Macoupin Energy, LLC
Shay No. 1 Mine

National Pollutant Discharge Elimination System (NPDES) Permit

Responsiveness Summary

Regarding

April 27, 2011 & March 11, 2014
Public Hearings

Illinois Environmental Protection Agency
Office of Community Relations
August 18, 2015

Macoupin Energy, LLC
Shay No. 1 Mine

National Pollutant Discharge Elimination System (NPDES) Permit Responsiveness Summary

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Macoupin Energy, LLC.
Shay No. 1 Mine
Renewal of Permit
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ILLINOIS EPA PERMIT DECISION

On August 18, 2015, the Illinois Environmental Protection Agency approved a renewed NPDES permit for Macoupin Energy, LLC.

The NPDES permit reflects the following changes since the last public notice:

1. Special Condition 17, which contained a chloride compliance schedule for Outfall 007 and plans to relocate the outfall, was removed from the permit. As a result, effluent limits for Outfall 007 were modified to require that water quality standards are to be met under all discharge conditions. Previously, mixing for Outfall 007 was to be allowed under precipitation-driven discharge events as described by Special Conditions 13 and 16. These Special Conditions have now been modified to only allow mixing for Outfalls 002 and 005.
2. Supplemental Construction Authorization No. 8107-10-1, (Page 19 of the draft Permit), was revised to specify the water handling procedures relative to the ground trenches and wick drains.
3. The permit was revised to reflect a maximum detection limit of 0.002 mg/L for Selenium (Special Condition No. 20 in the draft permit).

PRE-HEARING PUBLIC OUTREACH

The notice of the April 27, 2011 NPDES permit public hearing was published in the *Macoupin County Enquirer Democrat* on March 10, 17, and 24, 2011.

The notice of the March 11, 2014 NPDES permit public hearing was published in *Macoupin County Enquirer Democrat* on January 23, 30 & February 6, 2014.

The hearing notices were mailed or e-mailed to:

a) The hearing officer list of those requesting to be notified of water hearings;
b) Macoupin county officials;
c) Municipal officials in Carlinville and Gillespie; and,
d) All who requested a hearing or filed comments on the public noticed permit.

The hearing notices were posted on the Illinois EPA website and are available at:
http://www.epa.illinois.gov/public-notices/2013/npdes-notices/index#macoupin-energy

Hearing notices were posted at the Illinois EPA headquarters in Springfield and in the Marion Regional Office.

April 27, 2011 and March 11, 2014 PUBLIC HEARING

Hearing Officer Dean Studer opened the hearing April 27, 2011, at 6:06 p.m. at the Blackburn College – Olin Lecture Hall, 200 College Avenue, Carlinville, Illinois.

Hearing Officer Dean Studer opened the hearing March 11, 2014, at 5:04 p.m. at the Carlinville Park District Building located at 859 Ramey Street, Carlinville, Illinois.

Illinois EPA Hearing Participants (4-27-2011 and 3-11-2014):

Stefanie Diers, Assistant Counsel, Bureau of Water
Brian Koch, Standards Section, Bureau of Water
Lynn Dunaway, Groundwater Section, Bureau of Water
Larry D. Crislip, Permit Section Manger, Mine Program, Bureau of Water

Comments and questions were received from the audience at both hearings.

Hearing Officer Dean Studer closed the hearing at 8:05 p.m. on April 27, 2011.

Hearing Officer Dean Studer closed the hearing at 7:05 p.m. on March 11, 2014.

Illinois EPA personnel were available before, during and after the hearings to meet with elected officials, news media and concerned citizens.

Audience members representing neighbors, local government, businesses, miners, elected officials, environmental groups, interested citizens, and Hillsboro Energy, L.L.C., participated at and/or attended the hearing. A court reporter prepared transcripts for both public hearings which were posted on the Illinois EPA website and are available at: http://www.epa.illinois.gov/public-notices/2013/npdes-notices/index#macoupin-energy

The hearing record remained opened through May 27, 2011 for the April 27, 2011 hearing.

The hearing record remained open through April 10, 2014 for the March 11, 2014 hearing.

BACKGROUND of Macoupin Energy, L. L. C.
Shay No. 1 Mine

The Illinois EPA Bureau of Water prepared a draft renewed National Pollutant Discharge Elimination System (NPDES) permit with modifications for Macoupin Energy, L.L.C., Shay No. 1 Mine. The address of the discharger is 14300 Brushy Mound Road, Carlinville, Illinois 62626. The facility is located in Macoupin County, approximately 7 miles south of Carlinville, Illinois and discharges into Spanish Needle Creek and unnamed tributaries of Macoupin Creek and Spanish Needle Creek.

The applicant operates an existing underground coal mine (SIC 1222). Mine operations result in the discharge of wastewater classified as alkaline mine drainage, wastewater from the preparation plant area and coal refuse disposal piles classified as acid mine drainage, and stormwater and sanitary wastewater. Modifications included in the draft permit public noticed on December 3, 2013 included the additions of various parcels totaling 42.5 acres for use of facilities in support of the underground mining activities; reclassification of Outfall 003 and Outfall 004 as stormwater discharges; elimination of Outfall 006; incorporation of modified disposal plan to include underground disposal of fine coal refuse; and, a revision to the reclamation plan for Refuse Area Numbers 5 and 6. These are modifications (included in the December 3, 2013 public notice) since the previously public-noticed permit on November 18, 2010 (a hearing was held on April 27, 2011 regarding the 2010 public-noticed draft permit but a final permit was not issued until now).

A Total Maximum Daily Load (TMDL) for stream segment DA04 (Macoupin Creek) ultimately receiving flows from Outfall 001 was completed and approved by USEPA on September 27, 2006 for total suspended solids, total phosphorus, manganese and fecal coliform. Stream segment DAZL (Spanish Needle Creek) ultimately receiving flows from Outfalls 002, 003, 004, 005 and 007 discharges is not on the 2012 303(d) list of impaired waters.

After the hearing in 2011 and the public comments were reviewed, the Applicant contacted the Illinois EPA and presented plans for underground disposal of fine coal refuse (slurry). The Applicant also presented to the Illinois EPA a revised reclamation (abandonment) plan for Refuse Disposal Area No. 5 and 6 and modification of associated groundwater monitoring plan. This plan was proposed to help in addressing the local area groundwater contamination. Because of these proposed plans, the Illinois EPA decided to postpone issuance of the NPDES permit in 2011.

The Illinois EPA decided to modify the NPDES Permit and include the plan for underground disposal of fine coal and the revised reclamation plans. The modified NPDES Permit was again posted for public notice and a public hearing was held on March 11, 2014.

The updated information contained in the current permit from the 2011 permit includes the underground disposal of fine coal refuse, groundwater extraction trenches which are part of the Corrective Action Plan (CAP), revisions and details regarding the process water handling and management plan, and water process system. The current permit allows the Illinois EPA to clarify in the permit that a liner meeting the design permeability of no greater than 10 to the minus seventh centimeters per second would be required in Slurry Cell Number 5, regardless of whether or not wastewater came into contact with coal refuse.

Responses to Comments, Questions and Concerns

Comments, Questions and Concerns in regular text
Illinois EPA responses in bold text

NPDES Permit

1. Is there a 404 permit for this project 2?

   Yes, the U.S. Army Corps of Engineers issued a Nationwide 404 permit #12 (NMP12) authorizing the installation of pipelines for slurry disposal into mined voids and recovery of decant water on October 25, 2011.

2. Why does the permit allow for additional water to be pumped to Refuse Disposal Area 6 from the south holding pond slurry injection return water?

   The pumpage of water from the South Holding Pond into RDA (Refuse Disposal Area) No. 6 was proposed under IEPA Log No. 4221-94. The pumping of this water into RDA No. 6 is to provide and introduce additional makeup water as necessary into the coal preparation/washing process. This is one of several water transfer options that the Applicant has requested and approved to allow sufficient flexibility to insure against running short of water for the preparation plant operation during the dry summer months.

   Also, please refer to the response to Item No. 43 below.

3. What waste streams are allowed to empty into Smith Reservoir?

   There is an emergency overflow from RDA Number 5 that empties into Smith Reservoir (Lake). Refer to the attached Water Flow Balance Diagrams contained in Log No. 3177-15 in the Illinois EPA files and are available for review under the Freedom of Information Act.

   Also, please refer to the response to Item No. 29 below.

4. Are there withdrawals from the Smith Reservoir being permitted?

   There is a return pump for makeup water from Smith Reservoir (Lake) that is approved. Refer to the attached Water Flow Balance Diagram. Smith Reservoir (Lake) is on the mine property, and a treatment works for the mine. Since the treatment works is not a water of the State, no permit is necessary to withdraw water from the reservoir.

5. Are water withdrawals allowed from adjacent streams for use at Shay 1 Mine, including from Spanish Needle Creek, Macoupin Creek or tributaries to either?

Yes. Water withdraw is permitted from Spanish Needle Creek and Macoupin Creek, as proposed in the construction of a pumping station under Log No. 5143-93 (IPR No. 45). Also, please refer to the responses to Item Numbers 33, 34, 39, 40 and 43.

6. Has the Mine Pollution Control NPDES permit section staff, the Illinois EPA Groundwater staff and staff from the Site Remediation Program met at the same time to discuss Shay No 1 Mine? Have these three sections also met with Foresight Energy, Macoupin Energy and MaRyan Mining together?

   Yes, there have been numerous meetings, discussions and conference calls between the Mine Program, Illinois EPA Groundwater Section and the Bureau of Land, Site Remediation Program (SRP). Many of these meetings and/or discussions included personnel from Foresight Energy, Macoupin Energy and/or MaRyan Mining.

7. Regarding the management of onsite ponds such as recirculating ponds, holding ponds and sedimentation ponds, are fines ever removed, and if so, how often?

   The frequency of sediment being removed from the basins depends on the condition (vegetative cover as opposed to exposed soils) and size of the watershed. The need for sediments to be removed from basins is determined by visual observations, discharge water quality (a trend toward deteriorating water quality may be indicative of excessive sediment accumulation which reduces the stormwater treatment volume) and possibly measurements of sediment accumulation.

8. Where would the removed or dredged material be placed?

   If the removed or dredge material contains contaminants, such as coal or coal waste, it would be placed in the refuse disposal area. If the material is determined to be a clean sediment material, it can be potentially used as a top soil substitute material. However, IDNR/OMM would make the determination as to whether the material is acceptable to be used for reclamation as subsoil or as a top soil substitute material.

9. On this watershed map (E-4), directly east, slightly north of RDA 6 there is a continuation of the public water supply back up for Lake Carlinville. Is the Illinois EPA concerned if there was a breach or inundation type spill at RDA 6 that this area could be contaminated?

   The RDA No. 6 facility was designed and engineered to prevent a breach or spill, even in the event of seismic activity (earthquake). Therefore, the Illinois EPA has no reason to expect such a breach or spill might occur. However, in the remote event that such a spill would occur, emergency response plans have been developed by the mine to mitigate any breach or inundation.

10. Are there any wetlands or, prairie pothole potential wetlands that Illinois EPA hasn't identified in the acreage being added under this NPDES?

The Illinois EPA contacted the U.S. Army Corps of Engineers to determine if they were aware of any jurisdictional impacts to Waters of the U.S. The Corps of Engineers indicated that they did issue a Nationwide 404 permit on July 21, 1988 for impacts to Waters of the U.S. from construction of RDA #6. The Illinois EPA and Corps of Engineers are not aware of any other impacts to Waters of the U.S.

11. Considering the fact that there does appear to be some changes in our climate, does the Illinois EPA check to assure if the 24 rainfall event figures are accurate?

    Rainfall values or amounts used for design purposes are from published data developed from historical rainfall records. These design storm precipitation events include and account for historical climate changes. The rainfall data presented in this application were obtained from published data and are the accepted standard for engineering design and practices.

12. Why are the classifications for Outfall 003 and Outfall 004 being changed?

    Outfalls are reclassified based on the condition of the watershed tributary to the basins. The watersheds tributary to Outfalls 003 and 004 consist of the outslopes of older refuse disposal areas. These slopes have been covered with soil and have been revegetated. The condition and characteristics of the watersheds to these basins and outfalls qualify the outfalls for reclassification from alkaline Outfall 003 to stormwater discharge and reclamation Outfall 004 to stormwater discharge.

13. Does the Illinois EPA have any concerns regarding the RDA 6 slopes?

    The vegetation and/or revegetation of refuse disposal area slopes are reclamation activities and are governed by IDNR/OMM regulations. According to the information provided by IDNR/OMM, no subsoil or topsoil has been placed on the slopes of RDA 6 at this time. Therefore, RDA 6 has not yet been vegetated. Appropriate soil cover and vegetation will be established per the approved reclamation plan in IDNR/OMM Permit No. 209 for RDA No. 6 once the RDA is capped.

14. Is there a limit on the volume of water transferred from RDA 5 to Smith Lake?

    The maximum flowrate of water that is transferred or pumped from RDA5 to Smith Lake is limited by the pumping rate of the installed pump. During the peak years of the CAP (Corrective Action Plan) on RDA 5, pumping flows will range from 49.0 to 92.9 GPM (Gallons Per Minute) during the first three (3) years to 16.0 GPM by year nine (9) when the cover on RDA 5 is completed. However, as per the original request and as specified in the NPDES permit, the volume of water transferred from RDA No. 5 to Smith Lake shall be limited to prevent a discharge from Smith Reservoir (Lake).

15. The permit on Page 19 states that the disposal of fine coal refuse underground is authorized. Downgradient recovery wells are described. Will these wells need to operate into the indefinite future to capture decant water and protect groundwater resources from contamination?

A facility or operation approved for underground slurry disposal is required to install and operate downgradient wells that will withdraw a volume of water approximately equal to the volume of water that is being placed underground during the disposal operation. This prevents the buildup of hydraulic head in the underground mine voids that would potentially force the slurry decant water into the surrounding groundwater. These downgradient wells will no longer be operated once the slurry disposal point is relocated or if the underground slurry disposal operation ceases because there will no longer be a potential for the buildup of hydraulic head in the underground mine void.

16. Will there be any monitoring of pollutants in the water collected by the recovery wells?

    The water from the down-gradient slurry disposal wells will be pumped to the surface and maintained in the coal preparation or coal processing circuit. Therefore, since there is no offsite discharge of this water, there are no monitoring requirements under the NPDES permit for this slurry decant return water.

17. Will there be TCLP testing in regards to the NPDES permit at some point?

    There are no Toxicity Characteristic Leaching Procedure (TCLP) monitoring requirements included in the NPDES permit. TCLP analyses are required only when coal combustion waste (CCW) is approved for disposal. At the Shay No. 1 Mine there is no CCW approved for disposal; only coal combustion by-products (CCB's) have been approved by IDNR/OMM for utilization in the reclamation of the coal refuse disposal areas. The coal combustion by-products being utilized in the reclamation of the RDA's at the Shay No. 1 Mine have been appropriately characterized utilizing the ASTM 3987-85 testing method.

18. Will there be a new slurry pond or a pool construction within this NPDES, and could this be an incised impoundment or could that be changed into a new RDA?

    This NPDES permit renewal does not authorize construction of any new slurry pond or pool.

19. We are aware that there are plans for a very large long wall mine to be tied into this operating plan on this specific NPDES permit in the future. Will the IEPA review this NPDES for potential additional contamination if a larger facility does indeed happen?

    In the event that surface storage of coal at this facility increases, additional refuse disposal areas are proposed, coal production increases, etc., the sedimentation basins receiving runoff from such activities or expansion areas would be evaluated as "expanded discharges" under the anti-degradation regulations as well as evaluated for adequate treatment capacities. These re-evaluations would require a modified NPDES permit which would be subject to the public notice and comment requirements of the Clean Water Act.

20. How is the IEPA approving slurry injection at this facility when it only affords enough space for less than 5 years of space, yet a whole other longwall mine is being planned to tie in, in 3 years?

The Illinois EPA has not received any such permit applications. IEPA will review any such modification requests in accordance with applicable rules and regulations.

21. Why has the slurry pool level at the RDA not increased in the 5 years that Macoupin Energy has owned the mine? Are you certain there have not been unpermitted releases?

During that initial five-year period, there is very little, if any, mining because they were restoring the underground facilities back to safe operating conditions following the extended period of being idle. Also, during this time of restoration or upgrading, there was little or no coal being produced and cleaned that would have added to the slurry disposal area.

Based on the oversight and inter-agency communication by IDNR/OMM and the Illinois EPA, it is believed that there have been no "unauthorized" or "un-reported" discharges from this facility or operation.

22. What has Illinois EPA done to evaluate potential risks and impacts from subsidence and/or impounding wall failure (of RDAs) to area water resources? Has a risk assessment been completed for the proposed trenching and the impact of that removing up to 140 ft. depth of substrate near the toe of the impoundment may have on structural integrity and stability?

Subsidence and the risks associated with subsidence are outside the scope of the Subtitle D: Mine Related Water Pollution regulations. These risks and impacts are evaluated and addressed by IDNR/OMM. The RDA's at this facility are designed in accordance with MSHA (Mine Safety and Health Administration) regulations. These designs were reviewed and approved by MSHA to insure the structures are stable against failure under design conditions which includes potential seismic activity (earthquakes).

The trenches that have been proposed to capture groundwater that has been impacted by the RDAs will probably not exceed 30 feet in depth, but final designs will be submitted for Illinois EPA review. It should also be clarified that the trenches will not remain open and therefore subject to collapse. The trenches will be backfilled with sand that will readily conduct water to a pipe that will be laid in on the bottom of the trench. The pipes will lead to sumps where the water can be pumped out to the slurry circuit.

23. What is the purpose of this permit? I would like further clarification in laymen's language as to the purpose of this permit. Is the purpose of the permit to approve the present methods of cleaning the water before it's discharged?

