FATT Responsive Summary

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FATT Responsive Summary

The following is the Flood Analysis Technical Team's (FATT) response to comments received by citizens, members of the mining and timbering industries and members of the Flood Investigation Advisory Committee (FIAC).

A. Comments of the Flood Investigation Advisory Committee

The committee was in general support of the conclusions contained in the FATT report. Mining industry representatives on the committee offered several dissenting opinions on the mining recommendations, which are more specifically addressed in FATT's responses to the comments submitted by the West Virginia Coal Association (WVCA). These comments generally involved what was perceived as an overly broad approach, lack of flexibility and the lack of support in the study for the recommendation. FATT disagrees with these comments and cites the depth of research and analysis contained in the study. The majority of the committee members present at the meeting were supportive of the mining recommendations.

Forest industry representatives generally opposed limiting logging activities and FATT's response has been addressed herein. Strong sentiment was voiced by most committee members that most of the forestry impacts noted in this report resulted from poor harvesting practices which highlights the need for additional WVDOF enforcement resources. The committee unanimously supported dedication of additional resources for WVDOF. The technical team concurs with this position.

FIAC suggested and the technical team concurs that the following issues be noted as areas of additional concern:

- The effects of sedimentation and scouring (dynamic effects) from previous flooding.
- The DOF is participating in a 20-state study with the USFS and hopefully this study can include additional research on logging impacts.
- The viability of dredging and damming for improvements in flooding impacts.
- Methods to reduce the margin of error in similar studies.
- Determining the accuracy of rainfall data.
- The beneficial impacts of AOC variances.

The technical team believes that additional efforts by other groups are underway to address the foregoing concerns.

The committee suggested that the report acknowledge the importance of the timbering and mining industry to the state and those employed by both industries. FATT concurs with this sentiment and further emphasizes that the recommendations in this report reduce the potential flood damage threat posed by these industries without drastically interfering with their ability to successfully operate.

Numerous comments from individuals representing environmental and industry factions were received after the end of comment period for the FATT study. The issues presented were evaluated and have been addressed by this responsive summary.

FIAC Comments and FATT Responses

1. FIAC members suggest that a new paragraph be inserted after the introductory paragraph of the FATT conclusion introduction (page 70) which would include the statement that the scope of the flood analysis includes only southern West Virginia.

Response: One goal of the Governor's Executive Order (16-01) and the technical team's mission was to determine "the impact on the flooding from current or past methods of coal mining and timbering practices in the affected counties and watersheds." This assignment was achieved with the choice of watersheds and focused on the storm events of July 8, 2001, which occurred primarily in southern West Virginia. The report also emphasizes that the modeling technique and the findings can be generally extrapolated throughout West Virginia.

2. FIAC members suggest that the report underscore the important role played by the mining and timbering industries in West Virginia's economy.

Response: The members of the technical team recognize the important contribution of the mining and timbering industries to West Virginia's economy.

3. A FIAC member expressed the need for the following concept to be explicitly stated, "If logging increases, then runoff increases."

Response: The evaluation of the hydrologic impacts of logging and/or other disturbances within a watershed cannot be accurately projected in a linear relationship. The determination of industry or urbanization impacts within a watershed can be quite complex. This is due to the differences in modeling parameters such as soil classification, soil physical characteristics, topography, watershed area, watershed orientation, watershed geology and many other site-specific attributes. However, generally speaking, if the acreage of similar land disturbances, such as logging, increases in a watershed, the runoff would be expected to increase.

4. FIAC desires that the FATT study have specific paragraphs rewritten in order to clarify FATT's conclusions to the general public.

Response: FATT has prepared and written the FATT study at a reading and comprehensive level that should be understandable by the general public. Clarity of unusual terms and acronyms were defined wherever needed. However, FATT recognizes that unless the reader has read the entire FATT study, then there will be statements and findings of the study that appear difficult to understand or out of context. This is true of any document or manuscript. Therefore, FATT determined that it is important that all readers read and review the study in the format presented, otherwise ideas can be taken out of context and the implied meaning from specific language can be misunderstood or misinterpreted by the reader.

B. Responses to Forestry Comments

1. The studied watersheds have no rain or stream gaging information. Therefore, the study results are inherently inaccurate and the impacts of logging cannot be determined.

Response: This assertion is unfounded. FATT agrees and has stated that there is no stream gaging within the proximate vicinity of the study watersheds. There were gages located far downstream from the studied watersheds, but such data was not applicable. Therefore, Doppler radar imagery, certified by NOAA, was deemed the most accurate information and was used to assimilate the July 8, 2001, event storm. These rainfall amounts were modeled using the HEC1 program, which is an accepted modeling method to determine watershed runoff responses. The calculated runoff values were verified by using the HEC-RAS model to predict the calculated maximum water elevations. These values were then compared to the corresponding July 8, 2001, surveyed highwater marks in the study watersheds. These differences in water elevation of calculated versus actual values constitute the method used to establish model accuracy for the FATT study.

2. No research shows that logging contributes to overland flow in undisturbed portions of a forest. Therefore, the increases identified in the study are not due to logging.

