

Reclaim Wyoming: Prioritize Coal Mine Reclamation



A Publication of the Powder River Basin Resource Council

July 2018



934 N. Main St., Sheridan, WY 82801

(307) 672-5809

www.powderriverbasin.org

Who We Are

Founded in 1973, Powder River Basin Resource Council is a citizen-based organization of individuals and affiliate groups dedicated to the stewardship of Wyoming's natural resources. Through member empowerment, strategic alliances, and a dedicated staff, we work to preserve Wyoming's unique quality of life and our precious air, land, and water quality.

Our mission is to preserve and enrich our agricultural heritage and rural lifestyle; conserve Wyoming's unique land, minerals, water, and clean air consistent with the responsible use of these resources to sustain the livelihoods of present and future generations; and educate and empower Wyoming's citizens to raise a coherent voice to affect the decisions that will impact our environment and lifestyle.

We are a non-profit, 501(c)(3) tax-exempt organization.

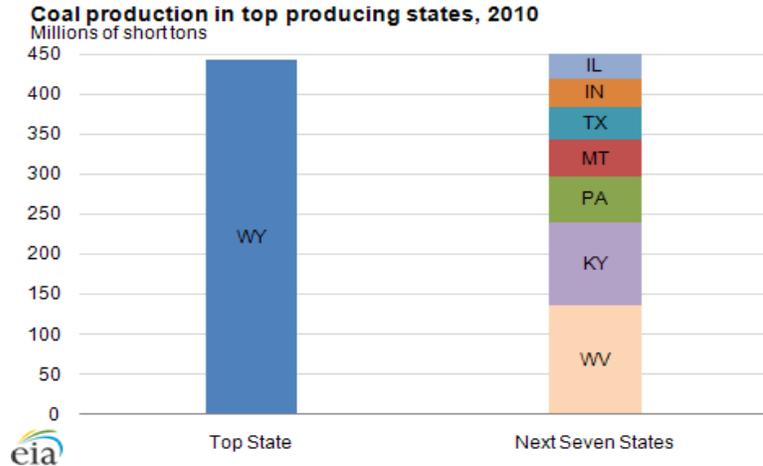
Credits

Our appreciation goes to Hesid Brandow, our staff member who conducted the initial research and writing of this publication. Additional thanks go to our staff, Shannon Anderson, Robin Bagley, Stephanie Avey and Jill Morrison, and Board member Bob LeResche for additional research, writing and editing.

Photo Credits: On the Cover and Page 9-10: Belle Ayr Mine, 2018, Courtesy of Shane Moore.

Introduction

Wyoming's coal mining legacy dates back to the arrival of the Union Pacific Railroad in 1897.¹ The state is home to some of the largest coal mines on earth, including the top eight active U.S. mines. Combined, Wyoming mines account for 41% of coal production in the U.S., about the same as the next seven largest coal producing states combined.²



The two largest mines in Wyoming alone, the North Antelope Rochelle Mine and the Black Thunder Mine, account for 21% of U.S. production. With high production comes thousands of acres in active mining status, as well as thousands of disturbed acres that are no longer productive. As coal in one area is mined out, mines move and expand to remain economically viable, increasing the area that needs to be reclaimed.

Once land is mined out, federal and state laws require it to be reclaimed to its former productive status supporting other uses. The federal Surface Mining Control and Reclamation Act (SMCRA) mandates that reclamation be completed “as contemporaneously as practicable” with production³ and the Wyoming Environmental Quality Act (WEQA) states that mining reclamation plans are to have a “time schedule encouraging the earliest possible reclamation program.”⁴ Despite these legal requirements, Wyoming mines must overcome many hurdles to achieve full reclamation.

Arid landscapes make it difficult to re-establish native vegetation, and it is not simple to return land contours to approximate pre-mining conditions after hundreds of feet of overburden and coal have been removed. Still, coal mines in Wyoming are proud of their reclamation efforts and have proven that high quality reclamation *IS* possible, at least in small amounts. But lack of adequate financial assurances that reclamation will be completed and regulatory features that reward delaying reclamation remain problematic. This report explores the current status of reclamation in Wyoming, what can be done to improve and accelerate reclamation, and related job creation potential.

