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Coal Combustion Residuals Landfill
Run-on and Run-off Control System Plan

Keystone Generating Station
Keystone Station Disposal Site
Shelocta, Pennsylvania

GAI Project Number: C151611.15, Task 003

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Professional Engineer's Certification

The Run-on and Run-off Control System Plan for the Keystone Station Disposal Site was prepared by GAI Consultants, Inc. The Plan was based on certain information that, other than for information GAI originally prepared, GAI has relied on but not independently verified. Therefore, this Professional Engineer's Certification is limited to the information available to GAI at the time the Plan was written. On the basis of and subject to the foregoing, it is my professional opinion as a Professional Engineer licensed in the Commonwealth of Pennsylvania, that the 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 time and in the same locale. It is my professional opinion that the Plan was prepared consistent with the requirements of Section 257.81 of the United States Environmental Protection Agency's "Disposal of Coal Combustion Residuals from Electric Utilities," published in the Federal Register on April 17, 2015 with an effective date of October 19, 2015.

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.

Adam B. Scheller, P.E.
Assistant Engineering Director



10/30/26

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Plan Revisions

Revision	Date	Reason	Description	Reviewer
0	Oct. 2016		Original Document	NRG, GAI Consultants
1	Sept. 2021	Comprehensive review and as-needed revisions per CCR Rule, Section 257.81(c)(4) requirements (review of plan required every five years)	Remove GenOn/NRG, additional miscellaneous administrative changes, revised run-on and run-off control system descriptions to reflect Stage IVA construction and current conditions	Keystone Station, GAI Consultants
2	Oct. 2026	Comprehensive review and as-needed revisions per CCR Rule, Section 257.81(c)(4) requirements (review of plan required every five years)	Revised run-on and run-off control system descriptions to reflect capping Phases 1 through 4 and current conditions	Keystone Station, GAI Consultants

1.0 Introduction

The Keystone Generating Station is a steam electric generating station located along Crooked Creek in Plumcreek Township, Shelocta, Pennsylvania (PA). The station consists of two 850-megawatt (nominal net maximum load) coal-fired units.

The Keystone Station Disposal Site (disposal site) is permitted under PA Department of Environmental Protection (PaDEP) Solid Waste Permit No. 300837 and has been used for the disposal of Keystone Generating Station's Coal Combustion Residuals (CCRs) and coal refuse since 1984. The currently permitted site (233 acres) is a lined disposal area.

In 2023, capping activities commenced on portions of the disposal site that were no longer actively receiving waste. The capping plan consists of seven phases, with one phase to be completed per year. Phases 1, 2, 3, and 4 were completed in 2023, 2024, 2025, and 2026, respectively. The station has elected to pause further capping at this time.

The facility consists of four stages of the contiguous East Valley and West Valley:

- Stage I of the East Valley (northern side) was constructed first and became operational in 1984; this stage was capped in 2023 (Phase 1) and 2026 (Phase 4);
- Stage II of the East Valley (southern side) was capped in 2024 (Phase 2) and 2025 (Phase 3); small portions of Stage II remain soil covered and vegetated and will be capped in a future capping phase;
- Stage III of the West Valley (northern side) contains some active portions and other portions that were capped in 2026 as part of Phase 4; and
- Stage IV of the West Valley (southern side) is currently active with possible future permitted steps.

In accordance with applicable permits, off-site stormwater run-on and stormwater run-off from soil-covered and vegetated areas will be diverted around the working areas and discharged into unnamed tributaries of Crooked Creek and Plum Creek. Run-off from the active portions of Stage III and Stage IV will be collected in run-off channels and conveyed to equalization ponds prior to treatment at the on-site treatment plant located at the disposal site.

2.0 Run-on and Run-off Control System Plan

This Run-on and Run-off Control System Plan (RRCSP) (§257.81) sets forth the techniques that are utilized to minimize stormwater run-on and divert or collect stormwater run-off during operation of the disposal site. The purpose of the Run-on and Run-off Control System is to limit flow of stormwater run-on from a 25-year, 24-hour storm onto the active portion of the disposal site and to divert or collect run-off from the capped or soil-covered and vegetated portions and the active portions of the disposal site (resulting from a 25-year, 24-hour storm) during operation. Stormwater controls include the following:

- Temporary/permanent stormwater diversion and collection channels;
- Culverts;
- Slope Drains; and
- Stormwater Equalization Ponds.

Surface run-on along the perimeter of the soil-covered and vegetated Stage I area is combined with stormwater run-off from the capped or soil-covered and vegetated Stage I area and discharged into a stormwater diversion channel that discharges to Plum Creek. The surface run-on along the perimeter of the Stage II, Stage III, and the Stage IV areas is or will be conveyed to diversion channels that are directed to unnamed tributaries of Crooked Creek (west side) or Plum Creek (east side).

The run-off channels consist of collection channels for stormwater run-off from the active portions of Stage III and Stage IV and diversion channels for stormwater run-off from areas that were capped in Phases 1 through 4 or are currently soil-covered and vegetated. Run-off from active areas is conveyed to the existing West Valley Equalization Pond located to the south of the disposal site for subsequent treatment, while run-off from capped or soil-covered and vegetated areas is directed to the West Stormwater Management Pond or unnamed tributaries of Crooked Creek or Plum Creek.

2.1 Stormwater Run-on Control

Stormwater run-on to the disposal site is controlled via diversion features such as diversion channels and culverts.

Most existing East Valley (Stage I and Stage II) diversion channels and culverts were designed for the 100-year, 24-hour storm event (exceeding the requirements of the CCR Rule). The existing Stage IIC, Stage III, and Stage IVA drainage facilities are designed for the 25-year, 24-hour storm event (meeting the requirements of the CCR Rule). As such, the diversion channels and culverts have been designed to meet requirements under Section 257.81 of the Federal CCR Rule.

2.1.1 Run-on Channel and Culvert Design

2.1.1.1 Existing Stage I Features

Stage I is the first phase of the East Valley development and was capped as part of Phase 1 (2023) and Phase 4 (2026). The existing diversion features capture some off-site run-on. Portions of the existing diversion features were replaced during the Phase 1 capping activities. The existing and new Stage I drainage features are discussed in Section 2.2.1.1.

2.1.1.2 Existing Stage IIC and III Features

The existing run-on control drainage features for Stage IIC and Stage III are designed for the peak flow from a 25-year, 24-hour storm event. Below is a list of the temporary and permanent features designed for the Stage IIC and Stage III developments. Some of the Stages IIC and Stage III temporary features may be buried by development of the Stage IV area, dependent on the disposal area required to be developed to support Station operations.

Temporary Run-on Features

The Stage III southwest ditch is a Type C-2 channel which diverts discharge from vegetated upland areas to discharge to the stream through a pipe. This channel may be buried by subsequent construction – Drawing No. D-728-1055.

Diversion Ditch D33 is a Type A-2 channel and diverts run-on from the western side of the site to discharge to the southwest ditch – Drawing No. D-728-1055.

Permanent Run-on Features

The portion of the Southeast Ditch developed during Stage III is a Type C-1 channel and diverts run-on for ultimate discharge to an unnamed tributary of Crooked Creek – Drawing Nos. D-728-1055, D-728-1056, and D-728-1058.

Haul Road Diversion Ditch Part 2 is a Type C-3 channel which diverts water from work areas upstream of the southeastern portion of the Stage III Haul Road to discharge through Culvert No. 1 for ultimate discharge to an unnamed tributary of Crooked Creek – Drawing Nos. D-728-1055, D-728-1056, and D-728-1058. The pond diversion channels are sub-divided into two parts:

- Pond Diversion Ditch Part 1 is a Type A-2 channel and diverts flow to the Pond Diversion Ditch Part 2 for ultimate discharge to an unnamed tributary of Crooked Creek – Drawing Nos. D-728-1055, D-728-1056, and D-728-1058.

- Pond Diversion Ditch Part 2 is a Type C-2 channel and diverts flow through Culvert No. 13 for ultimate discharge to an unnamed tributary of Crooked Creek – Drawing Nos. D-728-1055, D-728-1056, and D-728-1058.

2.1.1.3 Existing Stage IV Features

Construction work to initiate Stage IV started in March 2015, and continuous construction occurred until Stage IVA was lined and had the necessary certifications and approvals in place to begin receiving waste. Stage IVA began receiving waste in late-2018. The following sections include drainage features constructed for Stage IVA subgrade work and drainage features to be constructed up to when Stage IV reaches ultimate configuration.

The existing and proposed run-on control drainage features for Stage IV are designed for the peak flow from a 25-year, 24-hour storm event. Below is a list of the temporary and permanent features to be designed for Stage IV:

Temporary Run-on Features

Diversion Ditch D41 is a Type A-7 channel that will convey run-on from the southwestern working area to discharge to a spring – Drawing No. D-728-1056.

Permanent Run-on Features

Culvert Nos. 18 and 19 divert flows from the western side of the Stage III Haul Road under the proposed Stage IV Access Road to ultimately discharge to an unnamed tributary of Crooked Creek – Drawing No D-728-1058.

