Run-on and Run-off Control System Plan

H.W. Pirkey Power Plant Landfill
Hallsville, Harrison County, Texas

September 2026
Akron Project Number: 237P-2602

Prepared for:
American Electric Power
1 Riverside Plaza
Columbus, Ohio 43215

Prepared by:
Akron Consulting, LLC
212 Millridge Ct.
White Oak, Texas 75693
TBPE Firm # 14014

Table of Contents

Table of Contents **2**
1.0 INTRODUCTION **3**
2.0 RUN-ON CONTROLS **3**
2.1 Run-On Controls Outside the Active Landfill Footprint 3
2.1.1 Stormwater Perimeter Ditches 3
2.2 Run-On Controls Inside the Active Landfill Footprint 4
2.2.1 Landfill Phasing and Construction Practices 4
2.2.2 Underdrain System 4
3.0 RUN-OFF CONTROLS **4**
3.1 Perimeter Ditches 5
3.2 Leachate Collection System 5
3.3 Landfill Pond 5
3.4 Filling Operation 5
4.0 PLAN REVIEW AND CHANGES IN FACILITY OPERATION **5**
5.0 PROFESSIONAL ENGINEER CERTIFICATION **6**

APPENDIX A: Figures and Calculations
APPENDIX B: Run-On and Run-Off Plan Review Log
APPENDIX C: Professional Engineer Certification

1.0 INTRODUCTION

30 TAC 352.811 (Federal Regulation Title 40, Part 257.81) requires the owner or operator of an existing or new CCR landfill or any lateral expansion of an existing CCR landfill to comply with the following:

1. A run-on control system to prevent flow onto the active portion of the CCR unit during the peak discharge from a 24-hour, 25-year storm.
2. A run-off control system from the active portion of the CCR unit to collect and control at least the water volume resulting from a 24-hour, 25-year storm.
3. Run-off from the active portion of the CCR unit must be handled in accordance with the surface water requirements under §257.3-3.
4. Prepare initial and periodic run-on and run-off control system plans for the CCR unit according to the following timeframes:
    a. For existing CCR landfills, the owner or operator of the CCR unit must prepare the initial run-on and run-off control system plan no later than October 17, 2016.
    b. The owner or operator of the CCR unit must prepare periodic run-on and run-off control system plans every five (5) years.
5. Obtain a certification from a qualified professional engineer stating that the initial and periodic run-on and run-off control system plans meet the requirements of this section.
6. Comply with the recordkeeping requirements specified in §257.105(g), the notification requirements specified in §257.106(g), and the internet requirements specified in §257.107(g).

This Plan represents the **second** 5-year update of the original Run-on and Run-off Control System Plan, dated October 2016, and presents the regulatory-required materials as noted above. It is prepared for the existing landfill at AEP's H.W. Pirkey Power Plant in Hallsville, Texas. The landfill operator has previously installed and is currently maintaining the planned stormwater control measures discussed in this plan. The attached "Figure 1 – Overall Landfill Exhibit" identifies the landfill complex with the associated stormwater drainage systems as of September 2026.

2.0 RUN-ON CONTROLS

The purpose of run-on controls is to prevent the flow of water onto the active portion of the landfill during the peak discharge from a 24-hour, 25-year storm. The controls may be permanent or temporary, and their function may also change over time as landfill development proceeds. Controls must consider site conditions outside of the landfill footprint as well as site conditions within the landfill footprint.

2.1 Run-On Controls Outside the Active Landfill Footprint

2.1.1 Stormwater Perimeter Ditches

Perimeter drainage ditches around the active landfill provide controls to manage run-on from outside the active landfill footprint and define the limits of the active disposal area/footprint. The perimeter ditches direct stormwater around the landfill pond to the south, and stormwater enters an unnamed tributary that flows 0.8 mile to Hatley Creek.

Only one perimeter ditch now runs along the north side of the active landfill, and it was designed to adequately handle the peak flow from a 24-hour, 25-year storm event. The design calculations are provided in "Figure 3." The location of the perimeter collection and diversion channel is also shown on "Figure 1 – Overall Landfill Exhibit." The topography slopes away from the active landfill on all other sides.

2.2 Run-On Controls Inside the Active Landfill Footprint

Run-on controls inside the landfill footprint are in place to ensure that stormwater from closed landfill cells does not enter the active landfill footprint.

2.2.1 Landfill Phasing and Construction Practices

Sections of the landfill at the H.W. Pirkey Power Plant have been closed as those sections have reached their capacity. There is only one remaining active area near the top of the landfill that is approximately 5 acres in size, and all other landfill areas have been capped and covered. These closed landfill cells are graded to divert stormwater away from the active landfill cell, and into storm sewer systems with letdowns to capture water from the benches of the cell as well. See the figures in Appendix A for the landfill configuration.

2.2.1.1 ***Active Filling***
As discussed above, active filling currently occurs near the top of the landfill and is surrounded by closed areas. All capped and covered cells adjacent to the active area are graded to divert water away from the active cell and ultimately into stormwater perimeter ditches that bypass the landfill pond. Run-on controls within the landfill footprint consist of underdrain systems, which discharge into the landfill pond (see section 2.2.2 below). Run-off controls consist of a berm on the two long sides of the active landfill cell. Also, a leachate collection system with chimney drains serves to collect contact water from the active area and carry it to the landfill pond (see section 3.0 for more details).

2.2.1.2 ***Future Filling***
Future filling will occur in the same active landfill area since this is the last open area in the entire landfill footprint.

2.2.2 Underdrain System

Underneath the active HDPE-lined landfill cells, an underdrain system was installed to convey groundwater to perimeter ditches or the landfill pond. The underdrain systems consist of perforated HDPE pipes that are wrapped in #57 rock and enclosed in filter fabric. The pipe systems are in a drainage layer that directs groundwater to the pipe systems, which are located under low areas or valleys in the liner, generally directly underneath the leachate pipe systems and perimeter stormwater ditches.