Reclamation by the Numbers

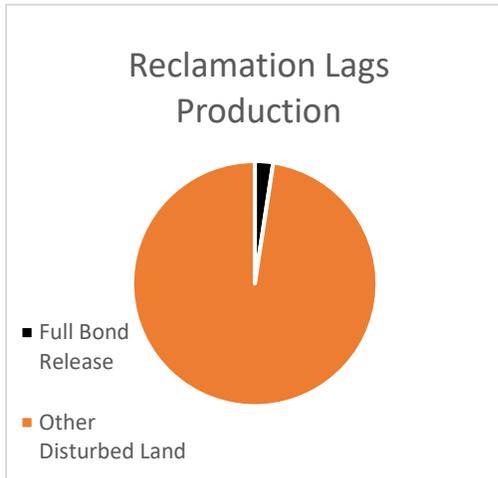
SMCRA and Wyoming laws require that all coal mines guarantee they will be reclaimed to support pre-mining land uses. To assure this, Wyoming requires that mining companies provide financial assurances sufficient to pay for reclamation. These financial assurances are commonly referred to as “bonds.” Bond amounts are calculated by the state to meet the future costs of reclamation. When reclamation has been completed to specified standards, assurances are no longer required, and “bond release” occurs.

The Wyoming Department of Environmental Quality (WDEQ) *Bond Release Guidelines* define reclamation in Wyoming in three phases, and specified proportions of bonds are released when each phase is accomplished. Phase I includes backfilling, regrading, replacing topsoil, recontouring grades, and controlling drainage. Phase II encompasses reseeding backfilled land, establishing vegetation closely matching pre-mining coverage and composition, and establishing surface stability. Phase III requires proof of revegetation success, meaning that reestablished vegetation is self-propagating and has lived under normal conditions for at least 10 years following reseeding.⁵ Phase III also requires restoration of the hydrologic balance of both surface water and groundwater. To achieve full and final bond release, companies must complete Phase III.

For the purposes of this report, we focus on 14 Wyoming mines (listed in Appendix B). The data used comes from the Reclamation Status Table for Evaluation Year 2016 prepared by the WDEQ Land Quality Division.⁶ In total, the 14 mines studied have disturbed 131,573 acres (or around 206 square miles) of land for mining and associated uses to date. That is more than eight times the 24.6 square miles comprising the entire City of Cheyenne.

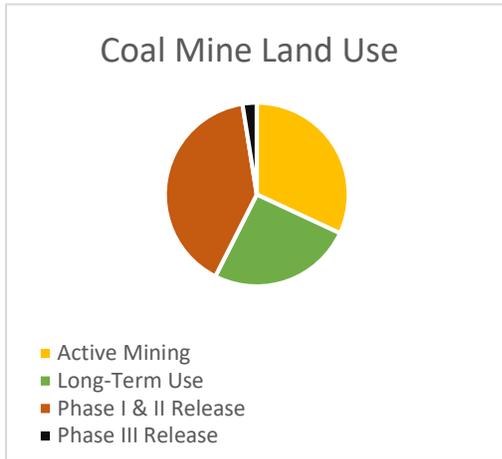


The shaded area above is approximately equal to the 131,573 acres disturbed by mines studied in this report.



Of all disturbed land at the 14 studied mines, only 3,167 acres (or 2.4%) have been released from Phase III bonding – that is, have been fully reclaimed. This proportion varies for individual mines. Seven of the 14 mines studied (Wyodak, Jim Bridger, Caballo, Antelope, North Antelope Rochelle, and School Creek) have not achieved final bond release for ANY land while the rest of the mines surveyed range from 0.84% to 12.6% full reclamation as measured by final bond release.

When Phase I and II reclamation bond releases are considered, numbers improve somewhat. Only five mines (Caballo, Antelope, North Antelope Rochelle, Dry Fork, and School Creek) have not achieved any release from Phase II bonding, and only one (School Creek) has no land released from Phase I bonding. The weighted average of all disturbed land for which Wyoming mines have achieved Phase I bond release is 30.54%. The weighted average for Phase II bond release is 7.87% of all disturbed lands.