The Stage IV Southwest Access Road Diversion Ditch is a Type C-8 channel and diverts flow from the Stage IV Southwest Access Road to discharge to the stream – Drawing Nos. D-728-1056 and D-728-1058.

2.2 Stormwater Run-off Control

Stormwater run-off from capped or soil-covered and vegetated areas is diverted around the active areas of the site. Stormwater run-off from active areas is collected and treated prior to off-site discharge through a National Pollutant Discharge Elimination System (NPDES)-licensed outfall. All stormwater run-off will be managed by run-off controls, such as diversion or collection channels, slope drains, culverts, and equalization ponds.

Most existing East Valley (Stage I and Stage II) run-off channels and culverts were designed for the 100-year, 24-hour storm event (exceeding the requirements of the CCR Rule). Some of these drainage features were modified to support the Phases 1 through 4 of capping activities. The new drainage features do not collect contact stormwater run-off from active areas and were designed for either the 10-year, 24-hour storm or the 25-year, 24-hour storm. The existing Stages IIC, Stage III, and Stage IVA drainage facilities are designed for the 25-year, 24-hour storm event (meeting the requirements of the CCR Rule). As such, all run-off channels and culverts collecting stormwater from active areas have been designed to meet the requirements under Section 257.81 of the Federal CCR Rule.

2.2.1 Run-off Channel and Slope Drain Design

2.2.1.1 Existing Stage I Features

Stage I is the first phase of the East Valley development, and it was capped as part of Phase 1 in 2023 and Phase 4 in 2026.

The East Peripheral Drainage Channel was developed during the East Valley development for the 100-year, 24-hour storm event, and the majority of this channel remains in place for drainage control. In addition to the East Peripheral Drainage Channel, new Channels 1, 2, 3, and 4 were constructed to support Phases 1 and 2 of capping. Existing Slope Drain 1/2 was reconstructed in-kind during the capping process.

New Channel 1 collects site drainage from the northernmost portions of the Phase 1 capped area and conveys it via new Culvert 1 to the East Peripheral Drainage Channel. New Channel 2 and reconstructed Slope Drain 1/2 collect site drainage from the southern portions of the Phase 1 capped area and convey it to the East Peripheral Drainage Channel. The East Peripheral Drainage Channel ultimately discharges into Plum Creek under NPDES Permit No. PA0002062. New Channels 3 and 4 collect drainage from the Phase 2 capped area and transfer this drainage via an existing channel into Plum Creek under NPDES Permit No. PA0002062.

Though new drainage features have been constructed to allow for capping of portions of the site, the drainage configuration allows for discharge of non-contact stormwater run-off that is consistent with the previous site configuration prior to capping.

2.2.1.2 Existing Stage IIC and III Features

The existing run-off control drainage features for Stage IIC and Stage III are designed for the peak flow from a 25-year, 24-hour storm event. Below is a list of the temporary and permanent features designed for the Stage IIC and Stage III developments. Some of the Stage IIC and III temporary features may be buried by development of the Stage IV area, dependent upon the disposal area required to be developed to support Station operations.

Temporary Run-off Controls from Soil-Covered and Vegetated Areas

The Southeast “Top of Pile” Swale is a Type A-4 channel which diverts drainage from the completed top of Stage IIC to the Northeast Ditch for ultimate discharge to existing East Valley ditches – Drawing No. D-728-1055.

The Southeast Ditch (utilized during Stage IIC development) is a Type B-2 channel which diverts discharge from the Stage IIC Slope Drain to the South Ditch for ultimate discharge to an unnamed tributary of Crooked Creek. This channel may be buried by subsequent construction – Drawing No. D-728-1055.

The South Ditch is a Type C-2 channel which diverts flow from the southeastern side of the Stage III Haul Road to the Haul Road Diversion Ditch for ultimate discharge to an unnamed tributary to Crooked Creek. This channel may be buried by subsequent construction – Drawing No. D-728-1055.

The North Temporary Diversion Channel is a Type A-6 channel that conveys drainage through the North Temporary Diversion Culvert to a stream – Drawing No. D-728-1055.

The East Temporary Diversion Ditch is a Type C-1 channel which diverts flows from the eastern side of the work area through Culvert No. 2 that discharges to an unnamed tributary of Crooked Creek – Drawing No. D-728-1055.

Diversion Ditch D31 is a Type A-7 and C-6 channel that conveys flow from an existing slope drain on the completed benches of Stage II to discharge to the West Stormwater Management (SWM) Pond. The C-6 channel portion of the diversion ditch will be a permanent feature of the ultimate configuration – Drawing Nos. D-728-1055, D-728-1056, and D-728-1058.

Diversion Ditch D32 is a Type A-2 channel which diverts flow from the western edge of liner of the East Valley to discharge to the stream – Drawing No. D-728-1055.

The East Slope Drain conveys drainage north of the East Ditch to the Northeast Ditch for ultimate discharge to existing East Valley Ditches – Drawing No. D-728-1056.

The Northeast Ditch is a Type C-2 channel which diverts flow from the completed top of Stage IIC to the East Ditch for ultimate discharge to existing East Valley Ditches. This channel may be buried by subsequent construction – Drawing No. D-728-1056.

The East Ditch is a Type A-5 channel which conveys flow from the Northeast Ditch to existing East Valley Ditches. This channel may be buried by subsequent construction – Drawing No. D-728-1056.

Haul Road Diversion Ditch Part 1 is a Type C-1 channel which diverts flow from the upstream work areas located northwest of the Stage III Haul Road to the West Ditch for ultimate discharge to an unnamed tributary of Crooked Creek. This channel may be buried by subsequent construction – Drawing No. D-728-1056.

Temporary Run-off Controls from Active Areas

A Stage IIC collection ditch along the reversed bench was designed to convey runoff from the Stage IIC area (through Culvert No. 11) to the existing East Valley Haul Road Ditch. – Drawing No. D-728-1055.

The North Collection Water Ditch is a Type C-2 channel. Its flow is conveyed through the West Collection Water Ditch for ultimate discharge to the West Valley Equalization Pond – Drawing Nos. D-728-1055 and D-728-1056.

The West Collection Water Ditch is a Type D-2 channel which conveys discharge to the West Valley Equalization Pond – Drawing No. D-728-1055.

The Haul Road Collection Water Ditch Part 1 is a Type C-5 channel placed in Stage 3. The drainage is conveyed adjacent to the existing Stage III Haul Road for ultimate discharge to the West Valley Equalization Pond – Drawing No. D-728-1056.

Permanent Run-off Controls from Soil-Covered and Vegetated Areas

The West Ditch is a Type C-2 channel and diverts water from the west side of the site to the West SWM Pond – Drawing Nos. D-728-1055, D-728-1056, and D-728-1058.

The existing East Valley West Side Collection Channel is a Type C-6 channel and conveys flow around the southeast toe of the ultimate landfill development, to the existing East Valley Ditches – Drawing Nos. D-728-1055, D-728-1056, and D-728-1058.

The existing East Valley Haul Road Ditch is a Type C-2 channel and diverts flow from the western side of the existing Stage II Haul Road for ultimate discharge to existing East Valley Ditches – Drawing Nos. D-728-1055, D-728-1056, and D-728-1058.

Permanent Run-off Controls from Active Areas

The Haul Road Collection Water Ditch Part 2 is a Type D-4 channel completed during Stage III subgrade development but will be a significant feature through much of Stage IV. The ditch will drain runoff from the Stage III Haul Road during Stage III and Stage IV developments for ultimate discharge to the West Valley Equalization Pond – Drawing Nos. D-728-1055, D-728-1056, D-728-1058.

2.2.1.3 Stage IV Disposal Area Development

Construction work to initiate Stage IV started in March 2015, and continuous construction occurred until Stage IVA was lined and had the necessary certifications and approvals in place to begin receiving waste. Stage IVA began receiving waste in late-2018. The following sections include drainage features constructed for Stage IV subgrade work and drainage features to be constructed up to when Stage IV reaches ultimate configuration.

The proposed run-off control drainage features for Stage IV are designed for the peak flow from a 25-year, 24-hour storm event. Below is a list of the temporary and permanent features designed for the Stage IV development:

Temporary Run-off Features from Active Areas

Temporary Culvert No. 16 will convey run-off from the Stage IV Haul Road for ultimate discharge to the West Valley Equalization Pond. During Stage IVA construction, temporary Culvert 20 was added just upstream of Culvert 16 to drain the Haul Road Collection Ditch under a temporary access ramp into Stage IVA.

Permanent Run-off Features from Soil-Covered and Vegetated Areas

The North "Top of Pile" Swale is a Type A-4 channel and diverts flow from the northern top of the disposal site to ultimately discharge to the existing East Valley East Peripheral Drainage Ditch – Drawing Nos. D-728-1056 and D-728-1058.

The North Ditch is subdivided into three parts:

- North Ditch Part 1 is a Type A-1 channel that diverts flow from the north side of the site to the existing East Valley East Peripheral Ditch – Drawing Nos. D-728-1056 and D-728-1058.
- North Ditch Part 2 is a Type C-1 channel that diverts flow from the north side of the site to the existing East Valley East Peripheral Ditch – Drawing Nos. D-728-1056 and D-728-1058.
- North Ditch Part 3 is a Type C-2 channel that diverts flow from the north side of the site to the existing East Valley East Peripheral Ditch – Drawing Nos. D-728-1056 and D-728-1058.

