BEFORE THE

ENVIRONMENTAL QUALITY COUNCIL

STATE OF WYOMING

February 11, 2009

IN THE MATTER OF THE	**)**	
PROPOSED REVISION OF	**)**	**LAND QUALITY DIVISION**
THE DEPARTMENT OF	**)**	**ANALYSIS OF COMMENTS**
ENVIRONMENTAL QUALITY	**)**	
LAND QUALITY DIVISION	**)**	**DOCKET NO. 08-4101**
COAL RULES AND REGULATIONS	**)**	

COAL – Chapters 1, 2, 4, 5 & Appendix A

Rule Package 1S – Revegetation Success Standards & Miscellaneous OSM Deficiencies

The following rules were brought before the Land Quality Division (LQD) Advisory Board on January 7, 2008. Rule Package 1-S also includes rule language presented to the LQD Advisory Board on April 21, 2008. The Advisory Board voted to allow the proposed rules to proceed to the Environmental Quality Council (EQC) after completing revisions as discussed during the Advisory Board Meetings. Rule Package 1-S was revised and forwarded to the EQC on September 30, 2008. A 60 day public notice seeking comments on the rule package was published in the Casper Star-Tribune followed by a 45-day notice of the public hearing. A total of eight sets of comments were submitted. The Wyoming Mining Association (WMA), the Campbell County Conservation District, the Wyoming Game and Fish Department, and the Wyoming Outdoor Council submitted comments. Two coal mine operators and three environmental consulting firms also submitted comments. LQD divided the comments into about fourteen different topics. Six comments were favorable or clarification comments that suggested no revision to the rules. Seven issues were raised by one or two commenters, an all of these are addressed below. Two issues received six or seven comments. These comments are addressed in detail in this document, but are briefly discussed here.

LQD proposed a definition for "Species Lacking Creditable Value" that excludes noxious weeds, and five other species (*Bromus japoncius*, *Bromus tectorum*, *Taeniatherum caput-medusae*, *Halogeton glomeratus*, *Kochia scoparia* and *Salsola tragus*) from being credited toward cover, biomass production, and species diversity and composition measurements. This definition received seven comments; 5 were opposed to excluding the listed species in cover measurements, but agreed with exclusion from production and species diversity and composition. Two commenters supported the rule as proposed. The comments and LQD responses are too extensive to summarize here. The LQD final recommendation is to retain the rule as proposed.

The second proposed rule that drew a lot of comment was the proposed Species Diversity and Composition standard. This proposed rule received six comments. Although there were some supporting

statements, the overall consensus was that proposed rule was not ready for approval. One of the reasons was that the proposed rule is actually a method, and the numeric standards the operator must meet using those methods are not yet specified. Because the rule was primarily method, LQD agreed to pull the rule and incorporate it into a guideline. LQD is committed to working with interested parties to develop standards using acceptable scientific methods.

The following is an analysis of those comments received. The analysis first discusses proposed rules which were revised in response to the comments received. This is followed by a discussion of rules that were not revised after review and consideration of the comments received. Next the analysis contains a discussion of comments received which may not have proposed changes to the rules or are more general in nature. Finally, the analysis discusses questions posed by Council members during the January 15, 2009 informational meeting with Council. Proposed rules which received multiple comments are analyzed together where appropriate. Revisions to the Statement of Reasons or associated attachments are suggested for incorporation into the final package when necessary. Comments were only received for the proposed rules discussed below. All other rules proposed in Rule Package 1-S, not discussed below, will be submitted as presented in the August 28, 2008 draft proposed rules and statement of reasons.

PROPOSED RULE CHANGES IN RESPONSE TO COMMENTS RECEIVED

1. Normal Husbandry Practices

Chapter 4, Section 2(d)(i)(m) contains a list of husbandry practices that are allowed during the bond responsibility period without restarting the bond clock.

Chapter 1, Section 2(bm): "Husbandry practice" means, when preceded by the word "normal", those management practices that may be used to achieve revegetation success without restarting the bond responsibility period.

Chapter 1, Section 2~~(ao)~~: *deleted rule*: "Good husbandry practices" means sound land management techniques which are commonly practiced in the area of the mine considering the Postmining land use and, if discontinued after the bond period ends, shall not reduce the probability of permanent vegetation success.

A. Wyoming Outdoor Council (Sophie Osborn and Bruce Pendery)

"However, we are concerned with the redefinition of "husbandry practices." While the current definition appears to be more precise, it eliminates the prior definition's assurance that permanent vegetation success would be maintained after the bond-responsibility period ended. The new definition should be amended to state that permanent vegetation success is required.

Chapter 4, Section 2(d)(i) – support provisions for normal husbandry practices. "However, we urge the LQD to ensure that discontinuing management measures identified as normal husbandry practices after the bond responsibility period ends will not reduce the probability of permanent vegetation success.

LQD Response

The original definition of normal husbandry practices in Chapter 1, Section 2 – termed "Good Husbandry Practices" includes a definition of husbandry practices specifying that if a practice is discontinued after the bond responsibility period ends, the probability of permanent vegetation success shall not be reduced. This language is part of the Office of Surface Mining (OSM) regulations at 30 CFR 816.111(c)(4). LQD did not include this in the new definition because it was not enforceable language. The specific list of acceptable normal husbandry practices and their limitations, which are enforceable, are included in Chapter 4, Section 2(d)(i)(M). However, the deleted definition is the defining criteria for normal husbandry practices. Therefore, LQD proposes to amend the proposed definition to include elements from the "Good Husbandry Practices' definition.

Final Proposed Rule

Chapter 1, Section 2(bm): "Husbandry practice" means, when preceded by the word "normal", those management practices that may be used to achieve revegetation success without restarting the bond responsibility period. Normal husbandry practices are sound management techniques which are commonly practiced on native lands in the area of the mine and, if discontinued after the area is bond released, shall not reduce the probability of permanent vegetation success.

2. TIMING OF VEGETATION SAMPLING

Chapter 4, Section 2(d)(ii)(B)(I) specifies the years that vegetation may be sampled for revegetation success evaluation: "…the requirements in (1), (2) and (3) are met for two out of four years beginning no sooner than year eight of the bond responsibility period."

The (1), (2), and (3) reference requirements for (1) cover, (2) production, and (3) species diversity and composition.

The current rules require that these criteria be met in the last two consecutive years of the bonding period for mines using native area comparisons.

A. BKS Environmental Associates, Inc. (Brenda K. Schladweller)

The current revised regulations (8-28-2008, page 107 of 149) state that the requirements for cover, production and species diversity must be met for "two out of four years beginning no sooner than year eight of the bond responsibility period". It is unclear whether this means two consecutive years for all parameters. This should be clarified and flexibility instilled that allows an operator in consultation with LQD to utilize differing years' cover, production and species diversity and composition data.

B. Rio Tinto – Cordero Rojo Mine (Roy Liedtke)

The proposed rule at Chapter 4, Sec. 2 (d)(ii)(B)(I) defines what is required for revegetation success on Grazingland and Pastureland. The proposed rule also requires the revegetation success sampling be conducted in "…two out of four years beginning no sooner that year eight of the bond responsibility period." The currently approved rules require sampling for the last two consecutive years of the bonding period. This proposed change was appropriately made to provide more flexibility in sampling and as a result of a similar federal rule change. However, the federal rule allows sampling to take place "during the growing season of any two years after year six of the (bond) responsibility period.

Our recommendation is the proposed Wyoming rule be revised to be similar to the federal rule and allow sampling to begin in year seven (i.e. after year six), rather than waiting until year eight. Regardless of when sampling takes place, the bond cannot be released until ten years after seeding; however, following the federal rule allows more flexibility on sampling times. It would also allow combining several reclamation areas of various ages into one larger logical bond release unit.

Comments on the counterpart federal rule change were published in the Federal Register on August 30, 2006, Vol. 71, No. 168, pages 51684 to 51705. One commenter expressed concern that year seven was too early to sample, as the vegetation community was still undergoing significant changes (page 51701). The Office of Surface Mining's response was "…OSM does not believe that the fact of continuing change within plant communities is sufficient reason to delay measurement of revegetation success on grazing land…" The OSM also stated the laws "… clearly requires that the operator must fully meet the requirements of the Act and the permit (including revegetation success standards) for a phase III bond release. Therefore, if the regulatory authority is concerned the vegetation does not meet the revegetation success standards during the final bond release inspection, the regulatory authority can and should require additional investigation to determine whether those standards have been met."

Additionally, the rule should be clarified to state that cover, production, and species diversity and composition sampling do not all have to be conducted during the same two of four years. For example, cover and production could be sampled in years eight and nine, while species diversity and composition could be sampled in years nine and ten. The federal rule and this rule package both require shrub density

to be sampled during the last year of the bond release period. It would be common to combine species diversity and composition sampling with shrub density sampling, as both types of sampling require utilization of a belt transect (as opposed to a line transect for cover or a quadrat for production sampling).

The change to the proposed rule to allow sampling to begin in year seven to clarify the sampling requirements could be accomplished by the following change to Chapter 4, Sec. 2 (d)(ii)(B)(I). For the sake of simplicity, the proposed rule is shown in a clean format, with the strike and underline shown only to reflect our proposed change.

> *(I) Revegetation shall be deemed to be complete when: (1) the vegetation cover of the affected land is shown to be capable of renewing itself under natural conditions prevailing at the site, and the absolute total vegetative cover is at least equal to the cover on the reference area or technical standard, (2) the annual herbaceous production is at least equal to the annual herbaceous production on the reference area or technical standard, (3) the species diversity and composition are suitable for the approved postmining land use, and (4) the requirements in (1), (2) and (3) are met for two out of four years beginning no sooner than year ~~eight~~ seven of the bond responsibility period. The individual requirements of (1), (2) and (3) are not all required to be met in the same two of four years. The species diversity and composition standard must be demonstrated using the semi-quantitative standards defined in Appendix 4A of Chapter 4 which do not require statistical analysis, or demonstrated using other alternative methods as approved by the Administrator. The following reference area type options are available:*

C. Wyoming Game and Fish Department

"Proper evaluation of vegetative parameters is imperative for the success of the mine reclamation program. We support DEQ-LQD's time frame of evaluation as stated in the document. Measuring vegetative parameters 2 of the last 4 years beginning no sooner than year 8 (of the bond) for a technical standard is appropriate."

