OFFICE OF SURFACE MINING

RECLAMATION AND ENFORCEMENT

Annual Evaluation Summary Report for the

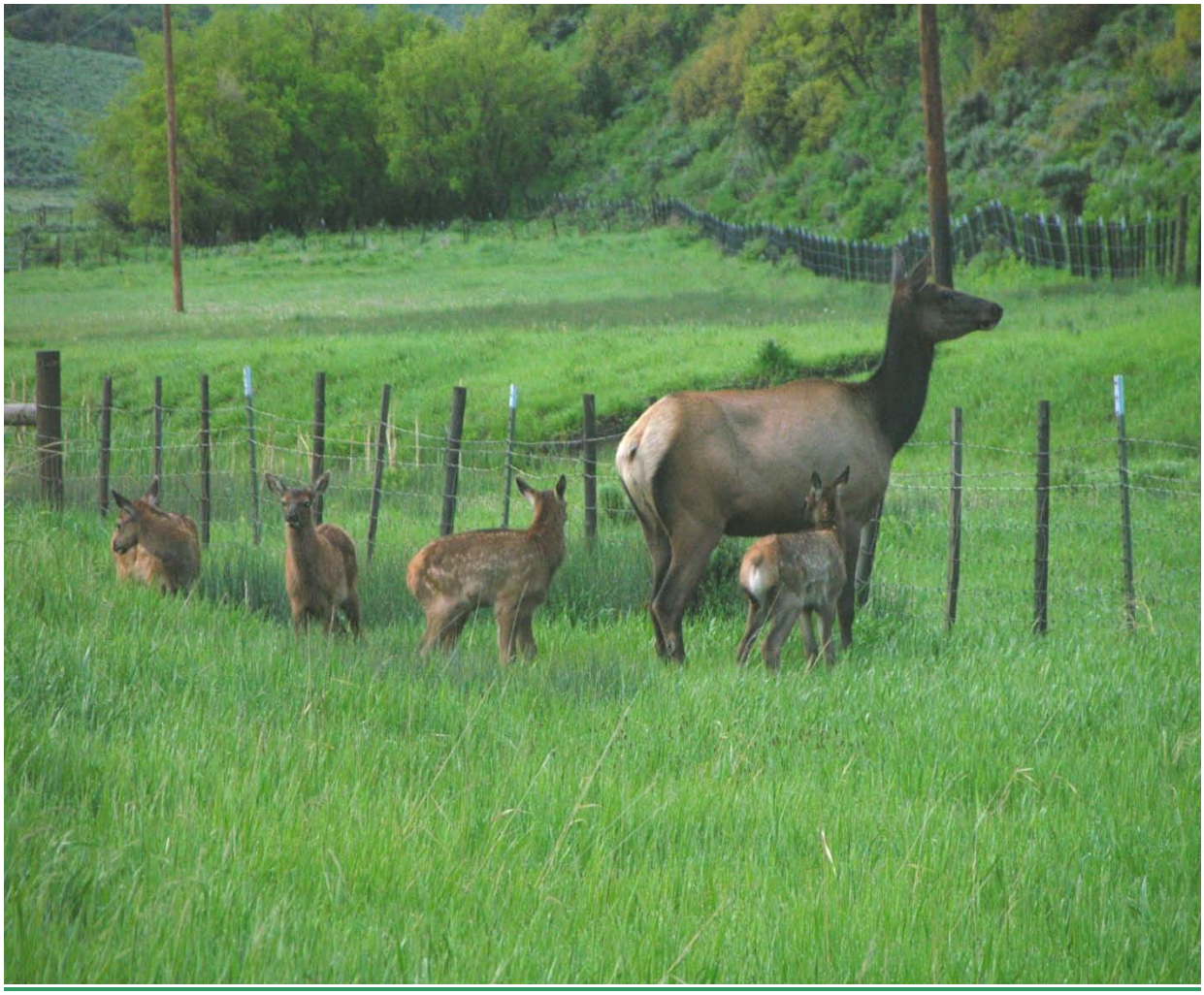
Regulatory Program Administered by the State of

COLORADO

Evaluation Year 2008

(July 1, 2007 through June 30, 2008)

September 2008



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The following list of acronyms is used in this report:

BLM	Bureau of Land Management
CY	Calendar Year
DFD	Denver Field Division
DRMS	Division of Reclamation, Mining, and Safety
EY	Evaluation Year
GIS	Geographic Information System
IMCC	Interstate Mining Compact Commission
NTTP	National Technical Training Program
OSM	Office of Surface Mining
SMCRA	Surface Mining Control and Reclamation Act of 1977
TIPS	Technical Innovation and Professional Services Program
CMA	Colorado Mining Association
USDA	United States Department of Agriculture
USFS	United States Forest Service
WIEB	Western Interstate Energy Board
WR	Western Region
WRTT	Western Region Technology Transfer

I. Introduction

The Surface Mining Control and Reclamation Act of 1977 (SMCRA) created the Office of Surface Mining Reclamation and Enforcement (OSM) in the United States Department of the Interior. SMCRA provides authority to OSM to oversee the administration of and provide federal funding for State regulatory programs that have been approved by OSM as meeting the minimum standards of SMCRA. This report contains summary information regarding the Colorado Department of Natural Resources, Division of Reclamation, Mining, and Safety's (DRMS) implementation of the approved Colorado program. Federal oversight of DRMS is conducted by the OSM, Western Region, Denver Field Division (DFD).

II. Overview of the Colorado Coal Mining Industry

Coal underlies 30,000 square miles or 28 percent of the state. Colorado ranks eighth in the United States in the demonstrated reserve base of coal (16.96 billion tons). The coal reserves are three-quarters bituminous and nearly one-quarter subbituminous. There are also small amounts of lignite and anthracite, but these are not currently being developed commercially.

Since the commencement of mining in 1861, mines in Colorado have produced over 1 billion tons of coal. Production in calendar year 2007 was 35, 548,821 million short tons (gross) (Table 1) (OSM-1 quarterly coal production reporting) ranking Colorado 7th among coal producing states. Coal production in Colorado has risen dramatically in the last decade, primarily due to an increase in underground mining operations utilizing the longwall mining method.