The Northwest Ditch is a Type A-2 channel that diverts flow from a northwestern bench of the site to the existing East Valley Peripheral Ditch – Drawing Nos. D-728-1056 and D-728-1058.

The Southwest Ditch is sub-divided into two parts:

- Southwest Ditch Part 1 will be a Type A-3 channel and will divert flow from the benched area located south of the Haul Road, through Culvert No. 15 to discharge to an unnamed tributary of Crooked Creek – Drawing No. D-728-1058.
- Southwest Ditch Part 2 is a Type C-2 channel that diverts flow from the benched area located south of the Haul Road to an unnamed tributary of Crooked Creek – Drawing No. D-728-1058.

During Stage IV disposal area development capping, the run-off channel at the South "Top of Pile" Swale, designed to collect run-off from active areas, will be converted to a diversion Type B-1 channel designed to divert run-off from soil-covered and vegetated areas. The channel will divert run-off from the southern top of the Stage IV disposal area and down the main Stage IV haul ramp channel C-4 for ultimate discharge to the West Valley Equalization Pond or an unnamed tributary at the Stage IV embankment toe – Drawing No. D-728-1058.

The Southeast Slope Drain will be located southeast of the completed Stage IV top and will discharge to existing East Valley Ditches – Drawing No. D-728-1058.

The West Slope Drain will be located on the western side of the Stage IV landfill to drain the western benches for ultimate discharge southward to Culvert 13 and to an unnamed tributary of Crooked Creek – Drawing No. D-728-1058. The lower portion of this diversion system and Culvert 13 were constructed as part of Stage IVA.

Southeast Ditch to be developed during Stage IV is a Type C-1 channel and diverts flow around the West Valley Equalization Pond for ultimate discharge to an unnamed tributary of Crooked Creek – Drawing Nos. D-728-1056, and D-728-1058.

Permanent Run-off Features from Active Areas

The Haul Road Collection Water Ditch Part 1 completed in Stage IV will be a Type C-4 channel and will be conveyed under the existing Stage IV haul road in Culvert 8 to the South Collection Ditch – Drawing No. D-728-1058.

The South Collection Water Ditch is a Type C-2 channel and discharges through Culvert No. 14 to ultimate discharge to the West Valley Equalization Pond – Drawing Nos. D-728-1056 and D-728-1058.

2.2.1.4 Capping Phases 1 through 4

Capping Phases 1 through 4 were designed to utilize existing infrastructure so that fewer permanent drainage features are required to be installed. Some temporary drainage features for use in managing construction stormwater during phases of the capping activities were installed and have already been removed or will be removed upon completion of capping activities. These temporary features function for control of construction stormwater and not for management of run-off from or run-on to the active area; as such, these temporary features are not detailed within this RRCSP.

Some slope drains were required to be re-built or replaced following cap placement. Any slope drains that were replaced were done so in-kind, so that the new feature matches the design of the former feature. Slope drains replaced in-kind are not summarized herein. Should any additional, permanent drainage features other than those outlined below be identified during subsequent phases of capping, this RRCSP will be modified to include a description of these features.

The permanent run-off control features for capping Phases 1, 2, 3, and 4 do not receive run-off from the active areas of the site. These drainage features were designed for the peak flow from the 10-year, 24-hour storm event or the 25-year, 24-hour storm event. Below is a list of the permanent features designed for capping.

Permanent Run-off Features for Capping Phases 1 and 2

Channel 1 receives non-contact stormwater run-off from the northernmost portion of the Phase 1 capped area. Channel 1 directs water to the existing East Peripheral Drainage Channel via Culvert 1. From the East Peripheral Drainage Channel, water is discharged via NPDES Outfall 009 – see Drawing 744-3121 and description in Section 2.2.1.1 above.

Culvert 1 (Phase 1) receives non-contact stormwater run-off from the new Channel 1 and directs the water into the East Peripheral Drainage Channel – see Drawing 744-3121.

Channel 2 receives non-contact stormwater run-off from the southern portion of the Phase 1 capped area. Channel 2 directs water to the existing East Peripheral Drainage Channel. From the East Peripheral Drainage Channel, water is discharged via NPDES Outfall 009 – see Drawing 744-3121, Drawing 744-3137, and description in Section 2.2.1.1 above.

Channel 3 receives non-contact stormwater run-off from portions of the Phase 2 capped area and conveys it to Channel 4 – see Drawing 744-3121, Drawing 744-3137, and description in Section 2.2.1.1 above.

Channel 4 receives non-contact stormwater run-off from portions of the Phase 2 capped area and from Channel 3. Channel 4 directs water to an existing channel where it is then discharged via NPDES Outfall 008 – see Drawing 744-3121, Drawing 744-3137, and description in Section 2.2.1.1 above.

Permanent Run-off Features for Phase 3

No permanent drainage features were constructed as part of Phase 3.

Permanent Run-off Features for Phase 4

The Phase 4 Slope Drain receives non-contact stormwater run-off from the Phase 4 area and conveys it through Culvert 1 (Phase 4; see description below) and into an existing collection channel and the West SWM Pond – see Drawing 744-3174.

Culvert 1 (Phase 4) receives non-contact stormwater run-off from the Phase 4 Slope Drain and conveys it into an existing collection channel and the West SWM Pond – see Drawing 744-3174.

2.3 Pond Designs

The West SWM Pond is designed to control stormwater that flows to the west to a culvert beneath Route 210 and to reduce the post-development flows to pre-development flows for the 2-year, 10-year, 25-year, and 100-year, 24-hour storm events. The outlet structures have also been designed to manage flow for the 25-year, 24-hour storm event and provide one-foot of freeboard for pre-development and post-development conditions. The West Valley Equalization Pond was designed to store the 10-year, 24-hour year storm and handles the 25-year, 24-hour storm volume through the principal spillway.

The existing East Valley Equalization Ponds were idle and unused prior to commencement of capping of portions of the site. The east cell of the East Valley Equalization Ponds was evaluated and modified so that it could receive stormwater run-off from different phases of capping activities. Modifications made to the east cell included installation of a riser and outlet pipe, temporary Channel 5, outlet protection, a concrete spillway, and a baffle. Following the modifications, the east cell of the East Valley Equalization Ponds can convey stormwater run-off from a 25-year, 24-hour storm event and meet a dewatering time of two to seven days.

During Phases 1 and 2, the east cell of the East Valley Equalization Ponds received construction stormwater and non-contact stormwater run-off. Following Phases 1 and 2, modifications to the drainage features were made so that the stormwater run-off discharge is consistent with the pre-capping condition. Presently, the east cell of the East Valley Equalization Ponds receives flow from the Phase 3 area; this configuration is temporary and, following the final phase of capping activities, the east cell will no longer be used for stormwater management.

The designs for these existing features comply with the federal requirement of handling the 25-year, 24-hour storm as stated in Section 257.81 of the CCR Rule.

2.4 Plan Amendment

The initial RRCSP can be amended (257.81(c)(2)) at any time and must be amended whenever there is a change in conditions that would substantially affect the written plan. In addition, a plan must be prepared every five years (257.81(c)(4)). Revision 2 (October 2026) of this RRCSP was created by reviewing the initial RRCSP, Revision 1 of the RRCSP, and Phases 1 through 4 capping documentation to update relevant portions accordingly to reflect current conditions at the disposal site. The RRCSP must be included in the facilities operating record (257.105(g)(3)).

3.0 References

GAI Consultants, Inc., Keystone Generating Station West Valley Disposal Site, West Side Pump Station and Stage IV-A Liner Construction, May 2015.

GAI Consultants, Inc., Keystone Generating Station West Valley Disposal Site, West Side Pump Station and Stage IV-A Liner Construction As-Built Drawing Package, February 2019.

GAI Consultants, Inc., Keystone Generating Station Ash/Mine Refuse Disposal Site Run-on and Run-off Control System Plan, Revised September 2021.

GAI Consultants, Inc., Keystone Generating Station Ash/Mine Refuse Disposal Site Phase 1 Capping Drawings Rev 1, March 2023.

GAI Consultants, Inc., Keystone Generating Station Ash/Mine Refuse Disposal Site Phase 2 Capping Drawings, January 2024.

GAI Consultants, Inc., Keystone Generating Station Ash/Mine Refuse Disposal Site Phase 3 Capping Drawings Rev 1, March 2025.

GAI Consultants, Inc., Keystone Generating Station Ash/Mine Refuse Disposal Site Phase 4 Capping Drawings Rev 1, April 2026.

Minor Permit Modification Residual Waste Permit # 300837, Stage IV Leachate Improvements. Form I Supplemental Calculations, July 2013.

Pennsylvania Department of Environmental Protection, Residual Waste Major Permit Modification, Keystone Station Disposal Site, Form I Soil Erosion and Sedimentation Controls, July 1996.

United States Environmental Protection Agency (USEPA) 40 CFR Parts 257 and 261 Hazardous and Solid Waste Management Disposal System; Disposal of Coal Combustion Residual from Electric Utilities, Final Rule April 2015.