The proportion of land in active mining status for all mines surveyed is 30.67%. An additional 24.48% of land (and as much as 40% for some individual mines), is classified as being used for “long-term mining or reclamation facilities” (Long-term Use). This last category does not have an official regulatory definition. The implications of this lack of definition, and subsequent lack of regulatory oversight are discussed below. Land in the Long-term Use category is excluded from contemporaneous reclamation requirements and encompasses a list of uses that range from roads to dump sites.

Why Are Final Reclamation Numbers So Low?

When mines have completed Phase III reclamation in Wyoming, the results have been good. Wyoming mines have received national recognition for their reclamation accomplishments. The issue, then, is more about quantity than quality. The right changes to existing practices would increase reclamation and ensure that it occurs during the productive years of a mine’s life, when revenues are sufficient to pay for it.

When it comes to reclamation, quantity is a critical measure. Under the law, reclamation must be *contemporaneous* with mining. If land is not reclaimed and put back into productive use during the life of a mine, there is a very real possibility that full reclamation will not take place after the mine closes. At that late stage, a mine is no longer generating capital, leaving it upside down financially when reclamation costs are factored in. This was a major reason the contemporaneous reclamation standard was included in SMCRA. The enormity of abandoned mine lands left un-reclaimed in the past led to recognition of the need for mandatory reclamation standards and financial assurance requirements. The Abandoned Mine Lands (AML) program exists, in part, because bonding was not required prior to that time, and many mines were simply abandoned. The intent of SMCRA’s contemporaneous reclamation standard was to ensure that large swaths of land will not be left un-reclaimed when mining operations are no longer profitable.



CONTEMPORANEOUS: EXISTING, OCCURRING OR ORIGINATING DURING THE SAME TIME

RECLAMATION: THE ACT OR PROCESS OF RECLAIMING: SUCH AS

A: REFORMATION, REHABILITATION

B: RESTORATION TO USE: RECOVERY

-Miriam-Webster

(See Appendix A for Wyoming’s regulatory definition of reclamation)

Phase III reclamation in Wyoming is low for several reasons. High reclamation standards must be met in order to achieve full bond release, making the process slow. In addition, reclamation requirements established in SMCRA allow states to remove any binding financial incentive for coal mines to reclaim contemporaneously. Wyoming’s allowance of self-bonding

and the structure of bond-release set by SMCRA reduce incentives to reclaim land contemporaneously. Additionally, the Long-term Use category provides an exclusion to reclamation requirements.

Federal and state laws rightly set the bar high for full bond release. Bond release standards *should* be high to ensure complete reclamation, leaving a landscape that can be put back into productive use for agriculture, recreation, or wildlife. Prior to final release, companies must restore surface water and groundwater quality and quantity (including groundwater recharge capacity within the mine permit area) to pre-mining conditions.⁷ This is often very difficult and, in some cases, may prove impossible. However, it is important to note that most of the mines that have yet to achieve any Phase III bond release (including Wyodak, Caballo, Jim Bridger, Coal Creek, Antelope, and North Antelope Rochelle) have been operating for more than 20 years – ample time to have fully reclaimed a much larger percentage of land used for production, even taking into consideration the high standards for final bond release.

Financial incentives for mines to achieve Phase III bond release are weak at best. This weakness stems, in part, from the bond release structure established by SMCRA. When mines complete Phase I reclamation, they are released from obligations on 60% of bonds for that land. Financial incentives diminish for Phase II and III reclamation, with another 25% bond release available after Phase II, leaving only 15% of release after Phase III. This is particularly counter-intuitive because Phase III takes longer to achieve and is often expensive because of long-term monitoring requirements. Nonetheless, this schedule is set by federal law and is unlikely to change.⁸ Wyoming’s allowance of self-bonding and exclusion from reclamation requirements of land in the Long-term Use category, discussed in detail below, exacerbate this problem.

