

Former Armstrong Wastewater Lagoon Legacy CCR Surface Impoundment Applicability Extension Report

Allegheny Energy Supply Company, LLC
Former Armstrong Power Station
Armstrong County, Pennsylvania

May 2025

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Attachment 1 – Field Investigation Work Plan

Operator Certification

In accordance with the applicable requirements §257.100(f)(1)(iii)(A)(2) of the United States Environmental Protection Agency's 40 Code of Federal Register (CFR) Part 257, Criteria for Classification of Solid Waste Disposal Facilities and Practices (CCR Rule), to the best of my knowledge or belief, existing and available information does not provide a sufficient basis to determine that the former Armstrong Wastewater Lagoon contained free liquids on or after October 19, 2015.



Dave Frederick
Director, Environmental

5/8/2025

Date

1.0 Introduction

The former Armstrong Wastewater Lagoon (Lagoon) is a potential legacy coal combustion residuals (CCR) surface impoundment located approximately 0.5 miles south of the former Armstrong Power Station (Station), an inactive electric utility located in Washington Township, Armstrong County, Pennsylvania (PA).

This Legacy CCR Surface Impoundment Applicability Extension Report was prepared in accordance with the applicable requirements §257.100(f)(1) of the United States Environmental Protection Agency's 40 Code of Federal Register (CFR) Part 257, Criteria for Classification of Solid Waste Disposal Facilities and Practices (CCR Rule).

2.0 Applicability Extension Report Requirements at §257.100(f)(1)(iii)(A)(1)

Regulatory Requirement / Reference	Description
Owner and Operator. The name and address of the person(s) owning and operating the legacy CCR surface impoundment with their business phone number and email address. <i>40 CFR §257.100(f)(1)(i)(A)</i>	Allegheny Energy Supply Company, LLC 800 Cabin Hill Drive Greensburg, PA 15601 (724) 837-3000 CCR@firstenergycorp.com
Impoundment Name. The name associated with the legacy CCR surface impoundment. <i>40 CFR §257.100(f)(1)(i)(B)</i>	Former Armstrong Wastewater Lagoon
Impoundment Identification. Information to identify the legacy CCR surface impoundment, including a figure of the facility and where the unit is located at the facility, facility address, and the latitude and longitude of the facility. <i>40 CFR §257.100(f)(1)(i)(C)</i>	SR 4006 Reesedale, PA 16210 Latitude: 40.929209 Longitude: -79.466343 See the attached Figure for a plan view of the facility and former unit.
Identification Number. The identification number of the legacy CCR surface impoundment if one has been assigned by the state. <i>40 CFR §257.100(f)(1)(i)(D)</i>	301335UNP


3.0 Field Investigation Work Plan [§ 257.100(f)(1)(iii)(A)(3)]

Please see Attachment 1 for the Field Investigation Work Plan.

FIGURE

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DRAWING TITLE			DRAWN BY:	ISSUE DATE:
FORMER ARMSTRONG POWER STATION				
PROJECT	 gai consultants	CLIENT	WOLFESM	10/11/2024
APPLICABILITY EXTENSION REPORT LEGACY CCR SURFACE IMPOUNDMENT FORMER ARMSTRONG POWER STATION ARMSTRONG COUNTY, PA		ALLEGHENY ENERGY SUPPLY COMPANY, LLC 800 CABIN HILL DRIVE GREENSBURG, PA 15601	CHECKED BY:	SCALE:
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ATTACHMENT 1

Former Armstrong Wastewater Lagoon Field Investigation Work Plan

Allegheny Energy Supply Company, LLC
Former Armstrong Power Station
Armstrong County, Pennsylvania

May 2025

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Certification / Statement of Professional Opinion

The Field Investigation Work Plan (Work Plan) for the former Armstrong Wastewater Lagoon at the former Armstrong Power Station was prepared by GAI Consultants, Inc. (GAI). It is my professional opinion as a Professional Engineer licensed in the Commonwealth of Pennsylvania that this Work Plan has been prepared in accordance with good and accepted engineering practices as exercised by other engineers practicing in the same discipline(s), under similar circumstances, and at the same time and in the same locale. It is my professional opinion that the Work Plan was prepared consistent with the requirements at Section 257.100(f)(1)(iii)(A)(3) of the United States Environmental Protection Agency's "Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments", published in the Federal Register on April 17, 2015 with an effective date of October 19, 2015 and amended on May 8, 2024 with an effective date of November 8, 2024.

The use of the words "certification" and/or "certify" in this document shall be interpreted and construed as a Statement of Professional Opinion, and is not and shall not be interpreted or construed as a guarantee, warranty, or legal opinion.