The majority of Colorado's electricity demand is met by coal-fired power plants. Most of the coal used by these plants is mined in Colorado. Colorado coal is low in sulfur, ash, mercury, and trace elements. The majority of this Colorado-produced 'compliance coal' is shipped by railroad to Texas, Utah, and four states in the south and midwest, where it is blended and burned with lower quality coal (Colorado Mining Association).

As of June 30, 2008, there were 43 inspectable units (Table 2). For these operations permitted acreage totaled 161,400 acres (Table 2) and bonded acreage approved for disturbance totaled 18,447 acres (Table 5). Of the 10 operations that were actively producing coal as of June 30, 2008, 7 were underground mines, and 3 were surface mines. Five of the seven underground mines use the longwall mining method, and two use the room-and-pillar mining method.

The federal government owns approximately 8.8 million acres of coal in Colorado. Colorado's coal mining industry has a significant impact on local and state economies. The mines employ about 2,246 staff. In 2006, they paid $64.4 million in federal and state royalties, $28.4 million into the United Mine Workers of America Combined Benefit Fund (funding mandated by SMCRA to provide health benefits to underground coal miners), $6.9 million into the abandoned mined land reclamation fund (funding mandated by SMCRA for the reclamation and restoration of land and water resources adversely affected by past coal mining), $10.3 million in property taxes and $9.2 million in severance and sales taxes. Much of this funding is used to support local and state governments and projects (Colorado Mining Association, Coal Production and Employment).

Differences in elevation throughout the State create many climatic zones in Colorado coal country. Annual precipitation averages less than 8 inches in some areas in extreme western Colorado, to 30 inches in certain mountainous areas. The growing season can be up to 169 days in length at some sites, but is usually much less, particularly in the mountainous regions of the Yampa River Basin where many of the mines have historically operated.

III. Overview of the Public Participation Opportunities in the Evaluation Process and Colorado Program

A. Oversight Process

Each year OSM and DRMS jointly evaluate DRMS's program for regulating coal mining. They determine how effective DRMS is in ensuring successful coal mine reclamation, in preventing offsite impacts, and in providing customer service. Evaluation parameters of these three, key program areas are further discussed in OSM Directive REG-8 "Oversight of State Regulatory Programs". OSM Directive REG-8 was revised effective December 21, 2006; and again July 1, 2008.

During each year via an annual mailing, the Team solicits input from coal mining stakeholders on OSM and DRMS evaluation topics, and the Team also requests comments on the oversight evaluation process and past OSM evaluation reports. The Team has also periodically held advertised public meetings in all of Colorado's coal producing regions.

On May 12, 2007, the Team mailed outreach letters to coal mining stakeholders (state, federal, and local governmental agencies, coal mine permittees, environmental groups, consulting firms, and coal mining trade groups), soliciting input for topics to evaluate during EY 2008, and soliciting any questions or comments on previous oversight reports or the OSM / DRMS oversight process. The Team did not receive any responses from the stakeholders outreach letters for EY 2008.

B. Colorado Program

1. Mined Land Reclamation Board Meeting

The Colorado Mined Land Reclamation Board is a multi-interest citizen board which establishes the regulations, standards and policies that guide the Division of Reclamation, Mining and Safety. The Board was created in 1976 by the Colorado General Assembly. Members are appointed by the Governor and confirmed by the legislature, serving terms of 4 years. The composition of the Board is established by the Colorado Mined Land Reclamation Act. The Colorado Coal Program acts independently of the Board on nearly all decisions.

The Board:

- Adjudicates violations and permit decisions after all administrative appeals at the program level have been exhausted
- Revokes permits and forfeits bonds
- Promulgates rules

2. Education and Community Outreach

DRMS made presentations to local university and school classes, professional organizations, Scout troops, and adult education classes. Presentations focused on the regulatory program and associated reclamation issues.

All DRMS staff had an opportunity to work the DRMS booth at the Colorado State Fair and help educate visitors about mining and reclamation. Over 70,000 people visited the Natural Resource Building.

3. Information and Technology Exchanges

DRMS participates on the steering committees for the OSM National Technical Training Program, the Technical Innovation and Professional Services Program, Western Regional Technology Transfer Team, and National Technology Transfer Team.

DRMS staff attended the Western Regional Technology Transfer team's annual meeting in Santa Fe, NM. The meeting topic was remote sensing and participants were provided a thorough overview, the types of imagery available and principal uses of the imagery. Small group discussions focused on how this imagery could be beneficial to the state programs.

DRMS exchanged information with other states through participation in the Interstate Mining Compact Commission (IMCC) annual meetings, and as a representative of the Reclamation Committee for the Western Interstate Energy Board (WIEB). Staff also participated in the IMCC's Intergovernmental Benchmarking Workshop entitled "*Surface and Ground Water Database Development and Use in State Mining Regulatory Programs*".

IV. Accomplishments, Issues, and Innovations

A. Accomplishments

1. Final Bond Releases

DRMS fully releases a reclamation performance bond (Phase III bond releases) when a permittee meets or exceeds all DRMS program requirements for the land disturbed.

During EY 2008 DRMS granted final bond release for all land disturbed by one underground mine, released liability for the "affected area" (the land above the underground workings) of another underground mine and terminated jurisdiction on one underground mine (termination of jurisdiction was on a bond forfeiture and permit revocation site). The total number of permitted sites for which Colorado has approved full and final Phase III bond release under its permanent regulatory program is now 18.

For further discussion of successful reclamation on permitted mines, see following Section V B. Reclamation Success

2. DRMS and Colorado Mining Association Reclamation Awards

To encourage innovative reclamation techniques and to recognize the companies that have exceeded the regulatory requirements for environmental protection and reclamation success, DRMS participated in the award process for the DRMS's and Colorado Mining Association's Annual Reclamation Awards.

Bowie Resources, LLC was recognized for excellence in reclamation for their unit train loadout structural demolition at the Bowie No. 1 Mine. Facilities included three large concrete silos, a steel conveyor and loading structures located immediately adjacent to a State Highway. Great care was taken by the operator to protect the adjacent highway, recycle all of the material, and finish the work in a timely fashion.

Mountain Coal Company (MCC) was recognized for reclamation excellence for their diligence in designing and constructing the Sylvester Creek road to reduce the traffic through Paonia and on county roads in an environmentally sound manner. Construction of the road eliminated the truck and heavy equipment route of 22 miles for mine related traffic in the Minnesota Creek valley. It has reduced the complaints received by MCC, USFS, Paonia, and Delta and Gunnison counties regarding traffic, noise and dust from the affected landowners and homeowners in Paonia and in the two counties.