3.0 RUN-OFF CONTROLS

The run-off control system prevents flow (contact water) from leaving the active portion of the landfill during the peak discharge from a 24-hour, 25-year storm. Run-off control consists of the following aspects:

- Perimeter berms/ditches
- Leachate collection system
- Landfill Pond
- Filling operation

Stormwater from the active landfill travels to the landfill pond via perimeter ditches and through the leachate collection system via chimney drains. The leachate collection system is similar to the underdrain system, but differs in that it is located in a drainage layer above the HDPE liner of the cell, and conveys

leachate and stormwater from the active landfill cell to the landfill pond. Chimney drains in the active landfill are utilized to capture stormwater from the top of landfill, and these chimney drains tie directly into the leachate system. The filling operation is managed such that contact water is directed or pumped to the chimney drains. The run-off control features are presented on the attached figures in Appendix A. The following further describes each run-off control component.

3.1 Perimeter Ditches

Perimeter berm/ditches are constructed around the active landfill area. These ditches serve to convey stormwater from the active landfill to the landfill pond. All ditches were designed to adequately convey the water volume resulting from a 24-hour, 25-year storm event (see Appendix A). The design capacities for the perimeter ditches were conservatively calculated based on minimum depths of 12 inches. However, some depths greatly exceed 12 inches, thus increasing the freeboard. Conservative watershed areas were used to calculate the flows in case the filling operation shifted the flow patterns.

3.2 Leachate Collection System

The leachate collection system consists of 2-ft-thick minimum drainage layer over the landfill composite liner system and a network of perforated collection pipes. The composite liner system is sloped to promote drainage to the leachate collection pipe network, and the leachate collection pipe network discharges into the landfill pond. The leachate collection pipe network spacing is a function of the base grade liner slope, drainage layer permeability, and flow distance to the collection pipes. The Hydraulic Evaluation of Landfill Performance (HELP) model was used in evaluating the pipe spacing with respect to contact water percolation to the leachate collection drainage layer, the minimum liner slope, and a selected pipe spacing or flow distance to each collection pipe. There are multiple chimney drains in the active area, resulting in a controlled discharge of stormwater into the drains and down to the leachate collection pipes.

3.3 Landfill Pond

All stormwater from the active landfill discharges into the landfill pond. This pond was originally designed to contain the water volume from a 24-hour, 25-year storm when the active area of the landfill was much larger. Therefore, the current pond watershed is much smaller than the original design, thus increasing the factor of safety. Currently, an evaporator system is locally utilized to control the normal operating level of the pond. In case of emergencies, the pond does have an emergency spillway that can be utilized.

3.4 Filling Operation

The filling operation must be performed in a manner to provide run-off control within the active disposal cell such that the contact surface water reaches the leachate collection system. This involves grading the placed material in a controlled manner to direct contact surface water flow toward the chimney drain structures in the interior portions of the disposal area. Grading must be directed away from the outside slopes, which have been capped.

4.0 PLAN REVIEW AND CHANGES IN FACILITY OPERATION

The Landfill Owner and/or Operator will review and evaluate this Plan every five (5) years from initial plan preparation and when there are changes in the facility design, construction, operation, or maintenance that materially affect the facility's potential for run-on and run-off control. Amendments to the Plan made to address changes of this nature are referred to as technical or major amendments, and must be certified by a P.E. Non-technical amendments can be performed by the facility owner and/or operator. This Plan represents the second 5-year update of the original Run-on and Run-off Control System Plan.

Technical and administrative amendments to the Plan have been and will continue to be documented on the Plan Review Log. The Owner/Operator will make the necessary revisions to the Plan as soon as possible, but no later than six months after the change occurs. The Plan must be implemented as soon as possible following a technical amendment, but no later than six months from the date of the amendment. The Designated Person is responsible for initiating and coordinating revisions to this Plan.

Scheduled reviews and Plan amendments will be recorded in the Plan Review Log provided in Appendix B. The log will be completed even if no amendment is made to the Plan as a result of the review.

5.0 PROFESSIONAL ENGINEER CERTIFICATION

This revised Plan, and all subsequent reviews and amended plans, must obtain certification from a qualified P.E. stating that the initial and subsequent run-on and run-off control system plans meet the requirements of 40 CFR 257. This certification in no way relieves the owner or operator of the facility of his/her duty to fully implement this Plan. The Professional Engineer Certification page is provided in Appendix C.