The basic purpose of this permit is to regulate the discharges from the site into waters of the state or receiving streams to ensure that those discharges meet applicable effluent limits or water quality standards.

24. On page 13 of the draft permit is a paragraph that discusses discharge 001, the inoperative sanitary wastewater system. One sentence states that the system is inactive and shall not be utilized until the requirements of condition no. 13 have been fulfilled. Is that sentence supposed to refer to condition no. 17 rather than condition no. 13?

    No, the reference to Condition No. 13 is correct. The reference on Page 13 of the draft permit is to Condition No. 13 of Construction Authorization No. 8107-10 which can be found on Page 16 of the draft Permit. This Condition indicates that the discharges from Outfall 001 will be subject to the limitations of Special Condition No. 17 of the draft Permit (Page 22) regarding residual chlorine or de-chlorination unless a disinfection exemption is requested and obtained prior to discharge.

25. Why is the mine given a disinfection exemption for Outfall A02?

    The facility applied for and was granted a disinfection exemption for Outfall A02 based on the Illinois EPA's determination that the recirculation pond is not a "protected water", i.e., a water body that supports swimming, for the purposes of 35 Ill. Adm. Code 302.209. Additionally, the Illinois EPA determined that the exemption would not result in exceedance of the fecal coliform standard at any downstream Public and Food Processing Water Supply intake.

26. Could you explain why Outfalls 002 and 005 are listed as acid mine drainage while Outfall 007 is listed as alkaline mine drainage?

    Outfalls 002 and 005 receive runoff from active areas of the operation, including the preparation plant and the active RDA 6. These active areas both have potentially acid conditions. Outfall 007 receives water from areas of the facility that have been reclaimed with alkaline-producing materials. Whether an outfall is classified as acid or alkaline is based on the runoff that is tributary to the basins, not the discharge itself.

27. Is the water inside the RDAs considered to be stormwater?

    The water within the RDA is mostly water used in the coal preparation and processing circuit. Of course, these impoundments would collect and retain stormwater that falls directly on the impoundment during precipitation events. Therefore, the water within the RDA's may be considered a combination of process water and stormwater.

28. The construction authorization states that the recirculation pond serves as the treatment pond for the preparation plant and associated areas including the coal stockpiles. Why then is Smith Lake being used as a treatment pond for runoff and pumpage from Outfalls 005 and 006?

Smith Reservoir (Lake) is not being used as a treatment pond for Outfalls 005 and 006. It is used as treatment works for surface water runoff from the slopes of RDA 5; for gravity-induced flows from the pool of RDA 5, wick drains, and collection ditches; and water pumped from the pool of RDA 5.

Also, please refer to the response to Item No. 29 below.

29. Why does one of the log numbers allow water from RDA5 to be emptied into Smith Lake without meeting permit limits and without requiring water quality standards in Smith Lake?

Water quality standards must be met in the waters of the state. Smith Reservoir is exempt from the definition of waters of the state because it is considered to be "treatment works." The "waters" that IEPA and the Illinois Pollution Control Board ("IPCB") are charged with regulating are defined in Section 301.440 of Title 35 of the Illinois Administrative Code as follows:

[A]ll accumulations of water, surface and underground, natural, and artificial, public and private, or parts thereof, which are wholly or partially within, flow through, or border upon the State of Illinois, except that sewers and treatment works are not included except as specially mentioned; provided, that nothing herein contained shall authorize the use of natural or otherwise protected waters as sewers or treatment works except that in-stream aeration under Agency permit is allowable.

In 35 Ill. Adm. Code 301.415, "treatment works" is defined as follows:

[I]ndividually or collectively those constructions or devices (except sewers, and except constructions or devices used for the pretreatment of wastewater prior to its introduction into publicly owned or regulated treatment works) used for collecting, pumping, treating, or disposing of wastewaters or for the recovery of byproducts from such wastewater.

Smith Reservoir is a sediment control structure mandated by 35 Ill. Adm. Code 406.108 (mine wastewater "shall be passed through a sedimentation pond or a series of sedimentation ponds before leaving the facility"). IPCB rules allow, under certain circumstances, the construction of these structures "in stream." See 35 Ill. Admin Code Section 405.105(d). IEPA and many other regulatory bodies widely consider sedimentation control structures, such as Smith Reservoir, to be the best and most practicable treatment technology to control suspended solids from mining discharges.

Given all of the above, the IPCB has long held that coal mine sediment control structures are "treatment works" and therefore not waters of the state. In 1980, the IPCB addressed this issue precisely, and has held fast to that ruling ever since. In Amax Coal Co. v. IEPA, PCB 80-63 (December 19, 1980), the IPCB held as follows:
In requiring sedimentation ponds in Rule 608 of new Chapter 4, the Board did not expressly intend that they be limited to perched ponds or other facilities which are not formed by damming a stream or ravine. These particular sedimentation ponds in

intermittent streams fall within the exception for treatment works in Rule 104 of Chapter 3 and are not "waters of the State." Id. at p. 10.

Smith Reservoir is such a sedimentation control structure. It is a manmade reservoir, and its permitted use, for many, many years has been to collect wastewater from the facilities at the Shay No. 1 mine, to treat them by allowing the settlement of sediment, and to then discharge compliant water. Outfall 007 is at the decant of Smith Reservoir, and it denotes the point at which the treatment works discharge into waters of the state. Outfall 007 contains effluent limits sufficient to protect waters of the state.

Smith Reservoir is completely contained within land now owned by Macoupin Energy, and has been on private lands owned by mining companies that preceded Macoupin Energy's ownership. It is also wholly within Illinois DNR mining permit # 056, and has been since permitting requirements came into existence. It is not public or recreational. Accordingly, IEPA has concluded based on regulations and IPCB rulings that Smith Reservoir has and has always been treatment works.

Because Smith Reservoir is not a water of the state, discharges into Smith Reservoir are not required to be reviewed for compliance with water quality standards. Instead, water quality standards are maintained through the use of Outfall 007, at the decant. Notwithstanding this precept, IEPA has imposed limitations on water being transferred by pumpage to Smith Reservoir. Pumped water cannot be transferred in such a volume as to cause a discharge from Smith Reservoir, and any such pumpage must meet effluent standards applied to Outfall 007 before it enters Smith Reservoir.

30. Has the chemical characterization been done so that Illinois EPA knows what is coming from RDA5? Any discharge coming from RDA5 into Smith Lake will impact Outfall 007, therefore analysis of RDA5 discharge should be required in order to ensure that discharge from Outfall 007 will meet water quality standards for both quality and quantity.

The applicant conducts their own chemical monitoring of RDA5 for pH, iron, manganese, sulfate, and chloride and has previously submitted this data to the IEPA along with chemical data for RDA6, Smith Lake, the south holding pond, the recirculation pond, and Outfalls 002, 005, and 007. Effluent limits for Outfall 007 do take into consideration the pollutants that are present in RDA5 and could potentially be present at Outfall 007. Based on the data received by the IEPA, the water quality of RDA5 would not lead to exceedances of effluent limits imposed at Outfall 007.

31. 35 Ill. Adm. Code Section 309.106 provides for the Illinois EPA to conduct a site visit or obtain additional information in order to evaluate an NPDES permit application. We request that the Illinois EPA use their authority for such a request and deny issuance of this final permit until the applicant is able to demonstrate and ensure compliance with applicable permits, rules and regulations for the duration of the permit's life.

The Illinois EPA has requested additional information and/or clarification regarding several issues during the permit review process. This includes additional information related to the underground slurry disposal application, anti-degradation assessment, etc.. Information provided by the Applicant during the permit review process has demonstrated that the facility can meet the applicable permit limits which are the basis for the draft NPDES permit that was public noticed.

32. On page 13 of the draft permit, it discusses the transfer of water from RDA5 to Smith Lake. It says that this pumping of water is for maintaining a stable water level in Smith Lake. Why are you trying to maintain a stable water level in Smith Lake?

Raw make-up water (clean) water is collected from Smith Lake and placed in facilities water tower from where it is directed for underground mine use for dust suppression, fire protection and replenishment of evaporative losses. Raw water from the tower averages 144 GPM. Approximately 15 GPM is captured in the underground sumps and returned to the Recirculation Pond while the remaining 129-130 GPM is captured in the coal or lost in the mine.

In the event that the water level in Smith Lake becomes too low, a sufficient volume of supplemental water may not be available for operation of the preparation plant and control of dust in the underground mining operations.

Maintaining a stable water level in Smith Reservoir (Lake) helps in providing an adequate volume of supplemental water to support the preparation plant and underground mining operations.

33. Why is 1000-1500 gallons per minute pumped from Macoupin Creek to Smith Lake?

Water withdrawal from Macoupin Creek being directed to Smith Reservoir (Lake) supports a stable water level in Smith Reservoir (Lake) as discussed in the response to Item No. 32 above. As also indicated above, the water in Smith Reservoir (Lake) may be utilized for make-up water for the preparation plant coal washing process as well as for dust control in the underground mining operations.

34. Log 5143-93 describes pumping out of Spanish Needle Creek. What is the role of the pumping station on Spanish Needle Creek? Why is this needed?

The withdrawal of water from Spanish Needle Creek is basically for the same purpose as the withdrawal of water from Macoupin Creek as discussed in the response to Question No. 32 above. This additional water source is used in the event that an insufficient volume of water is available from Macoupin Creek.

35. Log 2186 and Log 116-97 describe transfers of water from RDA5 and the Recirculation Pond to RDA6 and then from RDA6 to the South Holding Pond. Why is water needed at RDA6 at the same time that water needs to be removed from RDA6? Does Illinois EPA have a characterization of the water proposed to be transferred from RDA5 to RDA6? Does Illinois

EPA have a characterization of the water proposed to be transferred from the Recirculation Pond to RDA6? Does Illinois EPA have a characterization of the water proposed to be transferred from RDA6 to the South Holding Pond?

Illinois EPA requires that the effluent proposed to be discharged from each outfall be properly characterized, which includes representative sampling and development effluent limits for each outfall. Water that is managed within the facility is not required to be characterized.

The RDA No. 6 will provide settling for suspended solids from water pumped from other impoundments as well as settlement of coal fines in coal refuse (slurry) from the coal preparation plant. South Holding Pond, Recirculation Pond, and RDA 5 perform similar functions. So, water could be placed into RDA6 to allow sufficient holding time for settlement of suspended constituents. Then, once adequately clarified, it can be moved to South Holding Pond and from there it is ready to be discharged. Additionally, water from these ponds can be transferred to the Recirculation Pond as needed to provide sufficient water for use in the processing plant and/or underground mine works.

36. Will the water that is in RDA5 be spilling over the spillway or pumped from the interior of RDA5 into Smith Lake? Is it precipitation driven discharge or will it be pumped? (T27, Line 10) In the permit material it is described both ways.

    Water can enter Smith Reservoir (Lake) from RDA No. 5 by precipitation event gravity flows, or it can be transferred (pumped) into this lake under certain conditions as set forth in the permit.

37. Why isn't Outfall 007 which has discharge limits included in the permit for the water to be pumped from RDA5 to Smith Lake?

    Please refer to the response to Item No. 29 above.

38. How is the spillway at RDA5 considered to be an "internal structure" with "no NPDES impacts?"

    Please refer to the response to Item No. 29 above.

39. On page 13 of the proposed permit there is mention of the installation of a pumping station on Spanish Needle Creek. Is it typical that a mine has a pumping station on a creek? Is the pumping regulated to protect downstream flow conditions? Where do I find the conditions?

    Pumping stations are often constructed on streams to provide an adequate source of make-up water for the coal processing activities. IDNR, Office of Water Resources, is the regulatory authority responsible for ensuring proper management of water resources.

40. Is it permissible to pump water out of a stream such as Spanish Needle Creek as a method to dilute pollutants in effluent from a site? This is expressly prohibited by 35 Ill. Adm. Code Section 406.104.

The pumping of water from Spanish Needle Creek is not for dilution purposes. The approval to pump water from Spanish Needle Creek is to provide additional make-up water for the coal preparation process during dry weather conditions.

For clarification purposes, it is noted that Section 406.104 provides, in part, that the dilution of an effluent from a treatment works is not acceptable as a method of treatment in order to meet the effluent standards. However, please note that 35 Ill. Adm. Code Section 302.102 of the Board regulations allows utilization of dilution of a discharge to meet a water quality standard. In the case of the Shay No. 1 Mine, neither of these situations are applicable.

41. Would the Illinois EPA ever allow pumping of water out of a water body to dilute pollutants so that they could meet water quality standards upon discharge?

While the regulations prohibit dilution to meet an effluent standard (35 Ill. Adm. Code 304.102; 406.104), there is no prohibition for the dilution of effluents to meet water quality standards. Please see 35 Ill. Adm. Code Section 302.102 for more details.

42. Has Illinois EPA reconsidered allowing all of the transfers of water from different basins?

All of the water transfers approved over the past several years have been considered and evaluated under the anti-degradation assessment that was performed for this Permit, as well as have been considered for the classifications of outfalls. Therefore, there is no reason for reconsideration of water transfer approvals.

43. Why are there so many transfers of water among: RDA6 with a flocculation station; RDA5, Smith Lake, Recirculation Pond with pump to remove sediment; South Holding Pond with a pump station, a 12 inch siphon line at Outfall 005; and a Spanish Needle Creek pumping station? Specifically provide information on pollutant concentrations or volumes of water being transferred.

The Illinois EPA asked the Applicant to provide a complete summary of waters transferred at this mine. Information provided by the Applicant is provided below. The only time water is pumped onto the property from Spanish Needle Creed or Macoupin Creek are during drought conditions when there is not enough water to operate the plant and/or underground operations. According to the Applicant, the only time water is pumped from holding pond to another is to keep all ponds full during spring rains so that there is plenty of water on site going into the summer and they do not have to pump water from off site.

1. **The only pump in RDA #6 is used to pump water to the Recirculation Pond to be used in the Plant. The flocculation station has nothing to do with**

water transfer to any location. Flocculent was only used to aid in settling out solids in the slurry so the water could be reused at the plant.

2. **No water is pumped out of RDA #5, it has a decant and an emergency spillway which both discharge into Smith Lake.**

3. **Smith Lake pumps water into the water tower which supplies water to the underground operations, all surface facilities for fire suppression and wash down water. The tower has a discharge valve to transfer water into the Recirculation Pond which is only used when there is insufficient water in RDA #6 to keep the water level in the Recirculation Pond at the needed height to operate the plant.**

4. **The Recirculation Pond is a finish pond used to supply water to the plant. Its primary source of water is from RDA #6. If there is not enough water in RDA #6 then water is pumped from Smith Lake. Water from the Recirculation Pond also supplies a water sump outlet to fill the water truck that is used as dust suppression on all the mines roadways. During the spring, the mine can also pump water back into RDA #6 to make sure the mine can retain as much water in the spring as possible to have enough water to make it through a dry summer. There is no pump in the Recirculation Pond used to remove sediment.**

5. **The pump station in the south holding pond is used to pump water from the spring rains into RDA #6 to be used during the dry summer weather. The 12 inch siphon line is used to discharge water at 005 discharge point. It has been used to drain the South holding pond when settled solids had to be removed to maintain its required holding capacity.**

6. **The Spanish Needle Creek pumping station is only used during summer droughts when water is needed to operate the mine and all other water supplies are dry or near dry.**

7. **Macoupin mine also has a permit to pump water from Macoupin Creek when all water supplies are too low to operate the mine. The water is pumped into Smith Lake where it can then be pumped to the Recirculation Pond to be used to operate the plant as detailed above.**

The above information was provided to the Illinois EPA in a document entitled, "Application for the Modification of National Pollutant Discharge Elimination System (NPDES) Permit [IL0056022]" dated May 2013 and submitted with the permit application. Water test results were also included in the application and the quarterly reports.

44. Notification of transfer and analysis results shall be provided to the Illinois EPA within 15 days of transfer. Who receives and reviews this information? How is it enforced? Is there public process to review these materials?

As indicated in Special Condition No. 3 of the permit, the analysis results will be submitted to the Illinois EPA's Compliance Assurance Section with a copy provided to the Mine Pollution Control Program. This information will be reviewed by Illinois EPA personnel (both Compliance Assurance Section and Mine Program) to determine compliance with permit requirements and limitations. There is no standard or routine process for public review of these sample analyses, however, the sample analysis results would be available for public review under the Freedom of Information Act (FOIA).

45. What are the chemical constituents of the coagulate 220 and 222?

The coagulants are added to aid in precipitating out suspended solids and metals so that effluent meets effluent permit limits and water quality standards. The Applicant submitted MSDS (Material Safety Data Sheet) for these products in the approval process. MSDS sheets for these products are on file with the Illinois EPA and are available for review under the Freedom of Information Act (FOIA).

46. Why do they need to add an aluminum based chemical to the runoff?

Stormwater runoff inherently has high total suspended solids. Products such as Coagulant 200 and 222 are often utilized by mines (and other NPDES-regulated dischargers) to settle out suspended solids prior to discharge in order to meet NPDES permit limits.

47. Has RDA6 ever spilled over the top?

No, the Illinois EPA is not aware of any overflows incident(s) occurring from RDA 6.

48. How structurally sound is RDA6? Has there been leaching and erosion of RDA6?

The design of RDA No. 6 was evaluated and approved by the Mine Safety and Health Administration (MSHA), IDNR/OMM and the IEPA. The initial application for this structure included designs for both static and seismic (earthquake) stability. Therefore, RDA No. 6 was designed to remain stable even under seismic or earthquake conditions. The MSHA approval of this structure also requires weekly inspections of the structure to ensure there are no instability issues and to inspect for excessive erosion which would be addressed during normal or routine maintenance activities.