Self-Bonding

In Wyoming, self-bonding has been a major culprit in reducing incentives for early reclamation. Self-bonded mines are not required to purchase financial sureties or set aside any collateral, so they bear no cost or risk and gain nothing from achieving bond release. They have no “skin in the game” and lose nothing if they default on their reclamation responsibilities once the mine becomes unprofitable. Basically, companies with self-bonded mines make a promise to reclaim land at the end of use and, based on the financial viability of the company, Wyoming takes their word for it. Having reduced incentives for reclamation, self-bonding risks placing the burden of cleanup liabilities on taxpayers. The federal Government Accountability Office (GAO) recently put out a report that found self-bonding is a financial risk to states that allow it. The GAO recommended that SMCRA be amended to remove the option for self-bonding altogether.⁹

Complex financial structures created by large companies make it difficult to determine whether a company qualifies for self-bonding under state rules, and financial weakness is often obscured until too late, as occurred in the recent spate of coal company bankruptcies. The difficulty of determining a company’s true financial health makes self-bonding risky even under the best circumstances.

As long as a company stays financially viable and follows through on its promises, reclamation should occur with no issues. However, even the most financially secure company

cannot always predict downturns and trends in global energy markets. What is certain is that current market predictions bode poorly for the future profitability of coal.¹⁰ Companies must be required to provide ironclad financial assurances upfront, regardless of their future profitability, so that reclamation is guaranteed regardless of what happens in global energy markets. And these assurances must be structured to outlast the financial viabilities of the coal mines they are attached to. Paradoxically, even though Wyoming regularly acknowledges the dangers of over-reliance on extractive industries,¹¹ the state has not ended self-bonding – a simple remedy that would protect Wyomingites from one substantial risk of having all of our eggs in the extractive industry basket.

Fortunately, the proportion of financial assurances covered by self-bonding in Wyoming has decreased significantly over the last three years as the largest self-bonded companies went through bankruptcies; but three Wyoming mines (Jim Bridger, Buckskin and Dry Fork) continue the practice. In 2015, more than \$2 billion of reclamation bonds in the state were self-bonds.¹² According to a current WDEQ list of self-bonded coal mines, that figure has dropped to just over \$275 million.¹³ That is still a significant figure. The decrease resulted almost entirely from bankruptcy reorganizations of the three largest coal mining companies operating in Wyoming (Alpha, Peabody, and Arch), which were forced by public pressure and the federal government to secure other forms of bonding in order to be released from bankruptcy.^{12, 14, 15}

The cases of Alpha, Peabody, and Arch should raise red flags for the practice of self-bonding. Arch and Peabody failed to secure alternate bonds until they were forced to in order to emerge from bankruptcy. Subsequently, Alpha sold its Wyoming mines to a newly-created entity – Contura – which is now fully bonded¹⁶. Once again, this occurred only when Alpha was forced to address the issue in order to emerge from bankruptcy (Contura is now in the process of transferring the mines to a company, Blackjewel, that has to date failed to obtain bonding).

When Peabody was forced to obtain third-party bonding, they expressed a desire to “keep the door open” to self-bonding in the future. Peabody CEO Glenn Kellow issued a statement that Peabody still believed they should qualify for self-bonding, despite the bankruptcy they were just emerging from when they were forced to secure alternative bonding.¹⁵ Peabody has also opposed currently pending DEQ rules that would limit self-bonding. Kellow’s statement that Peabody, fresh out of bankruptcy, believed it should still qualify for self-bonding underscores the dangers of allowing the practice at all.