Response: The technical team's review of relevant literature revealed that significant overland flow does not occur in the undisturbed forest floor. As stated by Dr. Rhett Jackson in his July 12, 2002, response to the technical team, "Most rainfall reaching the forest floor infiltrates, and overland flow occurs only during very intense rainfall events." Overland flow from undisturbed forest floors as discussed is considered flow across the cutting area of tree removal and does not include flow from forest roads, landings, etc.

However, Dr. Jackson further stated in his response that, "In small basins, road runoff can substantially increase peak flows and volumes. If roads are cut into hillside subsoils, road cuts can serve to collect shallow groundwater flow from the hillside above." A study on the Fernow Experimental Forest using West Virginia Best Management Practices (BMPs) found that both growing-season peak flows and total growing-season storm flows increased significantly after logging (Kochenderfer, et al., 1997). This study also found that, five years after cutting, 23.5% of the road areas remained as exposed bare ground.

This phenomenon is shown in pictures #1 and #2, taken of recent West Virginia timber operations during the study. The road cuts usually expose bedrock and are between four and eight feet in height. Flow from the undisturbed forest floor, and from ephemeral and intermittent stream channels reach these road surfaces and become overland flow. Picture #3 underscores the technical team's observations that although West Virginia BMPs state that skid and truck roads should remove outer berms and outslope to direct runoff to the undisturbed forest floor, this is not a common practice. Roads reviewed during the study had outer berms generally intact and ranging from six inches to 2 feet high. This practice resulted in increased flows from the watersheds studied and the movement of debris to and from stream channels as observed in the flood impacted areas after the July 8, 2001, event.

Picture 1 – Abandoned skid road excavation bisecting both the forest floor and bedrock.

Picture 2 – Abandoned skid road excavation bisecting the forest floor.

Picture 3 – Evidence of flow channelization from forest floor along an abandoned skid road.

When roads/landings do not disperse water to the undisturbed forest floor and are located within the stream management zones, then increases in overland flow can be expected. "Preplanning and having the entire road system laid out carefully on the ground prior to harvesting operations, although not a standard guideline, was probably the single most important procedure for reducing impacts to soil and water resources" (Kochenderfer, et al., 1997). These findings underscore the recommendations made in the FATT study concerning site inspections by the WVDOF. The Kochenderfer study states that the relatively small, although significant, increases in growing-season storm flows were attributed to: 1) a road system that was well laid out; 2) the use of water control structures that effectively dispersed road water; 3) placement of roads, landings and machinery at least 30 meters from streams, except at crossing sites; and 4) minimal soil disturbance and compaction on the logged areas, thereby minimizing overland flow. FATT recommendations 1e, 1f, 1g, and 1h address these issues by increasing site inspections both prior to commencement of operations, during operations, and at the end of operations.

As can be seen in pictures #4 and #5, overland flows on the skid roads completely washed to bedrock, eroded through a waterbar and became overland flow into a nearby stream channel. Although these skid roads were several years old, little evidence of leaves, natural woody debris or any other material remains on the roads, indicating movement by overland flow in what has become a channel. This occurrence was exacerbated by failure to remove the outside road berm and failure to outslope the road. FATT recommendations 1b and 1c prohibiting slash disposal on roads and requiring outsloping (berm removal) were drafted to address these conditions.

Picture 4 – Flow channelization and erosion through a waterbar on a skid road.

Picture 5 – Abandoned skid road with outer berm in place showing erosion to bedrock.

Pictures #6, #7 and #8 show an abandoned landing located next to a perennial stream in violation of the BMP 100-foot stream management zone, although there was clearly sufficient space to place it elsewhere. FATT recommendation 1c addresses this issue with the proposed slash disposal plan. All recommendations address areas of poor harvesting practices as discussed by the FIAC.

Picture 6 – Abandoned log landing site with remaining slash.

Picture 7 – Same landing site showing more areas of slash disposal near perennial stream.

Picture 8 – Same landing site with slash adjacent to perennial stream.

Pictures #9, #10, and #11 show an existing logging operation with a skid road within the stream management zone. The treetops and slash have been placed in the stream and road material from a water bar has also been placed in the stream. Picture #12 shows a timber haul road which had no pipes installed at any stream crossing although they were clearly available on the site.

Picture 9 – Active skid road within stream management zone.

Picture 10 – Same skid road with treetops lying within stream area.

Picture 11 – Treetops and road material deposited within an intermittent stream.

Picture 12 – Uninstalled stream crossing pipes on an active timber haulroad.

3. *Studies show no difference in runoff between large timber operations versus small jobs or based upon percentage of tree removal.*

Response: A 1993 study on the Fernow Experimental Forest showed that harvesting timber increased water yield by an amount roughly proportional to the amount of timber harvested (Hornbeck, et al., 1993). A year 2000 study by Princeton University found significant increases in water yield for four treated watersheds when compared to a control watershed. Although not all years had significantly higher yields, the effects of different timbering treatments took between four and seventeen years to recover (N. Bates, Princeton University, 2000). This same study examined hydrographs of individual storm events and found that clearcut watersheds may take at least 20 years to recover from storm response when compared to a control watershed.