DRAWINGS

STAGE III HAUL ROAD CURVE DATA

CURVE NO.	P.I. COORDINATES NORTH	P.I. COORDINATES EAST	Δ	D	R	T	L	P.C. STA.	P.T. STA.
BEGIN	489800.27	1527965.25	–	–	–	–	–	–	0+00
1	490151.89	1528183.22	57°17'43"	19°05'54"	300.00	163.89	300.00	2+49.99	5+49.99
2	490609.35	1527922.90	10°44'23"	14°19'10"	400.13	37.61	75.00	8+74.98	9+49.98
3	490708.55	1527830.43	15°53'37"	17°39'35"	324.45	45.29	90.00	10+02.72	10+92.72
4	490830.85	1527766.99	31°49'07"	17°39'30"	324.47	92.48	180.19	10+92.72	12+72.91
5	492216.17	1527873.55	74°57'16"	19°05'56"	299.99	230.00	392.45	23+39.83	27+32.28
6*	492555.02	1526913.72	118°21'31"	31°56'40"	179.36	300.63	370.51	32+19.54	35+90.05
7*	493035.93	1527444.16	07°24'33"	10°20'39"	553.90	35.86	71.63	39+69.53	40+41.16
8*	493579.72	1527906.87	35°49'34"	18°33'07"	308.84	99.83	193.11	46+19.48	48+12.59
END	493654.40	1528211.39	–	–	–	–	–	50+26.31	–

*SHOWN ON DRAWING D-728-1056

LEGEND

- STREAM ENCLOSURE PIPE
- FABRIC FORM SLOPE DRAIN — SLOPE DRAIN
- EXISTING COLLECTION DITCH
- PROPOSED COLLECTION DITCH
- EXISTING DIVERSION DITCH
- PROPOSED DIVERSION DITCH
- RIGHT OF WAY LINES
- PROPERTY LINES (KEYSTONE OWNERS)
- PROPERTY LINES (OTHERS)
- EXISTING PERMIT AREA (STAGE I AND II)
- NEW PERMIT AREA (STAGE III AND IV)
- EXISTING PERMIT LINER FOOTPRINT
- EXISTING EAST VALLEY LEACHATE PIPELINE
- K-58 1291.26 — SURVEY MONUMENT AND ELEVATION
- BUILDING IN USE
- X / XXXX — DETAIL NUMBER OR SECTION LETTER SHOWN ON DRAWING NUMBER

REFERENCE:
MAPPING COMPILED BY TVGA, INC. LANSE PENNSYLVANIA USING STEREOPHOTOGRAMMETRIC METHODS FROM 1"=1333' SCALE AERIAL PHOTOGRAPHY 04/08/94.

HORIZONTAL CONTROL IS BY A SURVEYED TIE TO THE PENNSYLVANIA STATE COORDINATE SYSTEM, SOUTH ZONE (1983 DATUM). VERTICAL CONTROL IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM.

NOTES:

1. CONTOUR INTERVALS SHOWN AT TEN(10) FEET.
2. FINISHED GRADE CONTOURS DEPICT TOP OF SOIL COVER OR FINISHED ROAD SURFACE.
3. SEE DRAWING D-728-1065 FOR TYPE A, B, C, AND D CHANNEL DETAILS AND SLOPE DRAIN DETAILS.
4. SEE DRAWING D-728-1061 FOR CHANNELS ON EDGE OF LINER DETAILS.
5. SEE DRAWING D-728-1064 FOR CHANNEL DETAILS AT EDGE OF HAUL ROAD AND DRAWING D-728-1063 FOR HAUL ROAD PROFILES.
6. SEE DRAWING D-728-1066 FOR RIPRAP OUTLET PROTECTION DETAILS.
7. SEE DRAWING D-728-1068 FOR CULVERT DETAILS AND SCHEDULE.
8. SEE DRAWING D-728-1057 FOR LINER LIMITS, SUBGRADE DRAIN PIPES, LEAK DETECTION PIPES AND LEACHATE COLLECTION PIPES.
9. FOR LEAK DETECTION, LEACHATE COLLECTION PIPES HEADERS AND LEACHATE PIPELINE TO STATION IWT SEE DRAWINGS D-728-1056, D-728-1071, D-728-1075, D-728-1076, AND D-728-1077.
10. SEE DRAWING D-728-1070 FOR STAGE IIC ROAD CURVE DATA.

SCALE 1"=200'
200 0 200 400

CAD FILE: KE-F4012.DWG 6/09/98

REVISED STAGE IIC AND EQUALIZATION POND	413472		ADDED STAGE IIC DEVELOPMENT	413470	
2	5/27/98	JMJ / JDP	1	4/25/97	JMJ / JDP
REV.	DATE	MADE / CHKD. SUPERVISOR	REV.	DATE	MADE / CHKD. SUPERVISOR
GAI CONSULTANTS, INC.			GAI CONSULTANTS, INC.		

GAI CONSULTANTS
570 BEATTY ROAD, MONROEVILLE, PA 15146 (412)856-9400

GAI Dwg. File No. 92-220-F4012

DRAFTING		ENGINEERING	
MADE JPS	CHECKED JMJ	DES. JMJ	MGR. JDP
DATE 7-26-96	7-30-96	7-30-96	7-30-96

Genco GPU Generation Corp. 1001 BROAD STREET, JOHNSTOWN, PA. 15907

KEYSTONE STATION UNITS 1 & 2
KEYSTONE STATION DISPOSAL SITE
PLUMCREEK TOWNSHIP

DWG. TYPE: CIVIL

TITLE: RESIDUAL WASTE PERMIT DRAWING
STAGE IIC PILE DEVELOPMENT
AND STAGE III SUBGRADE PLAN

PROJECT CONTROL NO.	SCALE	DRAWING NUMBER	REV.
413330	1"=200'	D-728-1055	2

STAGE III HAUL ROAD CURVE DATA

CURVE NO.	P.I. COORDINATES NORTH	P.I. COORDINATES EAST	Δ	D	R	T	L	P.C. STA.	P.T. STA.
BEGIN	489800.27	1527965.25	–	–	–	–	–	–	0+00
1	490151.89	1528183.22	57°17'43"	19°05'54"	300.00	163.89	300.00	2+49.99	5+49.99
2	490609.35	1527922.90	10°44'23"	14°19'10"	400.13	37.61	75.00	8+74.98	9+49.98
3	490708.55	1527830.43	15°53'37"	17°39'35"	324.45	45.29	90.00	10+02.72	10+92.72
4	490830.85	1527766.99	31°49'07"	17°39'30"	324.47	92.48	180.19	10+92.72	12+72.91
5	492216.17	1527873.55	74°57'16"	19°05'56"	299.99	230.00	392.45	23+39.83	27+32.28
6	492555.02	1526913.72	118°21'31"	31°56'40"	179.36	300.63	370.51	32+19.54	35+90.05
7	493035.93	1527444.16	07°24'33"	10°20'39"	553.90	35.86	71.63	39+69.53	40+41.16
8	493579.72	1527906.87	35°49'34"	18°33'07"	308.84	99.83	193.11	46+19.48	48+12.59
END	493654.40	1528211.39	–	–	–	–	–	50+26.31	–

LEGEND

- SLOPE DRAIN
- EXISTING COLLECTION DITCH
- PROPOSED COLLECTION DITCH
- EXISTING DIVERSION DITCH
- PROPOSED DIVERSION DITCH
- RIGHT OF WAY LINES
- PROPERTY LINES (KEYSTONE OWNERS)
- PROPERTY LINES (OTHERS)
- EXISTING PERMIT AREA (STAGE I AND II)
- NEW PERMIT AREA (STAGE III AND IV)
- EXISTING PERMIT LINER FOOTPRINT
- EXISTING EAST VALLEY LEACHATE PIPELINE
- SURVEY MONUMENT AND ELEVATION
- STREAM ENCLOSURE PIPE
- TEMPORARY 8" PVC SOLID WALL LEACHATE HEADER PIPE AND TEMPORARY 6" PVC SOLID WALL LEAK DETECTION PIPE (BUILT DURING STAGE IIIA LINER CONSTRUCTION)
- BUILDING IN USE
- LEACHATE FORCE MAIN

REFERENCE:
MAPPING COMPILED BY TVGA, INC. LANSE PENNSYLVANIA USING STEREOPHOTOGRAMMETRIC METHODS FROM 1"=1333' SCALE AERIAL PHOTOGRAPHY 04/08/94.

HORIZONTAL CONTROL IS BY A SURVEYED TIE TO THE PENNSYLVANIA STATE COORDINATE SYSTEM, SOUTH ZONE (1983 DATUM). VERTICAL CONTROL IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM.