APPENDIX A:
Figures and Calculations

Figure 1: Overall Landfill Exhibit

Figure 2: Active Landfill

Figure 3: Hydrology Exhibit

Associated Hydrology Calculations



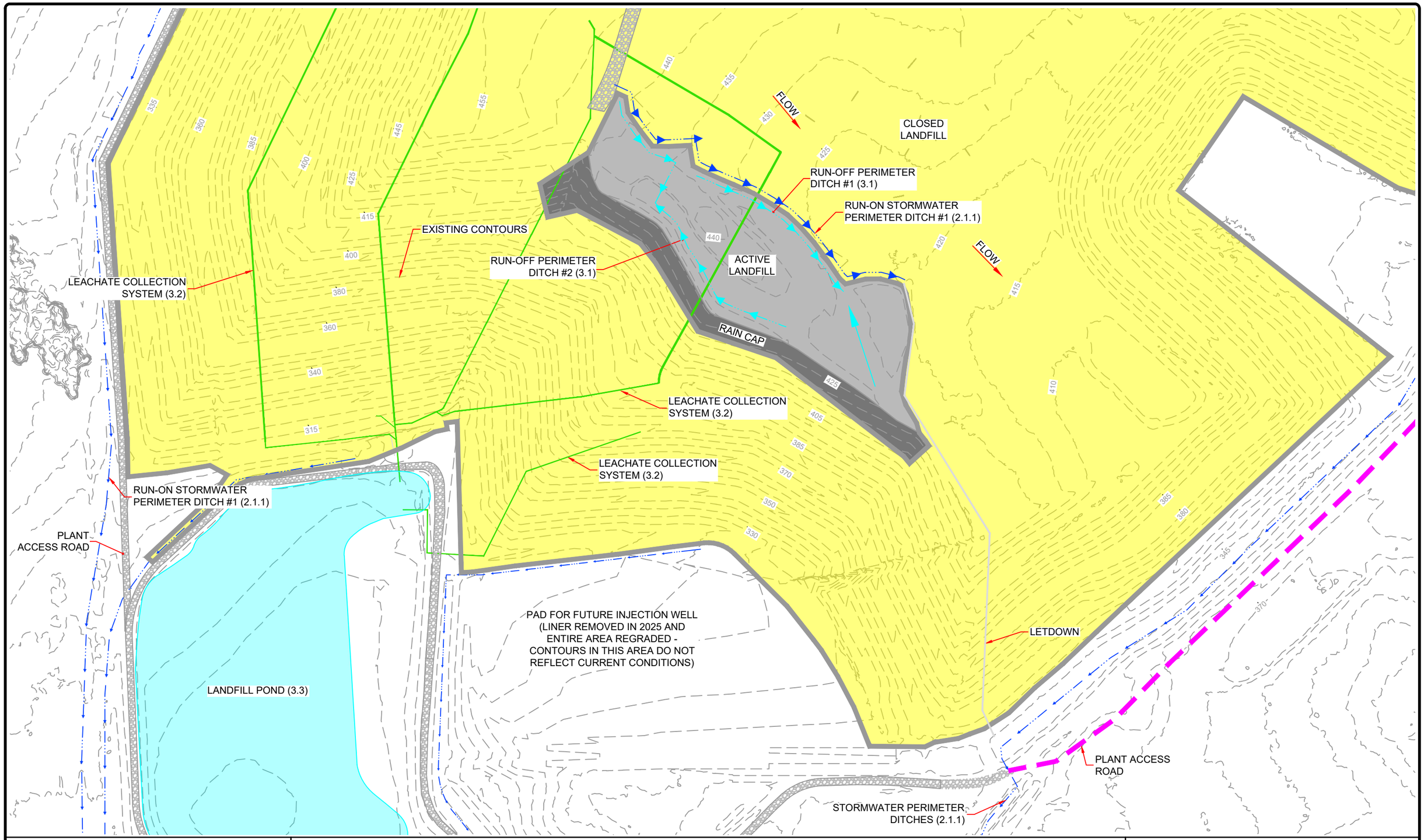
AKRON CONSULTING, LLC.
212 Millridge Ct.
White Oak, TX 75693
TBPE Firm Reg. # 14014
903-720-4822
www.akron-consulting.com

0 500' 1000'

1"=500'