LQD Response

There are two main points to consider. The first is the request to allow sampling to begin year seven instead of year eight, because the OSM regulations allow sampling starting year seven. The OSM regulations apply to many states. LQD must consider what is "best" for Wyoming. In determining when sampling may begin for final bond release, it is necessary to consider the time it takes for permanent vegetation to establish sufficiently to determine that reclamation is successful. Assessment of interim vegetation monitoring data suggests that this assessment would be difficult even at year seven. This is particularly true of the western and southern mines that have much lower rainfall and take longer to establish vegetation than do the Powder River Basin Mines. The LQD position is supported by the Wyoming Game and Fish Department.

One of the commenters offered the federal argument published in the Federal Register as to how issues with how reclamation that passes at years seven and eight may be reevaluated at bond release if it appears to fail later. The federal argument is that the operator must meet the requirements of the Act, and the regulatory authority may require additional sampling if it is concerned the vegetation does not meet success standards. If there has been no sampling, how will LQD know that the area does not meet standards? How will we draw the line that will result in requiring more sampling? It is unlikely the operators will resample without some data supporting the requirement. This is putting the responsibility of verifying successful reclamation on LQD rather than the operator. Even though this is squabbling over one year, the younger the reclamation is when it is evaluated for revegetation success, the more likely it is

that there will be questions at bond release. LQD favors retaining the proposed rule as it is, with sampling starting year eight.

The second issue is that operators would like to be able to sample the vegetation parameters (cover, production, species diversity and composition) on different years. That is, that each parameter is sampled two of four years, but that they are not necessarily sampled the same two years. LQD strongly disagrees with this proposal. These parameters *combined* describe the reclaimed plant community and it's capacity to support the post mine land use, and were intended to be sampled together. All of these parameters are measured simultaneously during baseline vegetation sampling. We use cover, production and diversity and composition together to evaluate successful vegetation. Each parameter provide different information that together paint a picture of the reclamation. It is LQD's contention that the proposed rule provides substantial additional flexibility by requiring only that the reclamation meet the success criteria two out of four years, versus the current rule that requires success be demonstrated for two consecutive years.

There is some question on the intent of OSM regarding their rule change. The previous rule in the CFR required sampling during the last two years of the bond responsibility period. When we forwarded the question the WMA posed about sampling the parameters different years, the response from OSM was that they intend the parameters to be sampled together. That the rules were not clear that parameters must be sampled together was an omission, simply because no one had thought of it. This was because parameters had always been sampled together since the previous rule specified "the last two years" of the bond responsibility period. Therefore, OSM will not support sampling cover and production separate years.

LQD proposes to modify the proposed rule to clarify that the parameters must be sampled together any two of four years.

Final Proposed Rule

Chapter 4, Section 2(d)(ii)(B)

(I) Revegetation shall be deemed to be complete when: (1) the vegetation cover of the affected land is shown to be capable of renewing itself under natural conditions prevailing at the site, and the absolute total vegetative cover ~~and total ground cover are~~ is at least equal to the cover on the reference area or technical standard ~~before mining~~, (2) the annual herbaceous production ~~productivity~~ is at least equal to the annual herbaceous production ~~productivity~~ on the reference area or technical standard, (3) the species diversity and composition are suitable for the approved postmining land use, and (4) the requirements in (1), (2) and (3) are all met during the same ~~for the last two consecutive years of the bonding period for those mines using native area comparisons or the requirements in (1), (2), and (3) are met for~~ two out of four years beginning no sooner than year eight of the bonding responsibility period for t hose mines with technical standards. …

3. APPENDIX 4A, SPECIES DIVERSITY AND COMPOSITION

This appendix was developed during the coal vegetation rules revision process, and contains a method for evaluating species diversity and composition for evaluation of reclamation success. The appendix lists when the standard applies, and the post mine land uses the standard applies to. The remainder of the appendix describes the methods developed by the rules group, and indicates that the actual standards, average numbers of species per belt transect and frequency of growth forms across the reclamation, "shall be determined by the Administrator." The intent was that data would be generated to support the development of the standards.

A. Wyoming Mining Association

The currently approved revegetation success standards in Chapter 4, Sec.2(d)(ii)(B)(I) – page 107 of 149 – require that "the species diversity and composition are suitable for the approved postmining land use." This also meets the federal requirements.

The proposed semi-quantitative standards defined in Appendix 4A require a predetermined average number of vegetative species and life form frequency in order to meet the diversity and composition success standard. This proposed rule would exceed the federal requirement. While the WMA and WDEQ agreed to this concept, the intent was to determine the standard numbers required prior to rule-making. This has not been done. WMA reluctant to support a standard that is not finalized. We formally request that WMA and WDEQ continue to collaborate on a guideline that determines the standard for species diversity and composition.

B. Buckskin Mining Company

First, we would point out that any assessment of diversity is not required in the federal rule. Every mine in Wyoming is required to submit the seed-mixes that will be used in the reclamation process to LQD for approval. LQD has significant input and control over the allowable species in the reclamation. They have many opportunities through inspection process and 10-year liability release period to mitigate significant issues where the insufficient presence of a life-form would negatively impact reclamation success.

The goal of reclamation, as required by federal rules is to reestablish the highest economic landuse. In Wyoming the dominant landuse is livestock grazing. In simplistic terms, the ratios of species and life-forms have very little in common with landuse. With a correctly formulated seed-mix, proper agronomic seeding methods, and timely precipitation, revegetation and reclamation of mined lands is an achievable reality. The species present in the seed-mix usually express themselves over the liability release period. Beyond this, livestock and wildlife function extremely well on reclaimed grazing lands. The notion that an evaluation of the ratios of species and live-forms at the end of the liability responsibility period is an exercise of little value.

Specific to this rule package, we have great concern over agreeing to a standard prior to the administrator actually establishing the numerical requirements. Prior to adopting this standard LQD should publish the average number of species per transect and the life-form frequency numbers. These numbers should be established based on data from across the state. We would recommend the numbers be regionalized by LQD district. For example, the southwest is likely to have significantly different numbers than the PRB.

Several years of data ought to be collected to account for mine to mine differences in seeding methods, seed mixes, precipitation, etc. In our view, only after this data has been collected can a reasonable evaluation of the usefulness and applicability of this Appendix be established. We recommend that Appendix 4A not be adopted as a part of the 1S rule package until proper data has been collected, evaluated, and published.

We would also point out the required 100 square meter belt-transect is largely untested. Only one consultant in the PRB is current using this methodology. Further, the consultant who uses this method developed it as an internal process for use in his company to semi-quantitatively evaluate reclamation as he was rolling up the tape measure from a cover transect. We have a mild concern that LQD is attempting to formalize a data collection methodology without thoroughly testing it.

C. Intermountain Resources

This appendix appears to be incomplete since, as stated, most of the standards and methods are yet to be determined by the administrator. We will grant that the standards and possibly also the methods will have to be different between the Powder River Basin and southwestern Wyoming due to the pronounced differences in climate, soils and premine plant communities. For example, there are few to no warm season grasses on some of the southern mines so they should not be held to a warm season grass component. However, the way this appendix is currently written the operator will be subject to whatever the administrator dictates at a future date.

Recommend Appendix 4A be deleted from the proposed rules until a more concise standard, or standards, is developed.

D. Rio Tinto – Cordero-Rojo Mine

The 3rd item on Page 3 of 149 describes the "Addition of a species diversity and composition standard" for Grazingland and Pastureland. The currently approved rules simply require that species diversity and composition "support the post-mine land use." This is similar to the federal rule. The addition of a species diversity and composition standard was a noble goal; however, it was not accomplished as the number of vegetative species and the frequency of life forms (i.e. warm season grass, cool season grass, shrub, perennial forb, etc) required for revegetation success was never determined. This was discussed several times between WDEQ/LQD and the various groups involved, but numbers were never agreed upon. It was decided more reclaimed vegetation data should be collected prior to determining the values for success. The rules as proposed (primarily Chapter 4A starting on Page 125 of 149) only provide a method. The number of species and frequency of life forms required for revegetation success, which is the heart of the entire rule, is simply stated as "…shall be determined by the Administrator."

Our recommendation is the species diversity and composition standard NOT be included in the rule package. It would be more appropriately addressed at a later date when the number of species and frequency of life forms has been agreed upon. While we agree with the concept of the rule (as long as "other alternative methods" are allowed), we do not agree to the approval of a rule that provides methods only and no values. Please not that several final bond release requests have been approved using the currently approved rule. Also note the currently approved rule is as stringent as the federal requirement so the rule does not have to be changed to address OSM deficiencies.

The species diversity and composition standard can be removed by making the following changes:

- Do <u>NOT</u> add the new text (shown below) at the end of Chapter 4, Sec. 2(d)(ii)(B)(I) – Page 107 of 149: <u>The species diversity and composition standard must be demonstrated using the semi-quantitative standards defined in Appendix 4A of Chapter 4 which do not require statistical analysis, or demonstrated using other alternative methods as approved by the Administrator.</u>
- Do NOT add the corresponding Appendix 4A – Species Diversity and Composition Standard (Pages 125-129 of 149).
- Since both federal rule and LQD rule require shrub density sampling the last year of the bond release period. It would be common to combine species diversity and composition sampling with shrub density sampling, as both types of sampling require utilization of a belt transect (as opposed to a line transect for cover or a quadrat for production sampling).

E. Wyoming Game and Fish Department

The species diversity and composition standard which consists of identifying species within a 100 m2 belt transect is weak at best. We recommend developing a more statistically robust method for determining the vegetative diversity found within reclamation. Greater plant species diversity will better represent pre-mine native ranges and provide a variety of grasses and forbs enhancing the habitat for wildlife species.

F. Wyoming Outdoor Council

Chapter 4, Section 2(d)(ii)(B)(I)(1). We appreciate that reclamation on grazinglands and pasturelands will be deemed complete only when both species diversity and species composition are deemed suitable for the approved post-mining land use, since both species diversity and composition are critical measures to determining suitable restoration of affected ecosystems. Nevertheless, we believe that species diversity and composition should be compared to a selected reference area or technical standard as with the other determinants of restored vegetation (cover, production), rather than just determining that species and composition are suitable for the approved Postmining land use.

Chapter 4, Section 2(d)(ii)(B)(II). Species diversity is not mentioned in this section. We believe that shrub species diversity as well as shrub species composition, density, and distribution should be included in the shrub standard for grazinglands Postmining. Restoring plant species diversity post-mining will play an important role in facilitating the recolonization of those species that used the grazingland component of the project area prior to mining activity. Therefore, grazinglands should be restored to ensure that post-mining biodiversity mirrors pre-mining biodiversity.