NOTES:

1. CONTOUR INTERVALS SHOWN AT TEN(10) FEET.
2. FINISHED GRADE CONTOURS DEPICT TOP OF SOIL COVER OR FINISHED ROAD SURFACE.
3. SEE DRAWING D-728-1065 FOR TYPE A, B, C, AND D CHANNEL DETAILS AND SLOPE DRAIN DETAILS.
4. SEE DRAWING D-728-1061 FOR CHANNELS ON EDGE OF LINER DETAILS.
5. SEE DRAWING D-728-1064 FOR CHANNEL DETAILS AT EDGE OF HAUL ROAD AND DRAWING D-728-1063 FOR HAUL ROAD PROFILES.
6. SEE DRAWING D-728-1066 FOR RIPRAP OUTLET PROTECTION DETAILS.
7. SEE DRAWING D-728-1068 FOR CULVERT DETAILS AND SCHEDULE.
8. SEE DRAWING D-728-1057 FOR LINER LIMITS, SUBGRADE DRAIN/LEAK DETECTION PIPES AND LEACHATE COLLECTION PIPES.
9. TEMPORARY SCHEDULE 40 LEACHATE AND LEAK DETECTION/SUBGRADE DRAIN HEADER PIPES TO BE GROUTED SHUT AND ABANDONED UPON INSTALLATION OF PERMANENT PIPES IN STAGE IV.
10. THE EXISTING 5' LONG x 18' WIDE OVERFLOW WEIR CREST SHALL BE RECONSTRUCTED WITH CULVERT 12 AND A TYPE C-2 OUTLET CHANNEL AS SHOWN ON DRAWING D-728-1071 REV. 5, TO ALLOW NEW CLEANOUT ACCESS ROAD CROSSING.

SCALE 1"=200'
200 0 200 400

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REV.	DATE	BY	DESCRIPTION
3	7-9-13	JCH	ADDED STAGE IV CLEANOUT ACCESS ROAD AND CULVERTS 12-17
2	4-25-97	PJC	REVISED NORTHEAST STAGE III DEVELOPMENT
1	4-25-97	PJC	REVISED TO REFLECT STAGE IIC DEVELOPMENT

GAI CONSULTANTS, INC. — 413470

GAI CONSULTANTS
GAI Dwg. File No. 92-220-F4013

	DRAFTING		ENGINEERING	
	WHS	STARTED	TRK	WHS
	JPS	JMJ	JMJ	JDP
DATE	7-11-96	7-30-96	7-30-96	7-30-96

Genco GPU Generation Corp. 1001 BROAD STREET JOHNSTOWN, PA 15907

KEYSTONE STATION UNITS 1 & 2
KEYSTONE STATION DISPOSAL SITE
PLUMCREEK TOWNSHIP

DWG. TYPE-CIVIL

TITLE: RESIDUAL WASTE PERMIT DRAWING
STAGE III PILE DEVELOPMENT AND
STAGE IV SUBGRADE PLAN

413330 PROJECT CONTROL NO. | 1"=200' SCALE | D-728-1056 DRAWING NUMBER | 3 REV

CAD FILE: P:\MUR\2011\C110408\Dash 00\Task 001\CAD Department\Production Drawings\KE-F4013REV3.dwg 7/9/2013

STAGE IV HAUL ROAD CURVE DATA

CURVE NO.	P.I. COORDINATES NORTH	P.I. COORDINATES EAST	Δ	D	R	T	L	P.C. STA.	P.T. STA.
BEGIN	490637.71	1527898.20	–	–	–	–	–	–	0+00
1	490716.26	1527829.55	29°13'36"	14°19'10"	400.13	104.32	204.10	0+00.00	2+04.10
2	491080.68	1526800.00	44°35'16"	14°19'26"	400.00	164.00	311.28	10+27.92	13+39.20
3	491615.00	1526540.00	71°06'00"	19°05'55"	300.00	214.38	372.28	15+55.03	19+27.31
4	492075.03	1527002.58	03°39'24"	07°17'12"	786.30	25.10	50.18	23+40.22	23+90.40
END	492427.01	1527417.68	–	–	–	–	–	29+09.54	–

EXISTING EAST VALLEY DISPOSAL AREA PERMIT BOUNDARY

EXISTING STAGE II HAUL ROAD

STAGE IV DISPOSAL AREA

STAGE IV

END STAGE IV HAUL ROAD
STA. 29+09.54
N 492427.01
E 1527417.68

K-58
1291.26
N 495473.657
E 1528388.231

K-45
1219.43
N 491240.736
E 1528617.310

K-21
1117.35
N 490187.990
E 1528337.031

EXISTING SOIL STOCKPILE

20' ACCESS ROAD (TYP.)

100' (TYP) SETBACK LIMIT

EXISTING EAST VALLEY EQUALIZATION PONDS #1 AND #2

EXISTING CULVERTS

EXISTING CULVERT 8

EXISTING CULVERT 3

EXISTING WEST VALLEY EQUALIZATION POND

CULVERT No. 10

CULVERT No. 9
OR CULVERT AS NEEDED FOR ACCESS TO TRANSMISSION LINES RIGHT OF WAY

CULVERT #19 SEE DETAIL 6/1068

CULVERT #18 SEE DETAIL 6/1068

CULVERT #16 SEE DETAIL 6/1068

CULVERT #14 SEE DETAIL 6/1068

CULVERT #12 SEE NOTE 10 SEE DETAIL 6/1068

CULVERT #13 SEE DETAIL 6/1068

CULVERT #15 SEE DETAIL 6/1068

CULVERT #17 SEE DETAIL 6/1068

STAGE IV CLEANOUT ACCESS ROAD (TYP.)

STAGE IV SOUTHWEST CLEANOUT ACCESS ROAD (TYP.)

TYPE C-3 DIVERSION CHANNEL SEE DETAIL 7/F002

PROPOSED WEST LEACHATE PUMP STATION

EXISTING WEST CLEAN STORMWATER MANAGEMENT POND SEE DRAWING D-728-1074

WEST VALLEY ENERGY DISSIPATOR SEE DETAIL 1/1066

WEST VALLEY WEIR BOX SEE DETAIL 1/1069

FOR CONTINUATION OF LEACHATE PIPING SEE DRAWING D-728-1071

TYPE A-3 CHANNEL

TYPE B-1 CHANNEL (SEE NOTE 9)

TYPE B-4 CHANNEL (SEE NOTE 9)

EXISTING TRANSMISSION LINES RIGHT OF WAY

PA. ROUTE 210

UNNAMED TRIBUTARY

SCALE 1"=200'
200 0 200 400

LEGEND

- FABRIC FORM SLOPE DRAIN
- EXISTING COLLECTION DITCH
- PROPOSED COLLECTION DITCH
- EXISTING DIVERSION DITCH
- PROPOSED DIVERSION DITCH
- RIGHT OF WAY LINES
- PROPERTY LINES (KEYSTONE OWNERS)
- PROPERTY LINES (OTHERS)
- EXISTING PERMIT AREA (STAGE I AND II)
- NEW PERMIT AREA (STAGE III AND IV)
- EXISTING PERMIT LINER FOOTPRINT
- EXISTING EAST VALLEY LEACHATE PIPELINE
- K-58 1291.26 — SURVEY MONUMENT AND ELEVATION
- BUILDING IN USE
- LEACHATE FORCE MAIN

NOTES:

1. CONTOUR INTERVALS SHOWN AT TEN(10) FEET.
2. FINISHED GRADE CONTOURS DEPICT TOP OF SOIL COVER OR FINISHED ROAD SURFACE.
3. SEE DRAWING D-728-1065 FOR TYPE A, B, C, AND D CHANNEL DETAILS AND SLOPE DRAIN DETAILS.
4. SEE DRAWING D-728-1061 FOR CHANNELS ON EDGE OF LINER DETAILS.
5. SEE DRAWING D-728-1064 FOR CHANNEL DETAILS AT EDGE OF HAUL ROAD AND DRAWING D-728-1063 FOR HAUL ROAD PROFILES.
6. SEE DRAWING D-728-1066 FOR RIPRAP OUTLET PROTECTION DETAILS.
7. SEE DRAWING D-728-1068 FOR CULVERT DETAILS AND SCHEDULE.
8. SEE DRAWING D-728-1057 FOR LINER LIMITS, SUBGRADE DRAIN PIPES, LEAK DETECTION PIPES AND LEACHATE COLLECTION PIPES.
9. AT STAGE IV PILE DEVELOPMENT CLOSURE, THE COLLECTION CHANNEL ACROSS THE TOP OF STAGE IV AND DOWN THE STAGE IV HAUL ROAD WILL BE CONVERTED TO A DIVERSION CHANNEL AND DIVERTED TO THE UNNAMED TRIBUTARY AT THE STAGE IV EMBANKMENT TOE.
10. THE EXISTING 5' LONG x 18' WIDE OVERFLOW WEIR CREST SHALL BE RECONSTRUCTED WITH CULVERT 12 AND A TYPE C-2 OUTLET CHANNEL AS SHOWN ON DRAWING D-728-1071 REV. 5, TO ALLOW NEW CLEANOUT ACCESS ROAD CROSSING.

REFERENCE:
MAPPING COMPILED BY TVGA, INC. LANSE PENNSYLVANIA USING STEREOPHOTOGRAMMETRIC METHODS FROM 1"=1333' SCALE AERIAL PHOTOGRAPHY 04/08/94.

HORIZONTAL CONTROL IS BY A SURVEYED TIE TO THE PENNSYLVANIA STATE COORDINATE SYSTEM, SOUTH ZONE (1983 DATUM). VERTICAL CONTROL IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM.