The Illinois EPA believes that leaching is occurring through the foundation of the structure into the local groundwater. Therefore, the IEPA has required the development of a CAP for RDA No. 6.

49. Why is the Illinois EPA drafting a permit and proposing continued mining, coal washing and disposal onsite if you know that there are problems that could impact public health, aquatic life and the designated uses that are required to be protected?

This permit was prepared to ensure that all new or proposed activities will be performed in a manner protective of public health, aquatic life, and designated uses of general use waters. The permit has also been prepared and drafted to include conditions and requirements to address and/or correct environmental issues or problems that are a result of previous mining activities.

Water Quality Standards/Antidegradation Assessment

50. Will there be any additional pollutant loading for parameters that are already exceeding either groundwater or surface water standards at the site?

The draft NDPES permit does not authorize additional pollutant loadings from outfalls permitted at this site. Pollutant loadings are expected to decrease compared to previously permitted conditions, as summarized in the Applicant's NPDES Permit Application dated November, 2013. Additionally, the modified NPDES permit would include permit limits that are water quality standard based, which would be more stringent than limits contained in the previous NPDES permit.

51. Did Illinois EPA staff compare volumes of waste water, change in concentrations of pollutants in waste streams, or change in loading of pollutants in waste water? Were these comparisons done in total to the receiving body, or per individual outfall?

Illinois EPA assessed the volume of flow and water chemistry of each outfall and also took into consideration the flow and water quality of the receiving water in order to determine permit limitations for each individual outfall. Changes in volumes and concentrations of pollutants at each outfall were also considered. Also, please refer to the response to Item Nos. 65 and 72 below.

52. Can you please tell us the extent of surface water sampling that has been conducted at Smith Reservoir and what the results have been?

During review of the modified permit, the Illinois EPA received data that included an analysis of surface water samples collected in Smith Lake on February 10th, May 10th, and June 6th, 2010. The water quality of Smith Lake was found to be similar to that of effluent from Outfall 007 (Averaged results = pH 8.2, 0.1 mg/L total iron, 0.07 mg/L manganese, 248 mg/L sulfate, and 194 mg/L chloride). According to the Applicant, this is the extent of sampling that has been conducted in Smith Lake.

53. Special Condition 17 is a two-year compliance schedule for Outfall 007 to meet chloride water quality standards of 500 milligrams per year. What is the basis for the two-year compliance schedule, and what treatment methods for chloride are being considered?

At this time, the mine believes that compliance with the 500 mg/L chloride limit at Outfall 007 can be attained without the need for relocation of the discharge structure. Therefore, Special Condition 17 has been removed from the NPDES permit.

54. How does Special Condition 17 fit with Special Condition 16, which says that discharges of chloride up to 1000 mg/L will be allowed from Outfall 007?

    At this time the mine believes that compliance with the 500 mg/L chloride limit at Outfall 007 can be attained without the need for relocation of the discharge structure. Therefore, Special Condition 17 has been removed from the NPDES permit.

55. Special condition 17 gives the option of moving Outfall 007 to Spanish Needle Creek. Will that, if they do that, require an antidegradation analysis and would the public have an opportunity to comment?

    At this time, the mine believes that compliance with the 500 mg/L chloride limit at Outfall 007 can be attained without the need for relocation of the discharge structure. A check of the facility's last five years of discharge monitoring reports (November 2009 – November 2014) for Outfall 007 shows that effluent has been consistently attaining the chloride water quality standard (maximum result was 263 mg/L chloride). Given that the mine believes compliance with the 500 mg/L chloride limit can be attained, Special Condition 17 has been removed from the permit. Also, please refer to the response to Item No. 66 below.

56. Has Illinois EPA evaluated cumulative impacts of allowing chloride discharges of up 1000 mg/L at three outfalls, Special Condition 16 to Spanish Needle Creek and on whether the water will exceed the State's water quality standard of 500 milligrams per liter?

    The Illinois EPA has evaluated the cumulative impacts of allowing chloride discharges up to 1,000 mg/L at the specified outfalls.

    Also, please refer to the response to Item No. 65 below.

57. What is the basis for the two-year compliance schedule to meet the proper total residual chlorine levels in Special Condition 18?
    The residual chlorine of that special condition, is related to a sanitary waste water discharge that is currently inactive, and that special condition will take effect if and when the mine wants to reactivate that sanitary waste water discharge.

58. Are the selenium detection levels within USEPA's water quality standards?

    The detection limit for selenium specified in Special Condition 20 is 0.005 mg/L, which is equivalent to the chronic USEPA National Recommended Water Quality Criterion for this substance.

59. Illinois EPA has not demonstrated that the proposed discharges will not cause or contribute to the violation of water quality standards in tributaries and/or mainstem reaches of Spanish Needle Creek and Macoupin Creek. The Illinois EPA must include limitations in the permit necessary to achieve water quality standards. Such limitations must control all pollutants which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard. 40 CFR 122.44 (d) (1). Despite this requirement, no reasonable potential analysis has been performed on the proposed pollutant loadings.

The Illinois EPA has included permit limitations that would require attainment of water quality standards either at the outfall or outside of an allowed mixing area as authorized by 35 Ill. Adm. Code 302.102. Regulation of the discharges as proposed by the draft permit would not lead to a violation of water quality standards in Spanish Needle Creek or Macoupin Creek. A formal reasonable potential analysis of pollutants was not conducted for the renewed permit because chloride, iron, manganese, and sulfate permit limits (along with mercury monitoring) are always required for acid mine discharges and alkaline mine discharges with coal refuse or coal combustion waste disposal areas, regardless of the concentration that is actually present. By incorporating limits in the mine permit, the Illinois EPA ensures that best management practices are always carried out by the regulated facility. Given that the renewed permit does not allow increases in pollutant loading compared to previously permitted conditions, no additional permit limitations were necessary.

60. The Illinois EPA has failed to fully identify and quantify proposed pollutant load increases and the potential impacts of those load increases on the affected waters and share the findings with the public. The modifications stated in the Illinois EPA factsheet leave out major modifications described as “water management and transfer” that can be found in the construction authorization dated August 23, 2010 (See p. 12 of draft NPDES permit). It appears that several transfers of water between RDA-5, RDA-6, South Pond, Spanish Needle Creek, Smith Reservoir and the Recirculation Pond are planned.

The draft NDPES permit does not authorize additional pollutant loadings from outfalls permitted at this site. Pollutant loadings are expected to decrease compared to previously permitted conditions, as summarized in the Applicant’s NPDES Permit Application dated November, 2013. Additionally, the modified NPDES permit would include permit limits that are water quality standard based, which would be more stringent than limits contained in the previous NPDES permit. Water management and transfers of water proposed on site were considered. When reviewing water chemistry data used in determining permit limitations for Outfalls 002, 005, and 007, the IEPA also received and reviewed data for RDA5, RDA6, the south holding pond, Smith Lake, and the recirculation pond. The transfers of water on site have occurred under previous permits and the Illinois EPA has acknowledged this in the past and present permits and has set permit limitations at each outfall with this in mind.

61. The Illinois EPA has failed to demonstrate existing uses will be fully protected in accordance with 35 Ill. Adm. Code 302.105. We specifically object to Illinois EPA’s failure to require Macoupin Energy, L.L.C. to characterize conditions and existing uses for bodies of water

receiving mine and stormwater discharges from Outfalls 002, 003, 004, 005, and 007 in violation of Illinois antidegradation regulations. The Illinois EPA Water Quality Standards Section has stated numerous times that the Illinois EPA does not require any kind of assessment of headwater-type streams, assuming they have very little aquatic life potential. The importance of headwater streams is recognized by the scientific community. While headwater-type streams may require different assessment methods, many do indeed have important existing aquatic life uses that cannot be dismissed categorically as insignificant.

The renewed NPDES permit for this facility was not subject to an antidegradation assessment given that there are no increases in pollutant loading compared to previously permitted conditions. Subsequently, a formal characterization of the existing uses and the physical, biological, and chemical conditions of the receiving water was not required. Nonetheless, the Illinois EPA conducted a facility related stream survey of Spanish Needle Creek on September 28, 2010 which consisted of a physical, chemical, and biological characterization of this stream upstream, downstream, and adjacent to the mine site. Spanish Needle Creek possessed good aquatic life conditions and habitat, and chemical parameters were found to be attaining General Use water quality standards at each sampling location.

62. Alternatives that could minimize increases in pollutant loadings (sulfate, chloride, iron, manganese, etc.) have not been fully explored. The proposed mining facility has failed to satisfy antidegradation regulations. The applicant has not considered alternatives to the use of sedimentation ponds for treating runoff from raw and clean coal storage areas, coal refuse storage area and discharges from the refuse disposal areas. Alternatives to sedimentation exist that could facilitate the avoidance or minimization of increased discharges of sulfates, chlorides, manganese, iron, mercury and suspended solids. In practice, sedimentation ponds only address dissolved pollutants like sulfates and chlorides by holding them until they can be discharged during a rain event when they can take advantage of the dilution. Sedimentation ponds are clearly not effective at the Shay No. 1 site, as surface waters are being impacted by discharges from the sedimentation basins. We request alternatives be evaluated to "assure…all technically feasible and economically reasonable pollutant loading [be] incorporated into the proposed activity."

The renewed NPDES permit for this facility was not subject to an antidegradation assessment and a subsequent assessment of alternatives given that there are no increases in pollutant loading compared to previously permitted conditions.

63. Special Conditions 16 and 17 address chloride discharges at 002 and 005 to Spanish Needle Creek and through 007 to the unnamed tributary to Spanish Needle Creek. Special Condition 16 allows concentrations up to 1000 mg/L to be discharged during rainfall events, granting mixing zones downstream of each of these outfalls. Special Condition 17 establishes a compliance schedule for Outfall 007. It is not clear from the permit materials what efforts Macoupin Energy has undertaken to comply with the chloride water quality standard of 500 mg/L.

Other than utilizing best management practices on site, including the management and transfers of water on site, it is unknown what other efforts the Applicant has undertaken to comply with the more stringent chloride limits. At this time, the mine believes that compliance with the 500 mg/L chloride limit at Outfall 007 can be attained without the need for relocation of the discharge structure. A check of the facility's last five years of discharge monitoring reports (November 2009 – November 2014) for Outfall 007 shows that effluent has been consistently attaining the chloride water quality standard (maximum result was 263 mg/L chloride). Given that the mine believes compliance with the 500 mg/L chloride limit can be attained, Special Condition 17 has been removed from the permit. Also, please refer to the response in Item No. 66 below.

64. Further, 35 Ill. Adm. Code 302.102(b)(4) prohibits mixing in waters "containing mussel beds, endangered species habitat, fish spawning area, areas of important aquatic life, or any other natural features vital to the well-being of aquatic life in such a manner that the maintenance of aquatic life in the body of water as a whole would be adversely affected". What surveys have been conducted to confirm these protected natural resources do not exist? Finally, according to Section 302.102(b)(9), "no mixing is allowed where the water quality standards for the constituent in question is already violated in the receiving water." Please confirm this to be the case.

The Illinois EPA conducted a facility related stream survey of Spanish Needle Creek on September 28, 2010 which consisted of a physical, chemical, and biological characterization of this stream upstream, downstream, and adjacent to the mine site. Spanish Needle Creek possessed good aquatic life conditions and habitat. However, no mussel beds, critical areas for endangered species, fish spawning, areas of importance for aquatic life, or any other natural features were present to prohibit the Illinois EPA from granting mixing for chloride during precipitation-driven discharge events. All chemical parameters that were assessed, including chloride, were found to be attaining General Use water quality standards at each sampling location. Based on this survey and the known water quality of the stream and each outfall, the IEPA determined that chloride mixing at each outfall would not adversely affect the maintenance of aquatic life and would result in attainment of the chloride water quality standard outside the areas of allowed mixing.

65. Explain the calculation for chloride and sulfate limits for Outfalls 002, 005, and 007?

The facility has had a history of high chloride and currently has a limit of 1,000 mg/L for each outfall, therefore allowed mixing is required in order to meet the chloride water quality standard of 500 mg/L downstream of Outfall 002 and 005. Because Outfall 007 does not currently discharge directly to Spanish Needle Creek and currently has no available mixing, a chloride limit of 500 mg/L is necessary to assure that the chloride water quality standard is maintained in the unnamed stream receiving the effluent. It was initially thought that a compliance schedule would be appropriate to accommodate the lower chloride limit at Outfall 007, with the expectation that the facility would ultimately be required to construct a pipeline directly to Spanish Needle Creek to utilize available dilution. However, at this time the mine believes that compliance with the 500

mg/L chloride limit at Outfall 007 can be attained without the need for relocation of the discharge structure. Therefore, Special Condition 17 has been removed from the NPDES permit. While a chloride limit of 500 mg/L is currently recommended for Outfall 007, mixing calculations using an effluent concentration of 1,000 mg/L chloride are provided below to demonstrate attainment of the 500 mg/L water quality standard should the discharge point of Outfall 007 ever be relocated to Spanish Needle Creek to utilize available dilution. The paragraph and table below summarize the available mixing for each outfall and the chloride concentration that would exist downstream of each outfall.

Spanish Needle Creek is a zero 7Q10 flow stream and therefore is only available for mixing with discharges that occur as a result of precipitation events. Because Spanish Needle Creek is not a zero 7Q1.1 flow stream, only 25% of the water body is available for mixing in order to meet the water quality standard of 500 mg/L. Given that the outfalls only discharge in response to precipitation, it is assumed that runoff during storm events is proportional between the receiving stream watershed and the mine pond watersheds, therefore the ratio of receiving stream watershed to outfall watershed equates to volume of flow (e.g., 9.56 miles^2 of watershed upstream of Outfall 005 and 0.58 miles^2 of Outfall 005 watershed = 16.5:1 dilution ratio). Based on the watershed size of each outfall and the Spanish Needle Creek watershed size existing upstream of Outfall 005 (the most upstream outfall), the receiving water possesses adequate flow to dilute effluent from each outfall down to 500 mg/L chloride outside of the mixing area. The table below summarizes the chloride concentrations that would exist downstream of each outfall. Outfall 005 calculations were based off the watershed size of Outfall 005, the watershed size of Spanish Needle Creek upstream of Outfall 005, chloride data from Spanish Needle Creek collected upstream of Outfall 005, and a maximum chloride effluent concentration of 1,000 mg/L from Outfall 005 during discharge events. Calculation for Outfalls 002 and 007 were based off upstream watershed size, outfall watershed size, calculated upstream chloride concentrations from mixing of upstream effluent with Spanish Needle Creek, and a maximum chloride effluent concentration of 1,000 mg/L.

Outfall	Watershed size of outfall (miles^2)	Watershed size upstream of outfall (miles^2)	Chloride upstream of outfall (mg/L)	Chloride within 25% mixing area (mg/L)	Chloride downstream of mixing area (mg/L)
005	0.58	9.56	38.9	226.6	93.9
002	0.19	10.14	93.9	157	110.6
007	0.95	10.33	110.6	349.8	185.5

Sulfate limits were determined according to the water quality standards at 35 Ill. Adm. Code 302.208(h) and were based on projected chloride and hardness concentrations downstream of each outfall. Data collected from Spanish Needle Creek upstream of Outfall 005 (the most upstream outfall) was used as the baseline hardness concentration existing upstream of the mine. The calculated daily maximum sulfate limits for each outfall are listed in the table below. Mixing allowance will not be needed in order for the applicant to meet sulfate limits. To aid in future determination of sulfate permit limits, continued monitoring for sulfate, chloride, and hardness should be required in the receiving water downstream of each outfall.

Outfall	Downstream Chloride (mg/L)	Downstream Hardness (mg/L)	Sulfate Limit (mg/L)
005	93.9	276.4	1730.5
002	110.6	281.5	1732.9
007	185.5	272.4	1629.4

66. Does Special Condition 16 call for the reduction of chloride concentrations in Outfall 007 effluent to 500 mg/L over the next two years? Why is the mine allowed to take two years before they are in compliance with the chloride water standard?

The 24 month compliance schedule was developed to allow the mine adequate time to first determine if the more stringent chloride limit could be met at the current discharge location and, if not, would allow the mine adequate time to develop plans and specifications for the pipeline, commence construction, and demonstrate compliance with permit limitations at the new discharge location. However, a check of the facility's last five years of discharge monitoring reports (November 2009 – November 2014) for Outfall 007 shows that effluent has been consistently attaining the chloride water quality standard (maximum result was 263 mg/L chloride). At this time, the mine believes that compliance with the 500 mg/L chloride limit at Outfall 007 can be attained without the need for relocation of the discharge structure. Therefore, Special Condition 17 (the chloride compliance schedule) has been removed from the NPDES permit, and Special Condition 16 has been modified to reflect the requirement for Outfall 007 to meet the 500 mg/L chloride limit at all times.

67. In Special Condition 15, the last sentence says that a mixing zone for chloride has been granted for each outfall. What is the size of that mixing zone for each outfall?

Each outfall is allotted 25% of the receiving water's volume of flow existing upstream of outfall. There is no defined area of mixing for each outfall, as mixing is only allowed during precipitation events and all mixing zones are based on watershed sizes of the outfalls and receiving water.

68. Does Illinois EPA calculate how far downstream it takes before the water quality standard is achieved?

The standard should be met quickly given that only 25% of the stream flow is utilized for mixing and under these circumstances the highest expected concentration within the area of allowed mixing is 349.8 mg/L. The Illinois EPA expects that mixing will occur quickly because of the turbulence in the receiving stream during precipitation events.

69. Clarify what is meant by the term "designated uses" as it listed on page 2 of the fact sheet. This term apparently differs from its meaning in stream classification.

"Designated Uses" as it appears on page 2 of the fact sheet was an error and should have been replaced by "Potential Sources", as the information below it was intended to characterize the sources of each cause of impairment.