Chapter 4, Appendix 4-A. We support the species diversity and composition standard and believe that the two components comprising this standard are essential to determining the efficacy of post-mining reclamation. We similarly support the LQDs provisions for the new species diversity and composition standard. However, we believe that the provisions outlined in these sections and their respective subsections for species diversity and composition in reclaimed area should be determined by the Administrator *based on biologically and scientifically accepted comparisons with nearly undisturbed reference areas.* We feel that the italicized text that we included in the previous sentence should be added to the proposed regulations to ensure objectivity in making determinations of reclamation adequacy. This addition should be added to pastureland designations (Section V) as well as to grazingland and fish and wildlife habitat designations. We believe it is crucial that biologically and scientifically accepted methods be used in determining that reclaimed lands exhibit a plant species diversity and composition that is equivalent to the pre-selected reference areas, since this is the only means of assuring the adequate restoration of disturbed habitat and ecological function. Allowing the Administrator some flexibility to determine what constitutes acceptable diversity in a particular area is appropriate, but these determinations should be based on biologically and scientifically accepted methodologies.

Chapter 4, Appendix 4A, Section VI. We strongly object to the provisions in Section VI allowing the calculated placement of additional 100 square meter transects if randomly located transects do not show acceptable diversity in pasturelands. This provision wholly undermines the established and accepted scientific basis for using a randomized design to sample vegetation and to make an objective and defensibly assessment of habitat quality and condition. Allowing the calculated placement of additional transects facilitates arriving at a *predetermined* outcome rather than providing an objective evaluation. If the number of randomly placed transects is deemed insufficient to provide an accurate assessment of pastureland habitat condition, the sample size of randomly located transects should be increased accordingly. That is accepted scientific practice.

LQD response to species diversity and composition comments

There were a total of 6 sets of comments, and all of them were primarily negative. Five recommended pulling Appendix 4A altogether. For the same reasons expressed by the commenters, LQD concurs and recommends deleting Appendix 4A from this rule package.

There are several main reasons discussed by the commenters. Appendix 4A is primarily a methods section, with very little actual standard language. The Appendix states that the standards for average species per belt transect and life form frequency will be published by the Administrator. Mine operators are understandably reluctant to agree to a methodology without knowing the values of the standards. They also contend that LQD agreed to have numeric standards in place before the rules were submitted. However, review of the meeting notes and flip charts from meeting notes on September 8, 2004, November 18, 2004, and February 2, 2005 did not reveal this commitment. Because Appendix 4A is primarily methods, it can be removed from rules and inserted into guideline and used by operators when numeric standards are determined. The methods we developed will not be lost, but included in guideline where all other methods are described.

Another reason for removing Appendix 4A is because it is a methodology and not a standard. The original rule package contained all of the methods for sampling and statistical analyses. When developing this standard, we (the veg rules group) were in the mode of all methods being included in rule. However, after our rule package was complete, OSM rules allowing for methods to be removed from rule were finalized. Therefore, the rules group agreed to remove methodology sections from the proposed rules. We did not discuss Appendix 4A at the time, but we now agree that it is more appropriate for guideline than rule.

The WG&F objected to this rule because it is "weak at best", and recommended developing a "more statistically robust method for determining the vegetative diversity found within reclamation." Their reasons for supporting a strong species diversity standard were that "Greater plant species diversity will better represent pre-mine native ranges and provide a variety of grasses and forbs enhancing the habitat for wildlife species."

The proposed standard has a numeric comparison, with no statistical analysis required. WOC also objected to the rule on the basis of weak scientific methods. They support the use of average species numbers and composition, but emphasize that the standards must be "*based on biologically and scientifically accepted comparisons with nearly undisturbed reference areas*", suggesting that rather than applying a standard, the reclamation should be compared to a reference area. They further state "we believe it is crucial that biologically and scientifically accepted methods be used in determining that reclaimed lands exhibit a plant species diversity and composition that is equivalent to the pre-selected reference areas, since this is the only means of assuring the adequate restoration of disturbed habitat and ecological function. Allowing the Administrator some flexibility to determine what constitutes acceptable diversity in a particular area is appropriate, but these determinations should be based on biologically and scientifically accepted methodologies." WOC particularly objected to the final section, which allows operators to deliberately select areas of high diversity to stack the deck in favor of achieving diversity.

The LQD is in full agreement that the standards should be developed using biologically and scientifically accepted methods. The LQD is committed to developing a numeric standard, which will likely vary by region, using the belt transect methods for all coal mines. In view of objections by all commenters, LQD agrees that Appendix 4A should be pulled from the rules and re-evaluated.

LQD responses to specific comments

Regarding the proposed methodology, one commenter stated that the belt transect method is "largely untested". LQD disagrees with this assertion. The specific method proposed has been used in at least four western states for many years by the developer. The group that worked on this rule consisted of professionals who are knowledgeable about vegetation sampling, including the commenter. Finally, belt transects are an established and proven method of evaluating vegetation parameters, including diversity (Hill et al. 2005). They are similar to a large quadrat in functionality.

One of the commenters suggested that diversity and shrub density be measured together at the end of the bond responsibility period, because they both employ belt transects. LQD is willing to consider this, but in light of the uncertainty of the species diversity and composition standard, we recommend waiting until this is resolved. Several comments addressed how the standards should be developed, primarily emphasizing that they should be regional because of the differences in climate and vegetation communities. LQD is in complete agreement with this perspective. Any rule that incorporates numeric standards must be developed at the regional level.

Several commenters expressed the concern that the species diversity and composition standard exceeds the federal requirements. Regardless of the fate of this particular species diversity and composition standard, it is important to address this issue. It is likely that a standard will be developed. LQD's response is similar to our response to the concern that SLCV exceeds the federal requirements. The OSM Code of Federal Regulations (CFR) requires that vegetation cover be established that is "diverse, effective, and permanent." This rule does not provide the structure required for an objective determination of vegetation that is diverse, effective, and permanent. In the 1982 Federal Register proposing the original rules, OSM explains their approach toward developing vegetation success standards:

> "OSM believes that standards of success for revegetation can best be developed at a State level. The proposed regulations would require the regulatory authority to develop standards that reflect the capabilities of local soils and climatic conditions. Minimum standards and acceptable sampling techniques would become parts of State programs and would be subject to approval by OSM." (Federal Register Vol. 47, No. 56, page 12599)

The OSM further elaborates in response to comments in the 1983 Federal Register:

> "OSM's rules provide a framework for individual regulatory programs. These standards are expected to be supplemented, where necessary, by regulatory authorities." (Federal Register Vol. 48, No. 172, page 40149.

Therefore, regulatory programs, including OSM, promulgate rules or require permit commitments that address how a more general requirement is met. The states of Montana, New Mexico, and Colorado all have species diversity requirements. In the absence of these more specific requirements, there would be conflict between operators and regulatory authorities determining exactly what a is "diverse, effective and permanent" plant community.

The LQD is committed to developing a numeric standard for species diversity and composition using belt transect methods for all coal mines. The standards will likely vary by region because of differences in vegetation, soils, and climate. In view of objections by all commenters, LQD agrees that Appendix 4A should be pulled from the rules. LQD maintains the belt transect method is a valid scientific method, and it will be included in Guideline. We will continue to work with the public developing scientifically based numeric standards for species diversity and composition.

Final Proposed Rule

Current proposed rule: Chapter 4, Section 2(d)(ii)(B)(I):…"The species diversity and composition standard must be demonstrated using the semi-quantitative standards defined in Appendix 4A of Chapter 4 which do not require statistical analysis, or demonstrated using other alternative methods as approved by the Administrator.

Revised proposed rule: Chapter 4, Section 2(d)(ii)(B)(I):… Species diversity and composition suitable to the postmine land use must be demonstrated using ~~t~~ methods approved by the Administrator.

> *The proposed revision still requires that species diversity and composition be demonstrated. Instead of a specified standard, the methods are approved by the Administrator. This reflects the current practice. Each coal permit has permit-specific requirements for demonstrating achievement of species diversity and composition. LQD proposes to continue with this practice until a standard is approved.*

Chapter 4, Appendix 4A – LQD proposes to delete the entire appendix. The methods will be available in guideline. Until numeric standards are developed, operators using this method will use standards approved by the Administrator.

4. DESIGN PRECIPITATION EVENTS

The following proposed change to the rules was not included in Rule Package 1-S as submitted to the EQC. During final drafting of the document it was noticed that a required program amendment was not included in the rule package. Language was presented to the LQD Advisory Board which revised design precipitation requirements for permanent and temporary impoundments (Chapter 4, Section 2(g)(iv) and (v), page 121 of 149 Statement of Reasons). A similar provision was discovered in an earlier section and should have been revised as Chapter 4, Section 2(g)(v)(B) (page 121 of 149, Statement of Reasons). The LQD proposes to correct this omission with the following proposed rule:

Revised proposed rule: Chapter 4, Section 2(c)(xii)(D)(II) If the impounding structure meets the criteria of 30 CFR § 77.216(a), the combination of principal and emergency spillways shall be able to safely pass or control runoff from the probable maximum precipitation of a 6-hour precipitation event ~~the 100-year, 6-hour design precipitation event~~ or a storm duration having a greater peak flow, as may be required by the Administrator.

5. EDITORIAL COMMENTS

Chapter 2, Section 6(b)(iii)(J) – contains an incorrect regulatory reference.

Revised proposed rule: (J) ~~Section 2(b)(vii)(C)~~ A plan for monitoring permanent revegetation on reclaimed areas, specifically including quantative sampling, as required by Chapter 4, Section 2(d)~~(xi)~~(i)(J).

NO PROPOSED RULE CHANGES IN RESPONSE TO COMMENTS RECEIVED

1. BELT TRANSECT DEFINITION

Chapter 1 Section 2(m): "Belt transect" means a rectangular sampling plot used for the estimation of shrub density (Premining and Postmining) and Postmining species diversity and species composition, each belt transect shall be at least 100 square meters and a minimum of 50 meters in length.