The Eastside Coal Company was recognized for excellence in meeting the requirements for and successfully achieving final Phase III bond release at the Eastside Mine. The Eastside Mine was an underground coal mine located in Garfield County where coal mining occurred from the late 1800's until 1993 when the mine went into permanent cessation. Reclamation of the site was completed in 1995. Revegetation data shows that the site has surpassed standards with a diverse self-sustaining plant community.

3. Evaluation of Permit Revocation / Bond Forfeiture Sites

DRMS continues to evaluate the reclamation status of the permit revocation sites in an effort to terminate jurisdiction. Several of the sites have been seeded for ten years or longer which serves as the liability time period. Through 2008, DRMS has continued revegetation sampling at the forfeited mine sites to demonstrate revegetation success.

Based on past DRMS sampling efforts, DRMS has released liability for two sites where the permit was revoked, reducing the number of permit revocation sites to 12. During EY 2008, DRMS terminated jurisdiction on one more underground mine, reducing the number of permit revocation sites to 11.

4. Training

DRMS continued to ensure that its staff is professionally and technically competent. Staff members attended TIPS and NTTP classes covering the Trimble Geo XT, Terrasync and PF Office: Mobile Computing for Reclamation; Introduction to Arc GIS for Mining and Reclamation; Permit Findings; Blasting and Inspection; SEDCAD Applications and Extensions for Mine Permitting and Reclamation; Soils and Vegetation; Underground Mining Technology; and Applied Engineering Principles. Colorado DRMS staff participated in 9 training instances with the TIPS training program; and provided two instructors for the OSM National Technical Training Program.

5. Review of Coal Exploration Cost Estimates

In the fall of 2006, the Division began a project to conduct reviews of the reclamation cost estimates of its coal exploration Notices of Intent. In EY2008, the Division developed a baseline of 178 coal exploration files, with a baseline performance bond amount for all Colorado coal exploration sites of $3,625,864.56. The Division in EY08 subsequently terminated several files for administrative reasons. The Division also received and approved bond release requests for four of the 178 exploration operations, releasing a total of $265,663 in performance bonds in EY08. This project will carry over into EY09, with the Division anticipating the termination of several more files via operator-requested bond release applications and Division administrative action.

6. Geographic Information Systems Development

As part of the underground mine mapping initiative initially funded by the Mine Safety Health Administration, and followed up with funding from OSM, the DRMS digitized and geo-referenced many of the historic mine maps for the Boulder-Weld coal field. This data is used internally and is available to the public for evaluations.

The DRMS is continuing to build its' ArcGIS Map library. An intern was hired to update all coal permit boundaries and to digitize and geo-reference past and current bond release applications. This will greatly aid the staff for subsequent bond release evaluations.

7. NTTP Applied Science Projects

Wildlife habitat is an important pre and post mining land use in Colorado. Coal mining regions are within important habitat for deer, elk, sage grouse, Columbian sharptail grouse to name a few. The important wildlife habitat includes mixed mountain shrub communities and aspen stands. Efforts to reclaim these habitat types have been a challenge. In an effort to reestablish these important communities in the post mining land use, the DRMS has supported several applied science projects.

a. Aspen Reestablishment

A mature aspen grove covering over 100 acres was disturbed by operations at Seneca II-W. Seneca Coal Company and the U.S.D.A., U.S. Forest Service Rocky Mountain Research Station (RMRS) undertook a study to investigate whether drip irrigation, in association with fencing, deep soil placement, and control of herbaceous competition could be employed to establish aspen saplings on the regraded area. The NTTP Applied Sciences Program provided additional funding in FY 2006.

Results of the initial experiments have been encouraging. Although assessment over a longer time period will be necessary to document long term survival and regeneration, the results suggest that successful aspen reestablishment may be achieved by means of fencing to exclude large ungulates, combined with suppression of vegetative competition. Supplemental irrigation may be necessary to establish transplants during below normal precipitation years, but these conditions did not occur during the case study (2005-2007).

Additional funding was requested for FY 2008. The study plan set forth in the proposal builds on the information gained during the initial study. The proposed study design will include six replicated study plots located inside fenced exclosures dispersed within reclaimed areas at Seneca Coal Company's II-W Mine and adjacent Yoast Mine permit areas. The proposed study will assess the effectiveness of commercial weed block fabric, in addition to the effect of supplemental high quality irrigation water. The weed block fabric is a practical method for suppression of vegetative competition in large scale plantings.

We believe the knowledge gained from the proposed study will be valuable in guiding future operational planting of aspen and serviceberry on reclaimed coal mine sites, and other severely disturbed wildland areas. The basic concepts (fencing to exclude large herbivores, suppression of competing vegetation, and use of supplemental irrigation) apply to the establishment of other woody plant species that commonly occur in undisturbed mountain shrub and aspen habitats, but have proven to be difficult to establish on reclaimed mined lands.

b. Native Shrub Establishment

Colorado State University (CSU) installed demonstration plots at three coal mines in northwest Colorado in the summer of 2000. These plots were designed with input from the DRMS and the Colorado Division of Wildlife in an effort to improve reestablishment of wildlife habitat. The goal of the study was to evaluate planting and seeding techniques that would promote shrub establishment. Several techniques were considered including: varying topsoil depths, strip seeding, reduced grass component in the seed mix, and elk-proof fencing on one-half of each plot. The plots were monitored annually from 2001-2004 using Colorado severance tax monies. Additional funding from the Applied Science Program was granted in FY 06 to obtain another year of monitoring data. The longer-term evaluation of these practical and promising techniques is supporting reclamation efforts in the west and resulting in fewer planting failures and reduced reclamation costs.

B. Issues

There are no unresolved issues as of June 30, 2008.

C. Innovations

1. Review of Coal Exploration Cost Estimates

See number 5 above at DRMS accomplishments for EY 2008.

V. Success in Achieving the Purposes of SMCRA

The Team conducted evaluations and inspections in EY 2008 to measure the number and extent of offsite impacts, the percentage of inspectable units free of offsite impacts, the number of acres that have been mined and reclaimed and / or meet the bond release requirements for the various Phases of reclamation (reclamation success), and DRMS's effectiveness in providing customer service. These evaluations and inspections are summarized in Section VII Evaluation Topics. Reports of the oversight evaluations and inspections conducted during EY 2008 are available for review in the DFD office.