N

FIGURE 1
OVERALL
LANDFILL EXHIBIT

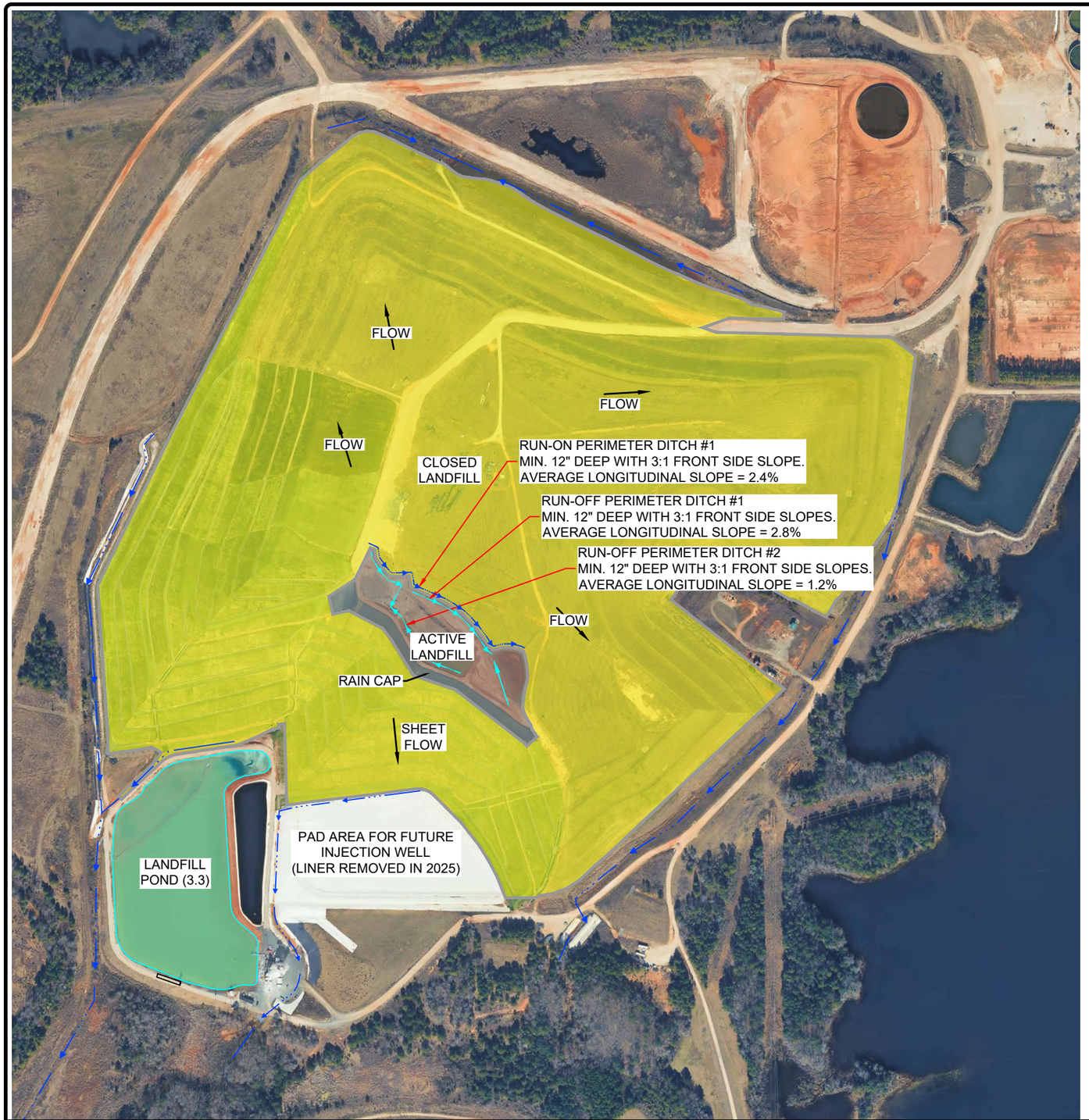


AKRON CONSULTING, LLC.
212 Millridge Ct.
White Oak, TX 75693
TBPE Firm Reg. # 14014
903-720-4822
www.akron-consulting.com

0 200' 400'
1"=200'

N

FIGURE 2
ACTIVE LANDFILL



DITCH DESCRIPTION	CAPACITY	25 YR, 24 HR FLOW
RUN-ON STORMWATER PERIMETER DITCH #1	94 CFS	7 CFS
RUN-OFF PERIMETER DITCH #1	91 CFS	28 CFS
RUN-OFF PERIMETER DITCH #2	59 CFS	28 CFS

AKRON CONSULTING, LLC.
212 Millridge Ct.
White Oak, TX 75693
TBPE Firm Reg. # 14014
903-720-4822
www.akron-consulting.com

0 500' 1000'
1"=500'

N

FIGURE 3
HYDROLOGY
EXHIBIT

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Aug 31 2026

Run-on Stormwater Perimeter Ditch #1

Trapezoidal

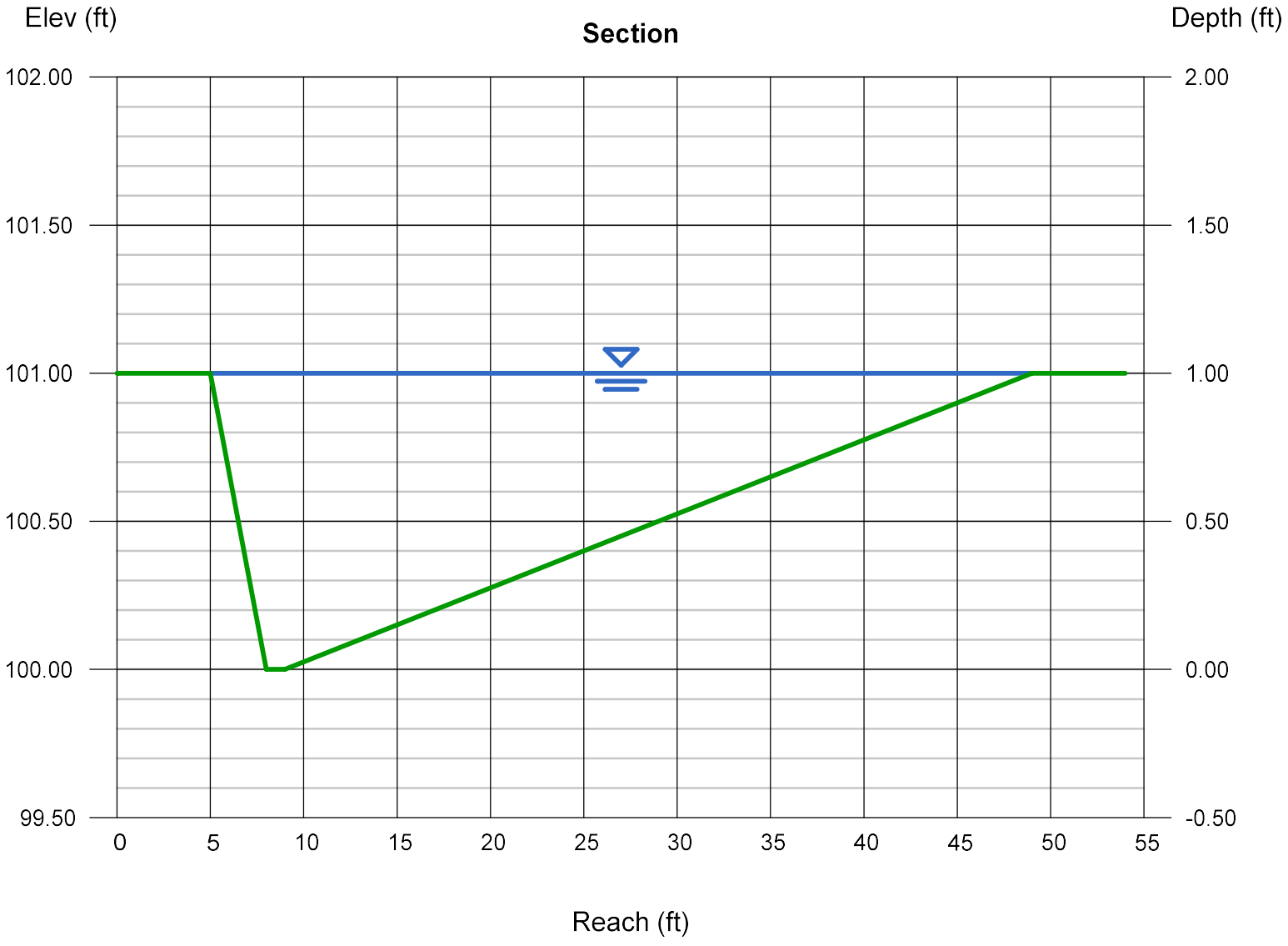
Bottom Width (ft)	= 1.00
Side Slopes (z:1)	= 3.00, 40.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 100.00
Slope (%)	= 2.40
N-Value	= 0.035