REV.	DATE	BY	REVISED STAGE IV CLEANOUT ACCESS ROADS AND CULVERTS 12-19	–	JMJ	SUPV/MGR
3	7-9-13	JCN		DMD	ENGR.	413472
REV.	DATE	MGR.		JCN	MGR.	GAI CONSULTANTS, INC.
2	5-27-98	MJE	REVISED EQUALIZATION POND AND NOTE 6	JDP	SUPV/MGR	
REV.	DATE	MGR.		JMJ	ENGR.	413472
1	4-25-97	MJE	REVISED TO REFLECT STAGE IC DEVELOPMENT	FJC	MGR.	GAI CONSULTANTS, INC.
REV.	DATE	MGR.		JMJ	SUPV/MGR	
				FJC	ENGR.	413470
				JDP	MGR.	GAI CONSULTANTS, INC.

GAI CONSULTANTS
385 SOUTH ROLLING ROAD
MONROEVILLE, PA 15146
(412)856-9400

GAI Dwg. File No. 92-220-F4015

	DRAFTING		ENGINEERING	
BY	JPS	JMJ	JDP	JDP
DATE	7-11-96	7-30-96	7-30-96	7-30-96

Genco GPU Generation Corp. 1001 BROAD STREET JOHNSTOWN, PA. 15907

KEYSTONE STATION UNITS 1 & 2
KEYSTONE STATION DISPOSAL SITE
PLUMCREEK TOWNSHIP

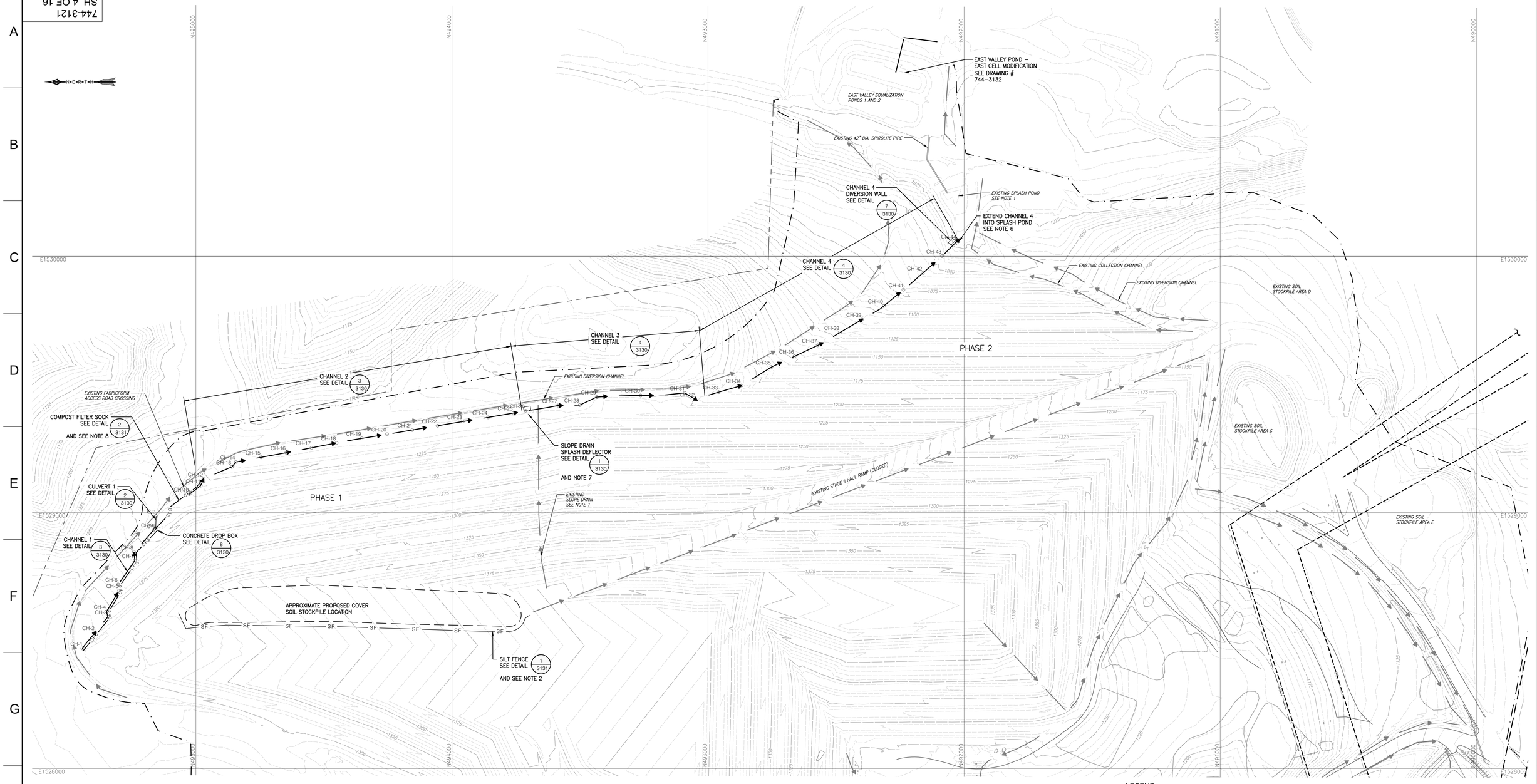
DWG. TYPE-CIVIL

TITLE: RESIDUAL WASTE PERMIT DRAWING
STAGE IV (ULTIMATE) PILE DEVELOPMENT

413330 PROJECT CONTROL NO.	1"=200' SCALE	D-728-1058 DRAWING NUMBER	3 REV.

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CAD FILE: P:\MUR\2011\C110408\Dash 00\Task 001\CAD Department\Production Drawings\KE-F4015_Rev 3.dwg 7/9/2013



REFERENCES:

1. HORIZONTAL CONTROL IS BY A SURVEYED TIE TO THE PENNSYLVANIA STATE COORDINATE SYSTEM, SOUTH ZONE (1983 DATUM). VERTICAL CONTROL IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM.
2. EXISTING TOPOGRAPHY IS COMPRISED OF MAPPING FROM THE 2016, 2020, AND 2021 ALOR SURVEYS AND 03–15–2023 SURVEY FROM ARROW SURVEYING, LLC.

DRAINAGE / EROSION AND SEDIMENT CONTROL SEQUENCING

1. REMOVE VEGETATION AND SEDIMENT FROM THE EXISTING PHASE 1/2 SLOPE DRAIN, EXISTING SPLASH POND, AND EAST CELL OF THE EXISTING EAST VALLEY EQUALIZATION POND PRIOR TO CONSTRUCTION. THESE EXISTING DRAINAGE FEATURES ARE TO BE USED TO MANAGE SEDIMENT AND STORMWATER DURING CONSTRUCTION. THE CONTRACTOR SHALL REMOVE ACCUMULATING SEDIMENT DURING CONSTRUCTION AS DIRECTED BY THE OWNER'S ENGINEER.
2. INSTALL SILT FENCE AND COMPOST FILTER SOCK AT APPROXIMATE LOCATIONS SHOWN ON DRAINAGE PLAN, AND AT OTHER LOCATIONS AS NEEDED. THE SILT FENCE AND COMPOST FILTER SOCK SHALL BE INSPECTED AFTER EACH PRECIPITATION EVENT AND REPAIRED AS DIRECTED BY THE OWNER'S ENGINEER.
3. REFER TO DRAWING NO. 744–3132. EXERCISE GATES LEADING TO THE EAST VALLEY EQUALIZATION PONDS EAST AND WEST CELLS TO VERIFY THAT THEY ARE OPERABLE. CONSTRUCT NEW RISER STRUCTURE, OUTLET PIPE, AND OUTLET PROTECTION IN THE EAST CELL OF THE EXISTING EAST VALLEY EQUALIZATION PONDS. CONSTRUCT CHANNEL 5 FROM OUTLET PIPE TO OUTFALL 008. SEDIMENT BUILDUP WITHIN THE POND SHALL BE REMOVED WHEN THE CLEANOUT ELEVATION HAS BEEN REACHED AS SHOWN ON THE DETAIL ON DRAWING NO. 744–3132.
4. REFER TO DRAWING NO. 744–3132. CONSTRUCT CONCRETE WALL WITHIN THE SPILLWAY BETWEEN THE EAST AND WEST CELLS OF THE EAST VALLEY POND TO INCREASE STORMWATER CAPACITY WITHIN THE EAST CELL.
5. CONSTRUCT CHANNELS 1 THROUGH 4, CONCRETE DROP BOX, AND CULVERT 1 BEGINNING AT THE EXISTING SPLASH POND.
6. CONSTRUCT CHANNEL 4 DIVERSION WALL ALONG CHANNEL 4 PRIOR TO ENTRANCE TO SPLASH POND TO PREVENT STORMWATER AND SEDIMENT FROM ENTERING THE EXISTING CHANNEL THAT PARALLELS THE SPLASH POND ALONG THE NORTH EDGE.
7. CONSTRUCT SLOPE DRAIN SPLASH DEFLECTOR ON THE EAST SIDE OF CHANNEL 3 PRIOR TO CONSTRUCTION OF THE NEW SLOPE DRAIN.
8. PLACE COMPOST FILTER SOCK UPSTREAM OF THE EXISTING FABRICFORM CROSSING OF THE ACCESS ROAD, AND BETWEEN TOE OF LANDFILL SLOPE AND CHANNEL 1.
9. REFER TO THE CONSTRUCTION POINT TABLES ON DRAWING NO. 744–3126.