70. There is the need to explore alternatives that could minimize increases in pollutant loadings (sulfate, chloride, iron, manganese, etc.). The state antidegradation rules at 35 Ill. Adm. Code 302.105(c)(2) require that all reasonable measures be taken to avoid and minimize pollutant loading. The applicant has not considered alternatives to the use of sedimentation ponds for treating runoff from raw and clean coal storage areas, coal RDAs and discharges from the RDAs.

The renewed NPDES permit for this facility was not subject to an antidegradation assessment and a subsequent assessment of alternatives given that there are no increases in pollutant loading compared to previously permitted conditions.

71. Has the Illinois EPA conducted analysis to determine what is coming out of each of the outfalls to assure that the water being released will meet water quality standards after all of the transfers of water on this site?

The Illinois EPA is aware of the potential for transfers of water throughout the site. The transfers of water on this site have occurred under previous permits and the IEPA has acknowledged this in the past and present permits and has set permit limitations at each outfall with this in mind. The IEPA reviewed water chemistry data from Outfalls 002, 005, and 007, and also received and reviewed additional data for RDA5, RDA6, the south holding pond, Smith Lake, and the recirculation pond in order to determine permit limitations for each Outfall. The Illinois EPA determined that chloride was the only parameter that may not meet water quality standards upon discharge, but the chloride standard would be attained in the receiving water outside of the area of allowed mixing.

Also, please refer to the response to Item No. 65 above.

72. Have the cumulative effects of Outfalls 002, 003, 004, 005, and 007 into the Spanish Needle Creek been considered?

The Illinois EPA considered the water quality of Spanish Needle Creek and the cumulative effects of each outfall when determining the appropriate permit limitations for Outfalls 002, 005 and 007.

The Illinois EPA also performed a chemical, physical, and biological survey of Spanish Needle Creek upstream, downstream, and adjacent to the mine site and found that the mine was having no discernable effects on Spanish Needle Creek.

73. Are total suspended solids considered mine waste?

Total suspended solids is a pollutant regulated in NPDES mine permits to assure that best management practices are being applied to retain and settle out suspended solids prior to discharge. The regulation of this parameter in NDPES permitting serves as a catchall for all suspended solids that could potentially be discharged at a site, which may include mine waste (e.g., coal pile runoff) as well as stormwater runoff from areas not containing coal or mine waste (e.g., reclaimed areas, undisturbed areas, support areas).

74. Special Condition 12 requiring monitoring for total suspended solids, iron, pH, alkalinity, acidity, sulfates and chlorides prior to pumping is not sufficient. The applicant and the Illinois EPA must reestablish outfalls from each of the runoff and discharge streams at the point of entry into the Smith Reservoir or an alternative waterbody and assign pollution limits in the permit for each outfall to ensure water quality standards will be met in Smith Reservoir.

Water quality standards are not required to be met in treatment works. Given that Smith Lake is a treatment works for the mine, water quality standards are not applicable within Smith Lake. However, water quality standards are applicable to the overflow from Smith Lake (Outfall 007). Also, please see response to Items No. 4, No. 28 and No. 29 above.

75. Why isn't manganese required to be monitored given that there is a limit for manganese at Outfall 007?

Special Condition 12 has been modified to include manganese as an additional parameter to be measured prior to allowing water transfers from RDA 5 to Smith Lake.

76. Does this site have PAHs and are there records that track PAH levels?

PAHs are lipophilic compounds, which means that they have a greater affinity to bind to organic substances rather than water. Because of these properties, PAHs bind to sediment and other organic materials and are not believed to be present in groundwater or surface water discharges from this site. Given that no monitoring or permit limits have been required for PAHs at this facility in the past, there are no records regarding these parameters.

77. Knowing there are exceedances of total dissolved solids, total suspended solids, iron, manganese, sulfates, and chloride, what additional monitoring has been done to find out what's behind those indicated pollutants?

Prior to the first public hearing, Illinois EPA personnel reviewed the "Supplemental Site Investigation Report; Shay No. 1 Coal Mine, Carlinville, Illinois" compiled by Conestoga-Rovers & Associates from February 2011 (Ref. No. 054658(3)) and found no evidence of surface water quality standard violations in Spanish Needle Creek.

78. Are effluent samples taken immediately outside of the outfall or are they taken from different areas?

Effluent samples are collected at the end of the discharge pipe before the effluent mixes with the receiving waters.

79. What month was the facility related stream survey conducted in?

The survey was conducted on September 28, 2010.

80. What method was used for collecting macroinvertebrates? Does that method include the time that the survey should be conducted and the season

Methodology used in collecting macroinvertebrates is summarized in the Illinois EPA's November 16, 2011 draft document entitled *Standard Operating Procedure for Methods to Sample Wadeable Stream Macroinvertebrates to Detect Chemical Impacts from Point-Source Discharges*. The method specifies that facility related stream surveys should be conducted between June 1st and October 15th.

81. Why are the smaller tributaries (Spanish Needle Creek and the unnamed tributary) not assessed? These are used to water livestock and for other uses.

Spanish Needle Creek and the unnamed tributaries of Spanish Needle Creek are not part of the IEPA's Intensive Basins Survey rotation due to their small watershed sizes and inability to provide permanent flow during the summer. While macroinvertebrates may be present in isolated pools during drought conditions, fish instinctively move downstream and therefore are not appropriately assessed under these conditions. Larger watersheds, such as Macoupin Creek in this instance, are better candidates for assessing the attainment of uses given that flow is not a limiting factor.

82. Has there been a biological study done of the creek and if so when?

The Illinois EPA conducted a facility related stream survey of Spanish Needle Creek on September 28, 2010 which consisted of a physical, chemical, and biological characterization of this stream upstream, downstream, and adjacent to the mine site.

Groundwater Issues

83. On October 15, 2013, Illinois EPA requested new toxicity characteristic leaching procedure tests on slurry. Do you know what the results of those tests are??

Yes, the mine has provided those results to the Illinois EPA. The purpose for requesting the tests was to compare coal slurry to the coal combustion residue that the mine accepts as CCB. The results indicate that the CCB and the coal slurry are similar, with CCB having a higher pH, which allows it to provide neutralization, while the refuse has much higher sulfur content.

Please see attached summary of the CCB Analytical Data.

84. Under a Memorandum of Understanding between Illinois EPA and IDNR that some of the responsibilities under SMCRA, namely for groundwater protection, has been delegated from IDNR to Illinois EPA. If either the nondegradation standard or groundwater quality standards are exceeded either on or off-site at Shay 1 Mine, whose responsibility is it to issue a violation notice to request inspection or to request additional sampling and so forth?

If there was a new exceedance (i.e. one that did not fall within the scope of the consent order) it would be the Illinois EPA that would issue violation notices, or required additional activities with regard to groundwater.

85. Are groundwater quality standards being met at Refuse Disposal Areas 1-4?

There are groundwater quality standard exceedances throughout the site.

86. Are coal combustion byproducts allowed at RDA 5 and 6 and if so, do you know in what volumes?

Yes. Currently, only the volume of CCB required for neutralization is allowed. However, as part of the corrective action plan, the mine may accept as much as 1.5 million tons of CCB annually. Acceptance of CCB as fill has not yet been approved by the Department of Natural Resources.

87. What is the most recent analysis of the leaching potential of the coal combustion byproducts and what test was used?

The analyses for CCB to demonstrate compliance with Section 3.135 of the Act (415 ILCS 5/3.135), using test method ASTM D-3987-85, must be reported to the Department of Natural resources annually by January 31st. The last available CCB analysis is from January 2015. Please see attached information on the CCB analysis from January 2015.

88. What is the water quality characterization of the waste streams regarding RDA 5 and 6? Where would the water from these waste streams go?

Several samples of leachate (slurry circuit water) were collected and a statistical method was used to calculate a tolerance limit. The tolerance limit provides an estimate of the maximum concentration of each chemical constituent that would be expected to occur. These maximum estimated concentrations were assumed to be the actual concentration that would exist.

For RDA 5, as proposed, there is gravity flow from RDA 5 out of the drainage layer to Smith Lake. The RDA 6 waste water flow has not been proposed yet, since water is still pumped from RDA 6 as make-up water for the mining operation.

89. Was it known prior to the purchase of the mine that there was off-site contamination?

Prior to buying the mine in 2009, there was no information that demonstrated off-site contamination. Off-site contamination was proven as part of investigations required under the site remediation program (SRP).

90. Do you monitor for groundwater contamination in respect to the coal slurry?

No groundwater monitoring relative to the underground slurry disposal is required.

91. If there is a contamination to groundwater from coal slurry, is there a way to remediate that?

The current groundwater problem is partially caused by slurry that was stored above ground. Injecting slurry into the abandoned mine works is not expected to cause contamination of any source or future source of drinking water. The State Geological Survey has created maps statewide that display the elevation underground where sources of drinking water (fresh water) occur.

In the area of the Shay #1 mine, the greatest depth below the ground surface where fresh water exists is 50-100 feet above the Number 6 Coal, which is the coal member being mined. Therefore, the mine voids being used for slurry disposal will not pose a hazard to current or potential sources of drinking water. Since the slurry is not pressurized in the mine void and much of the water that carried slurry is pumped back into the mines water circuit, there is nothing to cause the slurry to migrate upwards towards fresh water.

92. Why when you talk about NPDES chemicals for which you analyze, like chloride, sulfate, manganese, iron, whatever, why aren't some of the more toxic components of coal, like arsenic, cadmium, thallium, beryllium, lead, mercury, why aren't they analyzed or checked for in groundwater and in surface water?

The groundwater monitoring required in this NPDES permit does require the beginning of monitoring for those constituents. Please see NPDES Special Condition 14.

93. Does the mine have an underground injection permit from the Illinois EPA?

The wells used to inject slurry are classified as Class V Injection Wells. Class V wells are not required to obtain a permit. The underground injection control program at the Illinois EPA does maintain an inventory of Class V wells.

94. Will the Illinois EPA be reviewing all plans for the trenching?

The Illinois EPA will review trenching plans.

Please, also refer to the response to Item No. 22 above.

95. There are a lot of room and pillar sections going north toward Carlinville, and that would be north toward the gradient that appears to be draining toward Lake Carlinville, so without knowing exactly the plan for the injection, we wonder how can Illinois EPA be certain that the requirements to protect the public water supply lake be met?

Illinois EPA did consider the direction of the slope of the mine works into which slurry is to be injected. Berms will be constructed in the mine works to limit the area into which slurry can travel. Even if the berms were overtopped or the slurry somehow went around the berms, the mine works is located 300 or more feet below land surface. Since the slurry injection is not pressurized once it enters the mine void, there is nothing to cause the slurry to migrate upwards towards Lake Carlinville. Additionally, the regional slope of the coal seam in which the mine voids are located is to the southwest, not towards Lake Carlinville.

96. There are room and pillar chambers under RDA 6 and under RDA 5 and the conglomeration RDAs there, there's room and pillar chambers going clear north quite a ways almost to Route 4. There have been roof falls at this mine, there have been concerns about stability of perhaps some of the underground chambers. Is this a safe thing to do for the protection of the groundwater for the future?

Please, also refer to Items No. 91 and 95 above.

97. Can you describe any changes in the abandonment plans for RDA 5 and 6? And will there be opportunities for the public to see that and comment?

The corrective action plan requires the installation of wick drains and a drainage layer to dewater the existing slurry and a final cover that will incorporate a low permeability clay layer in both RDA 5 and RDA 6. The current abandonment requires only four feet of soil. The mine will be required to obtain an Office of Mines and Minerals permit to make these changes.

98. The Corrective Action Plan that was received June 10, 2013; how does that plan relate to the May, 2012, Remedial Action Plan?

The Remedial Action Plan (RAP) was a submission, required under the SRP. The Corrective Action Plan is a modification of the RAP, which includes changes required by the Illinois EPA to better protect groundwater. The Corrective Action Plan was developed to address the groundwater standards exceedances that were the subject of the violation notice W-2011-00040.

99. What analysis has IEPA performed to show that the plan to dispose of coal refuse underground won't further result in groundwater contamination?

Please refer to the responses to Items. No. 91 and 95 above.

100. As for protection of existing and designated groundwater uses, it appears that the Illinois EPA maintains that groundwater quality standards do not apply under a mining site within the permitted area per 35 Ill Adm. Code Section 620.240(f) which states that "Groundwater which underlies a coal mine refuse disposal area not contained within an area from which overburden has been removed, a coal combustion waste disposal area at a surface coal mine authorized under Section 21(s) of the Act, or an impoundment that contains sludge, slurry, or precipitated process material at a coal preparation plant, in which contaminants may be present, if such an area or impoundment was placed into operation after February 1, 1983, if the owner and operator notifies the Agency in writing, and if the following conditions are met:". We maintain that sufficient evidence exists that shows that subsections 2), 3) and 4) are not being met at Shay No. 1, meaning that groundwater existing under the coal refuse area does not meet the criteria to be considered "Class IV: Other Groundwater" and instead should have to meet criteria and protections for Class II groundwater. The following requirements to be classified as Class IV: Other Groundwater found at 35 Ill Adm. Code Section 620.240(f) have not been met:

2. The source of any release of contaminants to groundwater has been controlled
3. Migration of contaminants within the site resulting from a released to groundwater has been minimized;
4. Any on-site release of contamination to groundwater has been managed to prevent migration off-site;"

The violation notice W-2011-00040 issued by the Illinois EPA and the complaint filed by the Illinois Attorney General allege violations of the Class I and Class II groundwater quality standards. Macoupin Energy and the State are finalizing a consent order that incorporates a corrective action plan (CAP) that will remediate groundwater beyond the foot print of the RDAs to achieve the Class I and Class II standards. The Illinois EPA believes that implementation of the CAP will meet the criteria of 35 Ill. Adm. Code 620.240(f) (2), (3) and (4)

101. Has there been or will there be any analysis of groundwater for toxic chemicals such as arsenic, beryllium, boron, cadmium, chromium, lead, mercury, nickel, selenium, or polycyclic aromatic hydrocarbons (PAHs), since they are commonly found in coal refuse? We recommend that Outfalls 002, 005 and 007 be monitored quarterly for these chemicals.

This permit requires groundwater monitoring of the 35 Ill. Adm. Code 620.410(a) constituents with the exception of radium 226 and 228, and perchlorate. Please see NPDES permit Condition 14.

102. In the construction authorization dated August 23, 2010, Special Condition 14 requires groundwater monitoring for constituents from Aluminum to Zinc. Has this sampling been required before? Has the Illinois EPA seen groundwater monitoring values for those pollutants before? Why doesn't the Illinois EPA require this monitoring to be conducted prior to issuance of the permit?

The groundwater monitoring required in this permit has not been required before at this mine, but has become a standard requirement for new mine permits. Since the permit for this mine has not been renewed for some time, the requirements contained in Condition 14 are being incorporated into this permit. Having new requirements, such as monitoring, take effect coincident with the issuance of permits makes tracking of the requirements simpler and also provides an enforceable document to contain the requirement.

103. How can this site be in the SRP when 35 Ill. Adm. Code 740.105 says that places cannot be in the program if they are under current state or federal permits?

35 Ill. Adm. Code 704.105(a)(2) states that " one cannot use the SRP program if: "The investigative and remedial activities for which Agency review, evaluation and approval are requested are required under a current State or federal solid or hazardous waste permit or are closure requirements for a solid or hazardous waste treatment, storage or disposal site under applicable State or federal laws and implementing regulations." In this case, this section does not apply to the Shay mine. The site does not have any requirements under a current State or federal solid or hazardous waste permit or are closure requirements for a solid or hazardous waste treatment, storage or disposal site under applicable State or federal laws and implementing regulations.

104. Is the remediation site or any other part of the site currently polluting surface or groundwater?

Yes, violation notice W-2011-00040 was issued for alleged exceedances of the Part 620 groundwater quality standards. These alleged violations resulted in a referral to the Illinois Attorney General's Office. The Illinois Attorney General's Office, the Illinois EPA and Macoupin Energy are finalizing a consent order to address the alleged groundwater violations. Monitoring at surface gauges, which are completed as part of site investigations under the SRP, do not indicate exceedances of surface water quality standards.

105. Where is the Groundwater Monitoring Zone (GMZ) located?

The GMZ will be located as described in the GMZ application, submitted after the consent order is finalized. In general, the GMZ will be all of the mine property north of Spanish Needle Creek.

106. Are there any potable wells located within the SRP site or the GMZ?

Macoupin Energy must withdraw from the SRP as a condition of the consent order and the GMZ is entirely on mine property. There are no potable wells on the mine property.

107. Where are the onsite groundwater monitoring wells located?

There are monitoring wells located throughout the site and some off-site too. Please see the attached map.

108. Can you tell me how impoundments one through six are lined? Do they have plastic liners or is it four foot of clay?

Impoundments one through six are unlined. All of these impoundments were constructed before the use of liners became a common practice.

109. Which class of groundwater quality standards would the groundwater directly under the RDAs be held to?

Please refer to the response to Item No. 100 above.

110. Is the difference in the applicable groundwater standards for RDA5 and RDA6 due to their age?

Yes, but that difference only applies within the foot print of the impoundments. Please see 35 Ill. Adm. Code Section 620.450(b).

111. Has the owner or operator of the site notified the Illinois EPA that the source of any release of contaminants to the groundwater has been controlled as per condition 2 of 35 Ill. Adm. Code 620.240 (f)(2) and (3)?

Please refer to the response in Items No.100 and No. 104 above.

112. Have there been analysis of toxic materials (i.e. lead, cadmium, selenium, arsenic, and PAHs) for exceedance of Class I groundwater standards?

Groundwater has not been monitored for those constituents.

Also, please refer to the responses in Items No.101 and No. 102 above.