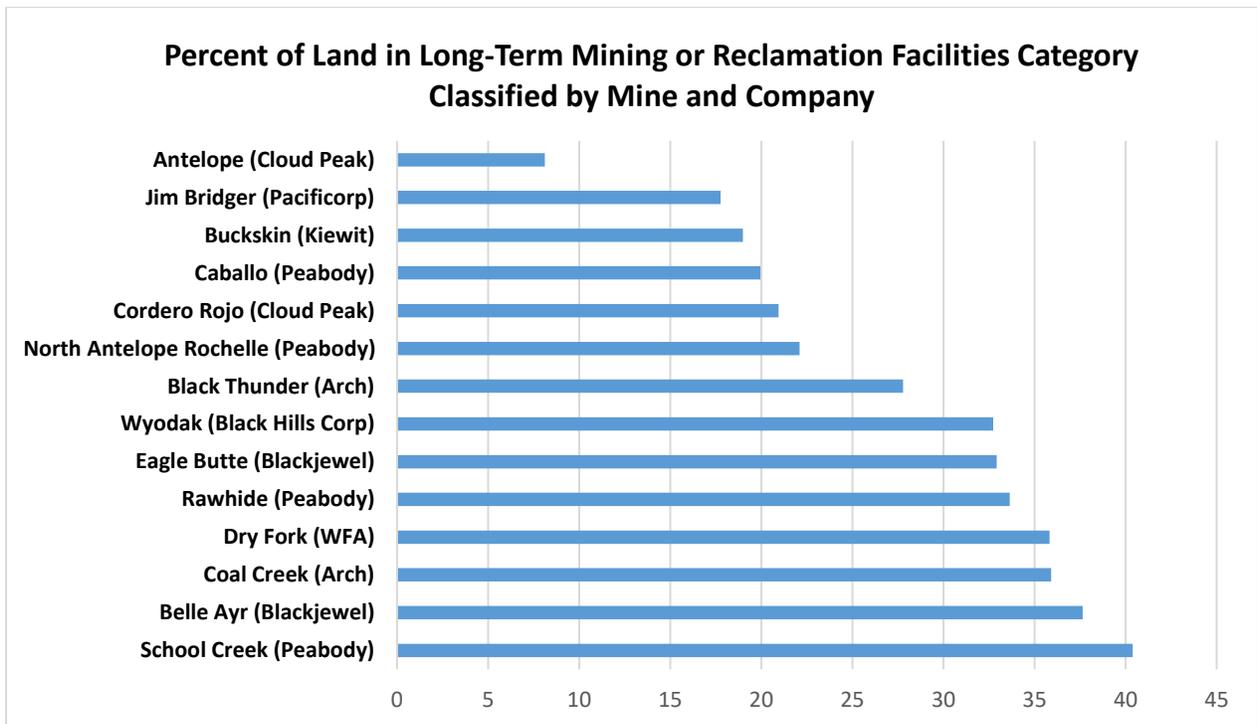
Risks posed by self-bonding have only increased with uncertainties in thermal coal markets. Even the Wyoming Mining Association acknowledges that coal no longer has the market it once did and that coal is facing a “new normal” that is leaner and less robust.¹⁶ As natural gas replaces coal for power generation and demand for renewable energy grows, demand for coal is certain to decrease even further, increasing the probability of financial difficulties for large Wyoming mines.

Once a company is financially weakened, it is too late to change bonding practices because third-party bonding becomes prohibitively expensive or unavailable. To ensure that reclamation occurs as intended under SMCRA, it is important that coal mines be required to seek third-party bonding and financial assurances from the outset, when such instruments are available and affordable.

“Long-Term Mining or Reclamation Facilities” Category Needs Clarification

Another reason so few acres have achieved final bond release is that land classified as “long-term mining or reclamation facilities”^a is excluded from contemporaneous reclamation requirements. As mentioned, this category is not well defined and is too often used as a catch all for land that is costly or difficult to reclaim. Exemption of this land from contemporaneous reclamation requirements artificially inflates bond release proportions when it is taken out of the equation. For example: North Antelope Rochelle Mine, the world’s largest open pit coal mine, has a Phase I bond release of 35.42% when land in Long-term Use is included in the calculation. When that land is excluded, Phase I bond release jumps to 45.48%, an apparent 28% improvement, but with no corresponding increase in actual reclamation.

The “Long-term Use” category warrants clarification. Some reclamation exemptions are certainly necessary during ongoing mining operations. However, the breadth of uses and lack of exact definition for this category makes it difficult to determine how much of this land is critical for mining to continue. Wide variation of the amount of land categorized as Long-term Use at different mines (anywhere from 8.42% to 40.39%) illustrates the vagueness of such a broad category. It would seem that, while some variation should be expected from mine to mine regardless of the specificity of definition, most mines would need similar infrastructure. A tightened definition should result in a smaller variation than the current numbers indicate.



