UPDATE ON DMLR IMPOUNDMENT ISSUES

Virginia Professional Engineers in Mining Seminar

March 30, 2017

Presented by:
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Topics:

- Summary of OSM Report on Coal Refuse Impoundments in Virginia
- OSM Dam Safety Initiative & Proposed Regulations
- DCR Dam Safety Issues
- DMLR Policy on Permanent Impoundments and Wetlands (if time allows)
October 11, 2000 – Martin County Coal Big Branch Impoundment near Inez, KY - slurry release (approx. 300 million gallons) from a 72 acre pool area into tributaries of the Tug Fork River

The release was caused by a breakthrough into deep mine workings underlying the impoundment.
75 miles of streams in KY / WV affected including several public water supplies for 27,000 people

Severe Adverse Impacts to Aquatic Life, Roads / Bridges, Homes / Businesses

$50 Million Cleanup Cost
The Martin County event, along with several other breakthrough events of lesser magnitude (e.g. Lone Mountain in 1996), provided the motivation for OSM to launch an oversight study in 2012 to evaluate how well each state SMCRA program is ensuring similar releases will not occur in the future.
The existence of mineable coal seams adjacent and subjacent to impoundments

The information used (in addition to underground mine maps) to determine the nature and extent of underground mining

Where underground mining exists, the procedures used to evaluate breakthrough potential

Preventive measures taken where breakthrough potential exists
Based on a review of **10 impoundments** selected from the total of **22** in the state.

- Jewell Smokeless – West Fork of Harpers Branch
- Lone Mountain Processing – Millers Cove
- Cumberland River Coal – Band Mill Hollow
- Cumberland River Coal – Potcamp Fork
- Pigeon Creek Processing – Stonega
- Dickenson-Russell Coal – Middle Fork
- Dickenson-Russell Coal – Moss 1
- Consolidation Coal – Big Branch
- Powell Mountain Energy – Mayflower
- Red River Coal – Steer Branch
OSM review included both permit file research and site visits.
Draft report provided to DMME on October 20, 2016 and OSM requested DMME make comments within 30 days.
DMLR requested and was granted a 30 day extension to submit comments.
DMLR responded on December 15, 2016.
The report conclusions were generally favorable to both DMLR and MSHA.

“...DMLR, with the support of U.S. Mine Safety and Health Administration (MSHA), has taken steps in its permit review to ensure that the potential for impounded coal waste slurry breakthrough into underground mines is eliminated or minimized in cases where mine works near an impounding structure are known and documented.”
OSMRE found three areas in DMLR’s program for which “improvement is needed”:

- Availability of Permit Documents
- Breakthrough Analysis Using IC-8741 and PIL I99-V-3
- Mineable Coal Seams Subjacent / Adjacent to Impound.
Availabilty of Permit Documents

OSM Comment: “there were several instances where the OSMRE review team was unable to find important documents in the permit files such as analytical data and calculations, professional engineer certifications and inspection reports, and DMLR inspection forms.”
Availability of Permit Documents

DMLR Response:

- Many of the permits in question are very old (in some cases over thirty years old) and many of the original permit documents are now available only on microfilm. Some of the documents were not submitted to DMLR in our EP format and were provided as paper submittals. This could cause difficulty in retrieving and reviewing some of the older documents.

- In order to improve in this area of concern, DMLR will evaluate its EP system to determine how handling and tracking of such documents may be improved in the future.
OSM Comment: “The OSMRE team also evaluated breakthrough potential .... using criteria set forth in the PIL I99-V-3 (Lawless and Elam, 1997) and the basin safety zone as defined in the IC 8741 (Babcock and Hooker, 1977). The Virginia regulatory program does not include requirements, policies or guidelines similar to the PIL or the IC.”
DMLR Response:

- DMLR does not require these specific analytical techniques. However, we do require a rigorous (albeit less formal) analysis of breakthrough potential where warranted.
- DMLR will conduct a critique of these references (PIL I99-V-3 and IC 8741) and determine if the procedures outlined in the references are appropriate for Virginia and if our current technical review procedures need to be modified to adopt some or all of the criteria contained in these references.
OSM Comment: “The RA program appears to be deficient in respect to documentation of all mined or potentially mineable coal strata close to the impoundments. The OSMRE review team recommends that DMLR review all existing impoundments within its jurisdiction for possible unidentified mines. The team also recommends that the state regulatory agency adopt a policy requiring permit and permit-revision applicants to identify all mineable coal seams adjacent and subjacent to impoundments and to investigate whether underground mine works are present in each mineable seam.”
Mineable Coal Seams

DMLR Response:

- Emphasized our efforts to acquire and scan all available mine maps and make them available to the public via our GIS system.
- Agreed to initiate an internal review of all impoundments in Virginia for possible unidentified mines and potentially mineable coal seams located in close proximity.
- Agreed to develop a written policy requiring permit and permit-revision applicants to identify all mineable coal seams adjacent and subjacent to impoundments, to investigate whether underground mine works are present in each mineable seam and to assess the potential impact of any mine works identified on impoundment stability and breakthrough potential.
Potential Future Recommendations From DMLR

- Enhanced descriptions of all “mineable coal seams” (i.e. > 24” thick)
- Enhanced investigations regarding old works:
  - Thorough review of geologic literature (both new and old)
  - Thorough field examination of seam outcrops with exploration at suspicious sites
  - Interviews with landowners and local residents
  - Potential for use of geophysical methods (e.g. seismic, etc.)
  - Potential use of drilling (vertical and/or horizontal)
- Enhanced engineering controls (hillside barriers, pool pumping, etc.)
  - *Any questions before we move on to our next topic?*
OSM held a **rule scoping meeting** in St. Louis in May, 2016.