A. Offsite Impacts

An "offsite impact" results from a surface coal mining and reclamation activity or operation that causes a negative effect on resources (people, land, water, structures) outside the area authorized by the permit for conducting mining and reclamation activities. The applicable State program must regulate or control the mining or reclamation activity, or the result of the activity, causing an offsite impact. In addition, the impact on the resource must be substantiated as being related to a mining and reclamation activity, and must be outside the area authorized by the permit for conducting mining and reclamation activities (OSM Directive, REG-8).

Table 4 shows the number and type of offsite impacts that the Team documented as having occurred during EY 2008, for both permitted sites and bond forfeiture sites. DFD reviews monthly DRMS inspection reports and enforcement actions which are the primary source of identifying offsite impacts in Colorado. DFD also conducts complete, joint, oversight inspections with DRMS; and oversight evaluation topics are selected by the Team to analyze offsite impacts occurring during the evaluation year. The Team identified 2 offsite impacts on permitted sites; and 2 offsite impacts on bond forfeiture sites during EY 2008 (Table 4).

Three of the offsite impacts were minor, and primarily involved sediment leaving the permit area (or bond forfeiture area) in association with precipitation event (rain or snow melt) runoff. The fourth minor offsite impact was caused by unapproved disturbance associated with a fan shaft development (stockpiling soil and rock materials offsite; unapproved removal of fill grade material offsite).

1. Permitted Sites

The Team assessed whether offsite impacts had occurred on each of the 32 permitted coal mining operations in Colorado (as of June 30, 2008). As noted above under offsite impacts, DFD reviews monthly inspection reports and enforcement actions provided by DRMS which are the primary source for determining offsite impacts during the evaluation year. The Team discusses inspection and enforcement activities during routine, monthly Team meetings.

The Team evaluated the following on-the-ground observations on permitted sites: 134 DRMS complete inspections; 235 DRMS partial inspections (Table 9); 2 OSM and DRMS joint complete oversight inspections; and 4 OSM / DRMS special focus evaluations for the permanent impoundment special focus topic. (The 2 complete inspections and 4 special focus evaluations are included in the DRMS complete and partial inspection totals shown).

Two total offsite impacts occurred on permitted mine sites during EY 2008. Both offsite impacts were minor and occurred on 2 separate mine sites, one underground mine and one surface mine. One minor offsite impact was an "other" impact to a land resource; and the second minor offsite impact was a "hydrology" impact to a water resource (Table 4).

DRMS issued a Notice of Violation (NOV) for each violation; the NOV abatement requirements and corrective measures were implemented as required in a timely manner; and the NOV's were terminated. No environmental

damage to land or water resources was measured or recorded as a result of the 2 offsite impacts.

2. Bond Forfeitures and Revoked Permit Sites

The Team's initial evaluation of offsite impacts from Colorado's 14 bond forfeiture and permit revocation sites occurred in EY 2000. That evaluation documented 3 minor, hydrology offsite impacts to a land resource due to erosion and sedimentation caused by uncontrolled surface water runoff from 3 separate bond forfeiture sites.

The Team initiated a two year evaluation beginning in EY 2004 to again determine offsite impacts from the fourteen bond forfeiture and permit revocation sites. Seven of the fourteen sites were evaluated in the field during EY 2004, and the remaining 7 sites were evaluated in the field during EY 2005. Seventy eight percent of the bond forfeiture and permit revocation sites (11 of 14) were free of offsite impacts during each of the following evaluation years: EY 2005, EY 2004, EY 2003 (9 month evaluation period), EY 2002, and EY 2001. Findings from this two year evaluation were reported in the EY 2005 annual evaluation summary report for Colorado, and are available for review at the DFD.

In EY 2005, after 2 years of successful revegetation sampling, DRMS terminated jurisdiction on the New Pryor Mine. In EY 2006, a permit revocation site known as the La Plata No. 1 Mine, reclaimed by a bank holding the mine's bond, achieved successful reclamation and was released by DRMS from full Phase III liability. Following these actions, the number of Colorado's bond forfeiture sites and permit revocation sites was reduced from 14 to 12.

For EY 2006, 75 percent of the bond forfeiture and permit revocation sites (9 of 12) were free of offsite impacts. That evaluation documented 3 minor, hydrology offsite impacts to a land resource due to erosion and sedimentation caused by uncontrolled surface water runoff from 3 separate bond forfeiture sites.

For EY 2007, DRMS conducted 31 complete, and 31 partial inspections on these 12 mines. DRMS documented 3 minor, hydrological offsite impacts to a land resource on 3 separate bond forfeiture sites. For EY 2007, 75 percent of the bond forfeiture and permit revocation sites (9 of 12) were free of offsite impacts.

During EY 2008, DRMS conducted 54 complete and partial inspections on 11 bond forfeiture sites. (DRMS terminated jurisdiction on one forfeiture site during EY08.) DRMS documented 2 minor, hydrological, offsite impacts to a land resource on 2 bond forfeiture sites. For EY 2008, 82 percent of the bond forfeiture and permit revocation sites (9 of 11) were free of offsite impacts (Table 4).

3. Permanent Water Impoundment Demonstrations

This topic was selected by the joint DRMS/OSM Oversight Team to evaluate offsite impacts. Permittees often submit requests to retain sediment ponds as permanent water impoundments to enhance post-mining land uses. In order for the Division to approve these requests the requirements of Rules 2.05.3(4) (b) and 4.05.9(1), Permanent Impoundments, must be demonstrated.

The team reviewed recent requests to retain permanent impoundments the Division had received from three separate surface coal mining operations located in the Yampa River Basin. The evaluation criteria included a review of the written demonstrations' compliance with Rule 4.05.9(13), and a field evaluation of the sediment ponds that have been approved as permanent water impoundments. The Oversight Team evaluated 13 approved permanent impoundments.

No offsite impacts were identified during this evaluation. Results of this evaluation are found in Section VII. A. Permanent Water Impoundment Demonstrations

4. Joint, Complete, Oversight Inspections

Each year the Team evaluates offsite impacts and reclamation success on joint, complete, oversight inspections selected by the Team to reflect current Colorado coal mining conditions, and coal mining regions. Reports detailing the two complete inspections conducted during EY 2008 are available for review in the DFD office. One minor, offsite impact was observed during one of the complete inspections. DRMS had cited the permittee for this unapproved practice on a previous inspection, and the permittee was abating the violation as required during the complete inspection.

