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June 24, 2013

Nelson L. Kidder, P.E.
Chair – Ohio Reclamation Forfeiture Advisory Board
11355 Stonecreek Drive
Pickerington, Ohio 43147

Dear Mr. Kidder:

Attached is the report documenting our analysis of the financial soundness of Ohio's Reclamation Forfeiture Fund. This final report represents the combined efforts contributed by the Ohio Reclamation Forfeiture Advisory Board, the Ohio Department of Natural Resources – Division of Mineral Resources Management, and Pinnacle Actuarial Resources.

It has been a pleasure working with you, the rest of the Board, and the DMRM. Please do not hesitate to contact me if you have any questions. I look forward to working with you again as you continue to monitor the Fund and its financial condition.

Best regards,

John E Wade

John E. Wade, ACAS, MAAA
Senior Consulting Actuary
jwade@pinnacleactuaries.com

Enclosure

cc: **Lanny Erdos, Chief ODNR- DMRM**

Analysis of the
RECLAMATION FORFEITURE FUND

Oversight by the
Reclamation Forfeiture Fund Advisory Board of Ohio

Maintained by the
Ohio Department of Natural Resources
Division of Mineral Resources Management

Issued June 24, 2013

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Commitment Beyond Numbers

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Purpose

Pinnacle Actuarial Resources, Inc. (Pinnacle) has been retained by the Reclamation Forfeiture Fund Advisory Board of the State of Ohio (the Advisory Board or RFFAB) to review the Fund's financial soundness.

Qualification to Provide Actuarial Report

This report is provided to the Advisory Board by John E. Wade, ACAS, MAAA. Mr. Wade is a member in good standing of the American Academy of Actuaries and meets its qualification standards to prepare this report.

Distribution and Use

This report and conclusions contained herein are being provided to the Reclamation Forfeiture Fund Advisory Board for its use in connection with our actuarial analysis of the current and estimated future Fund's liability in comparison with the current and estimated future assets. This report has been prepared to support the Advisory Board in complying with the Ohio legislation which established the Board as advisory oversight organization with respect to the Fund. The legislation also required a report be made to the Governor of the State of Ohio by the Advisory Board on a biennial basis.

We understand that copies of this report may be provided to the state auditors and other regulatory authorities along with other parties in compliance with Ohio's open records policies. Permission is hereby granted for this distribution on the condition that the entire report, including all exhibits and appendices, is distributed rather than any excerpt. These third parties should recognize that the furnishing of this report is not a substitute for their own due diligence and should place no reliance on this report or the data contained herein that would result in the creation of any duty or liability by Pinnacle to the third party.

The attached appendices and attachments in support of our findings are an integral part of this report. These sections have been prepared so they document our actuarial assumptions and judgments. Judgments about the conclusions drawn in this report should be made only after considering the report in its entirety. We remain available to answer any questions that may arise regarding this report. We assume that the user of this report will seek such explanation on any matter in question.

Our conclusions are predicated on a number of assumptions as to future conditions and events. Those assumptions, which are documented in subsequent sections of this report, must be understood in order to place our conclusions in their appropriate context. In addition, our work is subject to inherent limitations, which are also further outlined and discussed later in this report.

Reliances and Limitations

We have prepared this report in conformity with its intended use by persons technically competent in the areas addressed and for the stated purposes only. Judgments as to conclusions, methods, and data contained in this report should be made only after studying the report in its entirety. Furthermore, we are available to explain any matter presented herein, and it is assumed that the user of this report will seek such explanation as to any matter in question.

We have relied upon data and information supplied by members of the Ohio Department of Natural Resources – Division of Mineral Resources Management (ODNR-DMRM) staff including Permitting & Bonding, Forfeiture and AML, Regulatory and Data Management.

There is a limitation upon the accuracy of these estimates in that there is an inherent uncertainty in any actuarial estimate of future costs. This uncertainty is due to the fact that the ultimate liability for claims is subject to the outcome of events yet to occur,

e.g., the likelihood of permit holders running into financial difficulty and default, the size and cost of reclamation, changes in the standards of reclamation and desired speed of reclamation. While there are no standard techniques for which to develop estimates for these specific issues, in our judgment, we have employed techniques and assumptions that are appropriate and the conclusions presented herein are reasonable, given the information currently available. However, it should be recognized that future loss emergence will likely deviate, perhaps materially, from our estimates.

We have relied on the data provided without independent audit or verification on the part of Pinnacle to develop our estimates of potential future reclamation cost. We also worked with the ODNR-DMRM staff to understand the operation of the Fund, the reclamation process and the underlying data provided but only to the extent such information may have affected our analysis. We have not anticipated any extraordinary changes to the economic, legal, or social environment which might affect the cost and frequency of default.

Our estimates are provided net of underlying performance security (also known as performance bonds or bonds). We have made no attempt to evaluate the quality of security provided. Should such providers be unable to fulfill their obligations, the Fund would be responsible for this additional reclamation cost.

We estimate nominal costs at an expected level (50% likely that actual costs will be below our estimate and 50% likely they will be above), then apply inflationary factors, and finally discount to present values using investment rates derived from the US Treasury. Discounting is reliant upon the investment rate and timing of payments, both of which are assumptions in this model and are subject to potentially high variability. Looking at future payments on a discounted basis could unintentionally remove a level of conservatism not intended by the RFFAB. For financial statement purposes, the Fund's liabilities might be better stated on an undiscounted basis. Exhibits 2.2 and 2.3

show the claims liabilities for land reclamation and water treatment before the impact of cost inflation and discounting (Columns 1 and 4), after the impact of cost inflation but before discounting (Columns 2, and 5), and after both cost inflation and discounting (Columns 3 and 6). The difference is most profound on the water treatment liability, where a 75 year payout is assumed.

Please note that for the purposes of this report, the Performance Security Estimate (PSE) and Central Tracking System (CTS) data was provided as of October 15, 2012.

Further reliances and limitations are contained in the subsequent text, and in the exhibits accompanying the text.

Executive Summary

There are several ways to view financial soundness. We find that the Fund is solvent on a short term basis as the current Fund assets ($16.3 million) exceed the current Fund outstanding liabilities and obligations for forfeited reclamation projects ($0.0 million). For longer-term solvency, the measurement compares the current available Fund assets with the Fund's long term expected exposure or liability ($18.9 million on a present value basis of expected land reclamation and long-term water treatment costs of current permits plus the administrative expense to settle the liabilities). We do not believe the fund currently meets the criteria for long term solvency. **We estimate it will take two more years of no forfeiture costs before the Fund accumulates enough surplus to cover expected liabilities and expenses.**

Another indicator of financial soundness is the Fund's ability to withstand a shock loss. It would take two more years of non-forfeitures before the Fund could cover an average loss, eight more years to cover the forfeited permits of the failure of the fifth largest permit holder, and thirty-eight more years to cover the forfeited permits of the failure of the largest permit holder. See Exhibit 1 for additional details.

To further describe the situation, if the Ohio law was changed somehow closing the Fund at this time to any new permits, the future expected revenues from severance tax from the operating permits currently covered by the Fund for future forfeiture potential plus the current Fund balance would appear to provide sufficient capital to finance the estimated reclamation cost from the long term expected forfeiture of some of the 225 permits included in the Fund today. However, an average shock loss on top of the expected forfeitures would eventually place the Fund in a negative cash flow position. Our long term solvency measure is intended to compare the current balance with the exposures currently in place in a fashion similar to the method used to judge the solvency of insurance or bonding companies.

As with the prior study, through the efforts of the engineers with the Division of Mineral Resources Management, we have developed an estimate of the total potential cost to reclaim all of the subject mining operations covered by the Fund. This effort had historically only been undertaken once a site had been forfeited. In general, we note that underlying Performance Security provided through the private insurer/bonding community reduces the potential liability of the Reclamation Forfeiture Fund.

Thus, the total potential cost to the Fund equals the total potential cost for all reclamation efforts less the underlying performance security. This potential Fund figure should be viewed as the maximum possible cost or the worst case scenario (although should a provider of the performance security also default, the Fund would also be obligated for the reclamation cost covered by that provider).

The Fund is involved in assuming financial risk for an exposure that is categorized as low frequency of claims but very high severity in dollar terms, when an event (default) does occur. There are currently 31 mining companies with coal mine related permits in the state of Ohio covered by the Fund and included in our study. Some of the operators have only a single permit while other larger operators have a dozen or more mining permits. The operator with the most coal mining permits in Ohio currently has 66 permits in the Fund.

The small number of operators and the tremendous potential liability from a few of the larger operators create a significant risk to the Fund from a concentration of risk perspective. For example, should one of the permit holders with only a single coal mining permit become financially unable to meet their reclamation obligations, the cost to the Fund might fall anywhere from no cost (liability covered through bonding) to over $22 million. See Exhibit 8.1a. With the current Fund balance, the reclamation cost of a forfeiture of a single permit holder can be financed.

On the other side of the spectrum, should one of the permit holders with a large number of sites become financially troubled, the cost to the Fund for reclamation could easily exceed $39 million, with the largest potentially exceeding $159 million. See Exhibit 8.1b.

Our analysis includes the development of the Expected Cost to the Fund. We define the expected cost as the long run average that considers both the potential of a permit holder's forfeiture along with the potential cost of that forfeiture. If the Fund was collecting a single "premium" from the operators at the start of each project for providing this financial security as do insurance and bonding companies, this Expected Cost (along with any operating expenses) would be the basis for the "premium" required from each site and operator.

With this analysis, we have developed our estimates based upon an annual forfeiture rate of 0.37%, as developed in Exhibits 6.1 and 6.2. Our method of estimating expected ultimate loss applies the selected 0.37% forfeiture rate to every permit every year to determine an average expected loss.

The forfeiture rate selection is based upon historical Ohio forfeiture information and forfeiture rates developed by using Kentucky and West Virginia information. Ohio's data received 75% weight in our selection, and the other states combined received 25% weight. Our prior analysis in 2011 utilized publically available financial ratings for the individual permit holders and a general estimation of business survival (1/3 weight), estimated West Virginia forfeiture rates (1/3 weight), and the two year change in estimated West Virginia forfeiture rates (1/3 weight) applied to the financial ratings selections. Our 2009 analysis gave 100% weight to publically available financial ratings.

To say it another way, with the current analysis our forfeiture rate selection is heavily driven by actual historic Ohio forfeiture experience which was omitted from both our 2009 and 2011 studies. The previous omissions were intentional because the recent years of no forfeiture activity was not thought to be very credible. However, four more years of no forfeiture activity have ensued since our first analysis. While it would not be prudent to assume that the future forfeiture rates over the long term would be 0%, the stability of the program should be recognized, hence the application of the ¾ weight to Ohio's long term average forfeiture rate.

We have also introduced a direct reflection of reclamation cost inflation and discounted the future liabilities to present value using interest rates based on recent US Treasury information. With this analysis we have presented the cash flow tables in Exhibit 1 on a discounted to present value basis.

Based on our analyses, we have developed a land reclamation Fund Expected Cost estimate for the permits currently included in the Fund of $13.4 million in Exhibit 2.2.

New to this year's analysis, we have developed a long-term water treatment Fund Expected Cost estimate for existing permits of $4.2 million in Exhibit 2.3.

In Exhibit 1, Cash Flow, we display the expected revenues that will cover the above costs. Tonnage fees from the permits associated with the above costs are expected to accumulate to $20.3 million over the next 78 years (the projected time period to work through the long-term water treatment liabilities). During that same time, interest income earned on the positive fund balance would be expected to accumulate to $30.5 million. A portion of the interest income earned over the long time horizon should be thought of as being attributable to new permits that will be issued in the future. This report does not study the potential of new permits, either for income or for costs.

In order to cover the expected costs for land reclamation and long-term water treatment of the current permits, the Fund should have a $18.9 million balance ($13.4 million for land plus $4.2 million for water plus $1.3 million for operating expense), which we would expect it to attain during 2014. This can be thought of as the funding level to be 50% confident that the funds will adequately cover expected costs, that is, half the time this level of funding would be adequate, and half the time it would be insufficient. It is reliant on the assumptions explained throughout this report.

Also new to this year's analysis, we have incorporated a shock loss scenario that examines how the forfeiture of an average-sized permit holder would affect the Fund: resulting in an estimated $20.9 million in liability to the Fund. See the derivation in Exhibit 8.1b and the cash flow play-out in Exhibit 1 - Shock Loss. For practical considerations, the cash flow exhibit spreads the shock loss out over a five year period. It is unlikely that the activities required to reclaim the land associated with the hypothetical shock loss could be performed in a shorter time period.

To adequately cover the expected cost of the current permits and the shock loss of an average-sized permit, the Fund would need to build to a balance of $39.8 million ($13.4 million plus $4.2 million plus $1.3 million in operating expense plus $20.9 million). It is informative to note in Exhibit 1 – Shock Loss that even after a shock loss as described above the Fund maintains a positive balance for approximately 60 more years before going negative. Given the current economy and the financial condition of some of the coal operators in Ohio, the RFFAB should consider to what extent it wants to fund for a shock loss, whether it be an average loss or one far greater as displayed in Exhibit 8.1b.

Please note that our previous analysis did not address the possibility that a permit in danger of forfeiture could be taken over by another more financially secure operator, who would potentially assume the previous permit holder's assets, mining rights and

reclamation responsibilities. This replacement action would eliminate the reclamation cost to the Fund. However, by using Ohio's historic forfeiture experience, we now account for that activity to the extent it has occurred in the past.

There are advantages that insurers have that are not available to the Fund. The most obvious advantages include

- The spread of risk across insureds, locations, industries and lines of business;
- The ability to individually underwrite and price each risk; and, maybe most importantly,
- A level of surplus (available capital) in addition to the collected premium which allows an insurer to survive years and periods where the actual costs exceed (and sometimes greatly so) the expected long run costs. When actual annual costs exceed long-term expected annual costs, the insurers have this operating capital. In contrast, the Fund until recently had been using recent proceeds to pay for the current reclamation projects. The Fund has now begun and continues the capital accumulation process.

Summary of Findings

Based upon the methodology and assumptions described above, we have estimated the present value of potential expected liability of the Fund as follows:

- $13.4 million for land reclamation (Exhibit 2.2)
- $4.2 million for water treatment liability (Exhibit 2.3)
- $1.3 million for administrative expenses (Exhibit 1)

Resulting in a total estimated liability of $18.9 million

It is interesting to note that the total estimated liability of $18.9 million is down significantly from our estimate in 2011 of $32.3 million and our 2009 estimate of $42.8 million. These large drops, even after the inclusion of long-term water treatment

liability, are primarily attributed to the absence of any recent forfeitures in the state of Ohio.

There can be considerable variation around this estimate due to:

- The limited number of coal operators within the state of Ohio,
- The uncertainty with respect to future forfeiture rates,
- The emergence of water treatment liability,
- The number of operators with multiple permits,
- The relationship of the performance security provided by the private insurance market and estimated cost to reclaim the various sites along with the large size of some of the operators.

For example, should one of the largest operators be unable to meet its obligations, the potential cost to the Fund from a single operator could easily approach $159 million. An additional $20.9 million would be needed to cover an "average" shock loss. Please see Exhibit 8.1b.

In actuarial and insurance regulatory language, the Fund has significant risk of material adverse deviation from the estimated expected loss. This risk can easily be seen in two contexts. The first would be in comparing the average potential cost with the largest single potential cost. On an operator basis, this is $21 million versus $159 million or a relationship approaching 8 to 1. Please see Exhibit 8.1b. The second context would be a comparison of the largest single potential loss with the current available capital in the Fund - $159 million to $15.5 million (as on January 2013) or a ratio of 10 to 1. Even the average potential cost of $21 million would easily eliminate the Fund's current capital.

Ohio Reclamation Forfeiture Fund Background

The current Ohio Coal Mine Reclamation Forfeiture Fund ("the Fund") was significantly revised in 2007 by the State Legislature to provide reclamation coverage to eligible coal mine operators permitted by the State of Ohio in addition to the required private performance security for each site. This coverage is designed to step in to provide for funding the reclamation costs of coal mining sites in the event of financial default of the permit holder. The mechanisms prior to House Bill 443 in 2007 had not accumulated a significant amount of capital or revenue for its operations but the Bill did assign the responsibility for the on-going cost associated with the prior operator defaults not yet fully reclaimed to the Reclamation Forfeiture Fund. Fortunately, there have been no new forfeitures requiring Fund financial support since year-end 2005. As of the end of January 2011, there were no permits/sites on the list to be reclaimed under the direction of the Fund through the efforts and oversight of the Division of Mineral Resources Management. All reclamation work on previously forfeited permits was substantially completed by year-end 2010.

The coal mine permit holders must maintain Performance Security (Bonding) coverage in the amount of $2,500 per acre of land based upon the acreage designated to be affected in the given year as allowed on the permit. The Performance Security can be obtained from the private insurance market or financed by some other means such as letters of credit, certificates of deposit, cash or trust agreements.

The Fund provides additional forfeiture coverage for reclamation efforts on underground mines, surface mines and facility permits. Facility permits might include operations such as preparation plants, coarse refuse and slurry areas. The eligible mine operators who select to be reliant on the Fund for costs above the Performance Security pay a severance tax to the Fund which varies from $0.12 to $0.16 per ton of coal extracted based upon the Fund's balance. The required amount of private

performance security is based upon the affected acreage included on each permit issued by the Division of Mineral Resources Management. Many operators have submitted permit applications with a significant amount of land not currently affected by mining. The extra acreage has been included within the permit and performance security up front to eliminate the need for the operator to reapply or post additional performance security each time mining operations commence on another parcel of land. Also, some eligible operations, by choice or requirement, are fully covered by private performance security and not part of the "pool" operated by the Fund.

The total potential reclamation cost estimate is based upon the ODNR-DMRM engineer's assessment of the approved mining and reclamation plan on each permit including any on-site processing facilities covered by the Fund. This cost estimate is commonly referred to as the Performance Security Estimate (PSE). Each PSE uses unit costs derived from the historical reclamation costs of the Division of Mineral Resources Management, based on the data found in R.S. Means and yearly direct inquiries for quotes. These unit costs are applied to the approved mining and reclamation plans to assess the total potential cost in the event of forfeiture. Prior to our 2009 analysis, this PSE information had not been routinely established at the beginning of each permit operation nor reviewed annually to assess the potential cost to the Fund. It should be noted that the forfeiture coverage is now updated periodically by the DMRM during the active mining operation period of the mine and also during the reclamation process until the permit is released by the ODNR-DMRM.

The amount of the required Performance Security on a permit is adjusted during the reclamation process based upon the acreage affected. The amount of the private Performance Security required on any given affected acre is decreased by 50 percent upon satisfactory completion of the procedure to backfill and re-grade the land (phase 1 of reclamation). Another 35 percent decrease in required Performance Security is made when the land is re-planted and re-growth or re-vegetation has been satisfactorily

completed in accordance with the requirements set forth in the Ohio Revised Code and Ohio Administrative Code (law and rule) (phase 2 of reclamation) . The final 15 percent of the required performance security amount is typically released in about seven years following the date of planting, if no additional action was necessary by the operator to achieve satisfactory reclamation. It should be noted that the private performance security is not related to the estimated reclamation cost but rather a fixed amount of coverage ($2,500) per acre affected. As noted previously, at any site, the operator may elect not to rely upon the financial support of the Fund and choose to provide complete private performance security in the full amount of the estimated reclamation cost (using the same estimation methodology and unit cost values as the permits which are eligible and choose to rely upon the Fund).

In the case of default by the operator, the private bonding company may elect to reclaim all or a portion of the site based upon the amount of performance security remaining as surety. The remainder of the site reclamation effort would be turned over to the Fund possibly with the performance security payment of up to $2,500 per acre depending upon the amount previously released. Each coal mine operator may have multiple active sites (permits) with affected acres at various phases at any time. This situation with multiple permits from a single operator results in additional concentration of risk.

As of October 15th, 2012, there were 125 active permits for coal mining operations in Ohio that were part of the Reclamation Forfeiture Fund “Pool”. There were also 100 permits covered by the Fund with no future mining activity planned that had “Final Maps” accepted by the Ohio Department of Natural Resources – Division of Mineral Resources Management. See Exhibit 8.6a. Final Maps are created to provide the details of the impacted area from the mining operations and are used to determine the estimates of future reclamation costs.

From the data provided for this analysis, we had ODNR-DMRM engineer's performance security estimates on all 225 Fund-covered permits from 31 different operators. Of the 225 permits with PSEs, the current PSEs for 209 permits are greater than the possible funding from bonding, letters of credits, deposits or other instruments (private performance security). Please see Exhibit 8.2. The operator counts have been adjusted to reflect the fact that some permit holders are part of one umbrella company structure. This issue is noted due to the impact organizational structure has upon the concentration of risk. If a multiple permit holding operator should run into such financial difficulty that it defaults, we have assumed that all permits under that umbrella corporation are impacted and default as well.

