ATTACHMENT A
DESIGN CALCULATIONS

Physical/Mechanical Properties

A-1: Stability

The stability of the proposed liner system on the Master Cell (MC) VI-G liner and final grade slopes have been evaluated. The proposed liner grade changes do not introduce any interface and/or internal shear plane that is more critical than what is in the currently permitted liner system.

The slope stability analyses were conducted following similar approaches documented in the Basis of Design Report in the current permit (approved by the Michigan Department of Environmental Quality on May 4, 2012 and the Environmental Protection Agency on September 27, 2013), where the stability of the sideslope under excavation, stability of the liner system under construction, stability of the waste mass during filling, stability of the final cover, and stability of the long-term final closure were evaluated. **Attachment A-1** includes the results of the performed stability analyses.

A-2: Settlement

As required in Michigan Part 111 R299.9620 (4), the liner grades were designed at a minimum slope of 2% in directions perpendicular to the leachate collection pipes. The leachate collection pipes were designed at a minimum slope of 1%. Actual liner grades are shown in the Permit Engineering Drawings in Attachment C.

The ability of the liner grades to maintain the required minimum slopes in the post-settlement was evaluated for MC VI-E, MC VI-F and MC VI-G cells. The settlement of the underlying foundational soils and existing MC I and MC IV waste due to the expected loading was examined. For each of the cells, the post-settlement slope along the leachate collections pipe and a section of the cross-slope was calculated. The calculation showed the slopes are equal or greater than the required values in all cells. **Attachment A-2** includes the results of the performed settlement analyses.

Leachate Collection System Design

A-3: Pipe Strength

Leachate collection pipes and leachate sideslope risers were analyzed for structural stability under the expected loads in MC VI-G. The pipes were analyzed for both deflection and factor of safety against wall buckling. Both SDR 11 and SDR 9 pipes achieved acceptable factors of safety for wall buckling and deflections. In addition, the leachate collection pipes in MC VI-E were evaluated for performance with the final grade adjustments. The existing SDR-7 and 7.3 pipes achieved acceptable factors of safety for wall buckling and acceptable deflections. Refer to **Attachment A-3** for additional calculation information.

A-4: Leachate Collection System Flow Capacity

The leachate collection system consists of the leachate collection geocomposite, overlying sand leachate collection layer, and leachate collection pipes. The perforated 8-inch diameter leachate collection pipes are designed to be recessed in trenches on the cell floors of MC VI-F and G. The capacity of the leachate collection pipes and the capacity of the perforations in the leachate collection pipes were analyzed and found to surpass the maximum open condition leachate generation flow to the most critical pipes. Therefore the 8-inch pipes along with the proposed perforation pattern meet the required flow capacity for MC VI-G cells. For additional details see **Attachment A-4**.

A-5: Leachate Head on Liner Analysis

The leachate collection system geocomposite drainage layer was designed using McEnroe's equation for maximum head on liner. The leachate collection system geocomposite and sand layers were designed by determining the minimum geocomposite transmissivity required to achieve 1 foot of head on the liner or less through a process of iteration. The resultant minimum geocomposite transmissivity for the MC VI G subcells was determined to be within the range of standard industry materials and will be set as the requirement for the construction of each subcell. For additional details see **Attachment A-5**.

A-6: Surface Water Management System

The storm water management system provides management of storm water runoff including control of soil erosion. The storm water management system includes diversion berms, downslope channels, ditches, culverts, storm sewers, and sedimentation basins. The system is designed to collect and control the run-off from a 25-year, 24-hour storm event. Storm water basins are designed to contain run-off from a 100-year, 24-hour storm event. Detailed design information for the storm water management system is provided in Attachment A-6.

Conclusions

The calculations and information provided above and contained in the attachments demonstrate that the proposed MC VI-G and Final Grade modification calculations, including slope stability, settlement, pipe strength, leachate collection system flow, and storm water comply with the currently effective hazardous waste regulatory requirements.

List of Supplemental Attachments

Attachment A-1: Slope Stability Analysis

Attachment A-2: Settlement Calculations

Attachment A-3: Pipe Strength and Deflection Calculations

Attachment A-4: Leachate Collection System Flow Capacity Analysis

Attachment A-5: Head-on-Liner Calculations and Minimum Geocomposite Transmissivity

Attachment A-6: Surface Water Calculations

Attachment A-1

Slope Stability Analysis

Project Name:	WDI MC-VI-G4 through G7 Liner Grade Modification	Client:	Wayne Disposal, Inc.
Project Number:	1208070039.004	Project Manager:	Chris Backus
Project Location:	Belleville, Michigan	QA Manager:	

Calculation Sheet Information

Calculation Medium: ☒ Electronic
☐ Hard copy Number of pages (including cover sheet):

Title of Calculation:	Slope Stability Analyses
Calculation Originator:	Mohammad Kabalan
Calculation Contributors:	Mohammad Kabalan
Calculation Checker:	James Moseley, Kevin Foye

Calculation Objective

This calculation evaluates the stability of the proposed MC-VI-G at Wayne Disposal, Inc. (WDI) Landfill. The analyses include consideration of global slope stability for failures through the waste mass, along the liner system, and/or through the foundation soils at interim and final conditions. The analyses also determined the minimum required interface friction angle to attain a satisfactory factor of safety against failure at the liner system interface. Cross sections that are the most critical for analysis and design include cross sections with the steepest slopes and highest embankment (waste or soil) heights. The following critical cross sections were examined:

1. Cross Section C-C’ oriented East-West and going through Cell MC VI-G4.
2. Cross Section G-G’ oriented North-South and going through Cell MC VI-G6.

Assumptions and Open Items

1. Representative total and effective stress shear strength parameters were used for all layers in the profile. Material properties were retrieved from existing site data (NTH 2012) and are presented in Table 1. Strength properties for the lower clay were modeled as a relationship of shear stress to effective normal stress, whereas all other layers used the Mohr-Coulomb model with either an undrained shear strength or friction angle as input. A shear strength to effective stress ratio of 0.22 was applied for the lower clay in accordance with existing analyses (NTH 2012) to account for increases in shear strength resulting from increased overburden pressure within the lower clay layer.

Table 1: Material Properties

Material	Name	Color in Profile	Unit Wt(s) (pcf)	Strength ϕ or δ (deg.)	Strength C or Ca (psf)
1	Final Cover	Orange	130	0	1500
2	Existing Waste	Teal	86	34	0
3	New Waste	Light Green	103[A]	26[B]	300[B]
4	Upper Clay	Brown	131	0	1325
5	Middle Clay	Yellow	136	0	3000
6	Lower Clay	Maroon	133	$0.22\sigma'_v$	
7	Silt	Blue	125	28	0
8	Sand	Red	115	32	0
9	Liner (floor)	Magenta	120	13.2	0
10	Liner (sideslope)	Magenta	120	9	0

Notes:
[A] unit weight of waste determined from site survey data reported in 2020.
[B] representative value of waste strength as reported by Qian et al. (2002)
All other properties obtained from NTH (2012)

2. For liner system stability cases, the domain of the slip surfaces are defined so that a portion of the failure surface conforms to the liner system.
3. Applicable data used in the analysis that was provided by third parties is assumed to be accurate.

Design Criteria/Design Basis

1. The minimum allowable factor-of-safety (FS) against slope stability failures is 1.5 for final conditions and 1.3 for interim conditions.
2. The analyses were conducted using the computer program SLOPE/W within the software package GeoStudio 2021 by GEOSLOPE International Ltd. This program performs an automatic search to identify a critical failure surface that has the lowest FS value.
3. The analyses were conducted using the Morgenstern-Price method, which considers both moment and force equilibrium.
4. The geometry of the cross sections was derived from the engineering drawing set submitted as part of the permit mod package.
5. The required/assumed interface friction angles shall be met by considering peak strength values for the cell floor and large-displacement strength values for the cell sideslopes.
6. The required minimum interface friction angle for the liner system components is determined under the final conditions (after final cover is installed).
7. Due to the complex nature of the waste fill phasing during operation, the liner stability shall be evaluated based on the actual measurements of the interface friction angle for the liner system components and the design waste filling geometry for each phase. An example one such calculation was prepared to illustrate how to evaluate required minimum interface friction angle for the liner system components. This example analysis was performed on cross section C-C' assuming an interim waste slope of 3H:1V.

Results/Conclusions

1. Global slope stability analyses of the waste and foundation for each cross section determined that filling to proposed final grades yields acceptable factors of safety.
   a. Cross Section C-C': Factor of Safety =1.66
   b. Cross Section G-G': Factor of Safety = 1.50
2. Under the final conditions (after installation of final cover, the liner system analyses determined the minimum required interface friction angle for geosynthetics in the floor and slideslope liner systems to yield a factor of safety = 1.50. These values are **13.2 degrees for the floor (peak) and 9 degrees for the sideslope (large-displacement) with zero adhesion** .
   a. Cross Section C-C': Factor of Safety = 1.50 (used to evaluate minimum friction angle)
   b. Cross Section G-G': Factor of Safety = 1.54
3. The above values are minimum acceptable secant friction angles. Any combination of adhesion and friction angle resulting in comparable shear strength under representative normal stresses to final site conditions are also acceptable. Stability analysis using lab interface shear strength tests results from previous products used on site show that a combination of **$C_{\alpha,peak}$=164 psf / ϕ_{peak}=11.1° and $C_{\alpha,large\ displacement}$=110 psf / $\phi_{large\ displacement}$=7.3°** achieves an acceptable factor of safety. **Conformance testing of the selected geosynthetics shall be performed to confirm that the interface shear strength of the actual liner system components is sufficient to ensure the stability of the liner system.**
   a. Cross Section C-C': Factor of Safety = 1.5
   b. Cross Section G-G': Factor of Safety = 1.5
4. An example calculation of liner stability for an interim waste filling conditions is presented in Attachment 7. The required interface friction angle for the floor liner system was determined to be 13 degrees (peak). Actual interim phasing plan slopes and tested liner system interface properties shall be evaluated for each phase of fill per this example.

Source Documents and References

NTH (2012). WDI Operating License Application Master Cells VI F & G Volume III – Basis of Design Report

Qian, X., Gray, D.H., and Koerner, R.M. (2002) *Geotechnical Aspects of Landfill Design and Construction.*

Attachments

1. C-C' Foundation Stability
2. G-G' Foundation Stability
3. C-C' Liner Stability under Final Conditions with zero adhesion
4. G-G' Liner Stability under Final Conditions with zero adhesion
5. C-C' Liner Stability under Final Conditions with non-zero adhesion (previously tested values)
6. G-G' Liner Stability under Final Conditions with non-zero adhesion (previously tested values)
7. C-C' Liner Stability under Interim Conditions (example interim stability calculation)

Attachment A-1.1

C-C’ Foundation Stability

SLOPE STABILITY ANALYSIS REPORT FORM

Project Name:	WDI MC-VI-G4 through G7 Liner Grade Modification						
Project Number:	1208070039.004			**Client:**	Wayne Disposal, Inc.		
Analysis Short Name:	C-C' Foundation Stability				**File name:**	MC-VI-G_CrossSection_C_Foundation.gsz	
Revision:	0	**Originated:**	MK	**Checked:**	KF	**Approved:**	
Date:	10/05/21	**Date:**	10/05/21	**Date:**	10/6/21	**Date:**	

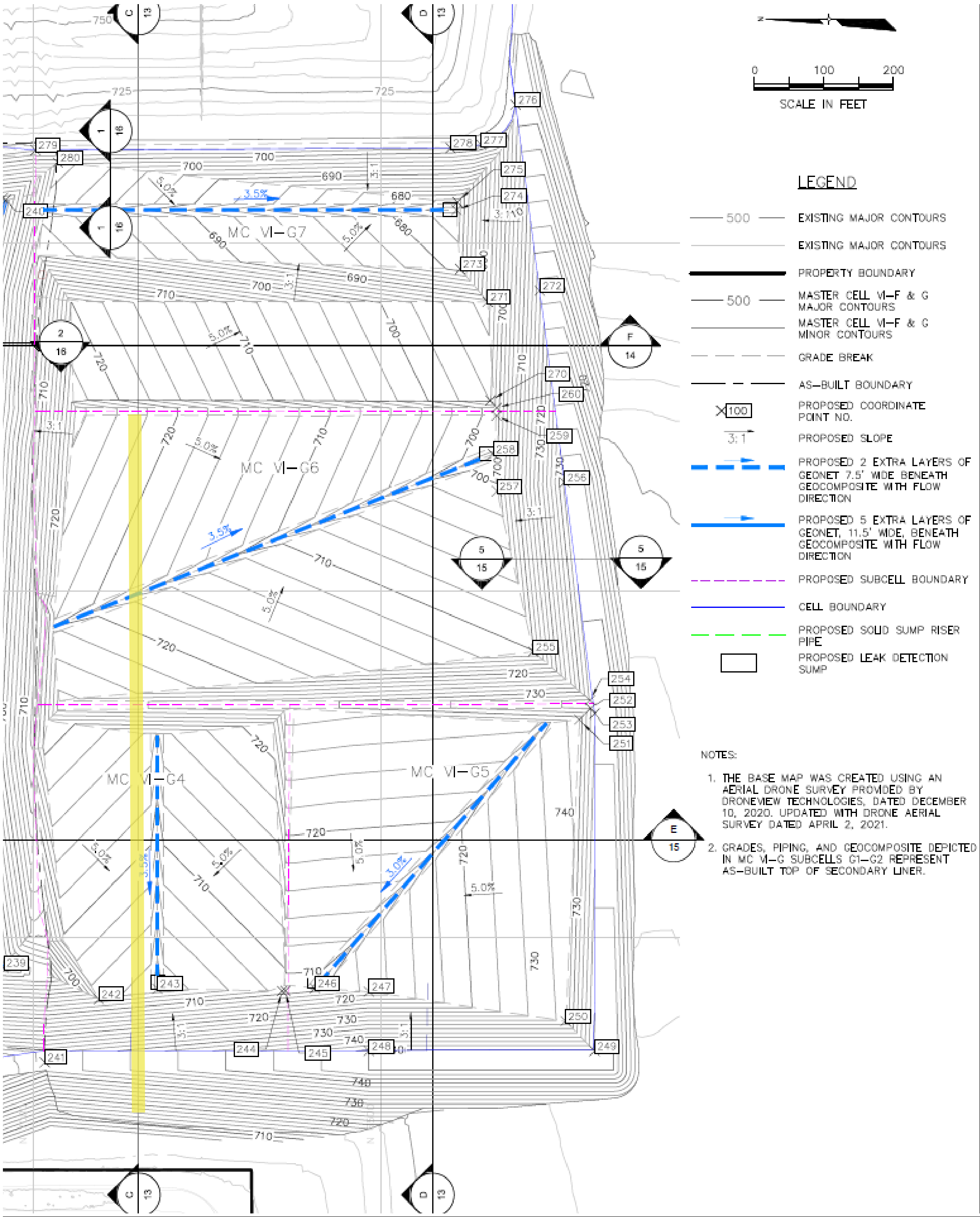
Purpose of Analysis:	To determine the factor of safety of the proposed final waste grades using cross-section C-C'. This case considers a west-facing slope, with fill to the final permitted grade elevations.		
☒ Effective Stress ☒ Total Stress	☒ Static ☐ Seismic	☒ Pore Pressure	☒ Optimized Surface
Additional Details:	The friction angle of the liner system was set equal to the required minimum interface friction angle determined from the liner stability analysis performed on Cross Section C. The groundwater level was set at elevation 655ft based on historical borings as documented in the Basis of Design Report (NTH 2012). Drained strength parameters were used for material with a relatively high permeability where excess pore-pressure conditions are not expected due to loading. Undrained strength parameters were used for low-permeability materials (clays) since excess pore pressure conditions may occur after loading. This is considered a conservative approach for this scenario.		

Material	**Name**	**Color in Profile**	**Unit Wt(s) (pcf)**	**Strength ϕ or δ (deg.)**	**Strength C or Ca (psf)**
1	Final Cover	Orange	130	0	1500
2	Existing Waste	Teal	91	34	0
3	New Waste	Light Green	103	26	300
4	Upper Clay	Brown	131	0	1325
5	Middle Clay	Yellow	136	0	3000
6	Lower Clay	Maroon	133	$0.22\sigma'_v$	
7	Silt	Blue	125	28	0
8	Sand	Red	115	32	0
9	Liner (floor)	Magenta	120	13.2	0
10	Liner (sideslope)	Magenta	120	9	0

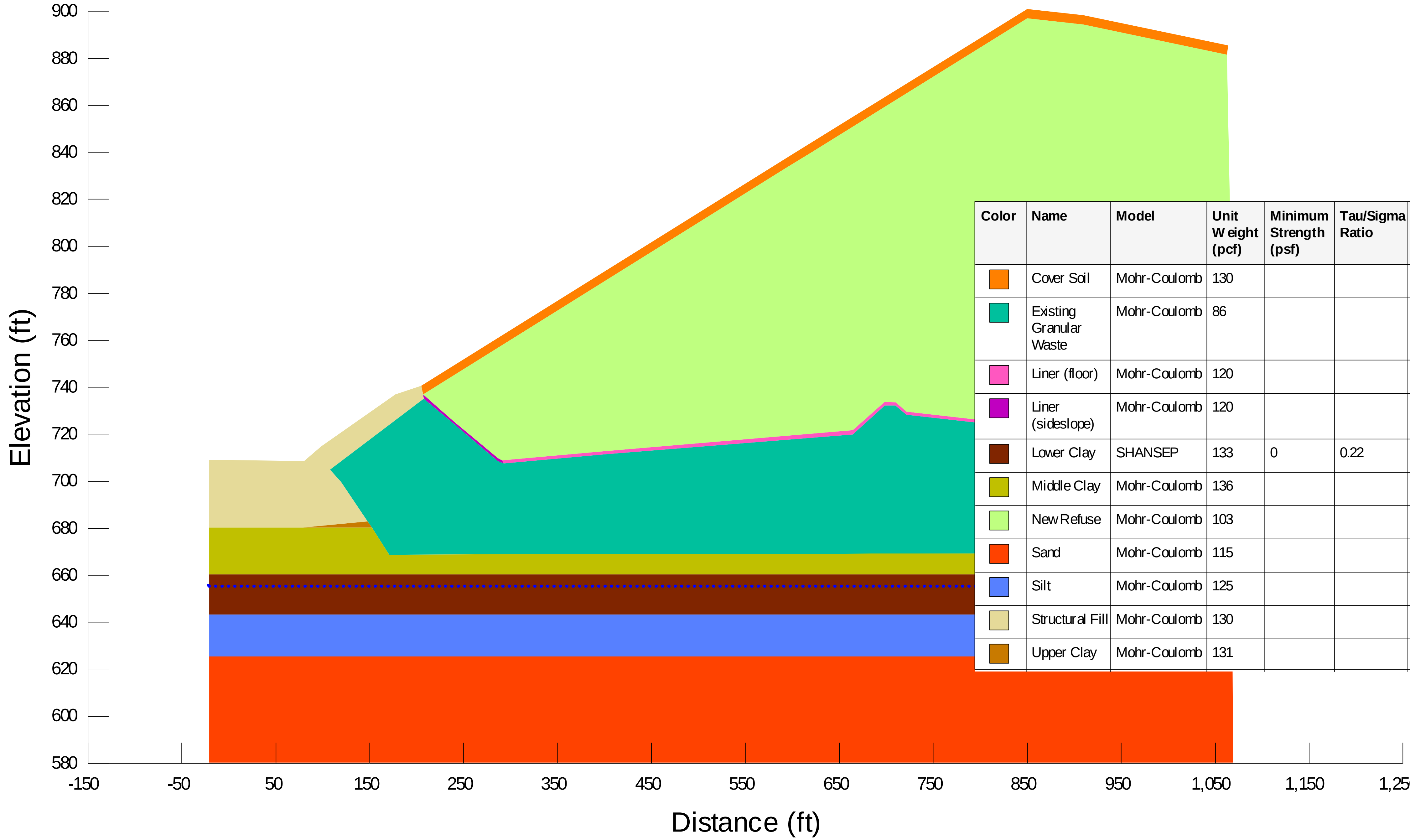
Source of Geometry:	Engineering Drawing Set
Source of Subsurface Profile:	Basis of Design Report - NTH (2012)
☐ Preconstruction ☐ Construction ☐ Interim ☒ Final ☐ Existing ☐ Back-Analysis	
Construction Phase Represented:	Final Build out
Other Geometry Notes:	Cross Section C

SLOPE STABILITY ANALYSIS REPORT FORM

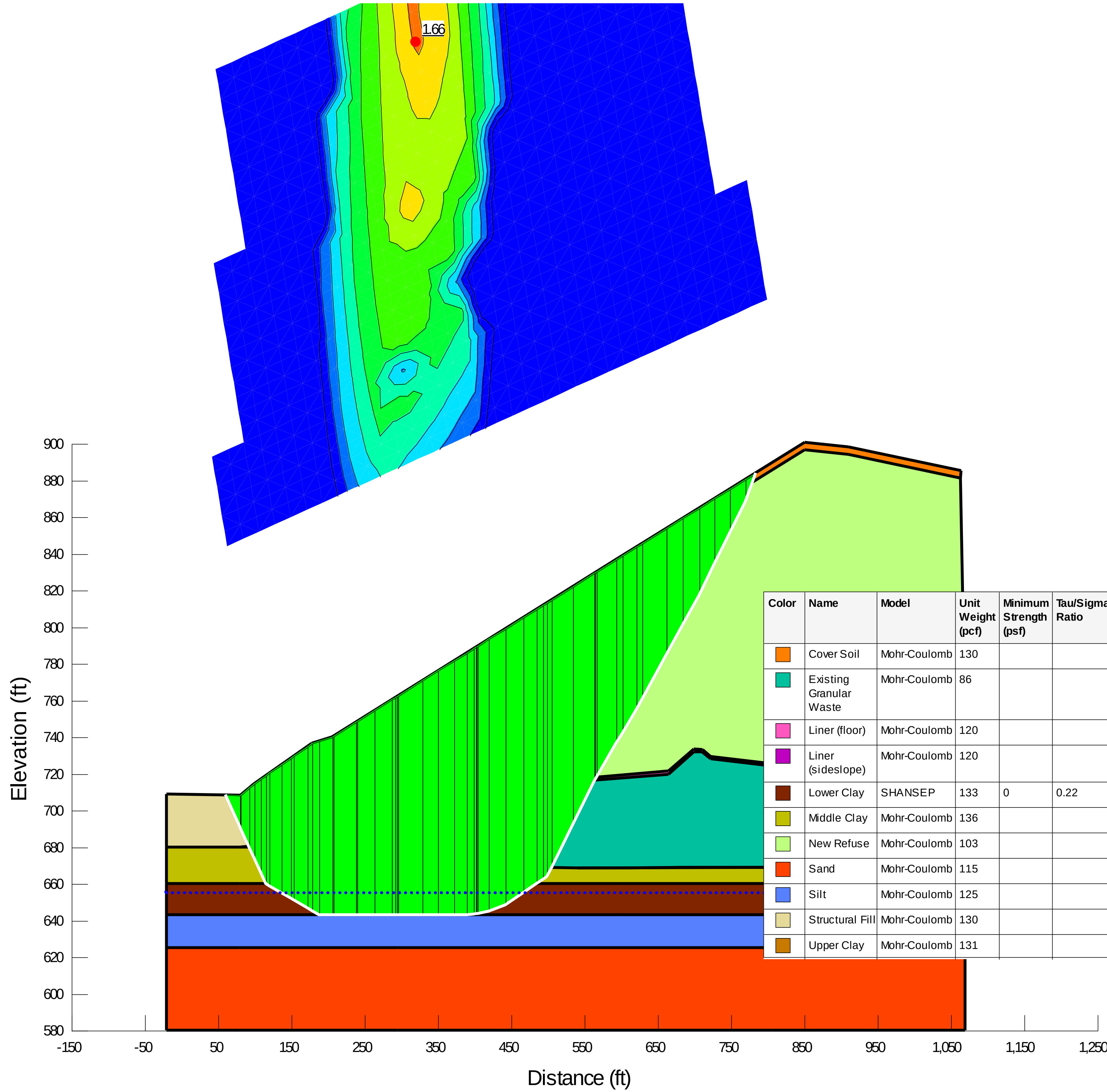
Plan View:



Factor of Safety:	1.66	☒ Acceptable ☐ Not Acceptable ☐ Follow-up ☐ Superseded
Comments:		
Attachments:	Slope/W Cross Section and Results	



Color	Name	Model	Unit Weight (pcf)	Minimum Strength (psf)	Tau/Sigma Ratio	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Cover Soil	Mohr-Coulomb	130			1,500	0	0	1	0	No
	Existing Granular Waste	Mohr-Coulomb	86			0	34	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120			0	13.2	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120			0	9	0	1	0	No
	Lower Clay	SHANSEP	133	0	0.22				1	1	Yes
	Middle Clay	Mohr-Coulomb	136			3,000	0	0	1	0	No
	New Refuse	Mohr-Coulomb	103			300	26	0	1	0	No
	Sand	Mohr-Coulomb	115			0	32	0	1	0	No
	Silt	Mohr-Coulomb	125			0	28	0	1	0	No
	Structural Fill	Mohr-Coulomb	130			1,500	0	0	1	0	No
	Upper Clay	Mohr-Coulomb	131			1,325	17.1	0	1	0	No



Color	Name	Model	Unit Weight (pcf)	Minimum Strength (psf)	Tau/Sigma Ratio	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Cover Soil	Mohr-Coulomb	130			1,500	0	0	1	0	No
	Existing Granular Waste	Mohr-Coulomb	86			0	34	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120			0	13.2	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120			0	9	0	1	0	No
	Lower Clay	SHANSEP	133	0	0.22				1	1	Yes
	Middle Clay	Mohr-Coulomb	136			3,000	0	0	1	0	No
	New Refuse	Mohr-Coulomb	103			300	26	0	1	0	No
	Sand	Mohr-Coulomb	115			0	32	0	1	0	No
	Silt	Mohr-Coulomb	125			0	28	0	1	0	No
	Structural Fill	Mohr-Coulomb	130			1,500	0	0	1	0	No
	Upper Clay	Mohr-Coulomb	131			1,325	17.1	0	1	0	No

Attachment A-1.2

G-G’ Foundation Stability

SLOPE STABILITY ANALYSIS REPORT FORM

Project Name:	WDI MC-VI-G4 through G7 Liner Grade Modification						
Project Number:	1208070039.004			**Client:**	Wayne Disposal, Inc.		
Analysis Short Name:	G-G' Foundation Stability				**File name:**	MC-VI-G_CrossSection_G_Foundation.gsz	
Revision:	0	**Originated:**	MK	**Checked:**	KF	**Approved:**	
Date:	10/05/21	**Date:**	10/05/21	**Date:**	10/6/21	**Date:**	

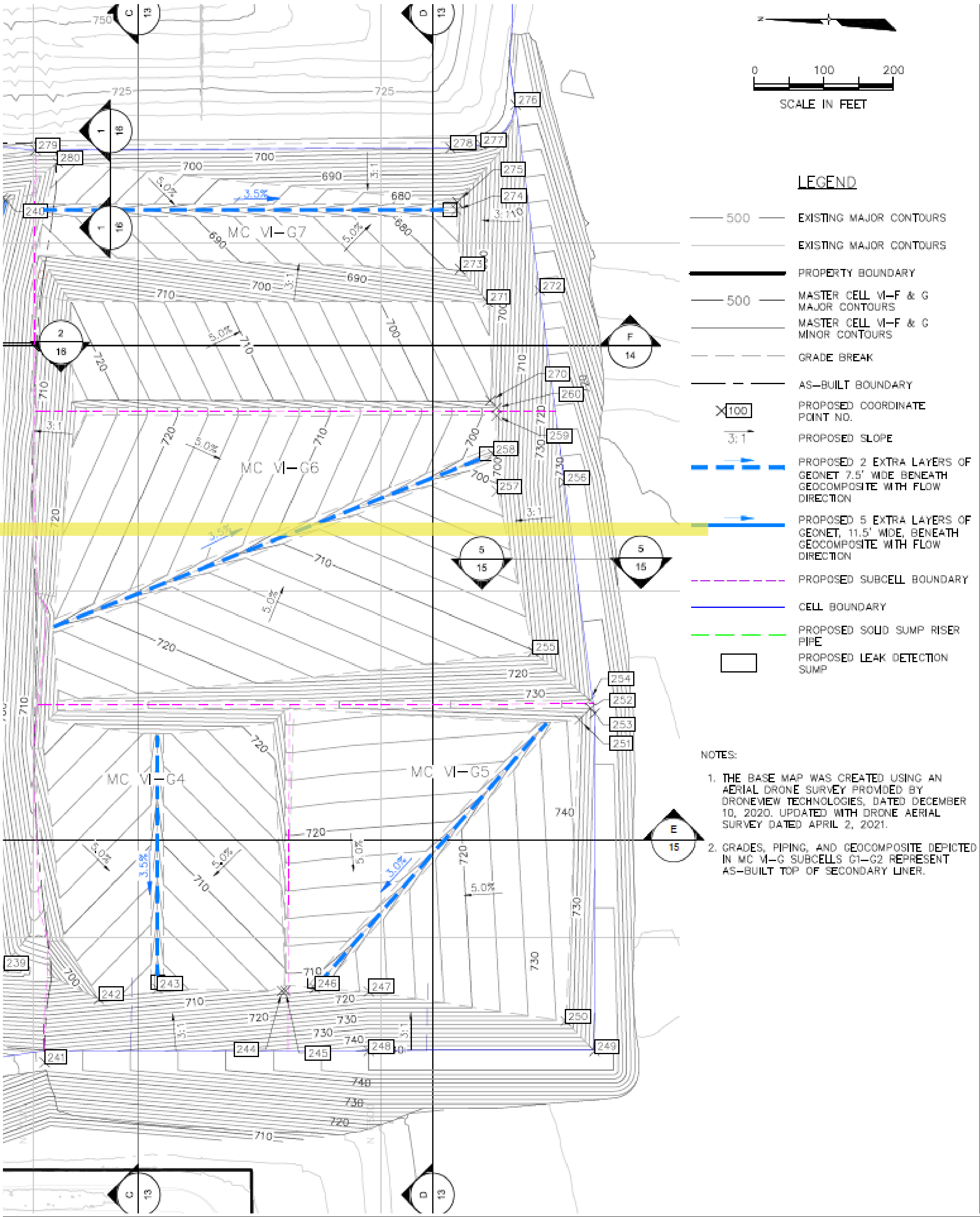
Purpose of Analysis:	To determine the factor of safety of the proposed final waste grades using cross-section G-G'. This case considers a south-facing slope, with fill to the final permitted grade elevations.		
☒ Effective Stress ☒ Total Stress	☒ Static ☐ Seismic	☒ Pore Pressure	☒ Optimized Surface
Additional Details:	The friction angle of the liner system was set equal to the required minimum interface friction angle determined from the liner stability analysis performed on Cross Section C. The groundwater level was set at elevation 655ft based on historical borings as documented in the Basis of Design Report (NTH 2012). Drained strength parameters were used for material with a relatively high permeability where excess pore-pressure conditions are not expected due to loading. Undrained strength parameters were used for low-permeability materials (clays) since excess pore pressure conditions may occur after loading. This is considered a conservative approach for this scenario.		

Material	**Name**	**Color in Profile**	**Unit Wt(s) (pcf)**	**Strength ϕ or δ (deg.)**	**Strength C or Ca (psf)**
1	Final Cover	Orange	130	0	1500
2	Existing Waste	Teal	91	34	0
3	New Waste	Light Green	103	26	300
4	Upper Clay	Brown	131	0	1325
5	Middle Clay	Yellow	136	0	3000
6	Lower Clay	Maroon	133	$0.22\sigma'_v$	
7	Silt	Blue	125	28	0
8	Sand	Red	115	32	0
9	Liner (floor)	Magenta	120	13.2	0
10	Liner (sideslope)	Magenta	120	9	0

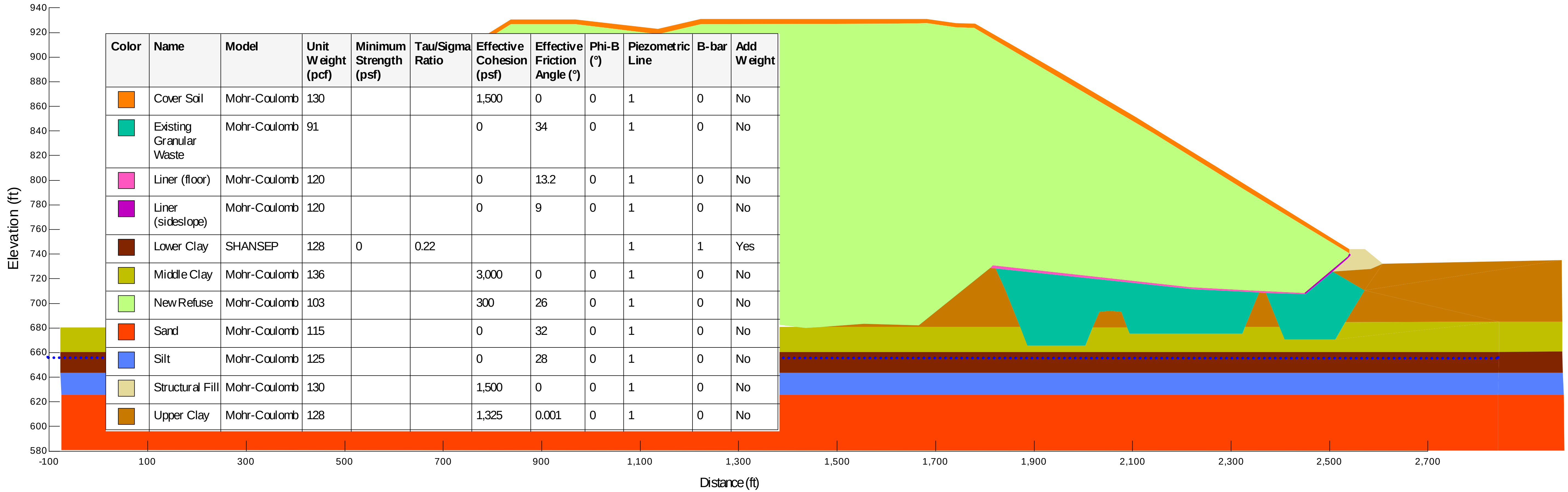
Source of Geometry:	Engineering Drawing Set
Source of Subsurface Profile:	Basis of Design Report - NTH (2012)
☐ Preconstruction ☐ Construction ☐ Interim ☒ Final ☐ Existing ☐ Back-Analysis	
Construction Phase Represented:	Final Build out
Other Geometry Notes:	Cross Section C

SLOPE STABILITY ANALYSIS REPORT FORM

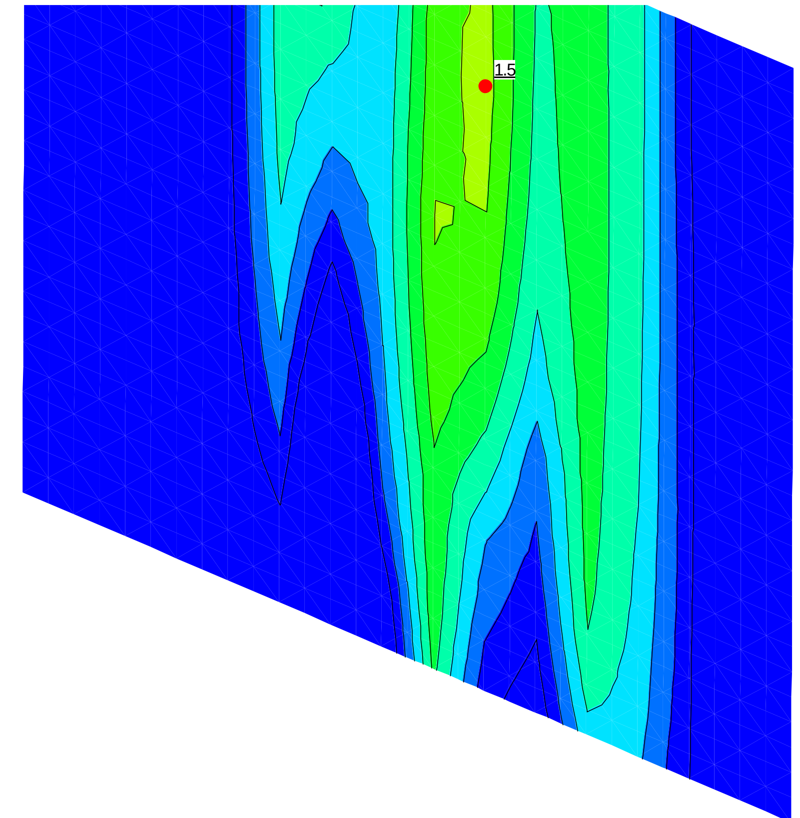
Plan View:

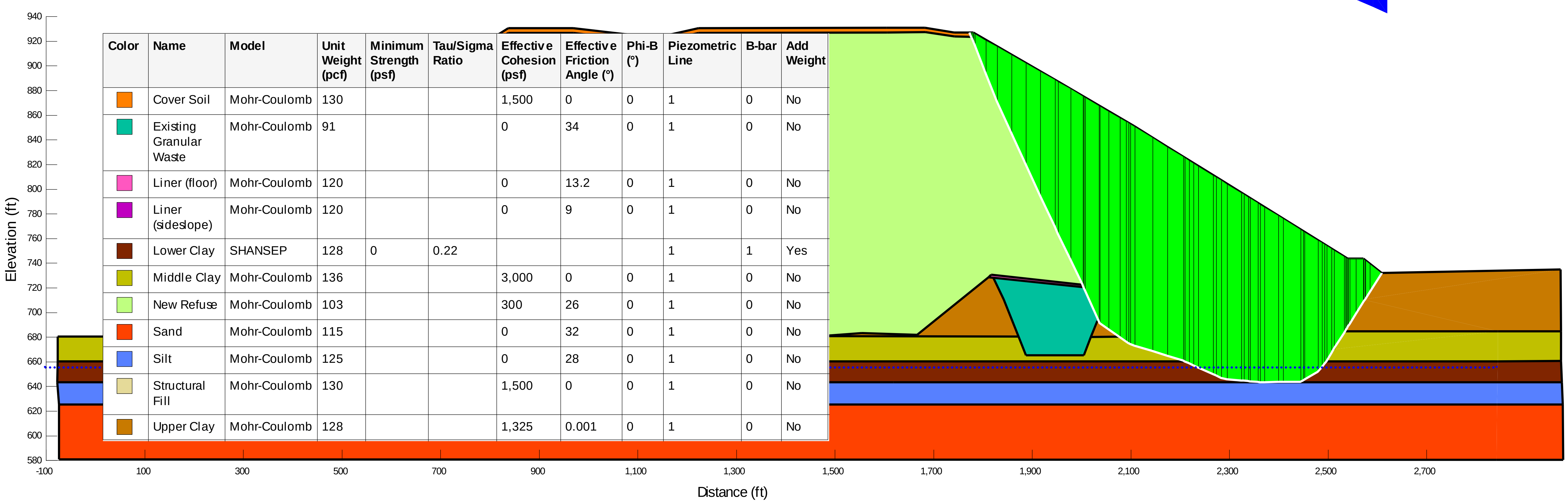


Factor of Safety:	1.5	☒ Acceptable ☐ Not Acceptable ☐ Follow-up ☐ Superseded
Comments:		
Attachments:	Slope/W Cross Section and Results	



Color	Name	Model	Unit Weight (pcf)	Minimum Strength (psf)	Tau/Sigma Ratio	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Cover Soil	Mohr-Coulomb	130			1,500	0	0	1	0	No
	Existing Granular Waste	Mohr-Coulomb	91			0	34	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120			0	13.2	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120			0	9	0	1	0	No
	Lower Clay	SHANSEP	128	0	0.22				1	1	Yes
	Middle Clay	Mohr-Coulomb	136			3,000	0	0	1	0	No
	New Refuse	Mohr-Coulomb	103			300	26	0	1	0	No
	Sand	Mohr-Coulomb	115			0	32	0	1	0	No
	Silt	Mohr-Coulomb	125			0	28	0	1	0	No
	Structural Fill	Mohr-Coulomb	130			1,500	0	0	1	0	No
	Upper Clay	Mohr-Coulomb	128			1,325	0.001	0	1	0	No