113. How many private drinking water wells are located in the vicinity of the Shay No. 1 Mine?

Based on information provided in the remedial objectives report submitted under the SRP, the Illinois EPA does not believe there are any drinking wells in use in the vicinity of the RDAs

114. Where and how far has the contamination migrated off of the NPDES permit site?

Contaminants have migrated at least 500 feet, but less than 1,000 feet west and northwest of RDA5.

115. Is the groundwater around the impoundments tested for arsenic, mercury, etc?

This permit contains requirements to monitor for a wide range of contaminants in the groundwater monitoring wells; however, metals other than iron and manganese are not currently part of the monitoring requirements.

Also, please refer to the responses to Items No. 101 and 102 above.

116. What chemicals constituents are being leached into the groundwater and do they pose a risk to adjacent landowners?

Violation notice W-2011-00040 alleged groundwater standards exceedances of iron, manganese, sulfate, chloride and total dissolved solids in samples from various monitoring wells. With the exception of manganese, these constituents cause water to have objectionable taste, odor and appearance, but have no long term health effects. Manganese can have health effects at certain levels, however it is noted that up gradient wells, unaffected by the mine, also exceed the manganese groundwater standard.

117. How can I review the results from the monitoring well on my property?

Monitoring well results can be obtained by submitting a Freedom of Information Act request to the IDNR.

118. Is Spanish Needle Creek currently being impacted by groundwater contamination at the mine? If so, why are there no special conditions to give this creek every possible protection from additional pollution that can be provided in an NPDES permit?

There is no information that indicates groundwater contamination is impacting Spanish Needle Creek. Monitoring at surface gauges, which was completed as part of the site investigations under the SRP, do not indicate exceedances of surface water quality standards.

119. On page 17, Special Condition 14G deals with the determination of whether a statistically significant change has occurred in the groundwater. What information did you obtain through this condition?

Condition 14(g) of this NPDES permit addresses actions, which are required by the permitee, but this requirement does not take affect until the NPDES permit is issued. Therefore, condition of 14(g) of this permit, at this time, has not provided the Illinois EPA information. Once the permit is issued, the permitee will be required to follow the requirements found in Condition 14(g) of the NPDES permit.

120. Has the Illinois EPA taken any steps to let the owners of private drinking water wells located in the vicinity of the Shay No. 1 Mine know that there's groundwater contamination both onsite and moving offsite?

Based on the information contained in the remedial objectives report for the SRP, the Illinois EPA is not aware of there being any drinking water wells within the vicinity of the RDAs. The Illinois EPA believes all residents near the mine are served by a community water supply.

Enforcement/Compliance Issues

121. In your assessment, is Smith Lake considered a water of the state of Illinois?

The Illinois EPA has determined this that Smith Lake is not a "waters of the state".

Please also refer to the responses found in Items No. 28 and No. 29 above.

122. Macoupin Energy fails to meet requirements for protected waters of the state of Illinois. The renewal of the NPDES permit violates Illinois law because the mine is unlawfully using Smith Lake, a "waters of the state," as a treatment works. Title 35 of the Illinois Administrative Code, Section 301.440 states that nothing contained in the Environmental Protection Act or Administrative Code "shall authorize the use of natural or otherwise protected waters as sewers or treatment works…." In this case, Macoupin Energy has impounded natural waters for use as a pond to dilute effluents from activities on the Shay 1 mine. That impoundment has been termed "Smith Lake" or "Smith Reservoir." (E-17) What legal authority does the Illinois EPA or a private entity have to remove waters of the state from protection under the CWA?

This water has not been removed from protection since it was always determined to be a "treatment works".

Please, also refer to response found in Items No. 28, No. 29 and No. 121 above.

123. Under what legal authority or regulation change or something, it was my understanding that the original NPDES for this mine when it was Monterey 1 with Exxon said that the NPDES permit could not be transferred and that a new permit would have to be obtained and, you know, then it was transferred, the permit was transferred from Monterey Coal Company to Macoupin Energy. Is IEPA aware of this?

Yes, the Illinois EPA is aware this permit was transferred. Monterey submitted their renewal application dated March 20, 2000 pursuant to 35 Ill. Adm. Code 309.104. The renewal application was received by the Illinois EPA on March 23, 2000. 35 Ill. Adm. Code states, "any permittee who wishes to discharge after the expiration of his NPDES permit shall apply for reissuance of the permit not less than 180 days prior to the expiration of the permit."

An effective permit was transferred in 2009 to Shay. This transfer was a name change only. Such a change is considered a minor modification pursuant to 40 C.F.R. 122.63(d).

124. Water law 35 Ill Adm. Code 406.204 says that the mine must use good mining practices. How can violations of the law be good mining practices?

The permit requires the permittee to use Good Mining Practices (GMPS) as required in 35 Ill. Adm. Code Section 406.204. These requirements are outlined in the NPDES permit on Page 15, Condition 11. GMPS are utilized to minimize the dissolved and suspended solids in the runoff of the basins and subsequent discharge. The permittee has proposed drainage control plan that has been approved under the NPDES permit. This plan includes ditching of runoff from disturbed areas, sedimentation basins, diverting runoff from unaffected areas around disturbed areas to minimize additional contribution of suspended solids, erosion control measures such as mulching, silt fence, straw bale dikes, etc., to demonstrate the permittee is using good mining practices.

If there is a violation found concerning the conditions of the NPDES permit, the Illinois EPA can take action against the permittee pursuant to Section 31 of the Illinois Environmental Protection Act.

125. A letter from Illinois EPA to the mining company in January 2009 discusses the Illinois EPA's position not to take enforcement actions or levy monetary penalties as long as the new operator makes good faith efforts to work within the bounds of the SRP and the GMZ designations. Does this mean that Illinois EPA is not enforcing penalties or regulations?

The referenced 2009 letter is speaking in general terms with regard to the Illinois EPA's usual practice when a site is enrolled in the SRP. The letter does state that the "Agency cannot relinquish its primary mandate of environmental protection. In this light, the SRP and GMZ programs to not eliminate an owner or operator's potential liability for any worsening of the groundwater after the GMZ has been established".

The Illinois EPA did issue violation notice W-2011-0040 to Macoupin Energy. The violation notice was subsequently referred to the Illinois Attorney General's Office due to the amount of time needed to complete the remediation at the mine. The referral resulted in a consent order, which is being finalized by the State and

Macoupin Energy. The consent order will contain a penalty and requirements to achieve compliance with groundwater regulations.

126. If an active RDA was unvegetated and showed significant signs of erosion along the embankments that form the disposal area, would that be a violation of the permit?

The Illinois EPA would conduct a site inspection to determine if the RDA were unvegetated and to determine the severity of the erosion to determine if there has been a permit violation. If the inspection found a permit violation, the Illinois EPA may issue a violation notice.

Site Remediation

127. How does Illinois EPA justify allowing Shay 1 mine site to be enrolled in the site remediation program at the same time they are allowed to operate and add additional pollutants to the very sources that they are, the very sources that are polluting groundwater and surface water?

The Site Remediation Program rules do not prohibit sites like Shay #1 Mine from entry into the program.

Reclamation

128. What are the reclamation plans to remove coal waste at RDA6 according to the Illinois Administrative Code and the U.S. Federal Register rules?

The coal waste from RDA 6 is not required to be removed. Reclamation requirements can be found within Illinois Department of Natural Resources regulations.

129. Who is responsible for cleanup when operations at this mine cease?

The Permittee is responsible for reclamation pursuant to 35 Ill. Adm. Code 405.110 when operations at this mine cease. The Illinois EPA must be notified within 30 days if active mining will be suspended. During the suspended period all monitoring and water control under the NPDES Permit must be maintained.

The cleanup/abandonment is detailed in the facility's reclamation plan submitted in accordance with 35 Ill. Adm. Code 405.109. Plan must demonstrate that post mining violations of the Act will not occur. At that time, all discharges and runoff from the site are required to meet the water quality standards.

130. According to the NPDES IL[#00]0056022, page 12 of log No. 5360-03 Outfall 006 was reclaimed. How and when was it reclaimed?

Outfall 006 was an incised sediment pond at the East Intake Air shaft. Once the shaft was installed and the mine had progressed through the shaft area the water was diverted from outfall 006 into the underground workings of the mine. The pond was then filled and re-vegetated around 2005.

131. How will the emergency spillway behave once reclamation of Outfall 005 is complete and vegetative soil caps are in place?

South Holding Pond was designed to have a pipe as the primary discharge structure, Outfall 005, and open channel emergency spillway for the active mining phase of this operation. Reclamation plan for this basin is to remove the discharge structures and backfill the basin with soil. The final stage of the reclamation plan will cover the entire area with soil and this area will be left as undeveloped land and cropland.

132. When reclamation of Outfall 005 is complete will the spillway be closed so that it prevents any water that's still inside from running off?

In order for the reclamation of Outfall 005 to be complete, the basin must be backfilled with soil, the spillway removed, and the whole area has been covered with soil and revegetated. Runoff from the area will be a sheet flow runoff similar to a runoff from naturally vegetated areas.

133. When did RDA5 stop receiving fine coal refuse for storage or disposal? When did RDA5 start the process of reclamation?

Refuse Disposal Area No. 5 reached its designed capacity for receiving fine coal refuse in 1996 and fine coal refuse was sent to the newly constructed Refuse Disposal Area No. 6. At this time, coarse coal refuse is used to start the reclamation of Refuse Disposal Area No. 5 and dike construction of Refuse Disposal Area No. 6.

134. Log 2048-06 requested water transfers from RDA6 to RDA5. According to the Illinois Department of Natural Resources, Department of Mines and Minerals RDA5 is currently in final reclamation. Why is the transfer from RDA6 to RDA5 being proposed in this permit if the area is in final reclamation?

Although RDA No. 5 is currently undergoing final reclamation, this structure remains part of the approved water management plans. Therefore, until final reclamation is complete, the option remains available for the mine to utilize any available water storage or holding capacity in RDA No. 5 as part of the overall water management plan.

Other Issues

135. Can I get NPDES results on Shay mine through a FOIA request?

The monitoring data sent to Illinois EPA by the mine is entered into the ICIS (Integrated Compliance Information System) system maintained by USEPA. The public has access to this data through a system called ECHO (Enforcement and Compliance History Online). The website for ECHO is http://echo.epa.gov/#. Using the NPDES permit number (IL0056022) ECHO will provide information on compliance and enforcement. If ECHO fails to provide the needed data, a Freedom of Information Act (FOIA) request may be filed with Illinois EPA. Instructions for filing a FOIA request are found on the Illinois EPA website http://www.epa.illinois.gov/foia/.

136. We own land contiguous to the mine property and have been forced to close our residential wells and tolerate material blowing into our work areas. Will this permit create more problems for adjacent properties?

The Illinois EPA has made a decision to grant the permit pursuant to Section 39 of the Illinois Environmental Protection Act. During the permitting process, the IEPA must base its decision whether to prepare a draft permit and issue a final permit on the application provided by the applicant and applicable regulations. The Illinois EPA must base its permit decision on whether the applicant has provided information that the applicant's operation, procedures, equipment and discharge to show that the discharge can consistently meet the state regulations. If so, the IEPA is required by law to grant the permit. The facility will then be required to operate within the limits in by the permit. In this case, it has been determined the applicant can meet the requirements of the permit and applicable regulations. Should a landowner or anyone else have concerns about the mine operation, the person can contact the Illinois EPA and report those concerns.

The contact information for reporting issues or concerns is 217-782-3637.

137. Shay No. 1 Mine has a RCRA permit ILD098641012 and apparently generates approximately four tons of hazardous waste per year. Does the Illinois EPA know what the waste related practices are covered by the RCRA permit and how those practices might impact surface and groundwater in the vicinity? Has this information been taken into account in the NPDES permit?

Shay No. 1 Mine is a Conditionally Exempt Small Quantity Generator (CEQG) which generates from 220 lbs. up to 2,200 lbs. of hazardous waste per month. The hazardous wastes generated are typical of industrial facilities and are managed in containers. Therefore, they are not required to have a RCRA permit to manage the waste. The ILD number above listed is a USEPA ID number, not a permit number. The hazardous wastes generated at the facility include spent Aerosol cans, Universal Waste Spent Fluorescent Lights, hazardous waste spent parts washer solvent, Used Oil, and hazardous waste lab packs from a no longer functioning lab or other work done on-site generating very small amounts of waste. Since these hazardous wastes are not part of the waste stream discharged pursuant to the NPDES Permit, they have not been considered in the NPDES Permit.

138. How long has this mine been operating?

Macoupin Energy, LLC, and its labor contractor, MaRyan Mining, have operated this facility since 2009. Prior to 2009, the mine was operated by Monterey Coal Company, dating back to the 1960s.

139. How many acres does RDA6 cover and how deep is it? Has the crest of RDA6 been raised from 701 feet to 705 feet?

RDA 6 is approximately 220 acres of surface area. Its bottom elevation is approximately 610 feet at its lowest point. The top permitted elevation is 705 feet, making it less than 100 feet tall. The dam was modified to raise the crest elevation of the dam to allow for continued disposal of fine coal refuse slurry into the dam interior.

140. It is stated on page 19, special condition no. 5 that CCW analyses is required. Does this mean that CCW or coal slurry will be injected underground in mine voids?

Currently, there is no coal combustion waste (CCW) disposal at this facility, nor has there been an application submitted to the Illinois EPA for CCW disposal. Furthermore, Illinois EPA has not received any application for underground injection at this facility.

141. I have submitted a series of photos documenting an oil like film and red to orange looking substance on the water in Spanish Needle Creek. Were these photos or conditions inspected? If so, what were the results?

The Illinois EPA contacted IDNR/OMM regarding this concern and the following information was provided: IDNR/OMM conducted downstream sampling in response to a complaint concerning an oily film on the water surface and "red muck" in Spanish Needle Creek downstream of the mine. The samples collected were analyzed for metals, anions by Ion Chromatography, acidity, alkalinity, ammonia, pH, total dissolved solids, and total suspended solids. The sample results were within the approved range set by the NPDES permit for Shay Mine's discharge points upstream of these sample locations. Later, IDNR/OMM staff collected additional samples for hydrocarbons at the same locations. The samples were analyzed for volatile organic compounds, semi-volatile organic compounds, and total petroleum hydrocarbons. No substances tested for were detected.

IDNR/OMM concluded that the oily substances observed on the water surface is likely natural organic materials resulting from decomposition of detritus and the "red muck" observed was most likely a natural biofilm.

142. Does this facility have a land permit that would affect their ability to be accepted into the SRP?

This facility does not have a permit under any Bureau of Land Program.

143. Is a permit under the Resource Conservation Recovery Act (RCRA) a land permit?

A permit under RCRA is a permit under a Bureau of Land Program.

144. To have constructed RDA6 on a tributary to Spanish Needle Creek , Exxon Moil would have needed to secure a Section 404 permit from the Army Corps of Engineers, under the CWA. To my knowledge this permit was not obtained from the Corps. Was this permit ever obtained?

In a letter dated July 21, 1988, the Army Corps of Engineers (COE) responded to the mine's application requesting authorization under Section 404 of the Clean Water Act for the placement of fill material into waters of the United States in conjunction with the construction of RDA 6 by issuing Nationwide Section 404 Permit Number 21.

Acronyms and Initials

CAP	Corrective Action Plan
CCA	Compliance Commitment Agreement
CCB	Coal Combustion By-product
CCW	Coal Combustion Waste
CFR	Code of Federal Regulations
COE	Corps of Engineers
CWA	Clean Water Act
DMR	Discharge Monitoring Report
ECHO	Enforcement and Compliance History Online
FOIA	Freedom of Information Act
GMZ	Groundwater Monitoring Zone
GPM	Gallons per Minute
ICIS	Integrated Compliance Information System
IDNR	Illinois Department of Natural Resources
IEPA	Illinois Environmental Protection Agency
ILCS	Illinois Complied Statutes
IPCB	Illinois Pollution Control Board
Ill. Adm. Code	Illinois Administrative Code
mg/L	Milligrams per liter
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration
NPDES	National Pollutant Discharge Elimination System

OMM	Office of Mines and Minerals
pH	A Measure of Acidity or Alkalinity of a Solution
PAH	Polycyclic Aromatic Hydrocarbon
RAP	Remedial Action Plan
RCRA	Resource Conservation Recovery Act
RDA	Refuse Disposal Area
SMCRA	Surface Mining Control and Reclamation Act of 1977 (federal)
SRP	Site Remediation Program
TDS	Total Dissolved Solids
TCLP	Toxicity Characteristic Leaching Procedure
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids

DISTRIBUTION OF RESPONSIVENESS SUMMARY

An announcement, that the NPDES permit decision and accompanying responsiveness summary is available on the Illinois EPA website, was mailed to all who registered at the hearing and to all who sent in written comments. Printed copies of this responsiveness summary are available from Barb Lieberoff, 217-524-3038, e-mail: Barb.Lieberoff@illinois.gov.