Seal

5/8/2025
Date

1.0 Introduction

The former Armstrong Wastewater Lagoon (Lagoon) is a potential legacy coal combustion residuals (CCR) surface impoundment located in Armstrong County, Pennsylvania and owned by Allegheny Energy Supply Company, LLC. This Field Investigation Work Plan (Work Plan) outlines the actions to be taken to determine through a field investigation whether the former Lagoon contained both CCR and liquids on or after October 19, 2015, and as a result, may meet the definition of a legacy CCR surface impoundment. This Work Plan was prepared in accordance with the applicable requirements at Section 257.100(f)(1)(iii)(A)(3) of the United States Environmental Protection Agency's 40 Code of Federal Register (CFR) Part 257, Criteria for Classification of Solid Waste Disposal Facilities and Practices (CCR Rule).

This Work Plan represents the second report completed for the former Lagoon (the initial Work Plan was completed in November 2024). This Work Plan has been revised to incorporate the results of field investigation activities performed over the last six months (from November 2024 until May 2025) and to describe the work that still remains to fully characterize the former unit. The subsections below have been revised from the initial Work Plan to incorporate new information when available.

2.0 Characterization Approach [§257.100(f)(1)(iii)(A)(3)(i)]

Characterization of the potential legacy CCR surface impoundment, as well as native geologic materials beneath and surrounding the potential unit, is important to investigate the presence of free liquids within the potential legacy CCR surface impoundment. Relevant site features, such as topography, geology, hydrogeology, hydraulic, and physical properties of materials, characteristics of the CCR, and other factors are used to develop a plan for identification of free liquids. To evaluate relevant factors as they relate to the former Lagoon, a Conceptual Site Model (CSM) will be developed. The first steps to develop the CSM consist of two general components:

- Characterization of physical, hydraulic, geotechnical, and chemical properties of CCR deposits and other layers in and immediately surrounding the potential legacy CCR surface impoundment (Section 2.1).
- Determination of the extent, spatial position, and volume of emplaced CCR (Section 2.2).

To characterize the above items, a Phase 1 investigation was completed in 2024 in which 15 auger borings in conjunction with Standard Penetration Testing (SPT) were completed within the vicinity of the former Lagoon. The locations of these SPT borings are shown on Figure ARM002. Three additional SPT borings are proposed within the former Lagoon to gain further information during a Phase 2 investigation as also shown on Figure ARM002. The type, number, and location of proposed additional borings for Phase 2 may change based on the field conditions or observations made during the investigation. The number and location of borings completed in the vicinity of the potential legacy CCR surface impoundment was determined based on review of available historic documentation, current site knowledge, and engineering judgement. Section 3.0 below discusses the tools and methods that were employed for the Phase 1 borings, will be employed for the Phase 2 borings, and other aspects of the Work Plan.

The CSM will also include information about the presence of liquids (if any) that are in the vicinity of the potential legacy CCR surface impoundment, including both groundwater and surface water that may infiltrate the potential unit from the bottom, sides, and top. Groundwater considerations for the CSM are discussed in Section 4.0. Stormwater considerations for the CSM are discussed in Section 5.0.

2.1 Characterization of Material Properties

The material within and immediately surrounding the potential legacy CCR surface impoundment must be classified and characterized in order to understand its propensity for retaining liquids. To characterize the material within and surrounding the potential legacy CCR surface impoundment,

geologic borings were completed in strategic locations throughout the potential unit and beyond its boundaries during the Phase 1 investigation as discussed above. Three additional SPT borings are proposed within the former Lagoon to gather further information during the Phase 2 investigation. The following tests and evaluations will be included in the CSM as necessary to characterize the CCR and geologic materials within and surrounding the potential legacy CCR surface impoundment:

- Geotechnical laboratory data such as grain size distribution, moisture content, Atterberg limits, hydrometer analysis and Unified Soil Classification System (USCS) classification.
- Hydraulic data such as permeability including spatial distribution of permeability.
- Paint Filter Liquids test to determine the presence of free liquids in the CCR samples.
- Identification of any impermeable and highly permeable layers or zones in CCR or in geologic materials surrounding the potential legacy CCR surface impoundment.
- Identification of preferential pathways related to geologic materials or engineered structures in CCR or in geologic materials surrounding the potential legacy CCR surface impoundment.
- Groundwater levels and porewater pressure distribution in CCR and geologic materials surrounding the potential legacy CCR surface impoundment (as described in Section 4.0).

2.2 Determination of Emplaced CCR Extents

To understand whether the former Lagoon contains free liquids, the extents of the CCR must first be delineated. The CSM will include information about the spatial position, elevation, and general shape of the CCR within the former Lagoon. This information will be obtained through drilling borings in strategic locations throughout the potential legacy CCR impoundment and beyond the boundaries of the potential unit as discussed above. Borings will be advanced until the native geologic materials beneath the CCR are encountered to establish the bottom elevation of CCR within the potential unit for comparison with groundwater elevations.

Visual inspection of the material obtained from each boring will be used to classify CCR and determine its lowermost and uppermost depths. Inspection of the material will provide information about whether or what type of cap material was placed on the potential legacy CCR surface impoundment after closure. If necessary, polarized light microscopy (PLM) analysis may be used during Phase 2 investigation activities to assist with material characterization. Information gained from visual inspection of the borings during both phases will be used to create cross sections of the potential legacy CCR surface impoundment to refine and update the CSM as needed. From these cross sections, high-points and low areas of CCR can be identified (if any) and the geologic features surrounding the CCR can be characterized.