B. Reclamation Success

1. Permitted Sites

Each evaluation year the Team compiles reclamation information for all operations that DRMS has permitted under the Colorado Regulatory Program since its approval in December 1980. This reclamation information is derived from annual reclamation reports submitted to DRMS by all permitted coal mine operations; and evaluation year bond release data contained in DRMS's permitting database.

The annual reclamation reports show mining and reclamation data based on the calendar year, and is reflected in the attached optional Table RECLAMATION STATUS OF ALL AREAS DISTURBED UNDER THE COLORADO PERMANENT REGULATORY PROGRAM (see Appendix).

The DRMS permitting database is queried for bond release acreages, and those acreages are presented as EY 2008 data on the Colorado Reclamation Status Table. For the permitted and bonded operations the Team measures reclamation success by tracking the bonded, disturbed acreage that has received bond release from DRMS during the evaluation year. OSM also conducts oversight inspections, participates in Federal lands bond release inspections, and the Team selects evaluation topics that focus on the success of reclaimed lands.

During EY 2008, DRMS granted Phase I bond releases on 48 acres, Phase II bond releases on 272 acres, and Phase III bond releases on 278 acres (Table 5).

Using the data from the EY 2008 Colorado Reclamation Status table, the Team can accurately determine acreage in the following categories: disturbed acreage, acreage backfilled and graded, acreage topsoiled and seeded, acreage seeded for 10 years or longer, and Phase I, II, and III bond release acreage.

This table is divided into three blocks that list the permitted mines: active, temporarily inactive, and inactive operations (all permitted operations or 32 mines); terminated permits or operations for which DRMS has released Phase III bonds (18 mines); and revoked permits, the 11 mines where the permit has been revoked and the bond money was forfeited.

Review of data in the EY 2008 Colorado Reclamation Status Table indicates 64% (13,655 of 21,191 acres) of all the acreage disturbed on active, temporarily inactive, and inactive operations (all permitted operations) have been backfilled and graded.

Of the 21,191 total disturbed acres 7,655 acres consist of long-term facilities and active mining areas that are not subject to contemporaneous reclamation requirements during any given evaluation year, and thus not eligible for any Phase of bond release. Several operations have not submitted bond release applications for lands that have been reclaimed 10 years or longer.

Since the Colorado Permanent Regulatory Program approval in December 1980, DRMS has granted Phase III bond release on a total of 7,851 acres. This successfully reclaimed acreage is 31% percent of the total disturbed acreage under the Colorado permanent regulatory program (7,851 of 25,299 acres that includes all permitted mining operations, and full Phase III bond release mines, but not including bond forfeiture sites. See the EY 2008 Colorado Reclamation Status Table under Appendix 1 to this report.)

EY 2008 oversight inspections, and topic evaluations completed by the Team did not identify problems with contemporaneous backfilling and grading, or completed reclamation evaluated. The ratio of total Phase III bond release acreage to total disturbed acreage in Colorado is higher than other comparable western States.

OSM concludes that reclamation of mined land in Colorado is successful based on the Team review of the coal permittee's annual reclamation reports, DRMS's permitting database, the EY 2008 Colorado Reclamation Status Table, the Reclamation Cost Estimating evaluation, and the DRMS routine monthly inspections that include reclamation success evaluations of the reclaimed lands.

2. Bond Forfeitures and Revoked Permit Sites

In EY 2005 after 2 years of successful revegetation sampling DRMS terminated jurisdiction on the New Pryor Mine. In EY 2006 a permit revocation site (La Plata Mine) reclaimed by the bank holding the bond achieved successful reclamation, and DRMS released the bank from full Phase III liability.

The Phase III bond release application from the bank was processed and approved in accordance with Colorado Rule 3.03 "Release of Performance Bonds". Both these sites were removed from the Colorado inspectable units list in Table 2. This reduced total bond forfeiture and permit revocation sites in Colorado to 12.

During EY 2008 DRMS continued to evaluate the 12 bond forfeiture sites, for reclamation success that will lead to termination of jurisdiction. During EY08 DRMS terminated jurisdiction on one site (Blue Flame) reducing the number of permit revocation and bond forfeiture sites in Colorado to 11. Jurisdiction was also terminated on 71 acres of private land at the Coal Basin forfeiture site. DRMS continues to monitor revegetation success as necessary at the bond forfeiture and permit revocation sites.

3. Reclamation Cost Estimating

DRMS and OSM jointly selected this oversight topic to evaluate reclamation success. Its purpose is to evaluate whether DRMS is implementing its approved regulatory program by ensuring that performance bonds for surface coal mining and reclamation operations are of an amount sufficient to assure the completion of approved reclamation plans if the reclamation work had to be performed by the Colorado Mined Land Reclamation Board, through independent contractors. Results of this evaluation are found at in Section VII B. Reclamation Cost Estimating.

4. Joint, Complete, Oversight Inspections

Each year the Team evaluates reclamation success and offsite impacts on joint, complete, oversight inspections. Reports detailing the two complete inspections conducted during EY 2008 are available at the DFD. No unresolved problems with reclamation success or offsite impacts were identified as a result of these two inspections. One minor offsite impact was observed during one of the complete inspections. This violation had been previously cited by DRMS, and the required abatement measures were being implemented in a timely manner.

C. Customer Service

To evaluate the effectiveness of customer service provided by the DRMS, the team will select a program area to monitor the States' responses to complaints, requests for assistance and services. During EY08 the team evaluated whether DMRS is implementing its' approved regulatory program by ensuring permittees comply with the requirements of Regulation 4.08.5, Records of Blasting for Surface Coal Mining Operations which requires permittees to retain blast records for three years and make them available for inspection by the public upon request. The primary purpose of the evaluation was to determine whether the blasting records of the mine permittees evaluated are being maintained and available for public inspection as required. For a discussion of this evaluation, see section VII, C. Records of Blasting for Surface Coal Mining Operations.

VI. OSM Assistance

For the one-year grant period starting January 1, 2008, OSM funded an Administrative and Enforcement grant to the Colorado program in the amount of $ 2,322,607.00 (Table 8). Through a Federal lands cooperative agreement, OSM reimburses DRMS for permitting, inspection, and other activities that it performs for mines on Federal lands. Because most of the acreage mined for coal in Colorado is on Federal lands (Table 2), 79 percent of DRMS total program costs are funded by OSM.