A. Intermountain Resources (Jim Orpet)

The definition implies that the belt has to be 100 meters long. The minimum "shrub patch" size identified in definition (dz) of this rule package is 0.05 acres or about 47 feet by 47 feet. There are obvious problems with trying to sample a 328 foot long transect within a 47 foot patch. With all the transect angling back into the patch that would be required, the transect would have to cross itself and some shrubs would be counted twice. Recommend more flexibility in transect length and width such as including belts 2 meter by 50 meter and 4 meter by 25 meter.

B. Wyoming Mining Association (WMA)

Chapter 1 Section 2 (m) page 12 of 149 – the definition of " Belt transect" as shown in the Statement of Reasons version of the Rule Package is correct and accurately reflects the discussion at the Land Quality Advisory Board meeting on January 7, 2008. At that time it was agreed upon that a belt transect must be a minimum of 50 meters in length. The other Chapter 1 documents do not reflect this change…

LQD response

The confusion for Intermountain Resources was that the version they reviewed was different than the Statement of Reasons version provided above. The WMA comment notes mistakes in other Chapter 1 documents, which have been addresses by LQD. The definition should reflect that belt transects must be a minimum of 50 meters in length, as agreed during the LQAB meeting.

LQD is of the opinion that allowing a transect 25 meters in length by 4 meters in width would cause sampling difficulties that would result in inaccurate data. On a 1X100m or 2X50m belt transect the tape defines one side of the 1 meter wide belt. The sampler counts the number of plants in the 1 meter wide belt using a "yardstick" to define the outside edge of the belt. A 4X25m transect would require the sampler to count the number of plants in a 2 meter wide belt. This would be nearly impossible because of the width of the belt. There would be twice as many plants to count and the edges of the belt would be difficult to observe. Imagine carrying a 2 meter "yardstick", holding one end on the tape, while counting lots of shrubs and trying to decide which plants fell within the outside edge of the belt. If the belt were delineated on the ground using stakes and string then it might be manageable. However, this would defeat the purpose of using a belt transect, essentially making it into a large fixed quadrat. In a small shrub patch (50' wide) a 50m belt transect would have to be re-oriented several times. An alternative would be to count all of the shrubs in the patch. The approved sampling methods do allow for alternate plot sizes and shapes as approved by the Administrator.

Final Proposed Rule

Retain the rule as proposed in the Statement of Reasons above; with a minimum transect length of 50 meters.

2. QUADRAT DEFINITION

No recommended changes, clarification requested.

A. Intermountain Resources (Jim Orpet)

The LQD has included the use of a ½ square meter plot in addition to the standard 1 square meter plot. Does this also mean data collected from a ½ square meter plot can be included with data previously collected from a 1 square meter plot (after proper conversion) for development of a technical standard? Does this also mean that at the time of bond release, data collected on a reclaimed area using a ½ square meter plot can be compared to a technical standard developed from baseline data collected using a 1 square meter plot following the proper conversion? Most of the mines have collected a considerable amount of baseline and monitoring data using 1 square meter plots and need to know if the LQD considers data collected from ½ square meter plots to be statistically comparable to that existing data. We are not suggesting a revision to the proposed rules but would request a written clarification.

LQD Response

The commenter has posed a good question. The intent of the rule change was to allow future sampling efforts to employ a ½ square meter plot. However, the different plot sizes are not comparable, even after proper conversion. The methods must be the same as were used in developing the technical standard, and data collected using different plot sizes cannot be combined or compared for revegetation success evaluation. This clarification will be incorporated into the sampling and methods guidelines.

Final Proposed Rule

No changes are proposed to the rule as shown above.

3. SOIL HORIZONS DEFINITIONS

Chapter 1 Section 2(eb) "Soil Horizons" and Chapter 1 Section 2(fa) "Topsoil"

A. Buckskin Mining Company (Laura Ackerman, Buckskin Mine, Richard Bonine, Habitat Management, Inc)

Soil Horizons 1-19: There should be a definition for "O" horizons, which occur in wetland soils or in other situations where organic matter has accumulated. An "O" horizon is a surface layer dominated by organic material and occurs above the A-horizon.

LQD Response

Revisions to rules on soil horizons and topsoil were not part of this rule package. Therefore, LQD does not recommend adding a definition for "O" horizon as part of this rule package or including an "O" horizon in the topsoil definition as part of this rulemaking effort.

Final Proposed Rule

No changes are proposed to the rule.

4. SPECIES LACKING CREDITABLE VALUE

Chapter 1 Section 2(ef): "Species lacking creditable value" means the cover and production of these species will be estimated but will not be credited or counted towards meeting the revegetation success standards for cover, production or species diversity and composition. Species lacking creditable value include noxious weeds listed under the Wyoming Weed and Pest Control Act, *Bromus japoncius*, *Bromus tectorum*, *Taeniatherum caput-medusae*, *Halogeton glomeratus*, *Kochia scoparia* and *Salsola tragus*, and all synonyms for these species as listed in the Natural Resources Conservation Service's Plant Database.

This new definition describes which species may not be counted in revegetation success evaluations in reclaimed areas and reference areas (native areas used for comparison). Current rules exclude noxious weeds and annual plants from production measurements. The proposed definition also excludes noxious weeds and the listed species from total vegetation cover and species diversity and composition measurements.

Comments:

Seven of the eight comments addressed issues with species lacking creditable value (SLCV). Two were in support of the rule as proposed, and five commenters objected to including cover restrictions on any species beyond noxious weeds in the proposed rule. Some of those five recommended deleting the proposed definition entirely.

A. Wyoming Mining Association

WMA proposes to revise the definition of Species Lacking Creditable Value (SLCV) in Chapter 1. The proposed LQD definition has been expanded beyond the initial agreement between WMA and LQD. The proposed LQD definition states that all SLCV be excluded for cover, production, species diversity and composition evaluations. WMA agreed to the concept of excluding all of these species in evaluations of production, species diversity and composition. However, regarding cover evaluations, WMA proposes that the rule not be changed to exclude any species except those noxious weeds listed under the Wyoming Weed and Pest Control Act.

Lest there be any misrepresentation, WMA recognizes that annual weeds, such as annual bromes, can be problematic invasive species of great concern. For example cheatgrass and Japanese brome are a problem in the West and it is no surprise that they are also present in and around mining areas in Wyoming. WMA operators do not want these plants on reclamation and most take some action to control them. Even utilizing the best available technology for revegetation practices and control efforts, annual bromes can become established to some degree on reclaimed lands.

Mines have long dealt with the annual weed problem. Annual weed seed is often legally present in the native seed we purchase for reclamation. Annual weed seed is present in the topsoil we salvage for reclamation. Companies utilize various husbandry practices to control annual weeds, but the very composition of reclaimed land provides better growth medium and opportunities for all plants than native environments.

Therefore, WMA objects to changes to the currently approved rule which would exclude annual weeds for cover evaluation. While we do not cultivate annual weeds or encourage their existence in the reclaimed lands, we do not feel we should be shackled with a change in regulation that could deny bond release, especially in drought years.

Vegetation cover is included in calculations for sediment control release and actually annual weeds function to stabilize the ground, particularly in drought situations. Please consider the following points which support retaining annual weeds for cover evaluation:

- Total vegetation cover is included as a performance standard to ensure that erosion is minimized on reclaimed lands. The current rules and regulations demonstrates this with the following definition in Chapter 1:

  "Cover" means vegetation, litter, and rock over the soil which intercepts rainfall.

  Therefore, a measure of all vegetative cover indicates the amount of erosion protection provided by vegetation

- The evaluation of species for revegetation success should be made under the requirements for species diversity and composition and not as part of the cover performance standard. An evaluation of species as part of the cover requirements is not needed.

- The annual brome species, given the right environmental conditions, can be a notable proportion of total vegetative cover on both reclamation and native ground and can impact cover evaluations. While these species are not desirable on reclaimed or native lands, they do provide a cover function by intercepting rainfall. As part of the normal lifecycle of these winter annuals, they have leaves which live into and, often, throughout the winter. These leaves are held immediately against the ground surface. In this fashion they exploit the warm boundary layer there and provide effective erosion control during months when most other herbaceous plants are dormant. The value of cheatgrass in erosion control was recognized early on by Stewart and Hull (1949, p. 67).

- An operator may request that a reclamation area be released from sediment control via a Sediment Control Release (SCR) evaluation package. Part of the evaluation is an estimate of total vegetative cover. The current method of evaluation of whether an area is erosionally stable enough to be released from sediment control includes vegetative cover of all species. Therefore, if total vegetative cover which now includes annual weeds is adequate for SCR analysis, then total vegetative cover which includes the annual weeds should be acceptable for the final total vegetative cover evaluation for bond release.

The WMA proposes the following definition of SLCV:

Chapter 1. Section 2.(ef) "Species lacking creditable value" means ***those species which*** *will not be credited or counted towards meeting revegetation success standards.*

(i) For the revegetation success standards for production and species diversity and composition, the species lacking creditable value include: noxious weeds listed under the Wyoming Weed and Pest Control Act, Bromus japonicus, Bromus tectorum, Taeniatherum caput-medusae, Halogeton glomeratus, Kochia scoparia and Salsola tragus and all synonyms for these species as listed in the Natural Resources Conservation Service's Plants Database.

(ii) For the revegetation success standard for cover, the species lacking creditable value include: noxious weeds listed under the Wyoming Weed and Pest Control Act.

B. Buckskin Mining Company

"We find the concept of SLCV very troublesome. While LQD is to be commended for expressing concern about undesirable species, the notion of eliminating species that are ever-present in undisturbed native range and is over-reaching. Many of the species currently listed provide unique function within a reclaimed landscape.

The annual bromes, for example, are a pioneering species in the cycle of vegetation succession toward a climax community. They have a lower C:N ratio than perennial species. This is essential in reestablishing the nitrogen and other nutrient cycles in reclaimed soils. Annual bromes provide a source of high protein forage for livestock and wildlife in the early spring, prior to the growth of other vegetation. They also provide early spring erosion control. Clearly, the annual bromes provide much utility within the landscape regardless of whether they are counted toward revegetation success. They are an early stage component that contributes to the overall success of the revegetation. As such, they should be counted toward vegetation cover and production.

We have conducted a comparative analysis of vegetation data collected at Buckskin mine from 2005 through 2008. In all but one instance, SLCV was higher in the Extended Reference Area (ERA) – ***native land*** – than in the reclamation. Our analysis indicates that the perennial vegetation is permanent, diverse, and effective as required by the federal regulations.