Samples of material obtained throughout the drilling process can be classified as explained in Section 2.1 above. Classification of each type of material within and surrounding the potential legacy CCR surface impoundment will provide insight about the nature and physical and hydraulic characteristics of both the CCR and the surrounding geologic materials.

3.0 Description of Tools and Methods [§257.100(f)(1)(iii)(A)(3)(ii)]

Various tools and methods are available for assessment of free liquids within the potential legacy CCR surface impoundment. These include tools for characterizing both the CCR and the groundwater using direct and indirect methods.

Geophysical surveys are an indirect method of delineating the extent of coal ash disposal and differentiating native soils from CCR. Geophysical methods such as Electromagnetic Induction, Electrical Resistivity, Ground Penetrating Radar, Seismic Refraction, and Multi/Hyper-Spectral Imaging can be useful at for sites for which little or no previous subsurface investigations have been performed or where access may be limited due to dense vegetation, topography, or incompatible land use. Some methods may also be useful for identifying areas of water saturation, pore fluid conductivity, and the

interface between soil and rock. Compared to conventional investigation methods that require intrusive sampling, geophysical methods are not invasive, can cover large areas over a relatively short time span, and may be more cost effective than intrusive investigations.

Although geophysical surveys can't replace conventional site characterization methods, they can be used to fill data gaps between more direct measurements or be used to identify areas to target with follow-up subsurface investigations. The use of geophysical surveying methods is not proposed at this time but will be further evaluated based on site-specific conditions and the quality and amount of hydrogeologic and geotechnical data obtained from the SPT and auger borings.

Both Cone Penetration Testing (CPT) and Standard Penetration Testing (SPT) methods may be used, as necessary, to characterize the potential legacy CCR surface impoundment and surrounding area. However, CPT methods may be ineffective, as evident from the Phase 1 investigation activities in which dense soils causing refusal were encountered. SPT, a direct investigation method, is proposed for site characterization during Phase 2 to obtain high quality, undisturbed samples for laboratory testing as needed, as well as for installation of piezometers at various boring locations specific to the former Lagoon and the surrounding area (more details on piezometers are provided in Section 4.0).

SPT drilling operations may include using a hollow stem auger rotary drilling method, or any other appropriate method depending on site-specific conditions. The drilled boreholes will be useful to assess subsurface conditions by visual inspection, logging and classifying the materials, and determining the material boundary by direct inspection. SPT is a standardized, widely accepted test which provides a measure of penetration resistance (called blow counts or N-values) which can be correlated to the engineering properties of soils such as strength and density and can also provide information on saturation of encountered soil samples (dry, moist, wet, etc.) for initial qualitative assessment. The use of the CPT method is not proposed at this time but may be further evaluated based on the site-specific conditions as implementation of the Work Plan progresses.

In addition to CPT and SPT, test pits can be excavated as needed for direct visual inspection of materials and to determine if CCR is exposed on the test pit sidewalls. These can also prove useful in assessing whether free liquid is present in the potential legacy CCR surface impoundment by direct observation of whether water is infiltrating into the test pit. Presently, no test pits are proposed as part of the Work Plan; however, test pits may be excavated as necessary in any areas of interest as implementation of the Work Plan progresses.

In addition to site characterization and initial qualitative assessment of free liquids using the above methods, conventional vertical standpipe piezometers (small diameter MWs) were installed within 14 of the 15 SPT borings drilled during Phase 1 in 2024 for direct assessment of the presence or absence of free liquids within the potential legacy CCR surface impoundment. The subsurface characterization and material boundary information obtained from SPT provided the information necessary to install screens at appropriate depths to best capture the free liquids (if present) from various geologic layers and CCR within the potential legacy CCR surface impoundment. The standpipe piezometers will be used to obtain groundwater levels at periodic intervals. Similarly, after developing an understanding of the geological features of the potential legacy CCR surface impoundment, in situ testing like standard slug testing, field pump testing, and/or packer testing can be performed during Phase 2 activities for more robust characterization of hydrogeological features of the potential unit, as needed.

Along with the installed 14 standpipe piezometers, three additional (standpipe and/or vibrating-wire) piezometers are proposed for installation during Phase 2 to refine the measurement of any porewater pressures that may be present in the CCR and other geologic materials. Standpipe piezometers can take a long time to respond if screened in low permeability materials, and rapid response piezometers can be useful in such materials to gain a more timely understanding of the groundwater conditions and assess for the presence of free liquids.

The field methods will be supplemented by laboratory testing, and samples collected from SPT drilling and/or excavated test pits will be analyzed to update the CSM and help strengthen the knowledge of the potential legacy CCR surface impoundment, including whether free liquids are present.

Some of the laboratory tests that could be performed are:

- Moisture content;
- Grain size distribution;
- Atterberg Limits;
- Hydrometer analysis;
- USCS classification;
- Paint Filter Liquids Test; and
- Hydraulic conductivity.