For the three year grant period starting July 1, 2007 (through June 30, 2010), OSM funded a grant to the Colorado Abandoned Mine Land (AML) Program in the amount of $2,507,991.00 (Table 8) which applies to both administrative and construction expenses. This amount represents 100 percent funding for the AML Program.

TIPS supported the state of Colorado by providing software upgrades. TIPS also provided instruction to the state of Colorado on basic AutoCAD functions for use with permitting and electronic submittals. Two state program employees and one intern visited OSM Denver office to become familiar with basic CAD functions. This information will be used to help discern electronic submittals and will eventually assist in their GIS development. In addition to this support, TIPS loaned the state of Colorado the bore-hole camera system for use in AML emergency and priority project work.

Colorado DRMS staff participated in sixteen training instances with the TIPS training program; and provided two instructors for the OSM National Technical Training Program.

Colorado DRMS staff continues to participate in sharing their technological advances, exchanging electronic information with their industries, and developing a GIS. Colorado staff made significant contributions to technology transfer this year by attending, participating, and sharing their expertise. Two staff members attended the annual WRTT meeting.

OSM's Technical Librarian filled two reference requests and provided sixty-nine article reprints to the Colorado SRA staff members. OSM's Technical Library web site can be accessed at www.ott.wrcc.osmre.gov

VII. Evaluation Topics

Each year the Team selects specific evaluation topics to determine whether DRMS is effective in preventing or minimizing offsite impacts, ensuring reclamation success, and providing customer service. Following are descriptions and findings of the evaluations conducted during EY 2008. Evaluation reports for these topics are maintained at the DFD.

A. Permanent Water Impoundment Demonstrations (Prevention of Offsite Impacts)

Basis for Topic Selection

This topic was selected by the joint DRMS/OSM Oversight Team. Retention of sediment ponds to serve as permanent water impoundments and enhance the post-mining land use is common and desirable. In order for DRMS to approve these requests the requirements of Rules 2.05.3(4) (b) and 4.05.9(1), Permanent Impoundments, must be demonstrated. The Team reviewed three recent requests DRMS received to retain permanent water impoundments. The Team evaluated the written demonstrations for compliance with Rule 4.05.9(13), and conducted field evaluations of the impoundments that have been approved as permanent.

Measurements

The Oversight Team:

a. Selected three recent requests for retention of permanent impoundments;
b. Evaluated the demonstrations for compliance with the requirements of Rule 4.05.9(13), Permanent Impoundments; and
c. Evaluated the approved permanent water impoundments in the field.

Permanent impoundments for beneficial use of stored water may only be authorized in accordance with applicable State law and upon the basis of the following demonstration:

(a) The quality of the impounded water shall be suitable on a permanent basis for its intended use, shall meet applicable state and federal water quality standards and discharge of water from the impoundment shall meet applicable State and Federal effluent limitations and shall not degrade the quality of receiving water below applicable stream standards;
(b) The level of water shall be sufficiently stable, and the configuration of the pond shall be adequate, to support the intended use;
(c) Adequate safety and access to impounded water shall be provided for proposed water users;
(d) Water impoundments shall not result in the diminution of the quality or quantity of water available to water right holders for agricultural, industrial, recreational, or domestic uses except in accordance with applicable state law;
(e) The size of the impoundment shall be adequate for its intended purposes;
(f) The impoundment shall be suitable for the approved post mining land use.

The Colorado regulatory program will be found successful in this topic area if the permanent impoundments evaluated as part of this Special Focus Topic are in compliance with the applicable requirements of Regulation 4.05.9(13) and are functioning properly.

Conclusions

Based on OSM's review of the written demonstrations for compliance with Rule 4.05.9(13) and the field evaluations of the permanent water impoundments selected, the Team concludes the following:

All permanent impoundments evaluated in conjunction with this evaluation topic are functioning in compliance with the applicable requirements of Rule 4.05.9(13), and are consistent with their approved post mining land use. DRMS is successfully implementing its permanent impoundment approval process and OSM has no recommendations to offer for improving the approval process as a result of this evaluation. No offsite impacts were documented from the permanent water impoundments evaluated.

B. Reclamation Cost Estimating (Ensuring Reclamation Success)

Basis for Topic Selection

The Office of Surface Mining, Reclamation, and Enforcement (OSM) and the Colorado Division of Reclamation, Mining, and Safety (DRMS) jointly selected this oversight topic. Its purpose is to evaluate whether DRMS is implementing its approved regulatory program by ensuring that performance bonds for surface coal mining and reclamation operations are of an amount sufficient to ensure the completion of approved reclamation plans if the reclamation work had to be performed by the Colorado Mined Land Reclamation Board, through independent contractors, in the event of bond forfeiture.

Colorado enacted a counterpart to SMCRA section 509(a) at Colorado Surface Coal Mining Reclamation Act Section 3.02.2.

Measurements

The Oversight Team will review the cost estimates of selected permitting actions for certain surface coal mining operations against the requirements of Regulation 3.02.2 ("Determination of Bond Amount").

Section 3.02.2 requires that:

(1) The amount of the bond shall be sufficient to assure the completion of the reclamation plan if the work had to be performed by the Board, through independent contractors, in the event of forfeiture.
The amount required for each bonded area shall depend upon the reclamation requirements of the approved permit and shall reflect the probable difficulty of reclamation, giving consideration to such factors as topography, geology of the site, hydrology, and revegetation potential. The amount of the performance bond shall be determined by the Division as part of the decision on permit approval as described in 2.07 and shall be subject to review by the Board as described in 2.07.

(2) In order to assure sufficiency, the amount shall be based on, but not be limited to:
(a) The estimated costs submitted by the applicant in accordance with 2.05.4.
(b) The additional estimated costs to the Board which may arise from applicable public contracting requirements or the need to bring personnel and equipment to the permit area after its abandonment by the permittee to complete the reclamation plan.
(c) All additional estimated costs necessary, expedient, and incident to the satisfactory completion of the requirements identified in 3.02.
(d) Such other cost information as may be required by or available to the Division.
(3) In no case shall the bond for the entire area under one permit be less than $10,000.
(4) The amount of the performance bond required shall be adjusted for good cause as affected land acreages are increased or decreased or when the cost of future reclamation changes including the cost of abating any violation for which a notice of violation has been issued.