LEGEND:

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING CHANNEL
- PROPERTY LINE
- TRANSMISSION LINE RIGHT–OF–WAY
- PERMIT BOUNDARY
- PHASE 1 LIMIT OF LINER
- SILT FENCE
- PROPOSED COLLECTION CHANNEL
- PROPOSED CULVERT
- PROPOSED COMPOST FILTER SOCK
- DETAIL # / REFERENCE DRAWING #
- PROPOSED CONSTRUCTION POINT

SCALE: 1" = 150'
150 0 150 300

gai consultants

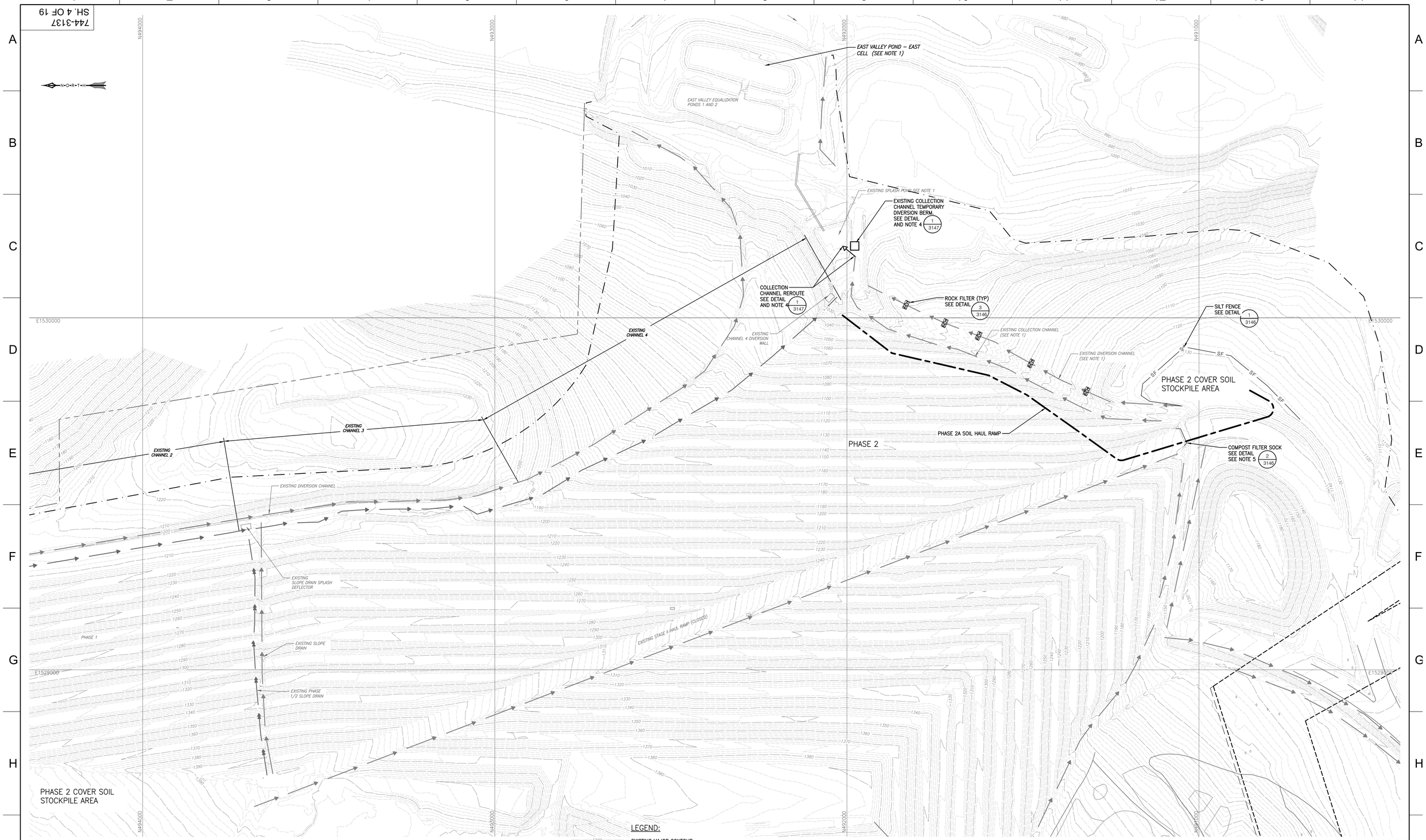
KEYSTONE STATION

KEYSTONE STATION DISPOSAL SITE
PHASE 1 CAPPING
DRAINAGE SEQUENCING PLAN

DRAWN: 1/20/2023	EMAYHOOD	DRAWING NUMBER	
CHECKED	MCORTESE	744-3121	
APPROVED	KHARRIS	SHEET: 4 OF 16	
SIZE: 30x42		REV: 1	
DISCIPLINE:	SCALE: NTS	FILE:	

NO.	DATE	REVISION	BY	CHK	APP.
1	03/23/2023	REVISED PHASE 1 EXISTING, SUBGRADE, FINAL COVER SURFACES	JDS	KRH	KRH
0	02/02/2023	ISSUED FOR CONSTUCTION	EJM	KRH	KRH

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LEGEND:

- EXISTING MAJOR CONTOUR (1200)
- EXISTING MINOR CONTOUR
- EXISTING CHANNEL
- PROPERTY LINE
- TRANSMISSION LINE RIGHT-OF-WAY
- PERMIT BOUNDARY
- SF — SILT FENCE
- ROCK FILTER
- PROPOSED CHANNEL
- DETAIL # (4/3142) REFERENCE DRAWING #
- PHASE 2A SOIL HAUL RAMP

DRAINAGE / EROSION AND SEDIMENT CONTROL SEQUENCING

1. REMOVE VEGETATION AND SEDIMENT FROM THE EXISTING CHANNELS, EXISTING SPLASH POND, AND EAST CELL OF THE EXISTING EAST VALLEY EQUALIZATION POND PRIOR TO CONSTRUCTION. THESE EXISTING DRAINAGE FEATURES ARE TO BE USED TO MANAGE SEDIMENT AND STORMWATER DURING CONSTRUCTION. THE CONTRACTOR SHALL REMOVE ACCUMULATING SEDIMENT DURING CONSTRUCTION AS DIRECTED BY THE OWNER'S ENGINEER.
2. INSTALL SILT FENCE AND AND ROCK FILTERS AT APPROXIMATE LOCATIONS SHOWN ON DRAINAGE PLAN, AND AT OTHER LOCATIONS AS NEEDED. THE SILT FENCE AND ROCK FILTERS SHALL BE INSPECTED AFTER EACH PRECIPITATION EVENT AND REPAIRED AS DIRECTED BY THE OWNER'S ENGINEER.
3. REFER TO DRAWING NO. 744-3147 CONSTRUCT COLLECTION CHANNEL REROUTE, THEN CONSTRUCT TEMPORARY DIVERSION BERM.
4. STORMWATER FROM A PORTION OF THE PHASE 2 CAPPING AREA AND FUTURE PHASE 3 CAPPING AREA TO BE ROUTED THROUGH THE COLLECTION CHANNEL REROUTE AND TO THE SPLASH POND.
5. REMOVABLE COMPOST FILTER SOCK SHALL BE PLACED ACROSS STAGE II HAUL RAMP. IT SHALL BE PUT BACK INTO PLACE AT THE END OF EACH WORK DAY AND PRIOR TO STORM EVENTS.

REFERENCES:

1. HORIZONTAL CONTROL IS BY A SURVEY TIED TO THE PENNSYLVANIA STATE COORDINATE SYSTEM, SOUTH ZONE (1983 DATUM). VERTICAL CONTROL IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM.
2. EXISTING TOPOGRAPHY IS COMPRISED OF MAPPING FROM THE 2016, 2020, AND 2021 ALOR SURVEYS AND 10/02/2023 SURVEY BY GAI CONSULTANTS, INC.