Laboratory tests to determine additional physical, geotechnical, and hydraulic parameters can be performed, as needed, based on the information necessary to characterize the site as implementation of the Work Plan progresses.

4.0 Determination of Groundwater Elevations **[§257.100(f)(1)(iii)(A)(3)(iii)]**

One potential source of free liquids within the potential legacy CCR surface impoundment is groundwater that may intersect CCR within an impoundment. As such, it is necessary to understand the location and extents of the water table and uppermost aquifer and/or whether any perched aquifers are in the vicinity of the potential legacy CCR surface impoundment. This information will be incorporated into the CSM as needed to accurately depict site conditions. To obtain information about groundwater in the vicinity of the potential legacy CCR surface impoundment, borings are completed at strategic locations as discussed in Section 2.0. Visual inspection of the material removed for each boring can be used to estimate the elevation associated with the uppermost aquifer and identify impermeable layers or perched zones (if any) above the aquifer.

To further characterize groundwater flow in the vicinity of the site, additional piezometers are proposed to be installed during Phase 2 activities as discussed in Sections 2.0 and 3.0 above to supplement current monitoring network and characterize site conditions. The proposed locations of piezometers were chosen based on information obtained during the subsurface investigation, historic documentation, topography, and engineering judgement. Similarly, elevations of screened intervals and instrumentation for these proposed additional piezometers will be chosen based on information obtained during the subsurface investigation, historic documentation, and professional judgement.

Water level readings are currently being gauged in the standpipe piezometers installed during Phase 1, and these readings will be performed at least once per quarter until the completion of the Work Plan. Water levels and porewater pressures as obtained from the piezometers will be reviewed throughout the Work Plan implementation to gain an understanding of the flow patterns and how they may vary seasonally. From this data, contour maps of groundwater flow can be created as necessary to represent groundwater flow beneath and around the potential legacy CCR surface impoundment and assess whether groundwater intersects the CCR within the potential unit.

As part of this effort, various external factors that have the potential to influence water levels and porewater pressures will also be assessed. These factors include items related to surface water, man-made infrastructure within, surrounding, or in the vicinity of the potential legacy CCR surface impoundment, topography, industrial operations nearby, and preferred pathways in/out of the CCR.

The following items will be completed as necessary to characterize the liquids distribution in the vicinity of the potential legacy CCR surface impoundment:

- Providing details of piezometer monitoring including locations, depths, screened intervals, or measurement intervals of different types of piezometers (which may include MWs, vibrating wire

piezometers, pressure transducers or any other device) and will be finalized as implementation of the Work Plan progresses).

- Identifying a sufficient number of monitoring points, which will be installed at appropriate locations and depths depending on complexity of the potential legacy CCR surface impoundment and CCR identified during characterization. These monitoring points will be screened or instrumented at vertical intervals close enough to capture different layers that may contribute to free liquids (if any).
- Identifying if additional water level measuring devices are needed at units where groundwater may intersect the potential legacy CCR surface impoundment, and to identify if any preferential pathways exist.
- Identifying any perched or hydraulically isolated zones within the potential legacy CCR surface impoundment.
- Identifying the possibility of upward vertical gradients beneath the CCR material.
- Identifying surface water features, including impounded water, rivers, streams, wetlands, etc., at locations above and adjacent to the potential legacy CCR surface impoundment, and their impact on water levels and hydraulic head pressure within the CCR.
- Identifying presence and magnitude of any groundwater mounding.
- Identifying seasonal or temporal variations of groundwater levels and porewater pressures.

5.0 Stormwater Evaluation [§257.100(f)(1)(iii)(A)(3)(iv)]

As part of the field investigation, stormwater flow processes at the former Lagoon will be evaluated to understand how these processes may result in the formation of free liquids in the potential unit. Stormwater processes to be evaluated include flow over the surface of the potential unit, drainage from the potential unit, and infiltration into the potential unit. The CSM will be updated to include relevant findings from the evaluation of stormwater flow processes. The attached Figure ARM003 includes a current topographic map of the former Lagoon with arrows to indicate the general flow of surface water over the former Lagoon. This figure also includes labels for natural or man-made features pertinent to stormwater drainage, infiltration, and related processes, if any.

To better understand the site conditions and gather information for the stormwater evaluation, a site visit will be conducted to inspect for evidence of drainage onto or off of the potential legacy CCR surface impoundment and surrounding area, view and verify terrain and topographic features, and identify any signs of erosion or other markings which may indicate stormwater flow patterns. If drainage features are observed, the locations of each feature will be noted. If possible, design details of drainage features, such as dimensions, will be recorded.

Stormwater flow over the surface of the potential unit and drainage from the potential unit will be evaluated using the Soil Conservation Service (SCS) Runoff Curve Number (CN) method or similar process. Drainage areas at the site will be delineated based on current topography, aerial imagery, and additional knowledge gained from the site visit. Drainage area delineation will provide insight into sources and quantity of stormwater flowing onto and away from the site and identify any low points where stormwater may collect. CNs will be developed for each drainage area identified based on aerial imagery, cover type knowledge gained from the site visit, and soil data obtained from Natural Resources Conservation Service (NRCS) Web Soil Survey. CN development will further refine knowledge of the potential unit, stormwater flows in the vicinity of the potential unit, and the potential for infiltration.