The Division shall review the amount of bond required for a permit area and the terms of acceptance of the bond at the time permit reviews are

conducted under 2.08.3 or every two and one-half years, whichever is more frequent. The procedures for any adjustment shall include:
(a) Notification of the permittee of any proposed bond adjustment and provide the permittee with an opportunity for an informal conference on the adjustment;
(b) Issuance of a written proposed decision by the Division to adjust the bond amount, publication of notice of the proposed decision in a newspaper of general circulation in the locality of the mining operation once a week for two weeks following issuance of the decision, and notification of the permittee, the surety and any person with a property interest in the collateral who has requested notification;
(c) An opportunity for a formal hearing pursuant to Rule 2.07.4(3);

(5) A permittee may request reduction of the required performance bond amount upon submission of evidence to the Division proving to the Division that the permittee's method of operation or other circumstances will reduce the maximum estimated cost to the Division to complete the reclamation responsibilities and therefore warrant a reduction of the bond amount. The request and demonstration shall be in the form of a permit revision application, or technical revision application, as appropriate. Bond adjustments which involve undisturbed land or revision of the cost estimate of reclamation are not considered bond release subject to procedures of 3.03.
(6) The amount of bond, as determined under this Rule and as adjusted from time to time, is an estimate of the cost of completing the relevant reclamation plan. It does not operate to any extent as a limitation upon the obligation of the permittee to complete the reclamation plan, the cost of which may exceed or be less than the amount of bond.

Performance bonds are currently held for each of Colorado's 32 permitted coal mining operations. OSM met with representatives from Colorado DRMS and reviewed the cost estimates generated in conjunction with recent significant permitting actions at three of these mines: a Permit Revision adding new acreage and facilities to an existing permit, a Permit Renewal, and a New Permit.

The State uses software that was developed approximately fifteen years ago named CIRCES (Colorado Integrated Reclamation Cost Estimating Software). Colorado plans to update this software in the near future, making it more user-friendly.
CIRCES requires manual updates every year to reflect the changes in the costs of labor, equipment, demolition, seeds, etc. The source of a cost (Equipment Watch's *Cost Reference Guide*, Equipment Watch's *Contractors' Equipment Cost Guide, R.S. Means Site Work and Landscape Cost Data, The Caterpillar Performance Handbook*, or the *CIRCES* program database) is identified on the printed worksheets for each cost estimate. Every 2.5 years, a mid-term permit review is completed for each mine's bond calculation. During this process, the state has the opportunity to update for inflation and fuel costs.

In reviewing these estimates, the team learned that all the costs needed for calculating a bond are available within the program using pull-down menus. In some instances, the most appropriate pull-down selection was not chosen for the given function. Despite the ease in using the software, the reclamation bond calculation process requires a basic understanding of what is required at a mine or construction site for reclamation. This includes the types and suitability of equipment used and the ability to capture the complete procedure needed to ensure all costs are included in every estimate. DRMS demonstrates this understanding.

Success

The Bond Calculations for all three mines appeared to be sufficient to ensure the completion of the relevant reclamation plan if the work had to be performed by the Colorado Mined Land Reclamation Board (through independent contractors) in the event of bond forfeiture.

Conclusions/Recommendations:

As a result of the evaluation of the bond calculations for the permitting actions, OSM recommends the following:

- Not all bond calculation estimates contained accurate information regarding costs. When some of the unit costs were evaluated, OSM was unable to duplicate the exact figure that was created using the CIRCES software.

- When utilizing the CIRCES software, Colorado should review all options given in the pull-down menus to determine which choice is the most representative of the desired cost or action.

C. Records of Blasting for Surface Coal Mining Operations (Customer Service)

Basis for Topic Selection

This topic was selected by the joint DRMS/OSM Oversight Team. Its purpose is to evaluate whether DMRS is implementing its approved regulatory program by ensuring permittees comply with the requirements of Regulation 4.08.5 of the Regulations of the Colorado Mined Land Reclamation Board for Coal Mining. This topic was chosen as the annual Customer Service Special Focus Topic because Regulation 4.08.5 requires permittees to retain blast records for three years and make them available for inspection by the public upon request.

Measurements

The Oversight Team will:

(1) Determine during the Special Focus mine site inspection whether permittees have retained blasting records for the 36-month period preceding the date of the inspection;
(2) Determine whether permittees are recording all applicable information required by Regulation 4.08.5 by reviewing the records of the 10 most recent blasts at each mine against the requirements of Regulation 4.08.5; and
(3) Determine whether permittees received any requests from the public to review the blasting records during the 36-month period preceding the date of the Special Focus inspection, and, if so, how those requests from the public were accommodated.

Population

Surface blasting is currently occurring on a consistent basis at three Colorado surface coal mines (surface blasting may occasionally occur at certain underground mines in conjunction with certain surface activities). The Oversight Team will inspect two of these three surface coal mines.

Blasting Records Evaluation

OSM and DRMS jointly evaluated one of the three surface coal mines blasting on a consistent basis. This mine is a large, dragline operation with draglines operating in multiple pit locations. We reviewed blasting records from October 2007. The blasting records contained all the required information. On October 5th the blast record for an overburden blast recorded a "worst case" estimation method for total pounds of explosive detonated during any 8 millisecond (ms) delay period

The blaster used the highest pounds of blasting agent actually loaded in a single bore hole of the blast pattern, multiplied by how many bore holes actually detonated during any 8 ms delay period. This estimated the total amount of explosive that could detonate during any 8 ms delay period, and this estimate exceeded the total amount of explosives allowed based on the weight distance formula.

We reviewed this record with the blasting department staff and determined the "worst case" estimate of total explosives detonated during any 8 ms delay period recorded did not actually occur during the blast. We reviewed the blast sketch, the drill hole loading, burden and spacing, the initial bore hole detonation, and delay timing-sequence diagram to determine the bore holes which actually detonated during any 8ms delay period, and the actual total pounds of explosive loaded in each hole. This actual total detonated during any 8 ms delay period was within the weight distance formula requirements. The record was corrected.

All blast records reviewed included monitoring for air over pressure at the nearest occupied dwelling from the blasting area. Seismic monitoring for ground motion was also being conducted as required. The results of this blast monitoring were in compliance with the weight distance formula. Blasting records reviewed included all the information required by Colorado Regulation 4.08.5.