Color	Name	Model	Unit Weight (pcf)	Minimum Strength (psf)	Tau/Sigma Ratio	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Cover Soil	Mohr-Coulomb	130			1,500	0	0	1	0	No
	Existing Granular Waste	Mohr-Coulomb	91			0	34	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120			0	13.2	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120			0	9	0	1	0	No
	Lower Clay	SHANSEP	128	0	0.22				1	1	Yes
	Middle Clay	Mohr-Coulomb	136			3,000	0	0	1	0	No
	New Refuse	Mohr-Coulomb	103			300	26	0	1	0	No
	Sand	Mohr-Coulomb	115			0	32	0	1	0	No
	Silt	Mohr-Coulomb	125			0	28	0	1	0	No
	Structural Fill	Mohr-Coulomb	130			1,500	0	0	1	0	No
	Upper Clay	Mohr-Coulomb	128			1,325	0.001	0	1	0	No

Attachment A-1.3

C-C’ Liner Stability under Final Conditions with zero adhesion

SLOPE STABILITY ANALYSIS REPORT FORM

<table>
<tr><td>Project Name:</td><td colspan="7">WDI MC-VI-G4 through G7 Liner Grade Modification</td></tr>
<tr><td>Project Number:</td><td colspan="3">1208070039.004</td><td>Client:</td><td colspan="3">Wayne Disposal, Inc.</td></tr>
<tr><td>Analysis Short Name:</td><td colspan="4">C-C’ Liner Stability</td><td>File name:</td><td colspan="2">MC-VI-G_CrossSection_C_Liner_HOL.gsz</td></tr>
<tr><td>Revision:</td><td>0</td><td>Originated:</td><td>MK</td><td>Checked:</td><td>KF</td><td>Approved:</td><td></td></tr>
<tr><td>Date:</td><td>10/05/21</td><td>Date:</td><td>10/05/21</td><td>Date:</td><td></td><td>Date:</td><td></td></tr>
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<tr><td>Purpose of Analysis:</td><td colspan="3">To determine the minimum required liner interface friction angle to achieve an acceptable factor of safety of the proposed final waste grades using cross-section C-C’. This case considers a west-facing slope, with fill to the final permitted grade elevations under undrained conditions.</td></tr>
<tr><td>☒ Effective Stress
☐ Total Stress</td><td>☒ Static ☐ Seismic</td><td>☒ Pore Pressure</td><td>☒ Optimized Surface</td></tr>
<tr><td>Additional Details:</td><td colspan="3">The liner system was modeled in 2 sections (floor and sideslope) to allow use of Peak and Large-Displacement strength parameters appropriately. The friction angle of the sideslope was set at 9° corresponding to commonly achievable large-displacement interface secant friction angle. The friction angle of the floor liner system was varied to determine the required peak interface secant friction angle to achieve the required factor of safety of 1.5. A scenario of leachate build up in the leachate collection layer (to a height of 12 inches) is modeled in this analysis.</td></tr>
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Material	Name	Color in Profile	Unit Wt(s) (pcf)	Strength ϕ or δ (deg.)	Strength C or Ca (psf)
1	Final Cover	Orange	130	0	1500
2	Existing Waste	Teal	91	34	0
3	New Waste	Light Green	103	26	300
4	Upper Clay	Brown	131	0	1325
5	Middle Clay	Yellow	136	0	3000
6	Lower Clay	Maroon	133	$0.22\sigma'_v$	
7	Silt	Blue	125	28	0
8	Sand	Red	115	32	0
9	Liner (floor)	Magenta	120	?	0
10	Liner (sideslope)	Magenta	120	9	0

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<tr><td>Source of Geometry:</td><td>Engineering Drawing Set</td></tr>
<tr><td>Source of Subsurface Profile:</td><td>Basis of Design Report - NTH (2012)</td></tr>
<tr><td colspan="2">☐ Preconstruction ☐ Construction ☐ Interim ☒ Final ☐ Existing ☐ Back-Analysis</td></tr>
<tr><td>Construction Phase Represented:</td><td>Final Build out</td></tr>
<tr><td>Other Geometry Notes:</td><td>Cross Section B</td></tr>
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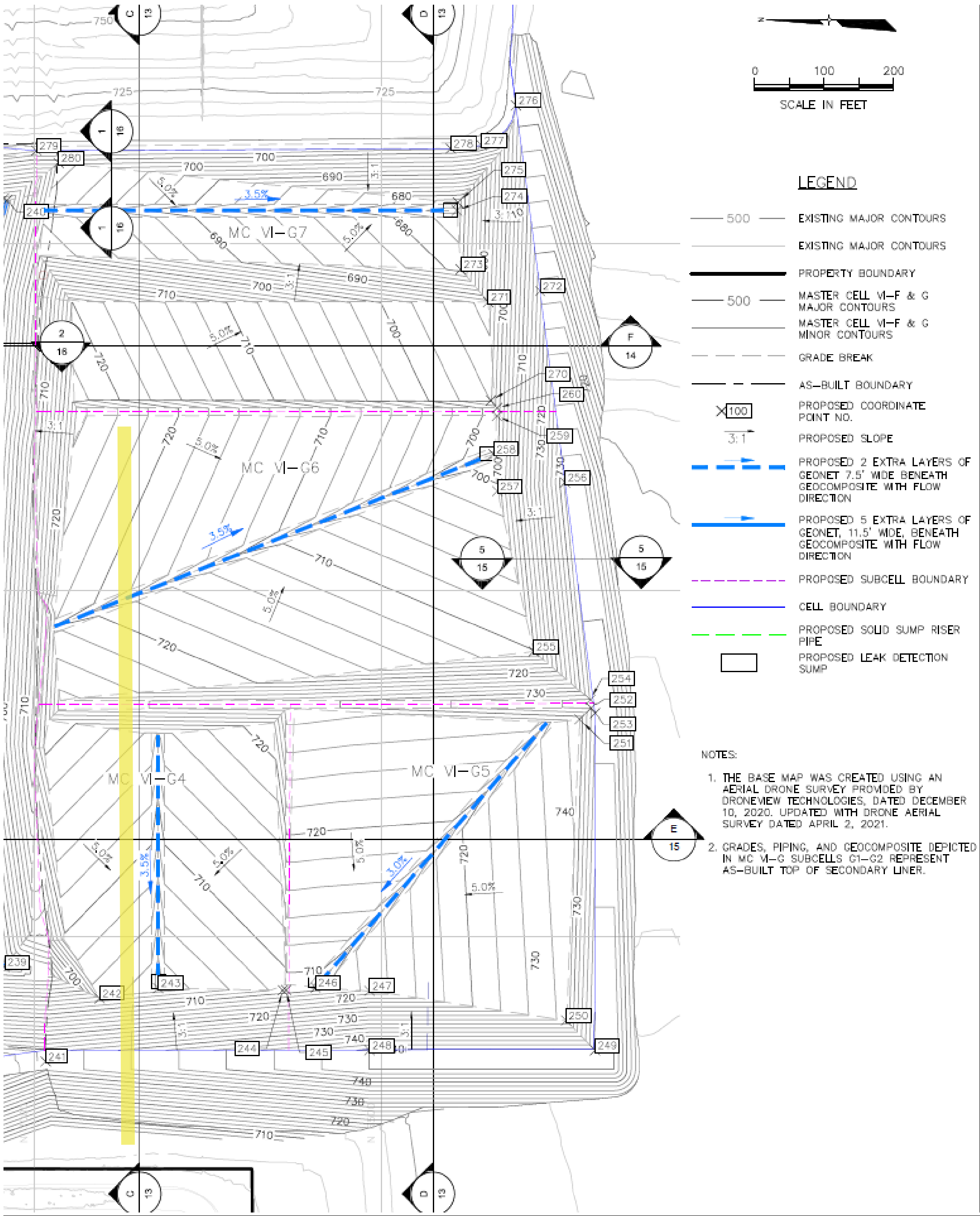
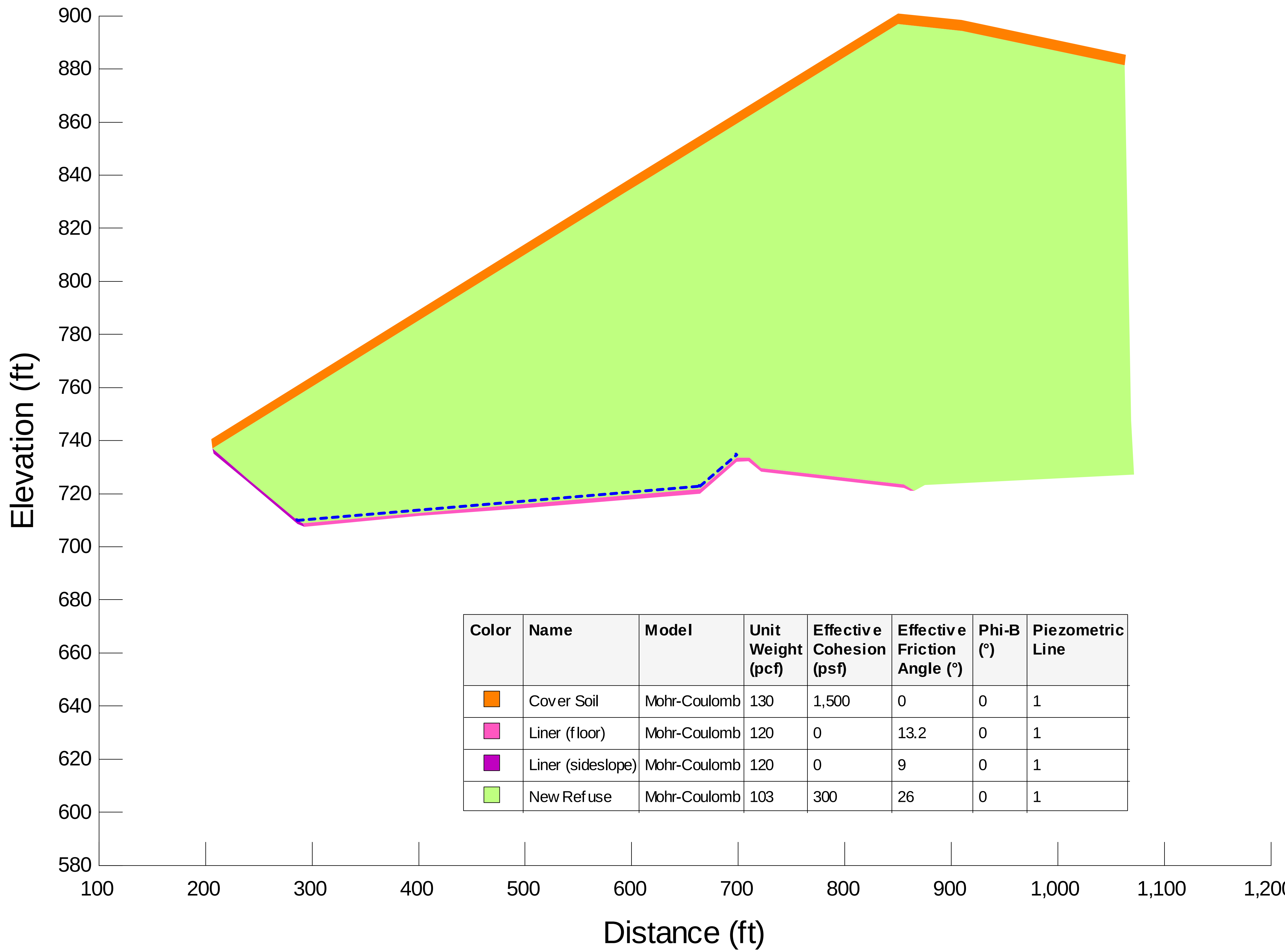
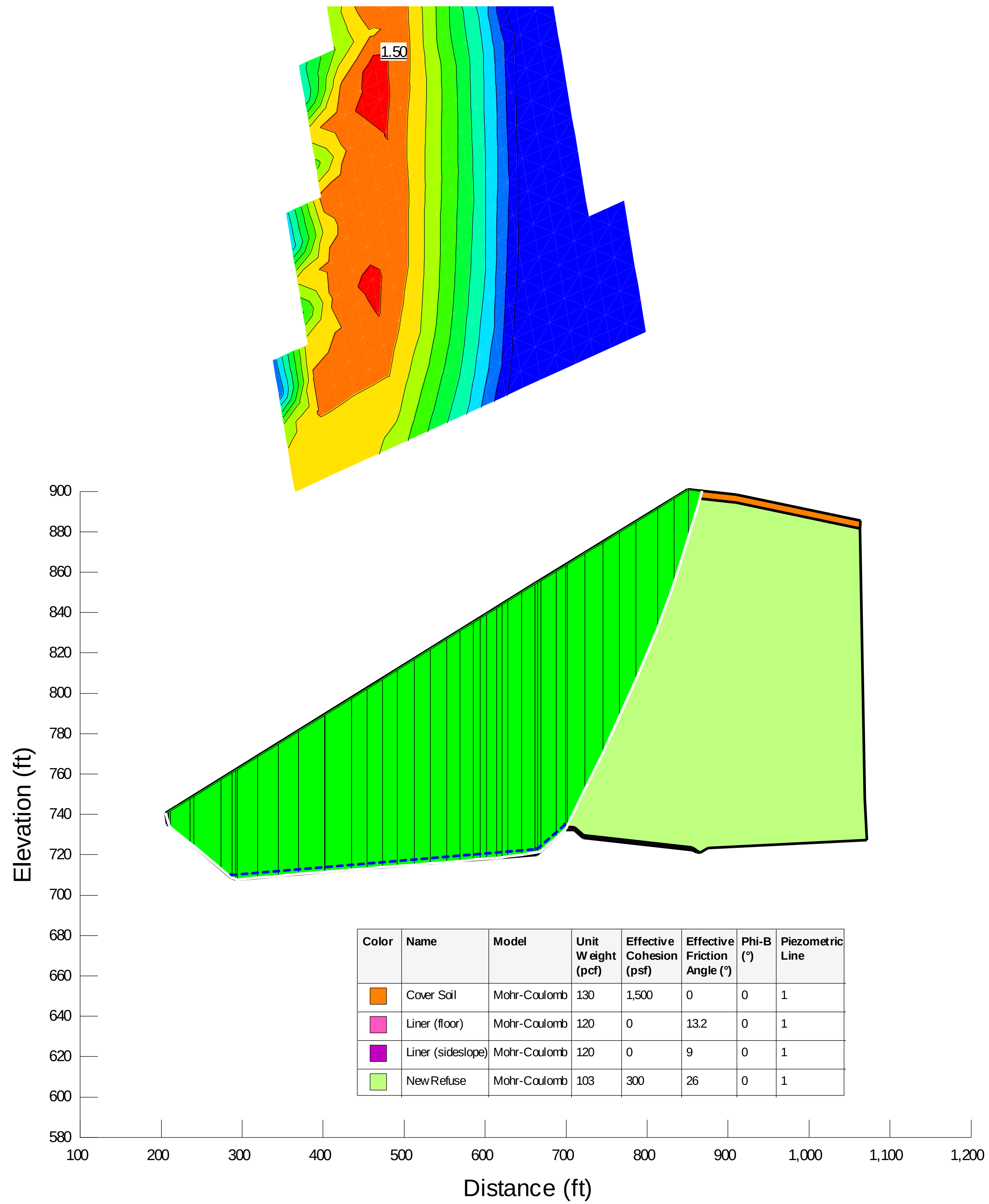
Plan View:



Factor of Safety:	1.50	☒ Acceptable ☐ Not Acceptable ☐ Follow-up ☐ Superseded
Comments:	The required peak interface friction for the floor liner system was determined to be 13.2°.	
Attachments:	Slope/W Cross Section and Results	



Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line
	Cover Soil	Mohr-Coulomb	130	1,500	0	0	1
	Liner (floor)	Mohr-Coulomb	120	0	13.2	0	1
	Liner (sideslope)	Mohr-Coulomb	120	0	9	0	1
	New Refuse	Mohr-Coulomb	103	300	26	0	1


1.50
Elevation (ft)
Distance (ft)
900
880
860
840
820
800
780
760
740
720
700
680
660
640
620
600
580
100
200
300
400
500
600
700
800
900
1,000
1,100
1,200
Color | Name | Model | Unit Weight (pcf) | Effective Cohesion (psf) | Effective Friction Angle (°) | Phi-B (°) | Piezometric Line
Cover Soil | Mohr-Coulomb | 130 | 1,500 | 0 | 0 | 1
Liner (floor) | Mohr-Coulomb | 120 | 0 | 13.2 | 0 | 1
Liner (sideslope) | Mohr-Coulomb | 120 | 0 | 9 | 0 | 1
New Refuse | Mohr-Coulomb | 103 | 300 | 26 | 0 | 1

Attachment A-1.4

G-G’ Liner Stability under Final Conditions with zero adhesion

SLOPE STABILITY ANALYSIS REPORT FORM

Project Name:	WDI MC-VI-G4 through G7 Liner Grade Modification						
Project Number:	1208070039.004			**Client:**	Wayne Disposal, Inc.		
Analysis Short Name:	G-G' Liner Stability				**File name:**	MC-VI-G_CrossSection_G_Liner.gsz	
Revision:	0	**Originated:**	MK	**Checked:**	KF	**Approved:**	
Date:	10/05/21	**Date:**	10/05/21	**Date:**	10/6/21	**Date:**	

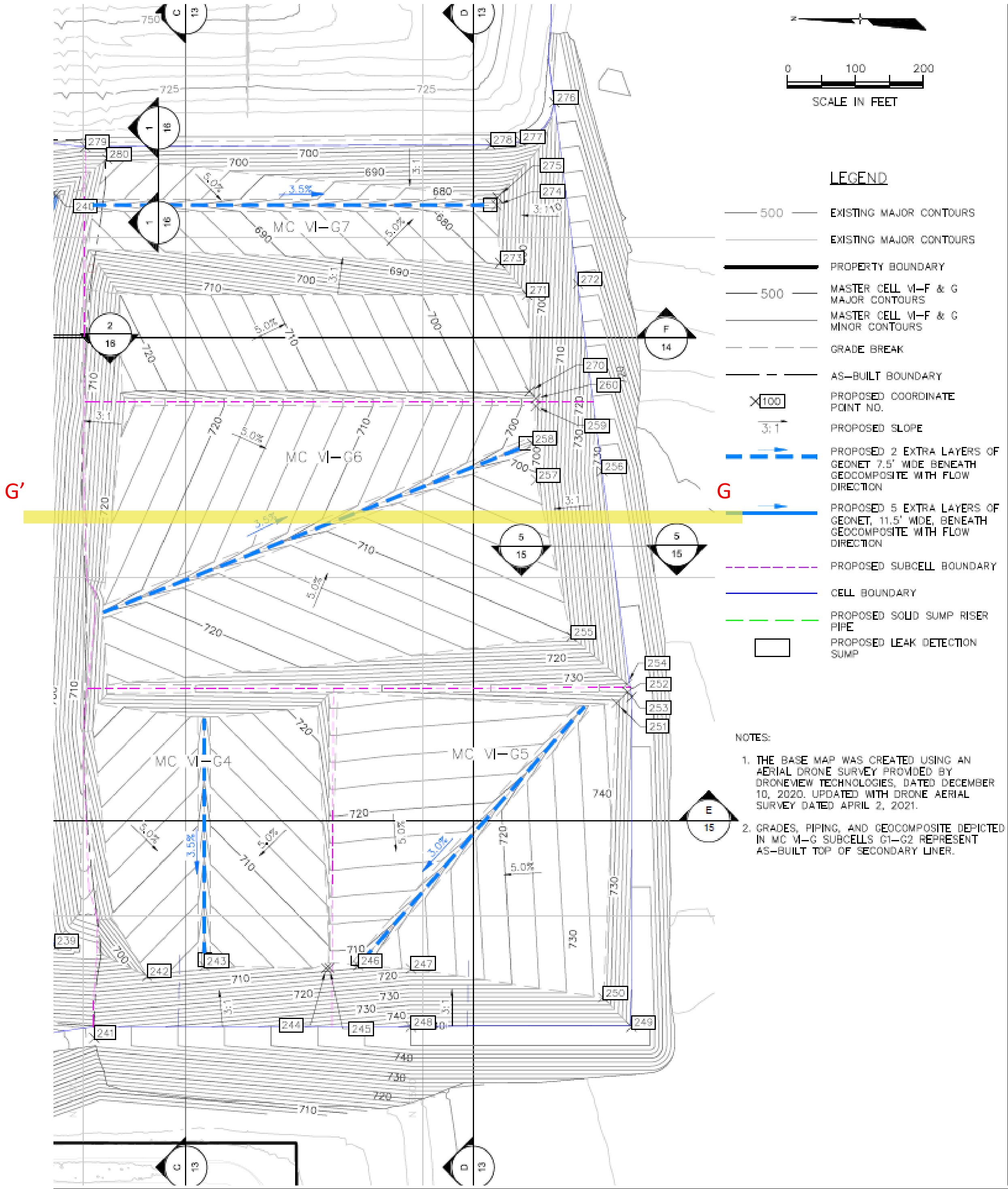
Purpose of Analysis:	To determine the factor of safety of the proposed final waste grades using cross-section G-G'. This case considers a south-facing slope, with fill to the final permitted grade elevations.		
☒ Effective Stress ☐ Total Stress	☒ Static ☐ Seismic	☒ Pore Pressure	☒ Optimized Surface
Additional Details:	The friction angle of the liner system was set equal to the required minimum interface friction angle determined from the liner stability analysis performed on Cross Section C. The required factor of safety is 1.5. A scenario of leachate build up in the leachate collection layer (to a height of 12 inches) is modeled in this analysis.		

Material	Name	Color in Profile	Unit Wt(s) (pcf)	Strength ϕ or δ (deg.)	Strength C or Ca (psf)
1	Final Cover	Orange	130	0	1500
2	Existing Waste	Teal	91	34	0
3	New Waste	Light Green	103	26	300
4	Upper Clay	Brown	131	0	1325
5	Middle Clay	Yellow	136	0	3000
6	Lower Clay	Maroon	133	$0.22\sigma'_v$	
7	Silt	Blue	125	28	0
8	Sand	Red	115	32	0
9	Liner (floor)	Magenta	120	13.2	0
10	Liner (sideslope)	Magenta	120	9	0

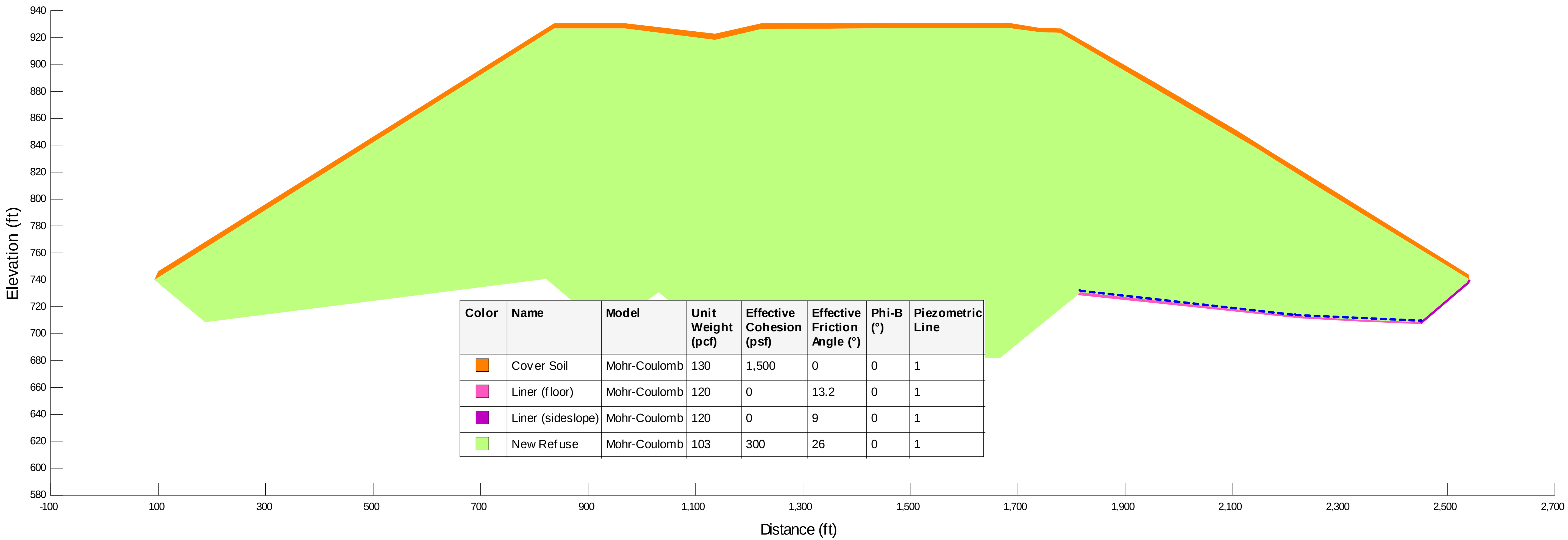
Source of Geometry:	Engineering Drawing Set
Source of Subsurface Profile:	Basis of Design Report - NTH (2012)
☐ Preconstruction ☐ Construction ☐ Interim ☒ Final ☐ Existing ☐ Back-Analysis	
Construction Phase Represented:	Final Build out
Other Geometry Notes:	Cross Section C

SLOPE STABILITY ANALYSIS REPORT FORM

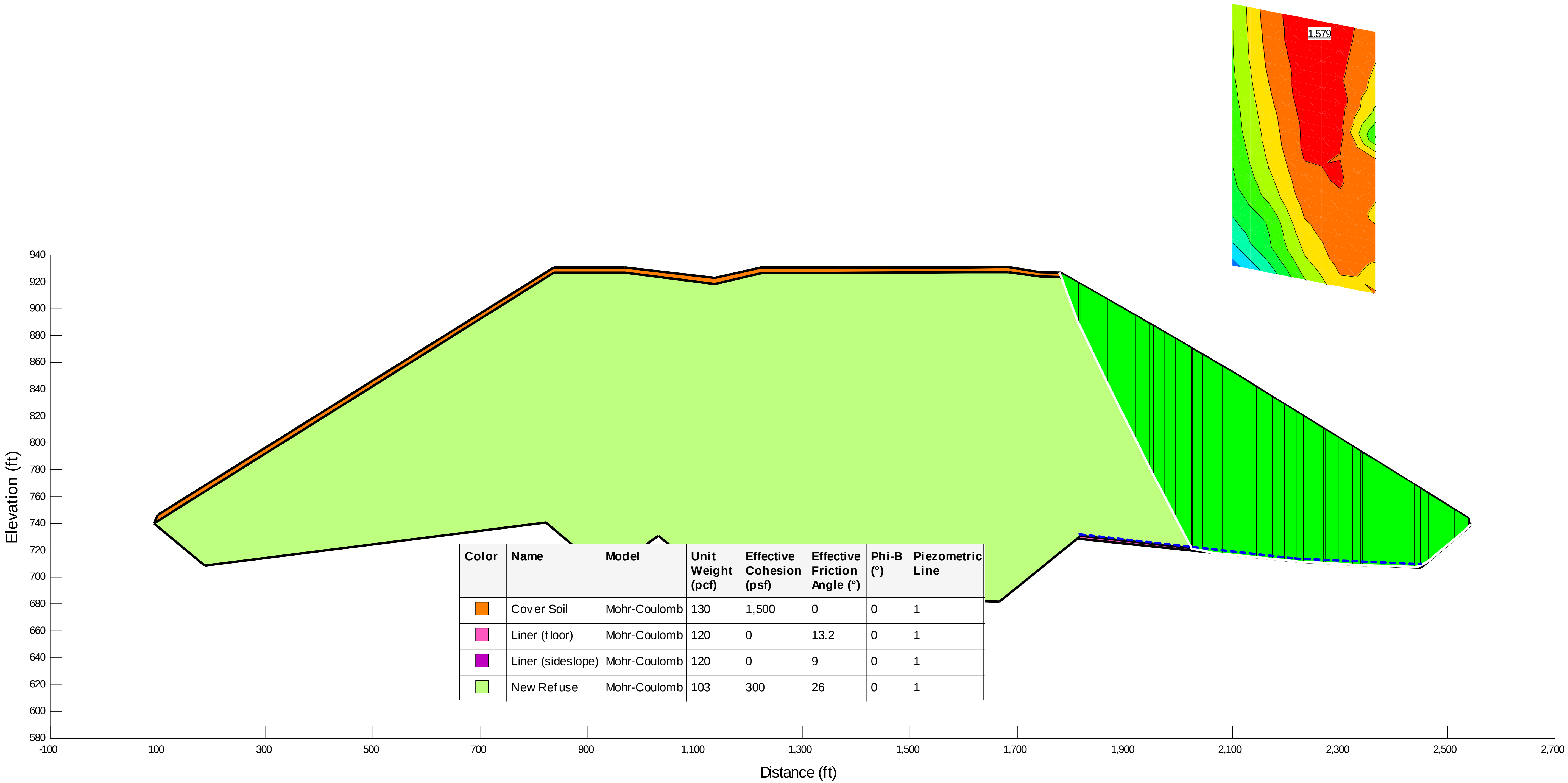
Plan View:



Factor of Safety:	1.58	☒ Acceptable ☐ Not Acceptable ☐ Follow-up ☐ Superseded
Comments:		
Attachments:	Slope/W Cross Section and Results	



Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line
	Cover Soil	Mohr-Coulomb	130	1,500	0	0	1
	Liner (floor)	Mohr-Coulomb	120	0	13.2	0	1
	Liner (sideslope)	Mohr-Coulomb	120	0	9	0	1
	New Refuse	Mohr-Coulomb	103	300	26	0	1



Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line
	Cover Soil	Mohr-Coulomb	130	1,500	0	0	1
	Liner (floor)	Mohr-Coulomb	120	0	13.2	0	1
	Liner (sideslope)	Mohr-Coulomb	120	0	9	0	1
	New Refuse	Mohr-Coulomb	103	300	26	0	1

Attachment A-1.5

C-C’ Liner Stability under Final Conditions with non-zero adhesion (previously tested values)

SLOPE STABILITY ANALYSIS REPORT FORM

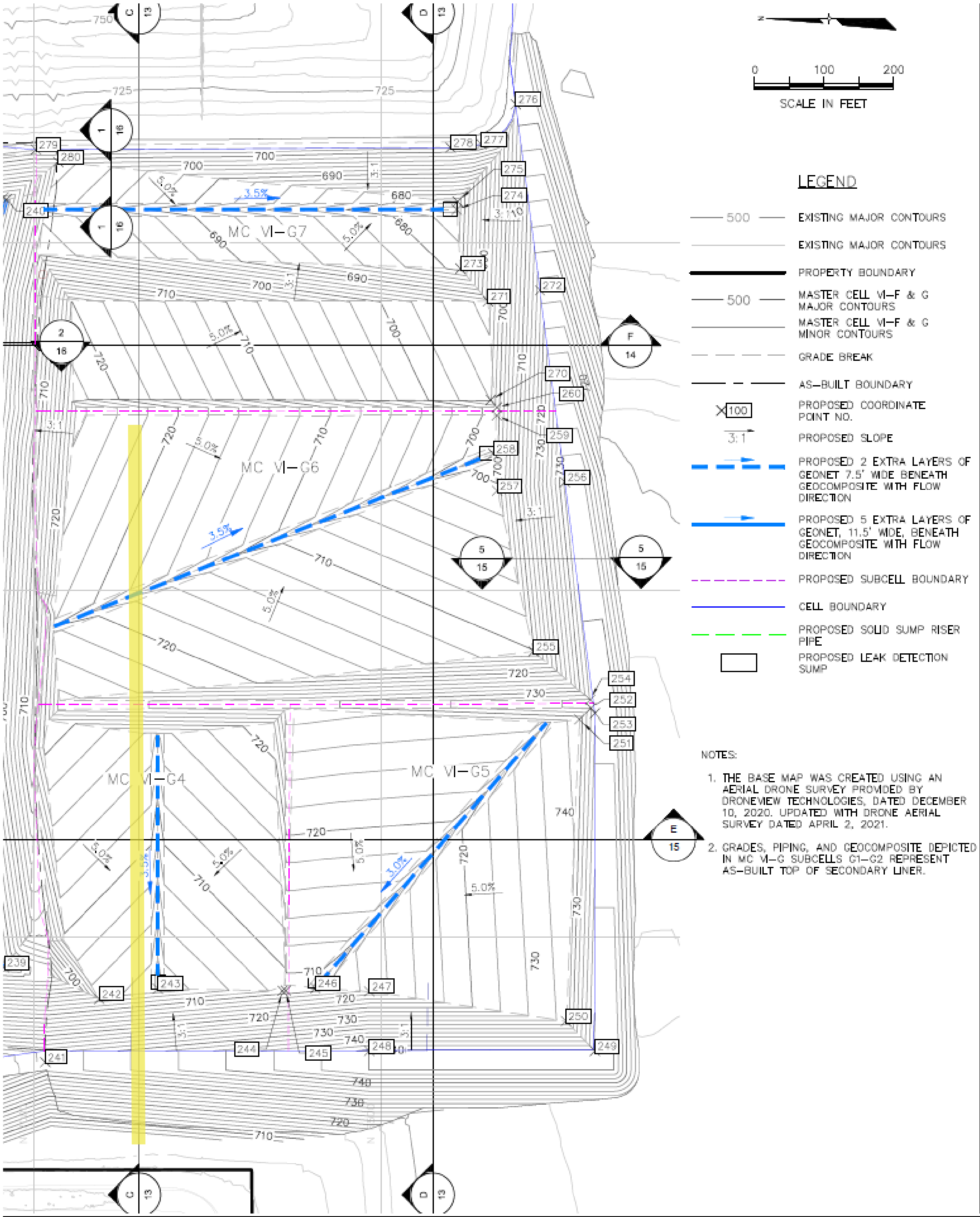
Project Name:	WDI MC-VI-G4 through G7 Liner Grade Modification						
Project Number:	1208070039.004			**Client:**	Wayne Disposal, Inc.		
Analysis Short Name:	C-C' Liner Stability				**File name:**	MC-VI-G_CrossSection_C_Liner_tested_values.gsz	
Revision:	0	**Originated:**	MK	**Checked:**	KF	**Approved:**	
Date:	10/05/21	**Date:**	10/05/21	**Date:**	10/6/21	**Date:**	

Purpose of Analysis:	To determine the minimum required liner interface friction angle to achieve an acceptable factor of safety of the proposed final waste grades using cross-section C-C'. This case considers a west-facing slope, with fill to the final permitted grade elevations under undrained conditions.			
☐ Effective Stress ☒ Total Stress	☒ Static ☐ Seismic	☒ Pore Pressure	☒ Optimized Surface	
Additional Details:	The liner system was modeled in 2 sections (floor and sideslope) to allow use of Peak and Large-Displacement strength parameters appropriately. The liner interface strength properties are based on interface strength test results of a similar liner system installed on site. The required factor of safety of 1.5.			