^a Long-term mining or reclamation facilities include haul and access roads; temporary dams and impoundments; permanent dams and impoundments; diversion and collector ditches; water and air monitoring sites; topsoil stockpiles; overburden stockpiles; offices; repair, storage, and construction areas; coal stockpile, loading, and processing areas; railroads; coal conveyors; refuse piles and coal mine waste impoundments; head-of-hollow fills; valley fills; ventilation shafts and entryways; and non-coal waste disposal areas (garbage dumps and coal combustion by-products disposal areas); and temporary cessation of operation areas.

Reclamation Work = JOBS

Following the recent downturn in our energy sector, Wyoming is in the middle of a major push toward economic diversification, as evidenced by the Economically Needed Diversity Options for Wyoming (ENDOW) initiative, created by the Wyoming legislature, and the prominence of the subject in the 2018 Wyoming legislative budget session. As a part of the diversification and stabilization of the Wyoming economy, a greater emphasis on contemporaneous reclamation of our coal mines is a logical and beneficial step to take. Increasing contemporaneous reclamation will ensure the coal mines that have contributed so much to Wyoming's economy do not become a financial drain as market forces change the picture for coal sales. And, at the same time, accelerated reclamation will increase economic activity and provide good jobs.

“Everyone knows Wyoming needs to diversify its economy.”

*-Wyoming Senate President Eli Bebout
on ENDOW*

It is hard to precisely define how many jobs exist in the reclamation sector of Wyoming's economy, or how many jobs would be created if reclamation were accelerated to be truly contemporaneous with mining. Most coal mines do the majority of reclamation work in-house, only contracting out a small amount of work. Finding good estimates of reclamation work is difficult because the majority of mines do not keep records of worker hours spent on reclamation as opposed to active mining.

Even assessing the number of worker-hours required per acre reclaimed is not easy. During the course of this report, all 14 mines studied were contacted in an attempt to come up with an estimate. Of the mines responding, some had corporate policies that did not allow them to divulge information on reclamation hours. Others reported that work classified as reclamation, such as backfilling, takes place concurrent with active mining (dirt removed from the active mining area is trucked to a pit that is no longer in production), and is not accounted for separately.

What can be quantified is work contracted out to reclamation service companies. Rocky Mountain Reclamation, for instance, estimates it takes between one and one-and-a-half hours per acre to complete re-vegetative work. Using that calculation, there are between 38,693 and 58,039 hours of reclamation work to be completed at these 14 mines in re-vegetation alone (see Appendix C for our methodology in determining these numbers). One full time position is equal to 2,087 hours per year. The work available would be equal to between 19 and 28 full-time equivalent positions. This work represents only a portion of the reclamation process, of course. It is evident that a push to increase reclamation to the point of being truly contemporaneous would result in significant job creation.

Although there are no reliable hard numbers for the time spent to backfill and regrade disturbed land, it is obvious that accelerating reclamation would result in a significant number of worker-hours of employment. This work could lessen coal miners' layoffs during downturns in the industry. The positions generated by increased reclamation would be temporary, but even a short-term increase in employment could provide a significant transition ramp for miners during a downturn, keeping Wyoming workers in the state as the economy sorts itself out.



Recommendations:

- 1) **End the practice of self-bonding, as recommended by the Government Accountability Office (GAO). This will ensure that companies are financially invested in completing reclamation activities and have a financial incentive to accelerate reclamation and achieve final bond release.**
- 2) **Establish a firm definition of the category of “long-term mining or reclamation facilities” to reduce the amount of land companies can delay reclaiming.**
- 3) **Increase enforcement of contemporaneous reclamation requirements by state and federal regulators. This will ensure that mines are in compliance, reclamation is closer to being truly contemporaneous, and more reclamation jobs are created.**

Reclamation must take priority while mines are still profitable. If it does not, the mines that have long been cornerstones of Wyoming's economy will instead become anchors dragging us toward financial instability. Together, these three measures will boost reclamation and create jobs within the reclamation sector, offering an alternative to layoffs during mining downturns.