During this meeting, OSM announced its intent to promulgate a **new rule** prohibiting final SMCRA permit & bond release for coal refuse slurry impoundments until it is proven the material behind the dam is “**non-flowable**”.
If left under the SMCRA permit, stricter Federal dam safety standards would apply (e.g. FEMA 93), EAP’s would be required and bond may need to be increased to cover the potential adverse impacts of failure.

OSM indicated in the meeting that they might consider exempting states from this rule if the state had a program in place to provide for continued regulation of the impoundment upon SMCRA bond release.

This led to discussions with DCR Dam Safety Division (which leads to our next topic…)

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DCR Dam Safety Program

- The **good news**: DCR does have a program that would regulate an impoundment after SMCRA permit release.
- The **bad news**: DCR permits are rigorous in themselves and apply to many different types of impoundments (not just large refuse impoundments).
- Need to **carefully weigh out your options**.
4VAC50-20-30. Definitions - "Impounding structure" or "dam" means a man-made structure, whether a dam across a watercourse or structure outside a watercourse, used or to be used to retain or store waters or other materials. The term includes: (i) all dams that are 25 feet or greater in height and that create an impoundment capacity of 15 acre-feet or greater, and (ii) all dams that are six feet or greater in height and that create an impoundment capacity of 50 acre-feet or greater.* The term "impounding structure" shall not include: (a) dams licensed by the State Corporation Commission that are subject to a safety inspection program; (b) dams owned or licensed by the United States government; (c) dams operated primarily for agricultural purposes which are less than 25 feet in height or which create a maximum impoundment capacity smaller than 100 acre-feet; (d) water or silt retaining dams approved pursuant to § 45.1-222 or 45.1-225.1 of the Code of Virginia ("SMCRA permit"); or (e) obstructions in a canal used to raise or lower water.

* Measured from the downstream toe to the crest of the dam.

D. All engineering analyses required by this chapter, including but not limited to, plans, specifications, hydrology, hydraulics and inspections shall be conducted or overseen by and bear the seal of a professional engineer licensed to practice in Virginia.

E. Design, inspection and maintenance of impounding structures shall be conducted utilizing competent, experienced, engineering judgment that takes into consideration factors including but not limited to local topography and meteorological conditions.
DCR Dam Safety Requirements

4VAC50-20-105. Regular Operation and Maintenance Certificates.

A Regular Operation and Maintenance Certificate is required for an impounding structure.

Requirements Summary (All due 90 days before previous permit expiration or immediately if not currently permitted):
1. Application Form Completed and Signed by owner and owner’s engineer.
2. Inspection Report
3. Emergency Action Plan with DBIZ / New PMP Certification
4. Fee & Fee Form
4VAC50-20-150. Conditional operation and maintenance certificate.

A. During the review of any Operation and Maintenance Certificate Application (Operation and Maintenance Certificate Application for Virginia Regulated Impounding Structures) completed in accordance with 4VAC50-20-105 should the director determine that the impounding structure has nonimminent deficiencies, the director may recommend that the board issue a Conditional Operation and Maintenance Certificate.

B. The Conditional Operation and Maintenance Certificate for High, Significant, and Low Hazard Potential impounding structures shall be for a maximum term of two years. This certificate will allow the owner to continue normal operation and maintenance of the impounding structure, and shall require that the owner correct the deficiencies on a schedule approved by the board.
Things You Need to Know:

- There are numerous ponds in our region that have been previously permitted and released or never permitted that fall under the DCR Dam Regulations.
- These requirements fall on the LANDOWNER where the structure is located, not on the entity that may have previously permitted or constructed the pond.
- A DCR permit acts as a “permit shield” which limits landowner liability to actual damages.
- Many (if not most) mining leases do not specifically address postmining liability for impoundments. This could lead to litigation between lease parties.
More Things You Need to Know:

- DCR has already “mined” DMLR data for information on “released” ponds in SWVA and will follow up with on-the-ground inspections in the near future.
- DMLR has agreed to send all bond release applications (beginning June, 2016) to DCR so they can evaluate the potential for permanent ponds which could remain post-release.
- At some point in the future, DMLR may enter into an MOU with DCR to formalize the responsibilities of both agencies in regard to this issue.
DCR Dam Safety Requirements

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Any questions before we move on to our final topic?
Definitions:

- "Impoundments" mean all water, sediment, slurry or other liquid or semi-liquid holding structures and depressions, either naturally formed or artificially built.
- "Impounding structure" means a dam, embankment or other structure used to impound water, slurry, or other liquid or semi-liquid material.
- Wetlands are considered to be impoundments when the surface area at normal pool elevation exceeds 0.1 acres. Some wetlands smaller than 0.1 acres may be classified as impoundments if they have a significant embankment or have an average depth > 4 feet. (These will be determined on a case-by-case basis.)
Small wetlands and small water-filled depressions with a pool surface area of 0.10 acres or less are deemed to be “Isolated Wetlands of Minimal Value” by DEQ and do not require construction certification.

Wetlands constructed exclusively for Corps of Engineers or DEQ mitigation and located outside the permit area do not require certification by DMLR.

“Qualifying wetlands” constructed within the permit area (either new construction or pond conversions) will require a construction certification by a RPE of the impounding structure only (i.e. embankment and spillway).
All impoundments within the permit area (including qualifying wetlands) must be:

- Designed by a Registered Professional Engineer
- Certified upon completion of construction (or reconstruction / conversion)
- Inspected and certified annually until bond release

Permanent Impoundments are allowed in accordance with 816/817.49 (b) but will require written approval from the landowner.

Any final questions? Thank You!