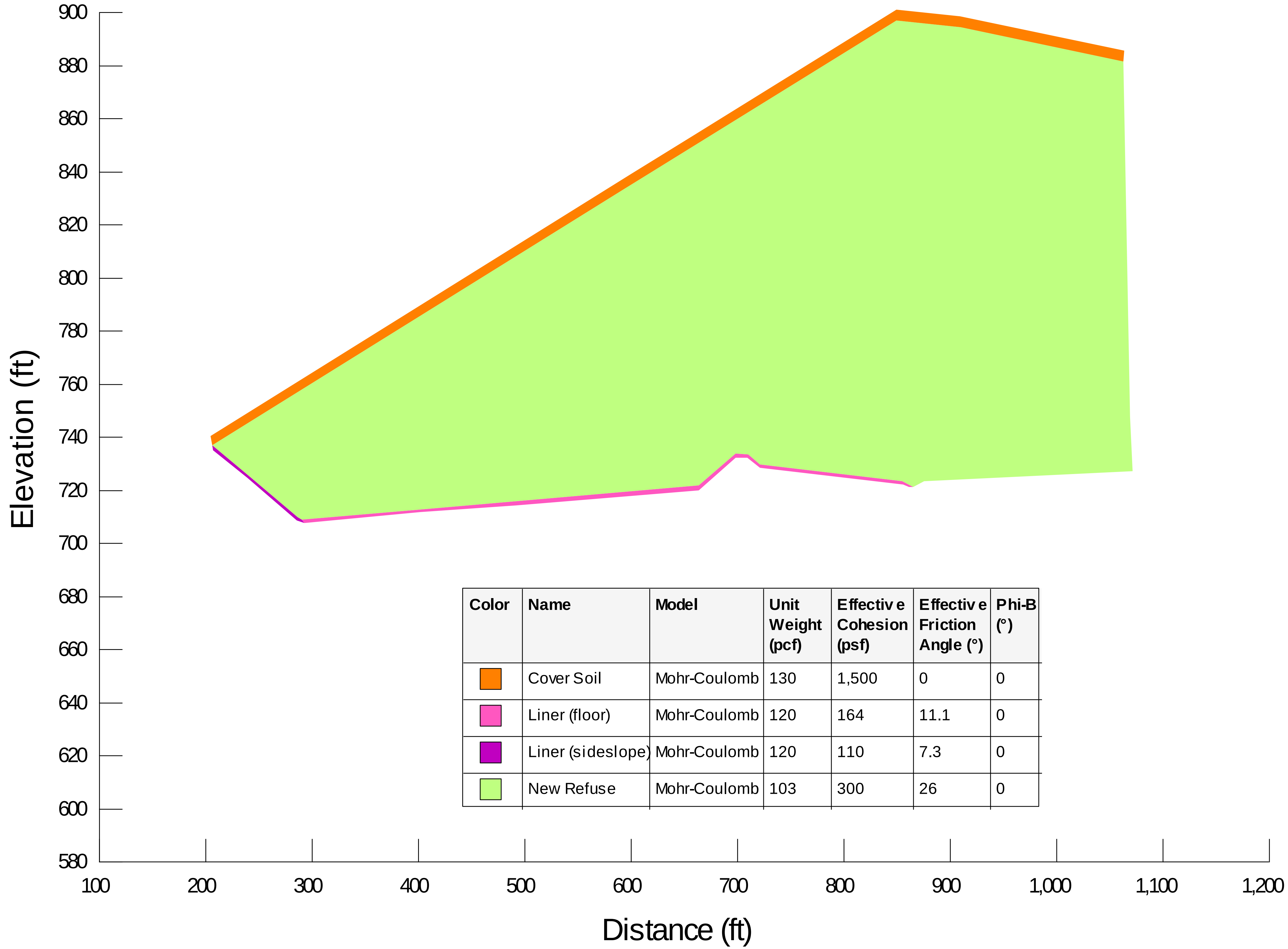
Material	Name	Color in Profile	Unit Wt(s) (pcf)	Strength ϕ or δ (deg.)	Strength C or Ca (psf)
1	Final Cover	Orange	130	0	1500
2	Existing Waste	Teal	91	34	0
3	New Waste	Light Green	103	26	300
4	Upper Clay	Brown	131	0	1325
5	Middle Clay	Yellow	136	0	3000
6	Lower Clay	Maroon	133	$0.22\sigma'_v$	
7	Silt	Blue	125	28	0
8	Sand	Red	115	32	0
9	Liner (floor)	Magenta	120	11.1	164
10	Liner (sideslope)	Magenta	120	7.3	110

Source of Geometry:	Engineering Drawing Set
Source of Subsurface Profile:	Basis of Design Report - NTH (2012)
☐ Preconstruction ☐ Construction ☐ Interim ☒ Final ☐ Existing ☐ Back-Analysis	
Construction Phase Represented:	Final Build out
Other Geometry Notes:	Cross Section B

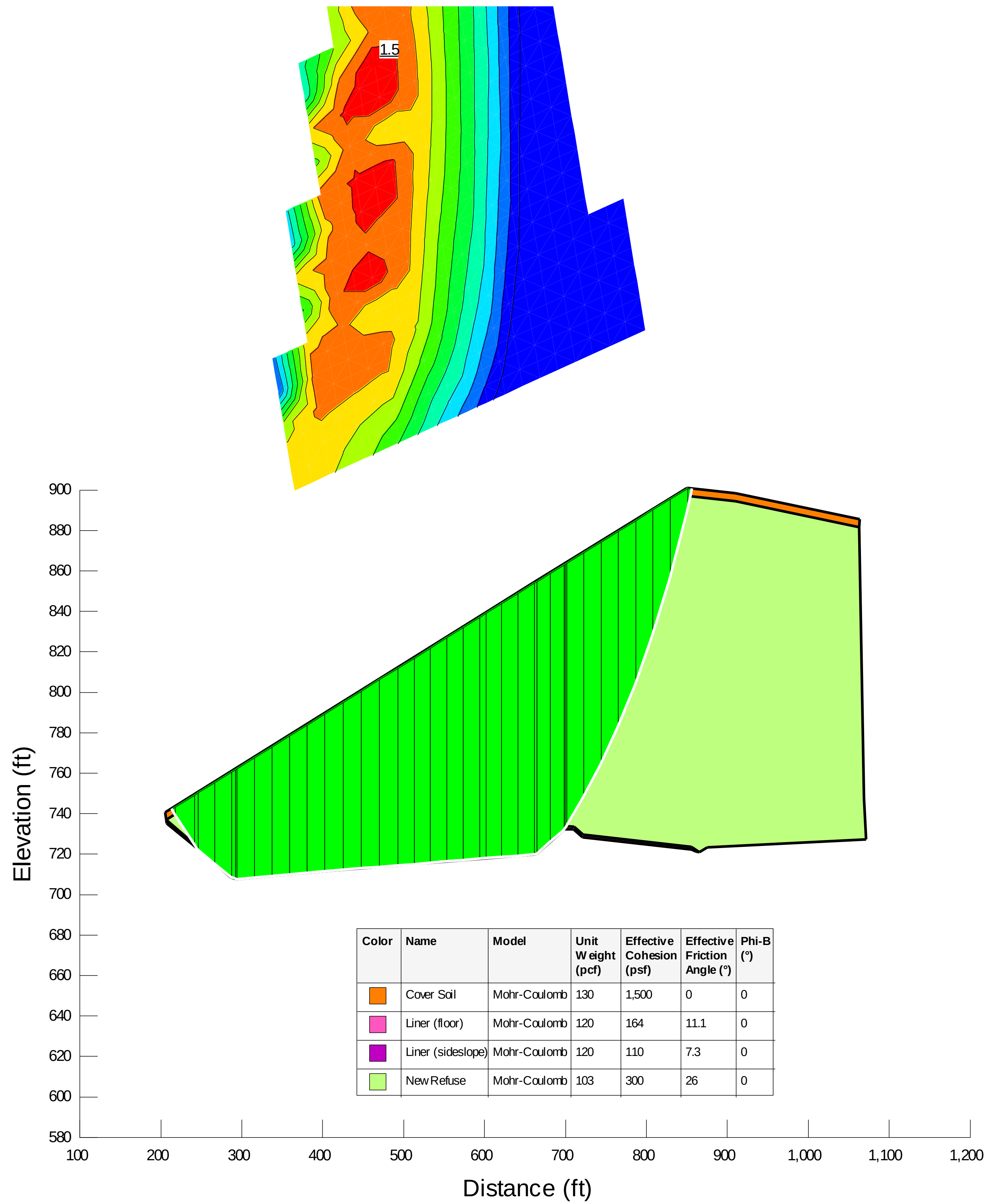
Plan View:



Factor of Safety:	1.5	☒ Acceptable ☐ Not Acceptable ☐ Follow-up ☐ Superseded
Comments:		
Attachments:	Slope/W Cross Section and Results	



Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)
	Cover Soil	Mohr-Coulomb	130	1,500	0	0
	Liner (floor)	Mohr-Coulomb	120	164	11.1	0
	Liner (sideslope)	Mohr-Coulomb	120	110	7.3	0
	New Refuse	Mohr-Coulomb	103	300	26	0



Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)
	Cover Soil	Mohr-Coulomb	130	1,500	0	0
	Liner (floor)	Mohr-Coulomb	120	164	11.1	0
	Liner (sideslope)	Mohr-Coulomb	120	110	7.3	0
	New Refuse	Mohr-Coulomb	103	300	26	0

Attachment A-1.6

G-G’ Liner Stability under Final Conditions with non-zero adhesion (previously tested values)

SLOPE STABILITY ANALYSIS REPORT FORM

Project Name:	WDI MC-VI-G4 through G7 Liner Grade Modification						
Project Number:	1208070039.004			**Client:**	Wayne Disposal, Inc.		
Analysis Short Name:	G-G' Liner Stability				**File name:**	MC-VI-G_CrossSection_G_Liner_tested_values.gsz	
Revision:	0	**Originated:**	MK	**Checked:**	KF	**Approved:**	
Date:	10/05/21	**Date:**	10/05/21	**Date:**	10/6/21	**Date:**	

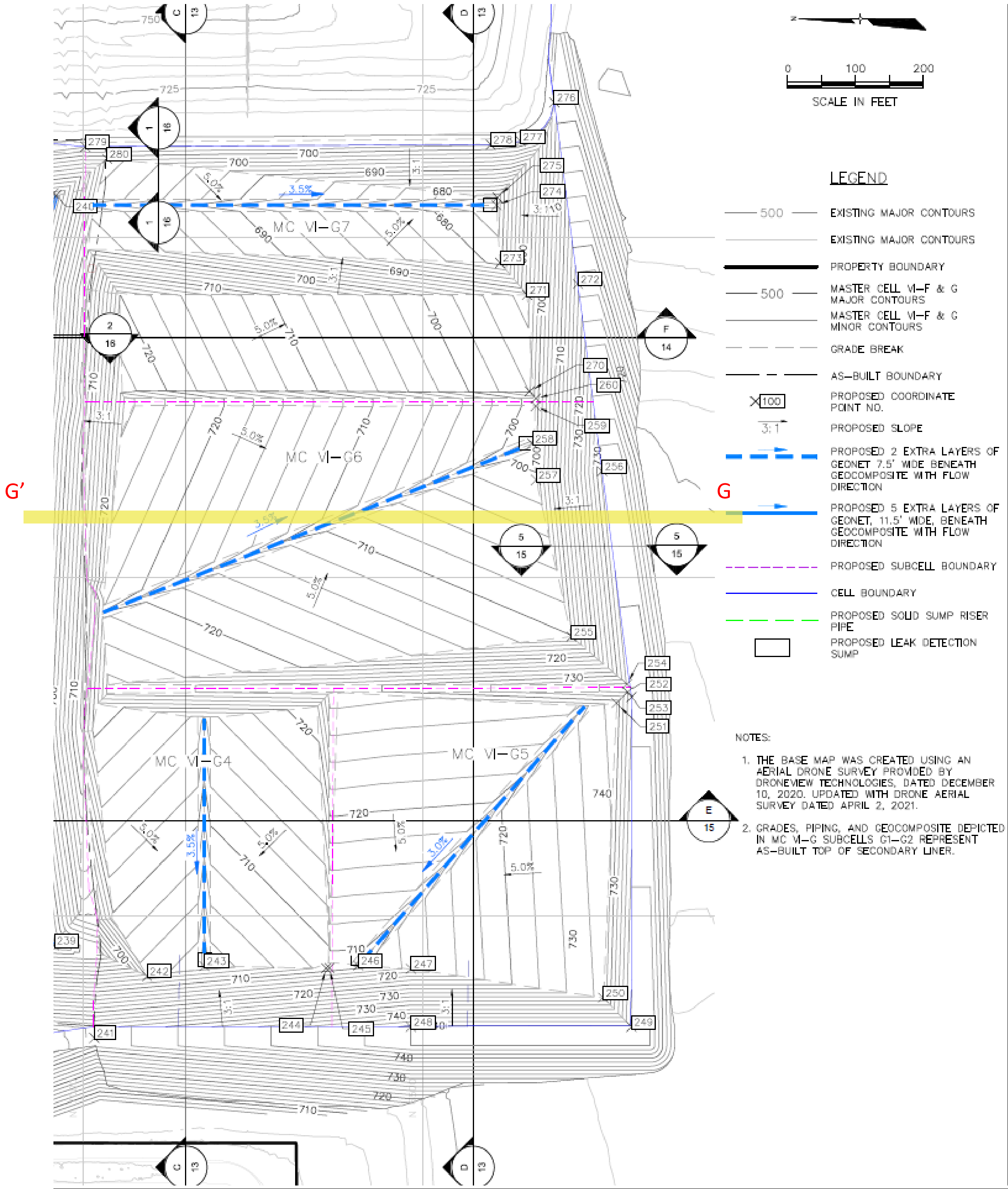
Purpose of Analysis:	To determine the factor of safety of the proposed final waste grades using cross-section G-G'. This case considers a south-facing slope, with fill to the final permitted grade elevations.		
☒ Effective Stress ☒ Total Stress	☒ Static ☐ Seismic	☐ Pore Pressure	☒ Optimized Surface
Additional Details:	The liner system was modeled in 2 sections (floor and sideslope) to allow use of Peak and Large-Displacement strength parameters appropriately. The liner interface strength properties are based on interface strength test results of a similar liner system installed on site. The required factor of safety of 1.5.		

Material	Name	Color in Profile	Unit Wt(s) (pcf)	Strength ϕ or δ (deg.)	Strength C or Ca (psf)
1	Final Cover	Orange	130	0	1500
2	Existing Waste	Teal	91	34	0
3	New Waste	Light Green	103	26	300
4	Upper Clay	Brown	131	0	1325
5	Middle Clay	Yellow	136	0	3000
6	Lower Clay	Maroon	133	$0.22\sigma'_v$	
7	Silt	Blue	125	28	0
8	Sand	Red	115	32	0
9	Liner (floor)	Magenta	120	11.1	164
10	Liner (sideslope)	Magenta	120	7.3	110

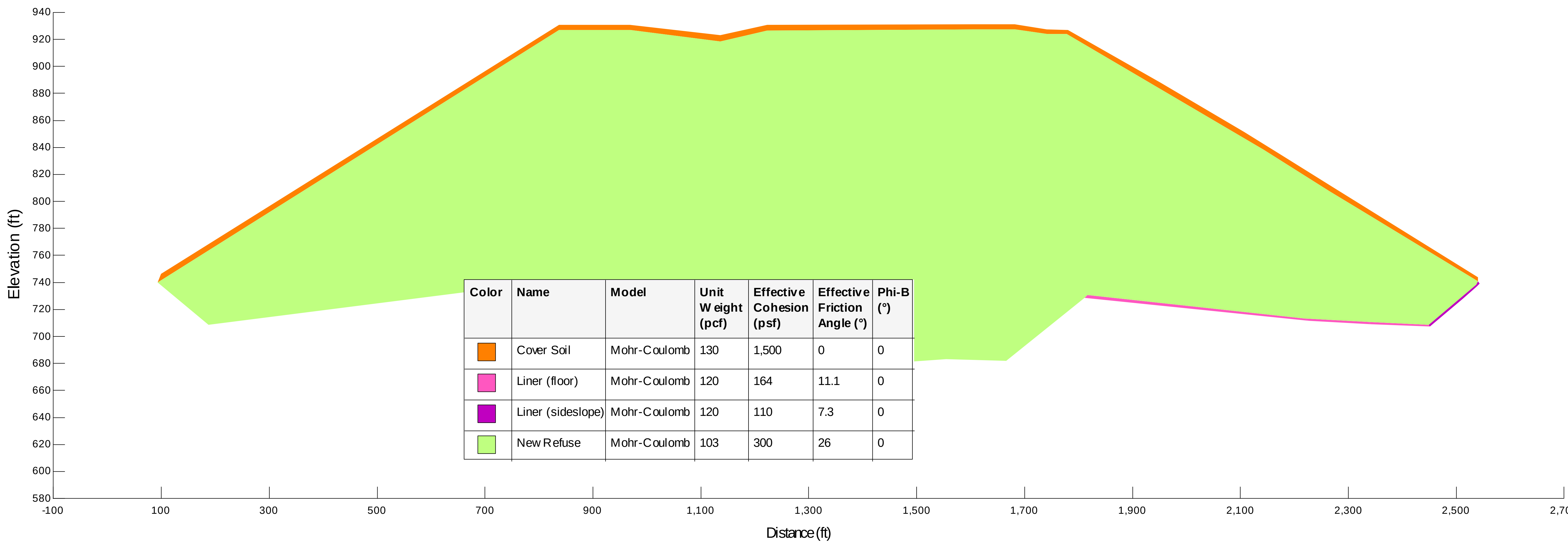
Source of Geometry:	Engineering Drawing Set
Source of Subsurface Profile:	Basis of Design Report - NTH (2012)
☐ Preconstruction ☐ Construction ☐ Interim ☒ Final ☐ Existing ☐ Back-Analysis	
Construction Phase Represented:	Final Build out
Other Geometry Notes:	Cross Section C

SLOPE STABILITY ANALYSIS REPORT FORM

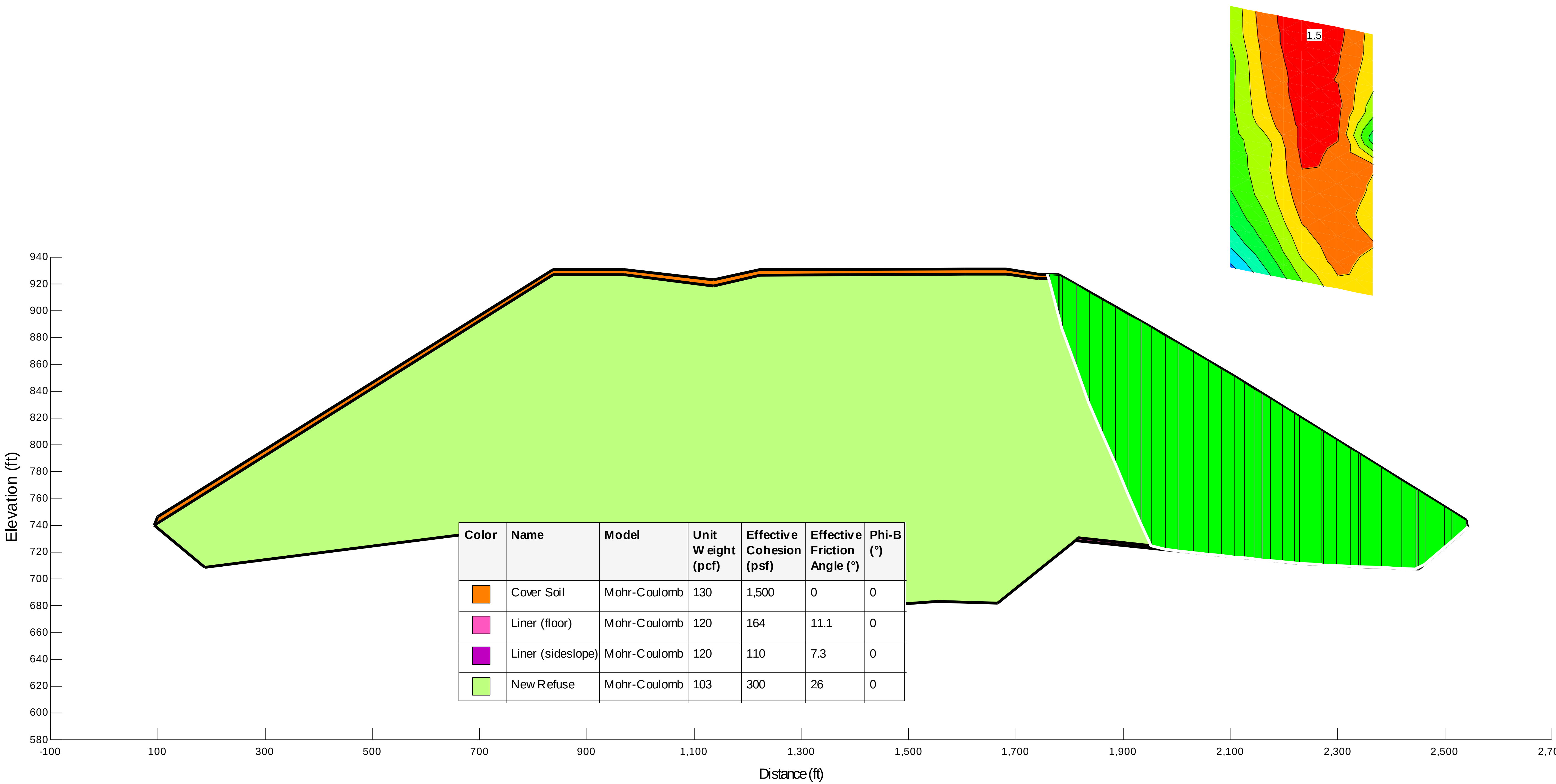
Plan View:



Factor of Safety:	1.5	☒ Acceptable ☐ Not Acceptable ☐ Follow-up ☐ Superseded
Comments:		
Attachments:	Slope/W Cross Section and Results	



Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)
	Cover Soil	Mohr-Coulomb	130	1,500	0	0
	Liner (floor)	Mohr-Coulomb	120	164	11.1	0
	Liner (sideslope)	Mohr-Coulomb	120	110	7.3	0
	New Refuse	Mohr-Coulomb	103	300	26	0



Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)
	Cover Soil	Mohr-Coulomb	130	1,500	0	0
	Liner (floor)	Mohr-Coulomb	120	164	11.1	0
	Liner (sideslope)	Mohr-Coulomb	120	110	7.3	0
	New Refuse	Mohr-Coulomb	103	300	26	0

Attachment A-1.7

C-C’ Liner Stability under Interim Conditions (example interim stability calculation)

SLOPE STABILITY ANALYSIS REPORT FORM

Project Name:	WDI MC-VI-G4 through G7 Liner Grade Modification						
Project Number:	1208070039.004			**Client:**	Wayne Disposal, Inc.		
Analysis Short Name:	C-C' Liner Stability				**File name:**	MC-VI-G_CrossSection_C_InterimSlope.gsz	
Revision:	1	**Originated:**	MK	**Checked:**	KF	**Approved:**	
Date:	11/03/21	**Date:**	11/03/21	**Date:**	11/04/21	**Date:**	

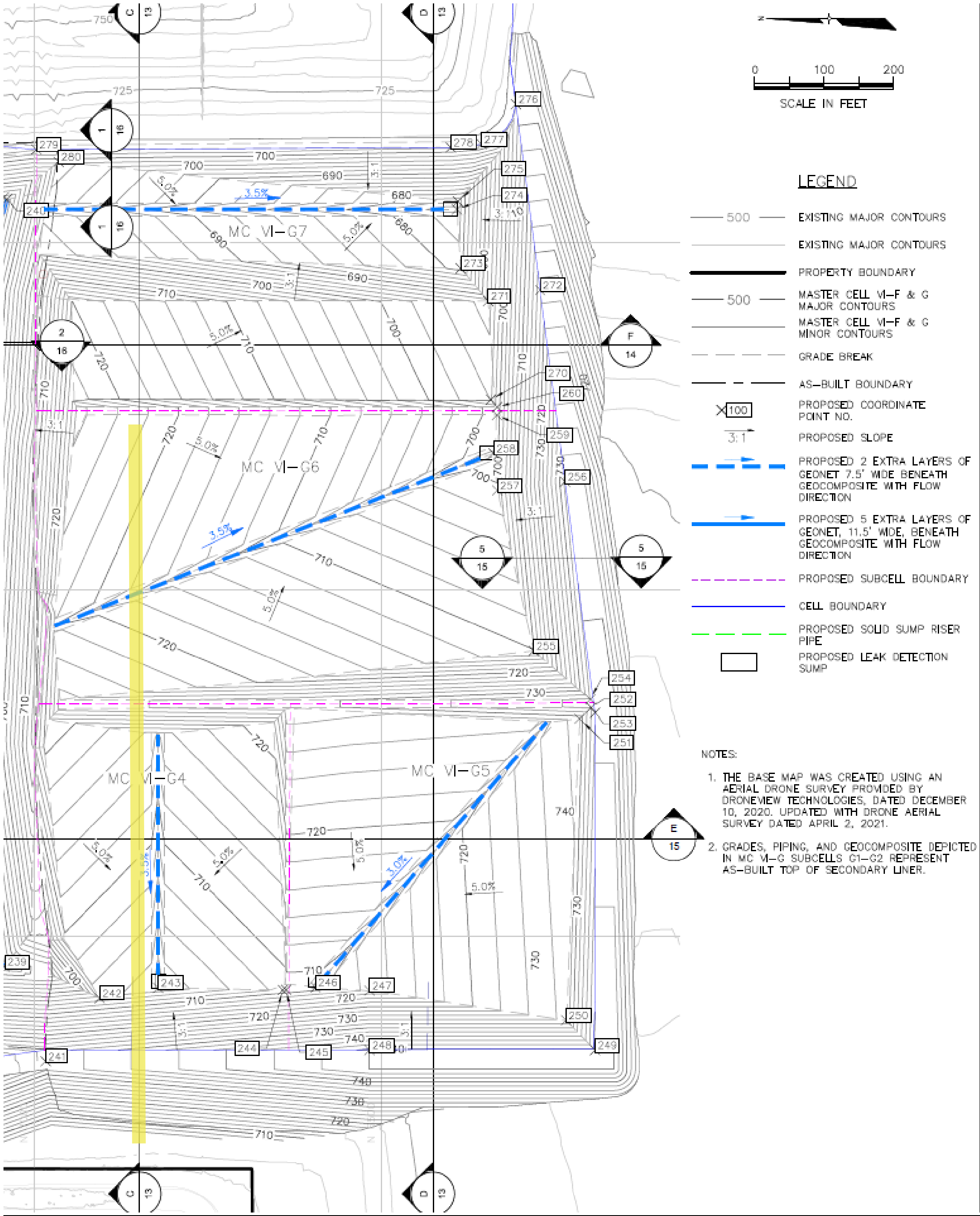
Purpose of Analysis:	To determine the required interface friction angle of the liner system to achieve an acceptable interim factor of safety of 1.3 using cross-section C-C'. This case considers a west-facing slope, with fill to a design interim grade elevation of 840 ft at an interim slope of 3H:1V. The failure surface is defined such that failure occurs in the underlying liner in order to evaluate the stability of the liner system.		
☐ Effective Stress ☒ Total Stress	☒ Static ☐ Seismic	☐ Pore Pressure	☒ Optimized Surface
Additional Details:			

Material	**Name**	**Color in Profile**	**Unit Wt(s) (pcf)**	**Strength ϕ or δ (deg.)**	**Strength C or Ca (psf)**
1	Final Cover	Orange	130	0	1500
2	Existing Waste	Teal	91	34	0
3	New Waste	Light Green	103	26	300
4	Upper Clay	Brown	131	0	1325
5	Middle Clay	Yellow	136	0	3000
6	Lower Clay	Maroon	133	$0.22\sigma'_v$	
7	Silt	Blue	125	28	0
8	Sand	Red	115	32	0
9	Liner (floor)	Magenta	120	?	
10	Liner (sideslope)	Magenta	120		

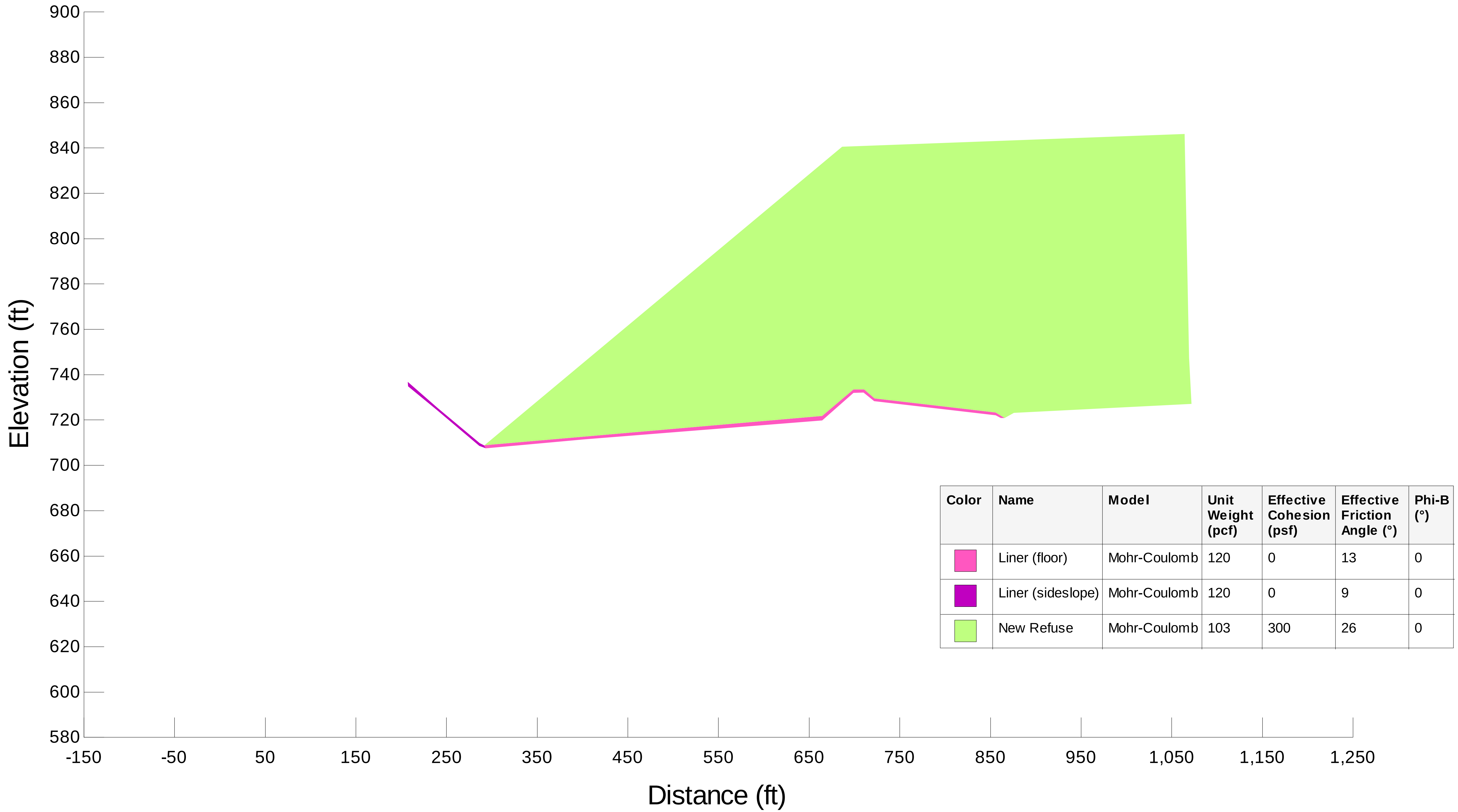
Source of Geometry:	Engineering Drawing Set
Source of Subsurface Profile:	Basis of Design Report - NTH (2012)
☐ Preconstruction ☐ Construction ☒ Interim ☐ Final ☐ Existing ☐ Back-Analysis	
Construction Phase Represented:	Interim Waste Filling
Other Geometry Notes:	Cross Section C

SLOPE STABILITY ANALYSIS REPORT FORM

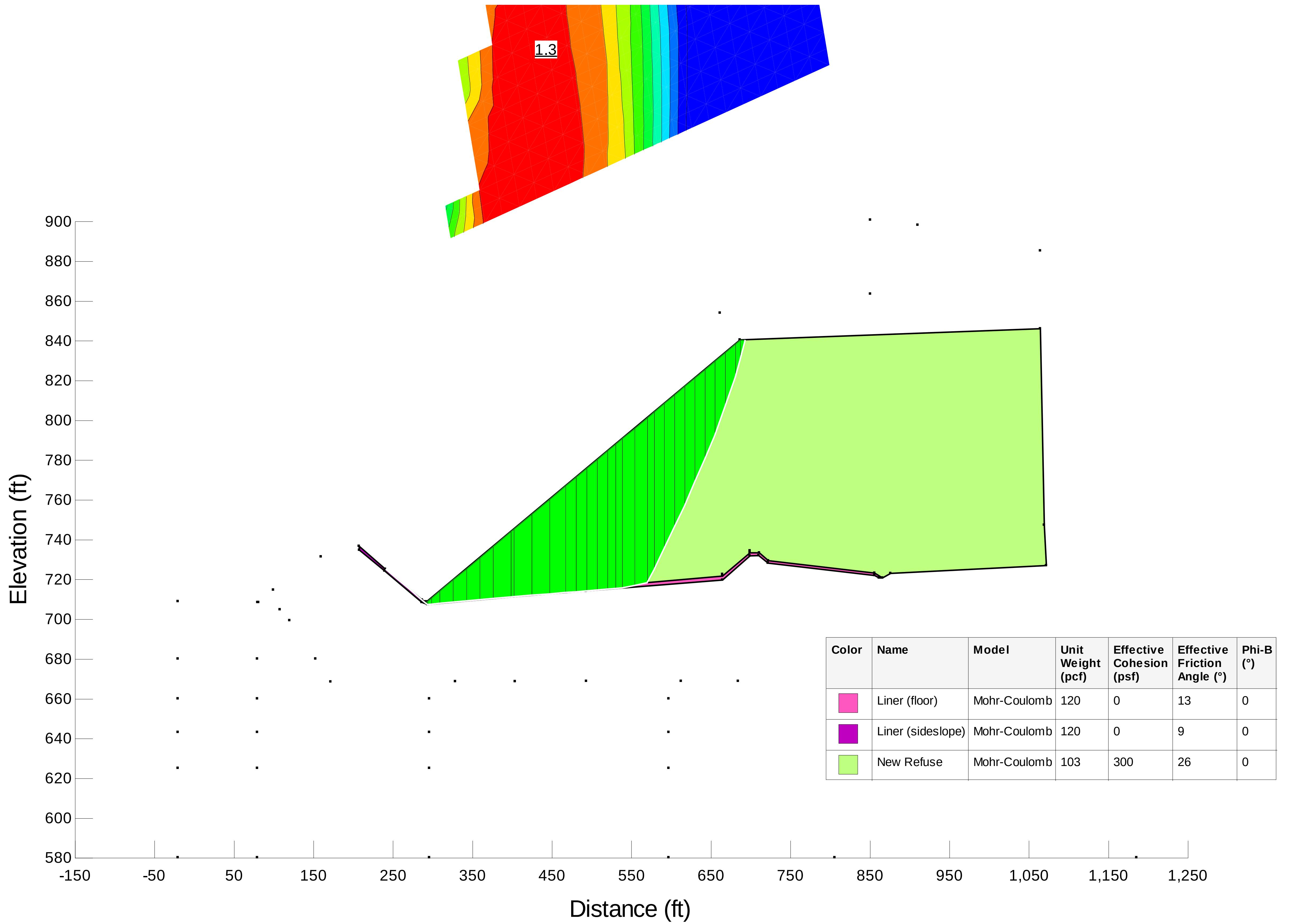
Plan View:



Factor of Safety:	1.3	☒ Acceptable ☐ Not Acceptable ☐ Follow-up ☐ Superseded
Comments:	The required interface friction angle is 13 degrees (peak). Any combination of adhesion and friction angle that yields a comparable shear strength under modeled site conditions is acceptable.	
Attachments:	Slope/W Cross Section and Results	



Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)
	Liner (floor)	Mohr-Coulomb	120	0	13	0
	Liner (sideslope)	Mohr-Coulomb	120	0	9	0
	New Refuse	Mohr-Coulomb	103	300	26	0



Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)
	Liner (floor)	Mohr-Coulomb	120	0	13	0
	Liner (sideslope)	Mohr-Coulomb	120	0	9	0
	New Refuse	Mohr-Coulomb	103	300	26	0

Project Name:	WDI Final Cover Grading Modification	Client:	Wayne Disposal, Inc.
Project Number:	1208070017.003	Project Manager:	Chris Backus
Project Location:	Belleville, Michigan	QA Manager:	

Calculation Sheet Information

Calculation Medium: ☒ Electronic
☐ Hard copy Number of pages (including cover sheet):

Title of Calculation:	Slope Stability Analyses
Calculation Originator:	Mohammad Kabalan
Calculation Contributors:	Mohammad Kabalan, Kazuhisa Matsuda
Calculation Checker:	Kevin Foye

Calculation Objective

This calculation evaluates the stability of the Wayne Disposal, Inc. (WDI) landfill under the proposed modification to the final cover grading. The analyses include consideration of global slope stability for failures through the waste mass, along the liner system, and/or through the foundation soils at interim and final conditions. The analyses also determined the minimum required interface friction angle to attain a satisfactory factor of safety against failure at the liner system interface. Cross sections that are the most critical for analysis and design include cross sections with the steepest slopes and highest embankment (waste or soil) heights. The following critical cross sections were examined and traces of each cross section is provided in Attachment 1:

1. Cross Section G-G’ oriented North-South passing through Cell MC-VI-F.
2. Cross Section H-H’ oriented North-South at Easting 5300 and going through Cell MC VI-E and existing MC IV.
3. Cross Section I-I’ oriented East-West and going through Cell MC VI-G, Sub Cell G1.
4. Cross Section J-J’ oriented East-West and going through Cell MC VI-G, Sub Cell G2.

Assumptions and Open Items

1. Representative total and effective stress shear strength parameters were used for all layers in the profile. Material properties were retrieved from existing site data (NTH 2012, NTH 2008) and are presented in Table 1. Strength properties for the lower clay were modeled as a relationship of shear stress to effective normal stress, whereas all other layers used the Mohr-Coulomb model with either an undrained shear strength or friction angle as input. A shear strength to effective stress ratio of 0.22 was applied for the lower clay in accordance with existing analyses (NTH 2012) to account for increases in shear strength resulting from increased overburden pressure within the lower clay layer.

Table 1: Material Properties

Material	Name	Color in Profile	Unit Wt(s) (pcf)	Strength ϕ or δ (deg.)	Strength C or Ca (psf)
1	Final Cover	Orange	130	0	1500
2	Existing Waste	Teal	86	34	0
3	New Waste	Light Green	103[A]	26[B]	300[B]
4	Upper Clay	Brown	131	0	1325
5	Middle Clay	Yellow	136	0	3000
6	Lower Clay	Maroon	133	$0.22\sigma'_v$	
7	Silt	Blue	125	28	0
8	Sand	Red	115	32	0
9	Liner (floor)	Magenta	120	13.2	0
10	Liner (sideslope)	Magenta	120	9	0
11	Existing MC V Waste	Teal	120	28[C]	0

Notes:
[A] Unit weight of waste determined from site survey data reported in 2020.
[B] Representative value of waste strength as reported by Qian et al. (2002).
[C] MC V waste properties as reported in NTH (2008).
All other properties obtained from NTH (2012).

2. For liner system stability cases, the domain of the slip surfaces are defined so that a portion of the failure surface conforms to the liner system.
3. Applicable data used in the analysis that was provided by third parties is assumed to be accurate.

Design Criteria/Design Basis

1. The minimum allowable factor-of-safety (FS) against slope stability failures is 1.5 for final conditions and 1.3 for interim conditions.
2. The analyses were conducted using the computer program SLOPE/W within the software package GeoStudio 2021 by GEOSLOPE International Ltd. This program performs an automatic search to identify a critical failure surface that has the lowest FS value.
3. The analyses were conducted using the Morgenstern-Price method, which considers both moment and force equilibrium.
4. The geometry of the cross sections was derived from the engineering drawing set submitted as part of the permit mod package.
5. The required/assumed interface friction angles shall be met by considering peak strength values for the cell floor and large-displacement strength values for the cell sideslopes.
6. The required minimum interface friction angle for the liner system components is determined under the final conditions (after final cover is installed).
7. Due to the complex nature of the waste fill phasing during operation, the liner stability shall be evaluated based on the actual measurements of the interface friction angle for the liner system components and the design waste filling geometry for each phase. An example one such calculation was prepared to illustrate how to evaluate required minimum interface friction angle for the liner system components. This example analysis was performed on cross section J-J’ assuming an interim waste slope of 3H:1V.

Results/Conclusions

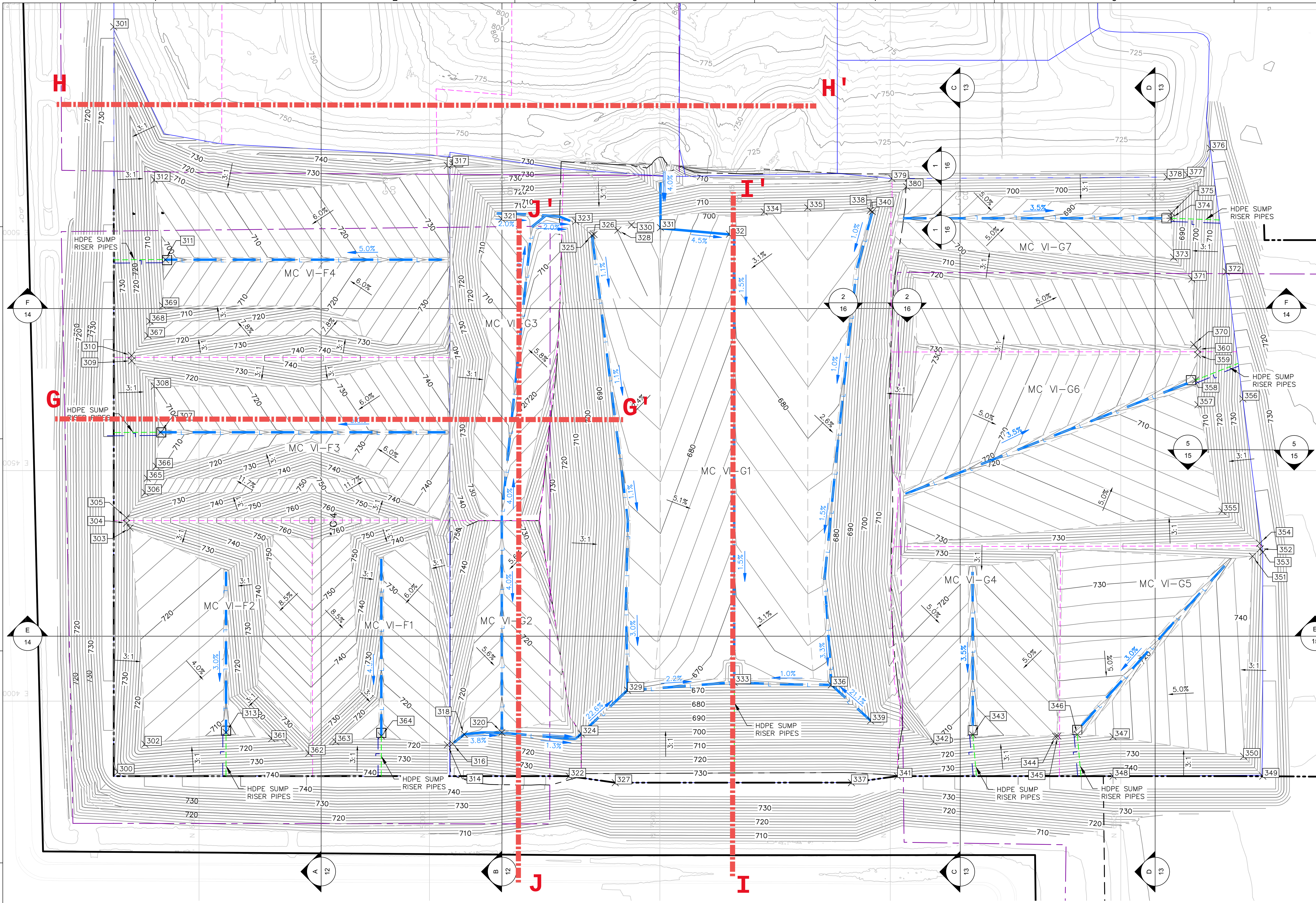
1. Global slope stability analyses of the waste and foundation for each cross section determined that filling to proposed final grades yields acceptable factors of safety.
    a. Cross Section G-G': Factor of Safety = 1.63
    b. Cross Section H-H': Factor of Safety = 1.57
    c. Cross Section I-I': Factor of Safety = 1.5
    d. Cross Section J-J': Factor of Safety = 1.5
2. Under the final conditions (after installation of final cover), the stability of the landfill along the liner system was analyzed. The strength parameters used to model the interface strength of the liner system were those determined from the slope stability analysis of MC-VI-G, Sub Cell G4. These parameters are shown in Table 1 and are considered values that could be typically achieved with commercial geosynthetic products. Any combination of adhesion and friction angle resulting in comparable shear strength under representative normal stresses to final site conditions are also acceptable. Conformance testing of the selected geosynthetics shall be performed to confirm that the interface shear strength of the actual liner system components is sufficient to ensure the stability of the liner system.
    a. Cross Section G-G': Factor of Safety = 1.65
    b. Cross Section H-H': Factor of Safety = 1.85
    c. Cross Section I-I': Factor of Safety = 1.7
    d. Cross Section J-J': Factor of Safety = 1.6
3. For Cells that have already been constructed, A stability analysis using lab interface shear strength tests results from previous products used on site was performed. The analyses show that a combination of **$C_{\alpha,peak}$=164 psf / ϕ_{peak}=11.1° and $C_{\alpha,large\ displacement}$=110 psf / $\phi_{large\ displacement}$=7.3°** achieves an acceptable factor of safety.
    a. Cross Section I-I': Factor of Safety = 1.6
    b. Cross Section J-J'': Factor of Safety = 1.5
4. An example calculation of liner stability for an interim waste filling conditions is presented in Attachment 7. The required interface friction angle for the floor liner system was determined to be 12 degrees (peak). Actual interim phasing plan slopes and tested liner system interface properties shall be evaluated for each phase of fill per this example.