Changes in the Data since Previous Report

We have compared the Performance Security Estimates for the 204 permits which had Performance Security Estimates in the data included in the previous report as well as Performance Security Estimates in the current data provided by the engineers from the Ohio Department of Natural Resources. Of these permits, the PSEs on 10 permits remained unchanged. For 94 permits, the PSEs in this year's data were lower than the PSEs included in the previous data by a total of $91.8 million of potential reclamation cost. For the remaining 100 permits, the performance security estimates increased by a total of $156.0 million since the data for the last review was collected. The overall net change is an increase in the Performance Security Estimate or the anticipated cost of reclamation of $64.2 million. Please see the bottom of Exhibit 8.6a.

In the 2009 report, we had performance security estimates on all but 25 of the permits. With the 2011 report and this year's analysis, we have been provided with performance security estimates on all the permits included in the Fund. Thus in this review, we are relying solely upon engineer's estimates of potential reclamation costs.

As might be expected, a grand majority of the permits in the database are from surface mining operations. Of the 225 permits included with PSEs, only 12 permits are related to underground mining operations and another 18 permits related to facility permits. Please see Exhibits 8.3a, 8.4a, and 8.5a.

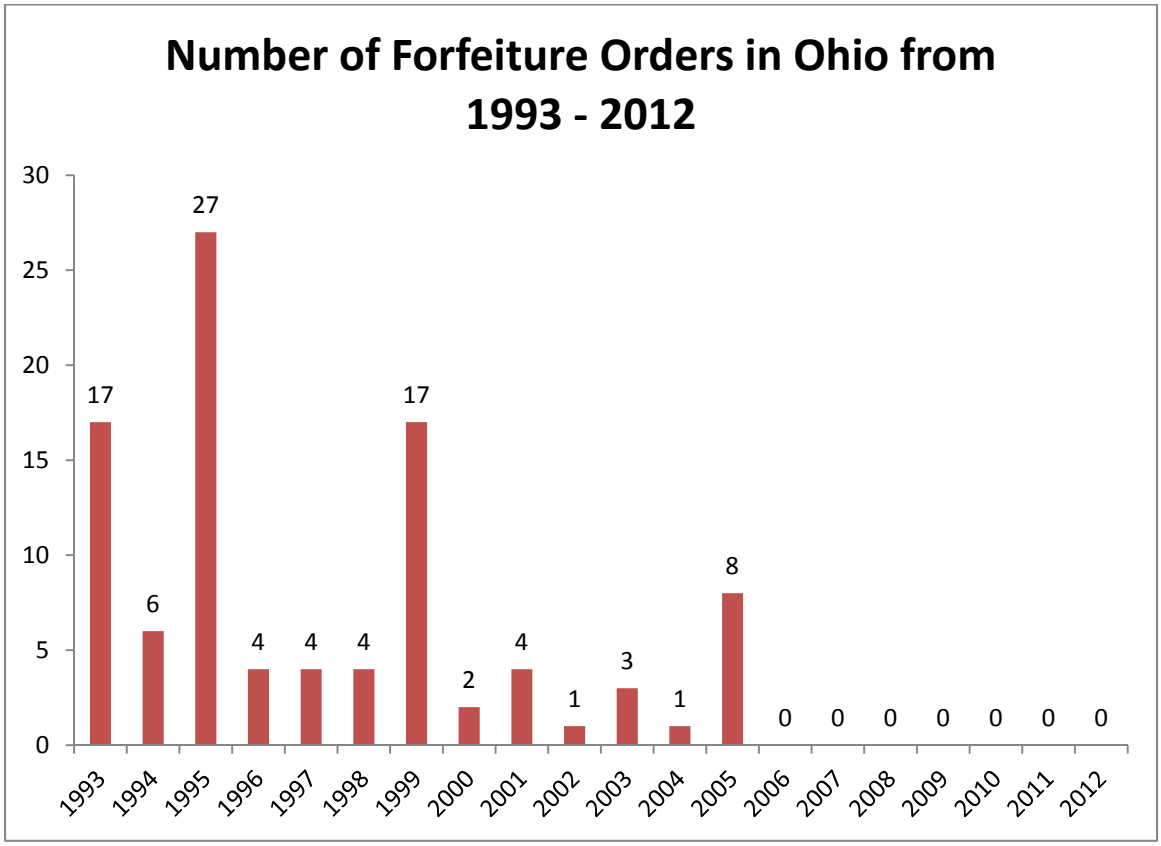
Of the 125 active permits, we have PSE data for 101 surface mining operations, 8 active permits for underground mining operations and 16 operating facilities permits. Please see Exhibits 8.3a through 8.6a. We note that the preceding information reflects only those permits covered by the Fund and not those that have elected or are required to operate under full private performance security.

Historical Forfeitures

As background information, the ODNR-DMRM provided the historical forfeiture order information available from the US Department of the Interior's Office of Surface Mining (OSM) covering the past 20 years by the year in which the order was made. Since 1993, there have been a total of 98 bond forfeiture orders to 32 permit holders. This results in an average of 3 permits per permit holder. The actual number of forfeiture orders per permit holder has ranged from 1 to 21 permits.

In the past 13 years, there have been only 19 forfeiture orders. Seven of these forfeiture orders were terminated because the company was able to reclaim and continue operation on the affected sites. These forfeiture orders did not result in any dollars being requested from the Fund to assist with the reclamation process. Very fortunately, there have been no forfeiture orders in the past 7 calendar years, even in the midst of the recent global financial crisis. This lack of recent forfeitures has allowed the Fund to cover the reclamation costs of previously forfeited locations including those forfeited prior to House Bill 443.

More importantly, the Fund has begun accumulating capital to cover potential future forfeitures of currently covered permits. In the early 2000s before House Bill 443, this capital accumulation process had been further slowed by the insolvency of a performance security provider (bond insurer) for two of the permit holders, one of which was an operator with a significant number of permits.



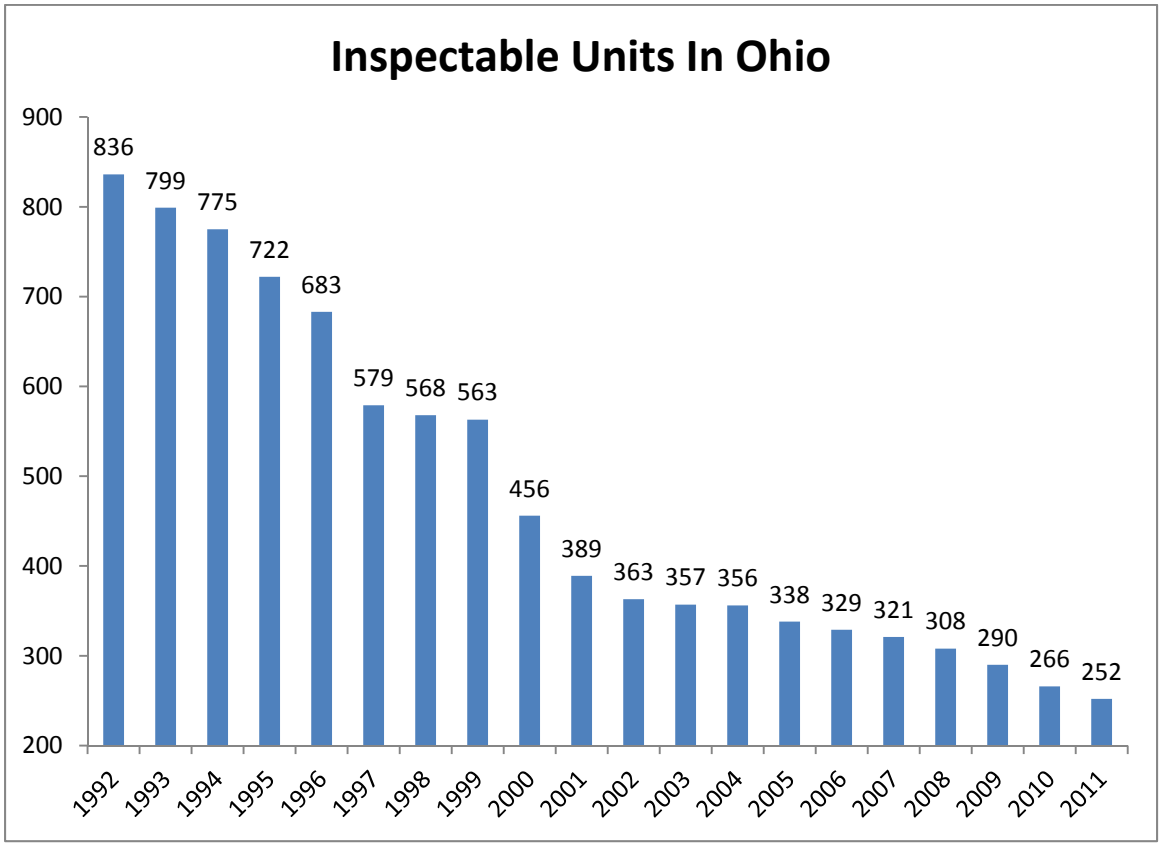
Source, Ohio Department of Natural Resources, Division of Mineral Resources Management

We note that similar to states that experience hurricanes, the lack of forfeitures in the recent past does not provide support for an assumption that there will be no forfeiture events in the future.

The average annual number of forfeiture orders over the twenty year available period has been about 4.9. We note that since 2000, the annual permit forfeiture order frequency has declined to 1.5 permits per year. And most notably, since 2006 there have been no forfeitures. We also note that although there were official forfeiture orders made on eight permits during calendar year 2005, the Fund was only called upon to provide reclamation capital on one of these sites – a very positive development for the Fund's financial situation. We were also provided with forfeiture information as compiled by the ODNR-DMRM which showed forfeiture activity during 1989 to 1992 at roughly the same levels as the 1993 to 1995 period.

If we measure the annual number of forfeitures at the *Permit Holder* level rather than the permit level, the long term permit holder forfeiture frequency has been less than two operators per year.

The number of inspectable units (permitted mining operations) in Ohio over the 20 year period is displayed in the chart below. Over the period of time 1992 through 2011, there have been anywhere from 836 to 252 inspectable units in Ohio. These figures are provided by the Office of Surface Mining from their publicly available records.



Source: Office of Surface Mining reports

The average forfeiture rate per number of permits issued is 1.12%. This translates to an annual forfeiture rate of 0.07% based on an average lifetime of a permit of 18 years and

adjusting for the fact that forfeitures rarely occur in the first two years of a permit's active life. Please see Exhibit 6.2. Note that our calculation of forfeiture frequency considers the seven 2005 permits discussed above that were eventually terminated. Since our goal is to estimate future frequency rates, it is prudent to realize that future remediation efforts leading to terminated forfeiture orders may not be as successful.

Comparing Ohio's historic 0.07% forfeiture rate to the Kentucky and West Virginia forfeiture rates of 1.10% and 1.14%, respectively, Pinnacle selected an Ohio annual forfeiture rate of 0.37%. The selection reflects 75% weight given to Ohio's data, 25% weight to Kentucky and West Virginia, and reflecting the new inclusion of a mine status forfeiture rate adjustment factor (Exhibit 6.3). While we do not have historical data to determine the forfeiture rate adjustment factors, our selections are intuitively logical. We have also adjusted the final selected forfeiture rate to account for the impact created by the adjustment factors, rendering the overall impact revenue neutral.

Analysis Overview and General Comments

For the current permits covered by the Fund, we have utilized the site specific current estimates of the total *potential* cost to reclaim all of the subject mining operations (Performance Security Estimate or PSE) from the engineers with the Ohio Department of Natural Resources– Division of Mineral Resources Management (ODNR-DMRM). We have combined the PSEs with estimated probability of forfeiture over the lifetime of the permit to develop an estimate of the total expected (or long term average) costs for the Fund.

The engineering estimation effort is now being undertaken by the ODNR-DMRM on a regular basis. This increased frequency of PSE updates greatly facilitates the monitoring of potential cost at the sites and the future analyses of the Fund's potential liability. Since the PSEs include all portions of the permit within a single figure, they are adjusted during our analysis to reflect the reported site operating status with respect to the various stages of mining and reclamation. A single permit may have various acres in process of achieving phase 1 release (all activity including active mining operations prior to completion of all land replacement), in the process of achieving phase 2 release (replanting and reforestation activity) and in the process of achieving phase 3 and final permit release (the waiting period prior to permit release).

In development of our estimation, we reflect that underlying performance security provided through the private insurer/bonding community, letter of credit or other security provided, if a permit is forfeited, would reduce the potential liability of the Reclamation Forfeiture Fund. Thus, the total potential cost to the Fund equals the total potential cost for all reclamation (PSE) less the underlying performance security (bond, etc.). This Fund potential cost figure should be viewed as the maximum possible cost or the worst case scenario, with one exception. In full disclosure of that one exception, we do note that should a provider of the performance security also default, the Fund would be obligated for the reclamation cost assumed to be covered by that provider.

Potential Fund Liability

Our analysis begins with estimates of total land reclamation cost (PSEs) for the 225 Fund-covered permits. In total, the engineer estimated reclamation cost is $872.2 million. This value is reduced by $172.8 million to reflect permitted acres not yet affected and by $71.8 million of available and required performance security. These adjustments to the initial PSEs result in a total *Potential Fund Liability* of $627.7 million for land reclamation. Again, these total potential cost figures should be considered a worst case scenario - if each and every operator would forfeit all their permits and no providers of performance security default.

Expected Fund Cost

The combination of the potential cost (adjusted PSEs) and probability that the Fund will be called upon (forfeiture rates) determines the *Expected* Cost to the Fund. This Expected Cost being a combination of the possible cost and the long run probability of default or forfeiture over the life of the permit could be considered the long run average cost of future forfeitures to the Fund. If the Fund was collecting a single up-front "premium" from the operators to provide this financial security in a manner similar to insurance and bonding companies, this Expected Cost (along with any operating expenses) would be the basis for the "premium" required from each site and operator.

We also note that while these are long term average projections, the actual results in any one year or series of years will vary, sometimes significantly, from the long run average. This is the nature of a low frequency/high severity risk such as this. For a similar example, we cite the cost of hurricane losses in a southern state. In some years, there will be no losses due to hurricane while in other years there will be significant losses. Most years are either well below or well above the long term average. The key is to generate sufficient capital in the less than average years to be available to cover the costs in the years where the costs far exceed the long term averages.

Forfeiture rates

For our previous analyses, we obtained publically available financial information about some of the firms holding Ohio coal mining permits through sources such as Standard & Poor's and Dun and Bradstreet. This potential default information was used to estimate the probability of an operator encountering financial difficulties such that the Fund would be called upon to assume the cost of the reclamation projects for each site of the firm.

Later we developed two additional estimates by using the probability of forfeiture estimates by permit type and permit issuance year from the West Virginia Special Reclamation Fund analysis.

With this analysis, we have developed a forfeiture rate based on historic Ohio experience. We blended that with projected forfeiture rates in West Virginia and Kentucky (using a 75/12.5/12.5 weighting). We determined that this measure was superior to the financial ratings as it should be directly related to the Reclamation Forfeiture Fund expected cost. The recent history of no forfeitures is fortunate, but it would not be appropriate to assume the future long term forfeiture rate would also be zero; hence we use the long term historic average and include the surrounding state information to add stability and credibility to our method.

Other methodology enhancements included in this year's analysis are:

- An adjustment factor to the forfeiture rates to reflect mine status (active, final map, pending phase 1 release, pending phase 2 release, pending phase 3 release)
- Expanded release rates determined from historic data
- An estimated liability for long-term water treatment or long-term alternative water supply (Water)

Based on a number of estimates and assumptions, described later in this report, along with the PSE information from the permits in the Fund, **we have developed an estimated land reclamation expected cost of $13.4 million,** reflecting inflationary trends and discounting to present value, both explained later in this report. See Exhibit 2.2. This compares to our estimate in the last analysis of $32.3 million. The substantial decrease is driven by the revised methodology of forfeiture rate selection.

Water

House Bill 163 recently amended the Ohio Revised Code to account for long-term water treatment and long-term alternative water supplies. It includes a provision for operators to set up a water trust fund to provide for a perpetual water liability. As discussed later in this report, **we have estimated a liability of $4.2 million to account for long-term water exposure on current permits. See Exhibit 2.3.**

Shock Loss

Another financial measure of the soundness of the Fund would be its ability to absorb a shock loss without threatening the viability of the Fund. A shock loss for purposes of this study could be considered to be the largest operator, carrying the largest liability, forfeiting all its permits. In this case, an additional $159.0 in estimated liability would come against the Fund.

In conversations between the RFFAB and coal producers it has been postulated that four of the largest operators would be less likely to be involved in a failure. However, there was some concern expressed about the financial difficulties facing large (and small) operators. For purposes of this study we considered the impact of a shock loss that was equal to the average liability for all operators in Ohio who are reliant on the Fund. See Exhibit 1 – Alternative. **That amounted to an additional $20.9 million of estimated**

liabilities for an "average" shock loss. For comparison purposes, this is approximately half the estimate of the cost for the fifth largest carrier defaulting. See Exhibit 8.1b.

While shock losses are highly unlikely to occur because of the financial strength and attractive value of the assets of the larger operating companies, it is prudent to be aware that remote possibilities do exist.

Actuarial Analysis

As described briefly above, the objective of our analysis is to measure the Expected Cost to the Fund of the current operating mines and all facilities currently in various phases of reclamation.

Data

The ODNR-DMRM has provided the following information by permit in an Excel spreadsheet format:

1. The Performance Security Estimate, which is the ODNR-DMRM engineer's assessment of the cost to reclaim the site based upon the approved mining and reclamation plan (described more fully later in this report) for all 225 mining permits covered by the Fund.
2. The Performance Security on-hand in total for each site along with the amounts separated into the three phases of the reclamation process (also described more fully in a later portion of the report).
3. The distribution of acres on the permitted site between the three phases of operation.
4. The Operator name by permit.
5. The provider of the performance security by permit.

Performance Security Estimate Groupings

The 225 PSEs are provided by the ODNR-DMRM engineers in the following two categories:

A. 100 Permits that have an approved Final Map and coal extraction is completed
B. 125 Permits still extracting coal and thus do not have an approved Final Map

The first category, permits with Final Maps, requires no additional adjustment prior to application of the default probabilities in the development of the estimated exposure

assumed by the Fund. The second category requires an additional adjustment to account for the typical situation where the PSE has assumed all acres proposed to be affected on the permit will require reclamation, when, in some cases, only a portion of the land proposed to be affected has been disturbed during the mining process. We have utilized the historic relationship of affected-to-permitted acres supplied by the ODNR-DMRM engineers from their work on PSE development of each of the Performance Security Estimates in Category B as an estimate of the affected–to-permitted acres relationship of our study sample. Please see Exhibit 5.

Performance Security (Bond) from Insurers

We next compare the estimated total cost of site reclamation developed in the prior step against the amount of private performance security on hand as provided from the Division of Mineral Resources Management data base (Central Tracking System - CTS) files. The private performance security, available should forfeiture occur, may be provided through any of the following means:

- Bond from an insurer licensed to do business in Ohio
- Letter of credit
- Certificate of Deposit
- Cash
- Trust agreements

The amount that the estimated total site cost exceeds the performance security on hand for the site is the potential reclamation cost to the Fund. There are a number of sites where the Performance Security on hand is greater than the Performance Security Estimate. Of the 225 permits included in the analysis, 16 permits, or slightly more than 7 percent, fall into this category and contribute zero dollars to our estimated potential and estimated expected Fund costs. In these cases, the Fund would have no reclamation liability in the case of operator default. But we understand that the Fund still could have some potential liability, if the provider of the Performance Security should become

insolvent prior to fulfilling its obligation. This situation occurred on a number of forfeited sites in Ohio in the early 2000s. We also note that the excess of individual permit Performance Security over the Performance Security Estimate has not been used as an offset to total Fund liabilities, as these monies would not be available to cover other forfeitures.

Estimated Potential Reclamation Fund Cost by Permit Holder

Exhibits 8.1a, 8.1b, and 8.1c provide the estimate of the potential reclamation cost by permit holder. One permit holder (operator) only has permits with zero net liability to the Fund. In essence, this operator is privately secured at "full cost". Therefore, 30 of the 31 current permit holders (operators) pose potential liability to the Fund (assuming their Performance Security providers do not fail).

