UCM-1 Application Addendum No. 1

Pursuant to rules enacted March 21, 2000
Revisions to subsidence control and mitigation

I. Drinking Domestic and Residential Water Supplies

I. A. For all underground operations: Shadow area water supply background information.

I. A. 1. Compliance with 62 Ill. Adm. Code 1784.14(b)(1): The operator shall provide the location and ownership of all existing drinking, domestic and residential water supplies, including private wells, municipal wells and springs. This information shall be provided for all areas within the proposed shadow area and within ½ mile of the boundaries of the proposed shadow area.

Please refer to the response in Part III(2)(B)(1) for the location and ownership of all known drinking, domestic and residential water supplies, including private wells, municipal wells and springs within the proposed shadow area and within at least ½ mile of the boundaries of the proposed shadow area.

I. A. 2. Compliance with 62 Ill. Adm. Code 1784.14(b)(1)(A)(ii): Provide adequate ground water quality descriptions for the shadow area and it's adjacent area (½ mile). The information shall include at a minimum pH, total dissolved solids, total iron and total manganese. The Department may require additional parameters based on site specific conditions.

Please refer to the response to Part III(2)(B)(3), and *Attachment III-2B3* for analytical results and a discussion regarding seasonal groundwater quality within the proposed shadow area and within at least ½ mile of the boundaries of the proposed shadow area.

I. A. 3. Compliance with 62 Ill. Adm. Code 1784.14(b)(1)(B): Respond to UCM-1 Application Part III(2)(B)(3).

Please refer to the response in Part III(2)(B)(3) for a description of ground water quantity for the proposed permit, shadow and adjacent areas.

I. B. For all underground operations: Qualification for exemption from performing individual water quantity and quality data collection.

I. B. 1. Compliance with 62 Ill. Adm. Code 1784.20(b)(7) and (b)(8)(B): Provide sufficient documentation concerning site specific geologic, geotechnical and historical performance to demonstrate that existing wells and springs will not be impacted by the operation. Stratigraphic locations of drinking domestic and residential water supplies relative to the seam to be mined shall also be discussed in relation to potential impacts from mine level instabilities such as roof falls.

Water usage surveys were conducted for all current property owners/residents located within the proposed permit and shadow areas. Comments received from the property owners/residents and well owners of record are included in the water source data table included in *Attachment III-2B1b*.

Based on responses to the survey, personal contact with property owners, visual observations of existing wells, an assumption that a well does exist because no other known water resource is available i.e. municipal water supply at occupied dwellings where the

owner or resident did not respond to the water resources survey, and available well records it is believed a total of 86 private wells exist within the permit and shadow areas. Well records are available for 45 of these wells, and are included in *Attachment III-2B1a*.

Table III-A in Part III of this application lists the presence of 45 wells within the permit and shadow areas. Respondents to the water resources survey, and visual inspection indicate an additional 41 wells exist within and adjacent to the Bulldog Mine. The type of aquifers supplying water to these wells includes 43 wells receiving water from unconsolidated glacial till deposits, 9 wells receive water from bedrock aquifers, 33 wells receive water from unknown aquifers, and 1 well is dry. All of the wells are finished at depths well above the Herrin No. 6 coal seam, which ranges from 318 feet to 383 feet (typically from 344 to 377 feet) beneath ground surface. Therefore it is not expected that any adverse impacts will occur to the water bearing deposits used as a regional water source.

Well records obtained from the Illinois State Geological Survey website, from respondents to a water usage survey, and visual inspections of property indicate 86 wells exist within the shadow area and within one-half mile from the shadow area. These wells are finished at 2 distinct depth ranges.

Forty-three (43) wells receive water from unconsolidated glacial till deposits ranging from 23.5 to 100 feet deep. Nine (9) wells are finished in the sandstone or limestone bedrock aquifers ranging from 51 to 204 feet below ground surface. One (1) well is dry. The aquifer for 33 wells is unknown and could not be determined mainly due to no response to the water resources survey from owners or residents of occupied dwellings. Reported depths for these wells range from 48 to 175 feet below the ground surface. The Herrin No. 6 coal seam ranges from 318 to 383 feet below ground surface.

These wells are generally separated from the underlying Herrin No. 6 coal seam by at least 100 feet of shales and highly impermeable limestones. Because of this separation it is unlikely these wells will experience any adverse impacts caused by the unplanned subsidence underground mining operation many feet below the wells.

Additionally, available well data indicate the potentiometric surface is near or just below the ground surface. The Bulldog mining operation will be well below the upper water-bearing stratum, and separated from the shallow groundwater system by thick layers of impermeable material.

Because the coal to be extracted from this mine is generally separated from the shallow and deep groundwater systems by thick layers of impermeable materials, it is not anticipated the mining operation will have any adverse impacts to the local groundwater system.

I. B. 2. Provide the locations of any water supplies that will be specifically monitored for water quality and quantity based on the potential for adverse impacts from the underground mining operations.