Source Documents and References
NTH (2008). Basis of Design Report. *Master Cell VI E Design Modification* NTH (2012). *WDI Operating License Application Master Cells VI F & G Volume III – Basis of Design Report* Qian, X., Gray, D.H., and Koerner, R.M. (2002) *Geotechnical Aspects of Landfill Design and Construction.*

Attachments
1. Traces of Cross Sections 2. G-G' Foundation Stability 3. H-H' Foundation Stability 4. I-I' Foundation Stability 5. J-J' Foundation Stability 6. G-G' Liner Stability under Final Conditions with zero adhesion 7. H-H' Liner Stability under Final Conditions with zero adhesion 8. I-I' Liner Stability under Final Conditions with zero adhesion 9. J-J' Liner Stability under Final Conditions with zero adhesion 10. I-I' Liner Stability under Final Conditions with non-zero adhesion (previously tested values) 11. J-J' Liner Stability under Final Conditions with non-zero adhesion (previously tested values) 12. J-J' Liner Stability under Interim Conditions (example interim stability calculation)

Attachment A-1.1

Traces of Cross Sections



LEGEND

- 500 — EXISTING MAJOR CONTOURS
- EXISTING MAJOR CONTOURS
- 500 — MASTER CELL VI-F & G MAJOR CONTOURS
- MASTER CELL VI-F & G MINOR CONTOURS
- GRADE BREAK
- 100 — PROPOSED DIKE COORDINATE POINT NO.
- 3:1 — PROPOSED SLOPE
- PROPOSED SUBCELL BOUNDARY
- CELL BOUNDARY
- AS-BUILT BOUNDARY
- PROPOSED LEACHATE COLLECTION PIPE AND FLOW DIRECTION
- PROPOSED LEACHATE CLEANOUT PIPE
- PROPOSED PRIMARY COLLECTION SUMP
- PROPOSED SOLID SUMP RISER PIPE

NOTES:

1. THE BASE MAP WAS CREATED USING AN AERIAL DRONE SURVEY PROVIDED BY DRONEVIEW TECHNOLOGIES, DATED DECEMBER 10, 2020. UPDATED WITH DRONE AERIAL SURVEY DATED APRIL 2, 2021.
2. GRADES, PIPING, AND GEOCOMPOSITE DEPICTED IN MC VI-G SUBCELLS G1-G2 REPRESENT AS-BUILT TOP OF SECONDARY LINER.

PRIMARY COORDINATE POINTS			
Point #	Northing	Easting	Elevation
300	8676.40	3846.28	734.54
301	8685.01	5462.64	728.25
302	8617.38	3906.71	712.94
303	8649.60	4375.66	727.86
304	8657.24	4386.11	730.42
305	8657.19	4397.62	730.43
306	8616.71	4452.40	717.06
307	8583.27	4583.16	706.16
308	8597.12	4683.16	709.89
309	8646.14	4738.22	725.58
310	8646.48	4749.72	725.56

PRIMARY COORDINATE POINTS			
Point #	Northing	Easting	Elevation
311	8572.76	4957.47	697.64
312	8596.51	5130.39	703.29
313	8441.35	3932.29	707.95
314	7960.91	3905.27	719.50
315	7961.26	5161.96	736.10
316	7949.75	3907.70	718.61
317	7949.45	5164.97	738.31
318	7924.50	3928.02	711.75
319	7904.56	5051.05	703.11
320	7842.87	3931.97	708.82
321	7842.87	5045.77	700.84

PRIMARY COORDINATE POINTS			
Point #	Northing	Easting	Elevation
322	7696.73	3837.32	733.74
323	7682.58	5040.91	697.50
324	7670.57	3929.29	702.88
325	7647.35	5010.49	687.00
326	7642.85	5012.25	688.18
327	7596.74	3823.09	738.60
328	7591.06	5021.51	690.24
329	7570.10	4023.55	671.56
330	7561.67	5032.75	691.59
331	7498.71	5027.05	693.52
332	7349.00	5012.85	686.42

PRIMARY COORDINATE POINTS			
Point #	Northing	Easting	Elevation
333	7338.74	4040.74	666.42
334	7273.49	5061.28	687.73
335	7179.18	5070.45	689.94
336	7128.04	4035.19	668.55
337	7084.38	3823.30	739.24
338	7043.49	5064.48	687.10
339	7042.63	3957.62	692.90
340	7038.96	5061.69	685.79
341	6984.38	3837.32	732.38
342	6905.54	3911.96	710.13
343	6821.02	3927.03	707.63

PRIMARY COORDINATE POINTS			
Point #	Northing	Easting	Elevation
344	6641.59	3923.81	713.92
345	6636.63	3924.19	713.94
346	6594.37	3927.75	714.00
347	6516.74	3922.88	717.86
348	6516.74	3837.32	746.00
349	6191.88	3837.32	746.00
350	6233.58	3880.28	731.87
351	6214.04	4314.26	734.09
352	6197.41	4330.56	739.73
353	6191.88	4323.06	741.29
354	6198.61	4342.06	739.71

PRIMARY COORDINATE POINTS			
Point #	Northing	Easting	Elevation
355	6280.17	4412.07	715.30
356	6235.08	4655.62	738.04
357	6332.61	4642.95	705.70
358	6337.83	4696.24	703.34
359	6333.17	4751.42	704.26
360	6332.82	4762.92	704.25
361	8342.16	3918.88	713.80
362	8261.82	3887.00	725.54
363	8203.29	3912.03	718.03
364	8104.44	3924.55	713.57
365	8612.28	4483.38	715.64

PRIMARY COORDINATE POINTS			
Point #	Northing	Easting	Elevation
366	8592.85	4509.67	709.22
367	8610.47	4793.01	713.10
368	8606.52	4823.99	711.44
369	8578.86	4857.57	701.75
370	6341.76	4773.54	701.15
371	6345.63	4915.50	698.23
372	6270.86	4931.07	722.96
373	6385.28	4962.52	684.48
374	6390.87	5047.34	681.65
375	6389.40	5058.83	682.01
376	6305.65	5198.88	708.30

PRIMARY COORDINATE POINTS			
Point #	Northing	Easting	Elevation
377	6355.11	5141.16	707.90
378	6399.40	5136.66	707.80
379	6996.47	5133.58	710.19
380	6964.50	5115.83	704.17

DATE:	10/08/21
DESIGNED BY:	LEH
DRAWN BY:	WRG
CHECKED BY:	CAB
APPROVED BY:	XZ

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28001 Cabot Drive, Ste. 250
Novi, Michigan 48377
248.486.5100 (fax)248.486.5050
www.cticompanies.com

REVISIONS

REV	DATE	REVISION DESCRIPTION	DRN	APP
I	10/08/21	SUBCELLS G4-G7 REVISIONS; FINAL GRADE MODIFICATIONS; MISCELLANEOUS CHANGES	WRG	XZ
H	8/25/21	RESPONSE TO EGLE COMMENTS	LEH	XZ
G	7/14/21	REVISED LINER GRADES IN F1-F4 AND OTHER MINOR COMMENTS	LEH	XZ
F	05/28/21	F1-F4 REVISIONS AND RESPONSE TO EGLE COMMENTS	WRG	XZ
E	5/29/18	ADDENDUM 1	PAA	XZ
C	5/02/18	SUBCELLS G2 AND G3 REVISIONS	PAA	XZ
B	9/23/11	PER MDEQ COMMENTS		DRL
A	6/10/11	PHASING DESIGNATIONS		DRL

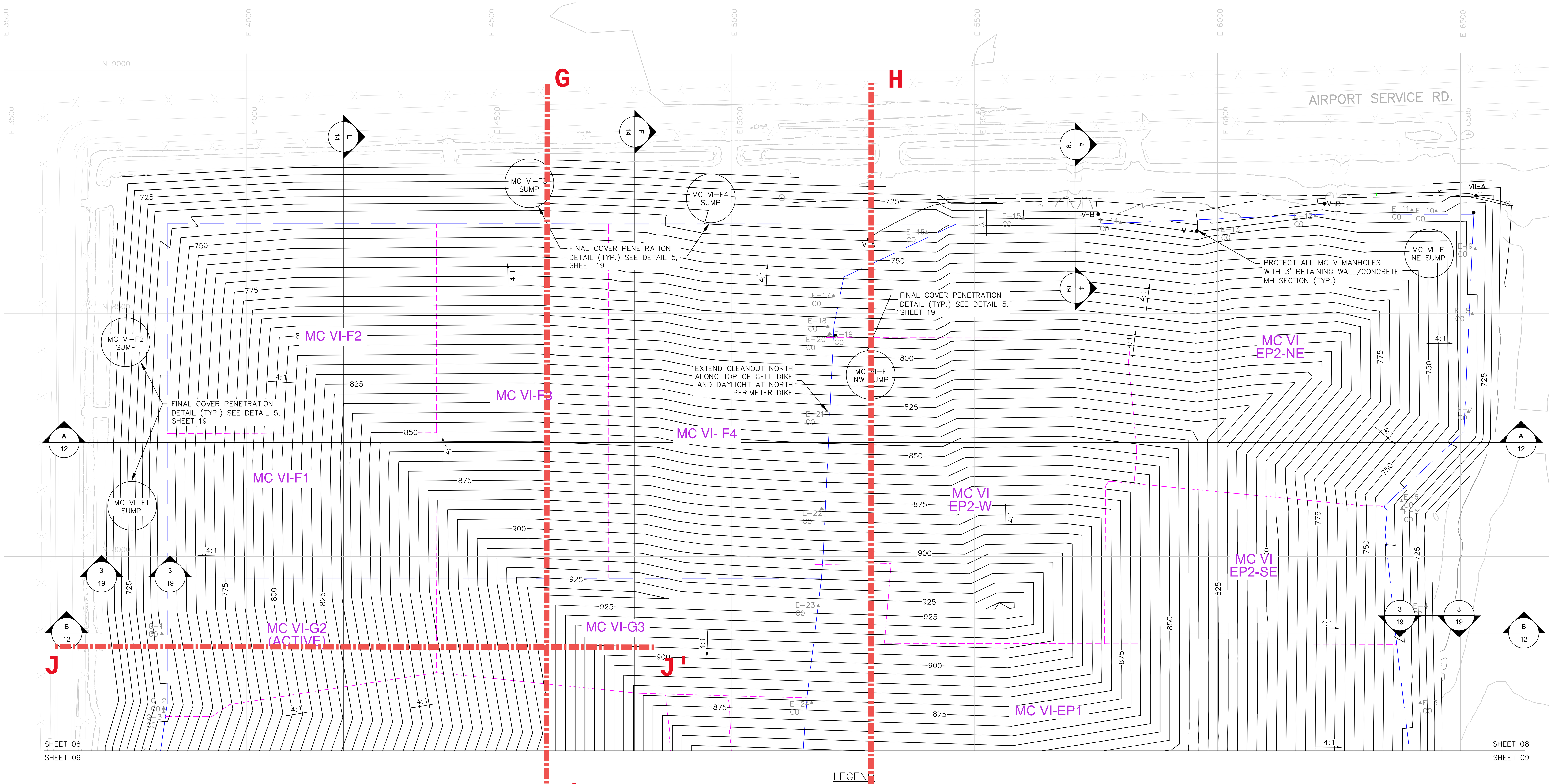
WAYNE DISPOSAL, INC. SITE NO. 2 - MASTER CELL VI - REV I
VAN BUREN TOWNSHIP, WAYNE COUNTY, MICHIGAN

TOP OF PRIMARY LINER GRADING PLAN

PROJECT NUMBER: 1218070017

SCALE: 1" = 100'

DRAWING NO: 06



LEGEND

500	EXISTING MAJOR CONTOURS
	EXISTING MINOR CONTOURS
500	PERMITTED TOP OF FINAL COVER MAJOR CONTOURS
	PERMITTED TOP OF FINAL COVER MINOR CONTOURS
	EXISTING GRADE BREAKLINES
	EXISTING LEACHATE FORCEMAIN
	SUBCELL BOUNDARY
	CELL BOUNDARY
G-6 CO	LEACHATE COLLECTION SYSTEM CLEANOUTS
V-A	EXISTING MANHOLES
	PROPOSED SUMP LOCATION AND COVER PENETRATION

0 100 200

SCALE IN FEET

NOTES:

1. THE BASE MAP WAS CREATED USING AN AERIAL DRONE SURVEY PROVIDED BY DRONEVIEW TECHNOLOGIES, DATED DECEMBER 10, 2020. UPDATED WITH DRONE AERIAL SURVEY DATED APRIL 2, 2021.

CTI and Associates, Inc.
28001 Cabot Drive, Ste. 250
Novi, Michigan 48377
248.486.5100 (fax)248.486.5050
www.cticompanies.com

DATE:	10/08/21
DESIGNED BY:	LEH
DRAWN BY:	WRG
CHECKED BY:	CAB
APPROVED BY:	XZ

REVISIONS

REV	DATE	REVISION DESCRIPTION	DRN	APP
I	10/08/21	SUBCELLS G4–G7 REVISIONS; FINAL GRADE MODIFICATIONS; MISCELLANEOUS CHANGES	WRG	XZ
H	8/25/21	RESPONSE TO EGLE COMMENTS	LEH	XZ
G	7/14/21	REVISED LINER GRADES IN F1–F4 AND OTHER MINOR CORRECTIONS	LEH	XZ
F	05/17/21	F1–F4 REVISIONS AND RESPONSE TO EGLE COMMENTS	WRG	XZ
C	5/02/18	SUBCELLS G2 AND G3 REVISIONS	PAA	XZ

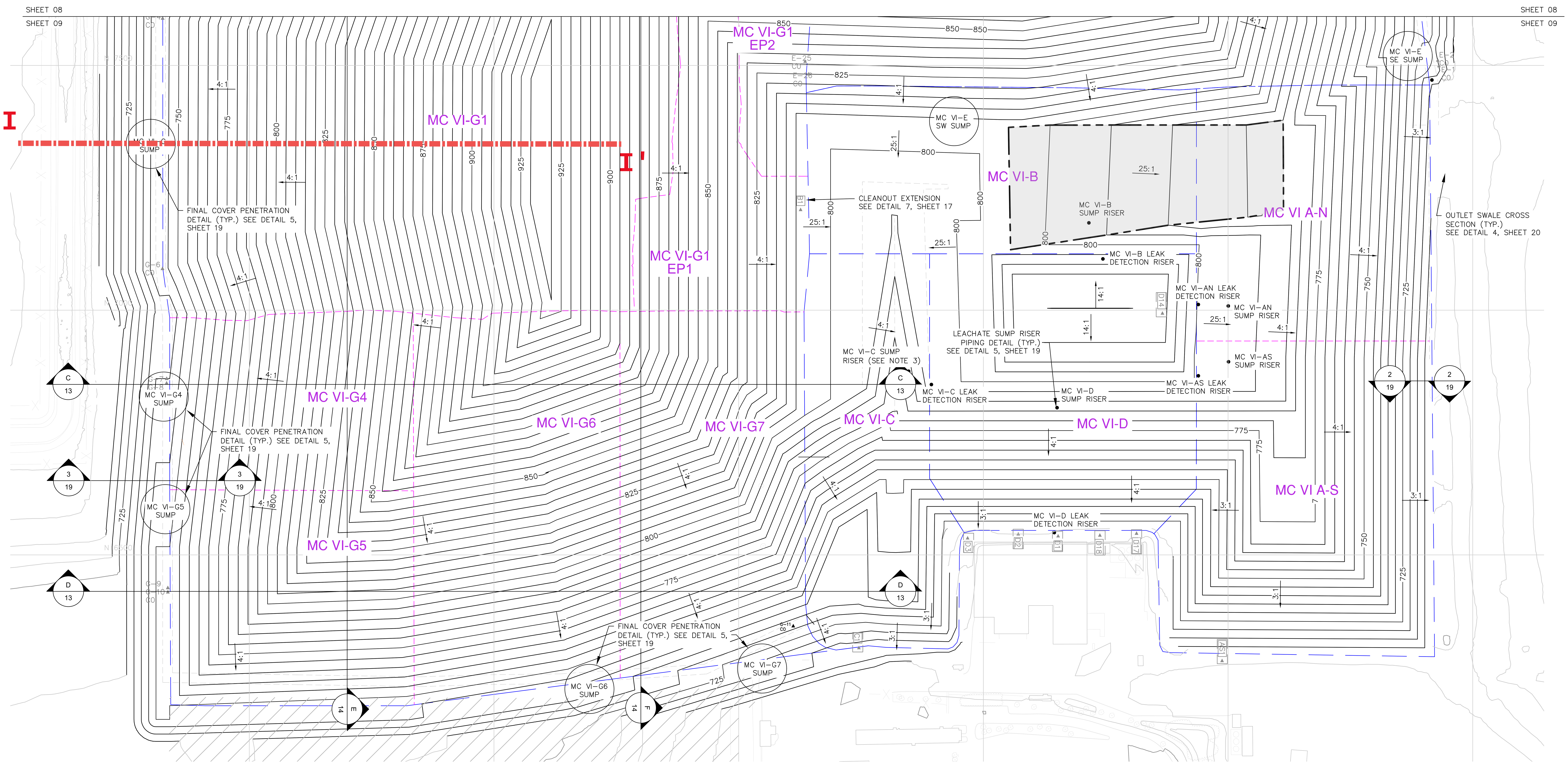
WAYNE DISPOSAL, INC. SITE NO. 2 - MASTER CELL VI - REV I
VAN BUREN TOWNSHIP, WAYNE COUNTY, MICHIGAN

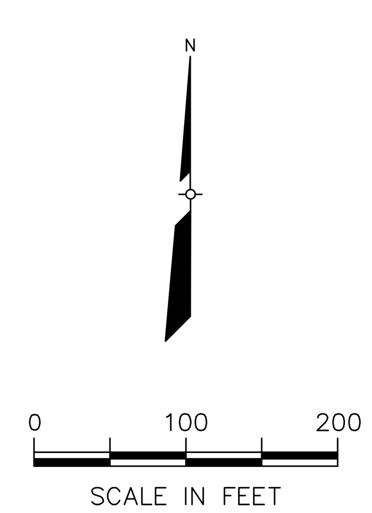
FINAL COVER GRADING PLAN (1 OF 2)

PROJECT NUMBER 1218070017

SCALE 1" = 100'

DRAWING NO 08





LEGEND

500	EXISTING MAJOR CONTOURS
	EXISTING MINOR CONTOURS
500	PERMITTED TOP OF FINAL COVER MAJOR CONTOURS
	PERMITTED TOP OF FINAL COVER MINOR CONTOURS
	EXISTING VEGETATION
	EXISTING GRADE BREAKLINES
	EXISTING LEACHATE FORCEMAIN
	SUBCELL BOUNDARY
	CELL BOUNDARY
	PROPOSED GEOCOMPOSITE (TRANSMISSIVITY 5.0 X 10^{-4} M^2/S)
G-6 CO	LEACHATE COLLECTION SYSTEM CLEANOUTS
	EXISTING LEAK DETECTION OR SUMP RISERS
	PROPOSED SUMP LOCATION AND COVER PENETRATION

NOTES:

1. THE BASE MAP WAS CREATED USING AN AERIAL DRONE SURVEY PROVIDED BY DRONEVIEW TECHNOLOGIES, DATED DECEMBER 10, 2020. UPDATED WITH DRONE AERIAL SURVEY DATED APRIL 2, 2021.
2. CLEANOUTS IN MC VI-AN, AS, B, C, AND D ARE TO BE ABANDONED EXCEPT B1, C1, D1 THROUGH D3, D14, D17, D18, AND AS1.
3. BEFORE PLACING WASTE AROUND MC VI-C SUMP RISER, A MONITORING PROGRAM SHOULD BE IMPLEMENTED TO MONITOR ITS FUNCTIONALITY.
4. PRIOR TO PLACING WASTE AROUND CLEANOUTS E-22 THROUGH E-26, THE CLEANOUTS SHOULD BE EVALUATED TO DETERMINE IF THE LEACHATE COLLECTION LINE CAN BE CLEANED BY A SINGLE ACCESS POINT. IF NOT, THE CLEANOUT SHOULD BE EXTENDED.

DATE:	10/08/21
DESIGNED BY:	LEH
DRAWN BY:	WRG
CHECKED BY:	CAB
APPROVED BY:	XZ

CTI and Associates, Inc.
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Novi, Michigan 48377
248.486.5100 (fax)248.486.5050
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REV	DATE	REVISION DESCRIPTION	DRN	APP
I	10/08/21	SUBCELLS G4-G7 REVISIONS; FINAL GRADE MODIFICATIONS; MISCELLANEOUS CHANGES	WRG	XZ
H	8/25/21	RESPONSE TO EGLE COMMENTS	LEH	XZ
G	7/14/21	REVISED LINER GRADES IN F1-F4 AND OTHER MINOR CORRECTIONS	LEH	XZ
F	05/28/21	F1-F4 REVISIONS AND RESPONSE TO EGLE COMMENTS	WRG	XZ
C	5/02/18	SUBCELLS G2 AND G3 REVISIONS	PAA	XZ
A	6/10/11	PHASING DESIGNATIONS	DRL	

WAYNE DISPOSAL, INC. SITE NO. 2 - MASTER CELL VI - REV I
VAN BUREN TOWNSHIP, WAYNE COUNTY, MICHIGAN

FINAL COVER GRADING PLAN (2 OF 2)

PROJECT NUMBER 1218070017
SCALE 1" = 100'
DRAWING NO 09

Attachment A-1.2

G-G’ Foundation Stability

SLOPE STABILITY ANALYSIS REPORT FORM

Project Name:	WDI Final Cover Grading Modification						
Project Number:	1218070017.003			**Client:**	Wayne Disposal, Inc.		
Analysis Short Name:	G-G' Foundation Stability				**File name:**	MC-VI-F_CrossSection_G_Foundation.gsz	
Revision:	0	**Originated:**	MK	**Checked:**	KF	**Approved:**	
Date:	10/07/21	**Date:**	10/07/21	**Date:**	10/7/21	**Date:**	

Purpose of Analysis:	To determine the factor of safety of the proposed final waste grades using cross-section G-G'. This case considers a north-facing slope, with fill to the final proposed grade elevations.		
☒ Effective Stress ☒ Total Stress	☒ Static ☐ Seismic	☒ Pore Pressure	☒ Optimized Surface
Additional Details:	The strength parameters used to model the interface strength of the liner system were those determined from the slope stability analysis of MC-VI-G, Sub Cell G4. The groundwater level was set at elevation 655 based on historical borings as documented in the Basis of Design report (NTH 2012). Drained strength parameters were used for material with a relatively high permeability where excess pore-pressure conditions are not expected due to loading. Undrained strength parameters were used for low-permeability materials (clays) since excess pore pressure may accumulate after loading. This is considered a conservative approach for this scenario.		

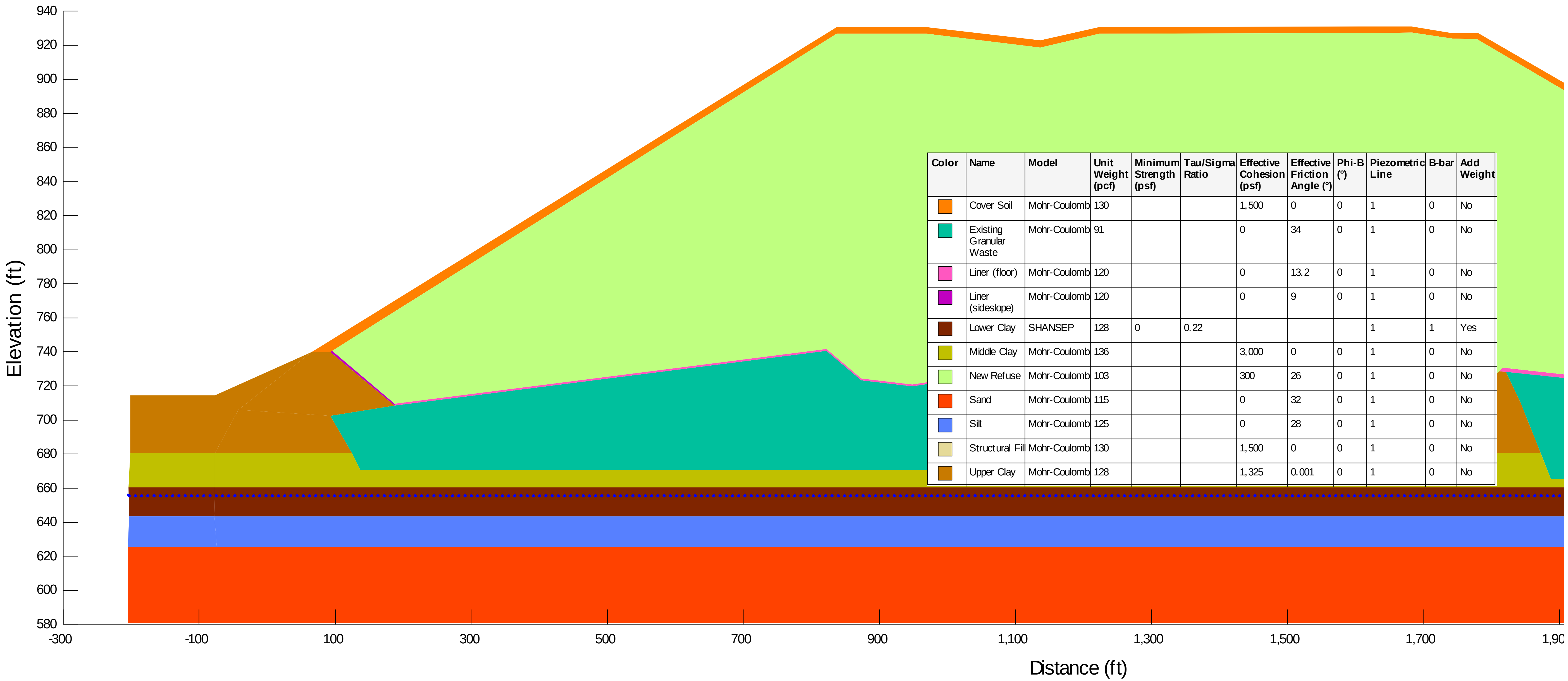
Material	**Name**	**Color in Profile**	**Unit Wt(s) (pcf)**	**Strength ϕ or δ (deg.)**	**Strength C or Ca (psf)**
1	Final Cover	Orange	130	0	1500
2	Existing Waste	Teal	86	34	0
3	New Waste	Light Green	103	26	300
4	Upper Clay	Brown	131	0	1325
5	Middle Clay	Yellow	136	0	3000
6	Lower Clay	Maroon	133	$0.22\sigma'_v$	
7	Silt	Blue	125	28	0
8	Sand	Red	115	32	0
9	Liner (floor)	Magenta	120	13.2	0
10	Liner (sideslope)	Magenta	120	9	0
11	Existing MC V Waste	Teal	120	28	0

Source of Geometry:	The proposed final cover elevations are from WDI Final Cover Grades Modification Engineering Drawings by CTI and Associates, Inc.
Source of Subsurface Profile:	Basis of Design Report - NTH (2012)

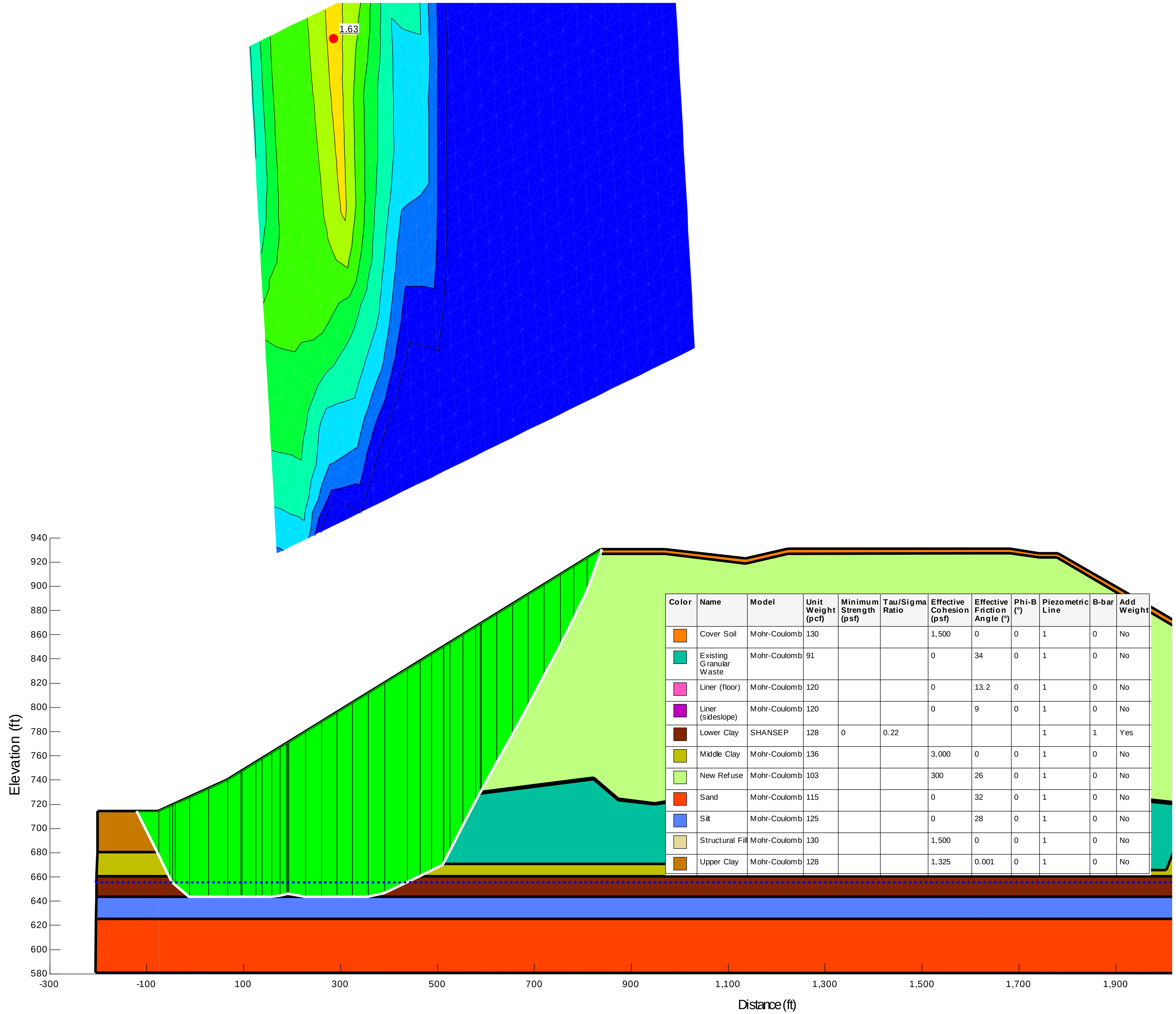
SLOPE STABILITY ANALYSIS REPORT FORM

☐ Preconstruction ☐ Construction ☐ Interim ☒ Final ☐ Existing ☐ Back-Analysis	
Construction Phase Represented:	Final Build out
Other Geometry Notes:	Cross Section G

Factor of Safety:	1.6	☒ Acceptable ☐ Not Acceptable ☐ Follow-up ☐ Superseded
Comments:		
Attachments:	Slope/W Cross Section and Results	



Color	Name	Model	Unit Weight (pcf)	Minimum Strength (psf)	Tau/Sigma Ratio	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Cover Soil	Mohr-Coulomb	130			1,500	0	0	1	0	No
	Existing Granular Waste	Mohr-Coulomb	91			0	34	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120			0	13.2	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120			0	9	0	1	0	No
	Lower Clay	SHANSEP	128	0	0.22				1	1	Yes
	Middle Clay	Mohr-Coulomb	136			3,000	0	0	1	0	No
	New Refuse	Mohr-Coulomb	103			300	26	0	1	0	No
	Sand	Mohr-Coulomb	115			0	32	0	1	0	No
	Silt	Mohr-Coulomb	125			0	28	0	1	0	No
	Structural Fill	Mohr-Coulomb	130			1,500	0	0	1	0	No
	Upper Clay	Mohr-Coulomb	128			1,325	0.001	0	1	0	No



Color	Name	Model	Unit Weight (pcf)	Minimum Strength (psf)	Tau/Sigma Ratio	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Cover Soil	Mohr-Coulomb	130			1,500	0	0	1	0	No
	Existing Granular Waste	Mohr-Coulomb	91			0	34	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120			0	13.2	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120			0	9	0	1	0	No
	Lower Clay	SHANSEP	128	0	0.22				1	1	Yes
	Middle Clay	Mohr-Coulomb	136			3,000	0	0	1	0	No
	New Refuse	Mohr-Coulomb	103			300	26	0	1	0	No
	Sand	Mohr-Coulomb	115			0	32	0	1	0	No
	Silt	Mohr-Coulomb	125			0	28	0	1	0	No
	Structural Fill	Mohr-Coulomb	130			1,500	0	0	1	0	No
	Upper Clay	Mohr-Coulomb	128			1,325	0.001	0	1	0	No

Attachment A-1.3

H-H’ Foundation Stability

SLOPE STABILITY ANALYSIS REPORT FORM

Project Name:	WDI Final Cover Grading Modification						
Project Number:	1218070017.003			**Client:**	Wayne Disposal, Inc.		
Analysis Short Name:	H-H' Foundation Stability				**File name:**	MC-VI-E_CrossSection_H_Foundation.gsz	
Revision:	0	**Originated:**	KM	**Checked:**	MK	**Approved:**	KF
Date:	10/07/21	**Date:**	6/3/21	**Date:**	10/07/21	**Date:**	10/7/21

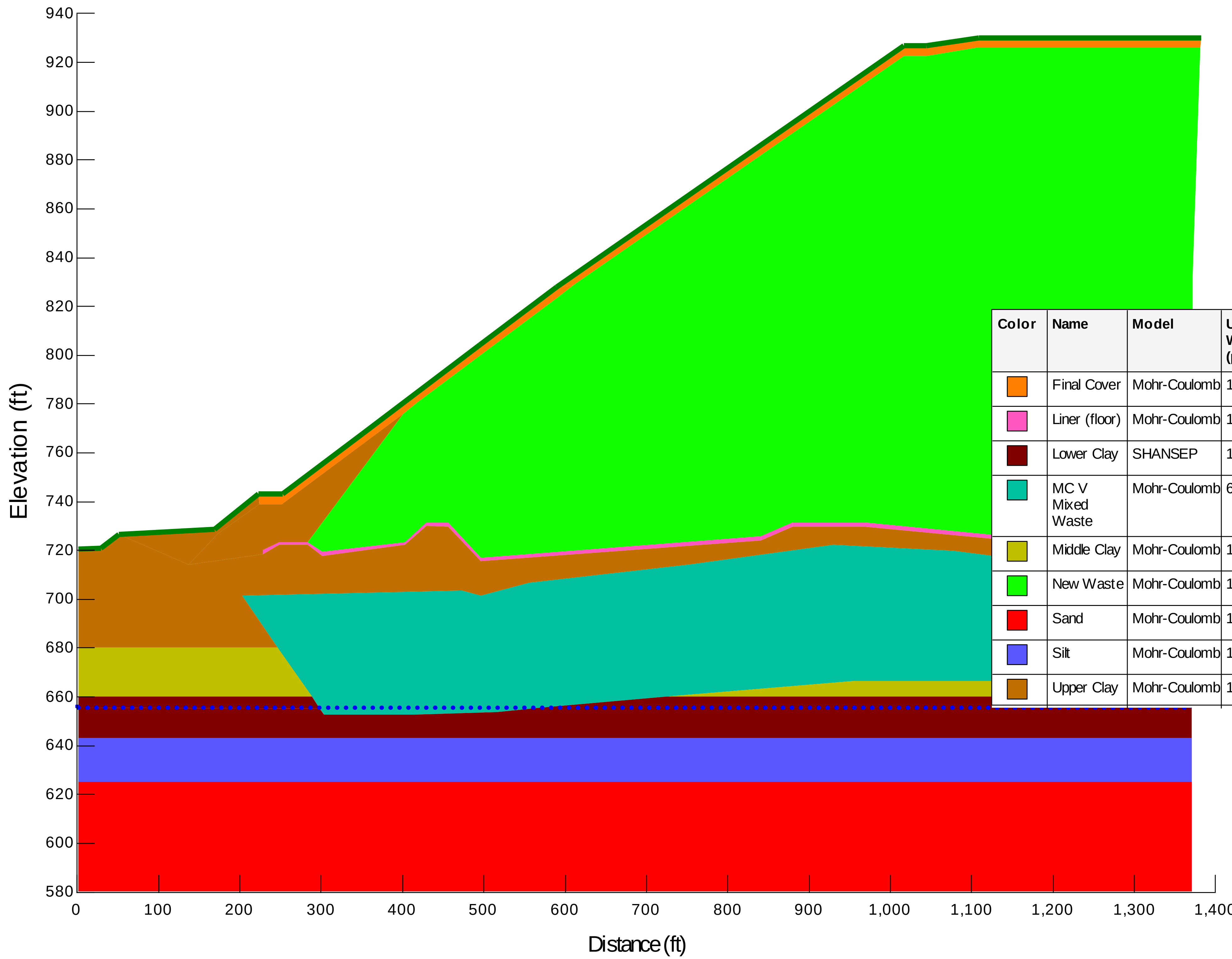
Purpose of Analysis:	To determine the factor of safety of the proposed final waste grades using cross-section H-H'. This case considers a north-facing slope, with fill to the final proposed grade elevations.			
☒ Effective Stress ☒ Total Stress	☒ Static ☐ Seismic	☒ Pore Pressure	☒ Optimized Surface	
Additional Details:	The strength parameters used to model the interface strength of the liner system were those determined from the slope stability analysis of MC-VI-G, Sub Cell G4. The groundwater level was set at elevation 655 based on historical borings as documented in the Basis of Design report (NTH 2012). Drained strength parameters were used for material with a relatively high permeability where excess pore-pressure conditions are not expected due to loading. Undrained strength parameters were used for low-permeability materials (clays) since excess pore pressures may accumulate after loading. This is considered a conservative approach for this scenario.			