Results of the stormwater evaluation will be used to identify areas where stormwater is likely to infiltrate and result in the formation of free liquids in the potential legacy CCR surface impoundment. This

information may be used in part to determine the location of soil borings as described in Section 2.0 above.

If needed, additional evaluation of stormwater surface flows to and from the potential unit can be completed to assess erosion potential or the effectiveness of existing drainage features. In this instance, stormwater flows to and/or from the potential unit could be calculated using the United States Department of Agriculture's Technical Report 55, Urban Hydrology for Small Watersheds (TR-55) or similar method. Times of concentration (TOCs) for each drainage area could be developed based on current topography, aerial imagery, and additional knowledge gained from the site visit. Peak flows for select precipitation events could be obtained using Hydraflow Hydrographs Extension for Autodesk® Civil 3D® or similar method.

The potential for stormwater infiltration into the potential unit can be modeled to assess whether it may contribute to the formation of free liquids. Any model used to assess stormwater infiltration potential will be created using site-specific data gained from the site characterization efforts described in Section 2.0 and the site visit described above.

6.0 Estimated Timeline [§257.100(f)(1)(iii)(A)(3)(v)]

The project includes components related to site characterization, monitoring, calculations, and data evaluation. Engineering efforts for design of the site characterization program are also anticipated to be required. The major phases of the project in the anticipated order of completion are discussed below. Where applicable, these items have been revised to reflect work completed since November 2024 and the anticipated schedule moving forward.

1. **Secure Engineering Design Firm (6 months).** GAI Consultants, Inc. (GAI) was retained to execute the work plan, including design of the geotechnical investigation.
2. **Engineering Design for Geotechnical Investigation (1-2 months).** A desktop review of available data was completed, and a preliminary CSM was developed. The preliminary CSM was used to develop a design for the initial drilling investigation. This work is ongoing to support the installation of additional piezometers during Phase 2 activities for further monitoring of the former Lagoon.
3. **Internal File Review (ongoing, concurrent with Items 1 and 2).** Internal historic files (both hard copy and digital, if applicable) are reviewed to gain an understanding of the former Lagoon.
4. **Initiate File Review with State Agency (1 month, concurrent with Items 2 and 3).** A file review request was initiated with the Pennsylvania Department of Environmental Protection to obtain and review any historic files relevant to the former Lagoon managed by the state.
5. **Establish Site Access and Clear Vegetation (1-3 months; concurrent with Item 1).** Access to the potential unit was established to support the initial drilling investigation in 2024.
6. **Secure Drilling Contractor (1 month, concurrent with Items 2 – 4).** A drilling contractor was secured for the Phase 1 drilling investigation completed in 2024. Further coordination with drilling vendors is anticipated to support the installation of additional piezometers during Phase 2 to monitor the former Lagoon.
7. **Stormwater Site Visit (1 week, concurrent with Items 2 – 6).** Representatives will visit the site and conduct a review of existing topography and drainage features as described in Section 5.0.
8. **Geotechnical Investigation and Piezometer Installation (1-2 months).** The selected drilling contractor will complete the subsurface geotechnical investigation as designed in Item 2 above. The subsurface investigation tools and methods are described in Section 3.0. The initial drilling investigation and piezometer installation was completed during the Phase 1 investigation in

2024. Further investigation will continue as part of the Phase 2 investigation activities described herein.

9. **Stormwater Evaluation (2 months, concurrent with Items 2 – 7).** Calculations and assessments to evaluate stormwater flow over the potential unit, from the potential unit, and infiltration into the potential unit will be completed as described in Section 5.0.
10. **Geotechnical Report and CSM Update (4-6 months, concurrent with Item 9).** An interim report summarizing the drilling program, piezometer installation, monitoring program, and boring information was prepared to reflect the work completed during Phase 1 in 2024. An update to the preliminary CSM was also completed to include all relevant information gathered from the subsurface investigation. Further updates will be completed as necessary to reflect work completed as part of Phase 2 to install additional piezometers as described herein.
11. **Piezometer Data Collection (1 year, concurrent with Items 9 and 10).** Data is collected from the piezometers and other instrumentation installed as part of the Work Plan implementation. One year of data is anticipated to be collected to reflect the groundwater levels during all four seasons and demonstrate that groundwater level fluctuation does not create free liquids within the emplaced CCR.
12. **Groundwater Evaluation (1 year, concurrent with Items 8 – 11).** As data is collected from the installed piezometers and other instrumentation, it must be evaluated. Data evaluation occurs concurrently with data collection. Resources such as groundwater contour maps will be created to help interpret the data and for use in determining whether free liquids exist within the potential legacy CCR surface impoundment.
13. **Determination if Potential Unit Contains Free Liquids (1 year, concurrent with Items 8 – 12).** Results from Items 8 through 12 above will be incorporated into the CSM and evaluated to make a determination about whether the potential unit contains free liquids.