Forestry recommendations 1.a and 1.d of the report were developed with this type of information in mind. Many comments from members of the timbering industry focused on this recommendation out of concern that acreage limits would be imposed on all logging operations. This concern is unfounded. Professional foresters should examine the watershed where their operations occur and recognize that existing disturbances (past logging, fire damage and other land disturbance) can contribute to increased water runoff. They should take these influences into account in development of their operations and should adjust their methods of harvesting by acreage, basal area removed, silvicultural methods or any combination thereof to minimize runoff velocities and channelization of flows. For example, adjusting an operation to reduce the number of roads would, in effect, limit the acreage disturbed.

4. *Peak flows from the FATT study are insignificant and the technical team failed to compare its conclusions to experimental results referenced in scientific literature.*

Response: The FATT study found increases in peak flows ranging from 0 to 5.9 percent. Various studies involving timber harvesting have found peak flow rates of up to 20 percent (Thomas and Megahen 1998, Lewis, et al., 2001), while others ranged from one to seven percent (Beschta, et al., 2000). The technical team's findings compare favorably with results from these previous studies.

FATT disagrees that the quantified peak flow increases are insignificant. The two studied watersheds having logging and mining disturbances, i.e., Seng and Scrabble Creeks, are characterized as steep sloped, high gradient watersheds with minimal cross-sectional stream areas. Such watersheds exhibit a high propensity for out-of-bank flows and resulting impacts from nominal precipitation events. Notably, these are similar characteristics of other small watersheds in southern West Virginia. This study identified that significant land disturbances created from logging or mining operations can exacerbate peak runoff quantities. Any increase in runoff quantity creates concern, particularly for residents living near such streams. For this reason, any increase in peak runoff (> 0%) attributable to logging and/or mining was deemed to be potentially "significant."

C. Responses to Mining Comments

The WVCA provided comments regarding the flood analysis and the proposed rule changes necessary to implement the recommendations. It should be noted that the proposed rules that the WVCA commented upon have now been revised to clarify various issues. These changes are reflected in the errata sheet on page 24.

1. *FATT's position that any contribution to flooding is significant is misleading, is not supported by the report, and is indefensible when other activities being conducted within the watersheds are considered.*

Response: All land disturbances within the study watersheds were considered in the hydrologic modeling. Any measured peak increases must be considered potentially significant due to the restrictive topographical conditions in the watersheds.

2. *The FATT Report and its recommendations ignore the single instance where the technical analysis demonstrated that current interpretation and application of guidelines relating to post-mining land configuration restore a watershed's propensity to flood.*

Response: FATT did not ignore this instance. In fact, the quantified results of the report highlight this fact. Restoring a surface mined area to approximate original contour (AOC) does not necessarily restore the watershed's propensity to flood. Likewise, flattening a mountain and reclaiming the land in a configuration less than AOC doesn't always decrease the watershed's propensity to flood, either. There is more to runoff control than just altering the topography. Consequently, current permitting standards require a surface water runoff analysis (SWROA) to

limit runoff peaks to pre-mining values or less. This is accomplished by constructing attenuation structures to slow the release of precipitation runoff from the permit.

3. *In the context of a 100-year storm event, such as the one experienced on July 8, 2001, the runoff increases attributed to mining as indicated by the Report are insignificant. Any runoff contribution below 20 percent is acceptable.*

Response: This statement is not correct for the studied watersheds. The areas did not experience a 100-year precipitation event. In reality, the peak discharge was calculated to be less than a 25 year/24 hour event. Industry runoff contribution may be "diluted" by larger storm events, i.e., a 100-year storm, but the storm of July 8, 2001, was not of that magnitude. From the model results, the technical team considers the measured effects of mining and logging as valid, quantifiable flow volumes with discernable impacts.

4. *DEP's position of significant impact is not applicable to every contribution of runoff. The State of Washington for example, has established a minimum threshold standard that requires an increase of runoff by 20 percent before any measures are required to address increased flooding potential.*

Response: The technical team did not study the topography of the State of Washington or its statutory/regulatory structure pertaining to flood control. Also, the team did not study the regulatory schemes or topographic characteristics of any other states. Given West Virginia's steep slope topography with narrow inhabited hollows and the technical team's observed effects in the studied watersheds, imposing a twenty percent standard before finding potential significance would be ill-advised.

5. *FATT was charged by Executive Order 16-01 to investigate alternative mining or forestry practices if such current practices are found to have had a deleterious impact on peak flows in affected watersheds, but instead ignored this charge.*

Response: FATT did not ignore this charge. Alternative mining and forestry practices are discussed at length in the FATT report on pages 71-73. Many of the stated recommendations represent alternative mining and forestry practices as a result of this study.

6. *The WVCA charges that several of the changes made from the draft to the final version are quite interesting and warrant reference*

Response: There should be no surprise that the final version of the report varies from an earlier draft. The narrative was edited until it accurately reflected the analysis and recommendations of the team.

