

General Correspondence
Incoming OSM



United States Department of the Interior

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November 21, 2017

Dana Dean, Associate Director
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NOV 27 2017
DIV. OF OIL, GAS & MINING

RE: Submission of October 2017 Tech-007 Revisions for DFB Review; Changes Do Not Affect Termination of Action Plan #UT-2017-001

Dear Ms. Dean,

This letter acknowledges the Office of Surface Mining Reclamation and Enforcement (OSMRE), Denver Field Branch's (DFB) receipt and review of the recent revisions to Technical Directive 007, entitled "Calculation Guidelines for Determining Coal Mining Reclamation Bond Amounts" (Tech-007). On May 3, 2017, certain aspects of Tech-007 became the subject of Action Plan #UT-2017-001, which addressed issues related to the Division of Oil, Gas and Mining's (DOGM) bond calculation methods and practices. DOGM subsequently satisfied all four criteria for resolution in accordance with the action sequence and schedule. As a result, DFB terminated the Action Plan in a letter dated July 19, 2017. On its own initiative, DOGM revised sections of Tech-007 and resubmitted the draft to DFB on October 11, 2017. DOGM requested that DFB review the draft additions to ensure the revised language does not alter the resolution of issues previously addressed in Action Plan #UT-2017-001.

DFB has reviewed the revised version of Tech-007. The revised language incorporates additional clarification on the Technical Directive's definition of "point of maximum reclamation cost liability" and provides further guidance on its calculation methods. DFB finds that DOGM's recent changes to Tech-007 do not directly relate to the issues addressed in Action Plan #UT-2017-001, and therefore does not affect nor alter DFB's decision to terminate the Action Plan.

Please direct any questions concerning this action to Alexis Long by email at along1@osmre.gov or by telephone at (303) 293-5039.

Sincerely,

Howard E. Strand, Manager
Denver Field Branch

Enclosure

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State of Utah Department of Natural Resources Division of Oil, Gas and Mining Coal Regulatory Program Directive	Directive Number: Tech - 007
	Effective Date: July 17, 2017
	Supersedes: None

Subject: **Calculation Guidelines for Determining Coal Mining Reclamation Bond Amounts**

Approved: _____ John Baza, Director, Division of Oil, Gas, and Mining

DISCLAIMER

This non-binding directive is intended for internal direction for the Utah Coal Regulatory Program to clarify the implementation of the Utah Coal Rules. It neither confers rights nor imposes obligations on the Division or any other party. In the case where a conflict is perceived to exist between this directive and the Utah Coal Rules, the rules prevail.

ABSTRACT

The Utah Coal Program abides by the current code and rules as provided by State and Federal regulatory systems. One of the main goals of the Utah Coal Program is to ensure adequate bonding for reclamation of all areas disturbed by coal mining. Prior to the Division issuing a permit, a performance bond must be posted in an amount sufficient to assure the completion of the mine reclamation plan in the event for any reason the reclamation should fall to Division. The Division developed this technical directive to provide some guidance for calculating reclamation bond amounts to ensure adequate bond coverage.

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1. PURPOSE

The purpose of this technical directive is to provide guidance for calculation of Utah Coal Mining reclamation bonds.

This technical directive provides guidance for the Division (DOGM) agents to help determine bond amount needed for reclamation of coal mines. The directives intent is to provide supplemental bonding guidance to help maintain constant alignment with UAC and Federal Regulations, consistent as possible and to provide adequate determination of bond amount for all Utah coal mines.

Utah Annotated Code Rules state the amount of the bond required for each bonded area will:

- R645.301.830-.110 Be determined by the division.
- R645.301.830.120 Depend upon the requirements of the approved permit and reclamation plan.
- R645.301.830.130 Reflect the probable difficulty of reclamation, giving consideration to such factors as topography, hydrology and revegetation potential.
- R645.301.830.140 Be based on but not limited to, the detailed estimated cost, with supporting calculation for the estimates, submitted by the permit applicant. R645.301.830.200 The amount of the bond will be sufficient to assure the completion of the reclamation plan if the work has to be performed by the Division in the event of forfeiture, and in no case will the total bond initially posted for the entire area under permit be less than 10,000.
- R645.301.830.300 An additional inflation

factor will be added to the subtotal for the permit term. This inflation factor will be based upon an acceptable Cost Index.