Material	**Name**	**Color in Profile**	**Unit Wt(s) (pcf)**	**Strength ϕ or δ (deg.)**	**Strength C or Ca (psf)**
1	Final Cover	Orange	130	0	1500
2	Existing Waste	Teal	86	34	0
3	New Waste	Light Green	103	26	300
4	Upper Clay	Brown	131	0	1325
5	Middle Clay	Yellow	136	0	3000
6	Lower Clay	Maroon	133	$0.22\sigma'_v$	
7	Silt	Blue	125	28	0
8	Sand	Red	115	32	0
9	Liner (floor)	Magenta	120	13.2	0
10	Liner (sideslope)	Magenta	120	9	0
11	Existing MC V Waste	Teal	120	28	0

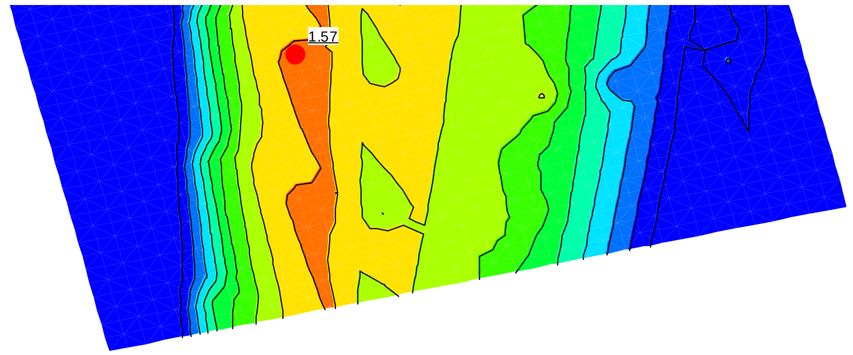
Source of Geometry:	The overfill liner elevations are from Master Cell VI-E Design Modification Plans, Wayne Disposal Inc., Site No. 2 by NTH Consultants (2011) and Master Cell VI Design Modification

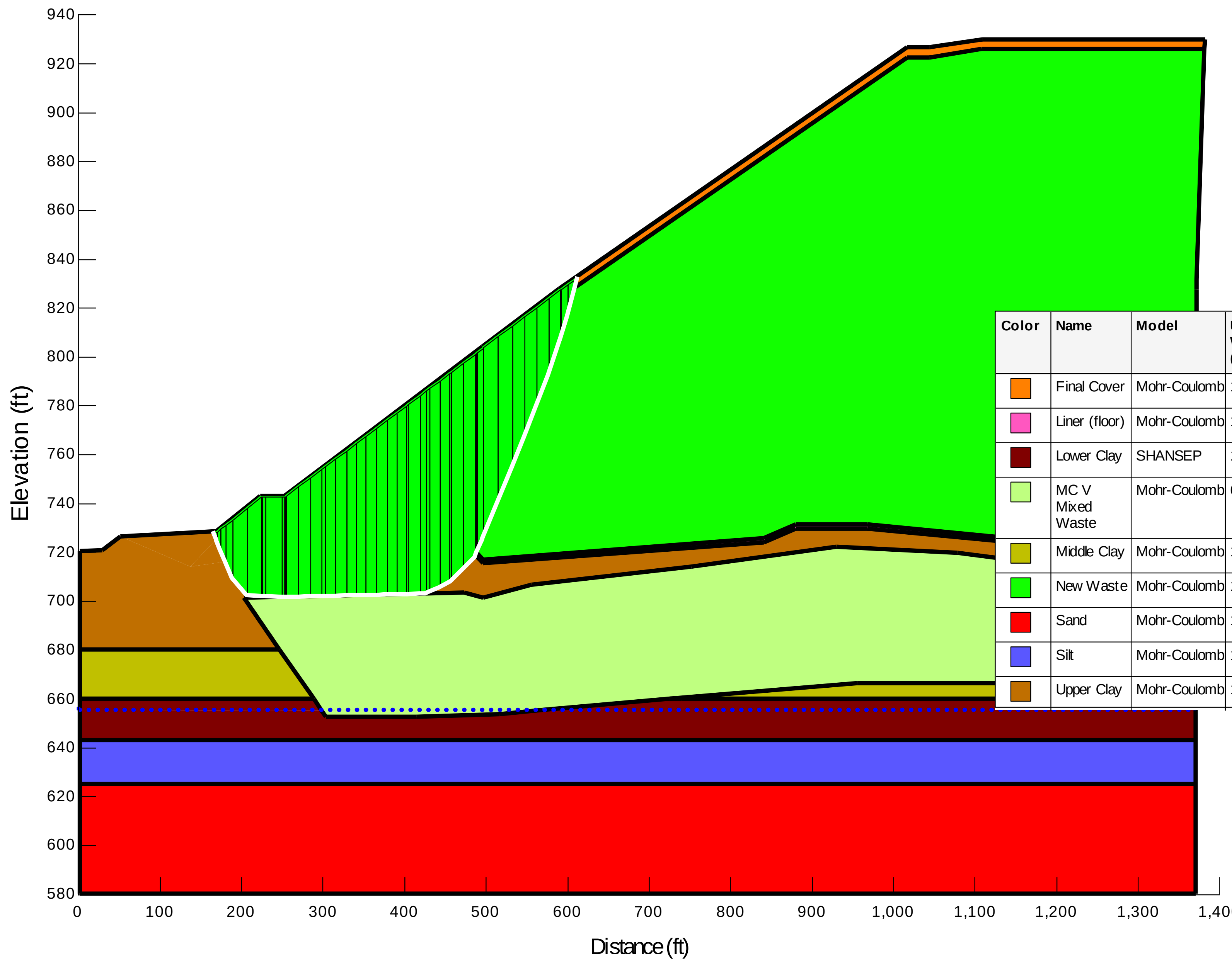
	Plans. Wayne Disposal, Inc. Site No. 2 by NTH Consultants (2008). The elevations for bottom and top of existing waste are from Appendix A Settlement Analysis, WDI MC VI-E Major Design Modification by NTH Consultants (2008). The proposed final cover elevations are from WDI MCVI-E/F Final Cover Proposed Grading Plan by CTI and Associates, Inc.
Source of Subsurface Profile:	Basis of Design Report - NTH (2012)
☐ Preconstruction ☐ Construction ☐ Interim ☒ Final ☐ Existing ☐ Back-Analysis	
Construction Phase Represented:	Final Build out
Other Geometry Notes:	Cross Section H

Factor of Safety:	1.6	☒ Acceptable ☐ Not Acceptable ☐ Follow-up ☐ Superseded
Comments:		
Attachments:	Slope/W Cross Section and Results	



Color	Name	Model	Unit Weight (pcf)	Minimum Strength (psf)	Tau/Sigma Ratio	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Final Cover	Mohr-Coulomb	130			1,500	0.01	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120			0	22.5	0	1	0	No
	Lower Clay	SHANSEP	133	0	0.22				1	1	Yes
	MC V Mixed Waste	Mohr-Coulomb	60			0	28	0	1	0	No
	Middle Clay	Mohr-Coulomb	136			3,000	0.01	0	1	0	No
	New Waste	Mohr-Coulomb	103			300	26	0	1	0	No
	Sand	Mohr-Coulomb	115			0	32	0	1	0	No
	Silt	Mohr-Coulomb	125			0	28	0	1	0	No
	Upper Clay	Mohr-Coulomb	131			1,325	0.01	0	1	0	No





Color	Name	Model	Unit Weight (pcf)	Minimum Strength (psf)	Tau/Sigma Ratio	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Final Cover	Mohr-Coulomb	130			1,500	0.01	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120			0	22.5	0	1	0	No
	Lower Clay	SHANSEP	133	0	0.22				1	1	Yes
	MC V Mixed Waste	Mohr-Coulomb	60			0	28	0	1	0	No
	Middle Clay	Mohr-Coulomb	136			3,000	0.01	0	1	0	No
	New Waste	Mohr-Coulomb	103			300	26	0	1	0	No
	Sand	Mohr-Coulomb	115			0	32	0	1	0	No
	Silt	Mohr-Coulomb	125			0	28	0	1	0	No
	Upper Clay	Mohr-Coulomb	131			1,325	0.01	0	1	0	No

Attachment A-1.4

I-I’ Foundation Stability

SLOPE STABILITY ANALYSIS REPORT FORM

Project Name:	WDI Final Cover Grading Modification						
Project Number:	1218070017.003			**Client:**	Wayne Disposal, Inc.		
Analysis Short Name:	I-I' Foundation Stability				**File name:**	MC-VI-G1_CrossSection_I_Foundation.gsz	
Revision:	0	**Originated:**	MK	**Checked:**	KF	**Approved:**	
Date:	10/07/21	**Date:**	10/07/21	**Date:**	10/7/21	**Date:**	

Purpose of Analysis:	To determine the factor of safety of the proposed final waste grades using cross-section I-I'. This case considers a west-facing slope, with fill to the final proposed grade elevations.		
☒ Effective Stress ☒ Total Stress	☒ Static ☐ Seismic	☒ Pore Pressure	☒ Optimized Surface
Additional Details:	The strength parameters used to model the interface strength of the liner system were those determined from the slope stability analysis of MC-VI-G, Sub Cell G4. The groundwater level was set at elevation 655 based on historical borings as documented in the Basis of Design report (NTH 2012). Drained strength parameters were used for material with a relatively high permeability where excess pore-pressure conditions are not expected due to loading. Undrained strength parameters were used for low-permeability materials (clays) since excess pore pressures may accumulate after loading. This is considered a conservative approach for this scenario.		

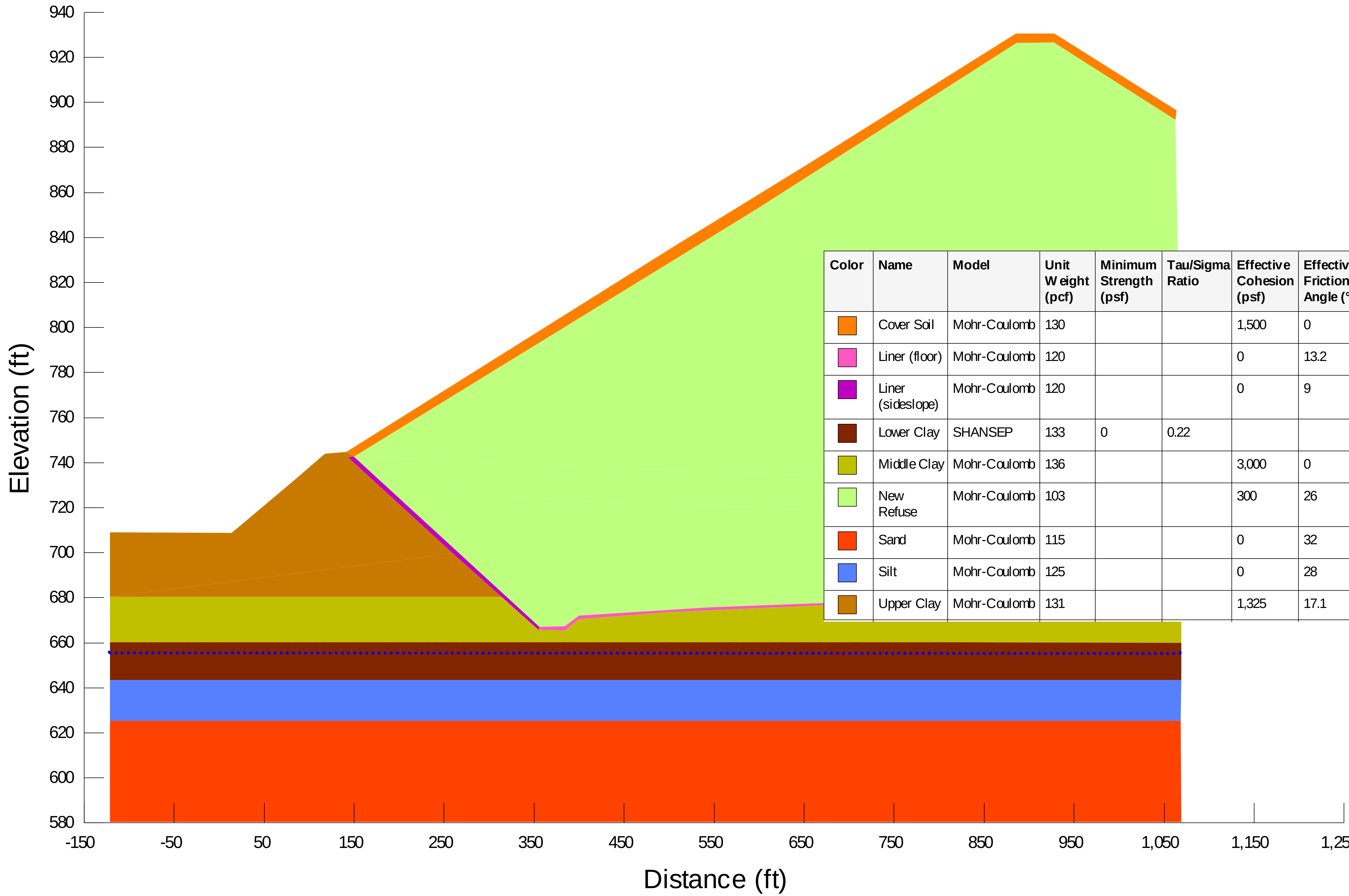
Material	**Name**	**Color in Profile**	**Unit Wt(s) (pcf)**	**Strength ϕ or δ (deg.)**	**Strength C or Ca (psf)**
1	Final Cover	Orange	130	0	1500
2	Existing Waste	Teal	86	34	0
3	New Waste	Light Green	103	26	300
4	Upper Clay	Brown	131	0	1325
5	Middle Clay	Yellow	136	0	3000
6	Lower Clay	Maroon	133	$0.22\sigma'_v$	
7	Silt	Blue	125	28	0
8	Sand	Red	115	32	0
9	Liner (floor)	Magenta	120	13.2	0
10	Liner (sideslope)	Magenta	120	9	0
11	Existing MC V Waste	Teal	120	28	0

Source of Geometry:	The proposed final cover elevations are from WDI Final Cover Grades Modification Engineering Drawings by CTI and Associates, Inc.
Source of Subsurface Profile:	Basis of Design Report - NTH (2012)

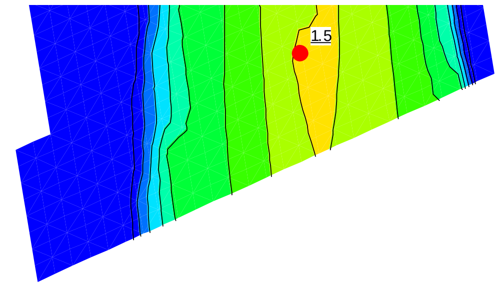
SLOPE STABILITY ANALYSIS REPORT FORM

☐ Preconstruction ☐ Construction ☐ Interim ☒ Final ☐ Existing ☐ Back-Analysis	
Construction Phase Represented:	Final Build out
Other Geometry Notes:	Cross Section I

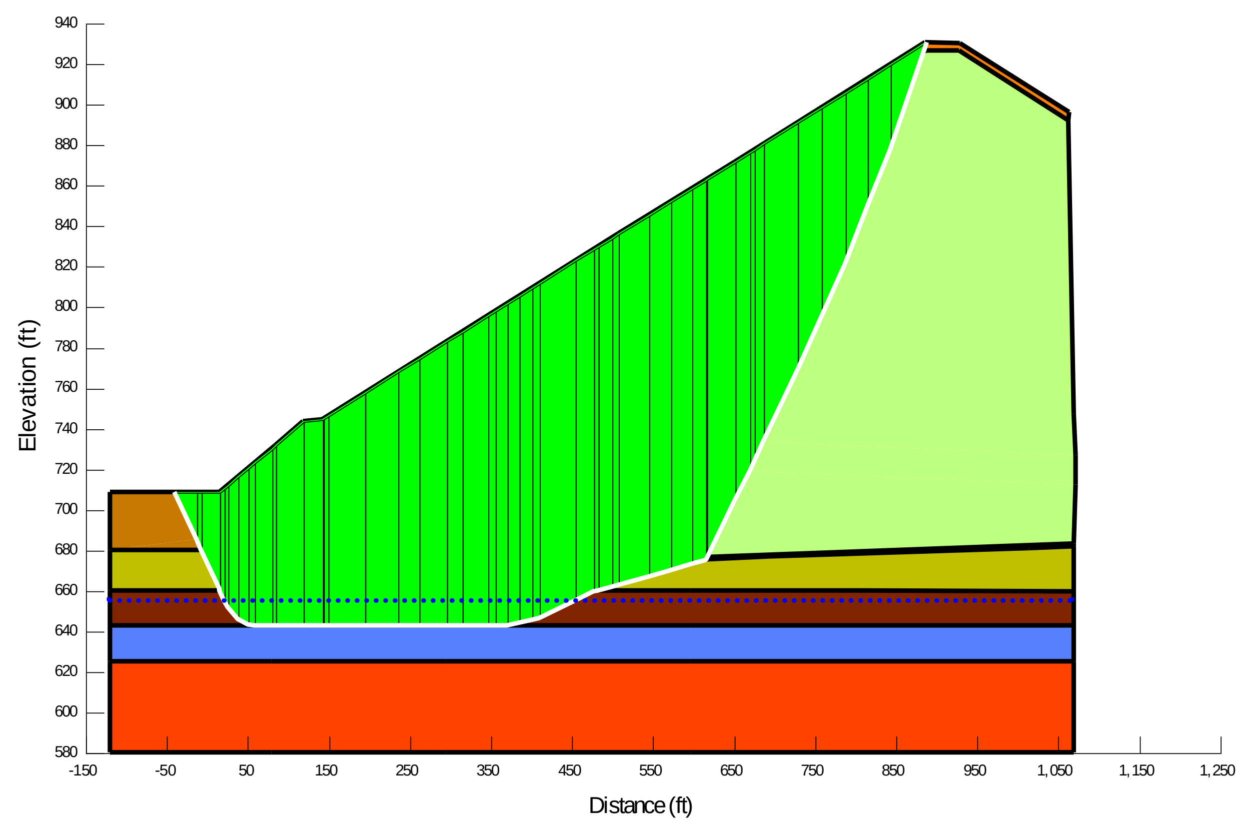
Factor of Safety:	1.5	☒ Acceptable ☐ Not Acceptable ☐ Follow-up ☐ Superseded
Comments:		
Attachments:	Slope/W Cross Section and Results	



Color	Name	Model	Unit Weight (pcf)	Minimum Strength (psf)	Tau/Sigma Ratio	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Cover Soil	Mohr-Coulomb	130			1,500	0	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120			0	13.2	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120			0	9	0	1	0	No
	Lower Clay	SHANSEP	133	0	0.22				1	1	Yes
	Middle Clay	Mohr-Coulomb	136			3,000	0	0	1	0	No
	New Refuse	Mohr-Coulomb	103			300	26	0	1	0	No
	Sand	Mohr-Coulomb	115			0	32	0	1	0	No
	Silt	Mohr-Coulomb	125			0	28	0	1	0	No
	Upper Clay	Mohr-Coulomb	131			1,325	17.1	0	1	0	No



Color	Name	Model	Unit Weight (pcf)	Minimum Strength (psf)	Tau/Sigma Ratio	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Cover Soil	Mohr-Coulomb	130			1,500	0	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120			0	13.2	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120			0	9	0	1	0	No
	Lower Clay	SHANSEP	133	0	0.22				1	1	Yes
	Middle Clay	Mohr-Coulomb	136			3,000	0	0	1	0	No
	New Refuse	Mohr-Coulomb	103			300	26	0	1	0	No
	Sand	Mohr-Coulomb	115			0	32	0	1	0	No
	Silt	Mohr-Coulomb	125			0	28	0	1	0	No
	Upper Clay	Mohr-Coulomb	131			1,325	17.1	0	1	0	No



Attachment A-1.5

J-J’ Foundation Stability

SLOPE STABILITY ANALYSIS REPORT FORM

Project Name:	WDI Final Cover Grading Modification						
Project Number:	1218070017.003			**Client:**	Wayne Disposal, Inc.		
Analysis Short Name:	J-J' Foundation Stability				**File name:**	MC-VI-G2_CrossSection_J_Foundation.gsz	
Revision:	0	**Originated:**	MK	**Checked:**	KF	**Approved:**	
Date:	10/07/21	**Date:**	10/07/21	**Date:**	10/7/21	**Date:**	

Purpose of Analysis:	To determine the factor of safety of the proposed final waste grades using cross-section J-J'. This case considers a west-facing slope, with fill to the final proposed grade elevations.		
☒ Effective Stress ☒ Total Stress	☒ Static ☐ Seismic	☒ Pore Pressure	☒ Optimized Surface
Additional Details:	The strength parameters used to model the interface strength of the liner system were those determined from the slope stability analysis of MC-VI-G, Sub Cell G4. The groundwater level was set at elevation 655 based on historical borings as documented in the Basis of Design report (NTH 2012). Drained strength parameters were used for material with a relatively high permeability where excess pore-pressure conditions are not expected due to loading. Undrained strength parameters were used for low-permeability materials (clays) since excess pore pressures may accumulate after loading. This is considered a conservative approach for this scenario.		

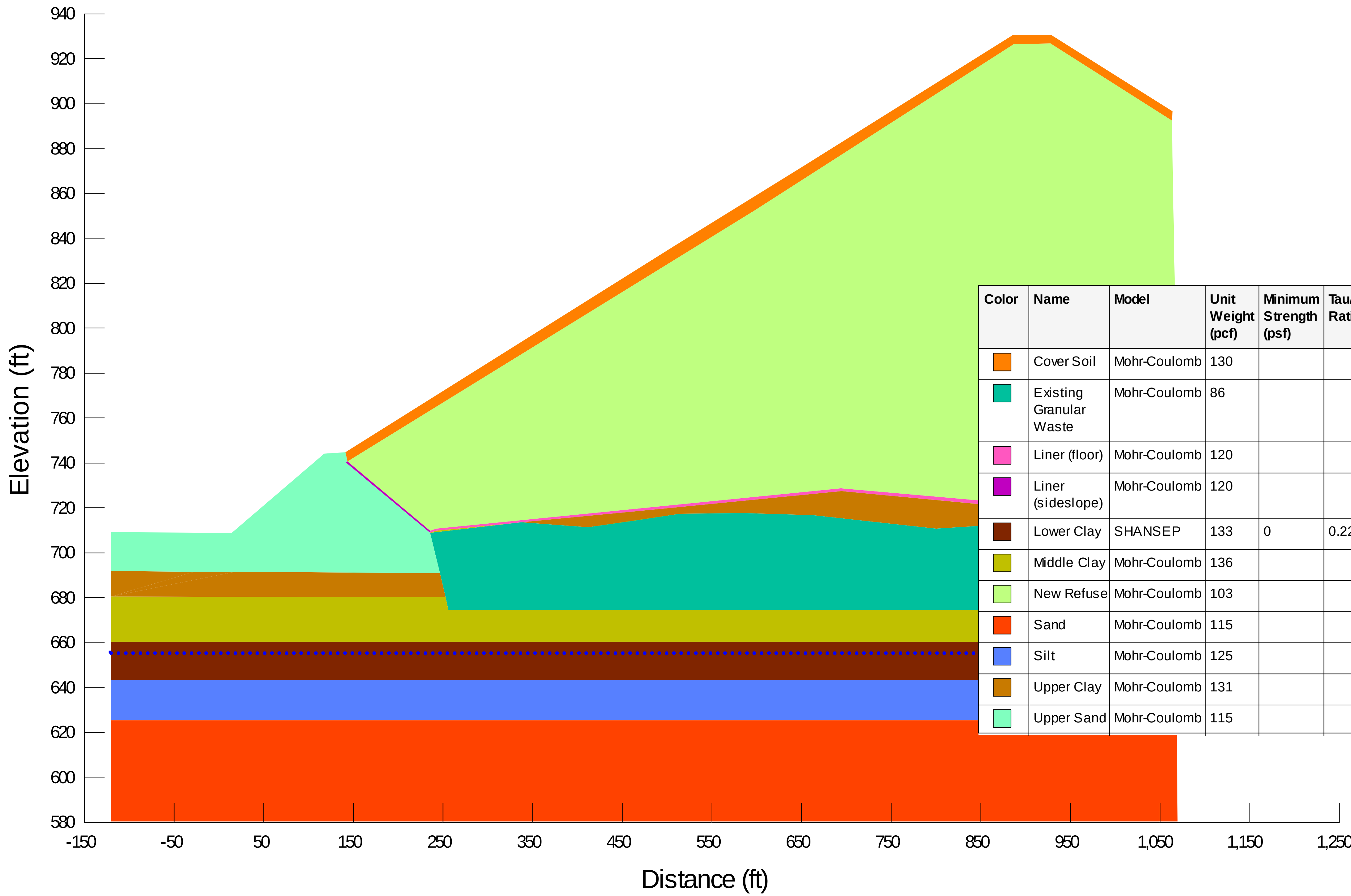
Material	**Name**	**Color in Profile**	**Unit Wt(s) (pcf)**	**Strength ϕ or δ (deg.)**	**Strength C or Ca (psf)**
1	Final Cover	Orange	130	0	1500
2	Existing Waste	Teal	86	34	0
3	New Waste	Light Green	103	26	300
4	Upper Clay	Brown	131	0	1325
5	Middle Clay	Yellow	136	0	3000
6	Lower Clay	Maroon	133	$0.22\sigma'_v$	
7	Silt	Blue	125	28	0
8	Sand/aqua	Red	115	32	0
9	Liner (floor)	Magenta	120	13.2	0
10	Liner (sideslope)	Magenta	120	9	0
11	Existing MC V Waste	Teal	120	28	0

Source of Geometry:	The proposed final cover elevations are from WDI Final Cover Grades Modification Engineering Drawings by CTI and Associates, Inc.
Source of Subsurface Profile:	Basis of Design Report - NTH (2012)

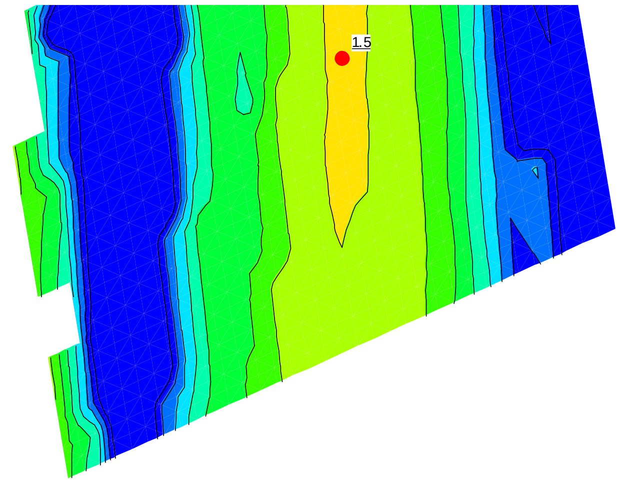
SLOPE STABILITY ANALYSIS REPORT FORM

☐ Preconstruction ☐ Construction ☐ Interim ☒ Final ☐ Existing ☐ Back-Analysis	
Construction Phase Represented:	Final Build out
Other Geometry Notes:	Cross Section J

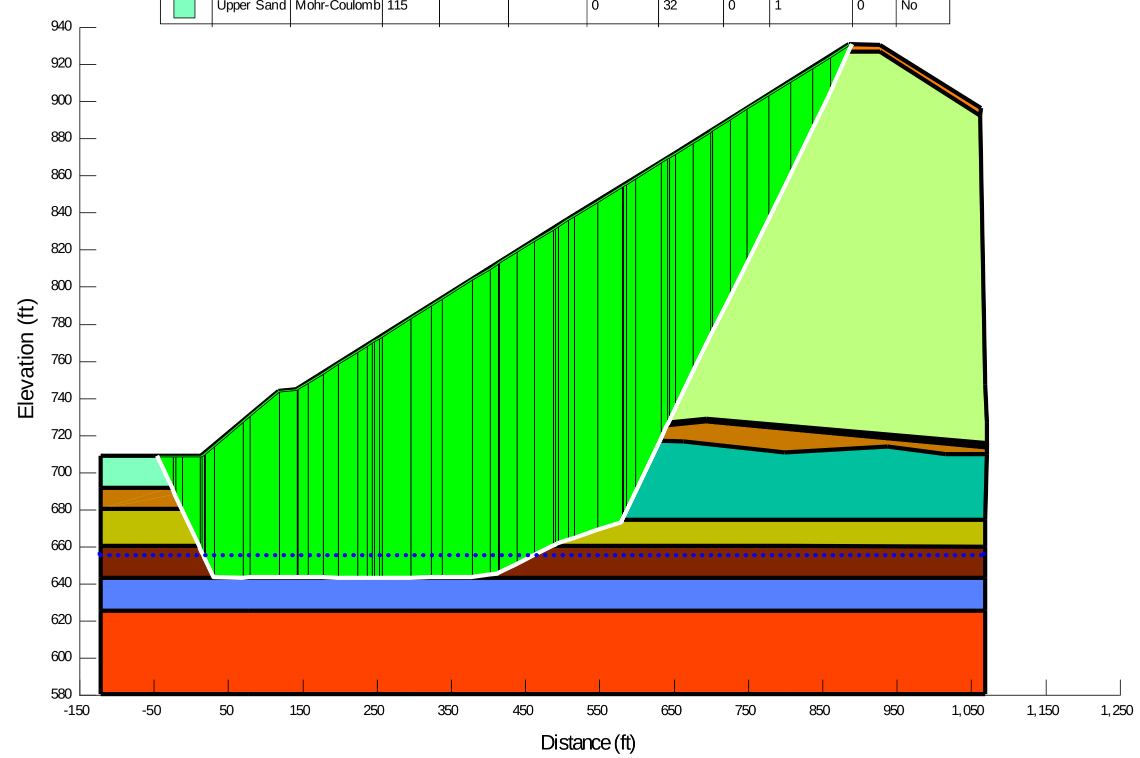
Factor of Safety:	1.5	☒ Acceptable ☐ Not Acceptable ☐ Follow-up ☐ Superseded
Comments:		
Attachments:	Slope/W Cross Section and Results	



Color	Name	Model	Unit Weight (pcf)	Minimum Strength (psf)	Tau/Sigma Ratio	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Cover Soil	Mohr-Coulomb	130			1,500	0	0	1	0	No
	Existing Granular Waste	Mohr-Coulomb	86			0	34	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120			0	13.2	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120			0	9	0	1	0	No
	Lower Clay	SHANSEP	133	0	0.22				1	1	Yes
	Middle Clay	Mohr-Coulomb	136			3,000	0	0	1	0	No
	New Refuse	Mohr-Coulomb	103			300	26	0	1	0	No
	Sand	Mohr-Coulomb	115			0	32	0	1	0	No
	Silt	Mohr-Coulomb	125			0	28	0	1	0	No
	Upper Clay	Mohr-Coulomb	131			1,325	0.0001	0	1	0	No
	Upper Sand	Mohr-Coulomb	115			0	32	0	1	0	No



Color	Name	Model	Unit Weight (pcf)	Minimum Strength (psf)	Tau/Sigma Ratio	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Cover Soil	Mohr-Coulomb	130			1,500	0	0	1	0	No
	Existing Granular Waste	Mohr-Coulomb	86			0	34	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120			0	13.2	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120			0	9	0	1	0	No
	Lower Clay	SHANSEP	133	0	0.22				1	1	Yes
	Middle Clay	Mohr-Coulomb	136			3,000	0	0	1	0	No
	New Refuse	Mohr-Coulomb	103			300	26	0	1	0	No
	Sand	Mohr-Coulomb	115			0	32	0	1	0	No
	Silt	Mohr-Coulomb	125			0	28	0	1	0	No
	Upper Clay	Mohr-Coulomb	131			1,325	0.0001	0	1	0	No
	Upper Sand	Mohr-Coulomb	115			0	32	0	1	0	No



Attachment A-1.6

G-G’ Liner Stability under Final Conditions with Zero Adhesion

SLOPE STABILITY ANALYSIS REPORT FORM

Project Name:	WDI Final Cover Grading Modification						
Project Number:	1218070017.003			**Client:**	Wayne Disposal, Inc.		
Analysis Short Name:	G-G' Liner Stability				**File name:**	MC-VI-F_CrossSection_G_Liner.gsz	
Revision:	0	**Originated:**	MK	**Checked:**	KF	**Approved:**	
Date:	10/07/21	**Date:**	10/07/21	**Date:**	10/7/21	**Date:**	

Purpose of Analysis:	To determine the factor of safety of the proposed final waste grades using cross-section G-G'. This case considers a north-facing slope, with fill to the final proposed grade elevations.		
☒ Effective Stress ☐ Total Stress	☒ Static ☐ Seismic	☒ Pore Pressure	☒ Optimized Surface
Additional Details:	The strength parameters used to model the interface strength of the liner system were those determined from the slope stability analysis of MC-VI-G, Sub Cell G4. These values are achievable using available geosynthetic materials. The required factor of safety is 1.5. A scenario of leachate build up in the leachate collection layer (to a height of 12 inches) is modeled in this analysis.		

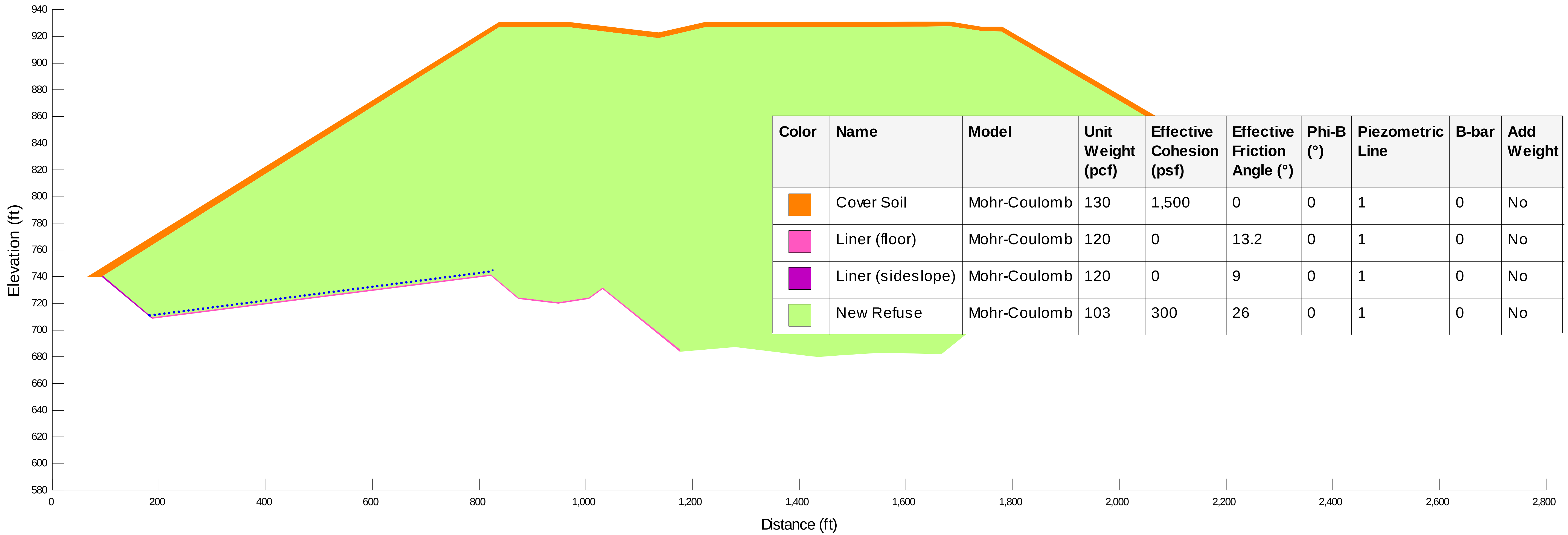
Material	Name	Color in Profile	Unit Wt(s) (pcf)	Strength ϕ or δ (deg.)	Strength C or Ca (psf)
1	Final Cover	Orange	130	0	1500
2	Existing Waste	Teal	86	34	0
3	New Waste	Light Green	103	26	300
4	Upper Clay	Brown	131	0	1325
5	Middle Clay	Yellow	136	0	3000
6	Lower Clay	Maroon	133	$0.22\sigma'_v$	
7	Silt	Blue	125	28	0
8	Sand	Red	115	32	0
9	Liner (floor)	Magenta	120	13.2	0
10	Liner (sideslope)	Magenta	120	9	0
11	Existing MC V Waste	Teal	120	28	0

Source of Geometry:	The proposed final cover elevations are from WDI Final Cover Grades Modification Engineering Drawings by CTI and Associates, Inc.
Source of Subsurface Profile:	Basis of Design Report - NTH (2012)
☐ Preconstruction ☐ Construction ☐ Interim ☒ Final ☐ Existing ☐ Back-Analysis	
Construction Phase Represented:	Final Build out

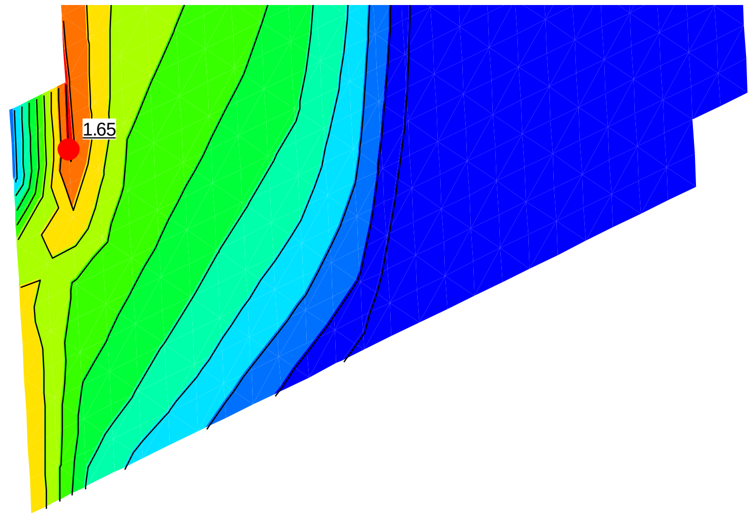
SLOPE STABILITY ANALYSIS REPORT FORM

Other Geometry Notes:	Cross Section G

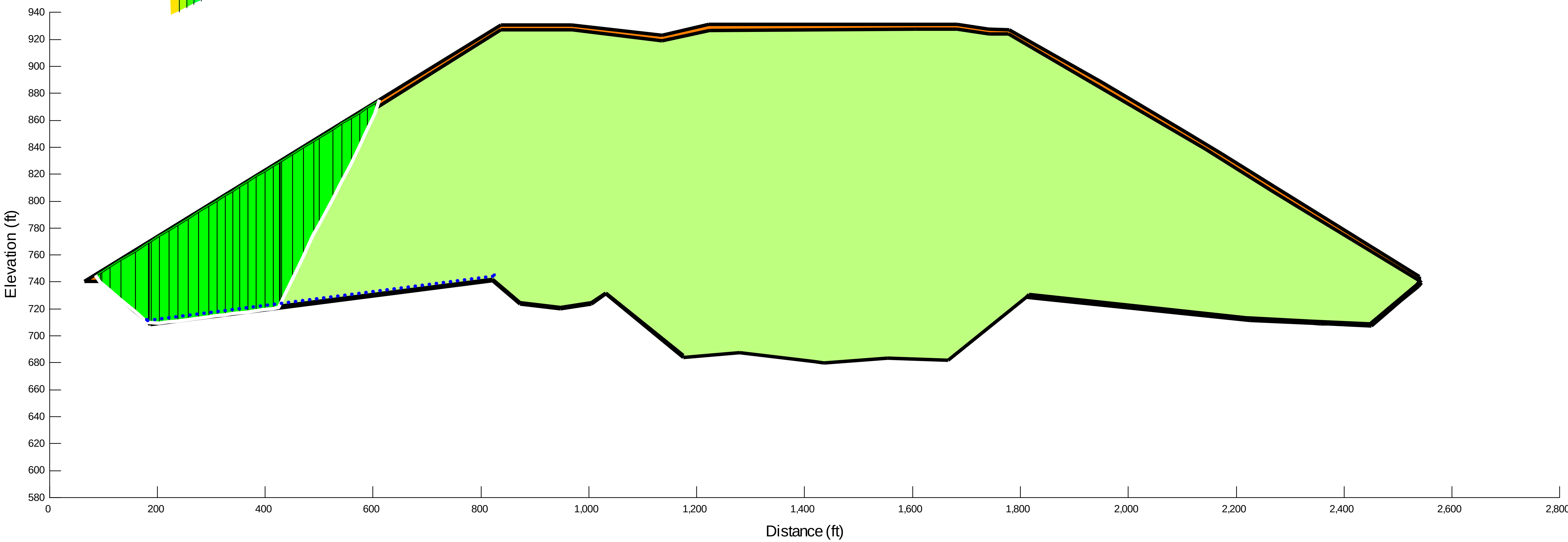
Factor of Safety:	1.7	☒ Acceptable ☐ Not Acceptable ☐ Follow-up ☐ Superseded
Comments:		
Attachments:	Slope/W Cross Section and Results	



Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Cover Soil	Mohr-Coulomb	130	1,500	0	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120	0	13.2	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120	0	9	0	1	0	No
	New Refuse	Mohr-Coulomb	103	300	26	0	1	0	No



Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Cover Soil	Mohr-Coulomb	130	1,500	0	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120	0	13.2	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120	0	9	0	1	0	No
	New Refuse	Mohr-Coulomb	103	300	26	0	1	0	No



Attachment A-1.7

H-H’ Liner Stability under Final Conditions with Zero Adhesion

SLOPE STABILITY ANALYSIS REPORT FORM

<table>
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<tr><td>Project Number:</td><td colspan="3">1218070017.003</td><td>Client:</td><td colspan="3">Wayne Disposal, Inc.</td></tr>
<tr><td>Analysis Short Name:</td><td colspan="4">H-H’ Foundation Stability</td><td>File name:</td><td colspan="2">MC-VI-E_CrossSection_H_Liner.gsz</td></tr>
<tr><td>Revision:</td><td>0</td><td>Originated:</td><td>KM</td><td>Checked:</td><td>MK</td><td>Approved:</td><td>KF</td></tr>
<tr><td>Date:</td><td>10/07/21</td><td>Date:</td><td>6/3/21</td><td>Date:</td><td>10/07/21</td><td>Date:</td><td>10/7/21</td></tr>
</table>