7. *The technical team should have made more of the reference to the beneficial effect that a variance to AOC can provide relating to runoff attenuation.*

Response: This point needs little clarification. Coal must be mined in a lawful manner. The federal Surface Mining Control and Reclamation Act of 1977 (SMCRA) established that

AOC shall be the rule, with an AOC variance being the exception. West Virginia, under SMCRA's primacy provision, cannot violate this requirement. Consequently, it was not the technical team's intention or charge to exclude one mining method over another, e.g., AOC versus AOC variance. Regardless of the chosen mining method, a storm water runoff analysis is required to assure that runoff from mining operations will produce no net increase in runoff when compared to the pre-mining watershed condition. The permit applicant chooses their mining method, not WVDEP.

8. The WVCA was critical of the technical team's concluding statement that, "…mining and timbering impacts did influence the study watersheds by increasing surface water runoff and the resulting stream flows at various evaluation points."

Response: The technical team made this statement to highlight the fact that runoff impact assessment was discernable only at the studied evaluation points within the study watersheds. This statement was never intended to mislead, but was presented to clarify the conclusion from a hydrologic standpoint. Flows at every point along the streams were not quantified. From a hydrologic viewpoint, this statement was to preface the conclusion within the context of the modeling procedure.

D. Comments on Proposed Mining Rule Changes

(Note: Underscore denotes proposed changes in regulations. The attached errata sheet presents the most recent revisions to the proposed changes and additions.)

1. The coal industry opposes Recommendation 2.c., which states, "Revise regulations to require the condition of the total watershed be reviewed prior to any approved placement of excess spoil material. Conditions that should be considered include the proximity of residents, structures, etc., to excess spoil structure." They also oppose the associated rule change. The re-drafted rule states:

3.7.d. A survey of the watershed identifying all man-made structures and residents in proximity to the disposal area to determine potential storm runoff impacts. At least thirty (30) days prior to any beginning of placement of material, the accuracy of the survey shall be field verified. Any changes shall be documented and brought to the attention of the Secretary.

The coal industry contends that this recommendation and rule change is too broad. They question the meaning of "watershed" in this context.

Response: The technical team intended that the downstream consequences be determined for areas immediately downstream of any excess spoil disposal area. Currently this type of survey is part of the SWROA. This survey is useful to both the permittee and the agency for siting purposes relative to excess spoil disposal sites.

The intent of this rule change was to assign greater significance to a disposal area if residents and man-made structures are downstream and in near proximity to the disposal site. In

this context, "watershed" would primarily indicate the immediate watershed where the fill is located. However, under certain circumstances, the Agency may require a larger survey area to account for downstream residents. Each excess disposal facility design has to be site-specific, but should utilize a siting evaluation, in addition to a SWROA, to minimize all potential runoff impacts.

2. *The coal industry opposes Recommendation 2.d., which states, "Revise regulations to require that valley fill designs minimize erosion within the watershed during precipitation. The permittee shall consider the total disturbance of the disposal area." The associated rule change is:*

   5.4.b.4. Have the capacity to store 0.125 Acre/ft. of sediment for each acre of disturbed area in the structures watershed; provided, that consideration may be given for reduced storage volume where the preplan and site conditions reflect controlled placement, concurrent reclamation practices, or use of sediment control structures; provided further, that reduced storage volume will be approved only where the operator demonstrates that the effluent limitations of subdivision 14.5.b of this rule will be met. The disturbed area for which the structure is to be designed will include all land affected by previous surface mining operations that are not presently stabilized and all land that will be disturbed throughout the life of the permit. <u>All sediment control for valley fills, including durable rock fills, shall be designed for the entire disturbed acreage associated with the watershed of the fill and shall take into account the length of time the area is to be disturbed.</u>

   The coal industry contends that such a restriction would increase stream disturbance, contradict the Clean Water Act, and establish a broad, "cookbook" approach to design standards.

<u>Response</u>: The technical team disagrees with this extreme view of possible consequences. This rule change will enhance the effectiveness of sediment control, which will likely decrease stream degradation. Further, this requirement compliments the SWROA requirements and the necessary designs to assure no increase in peak flows. In no way does the proposed rule prohibit on-bench drainage. It only serves to assure effective sediment control for fills, assuming worst-case design standards. The current practice of this agency is to not allow reduced factors for sediment control for fills. This change is to clearly state that full-factor ponds are required for fills and the engineering must accommodate for long-term exposure. The SWROA requirements, when combined with this rule, will result in more effective sediment control for excess spoil disposal facilities while insuring sufficient runoff attenuation.

3. *The coal industry presents opposition to the following recommendation and rule change: Recommendation 1.a.- Revise regulations to enhance Hydrologic Reclamation Plans for all existing, pending and future permits to prohibit any increase in surface water discharge over pre-mining conditions. Recommendation 1.b.- Revise regulations so that the post-mining drainage design of all existing and future mining permits corresponds with the permitted post-mining land configuration. The rule as changed would read as follows:*

5.4.b.11. Control discharge by use of energy dissipaters, riprap channels or other devices to reduce erosion, to prevent deepening or enlargement of stream channels and to minimize disturbance of the hydrologic balance. Discharge structures shall be designed using standard engineering procedures. The location of discharge points and the volume to be released shall not cause a net increase in runoff in a watershed when compared to pre-mining conditions and shall be compatible with the post-mining configuration and adequately address watershed transfer.