The applicant proposes monitoring groundwater quality and quantity at existing monitoring wells MW-1, MW-2, MW-3, MW-4, MW-5 and MW-6. Please refer to Part III, Schedule B, and *Attachment III-2B3* for pre-mining water quality and quantity data collected from the monitoring wells.

Based on the discussion above to questions I.B.1., and I.B.2., and the minimal potential for

adverse impacts to the groundwater system, no other monitoring locations are proposed. If requested by residents or landowners, the necessity to monitor specific wells will be evaluated on a case-by-case basis. If necessary, monitoring will be conducted in accordance with any agreements reached between the applicant, and individual residents or landowners.

Based on the analysis provided under B above, the Department will determine if any water supplies beyond those proposed to be monitored warrant pre-mining collection of quality and quantity data. In the event the Department determines additional monitoring is required beyond that proposed under B.2. above, the operator will be notified of such determination and will be required to modify the monitoring plan provided under C, below.

I. C. For all operations where water supplies have not been exempt from monitoring requirements under B, above: Water quality and quantity monitoring plan.

I. C. 1. Provide a plan for obtaining adequate pre-mining water quality and quantity data from wells and springs potentially impacted by subsidence. Specific parameters to be monitored and method(s) for defining approximate water supply quantities shall be detailed.

Water usage surveys were mailed to all current property owners/residents located within the proposed shadow area and within ½ mile from the proposed shadow area. Comments received from the property owners/residents and well owners of record are included in the water source data table included in *Attachment III-2B1b*.

The information obtained from public records, and from responses to the water usage survey indicates there are two regional aquifers that are used by local residents. The two aquifers are the unconsolidated glacial till deposits, and the sandstone and limestone bedrock deposits. Forty-three (43) private wells ranging from 23.5 to 100 feet deep are known to exist in the unconsolidated glacial till deposits. Nine (9) private wells finished 51 to 204 feet deep are known to exist in the deeper sandstone and limestone deposits.

As indicated in *Attachment III-2B3,* these water supply aquifers are being monitored by the applicant to collect seasonal background water quality and quantity information. These wells are monitored for the constituents listed in *Attachment III-2B3,* and *Attachment III-2D4a*.

I. C. 2. Provide a time table for collection of data sufficiently in advance of underground mine development to document pre-mining quality and quantity. Data collection should reflect seasonal fluctuations.

Seasonal groundwater monitoring began for this site in September 2011. To date, 8 months of data has been collected. Adequate background water quality and quantity data will be collected well in advance of permit issuance and underground mine development to document pre-mining quality and quantity.

I. D. For all underground operations: Replacement of impacted water supplies.

I. D. 1. Compliance with 62 Ill. Adm. Code 1784.20(b)(9): Provide a general plan for replacing any contaminated, diminuted, or interrupted drinking, domestic or residential water supply. The plan should include possible contingencies for emergency, temporary and permanent replacement of affected water supplies. Replacement of water supplies must comply with the definition found under 62 Ill. Adm. Code 1701.Appendix A Definitions: “Replacement of Water Supply”.

In the unlikely event that subsidence occurs resulting in damage to any water supply, or the mining operation causes contamination, diminution or interruption to an existing water supply, the operator will repair or replace the water supply as soon as possible. Any temporary or permanent repairs or replacement will be done in a manner that will provide an equivalent premining water supply quantity and quality.

During the period of temporary or permanent repair or replacement, the operator will implement an emergency plan to insure an uninterrupted water supply. The emergency plan may include hauling water for livestock and domestic usage, and/or installing temporary water storage facilities for drinking and domestic water usage, or temporarily relocating occupants to nearby hotels.

Owners of adversely affected water supplies will be reimbursed for actual out-of-pocket expenses caused by the temporary disruption of their water supply. Permanent replacement includes providing an equivalent water delivery system and reimbursement for operation and maintenance costs in excess of the customary and reasonable delivery costs for the pre-mining water supplies.

I. D. 2. Compliance with 62 Ill. Adm. Code 1784.20(b)(9)(A): Provide a procedural plan for determining the existence and degree of material damage, loss or diminution of water quality and quantity. Address resolution of disputes over the existence, amount or level of water quality and quantity such as third party arbitration.

The existence and degree of material damage, loss or diminution of water quality and quantity will be determined by agreement between Sunrise Coal, LLC (Sunrise) and the water supply owner. If mutual agreement cannot be reached, Sunrise will seek to obtain the agreement of the water supply owner to arbitrate the existence and degree of damage.

The water supply owner and Sunrise will each select a competent arbitrator having expertise in the affected area, and the two arbitrators shall select a third arbitrator. Each party shall bear the expense of the arbitrator he selects, and both parties shall bear equally the cost of the third arbitrator. The arbitrators shall inspect the site, evaluate the alleged damage, and submit their opinion based on the value before damage and value in the damaged condition. The decision of the majority of the arbitrators shall be binding on all parties. If damage is found to exist, Sunrise will promptly take corrective measures to repair the damage, or prompt payment will be made to the affected owner who will execute an appropriate release for all claims and damages.