- R645.301.830.410 (part of Adjustment of Amount) The amount of the bond or deposit required and the terms of the acceptance of the applicant's bond will be adjusted by the Division from time to time as the area requiring bond coverage is increased or decreased or where the cost of future reclamation changes. The Division may specify periodic times or set a schedule for reevaluating and adjusting the bond amount to fulfill this requirement.
- R645.301.830.430 A permittee may request reduction of the amount of the performance bond upon submission of evidence to the Division providing that the permittee's method of operation or other circumstances reduces the estimated cost for the Division to reclaim the bonded area. Bond adjustments which involve undisturbed land or revision of the cost estimate of reclamation are not considered bond release subject to procedures of R645-301-880.100 through R645-301-880.800.
- R645.301.830.440 In the event that an approved permit is revised in accordance with the R645 rules, the Division will review the bond for adequacy and if necessary, will require adjustment of the bond to conform to the permit as revised.

2. TIME OF BOND EVALUATION

Times when the Division evaluates the cost for future reclamation includes, but are not limited to the following:

- A. Determination of the initial bond amount.
R645-301-820.100

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- B. Evaluation of bond adequacy at the time of permit renewals and/or midterm reviews.
- C. Evaluation of bond when costs have been updated or an error has been discovered.
- D. Determination as a result of a permit revision that changes the calculations or the assumptions underlying the reclamation cost estimate for the existing bond.
- E. Determination of the amount of a bond to be retained at the time of Phase I or Phase II bond release.
- F. Determination of the bond under incremental bonding or cumulative bonding.
- G. If an error has been found in the bond calculations.

3. ASSUMPTIONS

The following assumptions are made to calculate the reclamation bond:

- A. The bond amount will reflect the cost of the Division engaging a third-party contractor to complete the reclamation work.

~~B. The bond amount will be based upon defined by the point of "worst case scenario maximum reclamation cost liability," which considers difficulty of reclamation, structures needing to be removed, topography, hydrology and revegetation potential. This point will be different for every mining operation depending on a variety of factors, but as a general rule it hinges upon the following considerations:~~

- ~~• Where maximum surface disturbance has occurred – i.e. where the maximum amount of earthwork and revegetation is required to fully reclaim.~~
- ~~• Where the maximum volume of~~

~~earthwork is required to establish AOC. An example of this would be when pits and/or trenches are excavated to their maximum limits.~~

- ~~• Where haulage distances are the longest and/or require traversing the steepest terrain. This would occur where the topsoil and/or subsoil piles are located the furthest distance from the areas being reclaimed.~~
- ~~• Where the maximum number of on-site structures has been constructed and requires full demolition and disposal.~~
- ~~• Where waste piles are at their largest and require the maximum amount of fill material to adequately reclaim the entire surface area.~~
- ~~• Where areas with special reclamation requirements have been disturbed fully. These areas would include prime farmlands, areas containing acidic or toxic soils or materials on site, areas of steep and/or rugged topography, or areas where underground portals require backfilling and sealing.~~

~~B.C.~~ The reclamation and operational plans and any special permit conditions imposed by the Division will serve as the basis for determining the amount of the reclamation bond. The Division will independently calculate the reclamation cost estimates; it will be based on, but not limited to, the cost estimates given by the permittee.

~~C.D.~~ The permittee will be in compliance with the approved reclamation and operational plans and permit conditions and performance standards at all times.

~~D.E.~~ The Division will routinely reevaluate the bond adequacy and require bond adjustments as authorized or mandated as required by R645-301-830.410

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~~E.F.~~ Bond calculations will not include remediation costs for unanticipated events. Should an unanticipated event occur, the Division will require the permittee to adjust the bond to cover the additional reclamation costs and obtain an insurance policy that will cover the cost of repairing damage.

~~F.G.~~ That the Permittee will be in full compliance at all times, including at the time of bond forfeiture.