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 1.00

Highlighted

Depth (ft)	= 1.00
Q (cfs)	= 94.37
Area (sqft)	= 22.50
Velocity (ft/s)	= 4.19
Wetted Perim (ft)	= 44.17
Crit Depth, Yc (ft)	= 1.00
Top Width (ft)	= 44.00
EGL (ft)	= 1.27



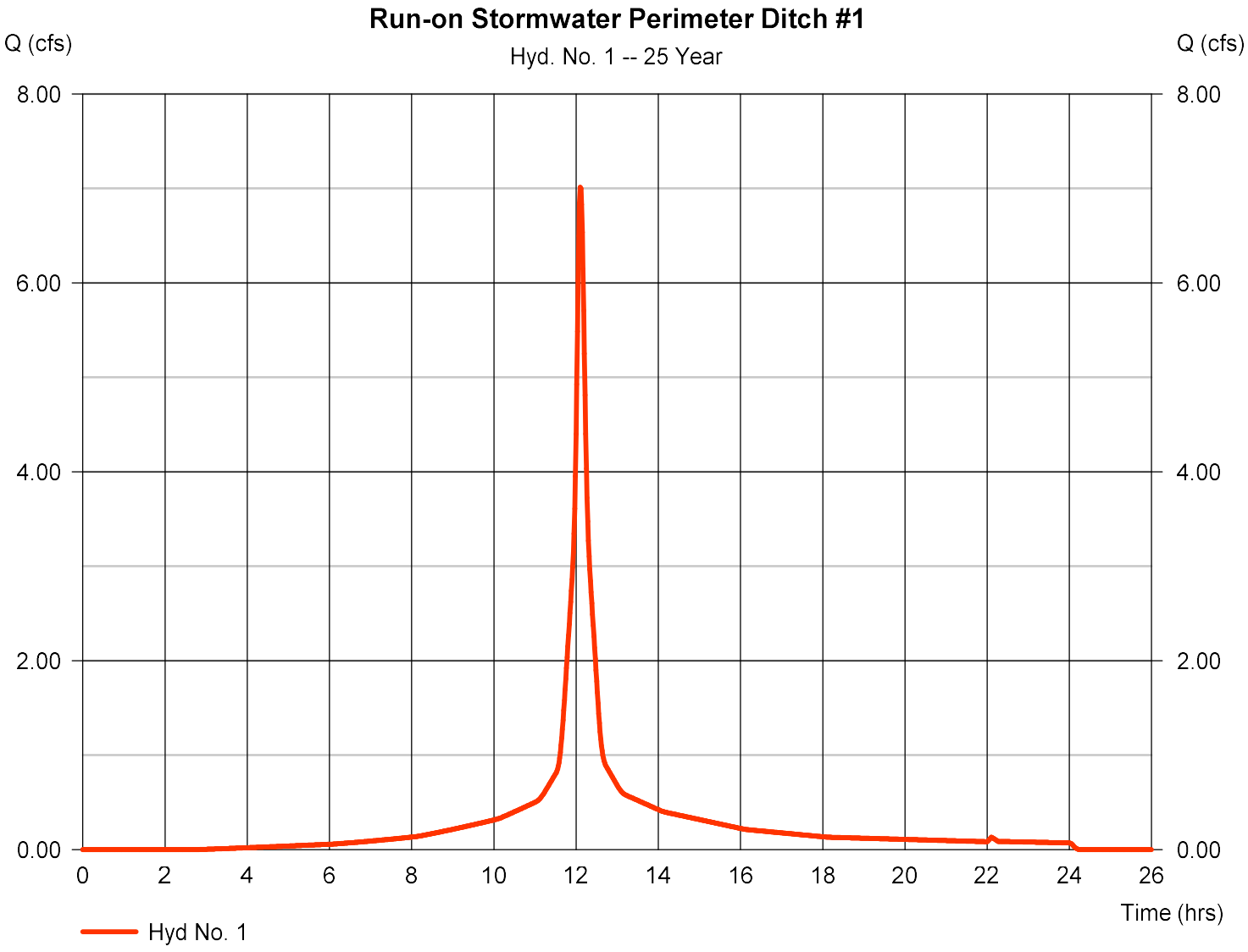
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 — Monday, 08 / 31 / 2026

Hyd. No. 1

Run-on Stormwater Perimeter Ditch #1

Hydrograph type	= SCS Runoff	Peak discharge	= 7.013 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.10 hrs
Time interval	= 1 min	Hyd. volume	= 25,777 cuft
Drainage area	= 1.000 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Sep 22 2026