WHO CAN ANSWER YOUR QUESTIONS

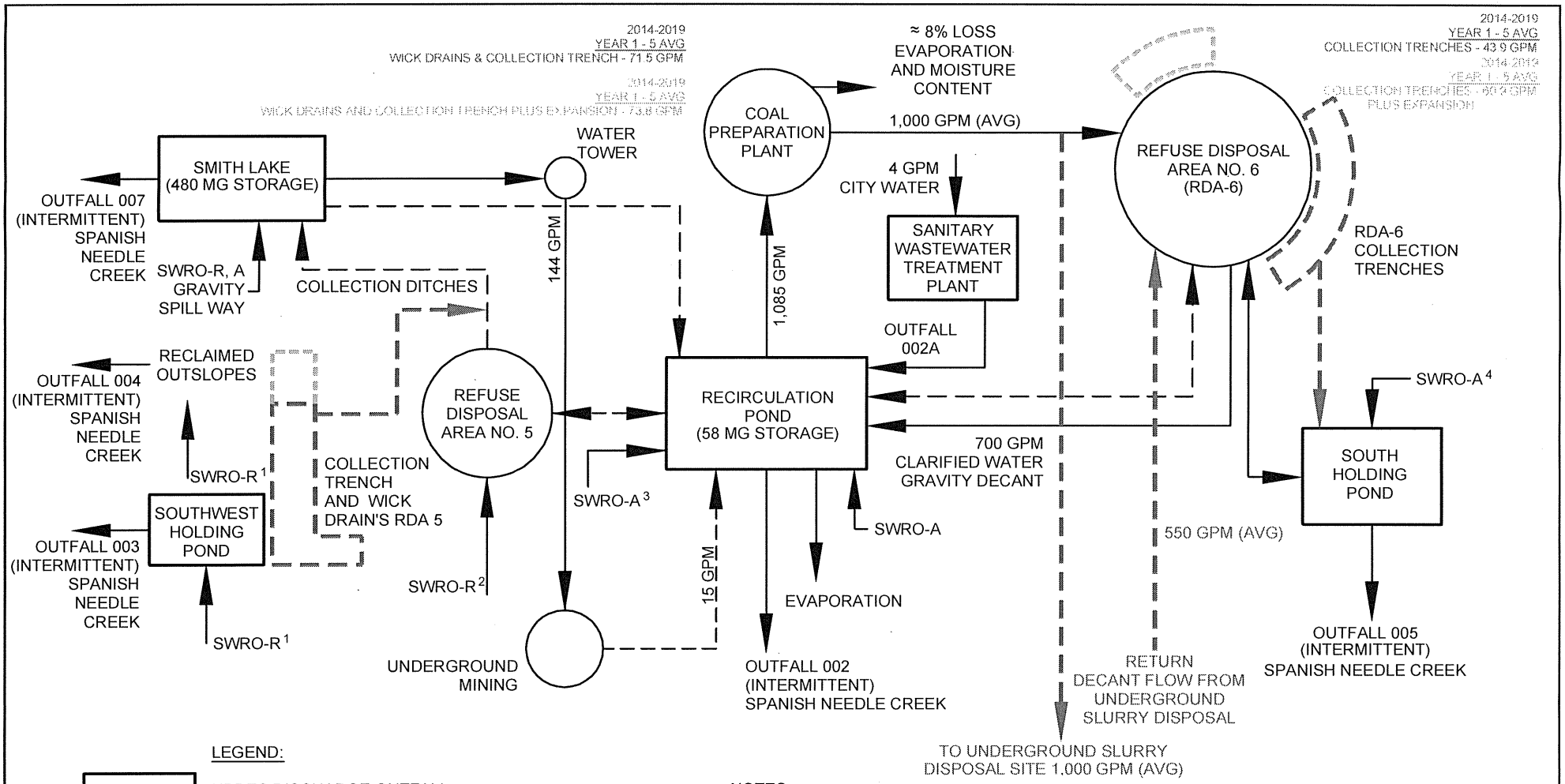
Illinois EPA NPDES Permit:

Illinois EPA NPDES technical decisions:	Iwona Ward	618-993-7200
Legal questions	Stefanie Diers	217-782-5544
Water quality issues	Brian Koch	217-558-2012
Groundwater issues	Lynn Dunaway	217-785-4787
Public hearings of April 27, 2011 and March 11, 2014.	Dean Studer	217-558-8280

Documents from this proceeding, including the final NPDES permit and the responsiveness summary are available on the Illinois EPA website (note that if you get an error message, you may have to paste the website address into you browser window):

http://www.epa.illinois.gov/public-notices/2013/npdes-notices/index#macoupin-energy

Attachment for Response to Item No. 3



LEGEND:

- NPDES DISCHARGE OUTFALL
- INTERNAL WATER IMPOUNDMENTS/ TRANSFER LOCATIONS
- INTERNAL WATER TRANSFER (ONE WAY)
- INTERNAL WATER TRANSFER (TWO WAY)
- PROPOSED ADDITION
- POTENTIAL EXPANSION OF GROUNDWATER COLLECTION TRENCH SYSTEM
- SWRO STORMWATER RUN OFF
- MGD MILLION GALLONS PER DAY (ANNUALIZED AVERAGE)

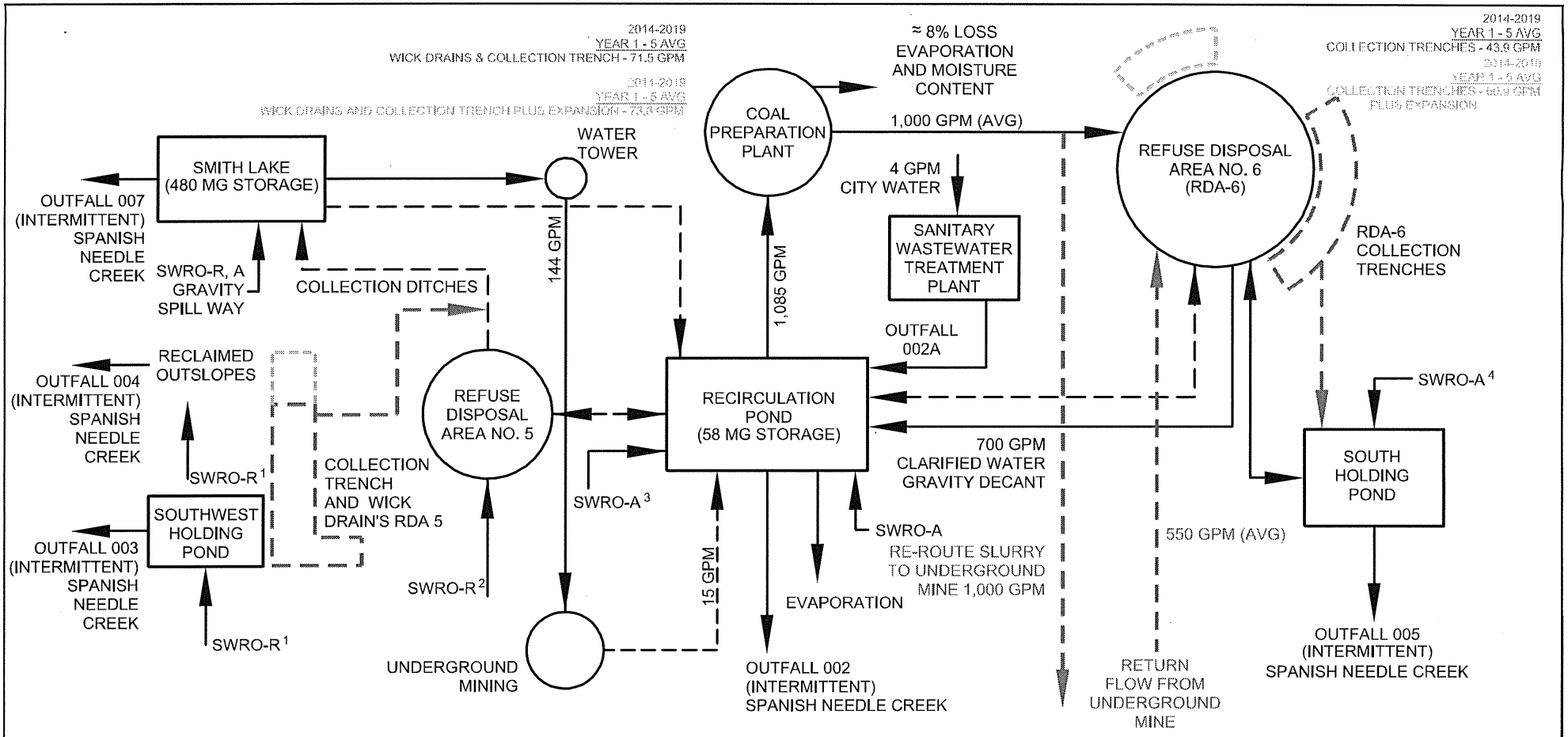
NOTES:

1- STORMWATER RUNOFF FROM RDA-5 OUTSLOPES RECLAIMED WITH SOIL COVER AND VEGETATION.
2- STORMWATER RUNOFF FROM RECLAIMED RDA'S. (NO. 1 THROUGH 4)
3- STORMWATER RUNOFF FROM RECLAIMED RDA-4 AND NON-MINING AREAS.
4- STORMWATER RUNOFF FROM ACTIVE MINING AREAS.
- RDA-5 IS CURRENTLY BEING CAPPED WITH COARSE REFUSE AS PART OF FINAL RECLAMATION.
- RDA-6 IS THE ACTIVE REFUSE DISPOSAL AREA RECEIVING BOTH FINE AND COARSE REFUSE.

figure 1.3

WATER FLOW BALANCE DIAGRAM EXISTING & PROPOSED MACOUPIN ENERGY, LLC - SHAY NO. 1 MINE

CARLINVILLE, ILLINOIS



LEGEND:

- NPDES DISCHARGE OUTFALL
- INTERNAL WATER IMPOUNDMENTS/ TRANSFER LOCATIONS
- INTERNAL WATER TRANSFER (ONE WAY)
- INTERNAL WATER TRANSFER (TWO WAY)
- PROPOSED ADDITION REPRESENTS NEW FLOWS FROM COLLECTION TRENCHES AND WICK DRAINS (TRENCHES & WICK DRAINS)
- POTENTIAL EXPANSION OF GROUNDWATER COLLECTION TRENCH SYSTEM
- SWRO STORMWATER RUN OFF
- MGD MILLION GALLONS PER DAY (ANNUALIZED AVERAGE)

NOTES:

1- STORMWATER RUNOFF FROM RDA-5 OUTSLOPES RECLAIMED WITH SOIL COVER AND VEGETATION.
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3- STORMWATER RUNOFF FROM RECLAIMED RDA-4 AND NON-MINING AREAS.
4- STORMWATER RUNOFF FROM ACTIVE MINING AREAS.
- RDA-5 IS CURRENTLY BEING CAPPED WITH COARSE REFUSE AS PART OF FINAL RECLAMATION.
- RDA-6 IS THE ACTIVE REFUSE DISPOSAL AREA RECEIVING BOTH FINE AND COARSE REFUSE.

figure 1.3

WATER FLOW BALANCE DIAGRAM EXISTING & PROPOSED MACOUPIN ENERGY, LLC - SHAY NO. 1 MINE

CARLINVILLE, ILLINOIS

Attachment for Response to Item No. 83

MaRyan Mining LLC
TATE & LYLE - Results

Sample Collection Date 1/17/2013

Parameter	Result	Units	Applicable Class I Groundwater Standard (620.410)	Units	Pass/Fail
Alkalinity	2400	mg/l			
pH	12.3				
Phenol	<0.05	mg/l	0.1000	mg/l	Pass
NP	325	CaCO3 T/KT			
NNP	325	CaCO3 T/KT			
Acidity	-2200	mg/l			
Barium	0.2180	mg/l	2.0000	mg/l	Pass
Beryllium	<0.0010	mg/l	0.0040	mg/l	Pass
Boron	0.1670	mg/l	2.0000	mg/l	Pass
Cadmium	<0.0020	mg/l	0.0050	mg/l	Pass
Chromium	0.0078	mg/l	0.1000	mg/l	Pass
Cobalt	<0.0100	mg/l	1.0000	mg/l	Pass
Copper	<0.0100	mg/l	0.6500	mg/l	Pass
Iron	<0.0200	mg/l	5.0000	mg/l	Pass
Manganese	<0.0050	mg/l	0.1500	mg/l	Pass
Nickel	<0.0100	mg/l	0.1000	mg/l	Pass
Silver	<0.0100	mg/l	0.0500	mg/l	Pass
Zinc	0.0034	mg/l	5.0000	mg/l	Pass
Antimony	<0.0050	mg/l	0.0060	mg/l	Pass
Arsenic	<0.0030	mg/l	0.0500	mg/l	Pass
Lead	<0.0020	mg/l	0.0075	mg/l	Pass
Selenium	<0.0060	mg/l	0.0500	mg/l	Pass
Thallium	0.0007	mg/l	0.0020	mg/l	Pass
Mercury	0.00007	mg/l	0.0020	mg/l	Pass

MaRyan Mining LLC
TATE & LYLE - Results

Sample Collection Date 1/17/2013

Parameter	Result	Units	Applicable Class I Groundwater Standard (620.410)	Units	Pass/Fail
Alkalinity	2200	mg/l			
pH	12.4				
Phenol	<0.05	mg/l	0.1000	mg/l	Pass
NP	600	CaCO3 T/KT			
NNP	600	CaCO3 T/KT			
Acidity	-2100	mg/l			
Barium	0.2090	mg/l	2.0000	mg/l	Pass
Beryllium	<0.0010	mg/l	0.0040	mg/l	Pass
Boron	0.1990	mg/l	2.0000	mg/l	Pass
Cadmium	<0.0020	mg/l	0.0050	mg/l	Pass
Chromium	<0.0010	mg/l	0.1000	mg/l	Pass
Cobalt	<0.0010	mg/l	1.0000	mg/l	Pass
Copper	<0.0100	mg/l	0.6500	mg/l	Pass
Iron	<0.0200	mg/l	5.0000	mg/l	Pass
Manganese	<0.0050	mg/l	0.1500	mg/l	Pass
Nickel	<0.0100	mg/l	0.1000	mg/l	Pass
Silver	<0.0100	mg/l	0.0500	mg/l	Pass
Zinc	<0.0100	mg/l	5.0000	mg/l	Pass
Antimony	0.0020	mg/l	0.0060	mg/l	Pass
Arsenic	<0.0030	mg/l	0.0500	mg/l	Pass
Lead	0.0008	mg/l	0.0075	mg/l	Pass
Selenium	<0.0060	mg/l	0.0500	mg/l	Pass
Thallium	0.0010	mg/l	0.0020	mg/l	Pass
Mercury	<0.00020	mg/l	0.0020	mg/l	Pass

Expanded Testing Results

ADM Fly Ash and Bed Ash
Tate & Lyle Fly Ash and Bed Ash
Shay No. 1 Coarse/Fine Refuse Composite
Comparison of Analyses From D3987 Shake Extract
(and Total Sulfur for Coal Refuse Composites)
10/23/2013

Parameter	T&L Fly Ash 3/20/2012	T&L Fly Ash 1/17/2013	T&L Bed Ash 3/20/2012	T&L Bed Ash 1/17/2013	ADM Fly Ash 3/12/2012	ADM Fly Ash 1/11/2013	ADM Bed Ash 3/12/2012	ADM Bed Ash 1/11/2013	Coarse Refuse Composite 10/9/2013	Units	Applicable Class I Groundwater Standard (620.410)	Units
Alkalinity		2400		2200		2700		2300	102	mg/l		
pH		12.3		12.4		12.4		12.4	8.13			
Phenol		< 0.05		< 0.05		< 0.005		< 0.005	< 0.005	mg/l	0.1000	mg/l
NP		325		600		292		420	37.6	CaCO3 T/KT		
NNP		325		600		292		420	21.8	CaCO3 T/KT		
Acidity		-2200		-2100		-2500		-2100	-88	mg/l		
Barium		0.218		0.209		0.237		0.159	0.0086	mg/l	2.0000	mg/l
Beryllium		< 0.0010		< 0.0010		< 0.0010		< 0.0010	< 0.001	mg/l	0.0040	mg/l
Boron		0.167		0.199		0.0914		0.212	0.228	mg/l	2.0000	mg/l
Cadmium		< 0.0020		< 0.0020		< 0.0020		< 0.0020	< 0.002	mg/l	0.0050	mg/l
Chromium		0.0078		< 0.0100		0.082		0.0089	< 0.01	mg/l	0.1000	mg/l
Cobalt		< 0.0100		< 0.0100		< 0.0100		< 0.0100	< 0.01	mg/l	1.0000	mg/l
Copper		< 0.0100		< 0.0100		< 0.0100		< 0.0100	< 0.01	mg/l	0.6500	mg/l
Iron		< 0.0200		< 0.0200		< 0.0200		< 0.0100	< 0.02	mg/l	5.0000	mg/l
Manganese		< 0.0050		< 0.0050		< 0.0050		< 0.0100	< 0.005	mg/l	0.1500	mg/l
Nickel		< 0.0100		< 0.0100		< 0.0100		< 0.0100	< 0.01	mg/l	0.1000	mg/l
Silver		< 0.0100		< 0.0100		0.0042		0.0036	< 0.01	mg/l	0.0500	mg/l
Zinc		0.0034		< 0.0100		0.0023		< 0.0100	0.0025	mg/l	5.0000	mg/l
Antimony		< 0.0050		0.002		0.0024		< 0.0050	0.0025	mg/l	0.0060	mg/l
Arsenic		< 0.0030		< 0.0030		< 0.0030		< 0.0030	< 0.01	mg/l	0.0100	mg/l
Lead		< 0.0020		0.0008		0.0029		0.0022	< 0.0075	mg/l	0.0075	mg/l
Selenium		< 0.0060		< 0.0060		0.0102		< 0.0060	< 0.05	mg/l	0.0500	mg/l
Thallium		0.0007		0.001		0.0008		< 0.0020	< 0.002	mg/l	0.0020	mg/l
Mercury		0.00007		< 0.00020		< 0.00020		< 0.00020	< 0.0002	mg/l	0.0020	mg/l
Cyanide	< 0.007		< 0.007		< 0.007		< 0.007		< 0.007	mg/l	0.2000	mg/l
Sulfate	1660		1750		1700		1580		103	mg/l	400	mg/l
Fluoride	0.59		0.15		3.44		0.22		0.59	mg/l	4	mg/l
Chloride	106		126		123		15		11	mg/l	200	mg/l
TDS									4930	mg/l	1200	mg/l
Aluminum									0.041	mg/l		
Molybdenum									0.0214	mg/l		
Vanadium									< 0.01	mg/l	0.0490	mg/l
Sulfur									105000	mg/kg		