7.0 Work Plan Results [§257.100(f)(1)(iii)(A)(3)(vi)]

Implementation of the Work Plan will result in observations that can be made about the potential legacy CCR surface impoundment based on the field investigations and calculations performed. Individual Work Plan results are anticipated to be as follows:

- Classification of subsurface materials obtained during the subsurface investigation.
- Boring logs indicating the characterization of the encountered materials, and presence or absence of moisture or free liquids during the subsurface investigation.
- Groundwater elevations in piezometers throughout the full monitoring period.
- Identifying the possibility of upward vertical gradients beneath the CCR material.
- Calculations providing insight about the direction of stormwater flow and cover types.
- Evaluation of the potential for infiltration of stormwater through the potential unit.

Results of the Work Plan will be reviewed first individually and then in conjunction with one another to determine whether the potential legacy CCR surface impoundment contains free liquids. A CSM consisting of characterization of physical, hydraulic, geotechnical and chemical properties of CCR deposits and other layers in and immediately surrounding the potential legacy CCR surface impoundment, as well as determination of the shape, spatial position, and volume of emplaced CCR will be developed. This will aid in looking at the wholistic picture of the site and determining the presence or absence of free liquids. Since the monitoring is anticipated to take place at least over the period of one year after the installation of the monitoring points, this will be useful in making

assessments over short time frames, as well as over a long period of time so that the relevant performance standard has been met if no free liquid is encountered.

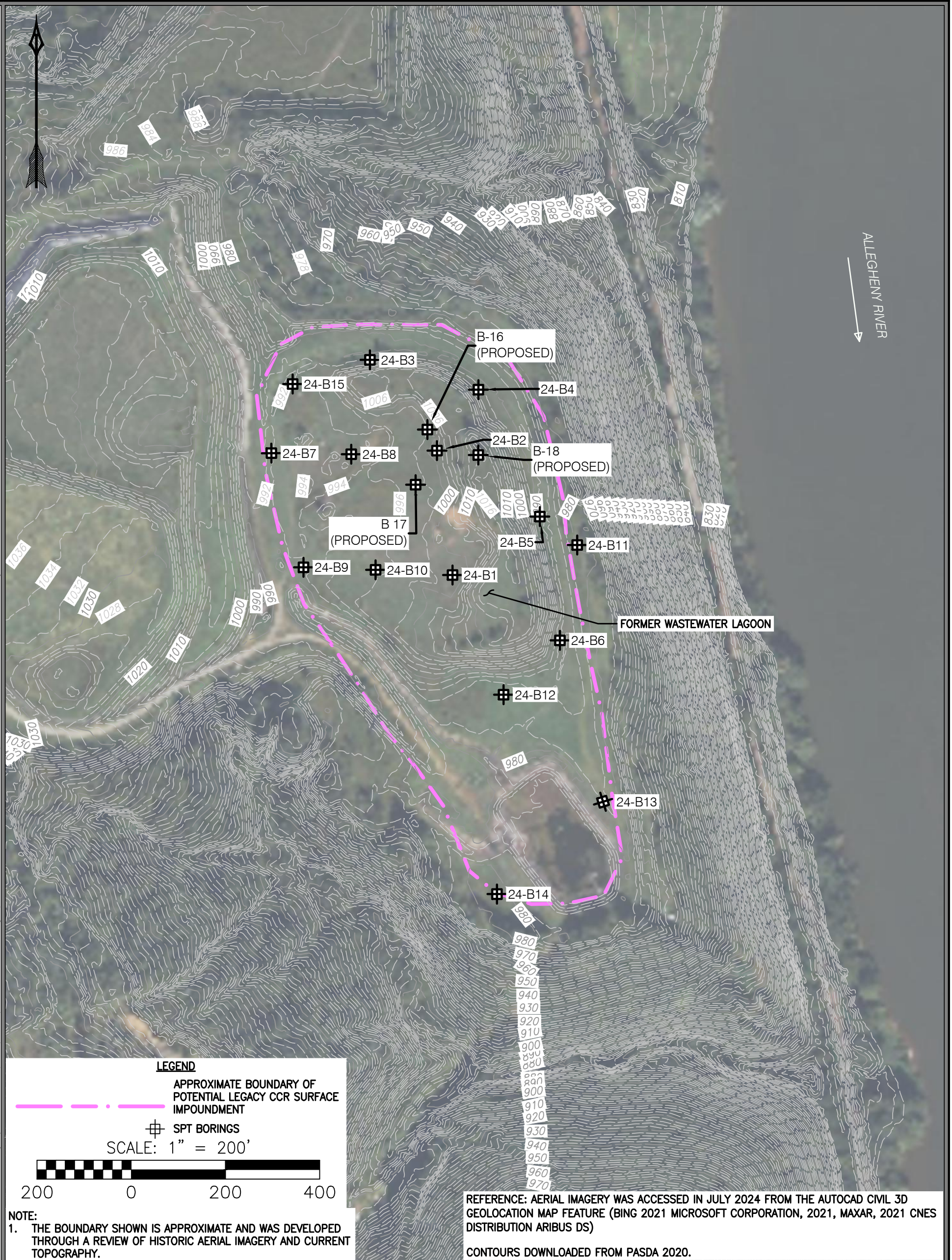
8.0 Anticipated Problems [§257.100(f)(1)(iii)(A)(3)(vii)]