Run-off Perimeter Ditch #1

Trapezoidal

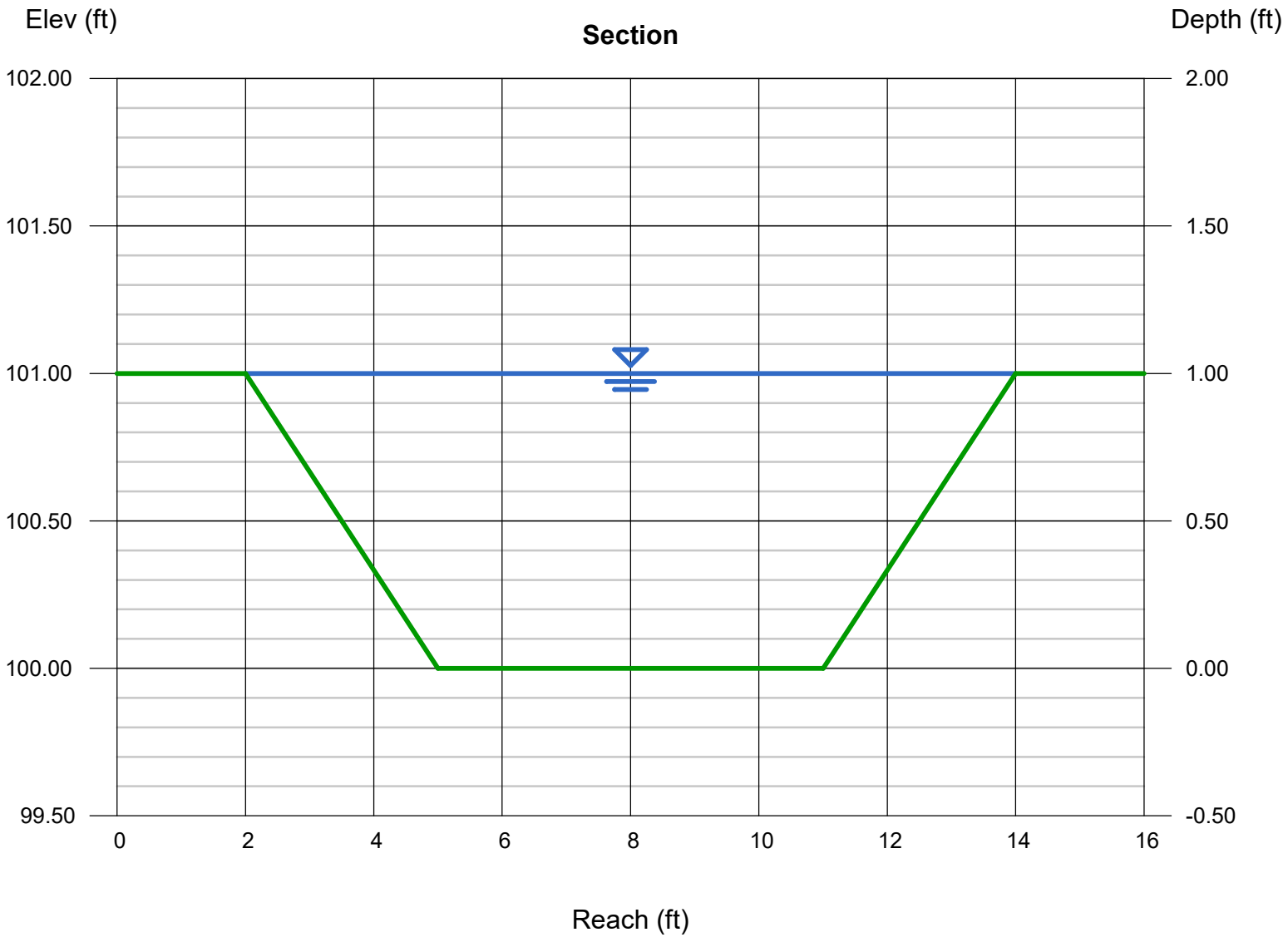
Bottom Width (ft)	= 6.00
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 100.00
Slope (%)	= 2.80
N-Value	= 0.020

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 1.00

Highlighted

Depth (ft)	= 1.00
Q (cfs)	= 90.73
Area (sqft)	= 9.00
Velocity (ft/s)	= 10.08
Wetted Perim (ft)	= 12.32
Crit Depth, Yc (ft)	= 1.00
Top Width (ft)	= 12.00
EGL (ft)	= 2.58



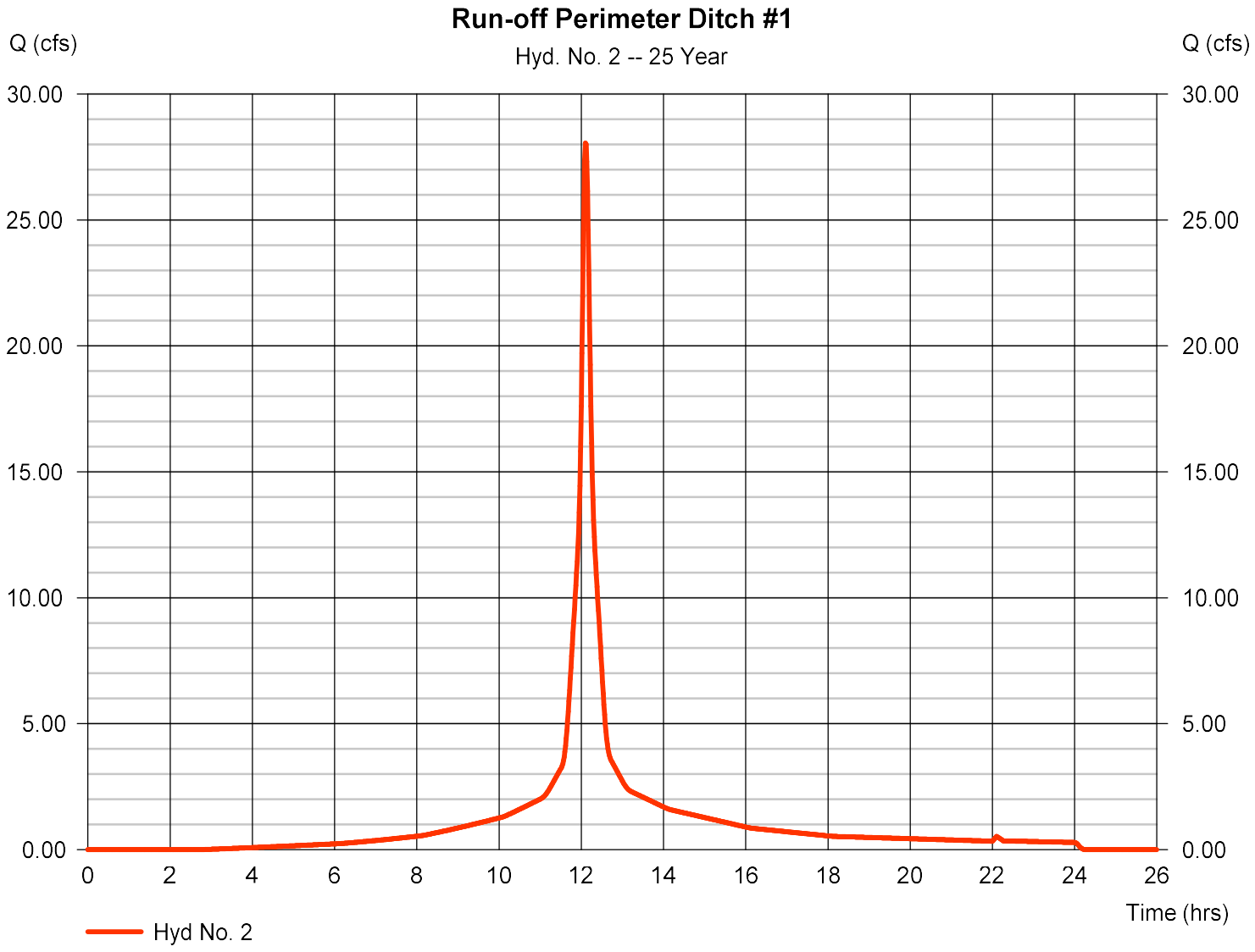
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 — Monday, 08 / 31 / 2026