MaRyan Mining LLC

TATE & LYLE - Results

Sample Collection Date 1/17/2013

Parameter	Result	Units	Applicable Class I Groundwater Standard (620.410)	Units	Pass/Fail
Alkalinity	2400	mg/l			
pH	12.3				
Phenol	<0.05	mg/l	0.1000	mg/l	Pass
NP	325	CaCO3 T/KT			
NNP	325	CaCO3 T/KT			
Acidity	-2200	mg/l			
Barium	0.2180	mg/l	2.0000	mg/l	Pass
Beryllium	<0.0010	mg/l	0.0040	mg/l	Pass
Boron	0.1670	mg/l	2.0000	mg/l	Pass
Cadmium	<0.0020	mg/l	0.0050	mg/l	Pass
Chromium	0.0078	mg/l	0.1000	mg/l	Pass
Cobalt	<0.0100	mg/l	1.0000	mg/l	Pass
Copper	<0.0100	mg/l	0.6500	mg/l	Pass
Iron	<0.0200	mg/l	5.0000	mg/l	Pass
Manganese	<0.0050	mg/l	0.1500	mg/l	Pass
Nickel	<0.0100	mg/l	0.1000	mg/l	Pass
Silver	<0.0100	mg/l	0.0500	mg/l	Pass
Zinc	0.0034	mg/l	5.0000	mg/l	Pass
Antimony	<0.0050	mg/l	0.0060	mg/l	Pass
Arsenic	<0.0030	mg/l	0.0500	mg/l	Pass
Lead	<0.0020	mg/l	0.0075	mg/l	Pass
Selenium	<0.0060	mg/l	0.0500	mg/l	Pass
Thallium	0.0007	mg/l	0.0020	mg/l	Pass
Mercury	0.00007	mg/l	0.0020	mg/l	Pass

MaRyan Mining LLC

TATE & LYLE - Results

Sample Collection Date 1/17/2013

Parameter	Result	Units	Applicable Class I Groundwater Standard (620.410)	Units	Pass/Fail
Alkalinity	2200	mg/l			
pH	12.4				
Phenol	<0.05	mg/l	0.1000	mg/l	Pass
NP	600	CaCO3 T/KT			
NNP	600	CaCO3 T/KT			
Acidity	-2100	mg/l			
Barium	0.2090	mg/l	2.0000	mg/l	Pass
Beryllium	<0.0010	mg/l	0.0040	mg/l	Pass
Boron	0.1990	mg/l	2.0000	mg/l	Pass
Cadmium	<0.0020	mg/l	0.0050	mg/l	Pass
Chromium	<0.0010	mg/l	0.1000	mg/l	Pass
Cobalt	<0.0010	mg/l	1.0000	mg/l	Pass
Copper	<0.0100	mg/l	0.6500	mg/l	Pass
Iron	<0.0200	mg/l	5.0000	mg/l	Pass
Manganese	<0.0050	mg/l	0.1500	mg/l	Pass
Nickel	<0.0100	mg/l	0.1000	mg/l	Pass
Silver	<0.0100	mg/l	0.0500	mg/l	Pass
Zinc	<0.0100	mg/l	5.0000	mg/l	Pass
Antimony	0.0020	mg/l	0.0060	mg/l	Pass
Arsenic	<0.0030	mg/l	0.0500	mg/l	Pass
Lead	0.0008	mg/l	0.0075	mg/l	Pass
Selenium	<0.0060	mg/l	0.0500	mg/l	Pass
Thallium	0.0010	mg/l	0.0020	mg/l	Pass
Mercury	<0.00020	mg/l	0.0020	mg/l	Pass

Attachment for Response to Item No. 87

MACOUPIN ENERGY LLC

Mr. Scott Fowler
Illinois Department of Natural Resources
Office of Mines and Minerals, Land Reclamation Division
One Natural Resources Way
Springfield, Illinois 62702-1271

January 23, 2015

Re: Permit No. 56, Insignificant Revision No. 106
Permit No. 209, Insignificant Revision No. 25

Dear Mr. Fowler,

As per condition number 1 in IDNR's approval letter dated November 17, 2011, which states "Each CCB source shall be analyzed for chemical constituents according to methods defined in Land Reclamation Division Memorandum 95-8 to verify the CCB continues to meet requirements for CCB. The analyses shall also include an acid base account of each CCB material. The testing shall be done beginning on January 31, 2013 and then annually thereafter for as long as the CCB is being utilized."

Macoupin is currently approved to receive ADM and Tate & Lyle fly and bottom (bed) ash. Enclosed are the required analysis for ADM and the calculation sheet to achieve a balanced net neutralization.

Please note that only ADM ash analysis was used for the net neutralization balance calculation because it is the only ash we currently have a contract to receive. However we did not conduct the analysis on the Tate & Lyle ash as we are currently not doing business with them. If and when we gain their business the required analysis will be conducted and a new calculation sheet will be amended and submitted.

If you have any questions concerning this report, please contact me at 217-899-1926.

Sincerely,

Guy R Hunt, P.E.
Director of Engineering
MaRyan Mining, LLC

cc: S. Fowler

January 19, 2015

Danielle Mullendore
Hanson Professional Services, Inc.
1525 South Sixth Street
Springfield, IL 62703
TEL: (217) 747-9375
FAX: (217) 788-5241

NELAP ACCREDITED TNI LABORATORY

RE: 13E0032G/1000 **WorkOrder:** 15010505

Dear Danielle Mullendore:

TEKLAB, INC received 1 sample on 1/13/2015 1:55:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report, Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Marvin L. Darling II

Marvin L. Darling
Project Manager
(618)344-1004 ex 41
mdarling@teklabinc.com

Client: Hanson Professional Services, Inc.
Work Order: 15010505

Client Project: 13E0032G/1000
Report Date: 19-Jan-15

This reporting package includes the following:

Client: Hanson Professional Services, Inc.
Work Order: 15010505

Client Project: 13E0032G/1000
Report Date: 19-Jan-15

Abbr Definition

CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.
DNI	Did not ignite
DUP	Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MB	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero.
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TNTC	Too numerous to count (> 200 CFU)

Qualifiers

# - Unknown hydrocarbon	B - Analyte detected in associated Method Blank
E - Value above quantitation range	H - Holding times exceeded
J - Analyte detected below quantitation limits	M - Manual Integration used to determine area response
ND - Not Detected at the Reporting Limit	R - RPD outside accepted recovery limits
S - Spike Recovery outside recovery limits	X - Value exceeds Maximum Contaminant Level

Teklab, Inc.
Environmental Laboratory

Case Narrative

http://www.teklabinc.com/

Client: Hanson Professional Services, Inc.
Work Order: 15010505

Client Project: 13E0032G/1000
Report Date: 19-Jan-15

Cooler Receipt Temp: 20.6 °C

Locations and Accreditations

	Collinsville	Springfield	Kansas City	Collinsville Air
Address	5445 Horseshoe Lake Road	3920 Pintail Dr	8421 Nieman Road	5445 Horseshoe Lake Road
	Collinsville, IL 62234-7425	Springfield, IL 62711-9415	Lenexa, KS 66214	Collinsville, IL 62234-7425
Phone	(618) 344-1004	(217) 698-1004	(913) 541-1998	(618) 344-1004
Fax	(618) 344-1005	(217) 698-1005	(913) 541-1998	(618) 344-1005
Email	jhriley@teklabinc.com	KKlostermann@teklabinc.com	dthompson@teklabinc.com	EHurley@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2015	Collinsville
Kansas	KDHE	E-10374	NELAP	4/30/2015	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2015	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2015	Collinsville
Texas	TCEQ	T104704515-12-1	NELAP	7/31/2015	Collinsville
Arkansas	ADEQ	88-0966		3/14/2015	Collinsville
Illinois	IDPH	17584		5/31/2015	Collinsville
Kentucky	KDEP	98006		12/31/2015	Collinsville
Kentucky	UST	0073		1/31/2015	Collinsville
Missouri	MDNR	00930		5/31/2015	Collinsville
Oklahoma	ODEQ	9978		8/31/2015	Collinsville

Client: Hanson Professional Services, Inc.
Work Order: 15010505

Client Project: 13E0032G/1000
Report Date: 19-Jan-15

Lab ID: 15010505-001
Client Sample ID: Fly Ash (ID: 1036)

Matrix: SOLID
Collection Date: 01/06/2015 8:48

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
ASTM D3987, STANDARD METHODS 2310 B IN SHAKE EXTRACT								
Acidity, Total (as CaCO3)		-100000		-2490	mg/L	1	01/15/2015 17:30	R199844
ASTM D3987, STANDARD METHODS 2320 B IN SHAKE EXTRACT								
Alkalinity, Total (as CaCO3)		0		2520	mg/L	1	01/15/2015 17:30	R199830
ASTM D3987, SW-846 9040 B, IN SHAKE EXTRACT								
pH		1		12.7		1	01/14/2015 20:42	105419
ASTM D3987, SW-846 9066, IN SHAKE EXTRACT								
Phenol, SHAKE		0.005		< 0.005	mg/L	1	01/15/2015 14:38	R199812
EPA 600/2-78-54 SLURRY								
Neutralization Potential		0		289	CaCO3 T/KT	1	01/16/2015 8:00	R199873
EPA 670 2-74-70 SLURRY								
Net Neutralization		0		289	CaCO3 T/KT	1	01/16/2015 8:00	R199874
ASTM D3987, SW-846 3005A, 6010B, METALS IN SHAKE EXTRACT BY ICP								
Barium		0.005		0.202	mg/L	1	01/15/2015 13:06	105444
Beryllium		0.001		< 0.001	mg/L	1	01/15/2015 13:06	105444
Boron		0.02		0.264	mg/L	1	01/15/2015 13:06	105444
Cadmium		0.002		< 0.002	mg/L	1	01/15/2015 13:06	105444
Chromium		0.01		0.0583	mg/L	1	01/15/2015 13:06	105444
Cobalt		0.01		< 0.01	mg/L	1	01/15/2015 13:06	105444
Copper		0.01		< 0.01	mg/L	1	01/15/2015 13:06	105444
Iron		0.02		< 0.02	mg/L	1	01/15/2015 13:06	105444
Manganese		0.005		< 0.005	mg/L	1	01/15/2015 13:06	105444
Nickel		0.01		< 0.01	mg/L	1	01/15/2015 13:06	105444
Silver		0.01		< 0.01	mg/L	1	01/15/2015 13:06	105444
Zinc		0.01	J	0.0073	mg/L	1	01/15/2015 13:06	105444
ASTM D3987, SW-846 3005A, 6020A, METALS IN SHAKE EXTRACT BY ICPMS								
Antimony	NELAP	0.001		< 0.001	mg/L	5	01/15/2015 18:20	105445
Arsenic	NELAP	0.001		< 0.001	mg/L	5	01/15/2015 18:20	105445
Lead	NELAP	0.001		0.0026	mg/L	5	01/15/2015 18:20	105445
Selenium	NELAP	0.001		0.01	mg/L	5	01/15/2015 18:20	105445
Thallium	NELAP	0.001		< 0.001	mg/L	5	01/15/2015 18:20	105445
ASTM D3987, SW-846 7470A IN SHAKE EXTRACT								
Mercury, SHAKE		0.0002		< 0.0002	mg/L	1	01/15/2015 11:22	105446

Teklab, Inc.
Environmental Laboratory

Receiving Check List

http://www.teklabinc.com/

Client: Hanson Professional Services, Inc.
Work Order: 15010505
Client Project: 13E0032G/1000
Report Date: 19-Jan-15

Carrier: Kelly Klostermann
Received By: SRH

Completed by: Emily E. Pohlman
On: 13-Jan-15

Reviewed by: Elizabeth A. Hurley
On: 13-Jan-15

Pages to follow: Chain of custody [1] Extra pages included [1]

Shipping container/cooler in good condition?	Yes ☐	No ☐	Not Present ☑	Temp °C 20.6
Type of thermal preservation?	None ☑	Ice ☐	Blue Ice ☐	Dry Ice ☐
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Reported field parameters measured:	Field ☐	Lab ☐	NA ☑	
Container/Temp Blank temperature in compliance?	Yes ☐	No ☑		
When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.				
Water – at least one vial per sample has zero headspace?	Yes ☐	No ☐	No VOA vials ☑	
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑	
Water - pH acceptable upon receipt?	Yes ☐	No ☐	NA ☑	
NPDES/CWA TCN interferences checked/treated in the field?	Yes ☐	No ☐	NA ☑	

Any No responses must be detailed below or on the COC.

The sample was out of temperature compliance upon receipt. Danielle Mullendore was notified of this error via workorder summary.

1501505

CHAIN OF CUSTODY RECORD

Teklab, Inc.
Collinsville, IL

HANSON

CLIENT INFORMATION:

Client: MaRyan Mining LLC

Address: Hanson Professional Services Inc.
1525 South 6th Street
Springfield, Illinois 62703

Contact Name: Danielle Mullendore
Telephone No.: (217) 747-9375
Fax No.: (217) 788-2503
Project ID/PO: 13E0032G/ 1000

SAMPLE INFORMATION:

Sampler (please print): _____ Sampler (signature): _____

Sample Description	Date Collected	Time Collected	Type: Grab	Type: Composite	Matrix: Water	Matrix: Soil	Matrix: Other	Number of Containers	Analyses Desired: See attached	Remarks
1501505 w/ Fly Ash (ID 1036)	1/6/15	8:49am	X				X		X	See attached. Routine turnaround

Relinquished by (signature):	Date/ Time	Received by (signature):	Date/ Time
Kevin Mills	1/13/15 11:30	Kelly Klostermann	1/13/15 11:30
Kelly Klostermann	1/13/15 1355	Stephanie Haynes	1/13/15 1355

Samples received: 20.6°C, no ice
Chilled (≤4°C) Y or N
in proper container Y or N
within holding time Y or N

Testing Sample Parameters

LRD Memorandum 95-8 (Beneficial Use)

• Acidity, (as CaCO3), Shake Extract	M2310 B
• Alkalinity, Total (as CaCO3), Shake Extract	M2320 B (T)
• Mercury, Shake Extract	D3987/SW7470A
• Metals, Shake Extract, by GFAA	D3987/7000 G
• Metals, Shake Extract, by ICP	D3987/6010B
• *Metals Analyses include: As, Ba, B, Cd, Cr, Co, Cu, Fe, Mn, Ni, Se, Ag, Zn, Be, Sb, Pb, Tl*	
• Net Neutralization, Slurry	E670/2-74-70 N
• Neutralization Potential, Slurry	E600/2-78-54 N
• pH, Shake Extract	D3987/SW9040B
• Phenols, Shake Extract	D3987/SW9066
• Shake Extraction (Inorganic) (Phenol)	D3987
• Shake Extraction (Inorganic) (Acidity/Alkalinity/pH)	D3987

MaRyan Mining, LLC
Amalyses for Beneficial Use Criteria
ADM Fly Ash Results
Sample Collected 1/6/2015

Parameter	Fly Ash ID: 1036	Units	Applicable Class I Groundwater Standard (620.410)	Units	Pass/Fail
Alkalinity	2520	mg/l			
pH	12.7				
Phenol	< 0.005	mg/l	0.1000	mg/l	Pass
NP	289	CaCO3 T/KT			
NNP	289	CaCO3 T/KT			
Acidity	-2490	mg/l			
Barium	0.202	mg/l	2.0000	mg/l	Pass
Beryllium	< 0.001	mg/l	0.0040	mg/l	Pass
Boron	0.264	mg/l	2.0000	mg/l	Pass
Cadmium	< 0.002	mg/l	0.0050	mg/l	Pass
Chromium	0.0583	mg/l	0.1000	mg/l	Pass
Cobalt	< 0.010	mg/l	1.0000	mg/l	Pass
Copper	< 0.010	mg/l	0.6500	mg/l	Pass
Iron	< 0.020	mg/l	5.0000	mg/l	Pass
Manganese	< 0.005	mg/l	0.1500	mg/l	Pass
Nickel	< 0.010	mg/l	0.1000	mg/l	Pass
Silver	< 0.010	mg/l	0.0500	mg/l	Pass
Zinc	0.0073	mg/l	5.0000	mg/l	Pass
Antimony	< 0.001	mg/l	0.0060	mg/l	Pass
Arsenic	< 0.001	mg/l	0.0100	mg/l	Pass
Lead	0.0026	mg/l	0.0075	mg/l	Pass
Selenium	0.010	mg/l	0.0500	mg/l	Pass
Thallium	< 0.001	mg/l	0.0020	mg/l	Pass
Mercury	< 0.0002	mg/l	0.0020	mg/l	Pass

January 19, 2015

Danielle Mullendore
Hanson Professional Services, Inc.
1525 South Sixth Street
Springfield, IL 62703
TEL: (217) 747-9375
FAX: (217) 788-5241

RE: 13E0032G/1000 **WorkOrder:** 15010500

Dear Danielle Mullendore:

TEKLAB, INC received 1 sample on 1/13/2015 1:55:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report, Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Marvin L. Darling II

Marvin L. Darling
Project Manager
(618)344-1004 ex 41
mdarling@teklabinc.com

Client: Hanson Professional Services, Inc.
Work Order: 15010500

Client Project: 13E0032G/1000
Report Date: 19-Jan-15

This reporting package includes the following:

Client: Hanson Professional Services, Inc. **Work Order:** 15010500

Client Project: 13E0032G/1000 **Report Date:** 19-Jan-15

Abbr Definition

CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.
DNI	Did not ignite
DUP	Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MB	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero.
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TNTC	Too numerous to count (> 200 CFU)