Blasting records for the previous three years are available for public inspection at the mine offices; and there have been no public requests for review of blasting records since January 1, 2005, the 3 year record period we chose to review. This concluded our evaluation.

Conclusions

> The Team found the blasting records at the surface mine evaluated to be in compliance with the requirements of Colorado Rule 4.08; the information required on the basting records was complete and included all required information; and that three years of blasting records were available for review at the mine offices by public request. We also decided this blasting records review was adequate for the EY 2008 evaluation (1 of 3 mines evaluated), and the second surface mine evaluation scheduled for EY 2008 was canceled.

The Team finds that the Customer Service requirements of Colorado Regulation 4.08.5 evaluated (public requests for blasting records review; and three years of blasting records available for inspection at the mine) are being satisfied at the surface mine evaluated. No offsite impacts were documented during this evaluation.

Appendix 1 Tabular Summary of Core Data Characterizing the Colorado Program

Tables 1 – 12 present data pertinent to mining operations and State and Federal regulatory activities within Colorado. They also summarize funding provided by OSM and Colorado staffing. Unless otherwise specified, the reporting period for the data contained in all tables is the same as EY 2008 or July 1, 2007, through June 30, 2008.

When OSM's Directive REG-8, Oversight of State Programs, was revised in December 2006, the reporting period for coal production on Table 1 was changed from a calendar year basis to an evaluation year basis. The

change was effective for the 2007 evaluation year. However, with Change Notice REG-8-1, effective July 1, 2008, the calendar year reporting period in Table 1 for coal produced for sale, transfer or use was reestablished and is effective for the 2008 evaluation year. In addition, for the 2008 evaluation report, coal production for the two prior years reported on Table 1 was recalculated on a calendar year basis so that all three years of production reported in the table are directly comparable. This difference in reporting periods should be noted when attempting to compare coal production figures from annual evaluation reports originating both before and after the December 2006 revision to the reporting period.

EY 2008 REG-8 Tabular Data Clarifications for Colorado

Table 1 When OSM's Directive REG-8, Oversight of State Programs, was revised in December 2006, the reporting period for coal production on Table 1 was changed from a calendar year basis to an evaluation year (July 1, 2006 through July 1, 2007) basis. The change was effective for the 2007 evaluation year.

For EY 2007, the calendar year production figures from the 2005 and 2006 annual evaluation reports were recalculated on an evaluation year basis (July 1 – June 30). This should be noted when attempting to compare coal production figures from annual evaluation reports originating both before and after the December 2006 revision to the reporting period.

This EY 2008 report provides coal production figures on Table 1 as calendar years 2005, 2006, and 2007. This changed was required by the REG-8-1 revision effective July 1, 2008.

Table 5 The Table 5 format was also changed effective EY 2007 as a result of the OSM Directive REG-8 revision in December 2006. The acreage numbers shown on Table 5 are calculated as follows:

Total Phase I bond released (BR) during EY 2008 is 48 acres. This total includes only mines in the active, temporarily inactive, and inactive categories of inspectable units (Permitted mining operations). Inspectable unit categories are shown on the EY 2008 Colorado Reclamation Status Table.

Total Phase II BR during EY 2008 is 270 acres and includes only permitted mining operations (active, temporarily inactive, and inactive mines).

Total Phase III BR during EY 2008 is 276 acres (active, temporarily inactive, and inactive mines).

Total number of new acres bonded during EY 2008 is 102 acres. In Colorado this 102 acres represents total acres bonded that are approved for disturbance during EY 2008. This number is derived from the DRMS permitting database, and is a different number than total bonded acreage.

Total number of acres bonded at the end of this review period (18,447 acres ending EY 2008) derives from the DRMS permitting database and represents total acres bonded that are approved for disturbance as described above.

The Colorado Reclamation Status Table was used to determine the bond release acreage sums on Table 5. "Sum of acres bonded that are between Phase I and Phase II bond release as of June 30, 2008" was calculated by subtracting the total Phase II acreage from the total Phase I acreage, and the "Sum of acres bonded that are between Phase II and Phase III bond release as of June 30, 2008" was calculated by subtracting the total Phase III acreage from the total Phase II acreage.

Total acres disturbed during this evaluation year (461 acres ending Calendar Year 2007) derives from the Colorado Reclamation Status Table and represents disturbed acreage reported on annual reclamation reports

submitted by each permitted mining operation for the period ending December 31, 2007. If this number is meant to be cumulative it should be the actual Total number of acres disturbed since December, 1980 including active permitted mines, terminated permits and revoked permits. That number is 26,523.

Total acres disturbed at the end of EY 2008 (17,816 total disturbed acres ending Calendar Year 2007) is cumulative since the approval of the Colorado Program in December 1980, and is based on annual reclamation reports submitted by each permitted mining operation for the period ending December 31, 2007). The total disturbed acreage of 17,816 is derived by subtracting cumulative Phase III bond release acreage (Phase III release from December 1980 through EY 2008) or 21,191 – 3,375 = 17,816 total disturbed acres).

The Table: "RECLAMATION STATUS OF ALL AREAS DISTURBED UNDER THE COLORADO PERMANENT REGULATORY PROGRAM" contains data from CY 2007 and EY 2008. The CY 2007 data is disturbed acreage, acreage backfilled and graded, acreage topsoiled and seeded, and acreage seeded for longer than 10 years that is derived from annual reclamation reports submitted by each permitted mining operation for the period ending December 31, 2007. The EY 2008 data in the table is bond release acreage released during the evaluation year, and is labeled as EY 2008 data.

These disturbance and reclamation acreages are tracked by DRMS via annual reclamation reports submitted by all permitted mining operations on a calendar year basis. This data represents all lands disturbed and reclaimed by permitted mining operations in Colorado since the approval of the Colorado Permanent Regulatory Program in December 1980.

DRMS also tracks and reports evaluation year bond release data to DFD during routine monthly meetings throughout the evaluation year.

Additional data used by OSM in its evaluation of Colorado's program is available for review in the evaluation files maintained at the OSM, DFD. Contact James Fulton, Chief, at jfulton@osmre.gov or to (303) 293-5015.

Online copies of this EY 2008 Colorado Annual Evaluation Summary Report and Tables are available on the OSM web site at http://www.osmre.gov/EvaluationInfo.htm

For additional information on the Colorado DRMS see http://mining.state.co.us

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