4. REFERENCES

The major sources of information that the Division uses to calculate bond amounts are as follows:

- A. *Methodology Handbooks*: OSM's Handbook for Calculation of Reclamation Bond Amount Revised April 2000 (or later versions) will be the main source for methodologies used for reclamation bond calculations. The manual can be downloaded from <http://www.osmre.gov/lrg/docs/directive882.pdf>
- B. *Site Data*: The permit application, Mining and Reclamation Plan (MRP), the proposed amendment or major revision will be the main source of site data.
- C. *Equipment Productivity and Performance Guidebooks*: The Division's primary source for equipment productivity will be the *Caterpillar Performance Handbook*. The handbook will be used for productivity data on tractors, loaders, scrapers, haulage vehicles, hydraulic shovels and excavators. The Caterpillar Performance Handbook can be downloaded from <http://wheelerca.com/company/resources/cat-performance-handbook-44/>. Local Caterpillar dealers can be used for addition information. The Division's secondary sources for equipment productivity are handbooks published by Gordian R. S. Means Data. Those references include but are not limited to, *R.S. Means Building Construction Cost Data*, *R.S. Means Heavy Construction Costs Data* and *R.S. Means Site Work and Landscape Cost Data*.
- D. *Equipment Cost References*: The Division's primary source for equipment costs is the *EquipmentWatch Rental Rate Blue Book*. The Division's secondary source for equipment cost is the reference published by Gordian R. S. Means Data. Those references include but are not limited to *R. S. Means Building Construction Cost Data*, *R. S. Means Heavy Construction Costs Data*, and *R. S. Means Site work and Landscape Cost Data*.
- E. *Construction and Demolition Cost References*: The Division's primary sources for construction and demolition costs will be those references published by the Gordian R. S. Means Data. Those references include but are not limited to: *R. S. Means Building Construction Cost Data*, *R. S. Means Heavy Construction Costs Data* and *R. S. Means Site Work and Landscape Cost Data*.
- F. *Revegetation Costs*: The Division's primary source for the equipment and labor revegetation costs are references published by Gordian R. S. Means Data. Many of the material costs are based on local vendors, because the seed mixes used for reclamation of coal mines does not always correspond to sites listed in the *R. S. Means* cost references.
- G. *Wage Rates*: The Division's primary source for wage rates is a reference published by Gordian R. S. Means Data.
- H. *Other Sources*: Additional sources include the Abandoned Mine Land (AML) program and local vendors. These costs are highly localized items like landfill disposal fees and items that

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are not listed in the above-mentioned references.

- I. *Note:* The Gordian R. S. Means Data publications have site factors for five cities in Utah including Price. The only regional factor that applies to reclamation work is site construction. Historically, the site construction regional factor for Utah cities is within 2% of the national average. Since the adjustment is not significant and varies from year to year, the Division does not use regional factors. Regional factors are based on climate conditions. Areas with short construction seasons must increase the hourly depreciation rates because the machines are idle during the winter months. To apply the regional factor correctly the Division would have to assume where the contractor would be based and what the weather would be like during reclamation. Since reclamation can occur five years or more after the bond is calculated, the Division typically does not ~~use~~apply the regional factors. However, if the Permittee is able to present compelling evidence to demonstrate why local costs should be applied to their performance bond, the Division may accommodate those requests where appropriate.

5. MRP BONDING APPROVAL REQUIREMENTS

A. *Data for Demolition:*

1. Specific description and specs of facilities to be demolished, including the dimensions, volumes, units, unit costs, material type, and cost references.
2. Disposal methods, haul distance and disposal fees etc., with accurate calculations for these costs and cost references. Include bids and costing

sheets where local costs are used.

B. *Data for Earthwork Calculations:*

1. Site conditions, haul distances, grades, access roads, soil and waste characteristics, etc.
2. Volume of material to be handled (sources of materials and destination for materials, centroids, and handling plans, etc.).
3. Include area, acres, calculations for conversion to units of cubic yards, square feet; include swell and density with material source and destination for materials.
4. Identify maximum capacity in cubic yards for all refuse piles, product piles, and any piles that would need to be moved in the event of forfeiture or the division has to do reclamation.
5. Equipment type and productivity for each reclamation operation will be calculated using the *Caterpillar Performance Handbook* or *R.S. Means Heavy Construction Cost Data book*.
6. Labor cost including O&P amount will be included in these calculations.
7. Other costing methods may be used if approved by DOGM. Bids for projects may be used if the permittee provides bid options with the reclamation plan. The lowest bid may be used if approved by DOGM. All cost estimates will have detailed cost references.