Problems that could arise during the implementation of this Work Plan include:

- **Time to secure engineering design firm (extra 6 months).** Securing an engineering design firm to assist with implementation of the Work Plan is a critical early step in the overall project schedule. Six months elapsed between the completion of the Phase 1 investigation in 2024 and the selection of an engineering design firm (GAI) to implement the Phase 2 investigation. During this time, a Request for Proposal was prepared and advertised, contractor proposals were developed and submitted, contractor proposals were evaluated, and a contract was awarded.
- **Availability of drilling contractor (extra 1 – 2+ months).** Securing a drilling contractor to complete the subsurface investigation and piezometer installation is a critical part of the overall project schedule. The availability of drilling contractors depends on a variety of factors, including time of year, previously contracted engagements and demand from other clients. Implementation of CCR Legacy Rule may cause short-term driller shortages as multiple facilities attempt to characterize potential legacy CCR surface impoundments or comply with future requirements of the CCR Legacy Rule for additional units. Additionally, the type of drill rig required for a site may influence the availability of the driller. Should availability of a driller or drill rig become an issue to the schedule, other drilling contractors can be contacted to inquire about whether the work can be completed more quickly with another company.
- **Drill rig malfunction or inadequacy (extra 1+ months).** The drill rig used for the subsurface investigation is critical to the implementation of the Work Plan; as such, a malfunctioning drill rig has the potential to delay the project. Similarly, sometimes subsurface conditions encountered after drilling has already started require that a different method for drilling be used. Should an issue with the drill rig arise, the contractor will be asked to provide a replacement rig. If a replacement rig cannot be provided, other drilling contractors can be contacted to determine whether a different company could complete the subsurface investigation more quickly.
- **Piezometer / instrumentation malfunction (extra 1+ months).** Piezometers installed as part of the Work Plan may malfunction. This may cause a need to reinstall an additional piezometer and/or repair the existing equipment to collect data. Should an issue with a piezometer or other instrumentation arise, effort will be made to engage the contractor to replace the piezometer or repair the existing one as soon as practical.
- **Delays or other issues with analytical laboratory testing (extra 2+ weeks).** Samples of material collected during the subsurface investigation will be sent to a laboratory for testing services. Laboratory analysis issues, such as malfunctioning equipment or a lost sample, can cause delays in the range of one day to multiple weeks. Similarly, securing a laboratory to complete the sample testing depends on a variety of factors, including previously contracted engagements and demand from other clients. Should an issue with obtaining analytical laboratory results arise, samples may be sent to a different laboratory that is able to complete the required testing without delay.
- **Weather delays (extra 1+ weeks).** Weather conditions can significantly affect project schedules. While some weather conditions can be predicted and accounted for in the schedule, the weather in Pennsylvania is variable, and conditions can change on a daily or weekly basis. Frozen ground and freezing temperatures may prevent or slow drilling efforts. Heavy rains, winds, and fog may occur periodically, and these weather events can also prevent or slow drilling efforts. The safety of all individuals involved with the project is paramount and, as such, field work efforts will be delayed if a potentially dangerous weather event arises. In the event of