The average potential cost of a permit holder forfeiture of the operators and sites is over $20.9 million per operator ($627.7 million divided by 30 operators with exposure to the Fund). As can be seen in Exhibit 8.1b, all of the five largest operators exceed the average. We do note that the estimated potential Fund cost for each of the other 25 operators is well below the average of $20.9 million. In fact, the average potential Fund cost of these 25 operators is roughly $5 million. We can conclude that the greatest concentration of risk to the Fund comes from a small number of mine operators.

Comparing the potential cost as obtained from the engineers at the ODNR-DMRM and adjusted for the available performance security with the number of permits with potential cost to the Fund, we develop the average potential cost of a forfeited permit of approximately $3.0 million ($627.7 million divided by the 209 permits with potential liability to the Fund). Please see Exhibit 4.3.

Based upon the information in the ODNR-DMRM data base (CTS) for each site within each of the three phases, we have allocated the total estimated reclamation cost to the three reclamation phases. This step is necessary to reflect the differences in the

estimated time until full release of the permit and the associated performance security based upon the assigned phase. These time estimates were developed based upon data from a report by the Office of Surface Mining Reclamation and Enforcement that is titled "A Report on the Success of Achieving Reclamation Standards on Surface Coal Mining Operations in Ohio". Please see Exhibit 3.2. As with any estimates, some sites may operate within significantly longer or shorter time periods – especially the active permits.

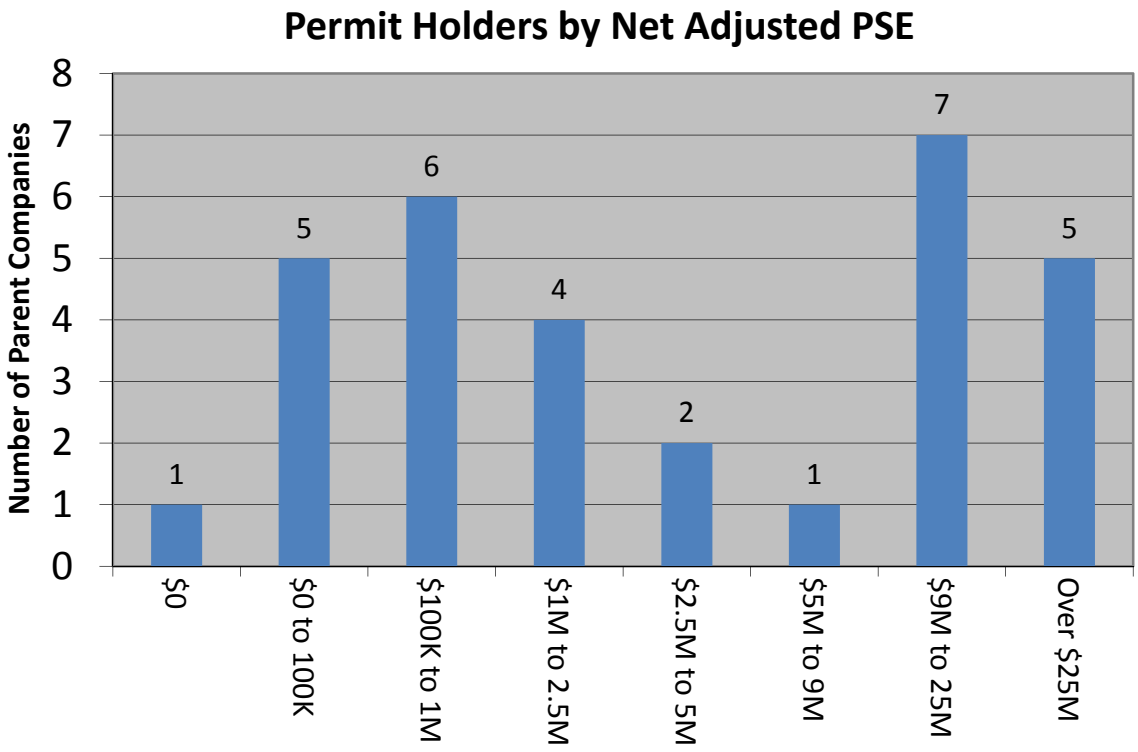
- For active permits (those without Final Maps), we have assumed that the future life cycle will take 18 years to completely proceed through the various phases of mining operation from coal extraction to land replacement, removal of collection ponds, replanting and reforestation and the maintenance period required to assure that the land is stable and fulfills the requirements of the approved reclamation plan and final release of the permits. At the point of permit release, the exposure to the Fund declines to zero and the private performance security is also fully released.
- For permits with Final Maps and CTS data pending phase 1 release, we assume that phase 1 release will be reached in 3 years. The additional times to release follows the phase 2 and phase 3 timeframes below.
- For permits with Final Maps and CTS data pending phase 2 release, we assume that phase 2 release will be reached in 4 years. The additional time to release follows the phase 3 timeframe below.
- For permits with Final Maps and CTS data pending phase 3 release, we assume that full release will be reached in 7 years.

The $627.7 million in potential cost from the permits in the study are spread across the Active and Final Map Permits within the three phases of reclamation as follows:

- Active Pending Phase 1 $420.4 million
- Active Pending Phase 2 $30.4 million
- Active Pending Phase 3 $28.6 million

- Final Map Pending Phase 1 $139.6 million
- Final Map Pending Phase 2 $6.5 million
- Final Map Pending Phase 3 $2.2 million

Please see Exhibit 4.2. These figures have significance as the permits now fully contained in phases 1, 2 and 3 of reclamation are no longer contributing revenue to the Fund but will continue to expose the Fund to potential cost. Please note that all potential costs are accumulated in the first category with any current activity. Thus, a permit with a final map pending phase 1 may also have some acres in pending phases 2 and 3 of the reclamation process, but all potential costs from the phase 2 or 3 acres would be included in the pending phase 1 category shown above.



Estimated Operator Financial Strength – Potential for Future Default

Since the Fund will only be called upon to financially support a reclamation effort if the permit holder should no longer have the financial resources to complete the effort, we need to consider the probability of forfeiture or financial default of the permit holder/operator. To reflect this financial capacity of the permit holder in our analysis, we have developed average forfeiture probabilities based on Ohio forfeiture data and the forfeiture rates in Kentucky and West Virginia. Please see Exhibit 6.2.

Projection into the Future

The time horizon for potential forfeiture varies based upon the reclamation phase determined by the Division of Mineral Resources Management. For the active permits, we used the longest period available – 18 years for the period of time from current until the reclamation is completed and the permit is released. For the sections of the permits with Final Maps currently working to achieve phase 1 release, we used a shorter period of 14 years to reflect that coal extraction has ceased and reclamation is underway. For the sections of permits currently in process of achieving phase 2 release, we used an 11 year time horizon and for the sections of permits currently within the maintenance period prior to phase 3 and total permit release, we have used 7 years as the appropriate time horizon. Please note that the underlying exposure (cost of reclamation) to the Fund declines when a section moves from one phase to the next in the same fashion as the release of the private performance security declines.

Impact of Future Inflation and Present Value of Estimate

As in our previous report, we include an explicit consideration of future inflation on reclamation costs (materials, fuel and manpower). We also explicitly consider that the costs of future potential liabilities could be discounted to present value based upon expected investment returns. That is -"how much money is needed to be set aside today to cover the costs years into the future?"

In this analysis, we make a separate reclamation cost inflation adjustment of 4% per year compounded. We also use the investment rates to discount the future costs to present value. The rates are based upon United States Treasury Note return rates as of March 1st, 2013. The Treasury Notes are sold for 2, 3, 5, 7, 10 and 30 year investment periods. We have interpolated the years in between those available. When investment returns are less than the assumed reclamation cost rates at any one point in time, the Fund liabilities are adversely impacted by cost inflation. Please see Exhibit 9 for a display of the rate of investment returns used in our analysis.

Development of the Estimates of Expected Cost

We develop estimates of the expected cost for each permit by combining the potential cost to the Fund information with the probabilities of forfeiture by permit age over the entire exposure period based upon the current distribution by phase. These forfeiture rates are adjusted to reflect the phase of the mine. The probability of forfeiture declines as the reclamation process transitions from active mining to reclamation and on to final release. Please see Exhibit 6.3. These expected long run average cost estimates by permit are then summed by parent company and then for the Fund in total. In this case, $13.4 million is the estimated long run average expected cost for land reclamation. Exhibit 2.2 summarizes the estimated costs over the next 18 years.

Estimated Expected Cost by Larger Permit Holders

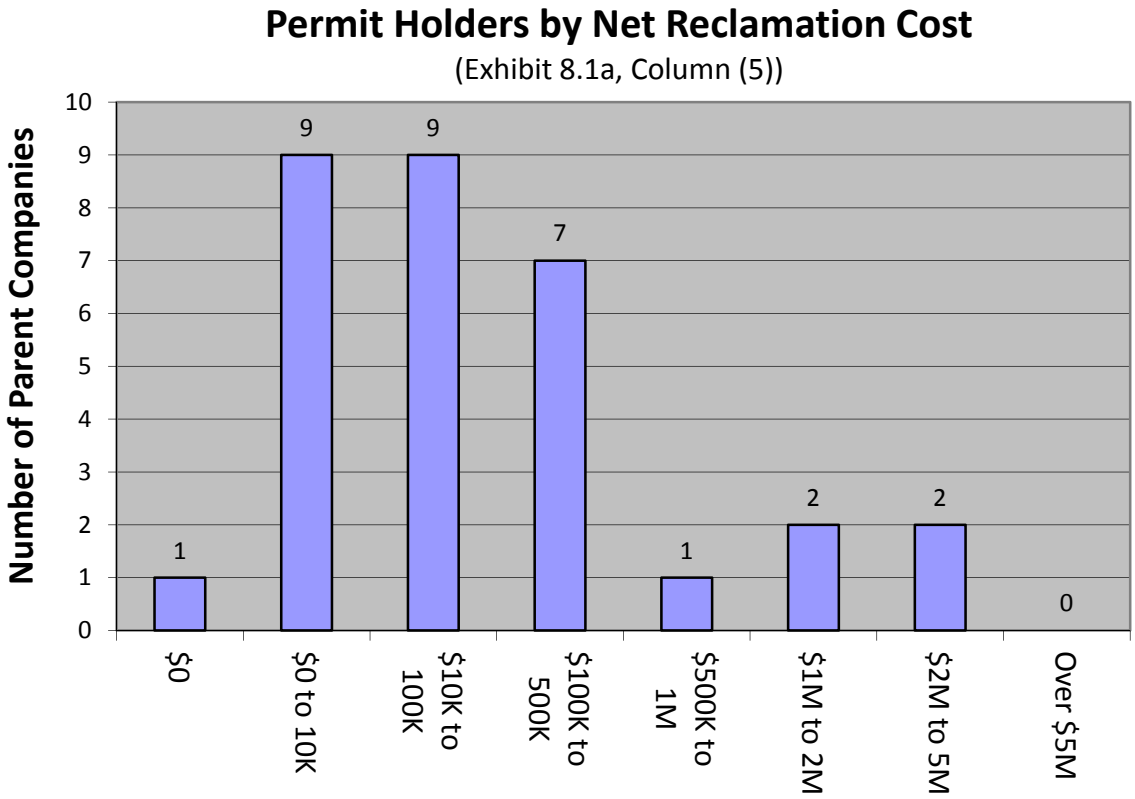
There are a number of sites that would be potentially impacted by a single large company becoming financially troubled. We have also developed estimates by permit holder as well as individual permit. Again, we are reflecting the assumption that if a permit holder should forfeit one permit, then all permits for that entity would simultaneously be forfeited.

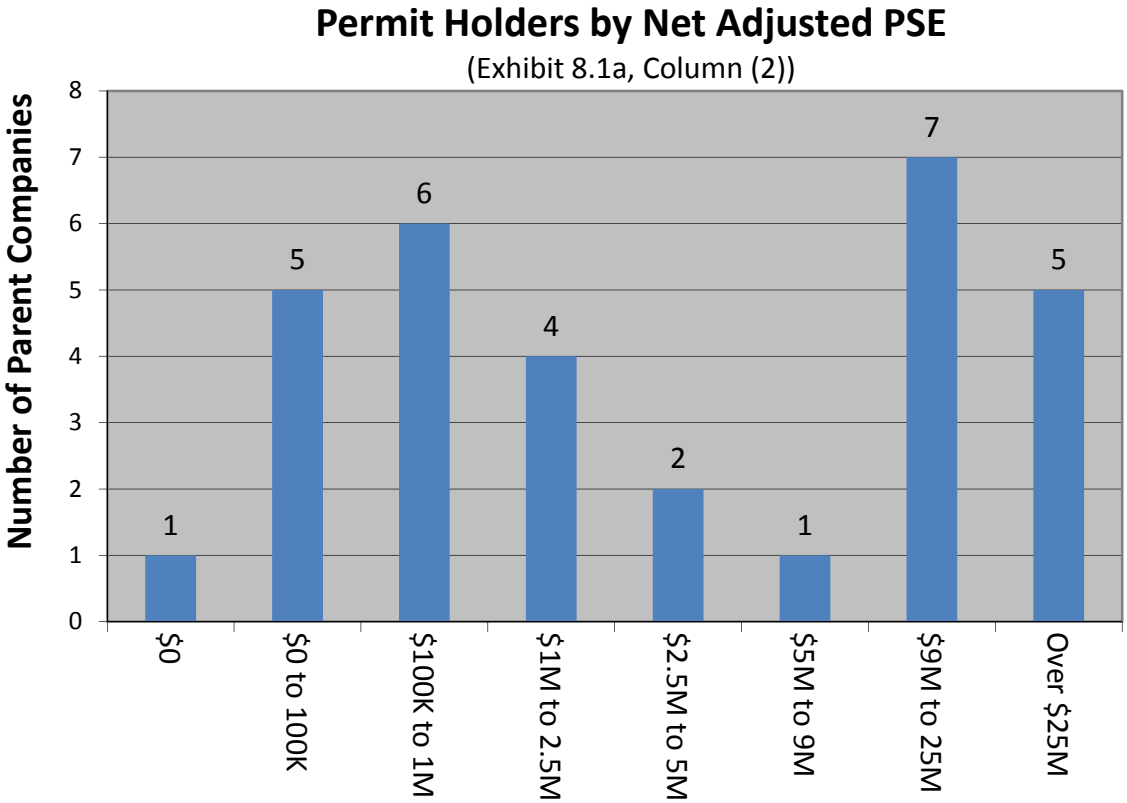
Thus, in the case of the forfeiture risk borne by the Fund, there is significant correlation between the default probabilities of various permits. On the other hand, we note that

no adjustment is made for any spread of risk between the various permit holders as the concentration of risk is much more significant. One might also look at it from the other perspective, i.e., if the larger permit holders continue to remain solid financially, the potential reclamation costs to the Fund might be much more manageable.

In Exhibit 8.1b, we provide the estimated nominal expected costs for the top five permit holders in terms of total expected cost to the Fund before application of reclamation cost inflation or present value calculations.

As can be seen, the estimated expected Fund cost (Net Reclamation Cost) at the permit holder level for those permits in the study is significantly less than the estimated potential Fund cost (Net Adjusted PSE) from the permit holder forfeiture. Please see the charts below and Exhibits 8.1a and 8.1b for comparisons. The difference in these figures can be thought of as being similar to the difference between the insured value of a home (potential cost) and the annual premium to insure the home against a multitude of potential losses over the many years of occupancy (expected cost).


Permit Holders by Net Reclamation Cost
(Exhibit 8.1a, Column (5))
Number of Parent Companies
0
1
2
3
4
5
6
7
8
9
10
1
9
9
7
1
2
2
0
$0
$0 to 10K
$10K to 100K
$100K to 500K
$500K to 1M
$1M to 2M
$2M to 5M
Over $5M


Permit Holders by Net Adjusted PSE
(Exhibit 8.1a, Column (2))
Number of Parent Companies
0
1
2
3
4
5
6
7
8
1
5
6
4
2
1
7
5
$0
$0 to 100K
$100K to 1M
$1M to 2.5M
$2.5M to 5M
$5M to 9M
$9M to 25M
Over $25M

Impact of Reclamation Cost Inflation and Adjustment to Present Value

We adjust the 2012 nominal estimates to reflect the expected future reclamation cost inflation using an annual 4 percent rate. These figures are then returned to a 2012 present value basis through the use of selected investment rates as previously displayed. Please see Exhibit 2.2 for the results. The following chart shows a summary of the impact of these adjustments to the estimates.

Estimated *EXPECTED* Fund Cost **After Cost Inflation and Present Value Adjustment**		
	Gross of Bond	**Net of Bond**
Nominal Estimate	**$12,857,773**	**$11,597,549**
Impact of 4% Cost Inflation	**2,439,197**	**2,203,785**
Present Value Adjustment	**(451,965)**	**(408,858)**
Resulting PV Estimate	**14,845,006**	**13,392,476**

Cost of Forfeited Sites Currently in the Reclamation Forfeiture Fund

An additional step is required when reviewing the financial condition of the Fund. We need to account for the sites included in the inventory of forfeited permits that are currently the responsibility of the Fund. As of December 31st, 2010, all reclamation projects of previously forfeited permits had been substantially completed. Thus, the Fund has no outstanding liability for any permits forfeited prior to January 1st, 2011.

Potential Cost to the Fund from Bond Company Default

Since the Fund would be responsible for the full cost reclamation of forfeited sites in the case of an insolvency of a performance security provider, we have attempted to roughly estimate the potential long term cost of this exposure to the Fund. As this has already happened in the past with a number of sites recently reclaimed by the Fund, this possibility of concurrent permit forfeiture and insurer insolvency is clearly a valid

concern. In order for the Fund to be obligated to provide reclamation coverage, there would need to be forfeiture by the permit holder and an insolvency of the bonding company for that permit holder. Bond amounts and account numbers are verified by the bonding company annually and by the DMRM every five years at renewal.

Typically, the Performance Security provided by the bonding company carries an annual premium for coverage that is irrevocable - even for non-payment of premium. The Fund's exposure to insurer insolvency is typically contained within a period of roughly 12 months rather than across the full life of the permit. The Fund management can require the replacement of a Performance Security provider in the event of an insurer's insolvency. The Ohio Revised Code allows up to 12 months for the operator to replace the coverage provided by an insolvent surety.

Other alternative financial arrangements do not carry a significant default risk. The following summarizes some of the underlying structure of those programs:

- Letters of credit must be issued for a term of 12 months or more and intent to non-renew requires 60-day notice to the Chief.
- Certificates of Deposit are automatically renewable and held at the Treasurer of the State's office. The amount of required security is verified annually at maturity. The Treasurer's office reports to the DMRM on any issues monthly.
- Cash is held by the Treasurer of State in a separate fund.

If we assume the probability of forfeiture by a permit operator in any one year is the same as selected for our analysis (0.37 percent, Exhibit 6.2) and the probability of the insolvency of a performance security provider is equal to the two year average default rate in 2011 for US financial institutions and insurance providers (0.57 percent) based on a recent Standard & Poor's study, the combined probability of default of both the permit holder and the provider of performance security is 0.37 percent times 0.57 percent, or .0021 percent. When applied to the estimated performance security of the

sites included in the Study as provided in the CTS files ($699 million), we develop an expected cost of approximately $14,600. This figure does not appear to be necessarily very material to the total Fund expected cost.

But it should be noted that, as has actually been previously witnessed, in the event of the situation where both the permit holder AND the performance security provider are unable to meet their obligations with respect to the completion of the reclamation, the actual cost of a provider of performance security to the Fund can be significant and material.

Reclamation Forfeiture Fund Operating Expenses

Reclamation Forfeiture Fund operating expenses include various oversight services provided by ODNR-DMRM personnel, travel cost reimbursements of Advisory Board members, external consulting costs, etc. The ODNR-DMRM booked operating expenses of $169,487 for Fund 5310/Reclamation Forfeiture for Fiscal Year 2012, and has booked $70,105 to the Fund through the first six months of Fiscal Year 2013.

The PSEs that we used to develop our future cost of reclamation estimates already include a 15% mark up for administrative expenses. For our estimates, we have assumed annual expenses of $5,000 for overhead costs not included in the PSEs, a biennial actuarial study at $50,000 per study, spread over two years, and long-term water treatment administrative expense of $10,000. (It should be noted that even though long-term water treatment trusts include operating expenses, our determination of the water treatment costs described below are not based on ODNR-DMRM cost estimates. We therefore add this additional expense in.) Our estimate therefore assumes the need for a periodic update to this type of analysis, annual water treatment administrative expense, and the need for the Advisory Board to meet periodically to discuss critical issues related to the financial operation of the Fund.