C. *Revegetation requirements:*

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1. The revegetation costs shall be based on the approved reclamation plan. When possible, site specific seed mixture will be used. Seed mixture cost may be provided by local vendors.
2. The revegetation costs will include reseeded cost estimate as determined by the Division.
3. Seed, plants and equipment needed for coal mine reclamation are specialized. Handbooks such as R. S. Means usually do not have unit costs that represent costs that would be included in a coal mine reclamation project. Sources for vegetation can include local vendors. If bids are used then the bids must include detailed cost estimates and where possible published rates. Other sources include Abandoned Mine Lands historic costs.
4. Support documentation must be included for all vendors, bids, and other costing methods.

6. PRIMARY COST SOURCES

- A. *The primary source for equipment operating costs* is the EquipmentWatch Rental Rate Blue Book. The secondary sources are the R.S. Means publications.
- B. *The primary sources for demolition costs* are the R. S. Means publications. Local vendors will be used for localized costs such as concrete demolition and debris disposal and other costs not listed in the R. S. Means publications.
- C. *Labor rates* will come from R. S. Means publication, local vendors or other approved sources.

- D. *Other sources for localized or specialized operations* may include the Abandoned Mine Lands program, local vendors, Coal Cost Guide, Mine and Mill Equipment Cost, Western Surface Coal Mines (Non-Union), and the Caterpillar Inc. FPC. As well as the Nevada Standardized Reclamation Cost Estimator. The cost source preferred by DOGM is R. S. Means and EquipmentWatch Rental Rate Blue Book. The permittee must submit documentation and sources along with references from the sources used.
- E. The final bonding amount will be determined by DOGM.

7. BOND CALCULATION PROCEDURES

A. *Determining the Point of Maximum Reclamation Cost Liability*

Usually, the greatest reclamation cost liability occurs when the following conditions exist:

1. The maximum number of acres has been disturbed.
2. The greatest number of on-site structures has been constructed.
3. A refuse pile has reached its maximum size.
4. An incremental bonded mine has reached its maximum incremental disturbance and has not performed reclamation required to move into the next incremental phase of mining and/or before additional bond has been posted for additional disturbance.

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B. Estimating Direct Reclamation Costs

Reclamation of most underground coal mines includes the following:

1. Structure demolition and debris disposal.

Items listed under this section include the demolition and disposal of facility buildings, material handling facilities (conveyors, silos, tipples, scales, etc.), support facilities (power lines, transformers, fuel tanks, water tanks, electrical substations, etc.), culverts, pavement roads, railroads and bridges, and miscellaneous items such as sealing portals, shafts and wells and the removal of monitoring stations.

2. Assumptions about debris disposal:

- a. No salvage value for any reclamation activity is included in the debris disposal.
- b. Steel can be disposed of at a scrap dealership with no disposal fee. Transportation cost must be included in the disposal costs.
- c. Disposal fees are highly localized. The Division allows the permittee to use local landfill rates. The permittee has the responsibility to document local landfill fees and provide support documentation.

3. A complete list of all structures to be demolished or removed from the site must be included in the reclamation plan and it must include the following:

- a. The description of each structure
- b. The dimensions and volume of each structure including any swell factor and density.

c. Type of construction material.

d. Type and dimensions of footers, foundations and floors (state if structure has reinforced or non reinforced concrete).

e. Distance and time to haul debris to disposal facility.

f. Disposal fees for landfills.

g. Cost for onsite disposal when allowed. This cost may be included in the earthwork calculations section.

h. Asphalt may be disposed of onsite if the permittee has been granted a permit by rule from the Department of Environmental Quality, Division of Solid and Hazardous Waste. (A letter from that Division must be included in the MRP.)

i. Demolition activities should be classified according to demolition costs listed in the R. S. Means publications. Some exception such as concrete demolition will be allowed.

j. Use the total O&P cost listed in the R. S. Means publications

4. The earthwork costs are based on the materials handling plan, equipment productivity, equipment, labor and material costs. Earthwork costs include backfilling and rough grading, high wall elimination, pond and road reclamation, final grading and topsoil placement and pocking.

5. The material handling plan must be included in the mine reclamation plan and include:

- a. Calculations for the volumes of materials that will be handled. There are several methods that can be used to calculate

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volumes including comparison of operational and reclamation contours, cross-sections, geometric shapes and computer programs. Regardless of the method used for earthwork calculations, the permittee must show the location of each material source and show where the material will be placed. The permittee must also state what the swell and shrinkage factors are.