In 2005, the mean absolute vegetation cover for SLCV in the ERA was 8.6%. This compares to a mean absolute vegetation cover for SLCV in the Logical bond release unit (LBRU) of 11.2% or a difference of 2.6%. The method detection limit for this sampling episode was 2%. The difference between these two units is barely detectable and statistically insignificant. In all other cases over the last 4 years of sampling, SLCV has been higher in the native ERA than in the LBRU. We honestly don't believe that there is a substantive issue here worthy of state regulation being more stringent than the federal rule.

Another phase of the analysis we conducted was an evaluation of SLCV on sample adequacy. In collecting vegetation cover or herbaceous production data, we are required to ensure that we have a representative sample for each individual parameter. This certainty or "confidence interval" is calculated through a sample adequacy equation. Typically, sample adequacy is calculated on Total vegetation cover (TVC) and the oven dried weight of production samples. This calculation is usually done in the field by a consultant prior to the consultant moving on to the next data collection project. The field data is generally not evaluated until much later in the year when the vegetation report is written. Both the federal rule and Chapter 4 of this package require quantitative comparisons with a confidence interval of 90%.

Our analysis encountered a situation in the data where sample adequacy is achieved in the field based on TVC. If it is recalculated after the SLCV are removed, one no longer has an adequate sample. In this situation the TVC of the LBRU is greater than the ERA indicating that it achieves reclamation success. However, because we fail to meet the confidence interval or sample adequacy requirements, an additional year of sampling would likely be required because the time-frame for vegetation collection has passed. The only way to avoid this situation is to calculate sample adequacy base on TVC minus the SLCV. Such a process will result in significant over sampling such as collection 35 samples when only 20 would otherwise be required.

Collecting cover or production data to meet sample adequacy without SLCV present is clearly more stringent that the federal rule and serves little purpose, given the vast acreages of native range where the concentrations of SLCV are higher than the reclamation. We believe the SLCV concept adds additional complexity to the data collection process is unwarranted.

"From a practical standpoint, our vegetation consultant, who has 22 years of experience, indicates that when clipping production samples from a quadrat, it is much easier and more efficient to clip all of the herbaceous production together than it is to sort and remove the individual SLCV. The definition of production in Chapter 1 of this rule package was specifically negotiated to allow for harvest of the entire plot to facilitate more efficient data collection. This benefit is greatly diminished and sampling is more costly if one needs to spend additional time separating SLCV from the other species present.

We strongly recommend that the SLCV concept be eliminated from this rule package.

C. BKS Environmental Associates, Inc.

Inclusion of *Salsola tragus* and *Kochia scoparia* within the definition of species lacking creditable values.

Salsola tragus and *Kochia scoparia* are both listed under this definition. These two species are quite common within recently seeded areas and can often be controlled during the first two growing seasons, if necessary, by mechanical means. In addition, both often crowd themselves out after two growing seasons. They provide valuable "mulching" effects for more desirable perennial plants during those early years. Their listing under this definition is unnecessary, in my mind, as both are short-lived and would likely not be present during any submittal for final bond release. In addition, no restriction on seed quality is present for these two species within the State of Wyoming Department of Agriculture Chapter 51.

Inclusion of *Bromus tectorum* and *Bromus japonicas* within the definition of species lacking creditable value

Flexibility in negotiation with the LQD on issues pertaining to cheatgrass and Japanese brome, are essential for the following reasons:

a) Degraded pre-mine vegetation communities exist throughout the mining regions of Wyoming that often contain such species;

b) Salvaged topsoil from such communities will contain plant seed;

c) Both species are considered "regulated weeds" ONLY under the Wyoming Department of Agriculture Chapter 51 regulations pertaining to seed, i.e., not considered Prohibited Noxious and Restricted Noxious;

d) Per "c" above, seed quality in the State of Wyoming does not exclude seed contamination by cheatgrass or Japanese brome, both of which are allowed up to 1200 seeds per pound;

e) The two plants listed above are not currently on the state list of designated and prohibited noxious weeds under the Weed and Pest Control Act, and

f) Resulting seeded plant communities, defined and described by cover estimates, will often reflect such topsoil and seed contamination, especially in drought years.

D. Intermountain Resources

"Kochia scoparia should not be included in this list. Kochia scoparia is highly nutritious (11 to 22% protein) and highly palatable to livestock and wildlife when in the growth stages. This species is the first to be utilized when livestock are grazed on newly reclaimed lands. Elk, mule deer and pronghorn also prefer this plant species. Due to the nutritional, as well as ground cover and erosional benefits, this species does not warrant the classification as a "Species Lacking Creditable Value" and should be removed from the list. For that matter, there are native species such as pricklypear cactus (Opuntia polyacantha) that would classify as a species lacking creditable value. This species and other undesirable native species with little value are abundant on may native rangelands that reclamation will have to be compared to for revegetation success. In other words, the reclamation species will have to provide additional cover to offset the cover of these undesirable species found in native rangelands. Why aren't these undesirable native species included in the list?"

E. Rio Tinto – Cordero Rojo Mine

"The addition of SLCV definition is a major shift in the whole concept of defining revegetation success. Historically revegetation success has been determined by three parameters, described below in very simplistic terms:

- Cover – how much of the ground is covered by plants or mulch and how much is bare ground?
- Production – how much grass or browse is there for a cow or a sheep or a deer to eat?
- Species diversity and composition – is there a variety of plants?

The federal regulation simply requires the ground cover of living plants to be at least equal to a reference area (similar undisturbed area). The currently approved Wyoming regulations in Chapter 4, Sec. 2(d)(x) require "…the vegetative cover and total ground cover are at least equal to the cover on the area before mining…".

The proposed new definition no longer considers "total cover; it now becomes selective about which vegetative species are "creditable". While we may all agree many annual forbs and grasses are not desirable, those plants do exist in both the native and reclaimed areas and are a part of the ecosystem. The currently approved rules in Chapter 1, Sec. 2(u) define cover as "…vegetation, litter, and rock over the soil which intercept rainfall." Annual forms and grasses do provide cover as they do intercept a raindrop and prevent it from hitting bare soil. Natural succession of disturbed areas typically includes establishment of quick growing annuals soon after disturbance as nature's way of stabilizing the soil. As time goes on the perennial plants become established.

Currently approved rules require mine operators to control noxious weeds:

> Chapter 4, Sec. 2(d)(xiv) The operator must control and minimize the introduction of noxious weeds in accordance with Federal and State requirements until bond release.

We agree with not including noxious weeds, annual grasses and annual forbs in the evaluation of production for revegetation success, as that is consistent with currently approved rules. We also agree with not including those plants in the species diversity and composition evaluation. However, we recommend these plants be included in the cover evaluation for revegetation success (again, even cheatgrass intercepts a raindrop). This would require the following change to the proposed rule package:

Delete "cover" from the definition in Chapter 1 on page 37 of 149:

> *Chapter 1 Section 2(ef): "Species lacking creditable value" means the cover and production of these species will be estimated but will not be credited or counted towards meeting the revegetation success standards for ~~cover~~, production or species diversity and composition. Species lacking creditable value include noxious weeds listed under the Wyoming Weed and Pest Control Act, Bromus japoncius, Bromus tectorum, Taeniatherum caput-medusae, Halogeton glomeratus, Kochia scoparia and Salsola tragus, and all synonyms for these species as listed in the Natural Resources Conservation Service's Plant Database.*

F. Wyoming Game and Fish Department

"As we previously stated in our letter of December 3, 2007, we are concerned with the language regarding SLCV. We are very supportive of LQD's current language which essentially excludes such species lacking creditable value (ex: noxious weeds, cheatgrass, other non-native invasives) from

measurements of vegetative cover, diversity and biomass. The plant "species" that are encompassed by this language provide no value to wildlife habitat and can adversely affect long term success of reclamation."

G. Wyoming Outdoor Council

"… we support the definition for SLCV and commend the LQD for ensuring that noxious weeds will not be credited or counted towards meeting the revegetation success standards for cover, production, species diversity and composition. This is an important provision that will help ensure that only lands that are comprised of native, undisturbed plant communities will be viewed as having been successfully reclaimed. Invasive and noxious plant species are increasingly reducing the ecological function of native plant communities and reducing their ability to sustain healthy wildlife populations as well as historic land uses and values. We support the LQD taking strong steps to ensure that the spread of non-native exotic species is neither accepted nor promoted.

LQD response to comments:

The purpose of this rule is to develop cover measurements for vegetation success evaluation that count the perennial species that contribute to the postmining land use, not include species that detract from the postmine land use. Operators are not penalized for having annual bromes or other SLCV in the reclamation; they are just not allowed credit for the presence of these species. The goal is to develop rules that will protect the interest of Wyoming and also meet federal requirements. The support of the Wyoming Game and Fish Department and the Wyoming Outdoor Council support our contention that LQD is protecting the interests of the state and its citizens with this rule.

The LQD appreciates that controlling annual weeds, particularly cheatgrass and Japanese brome, may require some additional efforts on the part of coal miners. The LQD also appreciates that this regulation may present some additional challenge in order to achieve successful reclamation. The rules are not designed to always allow vegetation to pass bond release; some areas may not pass and may require more intensive treatments and management to achieve the success criteria. However, LQD maintains that the annual grasses are so diabolical in their impact on both native and reclaimed plant communities and ecosystems that we would be remiss as a regulatory authority and in our responsibility to the State of Wyoming if reasonable restrictions on these species are not included in our rules.

LQD is not setting a precedent by proposing to eliminate annual weeds and noxious weeds from cover and production measurements. This requirement is already in the Wyoming Noncoal Rules and Regulations for noncoal mine operators. Noncoal operators are successfully applying this rule and achieving bond release. In the context of coal mining, LQD is not setting a precedent by restricting how these species are counted toward bond release. Coal mines under direct OSM regulation have permit-specific commitments for annual weeds, with specific limitations on Cheatgrass. The Montana, New Mexico, and Colorado programs also have restrictions on these species, either in rule or permit-specific commitments. Most of these programs actively apply restrictions to weedy species, particularly cheatgrass. Wyoming has taken the approach of essentially ignoring weedy species and focusing on the perennial species that contribute to the postmining land use.