Response: DEP's goal is to codify the SWROA requirements. This rule change is necessary to assure that mining operations will not exacerbate peak runoff volumes. The intent of this rule change is to apply SWROA to all permits, i.e., existing, pending and future. FATT anticipates that pending and future permits will not be difficult to address. However, the team recognizes that existing permits are more varied in nature. In actuality, existing permits can be categorized as not-started, inactive-disturbed, inactive-undisturbed, on-going operations and reclaimed. The technical team recognizes that historically permits that have been reclaimed to Phase I bond release standards and have also been revegetated have not experienced significant runoff problems. Therefore, the technical team will exclude reclaimed and revegetated permits from this requirement. For all other types of existing permits, a SWROA analysis will be required to demonstrate compliance with this proposed rule change. Accordingly, WVDEP is willing to exempt from the SWROA requirements those permits, or portions thereof, having achieved Phase I bond release standards and have been revegetated.

4. *The coal industry opposes the following recommendation, claiming that the existing associated rule (§8.2.e.) is adequate.*

Recommendation 2.f. states, "Revise regulations to prohibit placement of windrowed material in areas that encroach into natural drainageways."

Response: This comment is unfounded. Based upon numerous field observations by WVDEP inspectors and citizens, hydraulic transport of woody debris is a common occurrence that can cause debris blockages and resulting backwater flows. This recommendation and associated rule change will assure that windrowed materials are not placed within the immediate vicinity of a watercourse where they can be mobilized during heavy precipitation events.

5. *The coal industry opposes the following recommendation and associated rule:*

Recommendation 2.e. Revise regulations to prohibit "wing dumping" of spoil in excess spoil disposal structures.

14.14.a.8. All material placement into valley fills including durable rock fills must occur over the developing face or mechanically placed in lifts down the centerline of the valley. Under no circumstances shall material be placed in fills from the sides of the valley.

Response: Based upon field observations and experience, wing dumping and/or cast blasting into the hollow downstream of the advancing fill toe creates a condition where the fill is

highly vulnerable to erosion. Also, such areas can increase surface runoff from precipitation events. The elimination of this mining practice, in addition to bottom-up fill construction, will ensure that excessive erosion and runoff will be minimized from excess spoil disposal activities. It should be noted that WVDEP has never acknowledged any necessity for wing dumping, although the Agency has allowed its use. Even with the limits imposed by the wing dumping policy (November 13, 1992), increased sediment loads upon the sediment control structures have occurred. This proposal does not impact side-hill fill construction.

6. *The coal industry objects to the recommendation and associated rule change limiting durable rock fill construction to bottom up techniques. The recommendation and rule are as follows:*

Recommendation 2.b. Revise regulations to require durable rock fills be limited to "bottom up or incremental lift construction" methods for enhanced runoff and sediment control.

14.14.g.9 The durable rock fill shall be constructed in lifts from the toe upwards. The design plans and specifications shall specify the thickness of the lifts. The permittee shall provide certification from a registered professional engineer that such thickness will insure stability and meet all safety and environmental protection standards.

Response: Based upon field observations and experience, the technical team drafted this limitation upon construction techniques for excess spoil disposal facilities. The following photos show a recent occurrence of excessive erosion from an end-dumped durable rock fill at Lyburn in Logan County. Clearly, a heavy storm event caused a marked increase of erosion of a durable rock fill and ultimately overwhelmed the sediment control structure. Refer to Pictures #13 and #14.

Picture 13 – Lyburn durable rock fill showing face erosion.

Picture 14 – Hydraulic transport of the face material within toe area.

The requirement to construct valley fills from the bottom up will complement the prohibition of wing dumping. In some areas, minimal fill volumes and/or watershed confines could present challenges for siting fills. Because of space limitations and equipment grade requirements, a road constructed by "dumping" to the toe area might not be possible along the centerline of the hollow. However, alternate design methods for toe access roads could be implemented. In limited situations, a fill might have to be located in a different watershed more conducive to bottom up construction.

7. The coal industry opposes Recommendations 1.a., 1.c., 2.g., and 2.i.,which include requirements to install, operate and maintain rain gages at all mine sites. Other recommendations include SWROA implementation and limits on areas to be cleared/grubbed within excess spoil disposal areas.

Response: WVDEP proposes to codify the SWROA Guidelines in an effort to enhance the hydrologic reclamation plan.

Rain gauges are currently required by NPDES within three miles of the site. However, such placement may not be near the watershed associated with the closest fill site. This data is important to determine SWROA functionality and should be part of the permit and agency records. Moreover, it is important during a heavy precipitation event to recognize the possibility of impacts and the need to initiate drainage system reconnaissance to repair damage and further address offsite impacts.