Hyd. No. 2

Run-off Perimeter Ditch #1

Hydrograph type	= SCS Runoff	Peak discharge	= 28.05 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.10 hrs
Time interval	= 1 min	Hyd. volume	= 103,107 cuft
Drainage area	= 4.000 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Sep 22 2026

Run-off Perimeter Ditch #2

Trapezoidal

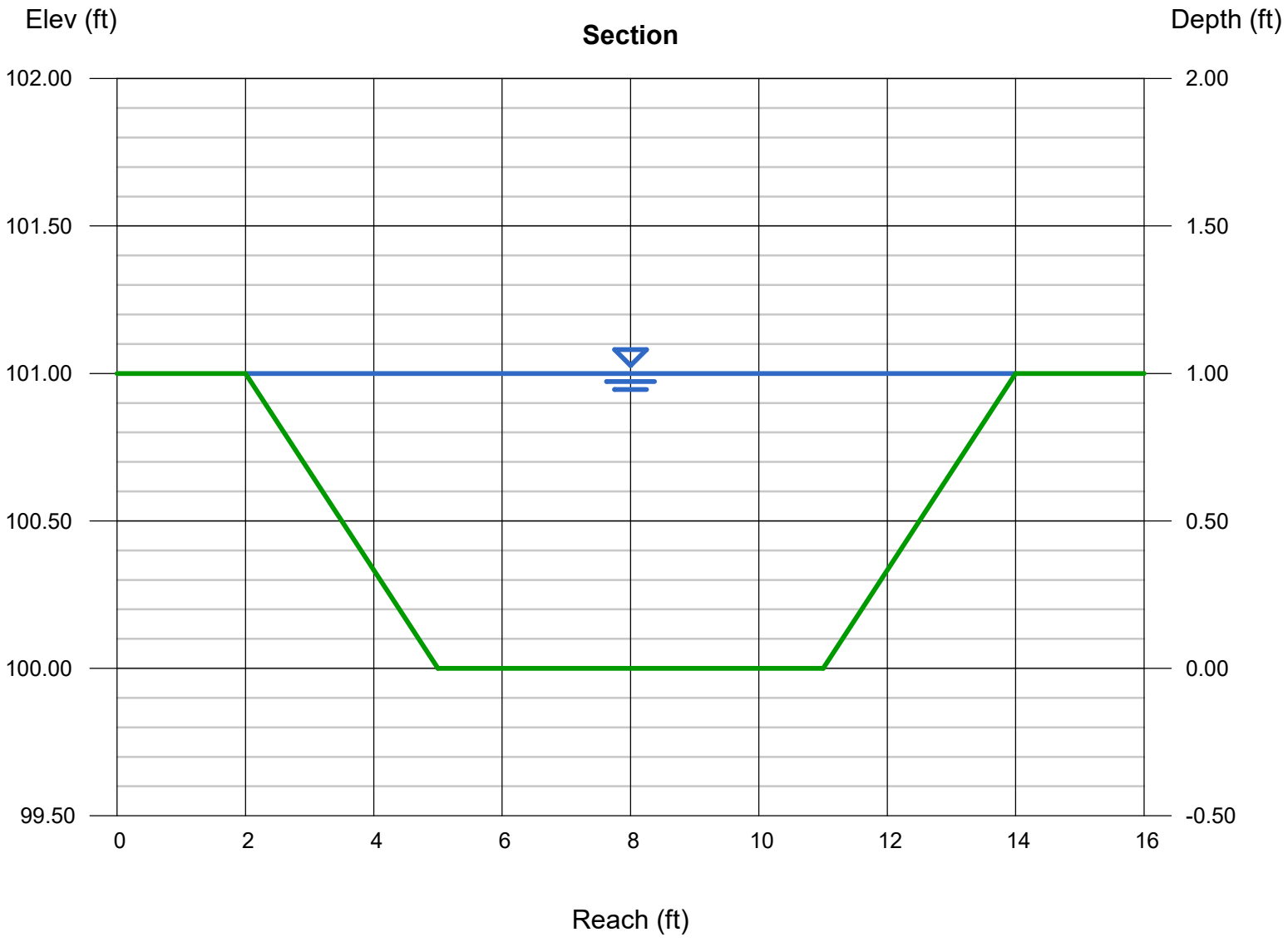
Bottom Width (ft)	= 6.00
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 100.00
Slope (%)	= 1.20
N-Value	= 0.020

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 1.00

Highlighted

Depth (ft)	= 1.00
Q (cfs)	= 59.40
Area (sqft)	= 9.00
Velocity (ft/s)	= 6.60
Wetted Perim (ft)	= 12.32
Crit Depth, Yc (ft)	= 1.00
Top Width (ft)	= 12.00
EGL (ft)	= 1.68