I. D. 3. Compliance with 62 Ill. Adm. Code 1784.20(b)(9)(B): Provide a plan for determining the present worth of the cost to replace a water supply if the operator wishes to pursue a one time lump sum payment for costs associated with provisions for an equivalent water delivery system and payment of operation and maintenance costs in excess of customary and reasonable delivery costs for pre-mining water supplies. Any lump sum payments for future costs must be agreed to by the water supply owner.

Should the operator choose to pursue a one-time lump sum payment for costs associated with providing an equivalent water delivery system, and payment of operation and maintenance costs in excess of customary and reasonable delivery costs for the pre-mining water supply, accepted economic analysis accounting procedures will be used to determine the amount of the lump sum payment.

A discounted cash flow analysis using accepted compound interest formulas (5% to 8%) will be performed to determine the net differences in the present value of the installation, operating and maintenance costs between the pre-mining water supply system and an equivalent water delivery system. Installation costs will be determined based on estimates or bids prepared by qualified contractors experienced in the installation of the selected water supply system. All equipment, components and construction necessary for installation and hookup of the replacement system will be included. Operating and maintenance costs over the expected life, generally regarded as 20 years, of the pre-mining system for both the pre-mining and replacement systems will be computed based on actual costs incurred by the owner, if available, or by estimates provided by a qualified contractor. Operating costs will include the reasonable and customary expenses for power, treatment chemicals, filters, and other consumable items related to the ongoing provision of the water supply. If the replacement system involves connection to a municipal water supply, the operating costs will include the periodic charges imposed by the utility for the expected water usage. Maintenance costs will include expenses required for the repair and replacement of system components such as pumps, pressure tanks, and treatment systems. As indicated above in the response to Item I.D.1., the lump sum payment may also include reimbursement for actual out-of-pocket expenses caused by the temporary disruption of the water supply. Any proposal for a one-time lump sum payment will be presented to the water supply owner, and their approval will be obtained.

II. Structures, Facilities and Occupied Dwellings

II. A. For operations proposing planned subsidence.

Not applicable. This application does not propose planned subsidence.

II. A. 1. Compliance with 62 Ill. Adm. Code 1784.20(b)(8)(A) and 1817.121(a)(3): Provide a general plan for the following:

II. A. 1. a. A description of the methods that will be employed to minimize damage from planned subsidence to structures and facilities.

Please note that if minimization methods are not proposed for a given structure or facility, the written consent of the owner must be obtained and provided to the Department in advance of any planned subsidence impacts.

II. A. 1. b. A description of the procedure that will be used to demonstrate that the costs of minimizing damages exceeds the anticipated cost of repair. This option is not possible if subsidence material damage would constitute a threat to health or safety.

II. A. 1. c. A time table for submitting to the Department the specific subsidence control approach for each structure or facility sufficiently in advance of underground mine development to comply with 62 Ill. Adm. Code 1784.20(b)(8)(A).

II. B. For operations proposing planned subsidence: Qualification for exemption from performing individual structural condition surveys.

Not applicable. This application does not propose planned subsidence.

II. B. 1. Compliance with 62 Ill. Adm. Code 1784.20(b)(7) and (b)(8)(B): Provide sufficient documentation concerning site specific geologic, geotechnical and historical performance to

demonstrate that a given structure or facility will not be impacted by the operation.

II. B. 2. Provide the locations of any structures and facilities for which an exemption to conduct condition surveys is requested in B.1. above.

Based on the analysis provided under B above, the Department will determine if any structures qualify for an exemption. In the event the Department determines structures can be exempted, the operator will be specifically notified of such determination.

II. C. Compliance with 62 Ill. Adm. Code 1784.20(b)(8)(B): Conducting pre-subsidence condition surveys. Provide a description of procedures to determine the condition of structures and facilities in accordance with 62 Ill. Adm. Code 1817.121(a)(2).

Not applicable. This application does not propose planned subsidence.

II. D. For all underground operations, compliance with 62 Ill. Adm. Code 1817.121(c)(3): Adjustment of bond due to material damage from subsidence. When material damage resulting from subsidence occurs to land, structures and facilities, the operator must comply with 1817.121(c)(3). Describe how the operator will adjust the bond or alternatively assure financial responsibility with appropriate liability insurance if repair, replacement or compensation is not accomplished within the allocated time frames.

In the unlikely event that subsidence occurs causing material damage to land, structures or facilities, or contamination, diminution, or interruption to a water supply the permittee will post adequate bond within ninety days, or provide appropriate liability insurance for subsidence damage in compliance with 62 Ill. Adm. Code 1817.121(c)(3).

III. Mining Operations - Blasting

III. A. Will the applicant be conducting any surface blasting activities incident to underground mining, including, but not limited to, initial rounds of slopes or shafts that are within 50 vertical feet of the original ground surface?
Yes _____ No ___**X**___

If the answer to the above is “yes”, please describe how the applicant will comply with 62 Ill. Adm. Code 1817.61 through 68.