A contention by the industry is that limiting clearing/grubbing conflicts with bottom up fill construction. For bottom up construction, the entire fill area will require clearing of all significant vegetation. However, the critical foundation area beneath the fill is required to be grubbed, which means cleared of vegetation, including root balls. Historically, these types of disturbances have produced fewer sedimentation/erosion problems than end-dumped fill construction techniques. By requiring bottom up construction or incremental lift construction and full-factor sediment control designed for the entire fill, the overall sediment contribution downstream of the activity will be minimized when compared to current practices.

8. The coal industry opposes the regulatory revision requiring that each application for a permit contain a sediment retention plan to emphasize runoff control and minimize downstream sediment deposition during precipitation events, claiming that such change is duplicative and that the study results do not support the regulatory change. The industry also questions the selection of .30 inches per hour as "heavy precipitation event" as referenced in the proposed rule change. The proposed rule states:

5.6.c. Each application for a permit shall contain a sediment retention plan to minimize downstream sediment deposition within the watershed resulting from heavy precipitation events (over 0.30 inch per hour). Sediment retentions plans may include decant ponds, secondary control structures, increased frequency for cleaning out sediment control structures, or other methods approved by the Secretary.

Response: The technical team proposes to codify the SWROA guidelines in an effort to enhance the hydrologic reclamation plan. The results of the report clearly support this recommendation. The flood analysis and attendant conclusions were based upon both quantitative and observed conclusions. The modeling results support the finding that mining disturbances in the studied watersheds increased peak runoff volumes. From on-ground observations of the study watersheds, it was evident that sediment was conveyed beyond the sediment structures. Moreover, based upon observations of excess spoil areas beyond the studied watersheds, it is evident that the .125 sediment volume standard alone may be insufficient to prevent off-site damage if adequate runoff controls are not implemented. Pictures #15 and #16 are examples of what the Agency is attempting to prevent with these recommendations and rule changes.

Picture 15 – Face erosion that flowed through the sediment pond and down Lyburn Hollow.

Picture 16 – Lyburn Hollow community immediately downstream of the eroded end-dumped valley fill.

The intent of the recommendation and rule is for the sediment plan to complement the SWROA. The designs are interrelated, so both the overall performance and function are integral to accomplish effective water quality/quantity control. It should be noted that WVDEP adopted the 0.30 inch per hour precipitation threshold value because this standard is used by the National Oceanic Atmospheric Administration (NOAA) to classify rainfall intensity. The 0.30 inch per hour precipitation rate, or greater, is defined as a heavy rainfall event by NOAA.

9. *The coal industry opposes the following recommendation and rule because they are perceived to be too inclusive. The industry also objects to retroactive application of new mining and reclamation standards. The recommendation and rule change are as follows:*

Recommendation 1.a. Revise regulations to enhance Hydrologic Reclamation Plans for all existing, pending and future permits to prohibit any increase in surface water discharge over pre-mining conditions.

5.6.d. After the first day of January two thousand three all active mining operations must be consistent with the requirements of this subdivision. The permittee must demonstrate in writing that the operation is in compliance or a revision shall be prepared and submitted to the Secretary for approval within 180 days. Full compliance with the permit revision shall be accomplished within 180 days from the date of the Secretary approval.

Response: The technical team's intent is to obtain an evaluation of all hydrologic reclamation plans to assure that no increase in surface water discharge will result when compared to pre-mining conditions. As previously stated, a SWROA will not be required for existing operations that have obtained at least a Phase I bond release and are vegetated. In addition, the Agency will consider excluding portions of existing permits from the SWROA requirement that are vegetated and qualify for Phase I release.

10. The coal industry questions Recommendation 2.h. and states that OSM will likely oppose the technical team's attempt to maximize reforestation opportunities.

Response: This statement is unfounded. The proposed change to maximize reforestation opportunities does not violate the federal Office of Surface Mining's "no less effective" primacy clause. By this recommendation and associated rule change, the Agency does not intend to reject previously approved post-mining landuses, but recommends that areas not directly associated with a chosen landuse be reforested. The coal industry has indicated it is uncertain whether trees are superior to grasses in minimizing erosion and sediment problems and claims that bonds releases will likely be delayed while trying to meet tree survival standards. The intent is for trees to complement chosen post-mining landuses, not replace them.

ERRATA SHEET – PROPOSED RULE CHANGES

The following changes reflect comments that were received from both the public and FIAC. Most of the changes are made to provide clarity to the proposed rule and do not represent substantive changes.

Page 1, Item 3.7.d.

This item should state, "…storm runoff impacts **and siting considerations**." ADDED FOR CLARITY

Page 1, Item 5.4.b.4.

This item should state, "…for the entire disturbed fill acreage **contained** within the watershed…" ADDED FOR CLARITY

Page 1, Item 5.4.b.11.

This item should state, "… the post-mining configuration and **prevent watershed transfer.**" ADDED FOR CLARITY

Page 2, Item 14.14.a.8.

This item should state, "…durable rock fill must occur **in conjunction with** the developing…" and also "…from the sides of the valley **ahead of the actively developing face**." ADDED FOR CLARITY

Page 2, Item 14.14.g.9.