The OSM Code of Federal Regulations (CFR) requires that vegetation cover be established that is "diverse, effective, and permanent." This rule does not provide the structure required for an objective determination of vegetation that is diverse, effective, and permanent. The assertion that LQD is exceeding the Federal rules has been discussed by several commenters in regard to several rules. Therefore, LQD is addressing this specific comment more generally to address the broader issue. In the 1982 Federal

Register proposing the original rules, OSM explains their approach toward developing vegetation success standards:

"OSM believes that standards of success for revegetation can best be developed at a State level. The proposed regulations would require the regulatory authority to develop standards that reflect the capabilities of local soils and climatic conditions. Minimum standards and acceptable sampling techniques would become parts of State programs and would be subject to approval by OSM." (Federal Register Vol. 47, No. 56, page 12599)

The OSM further elaborates in response to comments in the 1983 Federal Register:

"OSM has, in selected section, added more specific requirements. However, specific and detailed rules or criteria would remove flexibility that is needed by the regulatory authorities to develop rules which reflect differences in climate, soil topography, and other conditions. This effort by OSM to provide greater flexibility in achieving revegetation success standards should not be construed as a weakening of those standards of a lesser commitment to the environmental protection provisions of the Act. OSM's rules provide a framework for individual regulatory programs. These standards are expected to be supplemented, where necessary, by regulatory authorities." (Federal Register Vol. 48, No. 172, pages 40148 and 40149.

Therefore, regulatory programs, including OSM, promulgate rules or require permit commitments that address how a more general requirement is met. In the absence of these more specific requirements, there would be conflict between operators and regulatory authorities determining exactly what a is "diverse, effective and permanent" plant community. The CFR rules are meant to be general rules that states with primacy use to promulgate more specific rules. An additional consideration is that OSM must concur on all bond release applications that involve Federal surface or Federal coal. OSM has indicated they will not concur on bond releases for vegetation with extensive cheatgrass because the reclaimed vegetation does not meet the postmine land use.

LQD acknowledges that SLCV are present in native areas. Their presence in degraded native areas is why the rule was proposed as it is, to apply to both native and reclaimed areas. The rule to exclude SLCV was written to guard against the case where a reclaimed area might have extremely high cover of these species (SLCV) and low cover of native perennial species as compared to the reference area. Yet because these undesired species currently are counted toward cover the area would be eligible for bond release even though it contained large amounts of undesired plant species. LQD encourages the type of reclamation where SLCV is lower than or equal to the amount in the reference area however, just because good reclamation has been demonstrated in the past does not ensure that it will always be the case in the future. Moreover, LQD is not requiring SLCV to be absent in reclamation or even penalizing reclamation for containing them, just that SLCV will not be counted toward successful reclamation.

Opuntia is not included in the SLCV list because it is a native species found on degraded rangelands and although not especially desirable it is not a problem in reclamation and not expected to be a problem. Opuntia, may not be good forage, but it is a persistent species that provide valuable ecosystem functions, such as soil stability, and protection of adjacent plant crowns from grazing.

The WMA asserts that the proposed definition has been expanded beyond the initial agreement between the WMA and LQD by expanding the list beyond noxious species for cover measurements. LQD disagrees with this assertion. The proposed rule is consistent with the rules development process, as agreed upon by the coal vegetation rules revision group. The coal vegetation rules revision process occurred in several phases. The first phase was a large group that reviewed and agreed on the rule revision structure and content. During the second phase, a review team (RT) was formed consisting of two members from the coal mining industry, two members from LQD, and one member from Wyoming

Game and Fish. These team members represented the larger group interests during composition of the revised rules by LQD. The WMA and LQD both had to agree on each RT member. The role of this team was to review LQD rule revisions to ensure that proposed rules honored the agreements made by the large group. The SLCV rule was reviewed and approved by the RT, as shown by the official meeting notes dated January 24, 2006.

Some commenters expressed concern that even using good husbandry practices, annual bromes can become established to some degree on reclaimed lands. The end result is that operators "are shackled with a change in regulation that could deny bond release, especially in drought years." The LQD does not dispute that annual grasses are present in both native and reclaimed lands. Again, the emphasis is on perennial species that support the postmine land use. The presence of some annual bromes is expected and should not prevent reclaimed areas from successful bond release, since the comparison is perennial vegetation. Therefore, while operators cannot count annual bromes toward vegetation cover, they are not penalized because of its presence. LQD has seen no evidence that this rule is onerous, and has in fact seen evidence where the rule has favored bond release by eliminating annual grass cover in a reference area. According to the Buckskin Mine comments, the last 4 years of sampling have always shown that annual bromes are higher in the native area than in the reclamation, with no statistically significant difference between native and reclaimed areas.

Several commenters stated that annual brome species can be a notable portion of vegetation cover and that they provide a valuable function by intercepting rainfall, particularly when the perennial species are dormant. Stewart and Hull (1949, p67) are cited in support of this assertion. This implies that dormant vegetation does not provide erosion control. However, it is a longstanding practice in the field of agronomy to leave vegetative stubble (dormant or dead) for the express purpose of erosion control. While Cheatgrass and Japanese Brome (annual bromes) do provide some erosion control it cannot be considered a good species for that purpose. Stewart and Hull (1949) explicitly state that "cheatgrass cover was found to be less effective than wheatgrass…in promoting water absorption and preventing erosion". They also conclude that "cheatgrass is valuable for soil protection… **as compared to weeds**". While they recognize cheatgrass as functional for erosion control they in no means endorse it as a preferred species. Moreover, the United States Department of Agriculture, Natural Resources Conservation Services state that they consider cheatgrass as "poor" for erosion control (USDA NRCS, 2008). Thus, the annual bromes actually provide poorer erosion protection than perennial species, and do not constitute a good argument for including them in total vegetation cover for revegetation success evaluation.

The LQD acknowledges the value of some SLCV, particularly Salsola and Kochia, as forage species for wildlife and domestic livestock, and as pioneering species that facilitate reclamation during early establishment phases. These species function as mulch to conserve soil moisture, trap snow to enhance soil moisture, protect perennial seedlings from wind desiccation, and provide erosion control. One of the commenters stated that listing Salsola and Kochia is unnecessary because these species are short-lived and not likely to be present for final bond release. We agree with this assessment; the only time these species would be present for final bond release is if the reclamation has weed problems. These species are expected to be present early in reclamation and are valuable the first few years after seeding. They should be nearly excluded by a healthy perennial plant community before bond release. We have seen reclamation that is still dominated by SLCV during bond release applications. At this point, these species are indicative of poor reclamation. This is why they are included as SLCV.

Consideration of annual bromes and their role in early reclamation is another matter. LQD questions the assumption that these species will decrease as succession occurs on reclaimed areas, and therefore, the value of annual grasses especially cheatgrass as a suitable early succession species. Cheatgrass may appear on the surface to fill the role of an early successional pioneering species. However, it in actuality may "truncate" or interrupt natural succession (Young and Clements, 2004). The authors state that

"Cheatgrass truncates plant succession by out competing native perennial grass seedlings for moisture, thus providing a fine textured, early maturing fuel that increases the chance, rate, and spread of wildfires. This fuel has sparked large wildfire storms that have increased from thousands of acres to over a million and a half acres in recent times. With each cheatgrass wildfire, the loss of native plant communities are burned and often converted to cheatgrass dominated ranges. The loss of these habitats has severe impacts on neighboring habitats and the wildlife that depend on those habitats."

Evaluation of species using diversity and composition is adequate, an evaluation of species as part of cover requirements is not needed. The proposed species diversity and composition standard which is being removed from this rule package did not address SLCV. Climatic conditions are an important factor in the amount of annual grasses. Fall moisture usually increases the amount of annual grasses the following spring. Not allowing SLCV to count in cover and production is a fair way to the operators of dealing with these species because it uses the reference area concept which compares the reclamation and native area during the same year which eliminates the variable of climatic conditions.

LQD does not consider excluding SLCV to be a significant problem for field calculations of sample adequacy. Since cover data are collected at the species level, the data can easily be manipulated in the field to exclude species prior to the sample adequacy calculation. Therefore, exclusion of these species from cover will not prevent field calculations of sample adequacy. A commenter also expressed concern that the requirement that SCLV be separated from other species for production measurements would cause added time, complexity and expense. Current rules require that biomass samples be collected and reported by individual species. The commenter is objecting to a standard practice that has been in place since vegetation rules were established. The proposed rule change would allow operators to combine all perennial species, and combine all SLCV in a separate clipping. Therefore, the proposed rule is a reduction in time and expense as compared to the current rule.

Final Proposed Rule

LQD does not propose any changes to the definition for Species Lacking Creditable Value.

5. MEASUREMENTS OF TOTAL COVER AND TOTAL VEGETATION COVER

Chapter 4, Section 2(d)(ii)(B)(I) addresses revegetation success standards for grazingland and pastureland. Current rules require evaluation of vegetative cover and total ground cover**.** The proposed rules eliminate total ground cover and only require vegetative cover.

A. Wyoming Outdoor Council

Furthermore, we urge the LQD to reconsider whether vegetative cover is a suitable replacement for total ground cover. The LQD should fully consider whether such non-vegetation components of ground cover as litter and rocks make important contributions to ecological function that would not be fully duplicated by vegetative cover alone.

LQD Response

The LQD agrees that total ground cover is an important component of evaluating reclamation success because of important ecological functions other than plant community composition. Total ground cover was deleted here because it is considered in other portions of LQD regulations. Specifically, total ground cover is a component of sediment control release, which evaluates the erosional stability of reclamation.

Because of the non-vegetation elements, LQD agreed that this parameter should be evaluated in other verifications of successful reclamation and deleted in the requirements for successful revegetation.

Final Proposed Rule

LQD does not propose any changes to total cover and total vegetation cover

6. WETLAND RECLAMATION

Chapter 4, Section 2(d)(ii)(E) Postmining wetlands:

(I) Reclamation plans for postmining mitigation wetlands shall be reviewed and approved by the Army Corps of Engineers and the Administrator and incorporated into the Land Quality Division permit. Wetland mitigation shall be considered successful when the Army Corps of Engineers determines that mitigation was successful.

(1.) …

(2.) The minimum bond responsibility period for areas containing mitigation wetlands is ten years and no request for Phase 3 Incremental Bond release shall be made earlier than the last year of the bond responsibility period. A statement of successful mitigation from the Army Corps of Engineers shall be submitted by the operator to the Administrator as demonstration of successful mitigation. If successful mitigation is approved by the Army Corps of Engineers prior to the last year of the bond responsibility period, then the wetland will be evaluated as part of the surrounding area using the standards applied to that area.