Long-Term Water Treatment and Alternative Water Supply

Currently there are 6 permits determined by ODNR-DMRM to require long-term water treatment. One of these permits, #433, Consolidated Coal Company (Consol), has established a standby trust fund to meet its obligation to cover long-term water treatment liability. The DMRM is monitoring another 6 permitted sites for potential long-term water treatment. The list of monitored sites is continually being updated as new information becomes available. See Exhibits 10.2a and 10.2b for the current listing of sites designated for water treatment or monitoring.

There is limited data on how these potential long-term water treatment sites might develop. In order to determine an estimated liability on current permits, we considered the limited data available in Ohio along with the somewhat broader data base available from our analysis of West Virginia water reclamation liabilities.

In our first approach we consider the average costs per permitted acre separately for water treatment and capital cost (including cost of set up, annual maintenance and abandonment). We developed averages for the Ohio Consol permit and another set of averages based on West Virginia data. The data for the one Ohio permit does not contain sufficient information to make use of our intended exposure measure of permitted acres. (Consol is showing the footprint of acres rather than the permitted number of acres, which may be different than our intended measure.) Since we only have this one data point for Ohio, we selected the West Virginia cost indications to use in our estimates for Ohio. It should be noted that the West Virginia indications are prior to that state having to meet higher NPDES standards (implemented in 2011), since Ohio is not currently subject to those standards. That is, we used 2011 West Virginia indications, reduced by our estimate of the 2011 NPDES standards on that state's water capital and water treatment costs.

We also developed an estimate of permitted acres that will be in future need of long-term water treatment. That estimate is the sum of current permitted acres designated for long-term water treatment and a portion of monitored permitted acres. Our initial estimate of the portion of monitored permitted acres that will become treated permitted acres has been set at 50%. There is limited data to estimate how many of the monitored sites will become treatment sites. The 50% estimate was selected to give a substantial weight to this liability and roughly reflects the judgment of the ODNR-DMRM as to the number of permits (3) of the current permits (6) on the monitor list that could require long term water treatment.

Since these situations are potentially perpetual in nature, the ODNR-DMRM has settled on a 75 year time horizon to estimate future costs. We also used the 75 year time horizon in our estimates.

The final piece of the first estimate is to determine a forfeiture rate. There is only a liability to the Fund if the permit is forfeited. We have already selected a 0.37% annual forfeiture rate for all permits in Ohio. That annual forfeiture rate was developed from Ohio, Kentucky and West Virginia lifetime forfeiture rates. We selected a lifetime forfeiture rate of 2.25% for permits involving water. Again, there is no data to develop statistical estimates. Our thinking was that the mere involvement of water treatment would lead to potentially catastrophic costs that would greatly increase the probability of forfeiture, thus we selected the 2.25% forfeiture rate (double the Ohio overall historical rate of 1.12%) as a potentially conservative measure.

Our first method of estimating the ultimate liability for long-term water treatment on current permits is then simply the product of the number of permitted acres, the average cost per permitted acre, the number of years for payment, and the probability a forfeiture will occur. This method yielded a long-term water cost of $1.3 million.

Our second estimate is fairly simple. We developed an estimate of the ratio of long-term water cost to land reclamation cost in West Virginia. The West Virginia ratio is approaching 100%. Because West Virginia's water treatment standards were greatly increased last year, beyond what Ohio currently would have to meet, we estimated the relationship of West Virginia's cost of the prior standards to the newer, stricter standards and found that to be roughly 5 percent. Water capital costs under the old West Virginia standards are estimated to be about 25% of what they will be under the new standards. The average relationship in West Virginia, of the old standards to the new standards for water treatment and water capital combined is estimated to be about 15%. Considering these values to define a reasonable range of what might be expected for Ohio, we have selected a conservative ratio of 20% of estimated land costs instead of West Virginia's 100% of estimated land cost, reflecting the fact that Ohio's geology is less likely to develop water issues. Applying the 20% ratio to the average land reclamation cost in Ohio ($12.9 million) produces our second estimate for long-term water treatment liabilities of $2.6 million.

Based upon these two methods' estimates of $1.3 million and $2.6 million, we selected a final estimate of $2.5 million.

We make a final adjustment to the estimate to account for underlying security, primarily in the form of standby trust funds. While these funds are to be set up to cover 100% of the cost of capital and treatment, the operator can spread the funding of standby trust over five years. In the mean time, the Reclamation Forfeiture Fund provides the remainder of the coverage. The one trust that has already been established is fully funded and presents no liability to the Fund since the trust has a built in mechanism to adjust for shortages over time. Of course, not all permits needing standby trust funds will necessarily have established a trust fund before a forfeiture occurs. In fact, the discovery of the need for water treatment could escalate the probability of forfeiture for

permits owned by operators already in economic distress. We selected a 10% credit adjustment factor to apply to our water liability estimate. This adjustment factor will likely increase with time as more of these trusts actually become reality.

It is recognized that permitted acres is not the most desirable estimates for costs. Actual engineering estimates will be much more accurate when they become available, or even basing the projection on an exposure base other than acreage. The flow of contaminated water could be useful, but there will be many assumptions built into estimated treatment costs even then.

Applying the 10% mitigating water trust adjustment factor estimate to the selected $2.5 million estimated expected costs results in a net $2.25 million estimate for long-term water treatment and alternative water supply liabilities. See Exhibit 10.1. As the underlying data for our calculations is very limited and the assumptions made to determine the estimated costs are open to a large range of variation, it is important to note here that final results could in fact deviate substantially from these estimates. The ODNR-DMRM will want to monitor this aspect of the Fund's liability closely and update these estimates as often as practical.

Please note that the above figures for long term water treatment are stated on a basis before inflation and present value are taken into account over the 75 year payout period. After consideration of inflation and present value, the estimated expected cost of $2.25 million becomes $4.2 million. See Exhibit 2.3.

Financial Capacity of the Fund

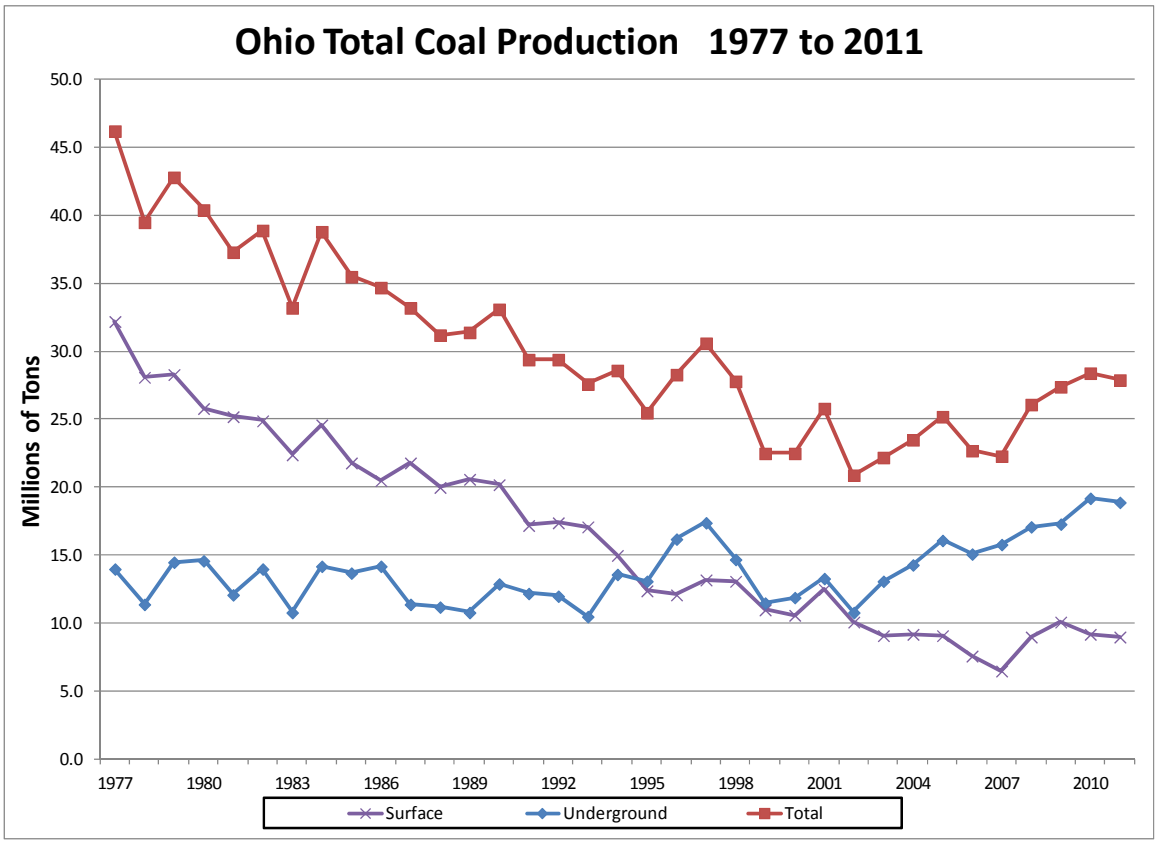
The capital available to operate the Fund is generated from revenues from the severance tax on the covered permit holders based upon their coal production. As explained in other sections of the report, this revenue is not directly related to the liability assumed / forfeiture protection provided by the Fund to the operators nor does it reflect the different financial capacity of each permit holder to fulfill his obligations to complete the land reclamation process. As opposed to an up-front premium payment required by the providers of the underlying private performance security (often to provide security over a single year time horizon) as is provided on "full cost" permits, Ohio's alternative bonding system is comprised of a per acre bond plus a severance tax charged to operators to build capital on an as-you-go basis. The collections from today need to cover the exposure that exists currently from both active mining sites and sites in the process of reclamation as well as potentially provide some additional capital accumulation to cover the current sites in the future.

The dynamic nature of the process whereby portions of the permitted sites move from active mining to phase 1 reclamation to phase 2 reclamation to phase 3 reclamation over time adds a complicating feature to any analysis or comparison of future revenue with either future expected or future potential costs. Any increase in mining operations will result in both an increase in revenue and an increase in potential future cost to the Fund. Similarly, declines in mining operations will result in decreased revenue and decreased exposure to the Fund. Since the Fund retains responsibility for forfeited reclamation projects in the years following the cessation of mining operations, the financial exposure to the Fund remains for a number of years after the revenue to the Fund has ceased.

Future Coal Production Projection

Based upon historical coal production figures developed by the US Department of Interior – Office of Surface Mining (OSM) and provided for our use by the Ohio Department of Natural Resources, we have the historical coal production from surface mining operations and underground mining operations. In the prior review, we used this data to attempt to project coal production into the future and thus the severance tax revenues.

The following chart displays the historical coal production in Ohio.



In our work on another project, we became aware of the "Consensus Coal Production Forecast Report for West Virginia 2009-2030". This report was prepared for the West Virginia Department of Environmental Protection Office of Special Reclamation by Dr. Randall A. Childs and Dr. George W. Hammond of West Virginia University's College of

Business and Economics. While this projection is specifically tailored to coal mining in West Virginia, it utilizes economic assumptions with respect to supply and demand related specifically to Northern Appalachia coal. We have developed a projected future annual change in Ohio coal production based upon the changes forecast in Northern Appalachian coal in the Energy Information Administration Annual Energy Outlook 2011 and a study performed by Wood Mackenzie Research and Consulting.

	Energy Information Agency Northern Appalachia Coal Production		**Wood MacKenzie Northern West Virginia Steam Coal**		
Year	**Millions of Tons**	**Index to 2011**	**Millions of Tons**	**Index to 2011**	**Average Index**
2011	*140.9*	1.0000	52.4	1.0000	1.0000
2012	142.2	1.0095	52.9	1.0095	1.0095
2013	140.8	0.9996	54.1	1.0324	1.0160
2014	142.1	1.0088	57.5	1.0973	1.0531
2015	141.0	1.0010	56.3	1.0744	1.0377
2016	142.9	1.0145	55.8	1.0649	1.0397
2017	141.9	1.0074	58.0	1.1069	1.0571
2018	140.6	0.9982	59.8	1.1412	1.0697
2019	140.2	0.9953	61.9	1.1813	1.0883
2020	143.6	1.0195	68.1	1.2996	1.1595
2021	141.5	1.0046	70.6	1.3473	1.1760
2022	141.8	1.0067	70.2	1.3397	1.1732
2023	143.6	1.0195	59.9	1.1431	1.0813
2024	150.1	1.0656	53.2	1.0153	1.0404
2025	149.6	1.0621	54.1	1.0324	1.0473
2026	155.5	1.1040	56.1	1.0706	1.0873
2027	154.6	1.0976	57.6	1.0992	1.0984
2028	151.3	1.0741	56.4	1.0763	1.0752
2029	152.7	1.0841	53.9	1.0286	1.0564
2030	152.4	1.0820	53.3	1.0172	1.0496
2031	154.7	1.0983	N/A	1.0197	1.0590
2032	156.4	1.1104	N/A	1.0223	1.0663
2033	158.0	1.1217	N/A	1.0249	1.0733
2034	158.0	1.1217	N/A	1.0275	1.0746
2035	159.7	1.1338	N/A	1.0301	1.0819
2036	N/A	1.1399	N/A	1.0326	1.0863
2037	N/A	1.1460	N/A	1.0352	1.0906
-	-	-	-	-	-
2067	N/A	1.3454	N/A	1.1164	1.2309

Please note that an anomaly in the Energy Information Agency's forecast for 2011 was replaced with a result producing a one percent annual increase rather than a nineteen percent annual increase in the first year of the forecast. This adjustment was necessary so that the anomaly would not be carried forward into 2012 and subsequent years.

We have used the average index to develop a projection of future Ohio coal production. In 2011, there were 27.9 million tons of coal mined in the state of Ohio, of which we attribute 25.1 million tons to operations that participate in the Fund. Based upon the methodology described above, the following table provides the projected future coal production in Ohio for operations under the Fund.

Ohio RFF Coal Production Projections (in million tons)		
Year	**Avg. Index**	**Tons**
2012	1.0095	25.3
2013	1.0160	25.5
2014	1.0531	26.4
2015	1.0377	26.1
2016	1.0397	26.1
2017	1.0571	26.5
2018	1.0697	26.9
2019	1.0883	27.3
2020	1.1595	29.1
2021	1.1760	29.5
2022	1.1732	29.5
2023	1.0813	27.2
2024	1.0404	26.1
2025	1.0473	26.3
2026	1.0873	27.3
2027	1.0984	27.6
2028	1.0752	27.0
2029	1.0564	26.5
2030	1.0496	26.4
2031	1.0590	26.6
2032	1.0663	26.8
2033	1.0733	27.0

As in our prior analysis, we feel that this projection is more predictive of the future than the use of an exponential trend of past Ohio coal production as was used in our 2009 analysis. We might suggest that Ohio consider commissioning a similar economic study specifically for Ohio coal production.

We caveat these estimates by stating that we assume the demand for coal from Ohio's mines will follow those projected in West Virginia for Northern Appalachia / Steam Coal. These assumptions are less certain the further out in the time horizon one goes. Another important assumption is that the supply of coal is more or less unlimited and thus the revenue to the Fund is not constrained or limited over the time horizon.

The per ton based severance tax rate is predicated upon the Fund balance from the prior year-end according to the following chart:

Fund Balance	Rate per Ton of Coal
Less than $5 Million	$0.16
Between $5 and $10 Million	$0.14
In excess of $10 Million	$0.12

The levels of estimated production along with the severance tax rates would generate between $3.0 and $4.7 million in annual operating capital for the Fund. We understand that currently about 90 percent of the current coal extraction is from Fund covered permits and have adjusted our revenue projections to account for this fact.

Based upon the various projections of future coal production provided, we have developed the following table that displays the estimated revenue from the severance tax that would be generated by these production levels with the added assumption that 90% of the coal production is from operators participating in the Fund. We provide the estimates at the three tax rates currently included in the statute.

OHIO RECLAMATION FORFEITURE FUND ANALYSIS Potential Reclamation Fund Revenue Projection			
Tons (in millions)	**$0.12**	**$0.14**	**$0.16**
25.0	3,000,000	3,500,000	4,000,000
25.5	3,060,000	3,570,000	4,080,000
26.0	3,120,000	3,640,000	4,160,000
26.5	3,180,000	3,710,000	4,240,000
27.0	3,240,000	3,780,000	4,320,000
27.5	3,300,000	3,850,000	4,400,000
28.0	3,360,000	3,920,000	4,480,000
28.5	3,420,000	3,990,000	4,560,000
29.0	3,480,000	4,060,000	4,640,000
29.5	3,540,000	4,130,000	4,720,000

Current Fund Balance

The Fund is in the process of collecting the revenue to build up sufficient capital to provide for future potential reclamation projects. The balance in the Fund as of June 2012 was approximately $13.0 million. This capital is increased $4.8 million from the December 2010 balance of $8.2 million.

We note that since June 2010, current reclamation work has been substantially completed on forfeited sites. Thus, a grand majority of the severance tax has been added to the Fund. The Fund balance at the end of May 2013 had risen to $16.3 million.

Investment Rate of Return

In addition to the revenue received from the “severance tax”, the capital funds will be invested by the State Treasurer in conservative instruments. We note that the Fund’s capital is invested along with all of the other State investments and the returns are allocated back to the Reclamation Forfeiture Fund’s account. This investment income opportunity should be included in the projection of possible Fund financial levels.

Based upon the current investment situation, we have assumed that the current returns are slightly less than those seen more historically. The investment rates are based upon recent US Treasury Note return rates. The Treasury Notes are sold for 2, 3, 5, 7, 10 and 30 year investment periods. We have interpolated the years between the years available. Please see Exhibit 9 for the resulting rates and discount factors used in our analysis.

Financial Picture – Current Permit Portfolio

One way to view the financial situation and outlook of a dynamic system is to review such an analysis on a current portfolio run-off basis. While we understand that at times the system has operated on an approach where the revenues of present sites have funded the reclamation of previously forfeited sites, our assignment included the task of measuring the current solvency of the Fund. In most analyses of this type, it is not appropriate to only reflect future income without a reflection of the additional potential liabilities. The current permit portfolio approach attempts to match the current capital and expected revenue from the current sites with the potential and expected costs or future liabilities from those same sites. This view eliminates the burden of the past being placed upon the future operations.

In this view, we review the financial picture of the system without the complication of adding any new entrants with respect to permits beyond those currently in the Fund as time goes forward. This view allows us to compare the current Fund Balance and estimated future revenue from only the permits currently in the Fund with the estimated expected costs for the same permits over a time horizon from current until all of the permits are anticipated to have completed phase 3 of the reclamation process.

The addition of new permits would add both revenue and potential cost to the system – estimating the impact of that dynamic would rely upon the information in the current analysis – thus not providing additional information. Again, as with any estimation of

the future, there are many assumptions made and actual results may vary from the estimated expected results. In the case of the Fund, as is shown, these projected financial results can vary significantly and the differences can be very material.

In our estimation of the expected costs, we have assumed that the active mining operations continue fairly uniformly over a 7 year period of time. This is followed by a 4 year period pending phase 2 release and then a 7 year observation period pending phase 3 release. Any acreage pending phase 1 release with no associated mining is assumed to reach phase 1 release in 3 additional years. Because the probability of forfeiture varies based upon the number of years that we are projecting into the future, the expected cost to the Fund from a site will vary - even between years in the same phase of reclamation.

Exhibit 1 summarizes the revenues and costs associated with current permits that are expected to flow through the Fund through 2090. The tonnage fee revenue is based on the assumption of coal production of 25.5 million tons from the currently issued permits covered by the Fund, changing annually according to the Ohio RFF Coal Production table displayed above, and the associated revenue for the first six years. In the seventh and final year of assumed mining, we assume that coal extraction will be half of the indexed amount or 13.7 million tons from permits currently in-force

We have credited the Fund with investment income on the prior year surplus – this assumes the current revenue is not invested until after the annual costs are paid. Also, investment income is constrained to not less than zero. The reclamation costs are the expected reclamation costs from Exhibit 2.1. Please note that we have assumed ongoing operating expenses to be $10,000 in the next few years to cover general overhead not included in the land reclamation cost estimates, and another $10,000 for the next 75 years for water treatment expenses not already included in the water treatment reclamation costs.

With no forfeited permits in the current inventory of the Fund, in development of the cash flow scenario in Exhibit 1, we have delayed the reflection of the method expected annual costs by three years in order to reflect the period of time between forfeiture order and reclamation activity. We understand that the process can include significant periods of time for discussion, negotiating and possible litigation.

As can be seen in Exhibit 1, the recent Fund balance of $15.5 million could grow to over $47 million in the next 78 years. This figure is on a present value basis, which is a relatively important consideration given the long time horizon associated with water treatment liabilities.