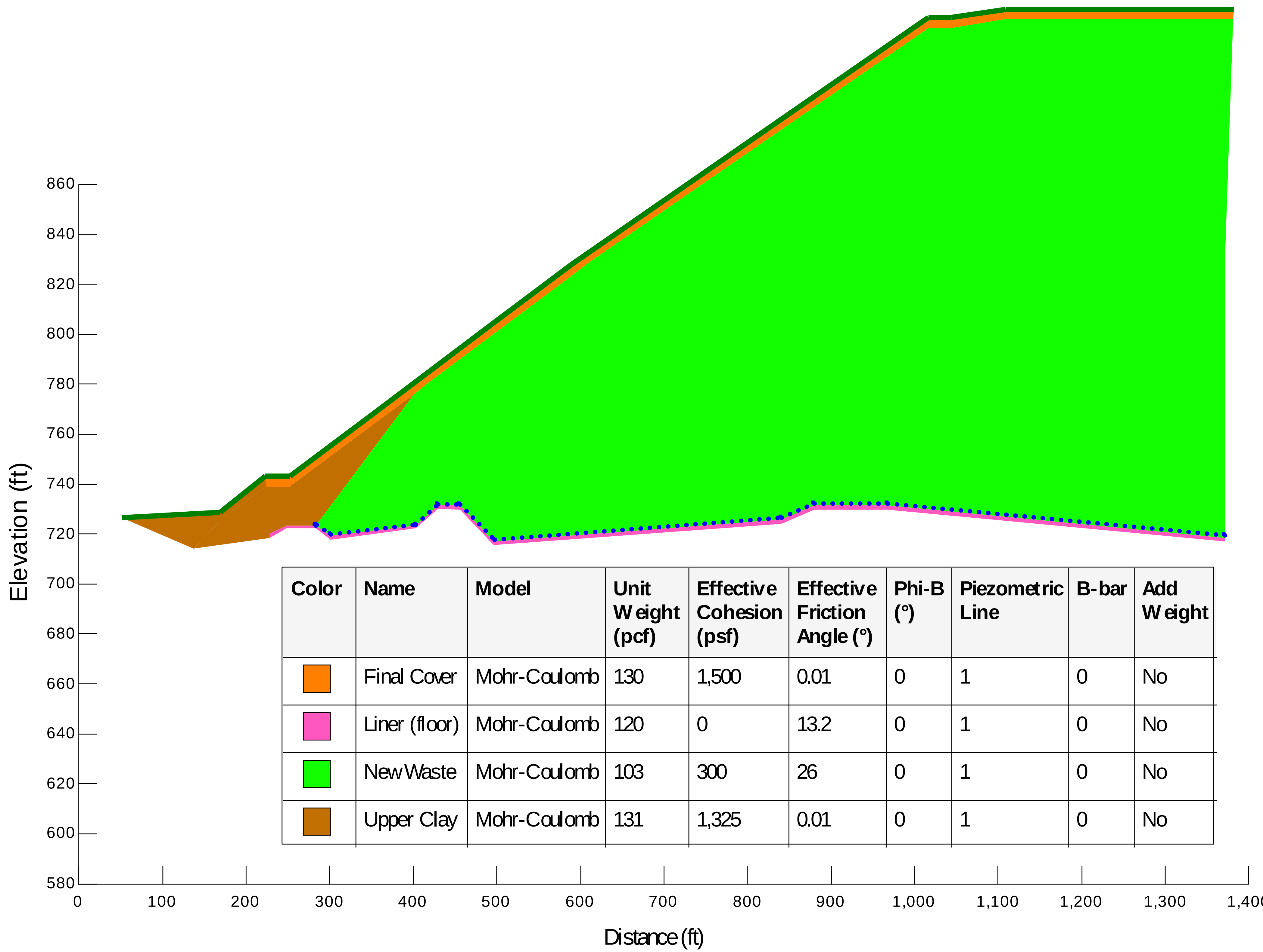
<table>
<tr><td>Purpose of Analysis:</td><td colspan="3">To determine the factor of safety of the proposed final waste grades using cross-section H-H’. This case considers a north-facing slope, with fill to the final proposed grade elevations.</td></tr>
<tr><td>☒ Effective Stress
☐ Total Stress</td><td>☒ Static ☐ Seismic</td><td>☒ Pore Pressure</td><td>☒ Optimized Surface</td></tr>
<tr><td>Additional Details:</td><td colspan="3">The strength parameters used to model the interface strength of the liner system were those determined from the slope stability analysis of MC-VI-G, Sub Cell G4. These values are achievable using available geosynthetic materials. Available data from interface testing performed on the liner system during installation suggests the interface friction angle may be as high as 22.5 degrees. This analysis was performed using a lower value which is a conservative approach.
The required factor of safety is 1.5. A scenario of leachate build up in the leachate collection layer (to a height of 12 inches) is modeled in this analysis.</td></tr>
</table>

<table>
<tr><th>Material</th><th>Name</th><th>Color in Profile</th><th>Unit Wt(s) (pcf)</th><th>Strength ϕ or δ (deg.)</th><th>Strength C or Ca (psf)</th></tr>
<tr><td>1</td><td>Final Cover</td><td>Orange</td><td>130</td><td>0</td><td>1500</td></tr>
<tr><td>2</td><td>Existing Waste</td><td>Teal</td><td>86</td><td>34</td><td>0</td></tr>
<tr><td>3</td><td>New Waste</td><td>Light Green</td><td>103</td><td>26</td><td>300</td></tr>
<tr><td>4</td><td>Upper Clay</td><td>Brown</td><td>131</td><td>0</td><td>1325</td></tr>
<tr><td>5</td><td>Middle Clay</td><td>Yellow</td><td>136</td><td>0</td><td>3000</td></tr>
<tr><td>6</td><td>Lower Clay</td><td>Maroon</td><td>133</td><td colspan="2">$0.22\sigma'_v$</td></tr>
<tr><td>7</td><td>Silt</td><td>Blue</td><td>125</td><td>28</td><td>0</td></tr>
<tr><td>8</td><td>Sand</td><td>Red</td><td>115</td><td>32</td><td>0</td></tr>
<tr><td>9</td><td>Liner (floor)</td><td>Magenta</td><td>120</td><td>13.2</td><td>0</td></tr>
<tr><td>10</td><td>Liner (sideslope)</td><td>Magenta</td><td>120</td><td>9</td><td>0</td></tr>
<tr><td>11</td><td>Existing MC V Waste</td><td>Teal</td><td>120</td><td>28</td><td>0</td></tr>
</table>

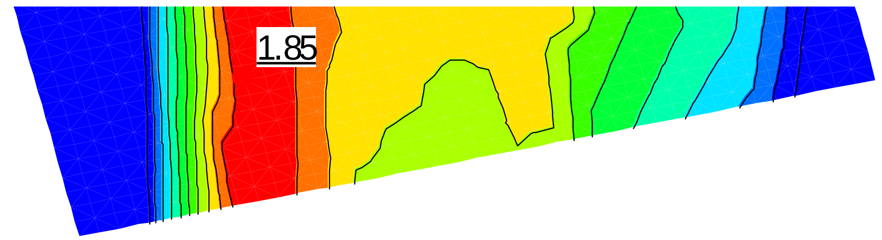
Source of Geometry:	The overfill liner elevations are from Master Cell VI-E Design Modification Plans, Wayne Disposal Inc., Site No. 2 by NTH Consultants (2011) and Master Cell VI Design Modification

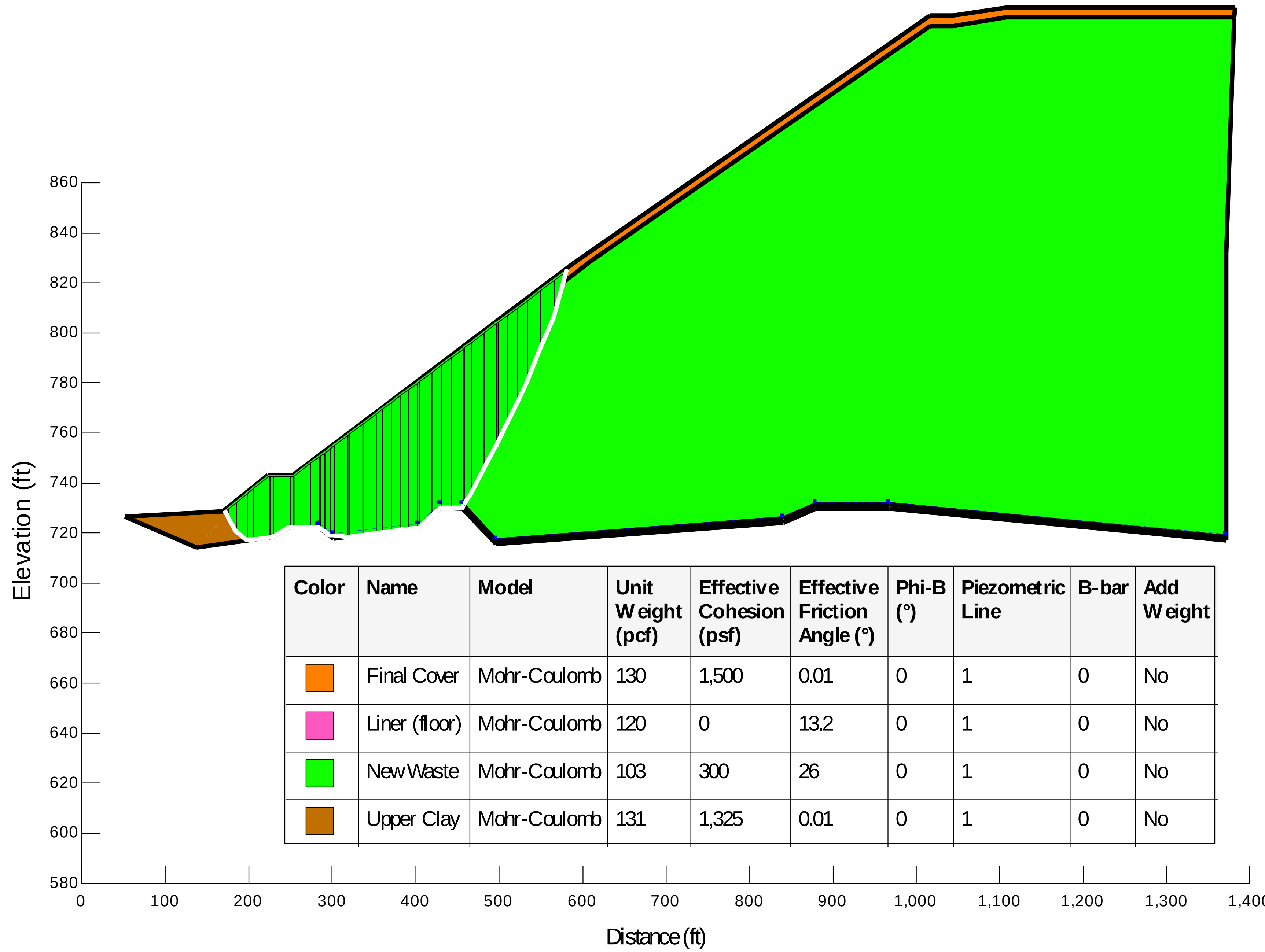
	Plans. Wayne Disposal, Inc. Site No. 2 by NTH Consultants (2008). The proposed final cover elevations are from WDI MCVI-E/F Final Cover Proposed Grading Plan by CTI and Associates, Inc.
Source of Subsurface Profile:	Basis of Design Report - NTH (2012)
☐ Preconstruction ☐ Construction ☐ Interim ☒ Final ☐ Existing ☐ Back-Analysis	
Construction Phase Represented:	Final Build out
Other Geometry Notes:	Cross Section H

Factor of Safety:	1.9	☒ Acceptable ☐ Not Acceptable ☐ Follow-up ☐ Superseded
Comments:		
Attachments:	Slope/W Cross Section and Results	



Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Final Cover	Mohr-Coulomb	130	1,500	0.01	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120	0	13.2	0	1	0	No
	New Waste	Mohr-Coulomb	103	300	26	0	1	0	No
	Upper Clay	Mohr-Coulomb	131	1,325	0.01	0	1	0	No





Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Final Cover	Mohr-Coulomb	130	1,500	0.01	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120	0	13.2	0	1	0	No
	New Waste	Mohr-Coulomb	103	300	26	0	1	0	No
	Upper Clay	Mohr-Coulomb	131	1,325	0.01	0	1	0	No

Attachment A-1.8

I-I’ Liner Stability under Final Conditions with Zero Adhesion

SLOPE STABILITY ANALYSIS REPORT FORM

Project Name:	WDI Final Cover Grading Modification						
Project Number:	1218070017.003			**Client:**	Wayne Disposal, Inc.		
Analysis Short Name:	I-I' Liner Stability				**File name:**	MC-VI-G1_CrossSection_I_Liner.gsz	
Revision:	0	**Originated:**	MK	**Checked:**	KF	**Approved:**	
Date:	10/07/21	**Date:**	10/07/21	**Date:**	10/7/21	**Date:**	

Purpose of Analysis:	To determine the factor of safety of the proposed final waste grades using cross-section I-I'. This case considers a north-facing slope, with fill to the final proposed grade elevations.		
☒ Effective Stress ☐ Total Stress	☒ Static ☐ Seismic	☒ Pore Pressure	☒ Optimized Surface
Additional Details:	The strength parameters used to model the interface strength of the liner system were those determined from the slope stability analysis of MC-VI-G, Sub Cell G4. These values are achievable using available geosynthetic materials. The required factor of safety is 1.5. A scenario of leachate build up in the leachate collection layer (to a height of 12 inches) is modeled in this analysis.		

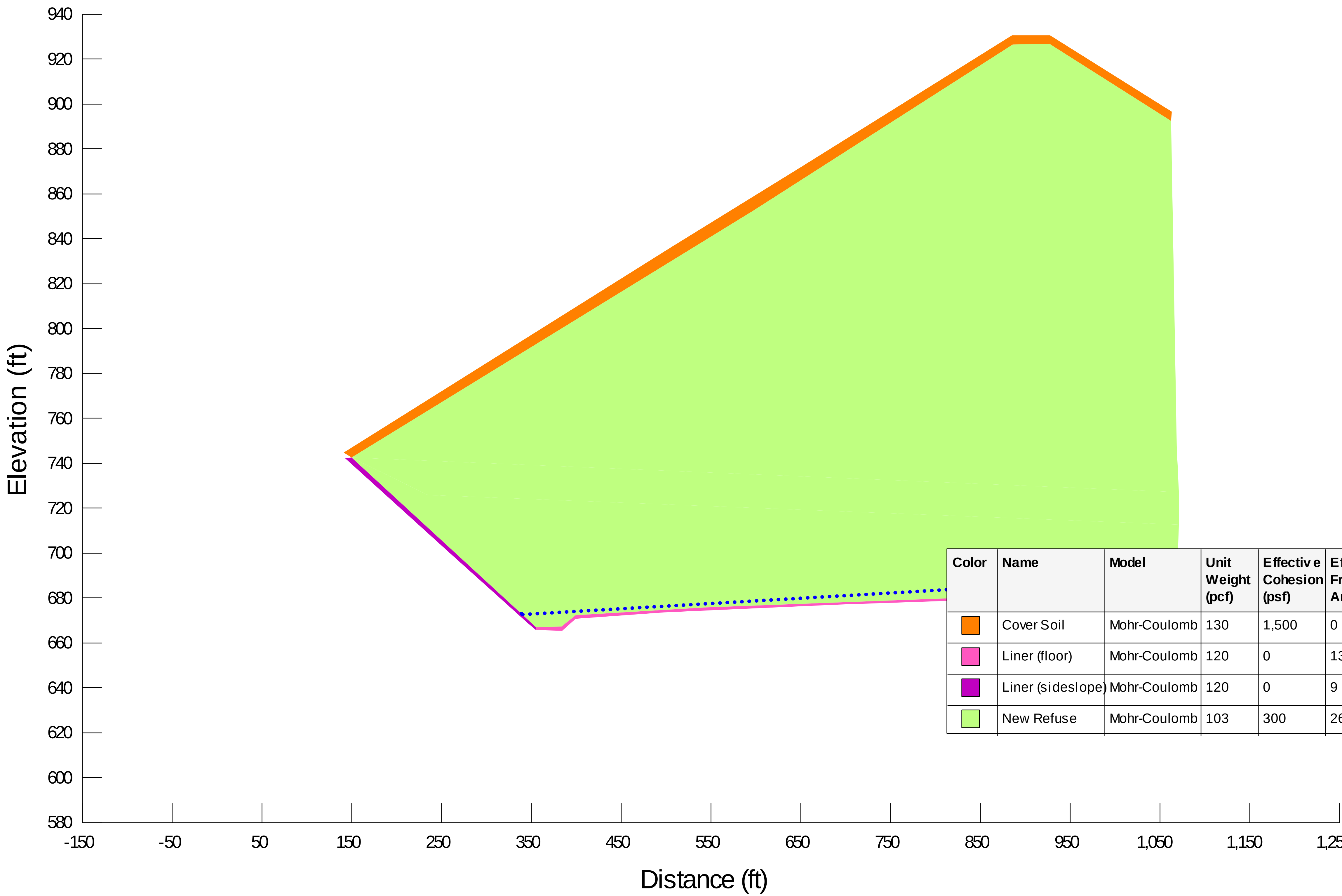
Material	**Name**	**Color in Profile**	**Unit Wt(s) (pcf)**	**Strength ϕ or δ (deg.)**	**Strength C or Ca (psf)**
1	Final Cover	Orange	130	0	1500
2	Existing Waste	Teal	86	34	0
3	New Waste	Light Green	103	26	300
4	Upper Clay	Brown	131	0	1325
5	Middle Clay	Yellow	136	0	3000
6	Lower Clay	Maroon	133	$0.22\sigma'_v$	
7	Silt	Blue	125	28	0
8	Sand	Red	115	32	0
9	Liner (floor)	Magenta	120	13.2	0
10	Liner (sideslope)	Magenta	120	9	0
11	Existing MC V Waste	Teal	120	28	0

Source of Geometry:	The proposed final cover elevations are from WDI Final Cover Grades Modification Engineering Drawings by CTI and Associates, Inc.
Source of Subsurface Profile:	Basis of Design Report - NTH (2012)
☐ Preconstruction ☐ Construction ☐ Interim ☒ Final ☐ Existing ☐ Back-Analysis	
Construction Phase Represented:	Final Build out

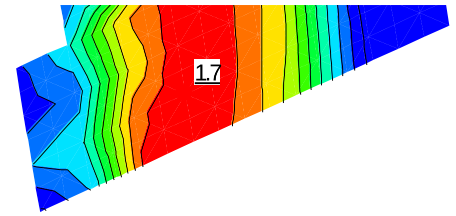
SLOPE STABILITY ANALYSIS REPORT FORM

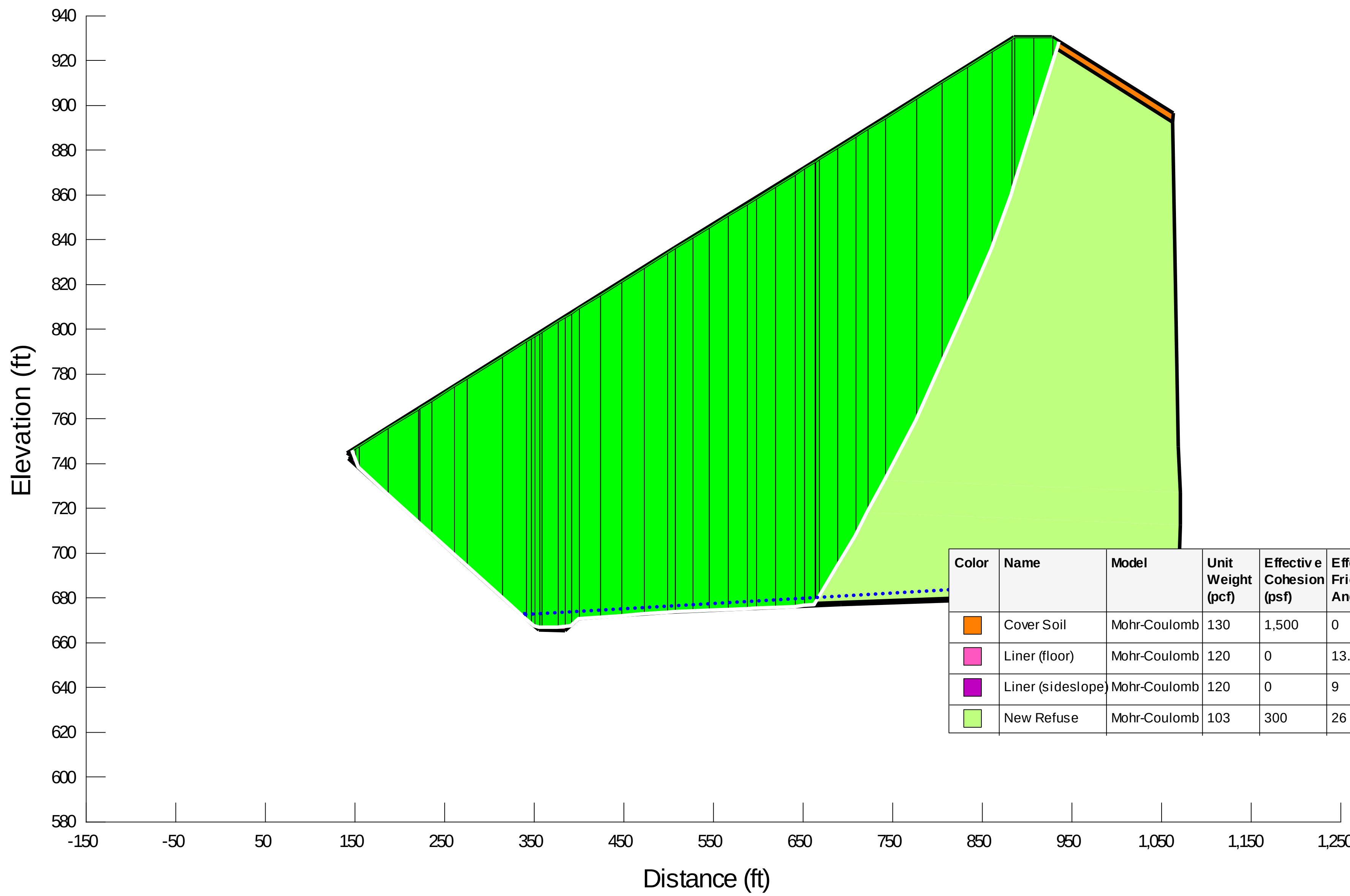
Other Geometry Notes:	Cross Section I

Factor of Safety:	1.7	☒ Acceptable ☐ Not Acceptable ☐ Follow-up ☐ Superseded
Comments:		
Attachments:	Slope/W Cross Section and Results	



Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Cover Soil	Mohr-Coulomb	130	1,500	0	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120	0	13.2	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120	0	9	0	1	0	No
	New Refuse	Mohr-Coulomb	103	300	26	0	1	0	No





Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Cover Soil	Mohr-Coulomb	130	1,500	0	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120	0	13.2	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120	0	9	0	1	0	No
	New Refuse	Mohr-Coulomb	103	300	26	0	1	0	No

Attachment A-1.9

J-J’ Liner Stability under Final Conditions with Zero Adhesion

SLOPE STABILITY ANALYSIS REPORT FORM

Project Name:	WDI Final Cover Grading Modification						
Project Number:	1218070017.003			**Client:**	Wayne Disposal, Inc.		
Analysis Short Name:	J-J' Liner Stability				**File name:**	MC-VI-G2_CrossSection_J_Liner.gsz	
Revision:	0	**Originated:**	MK	**Checked:**	KF	**Approved:**	
Date:	10/07/21	**Date:**	10/07/21	**Date:**	10/7/21	**Date:**	

Purpose of Analysis:	To determine the factor of safety of the proposed final waste grades using cross-section J-J'. This case considers a north-facing slope, with fill to the final proposed grade elevations.		
☒ Effective Stress ☐ Total Stress	☒ Static ☐ Seismic	☒ Pore Pressure	☒ Optimized Surface
Additional Details:	The strength parameters used to model the interface strength of the liner system were those determined from the slope stability analysis of MC-VI-G, Sub Cell G4. These values are achievable using available geosynthetic material. The required factor of safety is 1.5. A scenario of leachate build up in the leachate collection layer (to a height of 12 inches) is modeled in this analysis.		

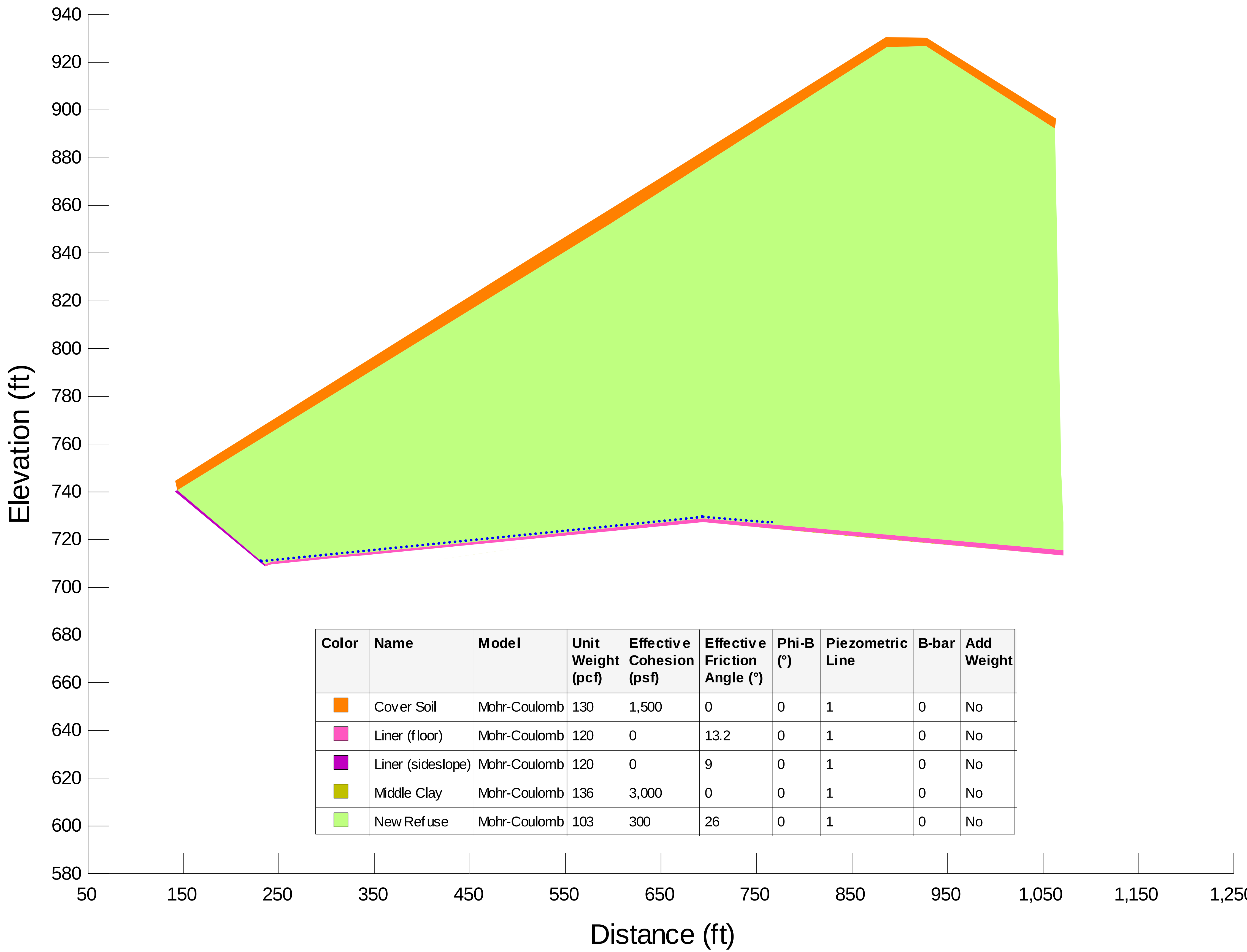
Material	Name	Color in Profile	Unit Wt(s) (pcf)	Strength ϕ or δ (deg.)	Strength C or Ca (psf)
1	Final Cover	Orange	130	0	1500
2	Existing Waste	Teal	86	34	0
3	New Waste	Light Green	103	26	300
4	Upper Clay	Brown	131	0	1325
5	Middle Clay	Yellow	136	0	3000
6	Lower Clay	Maroon	133	$0.22\sigma'_v$	
7	Silt	Blue	125	28	0
8	Sand	Red	115	32	0
9	Liner (floor)	Magenta	120	13.2	0
10	Liner (sideslope)	Magenta	120	9	0
11	Existing MC V Waste	Teal	120	28	0

Source of Geometry:	The proposed final cover elevations are from WDI Final Cover Grades Modification Engineering Drawings by CTI and Associates, Inc.
Source of Subsurface Profile:	Basis of Design Report - NTH (2012)
☐ Preconstruction ☐ Construction ☐ Interim ☒ Final ☐ Existing ☐ Back-Analysis	
Construction Phase Represented:	Final Build out

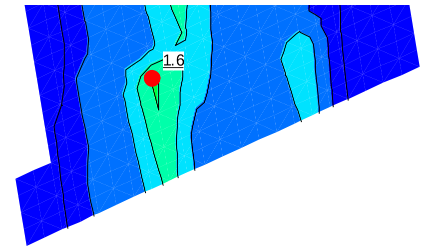
SLOPE STABILITY ANALYSIS REPORT FORM

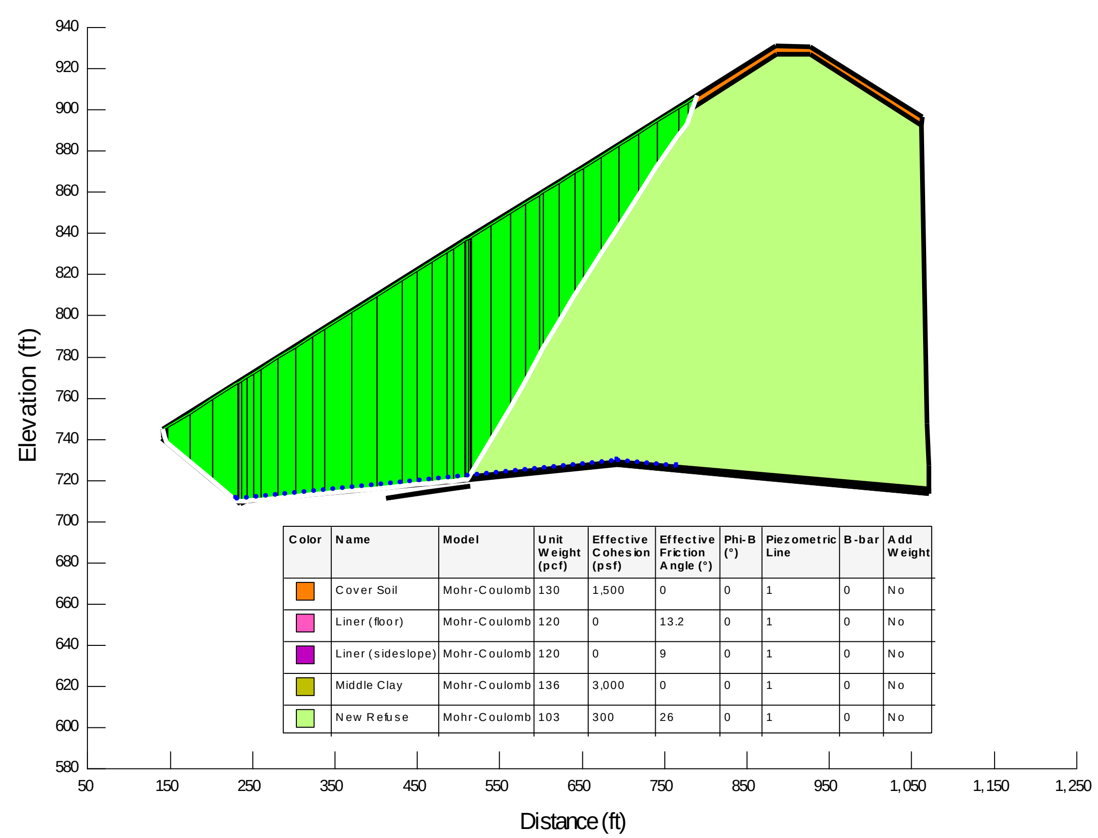
Other Geometry Notes:	Cross Section J

Factor of Safety:	1.6	☒ Acceptable ☐ Not Acceptable ☐ Follow-up ☐ Superseded
Comments:		
Attachments:	Slope/W Cross Section and Results	



Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Cover Soil	Mohr-Coulomb	130	1,500	0	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120	0	13.2	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120	0	9	0	1	0	No
	Middle Clay	Mohr-Coulomb	136	3,000	0	0	1	0	No
	New Refuse	Mohr-Coulomb	103	300	26	0	1	0	No





Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Cover Soil	Mohr-Coulomb	130	1,500	0	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120	0	13.2	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120	0	9	0	1	0	No
	Middle Clay	Mohr-Coulomb	136	3,000	0	0	1	0	No
	New Refuse	Mohr-Coulomb	103	300	26	0	1	0	No

Attachment A-1.10

I-I' Liner Stability under Final Conditions with non-Zero Adhesion (previously tested values)

SLOPE STABILITY ANALYSIS REPORT FORM

Project Name:	WDI Final Cover Grading Modification						
Project Number:	1218070017.003			**Client:**	Wayne Disposal, Inc.		
Analysis Short Name:	I-I' Liner Stability				**File name:**	MC-VI-G1_CrossSection_I_Liner_Tested_Values.gsz	
Revision:	0	**Originated:**	MK	**Checked:**	KF	**Approved:**	
Date:	10/07/21	**Date:**	10/07/21	**Date:**	10/7/21	**Date:**	

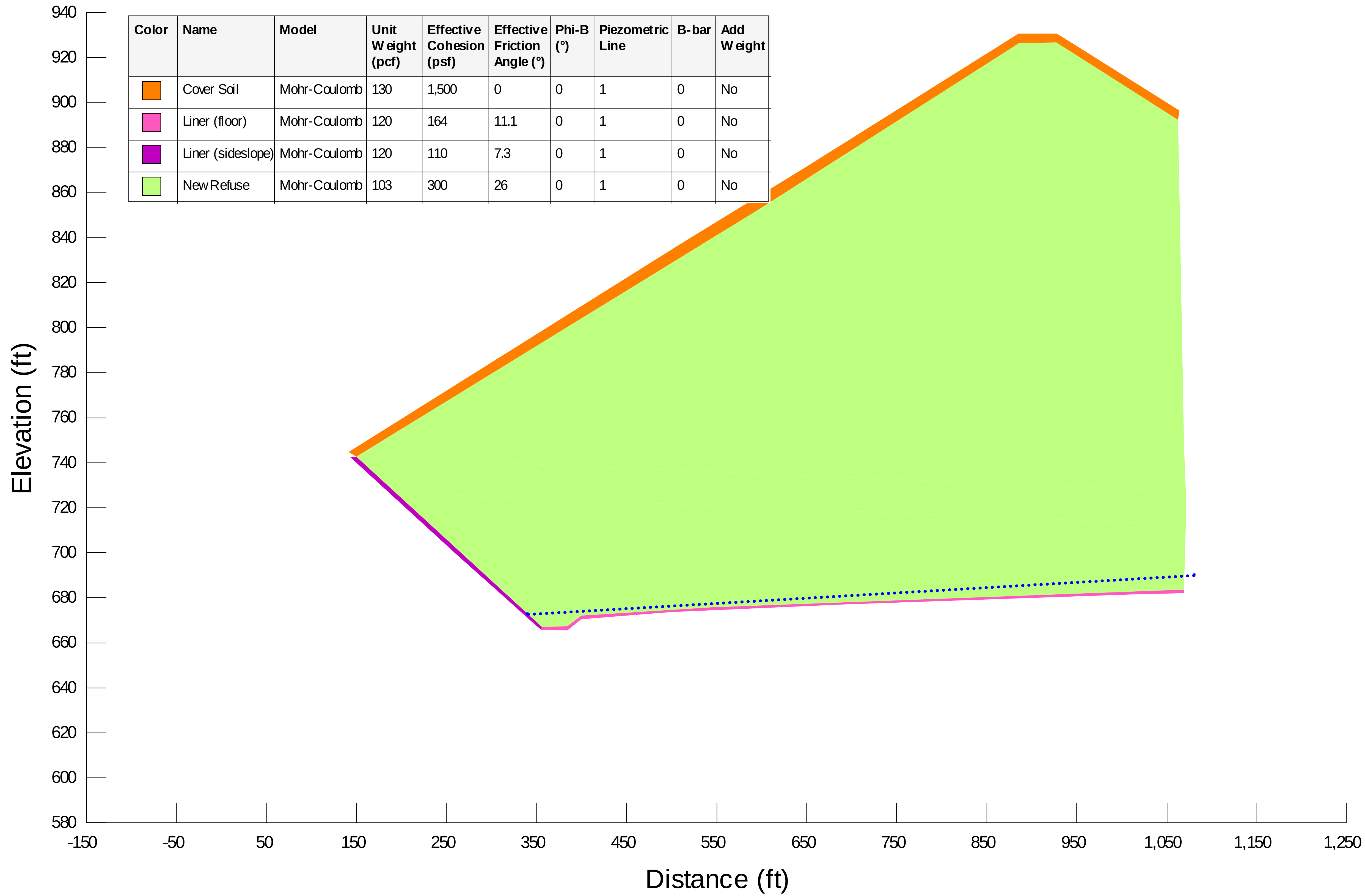
Purpose of Analysis:	To determine the factor of safety of the proposed final waste grades using cross-section I-I'. This case considers a west-facing slope, with fill to the final proposed grade elevations.		
☒ Effective Stress ☐ Total Stress	☒ Static ☐ Seismic	☒ Pore Pressure	☒ Optimized Surface
Additional Details:	The strength parameters used to model the interface strength of the liner system were determined from existing interface strength testing performed on existing similar liner system materials at WDI. The required factor of safety is 1.5. A scenario of leachate build up in the leachate collection layer (to a height of 12 inches) is modeled in this analysis.		