These rules were developed to address the requirements for mitigation wetlands that are under the jurisdiction of the Army Corps of Engineers. However, these areas must also meet OSM requirements for fish and wildlife habitat. Therefore, if the wetlands are approved be the Army Corps of Engineers before the end of the bond responsibility period, they must also be evaluated as part of revegetation success.

A. Buckskin Mining Company

Chapter 4, Section 2(d)(ii)(E): Postmining wetlands: With regard to mitigation wetlands, LQD clearly delegates their jurisdiction to the Army Corps of Engineers (ACOE). The ACOE issues the final jurisdictional determination that the mitigation wetland meets the appropriate standards. This is an acceptable process.

What is inconsistent and unacceptable is the requirement that if the mitigation wetland is released by the ACOE prior to the 10 year liability period, the "*mitigation wetland is to be included the surrounding area using the standards applied to that area"*.

First, the ACOE process for mitigation wetlands typically has a 5-year permit term. Therefore, it will usually be the case that the mitigation wetland is released by the ACOE with time remaining on the LQD liability release clock.

Secondly, including wetlands with upland vegetation communities is not practical. Such a practice will greatly increase the number of samples required to achieve an adequate sample, especially for production sampling. The variance of the entire dataset will likely much greater.

This requirement may also necessitate establishment of some sort of wetland community in the Reference Area. Locating a comparable wetland area within a reference area is not usually practical.

When establishing vegetation communities in baseline sampling LQD requires that wetland communities be distinguished from surrounding communities. We believe that post-mine wetlands should also be treated as separate communities.

Our conclusion is that if LQD is comfortable in delegating their jurisdiction to the ACOE and they willingly accept the results of mitigation wetlands as approved by the ACOE further sampling of the wetland should not be required. The wetland area ought to be released as part of the bond release unity when the appropriate liability release time frame has been met.

B. Wyoming Game and Fish Department

"We suggest that all wetland habitats are highly important whether they are "jurisdictional" or not. We recommend wetlands be reclaimed/restored to pre-mine condition as they provide a vital function for a variety of wildlife species."

C. Wyoming Outdoor Council

Chapter 4, Section 2(d)(ii)(D) and (E). We support and appreciate the additional provisions for wildlife habitat and post-mining wetlands.

LQD Response

Buckskin Mining Company comments:

These rules were developed to address the seeming conundrum that the Army Corps of Engineers (ACOE) has jurisdiction over mitigation wetlands, and that OSM *also* has jurisdiction of these same wetlands through SMCRA. The ACOE reclamation time frame is five years, while the OSM time frame is 10 years. For the occasions when the mitigation wetlands are approved by the ACOE earlier than the 10 year bond responsibility period, we developed a method to satisfy both agencies. The LQD, WMA, ACOE, and OSM met twice to determine a way to address both agencies' requirements. In the end, we agreed that the operator would provide a copy of the ACOE approval letter to LQD, thereby demonstrating its function as a wetland, and that the wetland would be included in the upland evaluation for revegetation success at a later date (documented in June 20, 2006 meeting notes). Our assumption was that the wetland(s) would be a relatively small component of the upland bond release area, and that few, if any, sample points would occur in the wetland. New sample points would be chosen if the point was on open water. It is possible that there may be some increase in variance, which may result in additional sampling if the operator chooses a statistical method that requires sample adequacy. This issue was discussed during our meetings, and determined to be a practical solution that was not an obstruction to the proposed solution. An alternative would be for the operator to compare the wetland to a native wetland.

Wyoming Game and Fish Department and Wyoming Outdoor Council comments:

The proposed rules provide for replacement of mitigation wetlands (required by ACOE) and development of enhancement wetlands beyond the requirements for mitigation wetlands. When the ACOE jurisdiction over isolated wetlands changed, LQD stopped requiring mine operators to replace isolated wetlands with the thought that there was no longer authority to require replacement of these premine features. Mines are encouraged to create wetlands, but they are not required to replace isolated wetlands. LQD would be interested in meeting with Game and Fish for further discussion on this topic.

7. PASTURELAND DEFINITION AND THE SHRUB DENSITY STANDARD

Chapter 1, Section 2(by)(ii): "Pastureland" means land used primarily for the long-term production of adapted, domesticated forage plants to be grazed by livestock or occasionally cut and cured for livestock feed. In addition, for the purpose of determining premining land use, the relative cover of introduced perennial forage species must be greater than 40% of the relative cover of total vegetation in order for the land to be pastureland. If the full shrub density is greater than one shrub per square meter on those lands, the land use is still pastureland but the land is also "eligible land" in terms of shrub reclamation.

Chapter 4, Appendix 4B. The only revision to the shrub standard was a specification of eligible land uses, rather than the current specification of excluded land uses: All "eligible lands" as defined in Chapter 1, Section 2(am) shall be subject to the standard.

Chapter 1, Section 2(am) defines eligible land as all grazingland and pastureland with a full shrub density greater than one full shrub per square meter.

Note that the substance of the two comments is so different that LQD is responding separately to each set of comments.

A. Rio Tinto – Cordero-Rojo Mine

The bottom of Page 2 of 149 notes:

"The group also made the following agreements:

- Retain the shrub standard from Appendix A with no revision as an Appendix to Chapter 4"

It was agreed early on in negotiations between the WDEQ/LQD and the various groups involved that the shrub density standard would not be changed; however, as is outlined in the 2nd item on Page 3 of 149, a revision was made to the definition of 'pastureland" and "eligible land". This proposed revision would make certain areas of pastureland eligible for the shrub density standard (see "Eligible land" definition on Page 18 of 149). Please realize this conflicts with a 2003 EQC hearing on the issue of pastureland and shrub density. The Environmental Quality Council Findings of Fact, Conclusions of Law and Order, filed May 6, 2003 specifically addressed this issue. Those Findings of Fact are attached for your information. Also please note that the currently approved Shrub Density standard exceeds the requirements of the federal rules. This proposed revision will make the Wyoming rules even more stringent and will require reclaiming more shrubs (primarily sagebrush) on areas that were pasturelands prior to mining.

LQD Response

The coal veg rules group did agree that there would be no revision to the shrub standard at the beginning of the rule revision process. The rule change to the definition of Pastureland and eligible lands was initiated by Wyoming Game and Fish Department. The reason that the Wyoming Game and Fish Department wanted this rule revision was because of the presence of pasturelands that contained relatively high densities of shrubs which provided valuable wildlife habitat. These shrub areas were not being replaced postmine. Many of these pasturelands were treated decades ago, and were "regressing" back to resemble native areas with high shrub densities. The importance of this habitat is supported by the Wyoming Outdoor Council comments, which support regulations that "ensure the adequate reclamation of pastureland habitats that contain sagebrush and shrubland components, since such measures will be essential to maintaining healthy populations of sage grouse and of other sagebrush obligates as energy development pressures increase across Wyoming's landscapes."

The Wyoming Game and Fish Department worked with members of the WMA to develop this rule. The two elements of this rule; the relative cover of pasture species to define a pastureland, and the shrub density on the pastureland that would trigger the shrub standard, were determined during several meetings between Game and Fish and the WMA. The former LQD Administrator was present at the meetings, but G&F initiated and negotiated this rule.

The shrub standard is not more stringent than the federal rule. The shrub standard was developed in compliance with federal rule. The Wyoming Game and Fish Department has the authority to determine shrub stocking requirements through OSM. The CFR states "Minimum stocking and planting arrangements shall be specified by the regulatory authority on the basis of the local and regional conditions and after consultation with and approval by the State agencies responsible for the administration of forestry and wildlife programs" (CFR 816.116(b)(3)(i)). This also addresses the comment that the shrub density standard exceeds the requirements of the federal rules. The federal rules require that the state agency, in this case Wyoming Game and Fish approve shrub stocking rates on any lands considered wildlife habitat. The shrub standard addresses stocking requirements for the wildlife use on grazing lands. The inclusion of pastureland does not make the rule more stringent than federal rules, because this rule was made through the authority delegated by federal rule to the Wyoming Game and Fish Department.

The LQD disagrees that this rule conflicts with the EQC findings of fact. The relevant piece of the Findings of Fact the Council used for determining pastureland on the Thundercloud amendment was if "the dominant vegetation on the 760 acres is an adapted, domesticated forage plant (crested wheatgrass) as compared to the vegetation on the remaining 4,487 acres." The new rule definition for pastureland is actually less stringent that the findings of Fact for defining pastureland because it uses 40% relative cover of crested wheatgrass instead of 50% which would have been a dominant amount. The council only ruled on the definition of pastureland and did not rule on shrubs or the shrub standard. It was the intention of LQD and Wyoming Game and Fish to build on the EQC decision to develop a clear rule and to address Wyoming Game and Fish concerns regarding lost wildlife habitat.

B. Wyoming Outdoor Council

"We would like to emphasize that maintaining both shrub species diversity and shrub species composition is critical to restoring habitats to pre-mining conditions so as to maintain the ecological function of Wyoming's increasingly threatened landscapes. In particular, we respectfully urge the LQD to ensure that difficult-to-reclaim habitats such as sagebrush, which may require many years to return to it pre-mining condition, are adequately reclaimed and at a minimum meet the 20% shrub density standard."

"We support the amended definition of pastureland that ensures that pastureland with a full shrub density equal to or greater than one full shrub per square meter is considered "eligible land" and subject to shrub reclamation under new permits. ……Therefore, the proposed regulations should contain provisions that ensure the adequate reclamation of pastureland habitats that contain sagebrush and shrubland components, since such measures will be essential to maintaining healthy populations of sage grouse and of other sagebrush obligates as energy development pressures increase across Wyoming's landscapes

We also support the provision in the definition of pastureland that the relative cover of introduced perennial forage species must be greater than 40% of the relative cover of total vegetation in order for the

land to be pastureland. Areas that are deemed pastureland should truly be pasture and native habitats should not be swept into any definition of pastureland."

Chapter 2, Section 3(g). Although we support and appreciate the commitment of operators to achieving the maximum shrub reestablishment performance standard (of one full shrub per square meter within shrub patches distributed over 20 percent of the eligible land), we urge the LQD and future Administrators to ensure compliance with achieving this standard, which may be difficult to enforce. Appropriate reclamation of sagebrush habitats may be particularly difficult to enforce since sagebrush may take many years to regenerate. Lengthy time frames are not mentioned in the proposed post-reclamation monitoring regulations, but must be kept in mind when determining compliance with and success of reclamation standards.