Alternative Approach

One other way of approaching the issue of capital and solvency would be to determine how many additional years with no permit holder forfeitures would be needed to generate sufficient capital to fund the reclamation of various permit holders. For purpose of explanation, we have developed these estimates at four levels based upon expected permit cost:

- the median permit holder,
- the average permit holder value,
- the 5th largest and
- the largest permit holder.

With this approach, we have utilized the total annual coal production and assumed on-going operating expenses as described above and no on-going reclamation projects. Please see Exhibit 1 – Alternative for the details in the cash flow analysis.

Number of Years with No Forfeitures Needed to Accumulate Capital to Cover the Forfeiture of a Permit Holder

Permit Holder Size	Net Adjusted PSE	Years from 2012
Median	2,241,653	0
Average	20,922,140	2
5th Largest	39,224,100	8
Largest	159,028,180	38

These estimates are before inclusion of otherwise expected land reclamation and water treatment liability. Making this adjustment would add approximately four to six more years to the last three estimates in the table above.

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Exhibit 1
Cash Flow
(all figures discounted to present value)

Calendar Year	Tonnage Fee	Interest Income	Land Reclamation	Water Reclamation	Operating Expense	Fund Balance
	(1)	(2)	(3)	(4)	(5)	(6)
2012						15,527,736
2013	3,056,000	42,586	0	0	30,000	18,596,322
2014	3,156,000	50,247	0	0	30,000	21,772,569
2015	3,111,000	86,882	0	0	30,000	24,940,451
2016	3,096,000	146,635	1,565,913	30,556	40,000	26,546,617
2017	3,123,000	207,038	1,750,700	31,699	40,000	28,054,256
2018	3,143,000	288,432	1,847,076	32,864	40,000	29,565,748
2019	1,577,000	365,297	1,790,148	34,020	40,000	29,643,877
2020	0	422,291	1,320,325	35,150	40,000	28,670,693
2021	0	468,880	1,361,228	36,239	40,000	27,702,106
2022	0	508,231	1,399,929	37,270	40,000	26,733,138
2023	0	495,117	459,853	38,235	40,000	26,690,167
2024	0	495,978	470,600	39,128	40,000	26,636,417
2025	0	498,389	480,417	39,944	40,000	26,574,444
2026	0	499,978	489,693	40,716	40,000	26,504,014
2027	0	498,590	71,194	41,479	40,000	26,849,931
2028	0	506,685	72,490	42,235	40,000	27,201,891
2029	0	512,183	73,767	42,979	40,000	27,557,328
2030	0	519,333	58,356	43,712	40,000	27,934,593
2031	0	526,284	59,320	44,434	10,000	28,347,123
2032	0	531,228	60,268	45,144	10,000	28,762,939
2033	0	537,726	61,197	45,840	10,000	29,183,628
2034	0	543,678	0	46,520	10,000	29,670,786
2035	0	548,237	0	47,185	10,000	30,161,837
2036	0	554,261	0	47,833	10,000	30,658,265
2037	0	557,778	0	48,463	10,000	31,157,581
2038	0	562,689	0	49,074	10,000	31,661,197
2039	0	567,001	0	49,666	10,000	32,168,532
2040	0	568,838	0	50,238	10,000	32,677,133
2041	0	571,963	0	50,790	10,000	33,188,305
2042	0	573,551	0	51,318	10,000	33,700,539
2043	0	564,755	0	51,824	10,000	34,203,470
2044	0	555,814	0	52,307	10,000	34,696,977
2045	0	546,748	0	52,765	10,000	35,180,960
2046	0	537,575	0	53,212	10,000	35,655,323
2047	0	528,314	0	53,664	10,000	36,119,973
2048	0	518,980	0	54,119	10,000	36,574,834
2049	0	509,591	0	54,578	10,000	37,019,847
2050	0	500,161	0	55,041	10,000	37,454,967
2051	0	490,706	0	55,508	10,000	37,880,164
2052	0	481,237	0	55,979	10,000	38,295,423
2053	0	471,770	0	56,454	10,000	38,700,738
2054	0	462,316	0	56,933	10,000	39,096,121
2055	0	452,887	0	57,416	10,000	39,481,591
2056	0	443,493	0	57,904	10,000	39,857,180
2057	0	434,145	0	58,395	10,000	40,222,930
2058	0	424,852	0	58,890	10,000	40,578,892
2059	0	415,623	0	59,390	10,000	40,925,125
2060	0	406,468	0	59,894	10,000	41,261,699
2061	0	397,392	0	60,402	10,000	41,588,689
2062	0	388,404	0	60,915	10,000	41,906,178
2063	0	379,509	0	61,431	10,000	42,214,255
2064	0	370,714	0	61,953	10,000	42,513,017
2065	0	362,025	0	62,478	10,000	42,802,563
2066	0	353,445	0	63,008	10,000	43,083,000

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
SPRING 2013

Exhibit 1
Cash Flow
(all figures discounted to present value)

Calendar Year	Tonnage Fee	Interest Income	Land Reclamation	Water Reclamation	Operating Expense	Fund Balance
	(1)	(2)	(3)	(4)	(5)	(6)
2067	0	344,980	0	63,543	10,000	43,354,437
2068	0	336,634	0	64,082	10,000	43,616,988
2069	0	328,410	0	64,626	10,000	43,870,772
2070	0	320,311	0	65,174	10,000	44,115,908
2071	0	312,340	0	65,727	10,000	44,352,521
2072	0	304,500	0	66,285	10,000	44,580,736
2073	0	296,792	0	66,847	10,000	44,800,680
2074	0	289,218	0	67,415	10,000	45,012,483
2075	0	281,780	0	67,987	10,000	45,216,276
2076	0	274,478	0	68,563	10,000	45,412,190
2077	0	267,314	0	69,145	10,000	45,600,359
2078	0	260,287	0	69,732	10,000	45,780,914
2079	0	253,399	0	70,324	10,000	45,953,990
2080	0	246,649	0	70,920	10,000	46,119,719
2081	0	240,038	0	71,522	10,000	46,278,234
2082	0	233,564	0	72,129	10,000	46,429,669
2083	0	227,227	0	72,741	10,000	46,574,156
2084	0	221,027	0	73,358	10,000	46,711,825
2085	0	214,963	0	73,980	10,000	46,842,808
2086	0	209,033	0	74,608	10,000	46,967,233
2087	0	203,238	0	75,241	10,000	47,085,229
2088	0	197,574	0	75,880	10,000	47,196,924
2089	0	192,041	0	76,523	10,000	47,302,441
2090	0	186,638	0	77,173	10,000	47,401,907
Total	20,262,000	30,495,365	13,392,476	4,200,719	1,290,000	

Coal Extraction Fee

Fund Balance	Rate
< $5M	0.16
$5M - $10M	0.14
> $10M	0.12

Footnotes:

All columns shown at present value, based on Exhibit 9, Investment Rates

(1) Based on coal production from the US Department of Interior - Office of Surface Mining.
Future production forecast based on the report "Consensus Coal Production Forecast Report for West Virginia 2011 Update".
The per ton coal extraction fee is predicated upon the prior year Fund Balance in column (6) according to the chart at the bottom of the second page, titled Coal Extraction Fee.
Active mining continues for seven years, with the seventh year coal production being half the prior year. See Exhibit 3.1.

(2) [Prior year Col (6) x Exhibit 9 Col (1)] + [Col (1) / 2 x Exhibit 9 Col (1)]. Years 2043 through 2087 based on 3.125% discount factor

(3) Exhibit 2.1 Col (2). Delayed by three years to reflect period between forfeiture order and reclamation activity

(4) Exhibit 2.1 Col (4). Delayed by three years to reflect period between forfeiture order and reclamation activity

(5) Based on discussion with client. Inflation and discount rates assumed to offset.
Majority of expense for land reclamation included in reclamation cost column (2), based on 15% load in PSEs. Others include:

Overhead $5,000	Actuarial/2 yrs $50,000	Water Treatment $10,000

(6) Year 2012 client provided data. Subsequent years = prior year col (6) + Col (1) + Col (2) - Col (3) - Col (4) - Col (5)

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
SPRING 2013

Exhibit 1 - Alternative
Cash Flow - Number of Years to Accumulate Capital to Cover a Forfeiture
(all figures discounted to present value)

Calendar Year	Tonnage Fee	Interest Income	Land Reclamation	Water Reclamation	Operating Expense	Fund Balance
	(1)	(2)	(3)	(4)	(5)	(6)
2012						15,527,736
2013	3,056,000	42,586	0	0	30,000	18,596,322
2014	3,156,000	50,247	0	0	30,000	21,772,569
2015	3,111,000	86,882	0	0	30,000	24,940,451
2016	3,096,000	146,635	0	0	40,000	28,143,086
2017	3,123,000	218,798	0	0	40,000	31,444,884
2018	3,143,000	321,443	0	0	40,000	34,869,327
2019	3,154,000	438,612	0	0	40,000	38,421,939
2020	3,316,000	570,958	0	0	40,000	42,268,897
2021	3,308,000	718,315	0	0	40,000	46,255,211
2022	3,247,000	878,397	0	0	40,000	50,340,608
2023	2,935,000	959,523	0	0	40,000	54,195,132
2024	2,758,000	1,032,723	0	0	40,000	57,945,854
2025	2,721,000	1,109,670	0	0	40,000	61,736,524
2026	2,764,000	1,187,527	0	0	40,000	65,648,052
2027	2,733,000	1,260,670	0	0	40,000	69,601,721
2028	2,613,000	1,338,110	0	0	40,000	73,512,831
2029	2,505,000	1,407,751	0	0	40,000	77,385,583
2030	2,437,000	1,481,338	0	0	40,000	81,263,921
2031	2,396,000	1,553,571	0	0	10,000	85,203,492
2032	2,354,000	1,618,779	0	0	10,000	89,166,271
2033	2,312,000	1,688,585	0	0	10,000	93,156,856
2034	2,252,000	1,756,449	0	0	10,000	97,155,304
2035	2,209,000	1,815,578	0	0	10,000	101,169,882
2036	2,158,000	1,878,949	0	0	10,000	105,196,831
2037	2,106,000	1,933,047	0	0	10,000	109,225,878
2038	2,055,000	1,991,118	0	0	10,000	113,261,996
2039	2,004,000	2,046,286	0	0	10,000	117,302,282
2040	1,953,000	2,091,532	0	0	10,000	121,336,814
2041	1,902,000	2,140,459	0	0	10,000	125,369,272
2042	1,851,000	2,182,592	0	0	10,000	129,392,865
2043	1,808,000	2,183,520	0	0	10,000	133,374,385
2044	1,760,000	2,181,664	0	0	10,000	137,306,048
2045	1,712,000	2,177,129	0	0	10,000	141,185,177
2046	1,666,000	2,170,078	0	0	10,000	145,011,255
2047	1,622,000	2,160,684	0	0	10,000	148,783,939
2048	1,578,000	2,149,099	0	0	10,000	152,501,038
2049	1,536,000	2,135,472	0	0	10,000	156,162,510
2050	1,499,000	2,119,980	0	0	10,000	159,771,490
2051	1,459,000	2,102,758	0	0	10,000	163,323,248

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
SPRING 2013

Exhibit 1 - Alternative
Cash Flow - Number of Years to Accumulate Capital to Cover a Forfeiture
(all figures discounted to present value)

Calendar Year	Tonnage Fee	Interest Income	Land Reclamation	Water Reclamation	Operating Expense	Fund Balance
	(1)	(2)	(3)	(4)	(5)	(6)
2052	1,420,000	2,083,913	0	0	10,000	166,817,160
2053	1,381,000	2,063,566	0	0	10,000	170,251,726
2054	1,344,000	2,041,842	0	0	10,000	173,627,568
2055	1,308,000	2,018,865	0	0	10,000	176,944,432
2056	1,277,000	1,994,771	0	0	10,000	180,206,203
2057	1,242,000	1,969,661	0	0	10,000	183,407,864
2058	1,209,000	1,943,618	0	0	10,000	186,550,482
2059	1,176,000	1,916,739	0	0	10,000	189,633,221
2060	1,144,000	1,889,115	0	0	10,000	192,656,336
2061	1,117,000	1,860,855	0	0	10,000	195,624,190
2062	1,087,000	1,832,042	0	0	10,000	198,533,232
2063	1,057,000	1,802,735	0	0	10,000	201,382,967
2064	1,029,000	1,773,009	0	0	10,000	204,174,976
2065	1,004,000	1,742,951	0	0	10,000	206,911,927
2066	977,000	1,712,623	0	0	10,000	209,591,550
Total	111,140,000	83,973,814	0	0	1,050,000	

Coal Extraction Fee

Fund Balance	Rate
< $5M	0.16
$5M - $10M	0.14
> $10M	0.12

Number of Years with No Forfeitures Needed to Accumulate Capital to Cover the Forfeiture of a Permit Holder

Permit Holder Size	Net Adjusted PSE	Years from 2012
Median	2,241,653	0
Average	20,922,140	2
5th Largest	39,224,100	8
Largest	159,028,180	38

Number of Years with No Forfeitures Needed to Accumulate Capital to Cover the Forfeiture of a Permit Holder and otherwise expected land and water reclamations costs

Permit Holder Size	Net Adjusted PSE	Years from 2012
Median	20,301,594	2
Average	38,982,081	8
5th Largest	57,284,041	12
Largest	177,088,121	44

Footnotes:

All columns shown at present value, based on Exhibit 9, Investment Rates

(1) Based on coal production from the US Department of Interior - Office of Surface Mining.
Future production forecast based on the report "Consensus Coal Production Forecast Report for West Virginia 2011 Update".
The per ton coal extraction fee is predicated upon the prior year Fund Balance in column (6) according to the chart at the bottom of the second page, titled Coal Extraction Fee.

(2) [Prior year Col (6) x Exhibit 9 Col (1)] + [Col (1) / 2 x Exhibit 9 Col (1)]. Years 2043 through 2087 based on 3.125% discount factor

(3) Assume no losses

(4) Assume no losses

(5) Based on discussion with client. Inflation and discount rates assumed to offset.

(6) Year 2012 client provided data. Subsequent years = prior year col (6) + Col (1) + Col (2) - Col (3) - Col (4) - Col (5)

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
SPRING 2013

Exhibit 1 - Shock Loss
Cash Flow - Shock Loss Scenario with 5 Year Spread
(all figures discounted to present value)

Calendar Year	Tonnage Fee	Interest Income	Land Reclamation	Water Reclamation	Operating Expense	Fund Balance
	(1)	(2)	(3)	(4)	(5)	(6)
2012						15,527,736
2013	3,056,000	42,586	0	0	30,000	18,596,322
2014	3,156,000	50,247	0	0	30,000	21,772,569
2015	3,111,000	86,882	0	0	30,000	24,940,451
2016	3,096,000	146,635	**5,750,341** *	30,556	40,000	22,362,189
2017	3,123,000	176,217	**5,935,128** *	31,699	40,000	19,654,579
2018	3,143,000	206,654	**6,031,504** *	32,864	40,000	16,899,865
2019	1,577,000	212,870	**5,974,576** *	34,020	40,000	12,641,138
2020	0	180,079	**5,504,753** *	35,150	40,000	7,241,314
2021	0	118,424	1,361,228	36,239	40,000	5,922,271
2022	0	108,652	1,399,929	37,270	40,000	4,553,724
2023	0	84,338	459,853	38,235	40,000	4,099,974
2024	0	76,189	470,600	39,128	40,000	3,626,435
2025	0	67,854	480,417	39,944	40,000	3,133,927
2026	0	58,962	489,693	40,716	40,000	2,622,481
2027	0	49,334	71,194	41,479	40,000	2,519,142
2028	0	47,539	72,490	42,235	40,000	2,411,955
2029	0	45,415	73,767	42,979	40,000	2,300,624
2030	0	43,357	58,356	43,712	40,000	2,201,912
2031	0	41,484	59,320	44,434	10,000	2,129,642
2032	0	39,910	60,268	45,144	10,000	2,054,140
2033	0	38,402	61,197	45,840	10,000	1,975,505
2034	0	36,803	0	46,520	10,000	1,955,787
2035	0	36,138	0	47,185	10,000	1,934,740
2036	0	35,553	0	47,833	10,000	1,912,460
2037	0	34,794	0	48,463	10,000	1,888,792
2038	0	34,111	0	49,074	10,000	1,863,829
2039	0	33,378	0	49,666	10,000	1,837,541
2040	0	32,493	0	50,238	10,000	1,809,796
2041	0	31,678	0	50,790	10,000	1,780,684
2042	0	30,773	0	51,318	10,000	1,750,139
2043	0	29,329	0	51,824	10,000	1,717,644
2044	0	27,912	0	52,307	10,000	1,683,250
2045	0	26,524	0	52,765	10,000	1,647,009
2046	0	25,167	0	53,212	10,000	1,608,964
2047	0	23,840	0	53,664	10,000	1,569,141
2048	0	22,546	0	54,119	10,000	1,527,567
2049	0	21,283	0	54,578	10,000	1,484,273
2050	0	20,053	0	55,041	10,000	1,439,285
2051	0	18,856	0	55,508	10,000	1,392,633
2052	0	17,692	0	55,979	10,000	1,344,346
2053	0	16,561	0	56,454	10,000	1,294,453
2054	0	15,463	0	56,933	10,000	1,242,983
2055	0	14,399	0	57,416	10,000	1,189,965
2056	0	13,367	0	57,904	10,000	1,135,428
2057	0	12,368	0	58,395	10,000	1,079,401
2058	0	11,401	0	58,890	10,000	1,021,912
2059	0	10,467	0	59,390	10,000	962,989
2060	0	9,564	0	59,894	10,000	902,659
2061	0	8,694	0	60,402	10,000	840,951
2062	0	7,854	0	60,915	10,000	777,890
2063	0	7,045	0	61,431	10,000	713,503
2064	0	6,266	0	61,953	10,000	647,816
2065	0	5,517	0	62,478	10,000	580,854
2066	0	4,796	0	63,008	10,000	512,642

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
SPRING 2013

Exhibit 1 - Shock Loss
Cash Flow - Shock Loss Scenario with 5 Year Spread
(all figures discounted to present value)

Calendar Year	Tonnage Fee	Interest Income	Land Reclamation	Water Reclamation	Operating Expense	Fund Balance
	(1)	(2)	(3)	(4)	(5)	(6)
2067	0	4,105	0	63,543	10,000	443,204
2068	0	3,441	0	64,082	10,000	372,563
2069	0	2,805	0	64,626	10,000	300,743
2070	0	2,196	0	65,174	10,000	227,764
2071	0	1,613	0	65,727	10,000	153,649
2072	0	1,055	0	66,285	10,000	78,419
2073	0	522	0	66,847	10,000	2,094
2074	0	14	0	67,415	10,000	(75,307)
2075	0	0	0	67,987	10,000	(153,294)
2076	0	0	0	68,563	10,000	(231,857)
2077	0	0	0	69,145	10,000	(311,002)
2078	0	0	0	69,732	10,000	(390,734)
2079	0	0	0	70,324	10,000	(471,058)
2080	0	0	0	70,920	10,000	(551,978)
2081	0	0	0	71,522	10,000	(633,500)
2082	0	0	0	72,129	10,000	(715,629)
2083	0	0	0	72,741	10,000	(798,370)
2084	0	0	0	73,358	10,000	(881,728)
2085	0	0	0	73,980	10,000	(965,708)
2086	0	0	0	74,608	10,000	(1,050,317)
2087	0	0	0	75,241	10,000	(1,135,558)
2088	0	0	0	75,880	10,000	(1,221,437)
2089	0	0	0	76,523	10,000	(1,307,961)
2090	0	0	0	77,173	10,000	(1,395,134)
Total	20,262,000	2,620,465	34,314,616	4,200,719	1,290,000	

Coal Extraction Fee

Fund Balance	Rate
< $5M	0.16
$5M - $10M	0.14
> $10M	0.12

Footnotes:

All columns shown at present value, based on Exhibit 9, Investment Rates

(1) Based on coal production from the US Department of Interior - Office of Surface Mining.
Future production forecast based on the report "Consensus Coal Production Forecast Report for West Virginia 2011 Update".
The per ton coal extraction fee is predicated upon the prior year Fund Balance in column (6) according to the chart at the bottom of the second page, titled Coal Extraction Fee.
Active mining continues for seven years, with the seventh year coal production being half the prior year. See Exhibit 3.1.

(2) [Prior year Col (6) x Exhibit 9 Col (1)] + [Col (1) / 2 x Exhibit 9 Col (1)]. Years 2043 through 2087 based on 3.125% discount factor

(3) Exhibit 2.1 Col (2). Delayed by three years to reflect period between forfeiture order and reclamation activity.
* In addition, Years 2016-2020 include a shock loss of $20,922,140, derived in Exhibit 8.1b Col (3), spread evenly over five years.