Eliminating the option to self-bond would increase incentives for companies to engage in contemporaneous reclamation. If companies must pay for sureties (expenses they would no longer incur after bond release), they will more likely prioritize reclamation. The track record for companies cleaning up mine sites without financial incentive to do so is not good. The creation of SMCRA and the AML program in response to past failures to reclaim coal mines is a testament to the need to enforce strong contemporaneous reclamation while mines are profitable.

The differing proportions of land in the "Long-term Use" category among mines needs to be examined and the category needs to be more clearly defined. A category that allows land to be excluded from contemporaneous reclamation requirements should have a firm definition with strict qualification requirements and mandatory monitoring to ensure requirements are met. Clearly, any ongoing operation will require certain infrastructure, which should logically be excluded from reclamation during its use. The allowed uses under this category, however, need to be closely scrutinized. Narrowing the definition of what is allowed under the Long-term Use category would stimulate an increase in concurrent reclamation, saving companies (and counties) the headache of dealing with the burden of reclamation when budgets are tighter.

An emphasis on accelerated reclamation will reduce the amount of un-reclaimed land left at the end of mine productivity. The Wyoming Environmental Quality Act states, "it is hereby declared to be the policy and purpose of this act to enable the state to prevent, reduce and eliminate pollution; to preserve, and enhance the air, water and reclaim the land of Wyoming[.]"¹⁸ It is time for that policy and purpose to be applied to the enforcement of contemporaneous reclamation requirements.

It is essential that we vigorously emphasize policies and practices that keep Wyoming workers employed and reduce future financial burdens on the state. We must explore all avenues with potential to further workforce diversification and economic stability in Wyoming. The time to look at the value of reclamation is now, while the coal sector is still viable. We must not wait until the coal has been mined or mining is no longer profitable. We must prioritize reclamation now, or Wyoming will pay for it later.

1. Anderson, C. L. (2014, November 8). The Coal Business in Wyoming. In *WyoHistory.org*. Retrieved from <https://www.wyohistory.org/encyclopedia/coal-business-wyoming>
2. Wyoming produces almost as much coal as the next seven states combined. (2011, August 23). In *U.S. Energy Information Administration*. Retrieved from <https://www.eia.gov/todayinenergy/detail.php?id=2770>
3. Surface Mining Control and Reclamation Act. (1977, August 3). In *Office of Surface Mining Reclamation and Enforcement*. Retrieved from <https://www.osmre.gov/lrg.shtm>
4. Wyoming Statute Section 35-11-402(a)(iii)
5. Wyoming Department of Environmental Quality. (2014). Guideline No. 25. In *Verifications For Phase 3 Bond Release Procedures For Coal Mines* (p. 2). N.p.: Land Quality Division. Retrieved from http://deq.wyoming.gov/media/attachments/Land%20Quality/Guidelines/Guidelines-25_Phase3-Bond-Release-guide-25.pdf
6. Wyoming Department of Environmental Quality. (2017). 14 PRB Mines. In *Wyoming Reclamation Status Table for EY2016 (Mine by Mine)*.
7. Wyoming Land Quality Regulations Ch. 15 § 5
8. Wyoming Department of Environmental Quality. (2014). *Bond Release Categories and Submittal Procedures for Coal Mines*(Volume 20 ed., pp. A3-1-A3-3). N.p.: Land Quality Division. Retrieved from http://deq.wyoming.gov/media/attachments/Land%20Quality/Guidelines/Guidelines-20_Coal-Bond-Release-guide-20.pdf
9. Government Accountability Office. (2018). Federal and State Agencies Face Challenges in Managing Billions in Financial Assurances. In *Report to Congressional Requesters*. Retrieved from <https://www.gao.gov/assets/700/690476.pdf>
10. U.S. Energy Information Administration. (2018, April 10). Coal Forecast. In *Short-Term Energy Outlook*. Retrieved May 2, 2018, from <https://www.eia.gov/outlooks/steo/report/coal.php>
11. Staff (2017, August 29). Mead spelled out plans to diversify Wyoming’s economy in Riverton today. *County 10*. Retrieved from <https://county10.com/mead-spelled-out-plans-to-diversify-wyomings-economy-in-riverton-today/>
12. Quinones, M. (2015, June 2). Facing downturn, Alpha can no longer self-bond in Wyoming. *Environment and Energy Daily*. Retrieved from <https://www.wyofile.com/facing-downturn-alpha-can-no-longer-self-bond-wyo/>
13. Wyoming Department of Environmental Quality. (2018). *List of Self Bonded Mines*. Sheridan
14. Johnson, G. (2016, September 14). Arch won’t self-bond, to emerge from bankruptcy. *Gillette News Record*. Retrieved from http://www.gillette newsrecord.com/news/article_1dcf0fb7-867f-54d3-8f18-a7dd8e67228a.html
15. Richards, H. (2017, March 8). Peabody to end self-bonds, for now. *Casper Star Tribune*. Retrieved from http://trib.com/business/energy/peabody-to-end-self-bonds-for-now/article_97b7d420-fd13-559f-ae53-54fa47ab0a0f.html
16. Johnson, G. (2016, July 8). Alpha deal includes sale of PRB mines. *Gillette News Record*. Retrieved from http://www.gillette newsrecord.com/news/article_a7648f15-9c39-574a-b16a-adac6a767e18.html