Chapter 2, Section 3 (g). We also remain concerned that inadequate shrub densities could be allowed under the guise of compliance with the 20% shrub density standard. If shrubs are seeded sparsely over large areas and more intensive concentrations of shrubs are seeded in smaller patches, measurement of these smaller patches would suggest compliance with the 20% shrub density standard, when in fact the larger-scale, landscape-level shrub density standards are not being met. Such a possibility underscores the importance of randomized vegetation sampling and using scientifically defensible measures for determining compliance to shrub density standards on a project-wide basis. The standard for successful revegetation must be a plant community that reflects the composition and structure (as well as function) fo the original community over the long-term, and the shrub density standard must ensure that this is the case.

Chapter 2, Section 6(b)(iv)(F). We urge the Administrator to ensure that reclamation of pasturelands includes reclamation of baseline shrub densities and that such reclamation adheres to established shrub density standards. Given the importance of shrub habitats in Wyoming and the escalating threats to these ecosystems and the wildlife and plants they support, we feel that it is critical to restore former shrub components of pasturelands and ensure that the pastureland designation is not used and manipulated to avoid meeting designated shrub density standards.

Chapter 4, Section 2(d)(ii)(B)(II). We support the shrub density standard that applies to lands affected after August 1996 and is a requirement for bond release. The shrub density standard is an essential measure for assuring successful post-mining vegetation reclamation. Species diversity and composition are key elements in defining the shrub density standard

Chapter 4, Section 2(d)(ii)(B)(II)(2). We believe that the proposed regulations should include provisions for restoring shrub patches to pre-mining shrub species diversity and composition. The species diversity and composition are not mentioned in this requirement, so presumably restored shrubs could consist of species that grow more quickly and are easier to reclaim than sagebrush. Without specifying that a similar species diversity and composition must be maintained in the restored shrub patches, the propose regulations tacitly allow operators to convert sagebrush area, which may take many years to regenerate, to non-sagebrush area. Given the considerable development pressure currently being experienced by sagebrush habitats and their associated sagebrush obligate species, we feel that the LQD should take every opportunity to ensure that operators reclaim disturbed areas to the premining vegetative type and condition.

Chapter 4, Section 2(d)(ii)(II)(2)(a). we support the 80-60 rule and the requirement that all planted shrubs be in place at least two years prior to the end of the bond-responsibility period.

Chapter 4, Appendix 4B. We commend the LQD for including grazinglands and pasturelands with full shrub densities greater than one shrub per square meter as "eligible" lands for the shrub density standard.

Reclaiming lands with significant shrub components (no matter their designation) is critical to preserving shrubland habitats and their ecological function in Wyoming, particularly since these ecosystems are facing ever-increasing development pressures.

GENERAL COMMENTS RECEIVED

1. BASELINE VEGETATION SAMPLING

Chapter 2, Section 3 Vegetation Baseline Requirements

A. Wyoming Outdoor Council

Support for inclusion of baseline sampling requirements in Chapter 2.

LQD response

No response is necessary, as no revisions to the proposed rules were requested.

2. TREE REPLACEMENT

Chapter 4, Section 2(d)(i)(I): Reclamation standards for tree replacement.

A. Wyoming Outdoor Council (Sophie Osborn and Bruce Pendery)

Support for added requirement that "all planted trees must have been in place at least two growing seasons."

LQD response

No response is necessary, as no revisions to the proposed rules were requested.

3. REQUIREMENTS FOR STATISTICAL ANALYSIS

Chapter 4, Section 2(d)(ii)(B)(II)(2)(a): The shrub density standard requires a statistical test using a 90% confidence interval to demonstrate achievement of the standard.

A. Wyoming Outdoor Council

We support the LQD requiring a 90% statistical confidence interval to demonstrate achievement of the standard since a more liberal confidence interval (such as 80%, which appears to have been required formerly) would fall below scientifically accepted methods of analysis.

LQD response

No response is necessary, as no revisions to the proposed rules were requested.

4. SAMPLING PLAN APPROVAL – BKS Environmental Associates, Inc.

"Although phrases such as "will be determined by the Administrator" or "as approved by the Administrator" have been part of the current rules and regulations, it is my desire that continued flexibility be allowed during implementation of the proposed rules and regulations. Working with WDEQ

prior to initiation of fieldwork evaluations has been historically beneficial to me. However, based on existing permit conditions and site specific nature of each mining operation, as well as regional differences, continued flexibility by the WDEQ-LQD must be part of the pre-sampling negotiations."

LQD Response

Administrator approval has been retained in the proposed rules for pre-sampling negotiations which is the sampling done for baseline collection of vegetation data. It is the intention of LQD to continue to maintain a flexible process, as it is currently being conducted. The following are permitting rules that have been retained that require Administrator approval for lands that did not support vegetation premining a determination that they need not support vegetation postmining.

-approval of the reference area(s)

- approval of land use

- request for any additional information that may be necessary

The following are new baseline rules where Administrator approval allows flexibility:

- when full baseline sampling will be required instead of reduced sampling.

- a baseline sampling plan that will be approved by the Administrator. The baseline sampling plan requires specific criteria to be addressed however there is flexibility for areas that do not fit neatly into a standard vegetation community.

5. Campbell County Conservation District

The CCCD submitted a comment stating that they support "practical, achievable regulations and requirements that support the designated post mine land use. CCCD supports a bond release process that puts mined lands back into agricultural production or other approved productive use in a timely manner."

LQD Response

The statement submitted by CCCD is consistent with the objectives of LQD, and the coal veg rules group that developed the proposed rule package.

6. Wyoming Game & Fish Department

"We recommend DEQ investigate the potential to coordinate reclamation among adjoining mines. Using a "landscape" approach in mine land reclamation may better re-establish pre-mine vegetative landscapes and provide larger contiguous blocks of habitat to support wildlife species such as pronghorn, mule deer, and sage grouse. In addition, a landscape approach can enable appropriate planning across mine borders to provide reclamation of drainages that provide additional valuable habitat function as movement corridors."

LQD Response

The LQD considers this to be a very good idea. Because of contiguous and overlapping permit areas, LQD should be aware of how the patchwork of reclamation by the mines fits together. This would

greatly inform LQD and permittees in development of reclamation plans.

7. RESPONSES TO ENVIRONMENTAL QUALITY COUNCIL QUESTIONS

A. What is the difference between Pastureland and Grazingland?

The difference between the two LQD definitions is bold font. The DEQ Department Head, Dennis Hemmer, determined that management was the main difference between the two land uses during informal conference. In 2003, the EQC determined that the composition of vegetation is the only difference. It may be a combination of management and the resulting composition, since vegetation is partially a result of management. Shrubs establishing into a crested wheatgrass field is because the field has been managed for shrubs, in that nothing has been done to keep the shrubs out.

New language draws a distinct line between pastureland and grazingland by applying a minimum cover of introduced perennial forage species to the pastureland definition. The purpose of this proposed change is to delineate how the shrub standard will be applied for areas containing pastureland species and high shrub densities that contribute to wildlife habitat.

*Pastureland is land used primarily for **the long-term production of adapted, domesticated** forage plants to be grazed by livestock or occasionally cut and cured for livestock feed. In addition, for the purpose of determining premining landuse, the relative cover of introduced perennial forage species must be greater than 40% of the relative cover of the vegetation in order for the land to be pastureland. If the full shrub density is greater than one shrub per square meter on those lands, the land use is still pastureland but the land is also "eligible land" in terms of shrub reclamation.*

*Grazingland **includes rangelands and forest lands where the indigenous native vegetation i**s actively managed for grazing, browsing, and occasional hay production, and occasional **use by wildlife**.*

B. Will the SLCV rule provide incentive to control annual grasses, particularly cheatgrass?

We hope that by not allowing SLCV to be credited at bond release, mine operators will have an incentive to control annual grasses. However, since this is linked to the condition of native areas, we are not absolutely certain that it will result in controlling annual grasses. Native areas with high abundance of weeds, including annual grasses, would not be suitable as comparison areas for bond release evaluation.

The practices that LQD believes will help reduce annual grasses is to:

- spray with a herbicide prior to stripping topsoil whether direct hauling or stockpiling
- seed stockpiles immediately and again during the next seeding season.
- control SLCV on stockpiles
- seed reclamation with high seeding rates
- do a good job of seeding: seed bed, seed depth, seed quality
- keep drill rows narrow and no gaps between passes

- Separate out the different species and seed in patches separately

- spring tillage and spring seeding

C. What are the consequences of not approving rules that are OSM deficiencies

There are several possible consequences to allowing OSM deficiencies to continue indefinitely.

- The OSM may take away primacy, so that coal mines are regulated directly by OSM

- An outside organization may file suit in Federal Court to force OSM to withdraw approval of the state program. This occurred in 1991 in Wyoming, where an organization filed suit to take away primacy because the State and Federal governments had failed to bring the State program into compliance with a condition the Secretary had placed on the approval of the program in 1982. The required program amendments for this current rule package are also conditions placed on the approval of the program. Wyoming passed emergency legislation during the non-legislative 1993 session to address the deficiency. This also happened in West Virginia in 2000. In short, if a State program has outstanding program amendments, particularly if they have been around a long time, the State is in jeopardy of losing primacy through a third party lawsuit. This is well-documented in a statement presented to the EQC on February 25, 2004 by Guy Padgett, then Field Office Director of the Casper OSM field office.

- The OSM may decline concurrence with bond release requests because the standards and methods applied to evaluations of reclaimed vegetation are not as stringent as OSM requirements. This judgment could be based on required program amendments or on actual standards or methods used by the operator. OSM must concur on all bond releases that involve federal surface or federal coal.

D. Who is responsible for controlling weeds that are introduced onto native from reclamation

The operator is responsible for controlling weeds that are introduced onto native from reclamation. Per Chapter 4, Section 2(d)(xiv), the operator is obligated to control all noxious weeds. This would apply to native areas inside the permit boundary. If the weeds spread outside the permit boundary, this would become an off-site impact which would be reported to the OSM. The operator would be required to control these weeds as well. Please note, this statute only applies to noxious weeds. Therefore, LQD does not currently have the regulatory authority to control annual grasses, such as cheatgrass, if it is introduced into native from reclamation. However, LQD would strongly encourage an operator to address the problem if cheatgrass was introduced into native from reclaimed areas.