Material	Name	Color in Profile	Unit Wt(s) (pcf)	Strength ϕ or δ (deg.)	Strength C or Ca (psf)
1	Final Cover	Orange	130	0	1500
2	Existing Waste	Teal	86	34	0
3	New Waste	Light Green	103	26	300
4	Upper Clay	Brown	131	0	1325
5	Middle Clay	Yellow	136	0	3000
6	Lower Clay	Maroon	133	$0.22\sigma'_v$	
7	Silt	Blue	125	28	0
8	Sand	Red	115	32	0
9	Liner (floor)	Magenta	120	11.1	164
10	Liner (sideslope)	Magenta	120	7.3	110
11	Existing MC V Waste	Teal	120	28	0

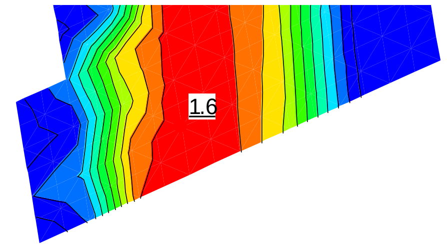
Source of Geometry:	The proposed final cover elevations are from WDI Final Cover Grades Modification Engineering Drawings by CTI and Associates, Inc.
Source of Subsurface Profile:	Basis of Design Report - NTH (2012)
☐ Preconstruction ☐ Construction ☐ Interim ☒ Final ☐ Existing ☐ Back-Analysis	
Construction Phase Represented:	Final Build out
Other Geometry Notes:	Cross Section I

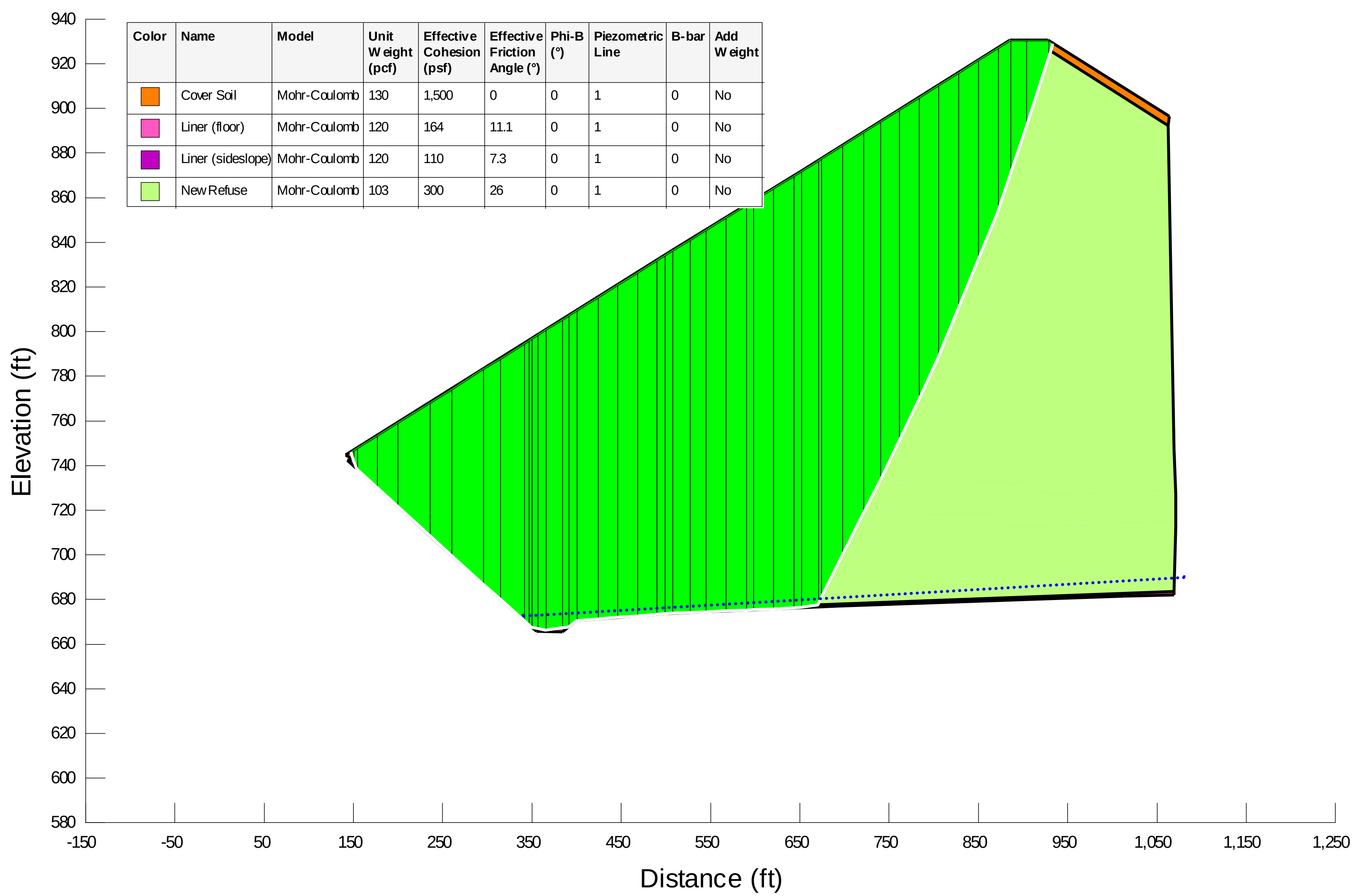
SLOPE STABILITY ANALYSIS REPORT FORM

Factor of Safety:	1.6	☒ Acceptable ☐ Not Acceptable ☐ Follow-up ☐ Superseded
Comments:		
Attachments:	Slope/W Cross Section and Results	



Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Cover Soil	Mohr-Coulomb	130	1,500	0	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120	164	11.1	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120	110	7.3	0	1	0	No
	New Refuse	Mohr-Coulomb	103	300	26	0	1	0	No


1.6


Color | Name | Model | Unit Weight (pcf) | Effective Cohesion (psf) | Effective Friction Angle (°) | Phi-B (°) | Piezometric Line | B-bar | Add Weight
Cover Soil | Mohr-Coulomb | 130 | 1,500 | 0 | 0 | 1 | 0 | No
Liner (floor) | Mohr-Coulomb | 120 | 164 | 11.1 | 0 | 1 | 0 | No
Liner (sideslope) | Mohr-Coulomb | 120 | 110 | 7.3 | 0 | 1 | 0 | No
New Refuse | Mohr-Coulomb | 103 | 300 | 26 | 0 | 1 | 0 | No
Elevation (ft)
940
920
900
880
860
840
820
800
780
760
740
720
700
680
660
640
620
600
580
-150
-50
50
150
250
350
450
550
650
750
850
950
1,050
1,150
1,250
Distance (ft)

Attachment A-1.11

J-J’ Liner Stability under Final Conditions with non-Zero Adhesion (previously tested values)

SLOPE STABILITY ANALYSIS REPORT FORM

Project Name:	WDI Final Cover Grading Modification						
Project Number:	1218070017.003			**Client:**	Wayne Disposal, Inc.		
Analysis Short Name:	J-J' Liner Stability				**File name:**	MC-VI-G2_CrossSection_J_Liner_Tested_Values.gsz	
Revision:	0	**Originated:**	MK	**Checked:**	KF	**Approved:**	
Date:	10/07/21	**Date:**	10/07/21	**Date:**	10/7/21	**Date:**	

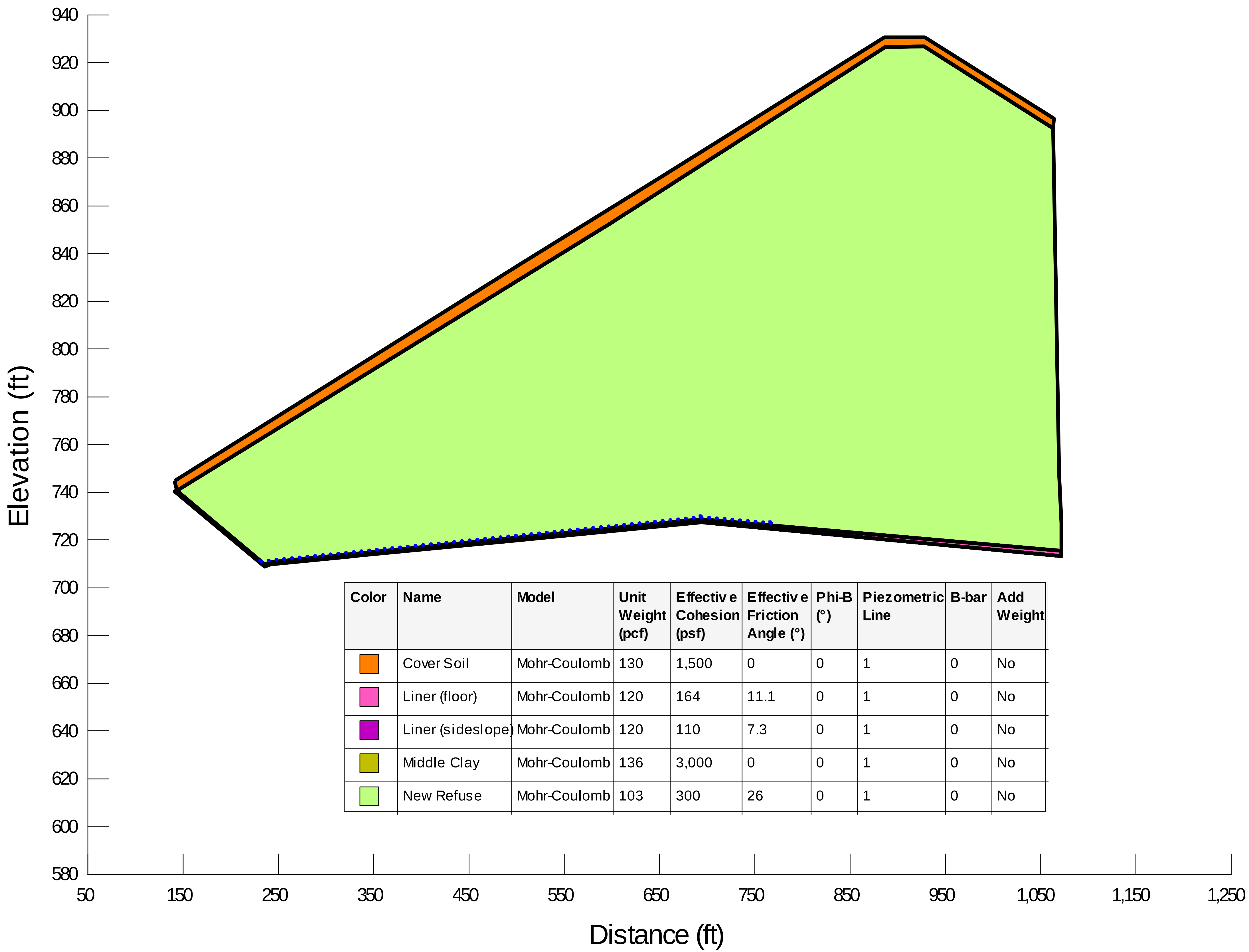
Purpose of Analysis:	To determine the factor of safety of the proposed final waste grades using cross-section J-J'. This case considers a north-facing slope, with fill to the final proposed grade elevations.		
☒ Effective Stress ☐ Total Stress	☒ Static ☐ Seismic	☒ Pore Pressure	☒ Optimized Surface
Additional Details:	The strength parameters used to model the interface strength of the liner system were determined from existing interface strength testing performed on existing similar liner system materials at WDI. The required factor of safety is 1.5. A scenario of leachate build up in the leachate collection layer (to a height of 12 inches) is modeled in this analysis.		

Material	Name	Color in Profile	Unit Wt(s) (pcf)	Strength ϕ or δ (deg.)	Strength C or Ca (psf)
1	Final Cover	Orange	130	0	1500
2	Existing Waste	Teal	86	34	0
3	New Waste	Light Green	103	26	300
4	Upper Clay	Brown	131	0	1325
5	Middle Clay	Yellow	136	0	3000
6	Lower Clay	Maroon	133	$0.22\sigma'_v$	
7	Silt	Blue	125	28	0
8	Sand	Red	115	32	0
9	Liner (floor)	Magenta	120	11.1	164
10	Liner (sideslope)	Magenta	120	7.3	110
11	Existing MC V Waste	Teal	120	28	0

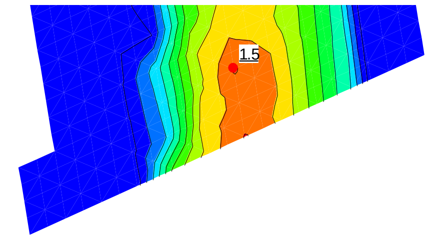
Source of Geometry:	The proposed final cover elevations are from WDI Final Cover Grades Modification Engineering Drawings by CTI and Associates, Inc.
Source of Subsurface Profile:	Basis of Design Report - NTH (2012)
☐ Preconstruction ☐ Construction ☐ Interim ☒ Final ☐ Existing ☐ Back-Analysis	
Construction Phase Represented:	Final Build out
Other Geometry Notes:	Cross Section J

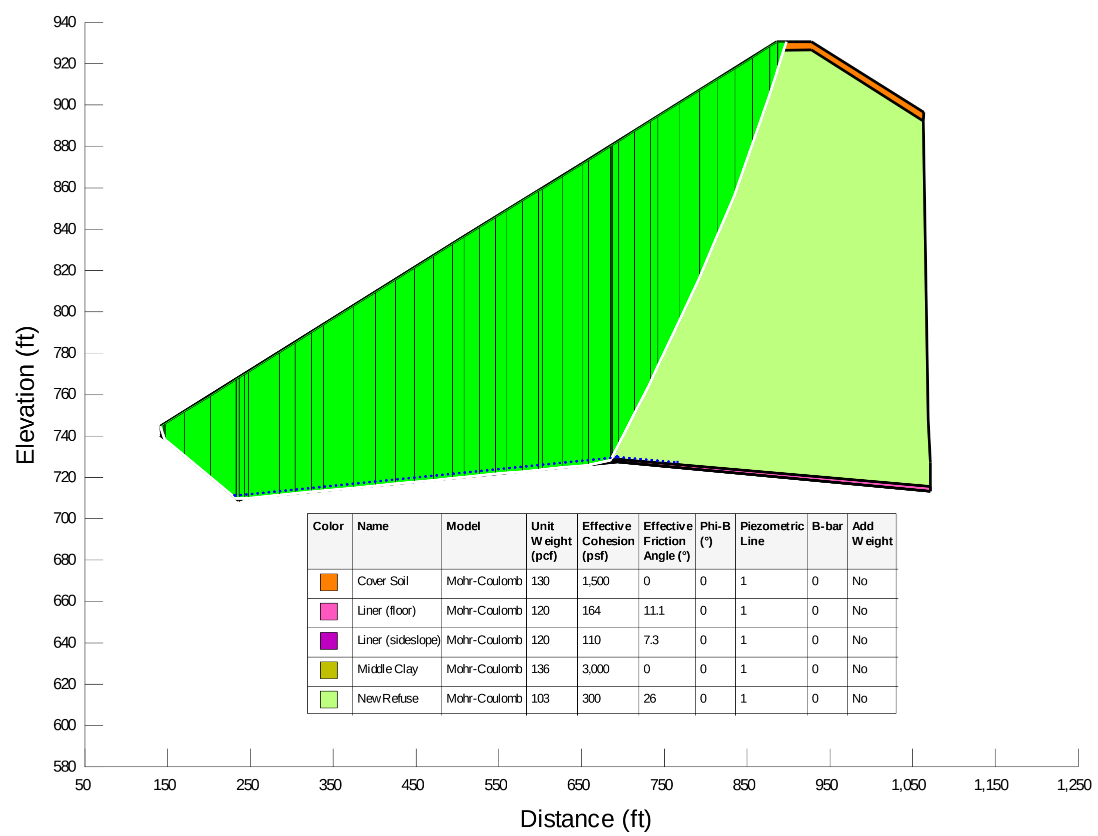
SLOPE STABILITY ANALYSIS REPORT FORM

Factor of Safety:	1.5	☒ Acceptable ☐ Not Acceptable ☐ Follow-up ☐ Superseded
Comments:		
Attachments:	Slope/W Cross Section and Results	



Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Cover Soil	Mohr-Coulomb	130	1,500	0	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120	164	11.1	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120	110	7.3	0	1	0	No
	Middle Clay	Mohr-Coulomb	136	3,000	0	0	1	0	No
	New Refuse	Mohr-Coulomb	103	300	26	0	1	0	No





Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Cover Soil	Mohr-Coulomb	130	1,500	0	0	1	0	No
	Liner (floor)	Mohr-Coulomb	120	164	11.1	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120	110	7.3	0	1	0	No
	Middle Clay	Mohr-Coulomb	136	3,000	0	0	1	0	No
	New Refuse	Mohr-Coulomb	103	300	26	0	1	0	No

Attachment A-1.12

J-J’ Liner Stability under Interim Conditions (example interim stability calculation)

SLOPE STABILITY ANALYSIS REPORT FORM

Project Name:	WDI Final Cover Grading Modification						
Project Number:	1218070017.003			**Client:**	Wayne Disposal, Inc.		
Analysis Short Name:	J-J' Liner Stability				**File name:**	MC-VI-G2_CrossSection_J_Liner_Interim.gsz	
Revision:	1	**Originated:**	MK	**Checked:**	KF	**Approved:**	
Date:	11/03/21	**Date:**	11/03/21	**Date:**	10/7/21	**Date:**	

Purpose of Analysis:	To determine the required interface friction angle of the liner system to achieve an acceptable interim factor of safety of 1.3 using cross-section J-J'. This case considers a west-facing slope, with fill to the final permitted grade elevations at an interim slope of 3H:1V. The failure surface is defined such that failure occurs in the underlying liner in order to evaluate the stability of the liner system.		
☐ Effective Stress ☒ Total Stress	☒ Static ☐ Seismic	☒ Pore Pressure	☒ Optimized Surface
Additional Details:	The required factor of safety is 1.3 for temporary conditions.		

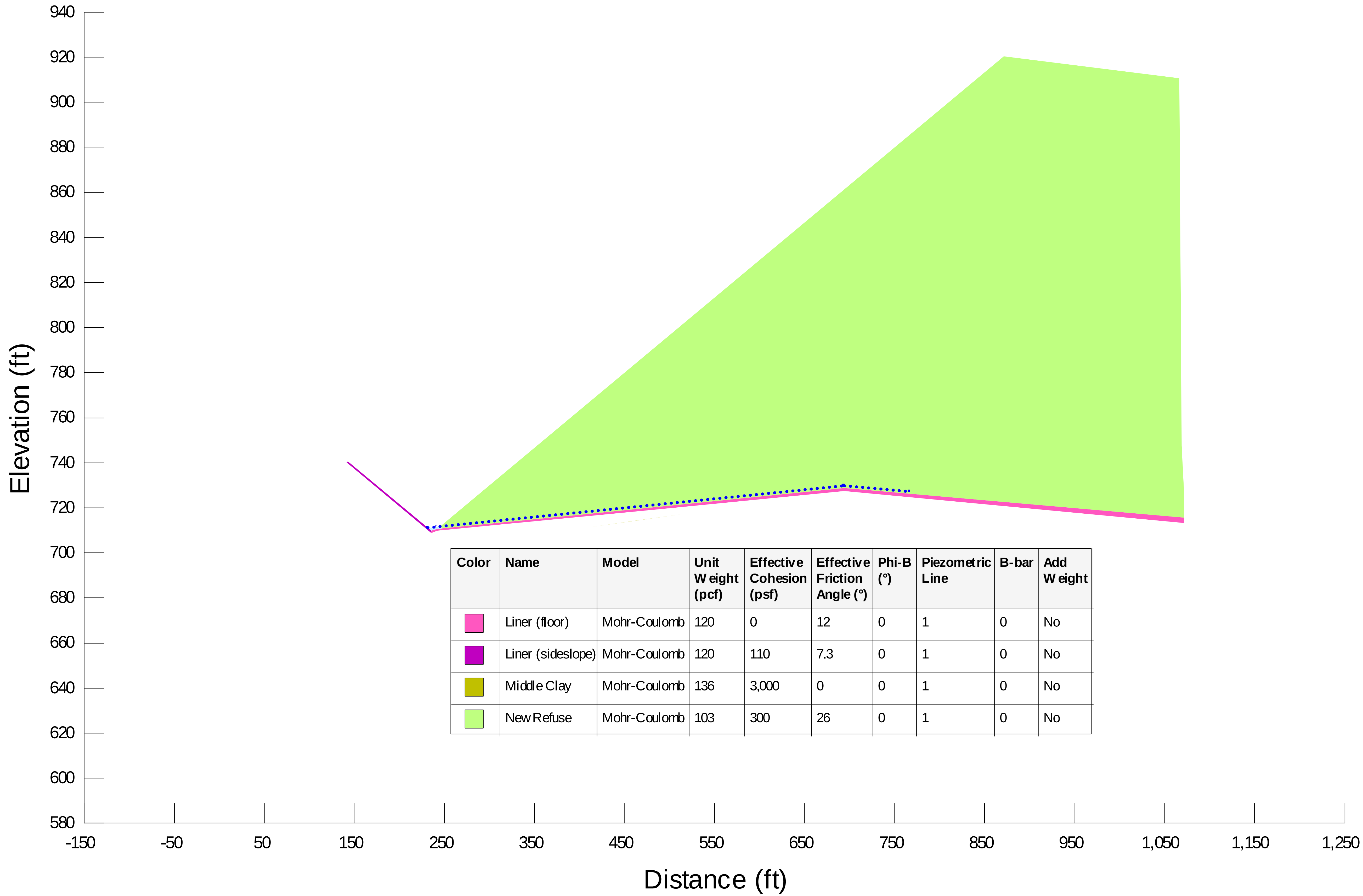
Material	**Name**	**Color in Profile**	**Unit Wt(s) (pcf)**	**Strength ϕ or δ (deg.)**	**Strength C or Ca (psf)**
1	Final Cover	Orange	130	0	1500
2	Existing Waste	Teal	86	34	0
3	New Waste	Light Green	103	26	300
4	Upper Clay	Brown	131	0	1325
5	Middle Clay	Yellow	136	0	3000
6	Lower Clay	Maroon	133	$0.22\sigma'_v$	
7	Silt	Blue	125	28	0
8	Sand	Red	115	32	0
9	Liner (floor)	Magenta	120	?	0
10	Liner (sideslope)	Magenta	120	n/a	n/a
11	Existing MC V Waste	Teal	120	28	0

Source of Geometry:	The proposed final cover elevations are from WDI Final Cover Grades Modification Engineering Drawings by CTI and Associates, Inc.
Source of Subsurface Profile:	Basis of Design Report - NTH (2012)
☐ Preconstruction ☐ Construction ☒ Interim ☐ Final ☐ Existing ☐ Back-Analysis	
Construction Phase Represented:	Interim Waste Filling to max height at 3H:1V
Other Geometry Notes:	Cross Section J

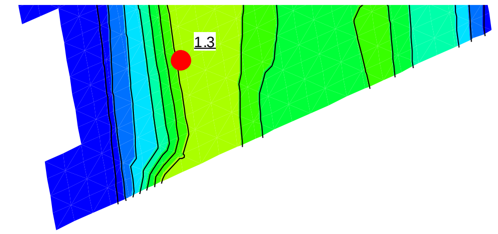
Factor of Safety:	1.3	☒ Acceptable ☐ Not Acceptable ☐ Follow-up ☐ Superseded

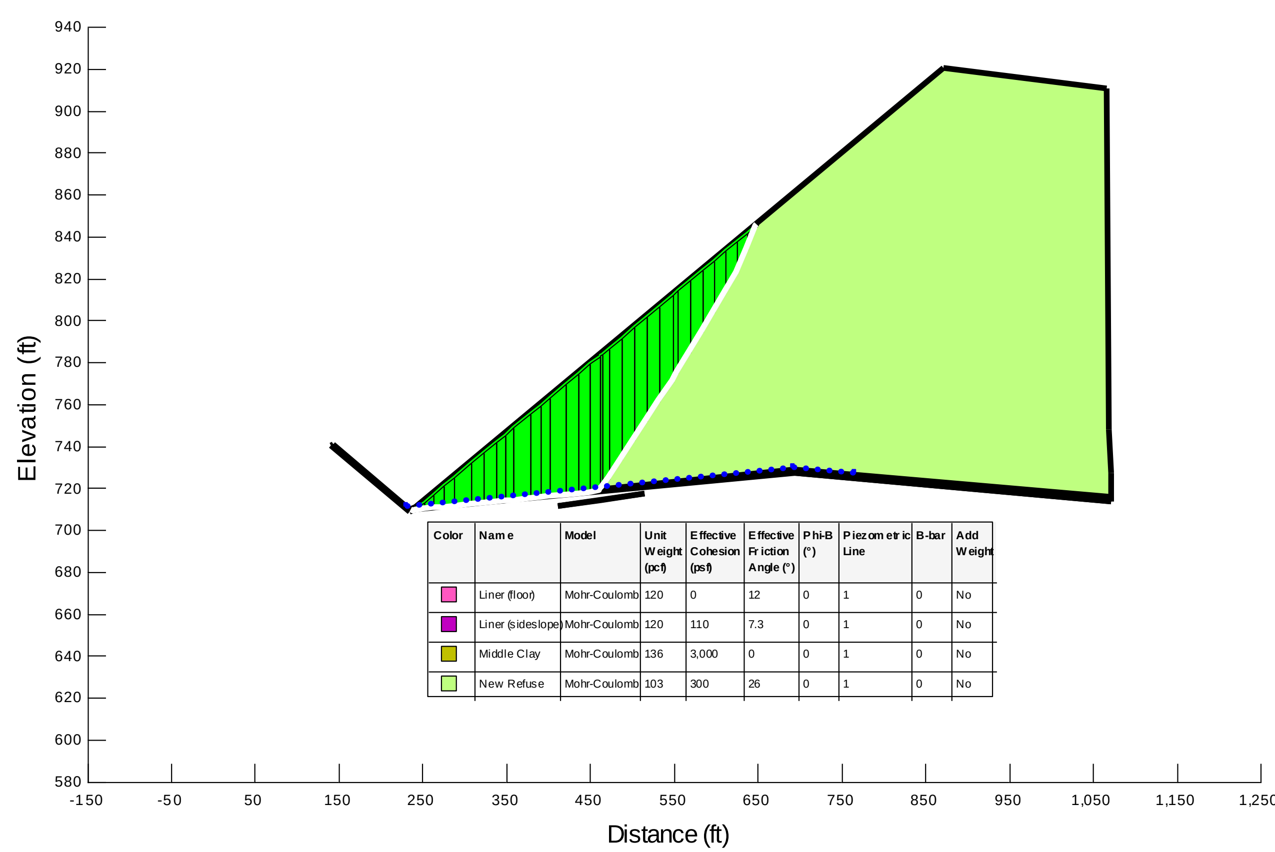
SLOPE STABILITY ANALYSIS REPORT FORM

Comments:	The required interface friction angle for the liner system is 12 degrees (Peak). Any combination of adhesion and friction angle that yields a comparable shear strength under modeled site conditions is acceptable.
Attachments:	Slope/W Cross Section and Results



Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Liner (floor)	Mohr-Coulomb	120	0	12	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120	110	7.3	0	1	0	No
	Middle Clay	Mohr-Coulomb	136	3,000	0	0	1	0	No
	New Refuse	Mohr-Coulomb	103	300	26	0	1	0	No





Color	Name	Model	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)	Phi-B (°)	Piezometric Line	B-bar	Add Weight
	Liner (floor)	Mohr-Coulomb	120	0	12	0	1	0	No
	Liner (sideslope)	Mohr-Coulomb	120	110	7.3	0	1	0	No
	Middle Clay	Mohr-Coulomb	136	3,000	0	0	1	0	No
	New Refuse	Mohr-Coulomb	103	300	26	0	1	0	No

Attachment A-2

Settlement Calculations

CALCULATION SHEET

Client: Wayne Disposal, Inc.
Project: WDI MC VI-G4 through G7 Liner Grade Modification
Calculation: Leachate Collection System Settlement Analysis

Project No.: 1218070017.003
Calculated By: KM Date: 3/26/2021
Checked By: MK Date: 10/5/2021
Approved By: KF Date: 10/5/2021

LEACHATE COLLECTION SYSTEM SETTLEMENT ANALYSIS

OBJECTIVE

This calculation evaluates the post-settlement slopes of the leachate collection pipe and cell floor cross slopes for proposed Master Cell VI-G (MC VI-G4 through G7), at Wayne Disposal, Inc. (WDI). This evaluation is based on the estimated settlement of the existing waste and soil underlying the proposed cells due to additional overburden stresses induced by waste placement and the impact of such settlement on the post settlement cell floor slopes. The purpose of this calculation is to determine the minimum required design slopes.

DESIGN CRITERIA AND ASSUMPTIONS

- The slope of each leachate collection pipe should be at least 1% and each cell floor cross slope should be at least 2% per Rule 299.9620 (4) (EGLE 2020).
- Pipe flowline analysis points were selected along the leachate collection pipe flowlines within MC-VI-G (Attachment 1). The specific locations of these points were selected to correspond to the cell floor high point, low point, changes in final cover slope and at regular intervals in between. In addition, points were selected at the top and bottom of existing below-grade subcell berms. Total settlement is estimated for each point, allowing an assessment of the post-settlement slope(s) along the flowline.
- Cross slope analysis points (also shown in Attachment 1) were selected at the location of maximum fill height within each cell in order to evaluate post-settlement slopes under maximum load.
- Maximum settlement is expected to occur at the completion of the cap construction when the foundation is subjected to the maximum overburden pressure. Under the worst-case scenario modeled, maximum load is applied (in full) to the foundation instantaneously during settlement analysis for a conservative (i.e., greater than anticipated) estimate of total settlement. In reality, loads would be applied incrementally as waste is placed gradually during the active life of the landfill. Additionally, the resulting settlement is assumed to occur immediately, conservatively accounting for the maximum settlement at the end of foundation soil consolidation.
- Table 1 lists the material properties used for the settlement analysis.
- Table 2 summarizes the compressibility parameters used in the settlement analysis. The compacted clay liner is only very slightly compressible relative to the in-situ clay layer due to the much greater thickness of the insitu clay. Considering the insignificant magnitude of the settlement of the compacted clay liner, it was not included in the analysis.

Table 1. Soil Properties for Settlement Analysis

Soil Type	Thickness [ft]	Moist Unit Weight [pcf]
Final cover soil	4	135
New waste	Varies	103*
Existing cover soil	Varies	135
Existing waste	Varies	82
In-situ middle clay	Varies	136
Attenuation Layer	5	135
Structural Fill	2	135
Venting Layer	1	135
Leachate Collection Sand	1	135
In-situ middle clay	Varies	136
In-situ lower clay (moist)	5	128
In-situ lower clay (saturated)	12	128
In-situ silt (saturated)	18	125
In-situ sand (saturated)	45	115

** New waste unit weight obtained from email correspondence with WDI dated 11/18/2020*

Table 2. Compressibility Parameters of Waste and Soils

Soil Type	Primary Compression Ratio $C_c/(1+e_0)$	Secondary Compression Ratio $C_\alpha/(1+e_0)$	Recompression Ratio $C_r/(1+e_0)$
Existing cover	0.102[B]	0.005[B]	0.017[A]
Existing waste	0.147	0	0.0245[A]
In-situ middle clay	0.102	0.005	0.017[A]
In-situ lower clay	0.171	0.009	0.0285[A]
In-situ silt	0.15[B]	0[B]	0[B]
In-situ sand	0.1[B]	0[B]	0[B]

[A] Estimated from $C_r = C_c/6$.
[B] Assumed values.

The information for subsurface soils is based on MCIV General Profiles (South), Appendix A Subsurface Soil/Waste Profiles & Corresponding Physical Properties, Volume III – WDI Operating License Application Master Cells VI F & G by NTH Consultants (2011a). Specifically, subsurface investigation boring logs, cross section profiles, and laboratory test results were used to assess the subgrade soil profile and its properties. Note that some uncertainty may exist in the interpretation of hydrogeological data due to natural soil's inherent variability, conservative assumptions have been applied to ensure a conservative estimate of settlement in this analysis.

METHODOLOGY

Total settlement is estimated using the 1-D compression equations (Coduto 1999). Total settlement is calculated as:

$$S = S_c + S_s \tag{1}$$

Where:

S = total settlement [ft]
S_c = primary compression settlement due to load application [ft]
S_s = secondary compression settlement due to creep effects [ft]

Settlement caused by primary compression for a given layer of soil with uniform properties is calculated as:

$$S_c = \frac{h_0}{1+e_0}\left(C_r\, log\frac{\sigma_c}{\sigma_0} + C_c\, log\frac{\sigma_i}{\sigma_c}\right) \tag{2}$$

Where:

C_c = primary compression index
C_r = recompression index
h_0 = initial compressible layer thickness [ft]
e_0 = initial void ratio of the clay subgrade
σ_0 = initial overburden pressure acting on the compressible layer [psf]
σ_i = final overburden pressure acting on the compressible layer [psf]
σ_c = preconsolidation stress [psf], calculated using Equation 4.

Settlement due to secondary compression is calculated using Equation 3 below:

$$S_s = h_0 \frac{C_\alpha}{1+e_0} log\left(\frac{t_2}{t_1}\right) \tag{3}$$

Where:

C_α = secondary compression index
H = layer thickness [ft]

t_2 = time after application of load (assumed 70 years)

t_1 = time required to complete primary consolidation (assumed 40 years)

- The elevations in this report are referenced to Mean Sea Level (MSL).
- The initial ground elevation (prior to initial development) was assumed to be approximately 705 ft. This value was inferred from the cross section profile from Engineering Drawings, Wayne Disposal, Inc. Site No.2 MC VI-F&G by NTH Consultants (2011b).
- The preconsolidation pressure of the middle clay and lower clay, the major contributing compressible layers below the existing waste, was set equal to the initial effective overburden pressure acting on them prior to development. This value is used in Equation 2 to estimate settlement resulting from an initial load less than the preconsolidation pressure. Note that both layers have historically experienced a higher overburden pressure since initial development of the site and placement of the now existing waste. This value is calculated using Equation 4.
- Calculation of settlement following MC-VI-G construction accounts for changes in overburden pressure resulting from the excavation of existing materials, the placement of new liner system components, the placement of new MC-VI-G waste, and the placement of new MC-VI-G final cover.
- At each point selected along the leachate collection pipe system, the elevations for the existing ground, proposed MC-VI-G liner system, final cover, and the foundation soils are determined and used to compute the initial and final overburden pressures at each settlement point within the analysis using Equation 4 similarly to the preconsolidation pressure. An example calculation at 2 adjacent settlement points along MC-VI-G4 is presented in Attachment 2.

$$\sigma_{c,0,f} = \sum_{i=0}^{n} \gamma_i \times h_i \tag{4}$$

Where:

$$\sigma_{c,0,f} = \left| \begin{array}{l} \sigma_c\text{: preconsolidation stress [psf]} \\ \sigma_0\text{: initial stress [psf]} \\ \sigma_f\text{: final stress [psf]} \end{array} \right.$$

γ_i = Unit weight of soil layer i [psf]

$$h_i = \left| \begin{array}{l} \text{Thickness of layer i [ft] at settlement point as follows:} \\ \text{For } \sigma_c \text{ use thicknesses of layers prior to development} \\ \text{For } \sigma_0 \text{ use thicknesses of layers up to existing elevations} \\ \text{For } \sigma_f \text{ use thicknesses of layers up to proposed final elevations} \end{array} \right.$$

- Soil layers are identified using subsurface soil profiles provided in MCIV General Profiles (South), Appendix A Subsurface Soil/Waste Profiles & Corresponding Physical Properties, Volume III –

WDI Operating License Application Master Cells VI F & G by NTH Consultants (2011a). These layers include in-situ clay with varying degrees of compressibility (see Table 2).

- The MC-VI-G liner system grades were determined from preliminary design drawings with a proposed leachate collection pipe slope of 4% and a proposed cell floor resultant slope of approximately 6%. The respective pre-settlement slopes are shown in Tables 3 through 14 below.
- Attachment 1 presents the plan locations of the settlement analysis points within MC-VI-G with respect to proposed cell floor grades.

CALCULATIONS:

Equations 1 through 3 were incorporated into a spreadsheet to conduct the settlement calculations. The settlement calculation output and resulting post-settlement slope(s) for the leachate collection pipes within MC-VI-G are presented in Table 3 through Table 6. The settlement calculation output and resulting post-settlement slope(s) for each analyzed cross slope within MC-VI-G are presented in **Table 7**Table 3 through 10.

Table 3. MC-VI-G4 Leachate Pipe Flowline Settlement Calculation Summary

			Elevation			Liner Grade	Pipe Flowline Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-01	6820.92	3929.81	707.74	4.87	122	702.87	3.5%	1.7%	1%
SP-02	6821.20	4051.75	712.00	7.11		704.89			
SP-02	6821.20	4051.75	712.00	7.11	114	704.89	3.5%	2.3%	1%
SP-03	6821.37	4166.03	716.00	8.49		707.51			
SP-03	6821.37	4166.03	716.00	8.49	130	707.51	4.6%	2.8%	1%
SP-04	6821.37	4295.92	722.00	10.85		711.15			

Table 4. MC-VI-G5 Leachate Pipe Flowline Settlement Calculation Summary

			Elevation			Liner Grade	Pipe Flowline Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-07	6594.33	3927.79	714.00	5.12	114	708.88	3.5%	2.6%	1%
SP-08	6519.13	4013.90	718.00	6.13		711.87			
SP-08	6519.13	4013.90	718.00	6.13	81	711.87	3.5%	1.5%	1%
SP-09	6466.34	4075.75	720.88	7.82		713.06			
SP-09	6466.34	4075.75	720.88	7.82	91	713.06	3.5%	3.6%	1%
SP-10	6407.04	4144.24	724.07	7.72		716.35			
SP-10	6407.04	4144.24	724.07	7.72	171	716.35	3.5%	4.3%	1%
SP-11	6293.54	4272.06	730.00	6.31		723.69			
SP-11	6293.54	4272.06	730.00	6.31	48	723.69	4.23%	5.75%	1%
SP-12	6263.71	4309.98	732.04	5.57		726.47			

CALCULATION SHEET

Client: Wayne Disposal, Inc.
Project: WDI MC VI-G4 through G7 Liner Grade Modification
Calculation: Leachate Collection System Settlement Analysis

Project No.: 1218070017.003
Calculated By: KM Date: 3/26/2021
Checked By: MK Date: 10/5/2021
Approved By: KF Date: 10/5/2021

Table 5. MC-VI-G6 Leachate Pipe Flowline Settlement Calculation Summary

			Elevation			Liner Grade	Pipe Flowline Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-15	6338.90	4697.51	703.42	3.85	55	699.57	3.5%	1.1%	1%
SP-16	6389.74	4677.62	705.33	5.17		700.16			
SP-16	6389.74	4677.62	705.33	5.17	282	700.16	3.5%	1.9%	1%
SP-17	6651.75	4573.81	715.16	9.69		705.47			
SP-17	6651.75	4573.81	715.16	9.69	211	705.47	3.5%	2.2%	1%
SP-18	6847.57	4495.87	722.53	12.42		710.11			
SP-18	6847.57	4495.87	722.53	12.42	126	710.11	3.5%	4.4%	1%
SP-19	6964.61	4450.12	726.93	11.35		715.58			

Table 6. MC-VI-G7 Leachate Pipe Flowline Settlement Calculation Summary

			Elevation			Liner Grade	Pipe Flowline Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-22	6393.49	5048.84	681.79	2.63	141	679.16	3.5%	2.0%	1%
SP-23	6534.01	5048.84	686.71	4.72		681.99			
SP-23	6534.01	5048.84	686.71	4.72	253	681.99	3.5%	2.5%	1%
SP-24	6787.25	5048.84	695.57	7.32		688.25			
SP-24	6787.25	5048.84	695.57	7.32	168	688.25	3.5%	2.8%	1%
SP-25	6954.90	5048.84	701.44	8.49		692.95			

Table 7. MC-VI-G4 Cross Slope Settlement Calculation Summary

			Elevation			Liner Grade	Cross Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-04	6821.37	4295.92	722.00	10.85	154	711.15	3%	3%	2%
SP-05	6975.85	4293.88	725.99	10.28		715.71			
SP-04	6821.37	4295.92	722.00	10.85	150	711.15	3%	3%	2%
SP-06	6671.32	4298.49	725.99	10.78		715.21			

Table 8. MC-VI-G5 Cross Slope Settlement Calculation Summary

			Elevation			Liner Grade	Cross Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-09	6466.34	4075.75	720.88	7.82	294	713.06	4%	5%	2%
SP-14	6241.30	3886.84	731.50	4.82		726.68			
SP-10	6407.04	4144.24	724.07	7.72	279	716.35	4%	3%	2%
SP-13	6622.32	4321.61	733.95	10.22		723.73			

CALCULATION SHEET

Client: Wayne Disposal, Inc.
Project: WDI MC VI-G4 through G7 Liner Grade Modification
Calculation: Leachate Collection System Settlement Analysis

Project No.: 1218070017.003
Calculated By: KM Date: 3/26/2021
Checked By: MK Date: 10/5/2021
Approved By: KF Date: 10/5/2021

Table 9. MC-VI-G6 Cross Slope Settlement Calculation Summary

			Elevation			Liner Grade	Cross Slope		
Point	North	East	Flowline Elevation	Settlement	**Length**	Post-Settlement	Pre-Settlement	Post-Settlement	**Min. Slope**
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-16	6389.74	4677.62	705.33	5.17	288	700.16	4%	4%	2%
SP-21	6289.94	4407.03	716.84	4.66		712.18			
SP-18	6847.57	4495.87	722.53	12.42	278	710.11	3%	3%	2%
SP-20	6944.02	4756.08	730.07	12.10		717.97			

Table 10. MC-VI-G7 Cross Slope Settlement Calculation Summary

			Elevation			Liner Grade	Cross Slope		
Point	North	East	Flowline Elevation	Settlement	**Length**	Post-Settlement	Pre-Settlement	Post-Settlement	**Min. Slope**
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-23	6534.01	5048.84	686.71	4.72	81	681.99	3%	3%	2%
SP-26	6532.88	4967.83	689.46	5.21		684.25			
SP-25	6954.90	5048.84	701.44	8.49	62	692.95	4%	5%	2%
SP-27	6955.68	5111.30	703.70	7.86		695.84			
SP-25	6954.90	5048.84	701.44	8.49	63	692.95	3%	2%	2%
SP-28	6954.65	4986.17	703.56	9.50		694.06			

CONCLUSIONS

The post-settlement slope of the leachate collection pipe should be at least 1% and each cell floor cross slope should be at least 2% per Rule 299.9620 (4) (EGLE 2020). This calculation estimated the settlement at points along the leachate collection pipe and the cross slopes within MC-VI-G. The settlement of each of these points was used to calculate the post-settlement slopes of the MC-VI-G floor. This settlement analysis determined that all design leachate collection pipe slopes and cross slopes within MC-VI-G meet the required minimum slopes.