17. Richards, H. (2017, July 3). Wyoming coal shows positive earnings as the sector slowly defines its "new normal". *Casper Star Tribune*. Retrieved from http://trib.com/business/energy/wyoming-coal-shows-positive-earnings-as-the-sector-slowly-defines/article_ec8d091b-aa25-549c-9152-f2548214f3c2.html
18. Wyoming Department of Environmental Quality. (2016). *Wyoming Environmental Quality Act and Industrial Development Information and Siting Act* (2016 ed., p. 10). Charlottesville, VA: LexisNexis.

Appendix A: WEQA Definition of Reclamation

“Reclamation” means the process of reclaiming an area of land affected by mining to use for grazing, agricultural, recreational, wildlife purposes, or any other purpose of equal or greater value. The process may require contouring, terracing, grading, resoiling, revegetation, compaction and stabilization, settling ponds, water impoundments, diversion ditches, and other water treatment facilities in order to eliminate water diminution to the extent that existing water sources are adversely affected, pollution, soil and wind erosion, or flooding resulting from mining or any other activity to accomplish the reclamation of the land affected to a useful purpose

Appendix B: Mines Studied for this Report

Antelope (Cloud Peak Energy)
Belle Ayr (Blackjewel Mining, LLC)
Black Thunder (Arch Coal, Inc.)
Buckskin (Kiewit Corporation)
Caballo (Peabody)
Coal Creek (Arch Coal, Inc.)
Cordero Rojo (Cloud Peak Energy)
Dry Fork (Western Fuels Association)
Eagle Butte (Blackjewel Mining, LLC)
Jim Bridger (PacifiCorp)
North Antelope/Rochelle (Peabody Energy)
Rawhide (Peabody Energy)
School Creek (Peabody Energy)
Wyodak (Black Hills Corporation)

Appendix C: Methodology for Determining Reseeding Jobs Potential

131,573 acres (Total Disturbed Area)
– 40,356 acres (Active Mining)
– 52,524 acres (Soiled and Seeded)
= 38,693 acres (Area Available for Seeding)

We multiplied the area available for seeding by 1 and 1.5 (the amount of time Rocky Mountain Reclamation claims it takes to reseed one acre) to determine the range of hours available for reseeded work. We did not subtract land in the “active mining or reclamation facilities” category, as we do not believe all land in that category merits exclusion from reclamation.

Notes



POWDER RIVER BASIN
Resource Council

934 North Main St
Sheridan WY 82801

NONPROFIT ORG.
U.S. POSTAGE
PAID
SHERIDAN WY
PERMIT NO. 38

Address Service Requested