Qualifiers

- # - Unknown hydrocarbon
- B - Analyte detected in associated Method Blank
- E - Value above quantitation range
- H - Holding times exceeded
- J - Analyte detected below quantitation limits
- M - Manual Integration used to determine area response
- ND - Not Detected at the Reporting Limit
- R - RPD outside accepted recovery limits
- S - Spike Recovery outside recovery limits
- X - Value exceeds Maximum Contaminant Level

Client: Hanson Professional Services, Inc.
Work Order: 15010500

Client Project: 13E0032G/1000
Report Date: 19-Jan-15

Cooler Receipt Temp: 20.6 °C

Locations and Accreditations

	Collinsville	Springfield	Kansas City	Collinsville Air
Address	5445 Horseshoe Lake Road	3920 Pintail Dr	8421 Nieman Road	5445 Horseshoe Lake Road
	Collinsville, IL 62234-7425	Springfield, IL 62711-9415	Lenexa, KS 66214	Collinsville, IL 62234-7425
Phone	(618) 344-1004	(217) 698-1004	(913) 541-1998	(618) 344-1004
Fax	(618) 344-1005	(217) 698-1005	(913) 541-1998	(618) 344-1005
Email	jhriley@teklabinc.com	KKlostermann@teklabinc.com	dthompson@teklabinc.com	EHurley@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2015	Collinsville
Kansas	KDHE	E-10374	NELAP	4/30/2015	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2015	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2015	Collinsville
Texas	TCEQ	T104704515-12-1	NELAP	7/31/2015	Collinsville
Arkansas	ADEQ	88-0966		3/14/2015	Collinsville
Illinois	IDPH	17584		5/31/2015	Collinsville
Kentucky	KDEP	98006		12/31/2015	Collinsville
Kentucky	UST	0073		1/31/2015	Collinsville
Missouri	MDNR	00930		5/31/2015	Collinsville
Oklahoma	ODEQ	9978		8/31/2015	Collinsville

Client: Hanson Professional Services, Inc.
Work Order: 15010500

Client Project: 13E0032G/1000
Report Date: 19-Jan-15

Lab ID: 15010500-001
Client Sample ID: Bed Ash (ID: 1002)

Matrix: SOLID
Collection Date: 01/08/2015 8:25

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
ASTM D3987, STANDARD METHODS 2310 B IN SHAKE EXTRACT								
Acidity, Total (as CaCO3)		-100000		-2250	mg/L	1	01/15/2015 11:51	R199788
ASTM D3987, STANDARD METHODS 2320 B IN SHAKE EXTRACT								
Alkalinity, Total (as CaCO3)		0		2300	mg/L	1	01/15/2015 11:51	R199772
ASTM D3987, SW-846 9040 B, IN SHAKE EXTRACT								
pH		1		12.7		1	01/14/2015 20:31	105419
ASTM D3987, SW-846 9066, IN SHAKE EXTRACT								
Phenol, SHAKE		0.005		< 0.005	mg/L	1	01/15/2015 13:36	R199812
EPA 600/2-78-54 SLURRY								
Neutralization Potential		0		433	CaCO3 T/KT	1	01/16/2015 8:00	R199873
EPA 670 2-74-70 SLURRY								
Net Neutralization		0		433	CaCO3 T/KT	1	01/16/2015 8:00	R199874
ASTM D3987, SW-846 3005A, 6010B, METALS IN SHAKE EXTRACT BY ICP								
Barium		0.005		0.225	mg/L	1	01/15/2015 12:32	105444
Beryllium		0.001		< 0.001	mg/L	1	01/15/2015 12:32	105444
Boron		0.02		0.364	mg/L	1	01/15/2015 12:32	105444
Cadmium		0.002		< 0.002	mg/L	1	01/15/2015 12:32	105444
Chromium		0.01	J	0.0051	mg/L	1	01/15/2015 12:32	105444
Cobalt		0.01		< 0.01	mg/L	1	01/15/2015 12:32	105444
Copper		0.01		< 0.01	mg/L	1	01/15/2015 12:32	105444
Iron		0.02		< 0.02	mg/L	1	01/15/2015 12:32	105444
Manganese		0.005		< 0.005	mg/L	1	01/15/2015 12:32	105444
Nickel		0.01		< 0.01	mg/L	1	01/15/2015 12:32	105444
Silver		0.01		< 0.01	mg/L	1	01/15/2015 12:32	105444
Zinc		0.01	J	0.0054	mg/L	1	01/15/2015 12:32	105444
ASTM D3987, SW-846 3005A, 6020A, METALS IN SHAKE EXTRACT BY ICPMS								
Antimony	NELAP	0.001		< 0.001	mg/L	5	01/15/2015 17:45	105445
Arsenic	NELAP	0.001		< 0.001	mg/L	5	01/15/2015 17:45	105445
Lead	NELAP	0.001	J	0.0003	mg/L	5	01/15/2015 17:45	105445
Selenium	NELAP	0.001		0.0031	mg/L	5	01/15/2015 17:45	105445
Thallium	NELAP	0.001		< 0.001	mg/L	5	01/15/2015 17:45	105445
ASTM D3987, SW-846 7470A IN SHAKE EXTRACT								
Mercury, SHAKE		0.0002		< 0.0002	mg/L	1	01/15/2015 11:02	105446

Teklab, Inc.
Environmental Laboratory

Receiving Check List

http://www.teklabinc.com/

Client: Hanson Professional Services, Inc.
Work Order: 15010500
Client Project: 13E0032G/1000
Report Date: 19-Jan-15

Carrier: Kelly Klostermann
Received By: SRH

Completed by: Emily E. Pohlman
On: 13-Jan-15

Reviewed by: Elizabeth A. Hurley
On: 13-Jan-15

Pages to follow: Chain of custody [1] Extra pages included [1]

Shipping container/cooler in good condition?	Yes ☐	No ☐	Not Present ☑	Temp °C	20.6
Type of thermal preservation?	None ☑	Ice ☐	Blue Ice ☐	Dry Ice	☐
Chain of custody present?	Yes ☑	No ☐			
Chain of custody signed when relinquished and received?	Yes ☑	No ☐			
Chain of custody agrees with sample labels?	Yes ☑	No ☐			
Samples in proper container/bottle?	Yes ☑	No ☐			
Sample containers intact?	Yes ☑	No ☐			
Sufficient sample volume for indicated test?	Yes ☑	No ☐			
All samples received within holding time?	Yes ☑	No ☐			
Reported field parameters measured:	Field ☐	Lab ☐	NA ☑		
Container/Temp Blank temperature in compliance?	Yes ☐	No ☑			
When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.					
Water – at least one vial per sample has zero headspace?	Yes ☐	No ☐	No VOA vials ☑		
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑		
Water - pH acceptable upon receipt?	Yes ☐	No ☐	NA ☑		
NPDES/CWA TCN interferences checked/treated in the field?	Yes ☐	No ☐	NA ☑		

Any No responses must be detailed below or on the COC.

The sample was out of temperature compliance upon receipt. Danielle Mullendore was notified of this error via workorder summary.

15010500

CHAIN OF CUSTODY RECORD

HANSON

CLIENT INFORMATION:

Client: MaRyan Mining LLC
Address: Hanson Professional Services Inc.
1525 South 6th Street
Springfield, Illinois 62703

Contact Name: Danielle Mullendore
Telephone No.: (217) 747-9375
Fax No.: (217) 788-2503
Project ID/PO: 13E0032G/ 1000

SAMPLE INFORMATION:

Sampler (please print):
Sampler (signature):

	Sample Description	Date Collected	Time Collected	Type: Grab	Type: Composite	Matrix: Water	Matrix: Soil	Matrix: Other	Number of Containers	Analyses Desired: See attached						Remarks
15010500 -001	Bed Ash (10:1002)	1/8/15	8:25 am	X				X		X						See attached. Routine turnaround

Relinquished by (signature):	Date/ Time	Received by (signature):	Date/ Time
[signature] 1/13/15	11:30 am	Kelly Klosterman	1/13/15 11:30
Kelly Klosterman	1/13/15 13:55	Stephanie Haynes	1/13/15 1355

Samples received: 20.6°c, no ice
Chilled (≤4°C) Y or (N)
in proper container (Y) or N
within holding time (Y) or N

Testing Sample Parameters

LRD Memorandum 95-8 (Beneficial Use)

• Acidity, (as CaCO3), Shake Extract	M2310 B
• Alkalinity, Total (as CaCO3), Shake Extract	M2320 B (T)
• Mercury, Shake Extract	D3987/SW7470A
• Metals, Shake Extract, by GFAA	D3987/7000 G
• Metals, Shake Extract, by ICP	D3987/6010B
• *Metals Analyses include: As, Ba, B, Cd, Cr, Co, Cu, Fe, Mn, Ni, Se, Ag, Zn, Be, Sb, Pb, Tl*	
• Net Neutralization, Slurry	E670/2-74-70 N
• Neutralization Potential, Slurry	E600/2-78-54 N
• pH, Shake Extract	D3987/SW9040B
• Phenols, Shake Extract	D3987/SW9066
• Shake Extraction (Inorganic) (Phenol)	D3987
• Shake Extraction (Inorganic) (Acidity/Alkalinity/pH)	D3987

MaRyan Mining, LLC
Amalyses for Beneficial Use Criteria
ADM Bed Ash Results
Sample Collected 1/8/2015

Parameter	Bed Ash ID: 1002	Units	Applicable Class I Groundwater Standard (620.410)	Units	Pass/Fail
Alkalinity	2300	mg/l			
pH	12.7				
Phenol	< 0.005	mg/l	0.1000	mg/l	Pass
NP	433	CaCO3 T/KT			
NNP	433	CaCO3 T/KT			
Acidity	-2250	mg/l			
Barium	0.225	mg/l	2.0000	mg/l	Pass
Beryllium	< 0.001	mg/l	0.0040	mg/l	Pass
Boron	0.364	mg/l	2.0000	mg/l	Pass
Cadmium	< 0.002	mg/l	0.0050	mg/l	Pass
Chromium	0.0051	mg/l	0.1000	mg/l	Pass
Cobalt	< 0.010	mg/l	1.0000	mg/l	Pass
Copper	< 0.010	mg/l	0.6500	mg/l	Pass
Iron	< 0.020	mg/l	5.0000	mg/l	Pass
Manganese	< 0.005	mg/l	0.1500	mg/l	Pass
Nickel	< 0.010	mg/l	0.1000	mg/l	Pass
Silver	< 0.010	mg/l	0.0500	mg/l	Pass
Zinc	0.0054	mg/l	5.0000	mg/l	Pass
Antimony	< 0.001	mg/l	0.0060	mg/l	Pass
Arsenic	< 0.001	mg/l	0.0100	mg/l	Pass
Lead	0.0003	mg/l	0.0075	mg/l	Pass
Selenium	0.0031	mg/l	0.0500	mg/l	Pass
Thallium	< 0.001	mg/l	0.0020	mg/l	Pass
Mercury	< 0.0002	mg/l	0.0020	mg/l	Pass

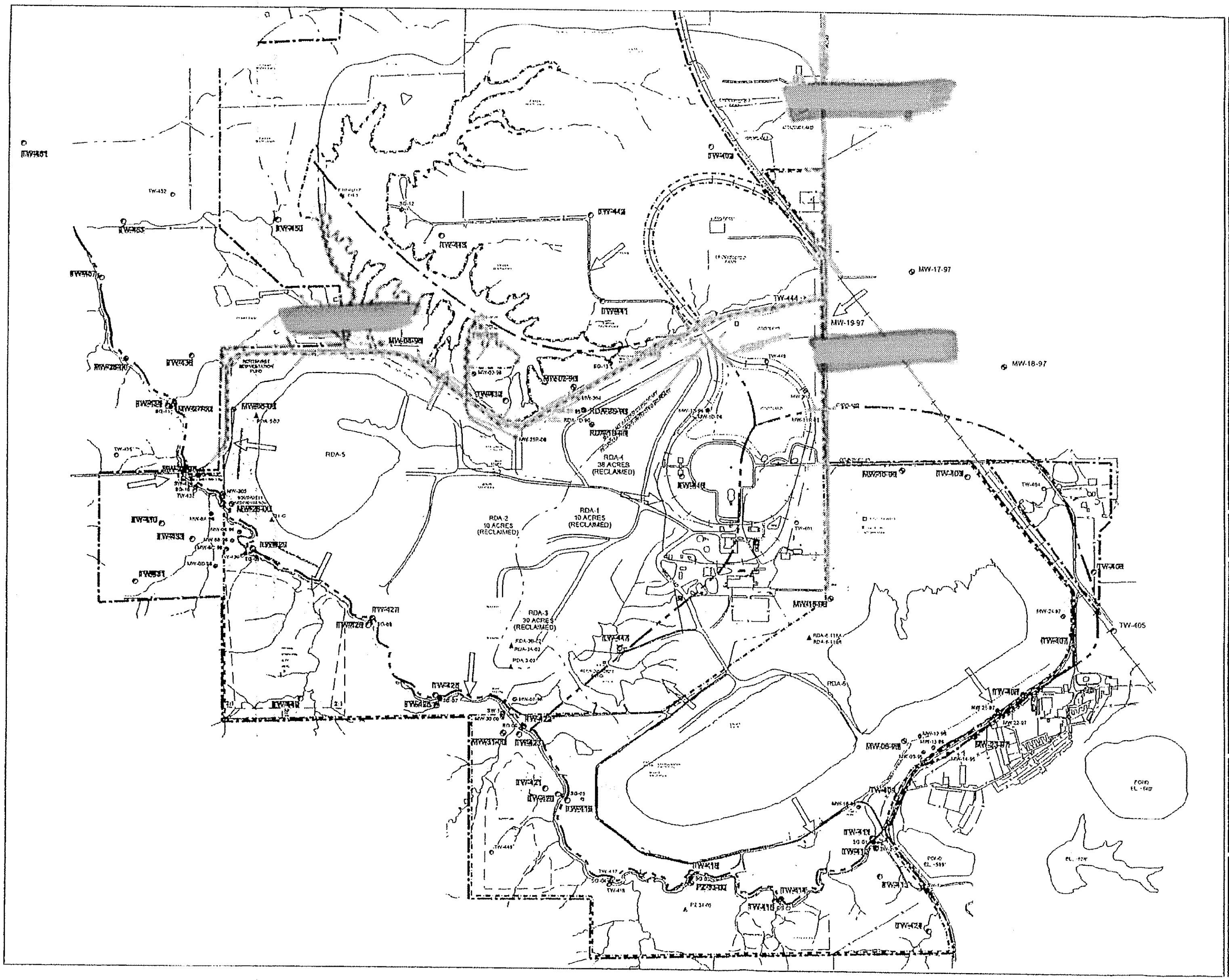
Calculation for Tons of Ash per 1000 Tons of Coarse Refuse to Achieve NNP

refuse		
4.15%	Pyritic Sulfur in **Refuse**	
129.53	Potential Acidity (PA)	
59.17	Neutralization Potential (NP)	
-70.36	Net Neutralization Potential (NNP) (NNP = NP-PA)	(tons per 1k tons of refuse)

Flyash	ADM	
0.00%	Pyritic Sulfur in **Flyash**	
0.00	Potential Acidity (PA)	
289.00	Neutralization Potential (NP)	
289.00	Net Neutralization Potential (NNP) (NP-PA) (tons per 1,000 tons of refuse)	
3.46	Multiplier for CaCO3 adjustment	
108.13	Tons of ash per 1,000 tons of refuse for each % of pyritic sulfur	
Bedash	ADM	
0.00%	Pyritic Sulfur in **Bedash**	
0.00	Potential Acidity (PA)	
433.00	Neutralization Potential (NP)	
433.00	Net Neutralization Potential (NNP) (NP-PA) (tons per 1,000 tons of refuse)	
2.31	Multiplier for CaCO3 adjustment	
72.17	Tons of ash per 1,000 tons of refuse for each % of pyritic sulfur	
Ash Mix		
70.4%	Flyash	
29.6%	Bedash	
331.62	Net Neutralization Potential (NNP) (NP-PA) (tons per 1,000 tons of refuse)	
3.02	**Multiplier for CaCO3 adjustment**	

212.18	Tons of ash per 1,000 tons of refuse (Refuse NNP Adjusted for 2014)

Attachment for Response to Item No. 107



LEGEND:

EXISTING MINE PROPERTY BOUNDARY
EXISTING IDNR PERMITTED PROPERTY BOUNDARY
APPROXIMATE HYDRAULIC DIVIDE
GENERAL GROUNDWATER FLOW DIRECTION
IEPA APPROVED BACKGROUND LOCATION
SSI MONITORING LOCATION WHICH EXCEEDED THE JULY 2012 COC OBJECTIVES BETWEEN MARCH 2010 AND JANUARY 2012
MONITORING WELL LOCATION AND IDENTIFIER (PATRICK ENGINEERING)
PIEZOMETER LOCATION AND IDENTIFIER (PATRICK ENGINEERING)
SURFACE WATER WELL LOCATION AND IDENTIFIER (PATRICK ENGINEERING)
TEMPORARY MONITORING WELL LOCATION AND IDENTIFIER (CRA)
STAFF GAUGE LOCATION AND IDENTIFIER

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

DRAWING STATUS

SHAY NO. 1 MINE
CARLINVILLE, ILLINOIS

SHAY NO. 1 MINE

EXCEEDANCES OF THE JULY 2012
COC OBJECTIVES

CONESTOGA-ROVERS & ASSOCIATES

Source Reference: PATRICK ENGINEERING

Project Manager: P. HARVEY	Reviewed By: S. PUNCH	Date: MARCH 2013	
Scale: AS SHOWN	Project No.: 54658-35	Report No.: 010	Drawing No.: figure 2.1