- b. The permittee must include and show the haul distances and grades.. The haul distances are calculated from either the centroid of the material source to the centroid of the fill location or from loading point to unloading point. The grade must include the slope angle and the road type. The road type is needed to determine the rolling resistance, which is needed for equipment productivity.
 - c. Permittee must include the type and characteristic of the material to be hauled. This information is needed for equipment selection. For example scrapers cannot be used to transport boulders but trucks can.
6. DOGM will review equipment selection and productivity.
- a. The permittee must select the equipment to be used for each reclamation activity listed in the material handling plan. Proper equipment selection will greatly reduce reclamation costs. The Division encourages the permittee to carefully make the equipment selection. The Division recommends that the permittee use Caterpillar equipment when possible because productivity can be easily calculated from the Caterpillar Performance Handbook.
 - b. Calculate the equipment's productivity. The main source of equipment productivity is the Caterpillar Performance Handbook. When calculating equipment productivity the permittee should use the following site factors:
 1. Operator factor is average
 2. Job efficiency is 50 min/hr
 3. Material factors as listed in the material handling plan
 4. Grades as listed in the material handling plan
 5. Bucket fill factor from material handling plan (type of material)
 6. Average cycle time
 7. Average dump time
 8. Site elevation
7. Equipment costs are as follows:
- a. The Division prefers to use EquipmentWatch Rental Rate Blue Book forequipment rental costs. The rental cost will include O&P costs as outlined in the R. S. Means publications. See the O&P section for more details. The Division can use EquipmentWatch Rental Rates from the R. S. Means publications. If neither Blue Book nor R. S. Means publications list the equipment then the Division may use other sources such as local vendors and AML costs or substitute other equipment productivity guidebooks, or cost reference manuals.

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b. The Division prefers to use EquipmentWatch Rental Rate Blue Book for equipment operating costs. If the equipment is not listed EquipmentWatch Rental Rate Blue Book, the Division will use operating costs from the R. S. Means publications. If neither EquipmentWatch Rental Rate Blue Book or R. S. Means publications list the equipment, then the Division will use other sources such as local vendors, AML, or other Division approved equipment productivity guidebooks and construction cost reference manuals.

8. Labor Rates are as follows:

- a. Whenever possible the Division will use labor rates from R. S. Means publications for equipment costs. The labor rates will include O&P as listed in the R. S. Means publications. (See the O&P section for more details.)
- b. If the R.S. Means publications do not have the labor rate then the Division will use other sources such as local contractor rates and AML costs. The Division may substitute other equipment as necessary.

9. Material Costs are as follows:

- a. The Division will use R. S. Means publications for the primary source of material costs.
- b. Some material costs can be very localized, therefore the Division will allow the use of local vendors for items such as seed costs and debris disposal. The permittee must supply the Division with published local material rates and bids.

c. Other sources for material costs include local vendors and AML costs. All quotes and bids will include O&P.

- 10. The revegetation costs will include the amount for the initial revegetation effort and the amount needed to complete the project in case of complete or partial failure of the initial revegetation effort.
- 11. The reclamation cost will also include the cost of other items in the MRP such as sealing portals and shafts.
- 12. O&P that is directly associated with the project is included in the direct costs. Division includes direct O&P as listed in the R. S. Means publications for labor, equipment and materials.

C. Estimate Indirect Costs:

The Division uses references from R. S.- Means Data publications for most indirect costs. Many indirect costs are expressed as a range of percentages of the direct costs. When a range is given the Division will use the lowest range. The Division uses:

- 1. 10% Mobilization/Demobilization which includes: mobilization/demobilization, permits, insurance, and bonds.
- 2. 5% for Contingency: Note: The contingency fee is for items that will be encountered but have not yet been identified in the permit application, Mining and Reclamation Plan, proposed amendments, or significant revisions. The contingency does not cover items that have been planned but have not been approved.

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3. 2.5% Engineering Redesign Fee.