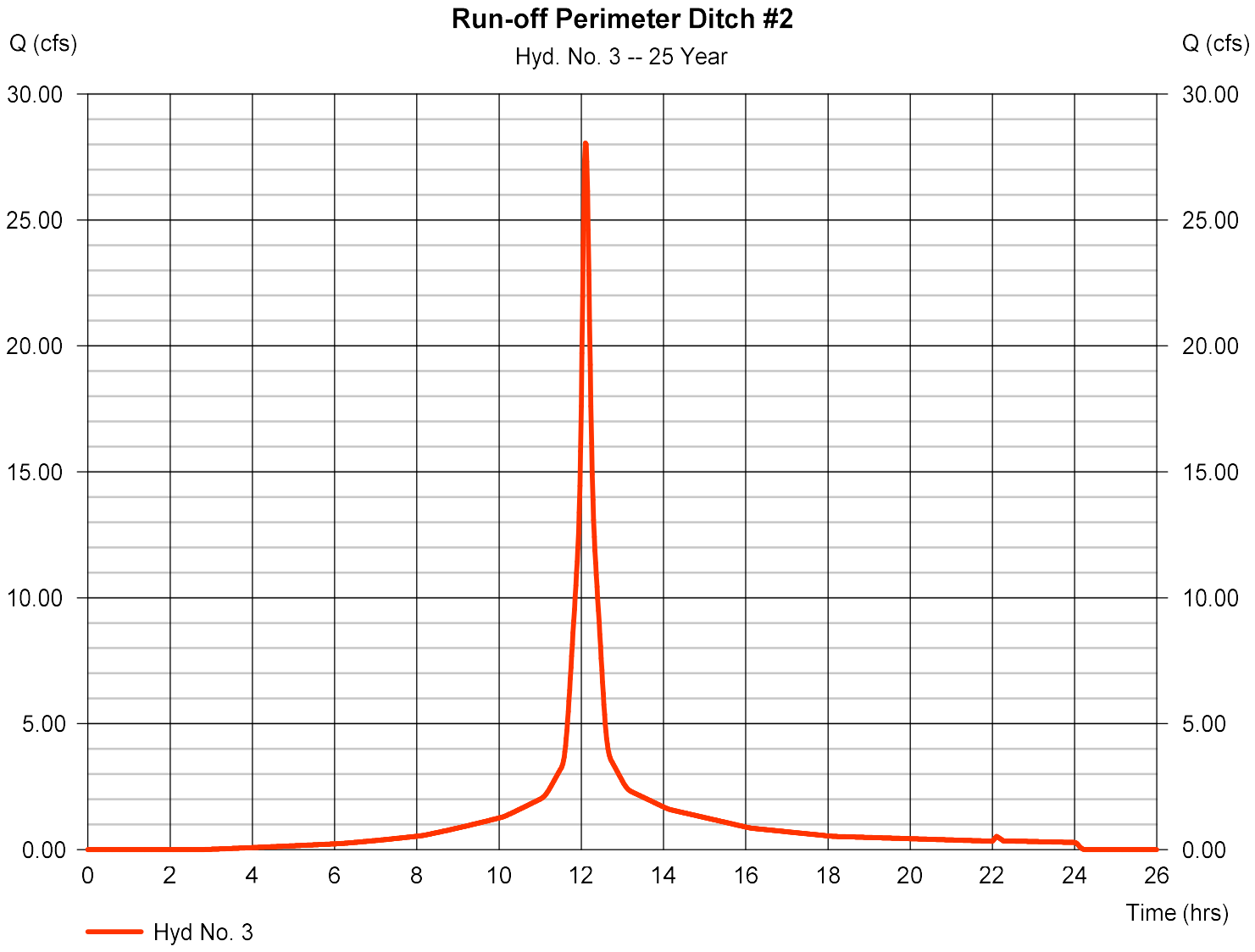
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Monday, 08 / 31 / 2026

Hyd. No. 3

Run-off Perimeter Ditch #2

Hydrograph type	= SCS Runoff	Peak discharge	= 28.05 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.10 hrs
Time interval	= 1 min	Hyd. volume	= 103,107 cuft
Drainage area	= 4.000 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 8.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



APPENDIX B:
Run-On and Run-Off Plan Review Log

Plan Review and Changes in Facility Operation

Scheduled reviews and Plan amendments shall be recorded in the Plan Review Log below. This log must be completed even if no amendment is made to the Plan as a result of the review.

By	Date	Amendment Description	P.E. Certification Required?	P.E. Name	Licensing State: Registration No.
Akron Consulting, LLC	10/14/2016	Initial Plan	Yes	Landon C. Allen	TX 119170
Akron Consulting, LLC	10/06/2021	5-Year Plan Revision	Yes	Lane D. Roberts	TX 105135
Akron Consulting, LLC	09/22/2026	5-Year Plan Revision	Yes	Lane D. Roberts	TX 105135

APPENDIX C:
Professional Engineer Certification

Professional Engineer Certification

The Run-on and Run-off System Control Plan for the H.W. Pirkey Power Plant Landfill was prepared by Akron Consulting, LLC (TBPE Firm #14014). This Certification/Statement of Professional Opinion is limited to the information available to Akron 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 State of Texas, 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, reviewed, and revised in accordance with the current requirements of 30 TAC 352.811 (Federal Regulation Title 40, Part 257.81).

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. This certification in no way relieves the Owner or Operator of the facility of his/her duty to fully implement this Plan.

Engineer: Lane D. Roberts

Registration Number: 105135

State: Texas

Date: 09/22/2026



TBPELS FIRM INFORMATION:
Akron Consulting, LLC
212 Millridge Ct.
White Oak, Texas 75693
TBPELS Firm # 14014

P.E. certification is required for the original Plan and Plan reviews and amendments.