SCALE: 1" = 100'
100 0 100 200

gai consultants

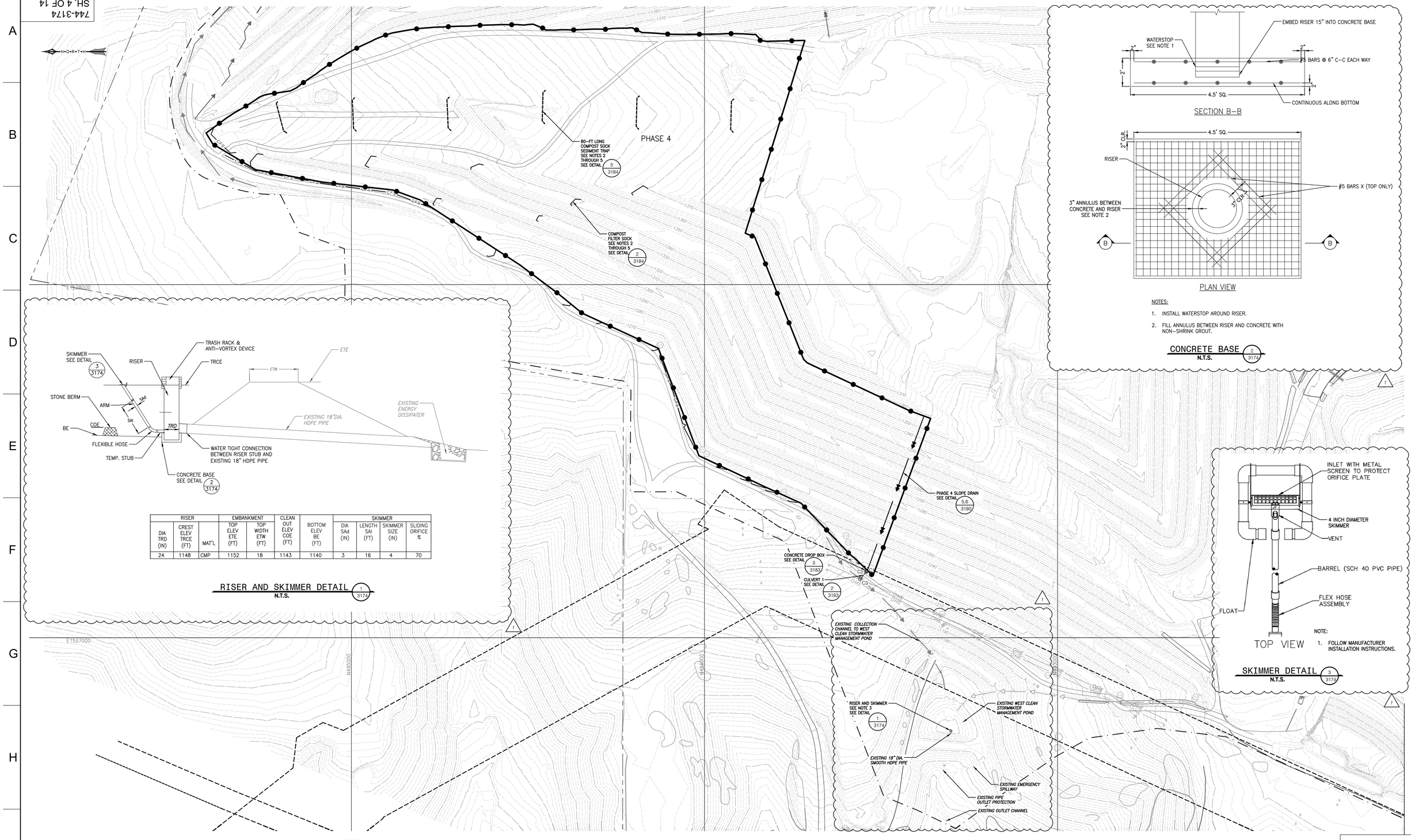
KEYSTONE STATION

KEYSTONE STATION DISPOSAL SITE
PHASE 2 CAPPING
DRAINAGE SEQUENCING PLAN

DRAWN: 01/22/2024	JMOUNTS	DRAWING NUMBER
CHECKED	CWHITE	744-3137
APPROVED	KHARRIS	SHEET: 4 OF 19
SIZE: 30x42		REV: 0
DISCIPLINE:	SCALE: AS SHOWN	FILE:

NO.	DATE	REVISION	BY	CHK.	APP.

© 2024 GAI Consultants, Inc. | GAI FILE PATH: Z:\ENERGY\2014\C141273.26 - KEYSTONE PHASE 2 CAPPING\CAD\ACAD\PRODUCTION DWGS\744-3137.DWG PLOTTED BY: KEVIN R. APEL DATE: 02/02/2024 PLOT FILE: GAI.STB



RISER			EMBANKMENT		CLEAN OUT		SKIMMER			
DIA TRD (IN)	CREST ELEV TRCE (FT)	MAT'L	TOP ELEV ETE (FT)	TOP WIDTH ETW (FT)	ELEV COE (FT)	BOTTOM ELEV BE (FT)	DIA SAd (IN)	LENGTH SAI (FT)	SKIMMER SIZE (IN)	SLIDING ORIFICE %
24	1148	CMP	1152	18	1143	1140	3	16	4	70

RISER AND SKIMMER DETAIL 1 3174
N.T.S.

NOTES:

1. INSTALL WATERSTOP AROUND RISER.
2. FILL ANNULUS BETWEEN RISER AND CONCRETE WITH NON-SHRINK GROUT.

CONCRETE BASE 2 3174
N.T.S.

NOTE:

1. FOLLOW MANUFACTURER INSTALLATION INSTRUCTIONS.

SKIMMER DETAIL 3 3174
N.T.S.

LEGEND:

- EXISTING MAJOR CONTOUR (1200)
- EXISTING MINOR CONTOUR
- EXISTING CHANNEL
- PROPERTY LINE
- TRANSMISSION LINE RIGHT-OF-WAY
- PERMIT BOUNDARY
- COMPOST FILTER SOCK (CFS)
- SILT FENCE (SF)
- ROCK FILTER (RCK)
- PHASE 4 LIMIT OF LINER
- COMPOST SOCK SEDIMENT TRAP
- DETAIL # / REFERENCE DRAWING # (4 / 3142)
- PHASE 4 SLOPE DRAIN
- CULVERT AND DROP BOX CONSTRUCTION POINT (C1)

REFERENCES:

1. HORIZONTAL CONTROL IS BY A SURVEY TIED TO THE PENNSYLVANIA STATE COORDINATE SYSTEM, SOUTH ZONE (1983 DATUM). VERTICAL CONTROL IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM.
2. EXISTING TOPOGRAPHY IS COMPRISED OF MAPPING FROM THE 2016, 2020, AND 2021 ALOR SURVEYS AND 10/02/2023 AND 01/30/2025 SURVEYS BY GAI CONSULTANTS, INC.

DRAINAGE / EROSION AND SEDIMENT CONTROL SEQUENCING

1. REMOVE VEGETATION AND SEDIMENT FROM THE EXISTING CHANNELS AND CULVERTS PRIOR TO CONSTRUCTION. THESE EXISTING DRAINAGE FEATURES ARE TO BE USED TO MANAGE SEDIMENT AND STORMWATER DURING CONSTRUCTION. THE CONTRACTOR SHALL REMOVE ACCUMULATING SEDIMENT DURING CONSTRUCTION AS DIRECTED BY THE OWNER'S ENGINEER.
2. INSTALL COMPOST FILTER SOCK, COMPOST SOCK SEDIMENT TRAPS AT APPROXIMATE LOCATIONS SHOWN ON DRAINAGE PLAN, AND AT OTHER LOCATIONS AS NEEDED. THE COMPOST FILTER SOCK SHALL BE INSPECTED AFTER EACH PRECIPITATION EVENT AND REPAIRED AS DIRECTED BY THE OWNER'S ENGINEER.
3. RISER AND SKIMMER SHALL BE INSTALLED WITHIN THE WEST CLEAN STORMWATER MANAGEMENT POND PRIOR TO CONSTRUCTION OF THE CULVERT, DROP BOX AND SLOPE DRAIN. PRIOR TO SUBGRADE DEVELOPMENT, THE CONTRACTOR SHALL HAVE THE OPTION TO INSTALL A TEMPORARY GEOMEMBRANE LINED SLOPE DRAIN (SEE DETAIL 1 ON DRAWING 744-3183) OR TO CONSTRUCT PHASE 4 SLOPE DRAIN IN ITS ENTIRETY (SEE DETAILS 5 AND 6 ON DRAWING 744-3180).
4. AFTER SUBGRADE EXCAVATION, COMPOST FILTER SOCK SHALL BE REPLACED AT THE APPROXIMATE LOCATIONS SHOWN ON THIS PLAN.
5. AFTER FINAL COVER SOIL IS PLACED, COMPOST FILTER SOCK SHALL BE PLACED AT THE APPROXIMATE LOCATIONS SHOWN ON THIS PLAN. PER DETAIL 2 ON DRAWING 744-3184, THE WOODED ANCHOR STAKES SHALL NOT PENETRATE MORE THAN 9 INCHES BELOW THE BOTTOM OF THE COMPOST FILTER SOCK TO PREVENT DAMAGE TO THE LINER SYSTEM.

SCALE: 1" = 100'
100 0 100 200

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KEYSTONE STATION

KEYSTONE STATION DISPOSAL SITE
PHASE 4 CAPPING
DRAINAGE SEQUENCING PLAN

DRAWN: 04/02/2025	RHULL	DRAWING NUMBER			
CHECKED	CWHITE	744-3174			
APPROVED	KHARRIS	SHEET: 4 OF 14			
SIZE: 30x42		REV: 1			
DISCIPLINE:	SCALE: AS SHOWN	FILE: 744-3174.DWG			

NO.	DATE	REVISION	BY	CHK.	APP.
1	04/17/2026	REVISED PHASE 4 DRAINAGE SEQUENCE PLAN	RAH	CSW	KRH
0	10/15/2025	ISSUED FOR CONSTRUCTION	RAH	CSW	KRH

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