This cost addresses the fact that site conditions at the time of reclamation may differ from what may have been anticipated at the time the original permit application was drafted. Consequently, if bond forfeiture occurs, the Division will need to assess the status and conditions of the site to determine the most appropriate course of action. This may require some or all of the following activities:

- Comprehensive property surveys to assess the extent and magnitude of disturbance, and determine volumes of stockpiles and topsoil on site.
- Soil surveys to determine toxicity and/or alkalinity of fill material.
- Evaluating structures for demolition and disposal.
- Evaluating the reclamation efforts that may have previously been completed by Permittee.
- Preparing bids and contract documents since the reclamation activities will be carried out by a third party contractor.

4. ~~65.8%~~ Main Office Expense ~~General Requirement Costs~~

These costs address items that are typically provided by the General Contractor, and can vary according to the size and magnitude of the project. These items are required to facilitate successful on-site reclamation work and generally include the following: On-site utilities, temporary facilities, security, testing, and project cleanup.

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5. 23.5% Project Management Fee.

Once a third party has been secured and

contracted to complete the reclamation work, a project management firm will be charged with inspecting and supervising the reclamation efforts to ensure they are being carried out to desired specifications. Typically, the Project Management Fee is equal to a percentage of the direct costs, and is proportional to the size of the project. The Project Management Fee will be based on a smaller percentage of direct costs where projects are larger and more expensive to reclaim.

D. Inflation Adjustments will be made as follows:

1. The Division uses a five-year average for the escalation factor from the Historical Cost Index generated by R. S. Means. If this becomes unavailable then DOGM will select another appropriate data source.
2. The Division considers escalating the bond during permit renewal, the midterm evaluation, during a significant revision to the bond amount, or as needed to ensure adequate reclamation. Bond amount held will never be lower than the estimated bond reclamation cost determined by the Division.
3. Use of the RS Means Historical Cost Index will avoid a zero or negative inflation factor.

E. The Total Bond will be calculated as follows:

1. The total bond is the sum of the direct costs, the indirect costs and the inflation costs.
2. Round the bond amount up to the next \$1,000.
3. If at any time the determination of bond

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amount necessary to complete reclamation is larger than the posted bond the amount of the bond posted will be increased accordingly.

F. The Division bond Analysts:

Will work together in order to insure as accurate as possible bonding calculations, using the methods outlined in the Coal Regulatory Program Directive.

8. STRUCTURE DEMOLITION PRIOR TO FINAL RECLAMATION

When an operator removes a structure as part of the operational phase of a mine, the Division may adjust the bond under Utah Administrative Code Rule R645-301-330 to account for the changed cost of future reclamation. The Division can only adjust the bond in this manner if it revises the permit's reclamation plan to reflect that the structure no longer exists and that the location will be used for a long-term surface disturbance as discussed in R645-301-800.850. In addition before such a bond adjustment can be approved, the entire structure must be removed and properly disposed of. The Division must verify the structure's removal with a field visit and written reports and photographs. Finally, the operator must submit updated maps and text for the updated mining and reclamation plan that show the structures have been properly removed as a mine plan amendment in accordance with R645-303-200. The amendment must satisfy the applicable application requirements outlined in R645-301 and R645-302.

If an operator removes a structure as part of final reclamation of the location, any reduction in bond amount must go through the bond release procedures outlined in Utah Administrative Code R645-301-880.

9. REGULATORY BASIS

R645-301.830, R645-301.840 The reclamation bond is based on the approved reclamation plan. Approval for the reclamation plan requires meeting regulatory requirements from all disciplines. It involves meeting standards for engineering, hydrology, geology, soils, and vegetation. Compliance also involves meeting the administrative and socio-economic requirements regarding public comment and use. This directive does not elaborate on the specific requirements under each discipline.

10. EFFECT ON OTHER DOCUMENTS

None

11. DIVISION CONTACT WORK GROUP APPENDICIES

A. CONTACT: Utah DOGM Coal Bonding group with any questions.

B. APPENDIX A: Regulatory Basis

Utah Administrative Code Annotated 830. Determination of Bond Amount. – refer to page 2 of this directive and the most recent Utah Administrative Code Annotated volume.

C. APPENDIX B: Records Availability

The calculations for the reclamation bonds and supporting information will be part of the mining and reclamation plan (MRP). The Permittee will be required to incorporate the Division's bond calculations into the MRP. The MRP and other information used by the Division will be kept in electronic format and in the Division public information room. All information related to the calculation of the bond amount is classified as public information and is available for review during normal working hours at the Division of Oil, Gas, & Mining Salt Lake Office public records room.

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