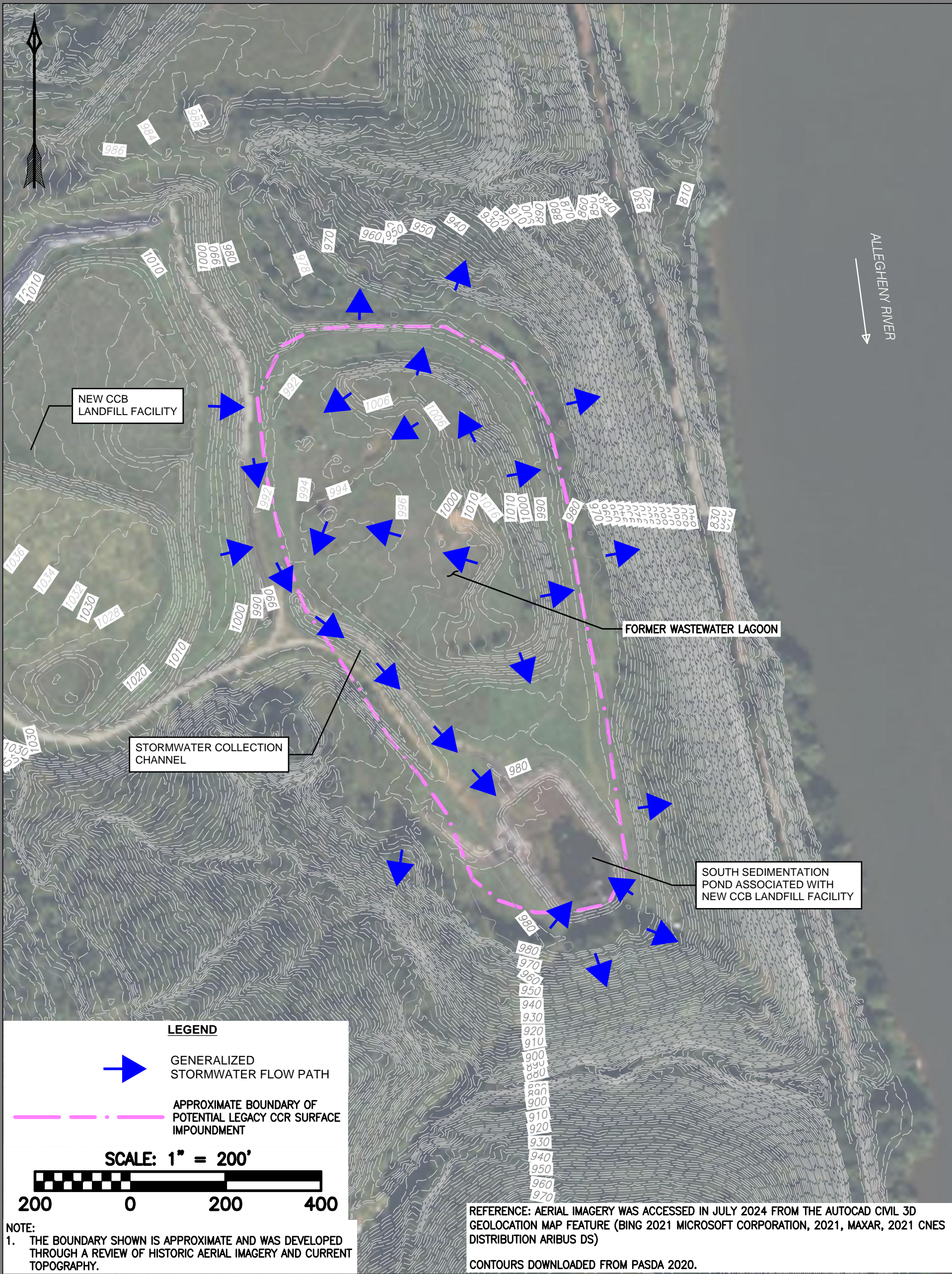
a weather delay, the schedule for work will be reviewed and updated as necessary to accommodate the delay without impact to the overall project schedule.


FIGURES



DRAWING TITLE			DRAWN BY:	ISSUE DATE:
BORING LOCATION PLAN				
PROJECT	 gai consultants	CLIENT	APELKR	5/2/2025
APPLICABILITY EXTENSION REPORT LEGACY CCR SURFACE IMPOUNDMENT FORMER ARMSTRONG POWER STATION ARMSTRONG COUNTY, PA		ALLEGHENY ENERGY SUPPLY COMPANY, LLC 800 CABIN HILL DRIVE GREENSBURG, PA 15601	CHECKED BY:	SCALE:
			ROUNCLL	AS SHOWN
			APPROVED BY:	SHEET NO.:
GAI FILE NUMBER:		GAI DRAWING NUMBER:		
C150917-54-000-00-ARM002		ARM002	DITULAL	001 OF 001
This drawing was produced with computer aided drafting technology and is supported by electronic drawing files. Do not revise this drawing via manual drafting methods.			© 2025 GAI Consultants	
ISSUING OFFICE: Pittsburgh 385 E. Waterfront Drive, Homestead, PA 15120				
PLOTTED ON: 5/2/2025 3:09:18 PM PLOTTED BY: Kevin R. Apel PLOT FILE: GAI.stb				

GAI CAD FILE PATH: Z:\Energy\2015\C150917.54 - FE CCR Legacy Rule Initia\CAD\ACAD\Production Drawings\APPLICABILITY REPORT FIGURES\C150917-57-000-00-ARM003.dwg



DRAWING TITLE			DRAWN BY:	ISSUE DATE:
STORMWATER PLAN - FORMER WASTEWATER LAGOON				
PROJECT	 gai consultants	CLIENT	BORINTR	5/2/2025
APPLICABILITY EXTENSION REPORT LEGACY CCR SURFACE IMPOUNDMENT FORMER ARMSTRONG POWER STATION ARMSTRONG COUNTY, PA		ALLEGHENY ENERGY SUPPLY COMPANY, LLC	CHECKED BY:	SCALE:
		800 CABIN HILL DRIVE	ROUNCLL	AS SHOWN
		GREENSBURG, PA 15601	APPROVED BY:	SHEET NO.:
GAI FILE NUMBER:		GAI DRAWING NUMBER:	DITULAL	001 OF 001
C150917-57-000-00-ARM003		ARM003	© 2025 GAI Consultants	
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