(4) Exhibit 2.1 Col (4). Delayed by three years to reflect period between forfeiture order and reclamation activity

(5) Based on discussion with client. Inflation and discount rates assumed to offset.

(6) Year 2012 client provided data. Subsequent years = prior year col (6) + Col (1) + Col (2) - Col (3) - Col (4) - Col (5)

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
SPRING 2013

Exhibit 2.1
Total Expenditures

Calendar	Land Reclamation		Water Reclamation				
Year	Gross	Net	Gross	Net	Operating Expense	Gross Total	Net Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
2012						0	0
2013	1,739,517	1,565,913	33,951	30,556	30,000	1,803,468	1,626,469
2014	1,943,828	1,750,700	35,221	31,699	30,000	2,009,049	1,812,399
2015	2,050,805	1,847,076	36,516	32,864	30,000	2,117,320	1,909,940
2016	1,990,149	1,790,148	37,800	34,020	40,000	2,067,949	1,864,168
2017	1,460,875	1,320,325	39,056	35,150	40,000	1,539,931	1,395,475
2018	1,506,133	1,361,228	40,266	36,239	40,000	1,586,399	1,437,468
2019	1,548,953	1,399,929	41,411	37,270	40,000	1,630,364	1,477,199
2020	508,687	459,853	42,483	38,235	40,000	591,170	538,088
2021	520,576	470,600	43,476	39,128	40,000	604,051	549,729
2022	531,435	480,417	44,383	39,944	40,000	615,817	560,361
2023	541,696	489,693	45,240	40,716	40,000	626,935	570,409
2024	78,228	71,194	46,088	41,479	40,000	164,317	152,673
2025	79,653	72,490	46,928	42,235	40,000	166,581	154,725
2026	81,056	73,767	47,754	42,979	40,000	168,810	156,746
2027	64,280	58,356	48,569	43,712	40,000	152,849	142,068
2028	65,341	59,320	49,371	44,434	40,000	154,713	143,754
2029	66,385	60,268	50,160	45,144	40,000	156,545	145,411
2030	67,409	61,197	50,934	45,840	40,000	158,343	147,038
2031	0	0	51,689	46,520	10,000	61,689	56,520
2032	0	0	52,428	47,185	10,000	62,428	57,185
2033	0	0	53,148	47,833	10,000	63,148	57,833
2034	0	0	53,847	48,463	10,000	63,847	58,463
2035	0	0	54,526	49,074	10,000	64,526	59,074
2036	0	0	55,184	49,666	10,000	65,184	59,666
2037	0	0	55,820	50,238	10,000	65,820	60,238
2038	0	0	56,433	50,790	10,000	66,433	60,790
2039	0	0	57,020	51,318	10,000	67,020	61,318
2040	0	0	57,582	51,824	10,000	67,582	61,824
2041	0	0	58,118	52,307	10,000	68,118	62,307
2042	0	0	58,627	52,765	10,000	68,627	62,765
2043	0	0	59,125	53,212	10,000	69,125	63,212
2044	0	0	59,626	53,664	10,000	69,626	63,664
2045	0	0	60,132	54,119	10,000	70,132	64,119
2046	0	0	60,642	54,578	10,000	70,642	64,578
2047	0	0	61,157	55,041	10,000	71,157	65,041
2048	0	0	61,676	55,508	10,000	71,676	65,508
2049	0	0	62,199	55,979	10,000	72,199	65,979
2050	0	0	62,727	56,454	10,000	72,727	66,454
2051	0	0	63,259	56,933	10,000	73,259	66,933
2052	0	0	63,796	57,416	10,000	73,796	67,416
2053	0	0	64,337	57,904	10,000	74,337	67,904
2054	0	0	64,883	58,395	10,000	74,883	68,395
2055	0	0	65,434	58,890	10,000	75,434	68,890
2056	0	0	65,989	59,390	10,000	75,989	69,390
2057	0	0	66,549	59,894	10,000	76,549	69,894
2058	0	0	67,113	60,402	10,000	77,113	70,402
2059	0	0	67,683	60,915	10,000	77,683	70,915
2060	0	0	68,257	61,431	10,000	78,257	71,431
2061	0	0	68,836	61,953	10,000	78,836	71,953
2062	0	0	69,420	62,478	10,000	79,420	72,478
2063	0	0	70,009	63,008	10,000	80,009	73,008
2064	0	0	70,603	63,543	10,000	80,603	73,543
2065	0	0	71,202	64,082	10,000	81,202	74,082
2066	0	0	71,807	64,626	10,000	81,807	74,626

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
SPRING 2013

Exhibit 2.1
Total Expenditures

Calendar	Land Reclamation		Water Reclamation				
Year	Gross	Net	Gross	Net	Operating Expense	Gross Total	Net Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
2067	0	0	72,416	65,174	10,000	82,416	75,174
2068	0	0	73,030	65,727	10,000	83,030	75,727
2069	0	0	73,650	66,285	10,000	83,650	76,285
2070	0	0	74,275	66,847	10,000	84,275	76,847
2071	0	0	74,905	67,415	10,000	84,905	77,415
2072	0	0	75,541	67,987	10,000	85,541	77,987
2073	0	0	76,182	68,563	10,000	86,182	78,563
2074	0	0	76,828	69,145	10,000	86,828	79,145
2075	0	0	77,480	69,732	10,000	87,480	79,732
2076	0	0	78,137	70,324	10,000	88,137	80,324
2077	0	0	78,800	70,920	10,000	88,800	80,920
2078	0	0	79,469	71,522	10,000	89,469	81,522
2079	0	0	80,143	72,129	10,000	90,143	82,129
2080	0	0	80,823	72,741	10,000	90,823	82,741
2081	0	0	81,509	73,358	10,000	91,509	83,358
2082	0	0	82,201	73,980	10,000	92,201	83,980
2083	0	0	82,898	74,608	10,000	92,898	84,608
2084	0	0	83,601	75,241	10,000	93,601	85,241
2085	0	0	84,311	75,880	10,000	94,311	85,880
2086	0	0	85,026	76,523	10,000	95,026	86,523
2087	0	0	85,747	77,173	10,000	95,747	87,173
Total	14,845,006	13,392,476	4,667,465	4,200,719	1,260,000	20,772,471	18,853,194

Footnotes:

(1) Exhibit 2.2 Col (3). Inflated and discounted reclamation costs.
(2) Exhibit 2.2 Col (6). Inflated and discounted reclamation costs.
(3) Exhibit 2.3 Col (3). Inflated and discounted reclamation costs.
(4) Exhibit 2.3 Col (6). Inflated and discounted reclamation costs.
(5) Client provided data
(6) Col (1) + Col (3) + Col (5)
(7) Col (2) + Col (4) + Col (5)

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
SPRING 2013

Exhibit 2.2
Land Reclamation Expenditures

Calendar Year	Gross of Bond	Gross Inflated	Gross Discounted	Net of Bond	Net Inflated	Net Discounted
	(1)	(2)	(3)	(4)	(5)	(6)
2012						
2013	1,707,867	1,741,690	1,739,517	1,537,422	1,567,869	1,565,913
2014	1,839,647	1,951,122	1,943,828	1,656,870	1,757,270	1,750,700
2015	1,872,072	2,064,932	2,050,805	1,686,099	1,859,800	1,847,076
2016	1,754,995	2,013,226	1,990,149	1,578,626	1,810,906	1,790,148
2017	1,246,824	1,487,494	1,460,875	1,126,868	1,344,383	1,320,325
2018	1,246,824	1,546,994	1,506,133	1,126,868	1,398,158	1,361,228
2019	1,246,824	1,608,874	1,548,953	1,126,868	1,454,084	1,399,929
2020	399,130	535,630	508,687	360,814	484,209	459,853
2021	399,130	557,055	520,576	360,814	503,578	470,600
2022	399,130	579,337	531,435	360,814	523,721	480,417
2023	399,130	602,511	541,696	360,814	544,670	489,693
2024	56,579	88,825	78,228	51,491	80,838	71,194
2025	56,579	92,378	79,653	51,491	84,071	72,490
2026	56,579	96,073	81,056	51,491	87,434	73,767
2027	44,116	77,907	64,280	40,050	70,728	58,356
2028	44,116	81,023	65,341	40,050	73,557	59,320
2029	44,116	84,264	66,385	40,050	76,499	60,268
2030	44,116	87,635	67,409	40,050	79,559	61,197
2031	0	0	0	0	0	0
2032	0	0	0	0	0	0
2033	0	0	0	0	0	0
Total	12,857,773	15,296,970	14,845,006	11,597,549	13,801,334	13,392,476

Footnotes:

(1) See report for details
(2) Col (1) x 4% annual inflation
(3) Col (2) + Col (2) x Exhibit 9 Col (3)
(4) See report for details
(5) Col (4) x 4% annual inflation
(6) Col (5) + Col (5) x Exhibit 9 Col (3)

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
SPRING 2013

Exhibit 2.3
Water Reclamation Expenditures

Calendar Year	Gross of Bond	Gross Inflated	Gross Discounted	Net of Bond	Net Inflated	Net Discounted
	(1)	(2)	(3)	(4)	(5)	(6)
2012						
2013	33,333	33,993	33,951	30,000	30,594	30,556
2014	33,333	35,353	35,221	30,000	31,818	31,699
2015	33,333	36,767	36,516	30,000	33,091	32,864
2016	33,333	38,238	37,800	30,000	34,414	34,020
2017	33,333	39,768	39,056	30,000	35,791	35,150
2018	33,333	41,358	40,266	30,000	37,222	36,239
2019	33,333	43,013	41,411	30,000	38,711	37,270
2020	33,333	44,733	42,483	30,000	40,260	38,235
2021	33,333	46,522	43,476	30,000	41,870	39,128
2022	33,333	48,383	44,383	30,000	43,545	39,944
2023	33,333	50,319	45,240	30,000	45,287	40,716
2024	33,333	52,331	46,088	30,000	47,098	41,479
2025	33,333	54,425	46,928	30,000	48,982	42,235
2026	33,333	56,602	47,754	30,000	50,941	42,979
2027	33,333	58,866	48,569	30,000	52,979	43,712
2028	33,333	61,220	49,371	30,000	55,098	44,434
2029	33,333	63,669	50,160	30,000	57,302	45,144
2030	33,333	66,216	50,934	30,000	59,594	45,840
2031	33,333	68,865	51,689	30,000	61,978	46,520
2032	33,333	71,619	52,428	30,000	64,457	47,185
2033	33,333	74,484	53,148	30,000	67,035	47,833
2034	33,333	77,463	53,847	30,000	69,717	48,463
2035	33,333	80,562	54,526	30,000	72,506	49,074
2036	33,333	83,784	55,184	30,000	75,406	49,666
2037	33,333	87,136	55,820	30,000	78,422	50,238
2038	33,333	90,621	56,433	30,000	81,559	50,790
2039	33,333	94,246	57,020	30,000	84,821	51,318
2040	33,333	98,016	57,582	30,000	88,214	51,824
2041	33,333	101,936	58,118	30,000	91,743	52,307
2042	33,333	106,014	58,627	30,000	95,412	52,765
2043	33,333	110,254	59,125	30,000	99,229	53,212
2044	33,333	114,664	59,626	30,000	103,198	53,664
2045	33,333	119,251	60,132	30,000	107,326	54,119
2046	33,333	124,021	60,642	30,000	111,619	54,578
2047	33,333	128,982	61,157	30,000	116,084	55,041
2048	33,333	134,141	61,676	30,000	120,727	55,508
2049	33,333	139,507	62,199	30,000	125,556	55,979
2050	33,333	145,087	62,727	30,000	130,578	56,454
2051	33,333	150,891	63,259	30,000	135,802	56,933
2052	33,333	156,926	63,796	30,000	141,234	57,416
2053	33,333	163,203	64,337	30,000	146,883	57,904
2054	33,333	169,731	64,883	30,000	152,758	58,395
2055	33,333	176,521	65,434	30,000	158,869	58,890
2056	33,333	183,582	65,989	30,000	165,223	59,390
2057	33,333	190,925	66,549	30,000	171,832	59,894
2058	33,333	198,562	67,113	30,000	178,706	60,402
2059	33,333	206,504	67,683	30,000	185,854	60,915
2060	33,333	214,764	68,257	30,000	193,288	61,431
2061	33,333	223,355	68,836	30,000	201,020	61,953
2062	33,333	232,289	69,420	30,000	209,060	62,478
2063	33,333	241,581	70,009	30,000	217,423	63,008
2064	33,333	251,244	70,603	30,000	226,120	63,543
2065	33,333	261,294	71,202	30,000	235,164	64,082
2066	33,333	271,746	71,807	30,000	244,571	64,626

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
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Exhibit 2.3
Water Reclamation Expenditures

Calendar Year	Gross of Bond	Gross Inflated	Gross Discounted	Net of Bond	Net Inflated	Net Discounted
	(1)	(2)	(3)	(4)	(5)	(6)
2067	33,333	282,615	72,416	30,000	254,354	65,174
2068	33,333	293,920	73,030	30,000	264,528	65,727
2069	33,333	305,677	73,650	30,000	275,109	66,285
2070	33,333	317,904	74,275	30,000	286,113	66,847
2071	33,333	330,620	74,905	30,000	297,558	67,415
2072	33,333	343,845	75,541	30,000	309,460	67,987
2073	33,333	357,599	76,182	30,000	321,839	68,563
2074	33,333	371,903	76,828	30,000	334,712	69,145
2075	33,333	386,779	77,480	30,000	348,101	69,732
2076	33,333	402,250	78,137	30,000	362,025	70,324
2077	33,333	418,340	78,800	30,000	376,506	70,920
2078	33,333	435,073	79,469	30,000	391,566	71,522
2079	33,333	452,476	80,143	30,000	407,229	72,129
2080	33,333	470,575	80,823	30,000	423,518	72,741
2081	33,333	489,398	81,509	30,000	440,459	73,358
2082	33,333	508,974	82,201	30,000	458,077	73,980
2083	33,333	529,333	82,898	30,000	476,400	74,608
2084	33,333	550,507	83,601	30,000	495,456	75,241
2085	33,333	572,527	84,311	30,000	515,274	75,880
2086	33,333	595,428	85,026	30,000	535,885	76,523
2087	33,333	619,245	85,747	30,000	557,321	77,173
Total	2,500,000	15,250,534	4,667,465	2,250,000	13,725,481	4,200,719

Footnotes:

(1) Exhibit 10.1 Row (20), spread over 75 years

(2) Col (1) x 4% annual inflation

(3) Col (2) + Col (2) x Exhibit 9 Col (3)
Years 2043 through 2087 based on
3.125% discount factor

(4) Exhibit 10.1 Row (22), spread over 75 years

(5) Col (4) x 4% annual inflation

(6) Col (5) + Col (5) x Exhibit 9 Col (3)
Years 2043 through 2087 based on
3.125% discount factor

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
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Exhibit 3.1
Remaining Performance Security Requirement

Years Since Issuance	Active Pending Phase 1 Release	Final Map Pending Phase 1 Release	Pending Phase 2 Release	Pending Phase 3 Release
	(1)	(2)	(3)	(4)
1	100%	100%	50%	15%
2	100%	100%	50%	15%
3	100%	100%	50%	15%
4	100%	50%	50%	15%
5	100%	50%	15%	15%
6	100%	50%	15%	15%
7	100%	50%	15%	15%
8	50%	15%	15%	
9	50%	15%	15%	
10	50%	15%	15%	
11	50%	15%	15%	
12	15%	15%		
13	15%	15%		
14	15%	15%		
15	15%			
16	15%			
17	15%			
18	15%			
19				
20				

Footnotes:

(1) - (4) Judgmentally selected based on historic Ohio timing of various stages of the mining and reclamation process

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
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Exhibit 3.2
Reclamation Lifecycles

Evaluation	Final Map to Phase 1 release			Phase 1 release to Phase 2 release			Phase 2 release to Phase 3 release		
Year	Permit Count	Acres	Avg # Yrs	Permit Count	Acres	Avg # Yrs	Permit Count	Acres	Avg # Yrs
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1999	115	5,470	1.9	129	7,117	3.9	147	5,961	6.5
2000	73	2,615	1.2	113	4,751	3.8	179	8,688	6.5
2001	91	7,671	1.7	117	7,640	3.6	162	6,844	6.9
2002	73	2,444	1.3	78	2,862	3.5	110	5,277	6.8
2003	87	4,840	2.6	62	2,603	3.7	105	4,800	7.2
2004	67	2,778	1.7	62	2,519	3.6	108	5,121	7.2
2005	70	3,357	1.2	50	2,415	3.3	73	2,519	6.0
2006	70	2,580	2.2	71	4,187	3.6	78	3,452	6.8
2007	53	2,216	1.6	61	2,675	4.2	81	3,125	7.8
2008	64	3,221	1.7	63	2,348	4.0	69	2,558	6.7
2009	40	2,030	1.8	57	1,852	5.2	50	2,358	8.5
2010	44	2,475	1.9	46	2,114	6.0	70	3,037	8.0
2011	54	2,285	3.4	68	3,181	4.3	73	3,081	7.0
2012	36	2,083	4.4	33	1,512	7.4	61	2,687	9.5
Total	937	46,065		1,010	47,776		1,366	59,508	
Average	67	3,290	2.04	72	3,413	4.29	98	4,251	7.24
Selected			3.00			4.00			7.00

Footnotes:

Yrs 1999 - 2011 from Office of Surface Mining Reclamation and Enforcement report
"A Report on the Success of Achieving Reclamation Standards on Surface Coal Mining Operations in Ohio"
Yr 2012 from client provided data

OHIO RECLAMATION FORFEITURE FUND ANALYSIS

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Exhibit 4.1

Performance Security Estimate (PSE)

PSE	**Spring 2013**	Spring 2011	2013 vs. 2011
(1) Total Constant PSE	**424,121,656**	252,891,003	171,230,653
(2) Total PSE without Constant	**448,080,344**	479,411,077	-31,330,733
(3) Total PSE	**872,202,000**	732,302,080	139,899,920
(4) Final Map PSE	**170,182,000**	170,812,000	-630,000
(5) Active PSE	**529,266,142**	396,722,889	132,543,253
(6) Total Adjusted PSE	**699,448,142**	567,534,889	131,913,253
(7) Bond Amount	**71,783,943**	69,293,576	2,490,367
(8) Total Net Adjusted PSE	**627,664,199**	498,241,313	129,422,886

Footnotes:

(1), (3), (4), (5), (6), (8)	See report for details
(2)	Row (3) - Row (1)
(7)	Row (6) - Row (8)

Spring 2011 Amounts from the Spring 2011 Report by Pinnacle

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
SPRING 2013

Exhibit 4.2
Net Adjusted PSE by Mine Status

Phase	**Spring 2013**	Spring 2011	2013 vs. 2011
(1) Active - Pending Phase 1 release	**420,449,906**	271,267,028	149,182,877
(2) Active - Pending Phase 2 release	**30,432,476**	61,646,604	-31,214,128
(3) Active - Pending Phase 3 release	**28,552,017**	16,381,793	12,170,224
(4) Active - Total	**479,434,399**	349,295,425	130,138,974
(5) Final Map - Pending Phase 1 release	**139,564,625**	138,898,250	666,375
(6) Final Map - Pending Phase 2 release	**6,455,063**	7,838,688	-1,383,625
(7) Final Map - Pending Phase 3 release	**2,210,113**	2,208,950	1,163
(8) Final Map - Total	**148,229,800**	148,945,888	-716,088
(9) Total Net Adjusted PSE	**627,664,199**	498,241,313	129,422,886

Footnotes:

(1) - (8)	See report for details
(9)	Row (4) + Row (8)

Spring 2011 Amounts from the Spring 2011 Report by Pinnacle

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
SPRING 2013

Exhibit 4.3
Average PSE

PSE Average	**Spring 2013**	Spring 2011	2013 vs. 2011
(1) Total PSE Per Permit Count	**3,108,658**	2,384,600	23.29%
(2) Net Adj PSE Per Permit Count	**2,789,619**	2,093,451	24.96%
(3) Total PSE Per Bonded Acre	**8,667**	6,312	27.17%
(4) Net Adj PSE Per Bonded Acre	**7,778**	5,541	28.75%
(5) Total PSE Per Permit Count w/ PSE > Bond	**3,346,642**	2,782,034	16.87%
(6) Net Adj PSE Per Permit Count w/ PSE > Bond	**3,003,178**	2,442,359	18.67%

Footnotes:

(1)	Exhibit 4.1 Row (6) / Exhibit 8.6a Col (9) Total
(2)	Exhibit 4.1 Row (8) / Exhibit 8.6a Col (9) Total
(3)	Exhibit 4.1 Row (6) / Exhibit 8.6b Col (9) Total
(4)	Exhibit 4.1 Row (8) / Exhibit 8.6b Col (9) Total
(5)	Exhibit 4.1 Row (6) / Exhibit 8.2 Col (9) Total
(6)	Exhibit 4.1 Row (8) / Exhibit 8.2 Col (9) Total

Spring 2011 Amounts from the Spring 2011 Report by Pinnacle

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
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Exhibit 5
Ratio of Affected-to-Permitted Active Acres

Affected Acres Ratio	Permit Count
	(1)
0%	14
0.1 to 25%	12
25.1 to 50%	25
50.1 to 67.5%	27
67.6 to 100%	47
Total Active Permits	125

Footnotes:
See report for details

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
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Exhibit 6.1 **Forfeiture Rates**	
Years Since Issuance	All Permit Types (1)
1	0.00%
2	0.00%
3	0.37%
4	0.37%
5	0.37%
6	0.37%
7	0.37%
8	0.37%
9	0.37%
10	0.37%
11	0.37%
12	0.37%
13	0.37%
14	0.37%
15	0.37%
16	0.37%
17	0.37%
18	0.37%
19	0.37%
20	0.37%

Footnotes:
(1) Exhibit 6.2 Row (8)

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
SPRING 2013

Exhibit 6.2
Forfeiture Rate Calculation

Calendar Year	Number of Permits		Forfeiture Rate
	Issued	Forfeited	
	(1)	(2)	(3)
1993	799	17	2.13%
1994	775	6	0.77%
1995	722	27	3.74%
1996	683	4	0.59%
1997	579	4	0.69%
1998	568	4	0.70%
1999	563	17	3.02%
2000	456	2	0.44%
2001	389	4	1.03%
2002	363	1	0.28%
2003	357	3	0.84%
2004	356	1	0.28%
2005	338	8	2.37%
2006	329	0	0.00%
2007	321	0	0.00%
2008	308	0	0.00%
2009	290	0	0.00%
2010	266	0	0.00%
2011	252	0	0.00%
2012	N/A	0	N/A
Total	8,714	98	1.12%
(4a) Average lifetime of permit			18.00
(4b) Selected avg lifetime of permits w/o forfeitures			16.00
(5) Ohio indicated forfeiture annual rate			0.07%
(6) Kentucky forfeiture annual rate			1.10%
(7) West Virginia forfeiture annual rate			1.14%
(8) Ohio selected forfeiture annual rate			0.37%

Footnotes:

(1)	Historical Ohio permit data
(2)	Historical Ohio permit data
(3)	Col (2) / Col (1)
(4a)	Exhibit 3.1
(4b)	Selected average lifetime based on assumption of minimal forfeitures within the first two years of issuance
(5)	Col (3) / Row (4b)
(6)	From Pinnacle analysis of Kentucky data applied to Ohio permit count by mine type distribution
(7)	From Pinnacle analysis of West Virginia data applied to Ohio permit count by mine type distribution
(8)	Selected based on rows (5) through (7)

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
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Exhibit 6.3
Forfeiture Rate Adjustment Factor for Mine Status

Mine Status	Factor
	(1)
Active, Pending Phase 1 Release	1.00
Final Map, Pending Phase 1 Release	0.80
Pending Phase 2 Release	0.67
Pending Phase 3 Release	0.33

Footnotes:
(1) Judgmentally selected

These factors are intended to reflect that the probability of forfeiture declines as the reclamation process moves from active mining to reclamation and on to final release.

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
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Exhibit 7
Net Reclamation Cost by Mine Status

Phase	**Spring 2013**	Spring 2011	2013 vs. 2011
(1) Active - Pending Phase 1 release	**9,110,576**	23,279,440	-14,168,864
(2) Active - Pending Phase 2 release	**339,359**	1,491,776	-1,152,416
(3) Active - Pending Phase 3 release	**244,034**	192,800	51,234
(4) Active - Total	**9,693,970**	24,964,016	-15,270,046
(5) Final Map - Pending Phase 1 release	**1,813,560**	4,363,792	-2,550,232
(6) Final Map - Pending Phase 2 release	**71,130**	201,678	-130,549
(7) Final Map - Pending Phase 3 release	**18,890**	22,973	-4,084
(8) Final Map - Total	**1,903,579**	4,588,444	-2,684,865
(9) Total Net Reclamation Cost	**11,597,549**	29,552,459	-17,954,911

Footnotes:

(1), (2), (3), (5), (6), (7)	See report for details
(4)	Row (1) + Row (2) + Row (3)
(8)	Row (5) + Row (6) + Row (7)
(9)	Row (4) + Row (8)

Spring 2011 Amounts from the Spring 2011 Report by Pinnacle

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
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Exhibit 8.1a
Permit Information by Parent Company

Parent Company	Total PSE	Net Adjusted PSE	Permit Count	Implied Bond Acres	Net Reclamation Cost
	(1)	(2)	(3)	(4)	(5)
OXFORD RESOURCES PARTNERS	259,099,000	159,028,180	66	34,725	3,274,468
MURRAY ENERGY	146,825,000	113,540,550	13	6,954	2,471,355
CONSOLIDATED COAL COMPANY	118,319,000	116,839,688	9	5,347	1,579,241
RHINO ENERGY, LLC	92,026,000	74,586,025	10	5,295	1,211,342
WATERLOO COAL COMPANY INC	57,580,000	39,224,100	13	4,434	647,426
ROSEBUD MINING COMPANY	34,472,000	16,669,214	29	4,928	304,690
ANTHONY MINING COMPANY INC.	26,607,000	19,857,266	7	1,105	410,416
KIMBLE CLAY & LIMESTONE	25,926,000	10,275,856	15	4,371	212,297
DTE DICKERSON LLC	25,124,000	22,159,622	1	83	481,309
VALLEY MINING INC	21,624,000	13,871,842	9	4,037	227,736
BUCKINGHAM COAL COMPANY	12,419,000	9,236,673	5	3,016	246,441
B&N COAL INC	11,071,000	4,272,459	10	1,619	71,175
HERITAGE COAL COMPANY LLC	9,791,000	9,416,625	1	384	116,177
MARIETTA COAL COMPANY	8,476,000	4,724,265	9	1,642	76,687
SIDWELL MATERIALS INC	8,317,000	5,165,448	2	696	97,419
ETTA MAE INC	3,474,000	1,180,266	1	110	13,337
AMERICAN LANDFILL INC	3,056,000	2,241,653	1	82	48,472
THOMPSON BROTHERS MINING	2,257,000	1,532,688	4	186	25,240
L & M MINERAL CO	1,589,000	1,122,793	2	531	36,087
FRANKLIN MINERAL	774,000	616,753	1	80	12,145
R T G INC	653,000	426,250	1	200	5,631
CRAVAT COAL CO	558,000	457,775	4	254	3,940
COUNTYWIDE RECYCLING & DISPOSAL FACILITY	558,000	362,821	1	205	11,661
AMERIKOHL MINING INC	535,000	461,475	3	148	4,740
SCHANEY MINING	358,000	73,026	1	38	2,347
STATE LINE RESOURCES INC	328,000	137,794	2	54	2,993
F & M COAL CO	207,000	87,091	1	9	1,892
SAGINAW MINING CO	66,000	36,900	1	78	315
RED MALCUIT INC	60,000	35,475	1	65	303
RITCHIE MINING	42,000	23,625	1	25	267
CHAMBERS DEVL OF OHIO INC	11,000	0	1	1	0
Total	**872,202,000**	**627,664,199**	**225**	**80,699**	**11,597,549**
Spring 2011 Total	732,302,080	498,241,313	238	89,912	29,552,459
2013 vs. 2011	139,899,920	129,422,886	-13	-9,213	-17,954,911

Footnotes:
(1), (2), (3), (4), (5) See report for details

Spring 2011 Amounts from the Spring 2011 Report by Pinnacle

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
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Exhibit 8.1b
Top Five Parent Companies

Parent Company	Net Adjusted PSE			Net Reclamation Cost		
	Amount	% of Total	Average	Amount	% of Total	Average
	(1)	(2)	(3)	(4)	(5)	(6)
OXFORD RESOURCES PARTNERS	159,028,180	25.34%		3,274,468	28.23%	
MURRAY ENERGY	113,540,550	18.09%		2,471,355	21.31%	
CONSOLIDATED COAL COMPANY	116,839,688	18.61%		1,579,241	13.62%	
RHINO ENERGY, LLC	74,586,025	11.88%		1,211,342	10.44%	
WATERLOO COAL COMPANY INC	39,224,100	6.25%		647,426	5.58%	
Subtotal	503,218,543	80.17%	100,643,709	9,183,831	79.19%	1,836,766
Remaining Parent Companies	124,445,656	19.83%	4,977,826	2,413,718	20.81%	96,549
Total	**627,664,199**	**100.00%**	**20,922,140**	**11,597,549**	**100.00%**	**386,585**
Spring 2011 Total	498,241,313		12,775,418	29,552,459		757,755
2013 vs. 2011	129,422,886		38.94%	-17,954,911		-96.01%

Footnotes:

(1)	Exhibit 8.1a Col (2)
(2)	Col (1) / Total Col (1)
(3)	Derived from Exhibit 8.1a Col (2)
(4)	Exhibit 8.1a Col (5)
(5)	Col (4) / Total Col (4)
(6)	Derived from Exhibit 8.1a Col (5)

Spring 2011 Amounts from the Spring 2011 Report by Pinnacle

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
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Exhibit 8.1c
Parent Company Counts by PSE Range and Net Reclamation Cost Range

Net Adjusted PSE	Company Count	Net Reclamation Cost	Company Count
(1)	(2)	(3)	(4)
$0	1	$0	1
$0 to 100K	5	$0 to 10K	9
$100K to 1M	6	$10K to 100K	9
$1M to 2.5M	4	$100K to 500K	7
$2.5M to 5M	2	$500K to 1M	1
$5M to 9M	1	$1M to 2M	2
$9M to 25M	7	$2M to 5M	2
Over $25M	5	Over $5M	0
Total	**31**	**Total**	**31**

Footnotes:

(2) Exhibit 8.1a Col (2)
(4) Exhibit 8.1a Col (5)

Spring 2011 Amounts from the Spring 2011 Report by Pinnacle

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
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Exhibit 8.2
Permits Counts with a Performance Security Estimate Greater Than Bond on Hand

Issue	Active				Final Map				Total
Year	Phase 1	Phase 2	Phase 3	Total	Phase 1	Phase 2	Phase 3	Total	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1982	0	0	1	1	0	0	0	0	1
1983	7	0	0	7	2	0	0	2	9
1984	8	1	0	9	3	0	2	5	14
1985	1	0	0	1	1	1	0	2	3
1986	0	0	0	0	0	1	2	3	3
1987	4	0	0	4	2	0	2	4	8
1988	1	2	0	3	1	1	0	2	5
1989	1	0	0	1	1	0	1	2	3
1990	0	0	0	0	1	1	0	2	2
1991	1	0	0	1	1	0	1	2	3
1992	1	2	1	4	0	1	1	2	6
1993	3	0	0	3	2	1	1	4	7
1994	2	1	1	4	1	0	0	1	5
1995	0	0	1	1	0	1	0	1	2
1996	1	0	0	1	0	2	1	3	4
1997	0	0	0	0	1	0	2	3	3
1998	8	1	0	9	1	1	0	2	11
1999	2	0	0	2	1	0	3	4	6
2000	1	0	1	2	1	1	1	3	5
2001	1	0	1	2	1	1	3	5	7
2002	2	0	0	2	1	2	1	4	6
2003	5	0	0	5	0	0	0	0	5
2004	5	2	0	7	2	3	4	9	16
2005	3	0	0	3	1	1	0	2	5
2006	8	0	0	8	2	4	4	10	18
2007	8	0	0	8	2	0	1	3	11
2008	6	0	0	6	2	1	0	3	9
2009	5	0	0	5	1	1	0	2	7
2010	5	0	0	5	0	2	0	2	7
2011	10	0	0	10	0	0	0	0	10
2012	8	0	0	8	0	0	0	0	8
Total	**107**	**9**	**6**	**122**	**31**	**26**	**30**	**87**	**209**
Spring 2011 Total				119				85	204
2013 vs. 2011				3				2	5

Footnotes:

(1) Client provided data, Pending Phase 1 Release
(2) Client provided data, Pending Phase 2 Release
(3) Client provided data, Pending Phase 3 Release
(4) Sum of Col (1) through Col (3)

(5) Client provided data, Pending Phase 1 Release
(6) Client provided data, Pending Phase 2 Release
(7) Client provided data, Pending Phase 3 Release
(8) Sum of Col (5) through Col (7)
(9) Col (4) + Col (8)

Spring 2011 Amounts from the Spring 2011 Report by Pinnacle

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
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Exhibit 8.3a
Permits Counts by Mine Status and Year of Issuance - Surface

Issue Year	Active				Final Map				Total
	Phase 1	Phase 2	Phase 3	Total	Phase 1	Phase 2	Phase 3	Total	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1982	0	0	0	0	0	0	0	0	0
1983	2	0	0	2	0	0	0	0	2
1984	1	1	0	2	1	0	2	3	5
1985	0	0	0	0	0	1	0	1	1
1986	0	0	0	0	0	2	2	4	4
1987	2	0	0	2	2	0	2	4	6
1988	1	1	0	2	1	2	0	3	5
1989	0	0	0	0	1	1	1	3	3
1990	0	0	0	0	1	1	0	2	2
1991	1	0	0	1	1	1	1	3	4
1992	1	2	1	4	0	2	1	3	7
1993	3	0	0	3	2	1	1	4	7
1994	2	1	1	4	1	0	0	1	5
1995	1	0	1	2	0	1	0	1	3
1996	2	0	0	2	0	2	1	3	5
1997	0	0	0	0	1	0	2	3	3
1998	8	0	0	8	1	1	0	2	10
1999	2	0	0	2	1	0	3	4	6
2000	1	0	1	2	2	1	1	4	6
2001	1	0	1	2	2	1	3	6	8
2002	2	0	0	2	1	2	1	4	6
2003	4	0	0	4	1	0	0	1	5
2004	4	2	0	6	2	3	4	9	15
2005	3	0	0	3	2	2	0	4	7
2006	7	0	0	7	2	4	4	10	17
2007	8	0	0	8	2	1	1	4	12
2008	6	0	0	6	2	1	0	3	9
2009	4	0	0	4	1	2	0	3	7
2010	4	0	0	4	0	2	0	2	6
2011	11	0	0	11	0	0	0	0	11
2012	8	0	0	8	0	0	0	0	8
Total	**89**	**7**	**5**	**101**	**30**	**34**	**30**	**94**	**195**
Spring 2011 Total				103				104	207
2013 vs. 2011				-2				-10	-12

Permits Released Since Spring 2011	34
Total PSE of Permits Released Since Spring 2011	9,316,000
Net Adjusted PSE of Permits Released Since Spring 2011	5,386,771

Permits Issued Since Spring 2011	21
Total PSE of Permits Issued Since Spring 2011	84,994,000
Net Adjusted PSE of Permits Issued Since Spring 2011	41,940,724

Permits remaining in system from Spring 2011 to Spring 2013	174
Total PSE change of permits remaining in system from Spring 2011 to Spring 2013	21,609,000
Net Adjusted PSE change of permits remaining in system from Spring 2011 to Spring 2013	53,344,254

Footnotes:

(1) Client provided data, Pending Phase 1 Release
(2) Client provided data, Pending Phase 2 Release
(3) Client provided data, Pending Phase 3 Release
(4) Sum of Col (1) through Col (3)
(5) Client provided data, Pending Phase 1 Release
(6) Client provided data, Pending Phase 2 Release
(7) Client provided data, Pending Phase 3 Release
(8) Sum of Col (5) through Col (7)
(9) Col (4) + Col (8)

Spring 2011 Amounts from the Spring 2011 Report by Pinnacle

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
SPRING 2013

Exhibit 8.3b
Implied Bonded Acres by Mine Status and Year of Issuance - Surface

Issue	Active				Final Map				Total
Year	Phase 1	Phase 2	Phase 3	Total	Phase 1	Phase 2	Phase 3	Total	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1982	0	0	0	0	0	0	0	0	0
1983	290	0	0	290	0	0	0	0	290
1984	97	39	55	191	16	23	126	166	356
1985	0	0	0	0	0	29	62	91	91
1986	0	0	0	0	0	133	615	748	748
1987	309	19	28	356	76	367	990	1,433	1,789
1988	0	32	46	78	4	201	427	631	709
1989	0	0	0	0	0	195	548	743	743
1990	0	0	0	0	45	81	142	268	268
1991	132	0	0	132	1	114	396	511	643
1992	3	149	256	408	0	54	147	201	609
1993	65	185	381	631	72	256	1,006	1,334	1,965
1994	22	495	968	1,485	171	491	1,046	1,709	3,193
1995	1	0	69	70	0	147	210	358	427
1996	244	50	146	441	0	352	831	1,183	1,624
1997	0	0	0	0	75	249	524	847	847
1998	350	683	1,510	2,543	6	77	149	233	2,775
1999	22	67	170	259	0	0	246	246	505
2000	213	530	858	1,601	22	39	213	275	1,875
2001	11	152	465	627	56	868	1,897	2,821	3,448
2002	41	196	365	602	23	157	656	836	1,438
2003	386	255	365	1,006	126	247	354	727	1,733
2004	126	309	442	878	43	280	1,017	1,339	2,217
2005	41	219	397	657	236	671	965	1,872	2,528
2006	1,250	540	805	2,595	139	462	1,003	1,604	4,200
2007	4,933	841	1,326	7,100	304	513	822	1,639	8,738
2008	531	848	1,212	2,591	285	547	782	1,614	4,205
2009	107	192	274	572	22	143	204	369	941
2010	3,451	75	108	3,635	0	64	91	155	3,790
2011	12,321	27	39	12,387	0	0	0	0	12,387
2012	3,505	0	0	3,505	0	0	0	0	3,505
Total	**28,451**	**5,903**	**10,283**	**44,638**	**1,723**	**6,762**	**15,465**	**23,950**	**68,588**
Spring 2011 Total				49,315				23,585	72,901
2013 vs. 2011				-4,677				365	-4,312

Acres Released Since Spring 2011	6,573

Acres Issued Since Spring 2011	16,283

Footnotes:

(1) Client provided data, Pending Phase 1 Release
(2) Client provided data, Pending Phase 2 Release
(3) Client provided data, Pending Phase 3 Release
(4) Sum of Col (1) through Col (3)
(5) Client provided data, Pending Phase 1 Release
(6) Client provided data, Pending Phase 2 Release
(7) Client provided data, Pending Phase 3 Release
(8) Sum of Col (5) through Col (7)
(9) Col (4) + Col (8)

Spring 2011 Amounts from the Spring 2011 Report by Pinnacle

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
SPRING 2013

Exhibit 8.4a
Permits Counts by Mine Status and Year of Issuance - Underground

Issue	Active				Final Map				Total
Year	Phase 1	Phase 2	Phase 3	Total	Phase 1	Phase 2	Phase 3	Total	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1982	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0
1984	4	0	0	4	3	0	0	3	7
1985	0	0	0	0	1	0	0	1	1
1986	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0
1998	0	1	0	1	0	0	0	0	1
1999	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0
2004	1	0	0	1	0	0	0	0	1
2005	0	0	0	0	0	0	0	0	0
2006	1	0	0	1	0	0	0	0	1
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	1	0	0	1	0	0	0	0	1
2011	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0
Total	**7**	**1**	**0**	**8**	**4**	**0**	**0**	**4**	**12**
Spring 2011 Total				8				5	13
2013 vs. 2011				0				-1	-1

Permits Released Since Spring 2011	0
Total PSE of Permits Released Since Spring 2011	0
Net Adjusted PSE of Permits Released Since Spring 2011	0

Permits Issued Since Spring 2011	0
Total PSE of Permits Issued Since Spring 2011	0
Net Adjusted PSE of Permits Issued Since Spring 2011	0

Permits remaining in system from Spring 2011 to Spring 2013	12
Total PSE change of permits remaining in system from Spring 2011 to Spring 2013	21,098,000
Net Adjusted PSE change of permits remaining in system from Spring 2011 to Spring 2013	19,826,040

Footnotes:

(1) Client provided data, Pending Phase 1 Release
(2) Client provided data, Pending Phase 2 Release
(3) Client provided data, Pending Phase 3 Release
(4) Sum of Col (1) through Col (3)
(5) Client provided data, Pending Phase 1 Release
(6) Client provided data, Pending Phase 2 Release
(7) Client provided data, Pending Phase 3 Release
(8) Sum of Col (5) through Col (7)
(9) Col (4) + Col (8)

Spring 2011 Amounts from the Spring 2011 Report by Pinnacle

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
SPRING 2013

Exhibit 8.4b
Implied Bonded Acres by Mine Status and Year of Issuance - Underground

Issue	Active				Final Map				Total
Year	Phase 1	Phase 2	Phase 3	Total	Phase 1	Phase 2	Phase 3	Total	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1982	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0
1984	2,204	57	82	2,343	475	914	1,306	2,695	5,037
1985	0	0	0	0	8	204	291	502	502
1986	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0
1998	0	3	4	6	0	0	0	0	6
1999	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0
2003	0	0	0	0	0	0	0	0	0
2004	1,153	0	0	1,153	0	0	0	0	1,153
2005	0	0	0	0	0	0	0	0	0
2006	1,182	0	0	1,182	0	0	0	0	1,182
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0
2010	662	0	0	662	0	0	0	0	662
2011	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0
Total	**5,201**	**60**	**85**	**5,346**	**483**	**1,118**	**1,597**	**3,197**	**8,543**
Spring 2011 Total				4,424				7,727	12,151
2013 vs. 2011				922				-4,530	-3,608

Acres Released Since Spring 2011	0

Acres Issued Since Spring 2011	0

Footnotes:

(1) Client provided data, Pending Phase 1 Release
(2) Client provided data, Pending Phase 2 Release
(3) Client provided data, Pending Phase 3 Release
(4) Sum of Col (1) through Col (3)
(5) Client provided data, Pending Phase 1 Release
(6) Client provided data, Pending Phase 2 Release
(7) Client provided data, Pending Phase 3 Release
(8) Sum of Col (5) through Col (7)
(9) Col (4) + Col (8)

Spring 2011 Amounts from the Spring 2011 Report by Pinnacle

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
SPRING 2013

Exhibit 8.5a
Permits Counts by Mine Status and Year of Issuance - Facility Operations

Issue	Active				Final Map				Total
Year	Phase 1	Phase 2	Phase 3	Total	Phase 1	Phase 2	Phase 3	Total	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1982	0	0	1	1	0	0	0	0	1
1983	5	0	0	5	2	0	0	2	7
1984	3	0	0	3	0	0	0	0	3
1985	1	0	0	1	0	0	0	0	1
1986	0	0	0	0	0	0	0	0	0
1987	2	0	0	2	0	0	0	0	2
1988	0	1	0	1	0	0	0	0	1
1989	1	0	0	1	0	0	0	0	1
1990	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0
2003	1	0	0	1	0	0	0	0	1
2004	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	1	0	0	1	0	0	0	0	1
2010	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0
Total	**14**	**1**	**1**	**16**	**2**	**0**	**0**	**2**	**18**
Spring 2011 Total				16				2	18
2013 vs. 2011				0				0	0

Permits Released Since Spring 2011	0
Total PSE of Permits Released Since Spring 2011	0
Net Adjusted PSE of Permits Released Since Spring 2011	0

Permits Issued Since Spring 2011	0
Total PSE of Permits Issued Since Spring 2011	0
Net Adjusted PSE of Permits Issued Since Spring 2011	0

Permits remaining in system from Spring 2011 to Spring 2013	18
Total PSE change of permits remaining in system from Spring 2011 to Spring 2013	21,514,920
Net Adjusted PSE change of permits remaining in system from Spring 2011 to Spring 2013	19,698,639

Footnotes:

(1) Client provided data, Pending Phase 1 Release
(2) Client provided data, Pending Phase 2 Release
(3) Client provided data, Pending Phase 3 Release
(4) Sum of Col (1) through Col (3)
(5) Client provided data, Pending Phase 1 Release
(6) Client provided data, Pending Phase 2 Release
(7) Client provided data, Pending Phase 3 Release
(8) Sum of Col (5) through Col (7)
(9) Col (4) + Col (8)

Spring 2011 Amounts from the Spring 2011 Report by Pinnacle

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
SPRING 2013

Exhibit 8.5b
Implied Bonded Acres by Mine Status and Year of Issuance - Facility Operations

Issue	Active				Final Map				Total
Year	Phase 1	Phase 2	Phase 3	Total	Phase 1	Phase 2	Phase 3	Total	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1982	0	0	4	4	0	0	0	0	4
1983	640	34	48	722	131	183	318	632	1,355
1984	1,233	6	9	1,248	0	0	0	0	1,248
1985	0	2	3	6	0	0	0	0	6
1986	0	0	0	0	0	0	0	0	0
1987	183	0	0	183	0	0	0	0	183
1988	0	35	53	88	0	0	0	0	88
1989	38	0	0	38	0	0	0	0	38
1990	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0	0
2002	0	0	0	0	0	0	0	0	0
2003	21	0	0	21	0	0	0	0	21
2004	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0
2009	625	0	0	625	0	0	0	0	625
2010	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0
Total	**2,740**	**78**	**117**	**2,935**	**131**	**183**	**318**	**632**	**3,567**
Spring 2011 Total				4,228				632	4,860
2013 vs. 2011				-1,293				0	-1,293

Acres Released Since Spring 2011	0

Acres Issued Since Spring 2011	0

Footnotes:

(1) Client provided data, Pending Phase 1 Release
(2) Client provided data, Pending Phase 2 Release
(3) Client provided data, Pending Phase 3 Release
(4) Sum of Col (1) through Col (3)
(5) Client provided data, Pending Phase 1 Release
(6) Client provided data, Pending Phase 2 Release
(7) Client provided data, Pending Phase 3 Release
(8) Sum of Col (5) through Col (7)
(9) Col (4) + Col (8)

Spring 2011 Amounts from the Spring 2011 Report by Pinnacle

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
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Exhibit 8.6a
Permits Counts by Mine Status and Year of Issuance - Total

Issue	Active				Final Map				Total
Year	Phase 1	Phase 2	Phase 3	Total	Phase 1	Phase 2	Phase 3	Total	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1982	0	0	1	1	0	0	0	0	1
1983	7	0	0	7	2	0	0	2	9
1984	8	1	0	9	4	0	2	6	15
1985	1	0	0	1	1	1	0	2	3
1986	0	0	0	0	0	2	2	4	4
1987	4	0	0	4	2	0	2	4	8
1988	1	2	0	3	1	2	0	3	6
1989	1	0	0	1	1	1	1	3	4
1990	0	0	0	0	1	1	0	2	2
1991	1	0	0	1	1	1	1	3	4
1992	1	2	1	4	0	2	1	3	7
1993	3	0	0	3	2	1	1	4	7
1994	2	1	1	4	1	0	0	1	5
1995	1	0	1	2	0	1	0	1	3
1996	2	0	0	2	0	2	1	3	5
1997	0	0	0	0	1	0	2	3	3
1998	8	1	0	9	1	1	0	2	11
1999	2	0	0	2	1	0	3	4	6
2000	1	0	1	2	2	1	1	4	6
2001	1	0	1	2	2	1	3	6	8
2002	2	0	0	2	1	2	1	4	6
2003	5	0	0	5	1	0	0	1	6
2004	5	2	0	7	2	3	4	9	16
2005	3	0	0	3	2	2	0	4	7
2006	8	0	0	8	2	4	4	10	18
2007	8	0	0	8	2	1	1	4	12
2008	6	0	0	6	2	1	0	3	9
2009	5	0	0	5	1	2	0	3	8
2010	5	0	0	5	0	2	0	2	7
2011	11	0	0	11	0	0	0	0	11
2012	8	0	0	8	0	0	0	0	8
Total	**110**	**9**	**6**	**125**	**36**	**34**	**30**	**100**	**225**
Spring 2011 Total				127				111	238
2013 vs. 2011				-2				-11	-13

Permits Released Since Spring 2011	34
Total PSE of Permits Released Since Spring 2011	9,316,000
Net Adjusted PSE of Permits Released Since Spring 2011	5,386,771

Permits Issued Since Spring 2011	21
Total PSE of Permits Issued Since Spring 2011	84,994,000
Net Adjusted PSE of Permits Issued Since Spring 2011	41,940,724

Permits remaining in system from Spring 2011 to Spring 2013	204
Total PSE change of permits remaining in system from Spring 2011 to Spring 2013	64,221,920
Net Adjusted PSE change of permits remaining in system from Spring 2011 to Spring 2013	92,868,933

Footnotes:

(1) Sum of Exhibits 8.3a through 8.5a Col (1), Pending Release
(2) Sum of Exhibits 8.3a through 8.5a Col (2), Pending Release
(3) Sum of Exhibits 8.3a through 8.5a Col (3), Pending Release
(4) Sum of Col (1) through Col (3)
(5) Sum of Exhibits 8.3a through 8.5a Col (5), Pending Release
(6) Sum of Exhibits 8.3a through 8.5a Col (6), Pending Release
(7) Sum of Exhibits 8.3a through 8.5a Col (7), Pending Release
(8) Sum of Col (5) through Col (7)
(9) Col (4) + Col (8)

Spring 2011 Amounts from the Spring 2011 Report by Pinnacle

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
SPRING 2013

Exhibit 8.6b
Implied Bonded Acres by Mine Status and Year of Issuance - Total

Issue	Active				Final Map				Total
Year	Phase 1	Phase 2	Phase 3	Total	Phase 1	Phase 2	Phase 3	Total	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1982	0	0	4	4	0	0	0	0	4
1983	930	34	48	1,012	131	183	318	632	1,645
1984	3,534	102	145	3,781	491	937	1,432	2,860	6,641
1985	0	2	3	6	8	233	353	593	599
1986	0	0	0	0	0	133	615	748	748
1987	492	19	28	539	76	367	990	1,433	1,972
1988	0	68	99	166	4	201	427	631	798
1989	38	0	0	38	0	195	548	743	781
1990	0	0	0	0	45	81	142	268	268
1991	132	0	0	132	1	114	396	511	643
1992	3	149	256	408	0	54	147	201	609
1993	65	185	381	631	72	256	1,006	1,334	1,965
1994	22	495	968	1,485	171	491	1,046	1,709	3,193
1995	1	0	69	70	0	147	210	358	427
1996	244	50	146	441	0	352	831	1,183	1,624
1997	0	0	0	0	75	249	524	847	847
1998	350	685	1,514	2,549	6	77	149	233	2,782
1999	22	67	170	259	0	0	246	246	505
2000	213	530	858	1,601	22	39	213	275	1,875
2001	11	152	465	627	56	868	1,897	2,821	3,448
2002	41	196	365	602	23	157	656	836	1,438
2003	407	255	365	1,027	126	247	354	727	1,754
2004	1,280	309	442	2,031	43	280	1,017	1,339	3,370
2005	41	219	397	657	236	671	965	1,872	2,528
2006	2,432	540	805	3,778	139	462	1,003	1,604	5,382
2007	4,933	841	1,326	7,100	304	513	822	1,639	8,738
2008	531	848	1,212	2,591	285	547	782	1,614	4,205
2009	732	192	274	1,197	22	143	204	369	1,566
2010	4,113	75	108	4,296	0	64	91	155	4,451
2011	12,321	27	39	12,387	0	0	0	0	12,387
2012	3,505	0	0	3,505	0	0	0	0	3,505
Total	**36,393**	**6,041**	**10,486**	**52,919**	**2,337**	**8,063**	**17,380**	**27,780**	**80,699**
Spring 2011 Total				57,968				31,944	89,912
2013 vs. 2011				-5,049				-4,165	-9,213

Acres Released Since Spring 2011	6,573

Acres Issued Since Spring 2011	16,283

Footnotes:

(1) Sum of Exhibits 8.3b through 8.5b Col (1), Pending Release
(2) Sum of Exhibits 8.3b through 8.5b Col (2), Pending Release
(3) Sum of Exhibits 8.3b through 8.5b Col (3), Pending Release
(4) Sum of Col (1) through Col (3)
(5) Sum of Exhibits 8.3b through 8.5b Col (5), Pending Release
(6) Sum of Exhibits 8.3b through 8.5b Col (6), Pending Release
(7) Sum of Exhibits 8.3b through 8.5b Col (7), Pending Release
(8) Sum of Col (5) through Col (7)
(9) Col (4) + Col (8)

Spring 2011 Amounts from the Spring 2011 Report by Pinnacle

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Exhibit 9
Projected Investment Rates
Based on US Treasury Returns in Spring 2013

Calendar Year	Investment Return (%)	Yearly Discount Factor	Compound Discount Factor
	(1)	(2)	(3)
2013	0.250%	99.751%	-0.125%
2014	**0.250%**	99.751%	-0.374%
2015	**0.375%**	99.626%	-0.684%
2016	0.560%	99.443%	-1.146%
2017	**0.750%**	99.256%	-1.790%
2018	1.000%	99.010%	-2.641%
2019	**1.250%**	98.765%	-3.724%
2020	1.500%	98.522%	-5.030%
2021	1.750%	98.280%	-6.549%
2022	**2.000%**	98.039%	-8.269%
2023	2.060%	97.982%	-10.094%
2024	2.110%	97.934%	-11.930%
2025	2.170%	97.876%	-13.775%
2026	2.230%	97.819%	-15.631%
2027	2.280%	97.771%	-17.492%
2028	2.340%	97.714%	-19.355%
2029	2.390%	97.666%	-21.218%
2030	2.450%	97.609%	-23.079%
2031	2.510%	97.551%	-24.941%
2032	2.560%	97.504%	-26.796%
2033	2.620%	97.447%	-28.645%
2034	2.680%	97.390%	-30.487%
2035	2.730%	97.343%	-32.318%
2036	2.790%	97.286%	-34.135%
2037	2.840%	97.238%	-35.939%
2038	2.900%	97.182%	-37.726%
2039	2.960%	97.125%	-39.499%
2040	3.010%	97.078%	-41.252%
2041	3.070%	97.021%	-42.986%
2042	**3.125%**	96.970%	-44.698%

Footnotes:

(1) Based on US Treasury Returns in Spring 2013; Returns not in **Bold** are interpolated from US Treasury Rates

(2), (3) Based on Col (1)

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
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Exhibit 10.1
Water Reclamation Cost

		Surface	Underground	Other	Total
Acres	(1) Permitted acres with water treatment	82	2,617	-	2,699
	(2) Permitted acres with water monitoring	3,432	-	395	3,827
	(3) Percent of monitored permits that become water treatment	50.00%	50.00%	50.00%	
	(4) Projected permitted acres with water treatment	1,797	2,617	198	4,612
Average Cost	(5) Water capital Ohio permit #433 avg cost per *affected* acre		14.53		
	(6) Water treatment Ohio permit #433 avg cost per *affected* acre		346.07		
	(7) Water capital West Virginia avg cost per permitted acre	11.09	51.00	38.91	
	(8) Water treatment West Virginia avg cost per permitted acre	6.11	213.69	157.02	
Selected	(9) Water capital selected avg cost per permitted acre	11.09	51.00	38.91	
Average Cost	(10) Water treatment selected avg cost per permitted acre	6.11	213.69	157.02	
Number of	(11) Number of years for water capital reclamation	75	75	75	
Exposure Years	(12) Number of years for water treatment reclamation	75	75	75	
Forfeiture Rate	(13) Water forfeiture rate	2.25%	2.25%	2.25%	
Estimate 1	(14) Water capital reclamation cost	33,626	225,142	12,977	271,745
Gross	(15) Water treatment reclamation cost	18,526	943,346	52,367	1,014,240
Reclamation Cost	(16) Estimate 1 - Total gross water reclamation cost	52,152	1,168,488	65,344	1,285,985
Estimate 2	(17) Gross land reclamation cost				12,857,773
Gross	(18) Selected relationship of water cost to land cost				20%
Reclamation Cost	(19) Estimate 2 - Total gross water reclamation cost				2,571,555
	(20) Selected gross water reclamation cost				2,500,000
Net	(21) Water Trust Fund mitigation adjustment percentage				10%
Reclamation Cost	(22) Total estimated net water reclamation cost				2,250,000

Footnotes:

(1), (2)	Provided by Client
(3)	Judgmental Selection (3 of 6 current monitored sites not expected to develop into long term water treatment)
(4)	Row (1) + Row (2) x Row (3)
(5), (6)	Derived from Client Data, Exhibit 10.2a
(7), (8)	Internal Analysis of West Virginia Data, treatment costs adjusted for pre 2011 NPDES standards
(9)	Row (7)
(10)	Row (8)
(11), (12)	Based on Client estimates.
(13)	Judgmental Selection. Compares to approximate 1% selection of non-water forfeiture.
(14)	Row (4) x Row (9) x Row (11) x Row (13)
(15)	Row (4) x Row (10) x Row (12) x Row (13)
(16)	Row (14) + Row (15)
(17)	Exhibit 2.2 Col (1)
(18)	Based on West Virginia 2012 Analysis: Water (Capital and Treatment) Liability / Land Liability approaching 100%, then adjusting for Ohio WATER TREATMENT being about 10% of WV post NPDES updated standards average costs.
(19)	Row (17) x Row (18)
(20)	Selection based on Row (16) and Row (19)
(21)	Judgmental Selection, considering forfeitures before Trust is set up or while Trust is partially funded by the RFF.
(22)	Row (20) x [1.00 - Row (21)]

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Exhibit 10.2a
Water Reclamation Cost

Ohio Permits with Water Treatment				
		Surface	Underground	Other
	Water Capital Cost per Year		7,293	
Permit #	Water Treatment Cost per Year		173,728	
433	Permitted Acres		51	
Issue Yr.	Affected Acres		502	
1984	Implied Bonded Acres		1,547	
	Total PSE		445,000	
	Net Adjusted PSE		2,630,075	
	Water Capital Cost per Year		N/A	
Permit #	Water Treatment Cost per Year		N/A	
325	Permitted Acres		934	
Issue Yr.	Affected Acres		-	
1984	Implied Bonded Acres		384	
	Total PSE		9,791,000	
	Net Adjusted PSE		9,416,625	
	Water Capital Cost per Year	N/A		
Permit #	Water Treatment Cost per Year	N/A		
328	Permitted Acres	82		
Issue Yr.	Affected Acres	-		
1984	Implied Bonded Acres	78		
	Total PSE	66,000		
	Net Adjusted PSE	36,900		
	Water Capital Cost per Year		N/A	
Permit #	Water Treatment Cost per Year		N/A	
354	Permitted Acres		1,048	
Issue Yr.	Affected Acres		-	
1984	Implied Bonded Acres		1,796	
	Total PSE		111,690,000	
	Net Adjusted PSE		109,704,625	
	Water Capital Cost per Year		N/A	
Permit #	Water Treatment Cost per Year		N/A	
355	Permitted Acres		316	
Issue Yr.	Affected Acres		-	
1984	Implied Bonded Acres		514	
	Total PSE		432,000	
	Net Adjusted PSE		-	
	Water Capital Cost per Year		N/A	
Permit #	Water Treatment Cost per Year		N/A	
463	Permitted Acres		319	
Issue Yr.	Affected Acres		-	
1985	Implied Bonded Acres		502	
	Total PSE		1,581,000	
	Net Adjusted PSE		1,198,125	

Data provided by Client

OHIO RECLAMATION FORFEITURE FUND ANALYSIS
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Exhibit 10.2b
Water Reclamation Cost

Ohio Permits Being Monitored For Possible Water Treatment				
		Surface	Underground	Other
Permit #	Permitted Acres			344
215	Affected Acres			-
Issue Yr.	Implied Bonded Acres			564
1983	Total PSE			730,000
	Net Adjusted PSE			166,063
Permit #	Permitted Acres	527		
533	Affected Acres	-		
Issue Yr.	Implied Bonded Acres	91		
1985	Total PSE	74,000		
	Net Adjusted PSE	14,663		
Permit #	Permitted Acres	134		
219	Affected Acres	127		
Issue Yr.	Implied Bonded Acres	202		
1983	Total PSE	532,000		
	Net Adjusted PSE	316,727		
Permit #	Permitted Acres	1,830		
1059	Affected Acres	-		
Issue Yr.	Implied Bonded Acres	1,709		
1994	Total PSE	5,614,000		
	Net Adjusted PSE	4,179,313		
Permit #	Permitted Acres	940		
1149	Affected Acres	-		
Issue Yr.	Implied Bonded Acres	712		
1997	Total PSE	965,000		
	Net Adjusted PSE	321,313		
Permit #	Permitted Acres			52
223	Affected Acres			38
Issue Yr.	Implied Bonded Acres			23
1983	Total PSE			296,000
	Net Adjusted PSE			137,794

Data provided by client.