This item should state, "The durable rock fill shall be **designed and** constructed **from the bottom upwards with the face benches and drainage constructed progressively** from the toe upwards **or in lifts from the toe upwards**. The design plans and specifications shall specify the thickness of the lifts. **Provided, however, the lifts cannot exceed 100 feet in thickness.** The permittee shall provide certification from a registered professional engineer that such **design** will insure stability, **proper drainage** and meet all safety and environmental protection standards." ADDED FOR CLARITY

Page 4, Item 5.6.d.

This item should state, "After the first day of **October** two thousand **two**…" and should add "…date of the Secretary approval. **Active mining operations for the purpose of this subsection excludes permits that have obtained at least a Phase I release and are**

vegetated. Provided, however, permits or portions of permits that meet at least Phase I standards and are vegetated will be considered on a case by case basis." ADDED TO IDENTIFY THE AFFECTED PERMITS

ERRATA SHEET - FATT ANALYSIS

Page 73, Item B.1.b.

This item should state, "Revise BMPs to prohibit the use of lopped slash as a supplement for seeding on skid roads…"

Page 73, Item B.1.h.

This item should include landowners and state, "…increased technical assistance to timber operators and landowners…"

Page 73, Item C.

The FIAC recommends that the following two items be included:

- Sedimentation issues and their associated downstream effects.
- Scouring effects and the dynamics associated with repeated flooding making an area more flood prone. Possible remedial actions of dredging , floodwalls, stream bank restoration, etc., may lessen these dynamic effects.

WVDEP Proposed Rule Changes

Recommendation 2.c. Revise regulations to require the condition of the total watershed be reviewed prior to any approved placement of excess spoil material. Conditions that should be considered include the proximity of residents, structures, etc., to excess spoil structure.

3.7.d. A survey of the watershed identifying all man made structures and residents in proximity to the disposal area to determine potential storm runoff impacts and siting considerations. At least thirty (30) days prior to any beginning of placement of material, the accuracy of the survey shall be field verified. Any changes shall be documented and brought to the attention of the Secretary.

Recommendation 2.d. Revise regulations to require that valley fill designs minimize erosion within the watershed during precipitation. The permittee shall consider the total disturbance of the disposal area.

5.4.b.4. Have the capacity to store 0.125 Acre/ft. of sediment for each acre of disturbed area in the structures watershed; provided, that consideration may be given for reduced storage volume where the preplan and site conditions reflect controlled placement, concurrent reclamation practices, or use of sediment control structures; provided further, that reduced storage volume will be approved only where the operator demonstrates that the effluent limitations of subdivision 14.5.b of this rule will be met. The disturbed area for which the structure is to be designed will include all land affected by previous surface mining operations that are not presently stabilized and all land that will be disturbed throughout the life of the permit. All sediment control for valley fills, including durable rock fills, shall be designed for the entire disturbed fill acreage contained within the watershed of the fill and shall take into account the length of time the area is to be disturbed.

Recommendation 1.a. Revise regulations to enhance Hydrologic Reclamation Plans for all existing, pending and future permits to prohibit any increase in surface water discharge over pre-mining conditions.

Recommendation 1.b. Revise regulations so that the post-mining drainage design of all existing and future mining permits corresponds with the permitted post-mining land configuration.

5.4.b.11. Control discharge by use of energy dissipaters, riprap channels or other devices to reduce erosion, to prevent deepening or enlargement of stream channels and to minimize disturbance of the hydrologic balance. Discharge structures shall be designed using standard engineering procedures. The location of discharge points and the volume to be released shall not cause a net increase in runoff in a watershed when compared to pre-mining conditions and shall be compatible with the post-mining configuration and prevent watershed transfer.

Recommendation 2.f. Revise regulations to prohibit placement of windrowed material in areas that encroach into natural drainageways.

8.2.e. In order to promote the enhancement of food, shelter and habitat for wildlife, the practice of creating a timber windrow is encouraged. All unmarketable timber may be used to create a windrow within the permitted area as approved by the Secretary in the mining and reclamation plan. The windrow shall be designed and approved as part of a wildlife planting plan and authorized where the postmining land use includes wildlife habitat. In planning and constructing the windrow, care shall be taken not to impound water or and shall not be placed in such manner or location to block natural drainways. The windrow shall be placed in a uniform and workmanlike parallel line and located so as to improve habitat, food and shelter for wildlife. Areas in and around the windrow shall be seeded after construction with approved, native plant species to provide for erosion control and wildlife enhancement. Construction of the wildlife timber windrow shall take place within the permit area and should be placed immediately below or adjacent to the sediment control system, maintaining a sufficient distance to prevent mixing of spoil material with the selectively placed timber. The placement of spoil material, debris, abandoned equipment, root balls and other undesirable material in the windrow are prohibited.

Recommendation 2.e. Revise regulations to prohibit "wing dumping" of spoil in excess spoil disposal structures

14.14.a.8. All material placement into valley fills including durable rock fills must occur in conjunction with the developing face or be mechanically placed in lifts down the centerline of the valley. Under no circumstances shall material be placed in fills from the sides of the valley ahead of the actively developing face.

Recommendation 2.b. Revise regulations to require durable rock fills be limited to "bottom up or incremental lift construction" methods for enhanced runoff and sediment control.

14.14.g.9 The durable rock fill shall be designed and constructed from the bottom upwards with the face benches and drainage constructed progressively from the toe upwards or in lifts from the toe upwards. The design plans and specifications shall specify the thickness of the lifts. Provided, however, the lifts cannot exceed 100 feet in thickness. The permittee shall provide certification from a registered professional engineer that such design will insure stability, proper drainage and meet all safety and environmental protection standards.

Recommendation 1.a. Revise regulations to enhance Hydrologic Reclamation Plans for all existing, pending and future permits to prohibit any increase in surface water discharge over pre-mining conditions.

Recommendation 2.g. Revise regulations to limit areas allowed for clearing/grubbing of operations in excess spoil disposal areas.

5.6 Storm Water Runoff

5.6.a. Each application for a permit shall contain a storm water runoff analysis which includes the following:

5.6.a.1. An analysis showing the changes in storm runoff caused by the proposed operation(s) using standard engineering and hydrologic practices and assumptions.

5.6.a.2. The analysis will evaluate pre-mining, worst case during mining, and post-mining (Phase III standards) conditions. The storm used for the analysis will be the largest required design storm for any sediment control or other water retention structure proposed in the application. The analysis must take into account all allowable operational clearing and grubbing activities. The evaluation points will be selected on a case-by case basis depending on site specific conditions including, but not limited to, type of operation and proximity of man-made structures.

5.6.a.3 The worst case during mining and post- mining evaluations must show no net increase in runoff compared to the pre-mining evaluation.

Recommendation 2.i. Revise regulations to require rain gages be located on all mine sites and that monitoring and reporting schedules be developed.

5.6.b. Each application for a permit shall contain a runoff-monitoring plan which shall include, but is not limited to, the installation and maintenance of rain gages. The plan shall be specific to local conditions. All operations must record daily precipitation and report monitoring results on a monthly basis and any event of one (1) inch or greater must be reported to the Secretary within twenty-four (24) hours and shall include the results of a permit wide drainage system survey.

Recommendation 2.a. Revise regulations to require that each application for a permit contain a sediment retention plan to emphasize runoff control and minimize downstream sediment deposition during precipitation events.

5.6.c. Each application for a permit shall contain a sediment retention plan to minimize downstream sediment deposition within the watershed resulting from heavy precipitation events (over 0.30 inch per hour). Sediment retentions plans may include decant ponds,

secondary control structures, increased frequency for cleaning out sediment control structures, or other methods approved by the Secretary.

Recommendation 1.a. Revise regulations to enhance Hydrologic Reclamation Plans for all existing, pending and future permits to prohibit any increase in surface water discharge over pre-mining conditions.

5.6.d. After the first day of October two thousand two all active mining operations must comply with the requirements of this subdivision. The permittee must demonstrate in writing that the operation is in compliance or a revision shall be prepared and submitted to the Secretary for approval within 180 days. Full compliance with the permit revision shall be accomplished within 180 days from the date of the Secretary approval. Active mining operations for the purpose of this subsection excludes permits that have obtained at least a Phase I release and are vegetated. Provided, however, permits or portions of permits that meet at least Phase I standards and are vegetated will be considered on a case by case basis.

Recommendation 2.h. Revise regulations to maximize reforestation opportunities for all types of post mining land uses.

9.1.a. Each surface mine operator shall establish on all regraded areas and all other disturbed areas a diverse, effective and permanent vegetative cover of the same seasonal variety native to the area of disturbed land, or introduced species that are compatible with the approved postmining land use. Reforestation opportunities must be maximized for all areas not directly associated with the primary approved post mining land use. All revegetation plans must include a map identifying areas to be reforested, planting schedule and stocking rates.

Recommendation 1.c. Revise regulations to enhance contemporaneous reclamation requirements to further reduce surface water runoff.

14.15.a.2. All permit applications shall incorporate into the required mining and reclamation plan a detailed site specific description of the timing, sequence, and areal extent of each progressive phase of the mining and reclamation operation which reflects how the mining operations and the reclamation operations will be coordinated so as to minimize the amount of disturbed, unreclaimed area, minimize surface water runoff, comply with the storm water runoff plan and to quickly establish and maintain a specified ratio of disturbed versus reclaimed area throughout the life of the operation.

14.15.c. Reclaimed Area. For purposes of this subsection, reclaimed acreage shall be that portion of the permit area which has at a minimum been fully regraded and stabilized in accordance with the reclamation plan, ~~and~~ meets Phase I standards and seeding has occurred. The following shall not be included in the calculation of disturbed area

14.15.g. Variance – Permit Applications. The Secretary may grant approval of a mining and reclamation plan for a permit which seeks a variance to one or more of the standards set forth in this subsection, if on the basis of site specific conditions and sound scientific and/or engineering data, the applicant can demonstrate that compliance with one or more of these standards is not technologically or economically feasible and demonstrate that the variance being sought will comply with section 5.6 of this rule. The Secretary shall make written findings in accordance with the applicable provisions of section 3.32 of this rule when granting or denying a request for variance under this section.