REFERENCES

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EGLE (2020) *Part 111 Administrative Rules*, Department of Environment, Great Lakes, and Energy *Hazardous Waste Management*, Materials Management Division.

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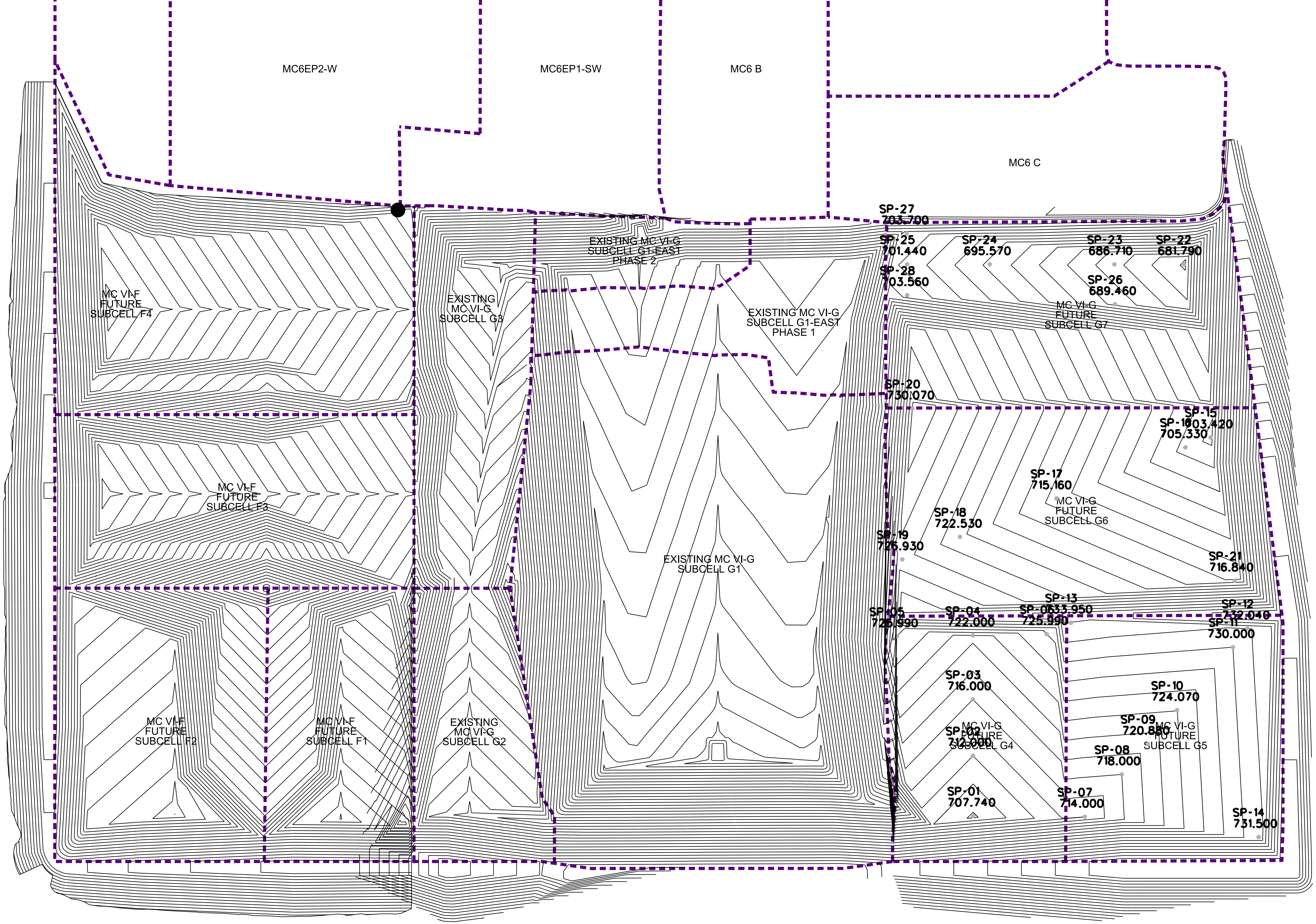
Attachment A-2.1

Settlement Analysis Points


MC6EP2-W
MC6EP1-SW
MC6 B
MC6 C
SP-27
703.700
SP-25
701.440
SP-24
695.570
SP-23
686.710
SP-22
681.790
SP-28
703.560
SP-26
689.460
EXISTING MC VI-G
SUBCELL G1-EAST
PHASE 2
MC VI-F
FUTURE
SUBCELL F4
EXISTING
MC VI-G
SUBCELL G3
EXISTING MC VI-G
SUBCELL G1-EAST
PHASE 1
MC VI-G
FUTURE
SUBCELL G7
SP-20
730.070
SP-15
703.420
SP-16
705.330
SP-17
715.160
MC VI-G
FUTURE
SUBCELL G6
SP-18
722.530
MC VI-F
FUTURE
SUBCELL F3
SP-19
726.930
EXISTING MC VI-G
SUBCELL G1
SP-21
716.840
SP-13
733.950
SP-05
726.990
SP-04
722.000
SP-06
725.990
SP-12
732.040
SP-11
730.000
SP-03
716.000
SP-10
724.070
SP-09
720.880
MC VI-F
FUTURE
SUBCELL F2
MC VI-F
FUTURE
SUBCELL F1
EXISTING
MC VI-G
SUBCELL G2
SP-02
712.000
MC VI-G
FUTURE
SUBCELL G4
MC VI-G
FUTURE
SUBCELL G5
SP-08
718.000
SP-01
707.740
SP-07
714.000
SP-14
731.500

Attachment A-2.2

Sample Calculation

SETTLEMENT POINT	Coordinates		Elevations									
SP-02	North	East	OFL	Final	Existing	BOTTOM MC	BOTTOM LC (DRY)	BOTTOM LC (SAT)	BOTTOM SILT	BOTTOM SAND	TOP CLAY	TOP EXISTING WASTE
	[ft]	[ft]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]
	6821.20	4051.75	712.00	794.71	717.43	660.00	655.00	643.00	625.00	580.00	670.00	708.07

	Layer Type	Layer	Layer Height	Eff. Unit Weight	Cut Layer	Inc. Layer Stress	Compression Parameters			Initial Stress (midpoint of layer)	Consolidation Stress (midpoint of layer)	Final Stress (midpoint of layer)	Consolidation Case	Primary Settlement	Secondary Settlement
			H [ft]	γ' [pcf]	1 = yes 0 = no	σ_i [psf]	$\frac{C_c}{1+e_0}$	$\frac{C_r}{1+e_0}$	$\frac{C_\alpha}{1+e_0}$	σ_0' [psf]	σ_c' [psf]	σ_f' [psf]	-	S_c [ft]	S_s [ft]
Overburden	1	Cover	4.00	135.0	0	540.0									
Overburden	2	New Waste	78.71	103.0	0	8107.1									
Overburden	3	OFL	5.43	135.0	TRUE	-733.0									
Overburden	4	Existing Waste	0.00	82.0	1	-									
Overburden		<none>		-	0	-									
Overburden		<none>		-	0	-									
Overburden		<none>		-	0	-									
Consolidation	3	OFL	1.96	135.0	0	265.3	0.102	0.017	0.005	865.7	865.7	8779.8	NC	0.202	0.003
Consolidation	3	OFL	1.96	135.0	0	265.3	0.102	0.017	0.005	1131.0	1131.0	9045.0	NC	0.181	0.003
Consolidation	4	Existing Waste	4.76	82.0	0	390.2	0.147	0.025	-	1458.7	1458.7	9372.8	NC	0.565	-
Consolidation	4	Existing Waste	4.76	82.0	0	390.2	0.147	0.025	-	1848.9	1848.9	9763.0	NC	0.506	-
Consolidation	4	Existing Waste	4.76	82.0	0	390.2	0.147	0.025	-	2239.1	2239.1	10153.2	NC	0.459	-
Consolidation	4	Existing Waste	4.76	82.0	0	390.2	0.147	0.025	-	2629.4	2629.4	10543.4	NC	0.422	-
Consolidation	4	Existing Waste	4.76	82.0	0	390.2	0.147	0.025	-	3019.6	3019.6	10933.7	NC	0.391	-
Consolidation	4	Existing Waste	4.76	82.0	0	390.2	0.147	0.025	-	3409.8	3409.8	11323.9	NC	0.365	-
Consolidation	4	Existing Waste	4.76	82.0	0	390.2	0.147	0.025	-	3800.0	3800.0	11714.1	NC	0.342	-
Consolidation	4	Existing Waste	4.76	82.0	0	390.2	0.147	0.025	-	4190.2	4190.2	12104.3	NC	0.322	-
Consolidation	6	Middle Clay	5.00	136.0	0	680.0	0.102	0.017	0.005	4725.3	4950.0	12639.4	OC-2	0.209	0.006
Consolidation	6	Middle Clay	5.00	136.0	0	680.0	0.102	0.017	0.005	5405.3	5630.0	13319.4	OC-2	0.192	0.006
Consolidation	7	Lower Clay (Moist)	5.00	128.0	0	640.0	0.171	0.029	0.009	6065.3	6290.0	13979.4	OC-2	0.299	0.011
Consolidation	8	Lower Clay (Sat)	6.00	65.6	0	393.6	0.171	0.029	0.009	6582.1	6806.8	14496.2	OC-2	0.339	0.014
Consolidation	8	Lower Clay (Sat)	6.00	65.6	0	393.6	0.171	0.029	0.009	6975.7	7200.4	14889.8	OC-2	0.326	0.014
Consolidation	9	Silt	9.00	62.6	0	563.4	0.150	-	-	7454.2	7678.9	15368.3	OC-2	0.407	-
Consolidation	9	Silt	9.00	62.6	0	563.4	0.150	-	-	8017.6	8242.3	15931.7	OC-2	0.386	-
Consolidation	10	Sand	9.00	52.6	0	473.4	0.100	-	-	8536.0	8760.7	16450.1	OC-2	0.246	-
Consolidation	10	Sand	9.00	52.6	0	473.4	0.100	-	-	9009.4	9234.1	16923.5	OC-2	0.237	-
Consolidation	10	Sand	9.00	52.6	0	473.4	0.100	-	-	9482.8	9707.5	17396.9	OC-2	0.228	-
Consolidation	10	Sand	9.00	52.6	0	473.4	0.100	-	-	9956.2	10180.9	17870.3	OC-2	0.220	-
Consolidation	10	Sand	9.00	52.6	0	473.4	0.100	-	-	10429.6	10654.3	18343.7	OC-2	0.212	-
														7.057	0.057
													Total Settlement [ft]	7.11	

Variables & Constants	
Point Name	SP-02
Settlement Layer [ft]	132.0
ERROR	0.0
# of Layers	22
t / t_p [ratio]	1.8

- Use the master "Material Properties" sheet to input the correct "Layer Type" into column C. This will auto-populate the density and compression parameters. Coordinates and elevations are referenced from the "Points" sheet for comparison to the total consolidation layer.
- Split layers greater than 10 feet thick.
- Existing layers that are to be removed are to be marked with a "1" in the "Cut Layer" column.

SETTLEMENT POINT	Coordinates		Elevations									
SP-03	North	East	OFL	Final	Existing	BOTTOM MC	BOTTOM LC (DRY)	BOTTOM LC (SAT)	BOTTOM SILT	BOTTOM SAND	TOP CLAY	TOP EXISTING WASTE
	[ft]	[ft]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]
	6821.37	4166.03	716.00	823.27	721.16	660.00	655.00	643.00	625.00	580.00	670.00	709.13

	Layer Type	Layer	Layer Height	Eff. Unit Weight	Cut Layer	Inc. Layer Stress	Compression Parameters			Initial Stress	Consolidation Stress	Final Stress	Consolidation Case	Primary Settlement	Secondary Settlement
										(midpoint of layer)					
			H [ft]	γ' [pcf]	1 = yes 0 = no	σ_i [psf]	$\frac{C_c}{1+e_0}$	$\frac{C_r}{1+e_0}$	$\frac{C_\alpha}{1+e_0}$	p_0' [psf]	p_c' [psf]	p_f' [psf]	-	S_c [ft]	S_s [ft]
Overburden	1	Cover	4.00	135.0	0	540.0									
	2	New Waste	103.27	103.0	0	10636.8									
	3	OFL	5.16	135.0	TRUE	-696.6									
	4	Existing Waste	0.00	82.0	1	-									
		<none>		-	0	-									
		<none>		-	0	-									
		<none>		-	0	-									
Consolidation	3	OFL	3.44	135.0	0	463.7	0.102	0.017	0.005	928.5	928.5	11408.7	NC	0.382	0.004
	3	OFL	3.44	135.0	0	463.7	0.102	0.017	0.005	1392.2	1392.2	11872.4	NC	0.326	0.004
	4	Existing Waste	4.89	82.0	0	401.1	0.147	0.025	-	1824.6	1824.6	12304.8	NC	0.596	-
	4	Existing Waste	4.89	82.0	0	401.1	0.147	0.025	-	2225.7	2225.7	12705.9	NC	0.544	-
	4	Existing Waste	4.89	82.0	0	401.1	0.147	0.025	-	2626.8	2626.8	13107.0	NC	0.502	-
	4	Existing Waste	4.89	82.0	0	401.1	0.147	0.025	-	3027.8	3027.8	13508.0	NC	0.467	-
	4	Existing Waste	4.89	82.0	0	401.1	0.147	0.025	-	3428.9	3428.9	13909.1	NC	0.437	-
	4	Existing Waste	4.89	82.0	0	401.1	0.147	0.025	-	3830.0	3830.0	14310.2	NC	0.412	-
	4	Existing Waste	4.89	82.0	0	401.1	0.147	0.025	-	4231.1	4231.1	14711.3	NC	0.389	-
	4	Existing Waste	4.89	82.0	0	401.1	0.147	0.025	-	4632.2	4632.2	15112.4	NC	0.369	-
	6	Middle Clay	5.00	136.0	0	680.0	0.102	0.017	0.005	5172.7	4950.0	15652.9	NC	0.245	0.006
	6	Middle Clay	5.00	136.0	0	680.0	0.102	0.017	0.005	5852.7	5630.0	16332.9	NC	0.227	0.006
	7	Lower Clay (Moist)	5.00	128.0	0	640.0	0.171	0.029	0.009	6512.7	6290.0	16992.9	NC	0.356	0.011
	8	Lower Clay (Sat)	6.00	65.6	0	393.6	0.171	0.029	0.009	7029.5	6806.8	17509.7	NC	0.407	0.014
	8	Lower Clay (Sat)	6.00	65.6	0	393.6	0.171	0.029	0.009	7423.1	7200.4	17903.3	NC	0.392	0.014
	9	Silt	9.00	62.6	0	563.4	0.150	-	-	7901.6	7678.9	18381.8	NC	0.495	-
	9	Silt	9.00	62.6	0	563.4	0.150	-	-	8465.0	8242.3	18945.2	NC	0.472	-
	10	Sand	9.00	52.6	0	473.4	0.100	-	-	8983.4	8760.7	19463.6	NC	0.302	-
	10	Sand	9.00	52.6	0	473.4	0.100	-	-	9456.8	9234.1	19937.0	NC	0.292	-
	10	Sand	9.00	52.6	0	473.4	0.100	-	-	9930.2	9707.5	20410.4	NC	0.282	-
	10	Sand	9.00	52.6	0	473.4	0.100	-	-	10403.6	10180.9	20883.8	NC	0.272	-
	10	Sand	9.00	52.6	0	473.4	0.100	-	-	10877.0	10654.3	21357.2	NC	0.264	-
														8.430	0.061
											Total Settlement [ft]			8.49	

Variables & Constants	
Point Name	SP-03
Settlement Layer [ft]	136.0
ERROR	0.0
# of Layers	22
t / t_p [ratio]	1.8

- Use the master "Material Properties" sheet to input the correct "Layer Type" into column C. This will auto-populate the density and compression parameters. Coordinates and elevations are referenced from the "Points" sheet for comparison to the total consolidation layer.
- Split layers greater than 10 feet thick.
- Existing layers that are to be removed are to be marked with a "1" in the "Cut Layer" column.

LEACHATE COLLECTION PIPE SETTLEMENT ANALYSIS

OBJECTIVE

This calculation evaluates the post-settlement slopes of the leachate collection pipe and cell floor cross slopes for cells affected by the proposed Final Cover Grading Modification at Wayne Disposal, Inc. (WDI). This calculation evaluates the following Cells:

- Master Cell-VI-E (MC6E)
- Master Cell-VI-F (MC6F)
- Master Cell VI-G, Sub cells G1, G2, and G3

This evaluation is based on the estimated settlement of the existing waste and soil underlying the proposed cells due to additional overburden stresses induced by waste placement and the impact of such settlement on the post settlement cell floor slopes.

DESIGN CRITERIA AND ASSUMPTIONS

- The slope of each leachate collection pipe should be at least 1% and each cell floor cross slope should be at least 2% per Rule 299.9620 (4) (EGLE 2020).
- Pipe flowline analysis points were selected along the leachate collection pipe flowlines within the analyzed cells (Attachment 1). The specific locations of these points were selected to correspond to the cell floor high point, low point, changes in final cover slope, locations along leachate collection toe drain, and at regular intervals in between. Total settlement is estimated for each point, allowing an assessment of the post-settlement slope(s) along the flowline.
- Cross slope analysis points (also shown in Attachment 1) were selected at the location of maximum fill height within each cell in order to evaluate post-settlement slopes under maximum load.
- Maximum settlement is expected to occur at the completion of the cap construction when the foundation is subjected to the maximum overburden pressure. Under the worst-case scenario, maximum load is applied (in full) to the foundation instantaneously during settlement analysis for a conservative (i.e., greater than anticipated) estimate of total settlement. In reality, loads would be applied incrementally as waste is placed gradually during the active life of the landfill. Additionally, the resulting settlement is assumed to occur immediately, conservatively accounting for the maximum settlement at the end of foundation soil consolidation.
- Table 1 lists the material properties used for the settlement analysis.
- Table 2 summarizes the compressibility parameters used in the settlement analysis. The compacted clay liner is only very slightly compressible relative to the in-situ clay layer due to the much greater thickness of the insitu clay. Considering the insignificant magnitude of the settlement of the compacted clay liner, it was not included in the analysis.

Table 1. Soil Properties for Settlement Analysis

Soil Type	Thickness [ft]	Moist Unit Weight [pcf]
Final cover soil	4	135
New waste	Varies	103*
Existing cover soil	Varies	135
Existing waste	Varies	82
In-situ middle clay	Varies	136
In-situ lower clay (moist)	Varies	128
In-situ lower clay (saturated)	Varies	128
In-situ silt (saturated)	18	125
In-situ sand (saturated)	45	115

** New waste unit weight obtained from email correspondence with WDI dated 11/18/2020*

Table 2. Compressibility Parameters of Waste and Soils

Soil Type	Primary Compression Ratio $C_c/(1+e_0)$	Secondary Compression Ratio $C_\alpha/(1+e_0)$	Recompression Ratio $C_r/(1+e_0)$
Existing cover	0.102[B]	0.005[B]	0.017[A]
Existing waste	0.147	0	0.0245[A]
In-situ middle clay	0.102	0.005	0.017[A]
In-situ lower clay	0.171	0.009	0.0285[A]
In-situ silt	0.15[B]	0[B]	0[B]
In-situ sand	0.1[B]	0[B]	0[B]

[A] Estimated from $C_r = C_c/6$.
[B] Assumed values.

The information for subsurface soils is based on General Profiles presented in Appendix A, Subsurface Soil/Waste Profiles & Corresponding Physical Properties, Volume III – WDI Operating License Application Master Cells VI F & G by NTH Consultants (2011a). The same general profile was used in the current MC VI-E permits for MC-VI-E, MC-VI-F, and MC-VI-. Note that some uncertainty may exist in the interpretation of hydrogeological data due to natural soil's inherent variability, conservative assumptions have been applied to ensure a conservative estimate of settlement in this analysis.

METHODOLOGY

Total settlement is estimated using the 1-D compression equations (Coduto 1999). Total settlement is calculated as:

$$S = S_c + S_s \tag{1}$$

Where:

S = total settlement [ft]
S_c = primary compression settlement due to load application [ft]
S_s = secondary compression settlement due to creep effects [ft]

Settlement caused by primary compression for a given layer of soil with uniform properties is calculated as:

$$S_c = \frac{h_0}{1+e_0}\left(C_r \, log \frac{\sigma_c}{\sigma_0} + C_c \, log \frac{\sigma_i}{\sigma_c}\right) \tag{2}$$

Where:

C_c = primary compression index
C_r = recompression index
h_0 = initial compressible layer thickness [ft]
e_0 = initial void ratio of the clay subgrade
σ_0 = initial overburden pressure acting on the compressible layer [psf]
σ_i = final overburden pressure acting on the compressible layer [psf]
σ_c = preconsolidation stress [psf], calculated using Equation 4.

Settlement due to secondary compression is calculated using Equation 3 below:

$$S_s = h_0 \frac{C_\alpha}{1+e_0} log\left(\frac{t_2}{t_1}\right) \tag{3}$$

Where:

C_α = secondary compression index
H = layer thickness [ft]
t_2 = time after application of load (assumed 70 years)
t_1 = time required to complete primary consolidation (assumed 40 years)

- The elevations in this report are referenced to Mean Sea Level (MSL).

- The initial ground elevation (prior to initial development) was assumed to be approximately 705 ft. This value was inferred from the cross section profile from Engineering Drawings, Wayne Disposal, Inc. Site No.2 MC VI-F&G by NTH Consultants (2011b).
- The preconsolidation pressure of the middle clay and lower clay, the major contributing compressible layers below the existing waste, was set equal to the initial effective overburden pressure acting on them prior to development. This value is used in Equation 2 to estimate settlement resulting from an initial load less than the preconsolidation pressure. Note that both layers have historically experienced a higher overburden pressure since initial development of the site and placement of the now existing waste. This value is calculated using Equation 4.
- When applicable, calculation of settlement following cell construction accounts for changes in overburden pressure resulting from the excavation of existing materials, the placement of new liner system components, the placement of new waste, and the placement of new final cover.
- At each point selected along the leachate collection pipe system, the elevations for the existing ground, proposed or existing liner system, final cover, and the foundation soils are determined and used to compute the initial and final overburden pressures at each settlement point within the analysis using Equation 4 similarly to the preconsolidation pressure. An example calculation at 2 adjacent settlement points along MC-VI-F4 is presented in Attachment 2.

$$\sigma_{c,0,f} = \sum_{i=0}^{n} \gamma_i \times h_i \tag{4}$$

Where:

$$\sigma_{c,0,f} = \left| \begin{array}{l} \sigma_c\text{: preconsolidation stress [psf]} \\ \sigma_0\text{: initial stress [psf]} \\ \sigma_f\text{: final stress [psf]} \end{array} \right.$$

γ_i = Unit weight of soil layer i [psf]

$$h_i = \left| \begin{array}{l} \text{Thickness of layer i [ft] at settlement point as follows:} \\ \text{For } \sigma_c \text{ use thicknesses of layers prior to development} \\ \text{For } \sigma_0 \text{ use thicknesses of layers up to existing elevations} \\ \text{For } \sigma_f \text{ use thicknesses of layers up to proposed final elevations} \end{array} \right.$$

- Soil layers are identified using subsurface soil profiles provided in "General Profiles" presented in Appendix A, Subsurface Soil/Waste Profiles & Corresponding Physical Properties, Volume III – WDI Operating License Application Master Cells VI F & G by NTH Consultants (2011a). These layers include in-situ clay with varying degrees of compressibility (see Table 2).
- Attachment 1 presents the plan locations of the settlement analysis points within the cells along with the liner elevations at those points.

CALCULATION SHEET

Client: Wayne Disposal, Inc.
Project: WDI Final Cover Grading Modification
Calculation: Settlement Analysis

Project No.: 1208070015.005
Calculated By: KM Date: 3/16/2021
Checked By: MK Date: 10/05/2021
Approved By: KF Date: 10/5/2021

CALCULATIONS

Equations 1 through 4 were incorporated into a spreadsheet to conduct the settlement calculations. The settlement calculation output and resulting post-settlement slope(s) for the leachate collection pipes and cross slopes within the cells are presented in Tables 3 through 19 below.

Table 3. MC6E Leachate Pipe Flowline Settlement Calculation Summary

			Elevation			Liner Grade	Pipe Flowline Slope		
Point	North	East	Flowline Elevation	Settlement	**Length**	Post-Settlement	Pre-Settlement	Post-Settlement	**Min. Slope**
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
P514	8641.95	6454.04	701.00	7.98	229	693.02	1.8%	2.50%	1%
P512	8666.18	6226.32	705.21	6.47		698.74			
P512	8666.18	6226.32	705.21	6.47	276	698.74	1.5%	1.0%	1%
P510	8599.09	5958.86	709.36	7.90		701.46			
P510	8599.09	5958.86	709.36	7.90	216	701.46	1.3%	2.1%	1%
P508	8649.05	5748.66	712.17	6.18		705.99			
P508	8649.05	5748.66	712.17	6.18	281	705.99	1.4%	1.6%	1%
P506	8657.89	5468.01	716.07	5.57		710.50			
P506	8657.89	5468.01	716.07	5.57	240	710.50	1.5%	1.2%	1%
P505	8565.19	5246.41	719.62	6.33		713.29			

Table 4. MC6E E5300 Cross Slope Settlement Calculation Summary

			Elevation			Liner Grade	Cross Slope		
Point	North	East	Flowline Elevation	Settlement	**Length**	Post-Settlement	Pre-Settlement	Post-Settlement	**Min. Slope**
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-84	8581.38	5296.64	719.00	4.74	48	714.26	4%	3%	2%
SP-85	8533.44	5296.64	721.00	5.49		715.51			
SP-85	8533.44	5296.64	721.00	5.49	45	715.51	4%	2%	2%
SP-86	8488.08	5296.64	723.00	6.37		716.63			

CALCULATION SHEET

Client: Wayne Disposal, Inc.
Project: WDI Final Cover Grading Modification
Calculation: Settlement Analysis

Project No.: 1208070015.005
Calculated By: KM Date: 3/16/2021
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Approved By: KF Date: 10/5/2021

Table 5. MC6E Phase II-NE Cross Slope Settlement Calculation Summary

			Elevation			Liner Grade	Cross Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
P-512	8666.18	6226.32	705.21	4.03	202	701.18	8%	6%	2%
SP-67	8464.52	6211.68	722.00	7.70		714.30			
SP-66	8566.99	6221.70	714.00	7.59	103	706.41	8%	8%	2%
SP-67	8464.52	6211.68	722.00	7.70		714.30			
SP-67	8464.52	6211.68	722.00	7.70	57	714.30	5%	5%	2%
SP-68	8408.01	6206.15	725.00	8.03		716.97			
SP-68	8408.01	6206.15	725.00	8.03	54	716.97	4%	3%	2%
SP-69	8354.03	6200.87	727.00	8.62		718.38			
SP-69	8354.03	6200.87	727.00	8.62	97	718.38	4%	7%	2%
SP-70	8257.04	6191.39	731.00	5.60		725.40			
SP-70	8257.04	6191.39	731.00	5.60	98	725.40	4%	5%	2%
SP-71	8159.20	6181.82	735.00	4.96		730.04			

Table 6. MC6G – G1 Pipe Flowline Settlement Calculation Summary

			Elevation			Liner Grade	Pipe Flowline Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-13	7339.00	4082.84	668.00	4.36	38	663.64	5.2%	4.7%	1%
SP-14	7339.00	4120.94	670.00	4.57		665.43			
SP-14	7339.00	4120.94	670.00	4.57	208	665.43	2.4%	2.1%	1%
SP-15	7339.00	4329.23	675.00	5.10		669.90			
SP-15	7339.00	4329.23	675.00	5.10	242	669.90	1.7%	1.6%	1%
SP-16	7339.00	4571.07	679.00	5.28		673.72			
SP-16	7339.00	4571.07	679.00	5.28	257	673.72	1.2%	1.3%	1%
SP-17	7338.93	4827.73	682.00	5.03		676.97			
SP-17	7338.93	4827.73	682.00	5.03	141	676.97	1.4%	1.5%	1%
SP-18	7338.96	4968.72	684.00	4.85		679.15			

Table 7. MC6G – G2 Pipe Flowline Settlement Calculation Summary

			Elevation			Liner Grade	Pipe Flowline Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-11	7842.87	3939.91	709.22	7.06	70	702.16	4.0%	2.2%	1%
SP-10	7842.87	4009.79	712.00	8.30		703.70			
SP-10	7842.87	4009.79	712.00	8.30	151	703.70	4.0%	2.9%	1%
SP-09	7842.87	4160.67	718.00	9.98		708.02			
SP-09	7842.87	4160.67	718.00	9.98	101	708.02	4.0%	2.9%	1%
SP-08	7842.87	4261.26	722.00	11.05		710.95			
SP-08	7842.87	4261.26	722.00	11.05	120	710.95	4.0%	4.2%	1%
SP-07	7843.09	4381.18	726.82	10.89		715.93			

CALCULATION SHEET

Client: Wayne Disposal, Inc.
Project: WDI Final Cover Grading Modification
Calculation: Settlement Analysis

Project No.: 1208070015.005
Calculated By: KM Date: 3/16/2021
Checked By: MK Date: 10/05/2021
Approved By: KF Date: 10/5/2021

Table 8. MC6G – G3 Pipe Flowline Settlement Calculation Summary

			Elevation			Liner Grade	Pipe Flowline Slope		
Point	North	East	Flowline Elevation	Settlement	**Length**	Post-Settlement	Pre-Settlement	Post-Settlement	**Min. Slope**
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-04	7776.87	5044.82	700.70	10.54	233	690.16	4.0%	3.8%	1%
SP-03	7800.62	4813.09	710.00	10.94		699.06			
SP-03	7800.62	4813.09	710.00	10.94	211	699.06	4.1%	3.9%	1%
SP-02	7822.70	4603.12	718.57	11.19		707.38			
SP-02	7822.70	4603.12	718.57	11.19	209	707.38	4.0%	4.2%	1%
SP-01	7842.77	4394.77	726.99	10.84		716.15			

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Table 9. MC6G – G1 Cross Slope Flowline Settlement Calculation Summary

			Elevation			Liner Grade	Cross Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-15	7339.00	4329.23	675.00	5.04	159	669.96	2%	2%	2%
SP-20	7180.19	4317.03	678.00	4.97		673.03			
SP-17	7338.93	4827.73	682.00	4.96	160	677.04	3%	3%	2%
SP-19	7179.21	4823.35	686.00	4.90		681.10			
SP-17	7338.93	4827.73	682.00	4.96	154	677.04	5%	5%	2%
SP-21	7493.33	4826.63	689.69	4.82		684.87			

Table 10. MC6G – G2 Cross Slope Flowline Settlement Calculation Summary

			Elevation			Liner Grade	Cross Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-10	7842.87	4009.79	712.00	8.30	129	703.70	5%	6%	2%
SP-12	7714.37	4002.92	717.80	6.61		711.19			

Table 11. MC6G – G3 Cross Slope Flowline Settlement Calculation Summary

			Elevation			Liner Grade	Cross Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-02	7822.70	4603.12	718.57	11.19	76	707.38	6%	6%	2%
SP-05	7898.60	4609.46	723.20	11.57		711.63			
SP-02	7822.70	4603.12	718.57	11.19	58	707.38	9%	11%	2%
SP-06	7764.39	4602.88	724.00	10.39		713.61			

CALCULATION SHEET

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Table 12. MC6F – F1 Pipe Flowline Settlement Calculation Summary

			Elevation			Liner Grade	Pipe Flowline Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-18	8104.51	3913.57	714.00	5.27	154	708.73	3.9%	1.8%	1%
SP-19	8104.44	4067.43	720.00	8.43		711.57			
SP-19	8104.44	4067.43	720.00	8.43	133	711.57	4.5%	4.7%	1%
SP-20	8104.44	4200.76	726.00	8.22		717.78			
SP-20	8104.44	4200.76	726.00	8.22	110	717.78	5.0%	4.3%	1%
SP-21	8103.62	4310.91	731.56	9.09		722.47			

Table 13. MC6F – F2 Pipe Flowline Settlement Calculation Summary

			Elevation			Liner Grade	Pipe Flowline Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-14	8439.33	3930.05	708.73	5.89	204	702.84	2.6%	1.4%	1%
SP-15	8441.35	4133.87	714.00	8.38		705.62			
SP-15	8441.35	4133.87	714.00	8.38	148	705.62	3.3%	3.5%	1%
SP-16	8441.72	4282.12	718.91	8.14		710.77			

Table 14. MC6F – F3 Pipe Flowline Settlement Calculation Summary

			Elevation			Liner Grade	Pipe Flowline Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-7	8588.77	4584.00	708.00	2.07	162	705.93	3.7%	1.3%	1%
SP-8	8426.54	4583.16	714.00	5.97		708.03			
SP-8	8426.54	4583.16	714.00	5.97	200	708.03	5.0%	5.2%	1%
SP-9	8226.54	4583.16	724.00	5.62		718.38			
SP-9	8226.54	4583.16	724.00	5.62	160	718.38	5.0%	2.0%	1%
SP-10	8066.54	4583.16	732.00	10.39		721.61			
SP-10	8066.54	4583.16	732.00	10.39	97	721.61	5.0%	2.5%	1%
SP-11	7969.29	4583.16	736.86	12.86		724.00			

Table 15. MC6F – F4 Pipe Flowline Settlement Calculation Summary

			Elevation			Liner Grade	Pipe Flowline Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-1	8577.97	4957.91	699.37	4.18	292	695.19	4.3%	2.5%	1%
SP-2	8285.65	4957.47	712.00	9.43		702.57			
SP-2	8285.65	4957.47	712.00	9.43	200	702.57	5.0%	3.5%	1%
SP-3	8085.65	4957.47	722.00	12.52		709.48			
SP-3	8085.65	4957.47	722.00	12.52	102	709.48	5.0%	4.6%	1%
SP-4	7983.70	4957.47	727.10	12.91		714.19			

Table 16. MC6F – F1 Cross Slope Flowline Settlement Calculation Summary

			Elevation			Liner Grade	Cross Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-18	8104.44	3913.57	714.00	5.27	143	708.73	4%	4%	2%
SP-22	7961.43	3910.35	719.71	5.34		714.37			

Table 17. MC6F – F2 Cross Slope Flowline Settlement Calculation Summary

			Elevation			Liner Grade	Cross Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-14	8439.33	3930.05	708.73	5.89	180	702.84	3%	3%	2%
SP-17	8619.11	3915.98	713.69	5.37		708.32			

Table 18. MC6F – F3 Cross Slope Flowline Settlement Calculation Summary

			Elevation			Liner Grade	Cross Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-11	7969.29	4583.16	736.86	12.86	158	724.00	4%	4%	2%
SP-12	7970.76	4741.64	743.04	12.23		730.81			
SP-11	7969.29	4583.16	736.86	12.86	186	724.00	4%	4%	2%
SP-13	7977.37	4397.40	743.72	11.65		732.07			

Table 19. MC6F – F4 Cross Slope Flowline Settlement Calculation Summary

			Elevation			Liner Grade	Cross Slope		
Point	North	East	Flowline Elevation	Settlement	Length	Post-Settlement	Pre-Settlement	Post-Settlement	Min. Slope
	[ft]	[ft]	[ft]	[ft]	[ft]	[ft]	[%]	[%]	[%]
SP-4	7983.70	4957.47	727.10	12.91	181	714.19	4%	4%	2%
SP-5	7989.83	4776.82	733.88	12.56		721.32			
SP-4	7983.70	4957.47	727.10	12.91	202	714.19	4%	5%	2%
SP-6	7988.38	5159.20	736.00	11.79		724.21			

CONCLUSIONS

The post-settlement slope of the leachate collection pipe should be at least 1% and each cell floor cross slope should be at least 2% per Rule 299.9620 (4) (EGLE 2020). This calculation estimated the settlement at points along the leachate collection pipe and cross slopes within cells affected by the proposed revised final grades. The settlement of each of these points was used to calculate the post-settlement slopes of the liner system in these cells. This settlement analysis determined that all leachate collection pipes and cross slopes within MC VI-E, MC-VI-F, and MC-VI-G sub cells G1, G2, and G3 meet the required minimum post-settlement slopes.

REFERENCES

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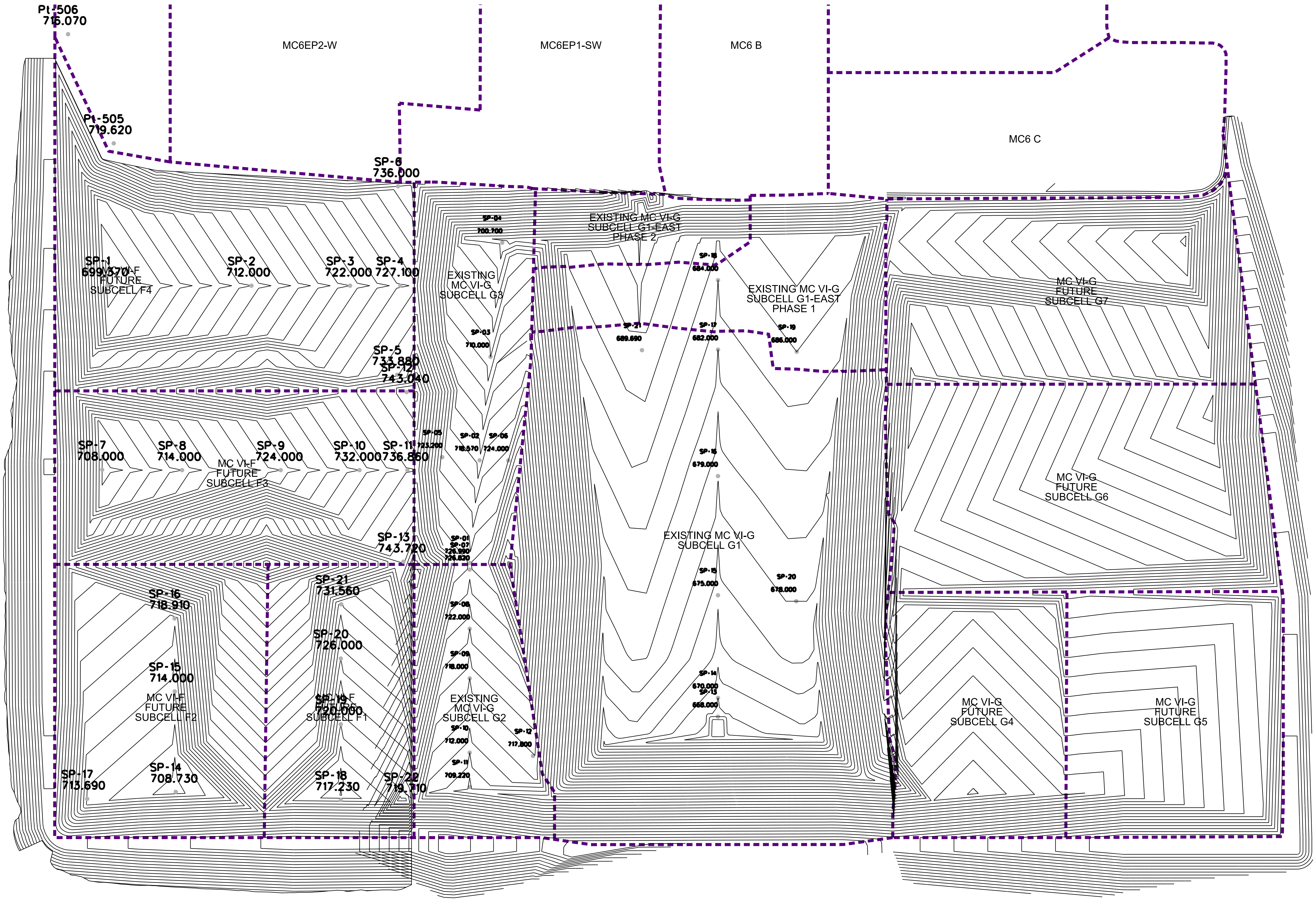
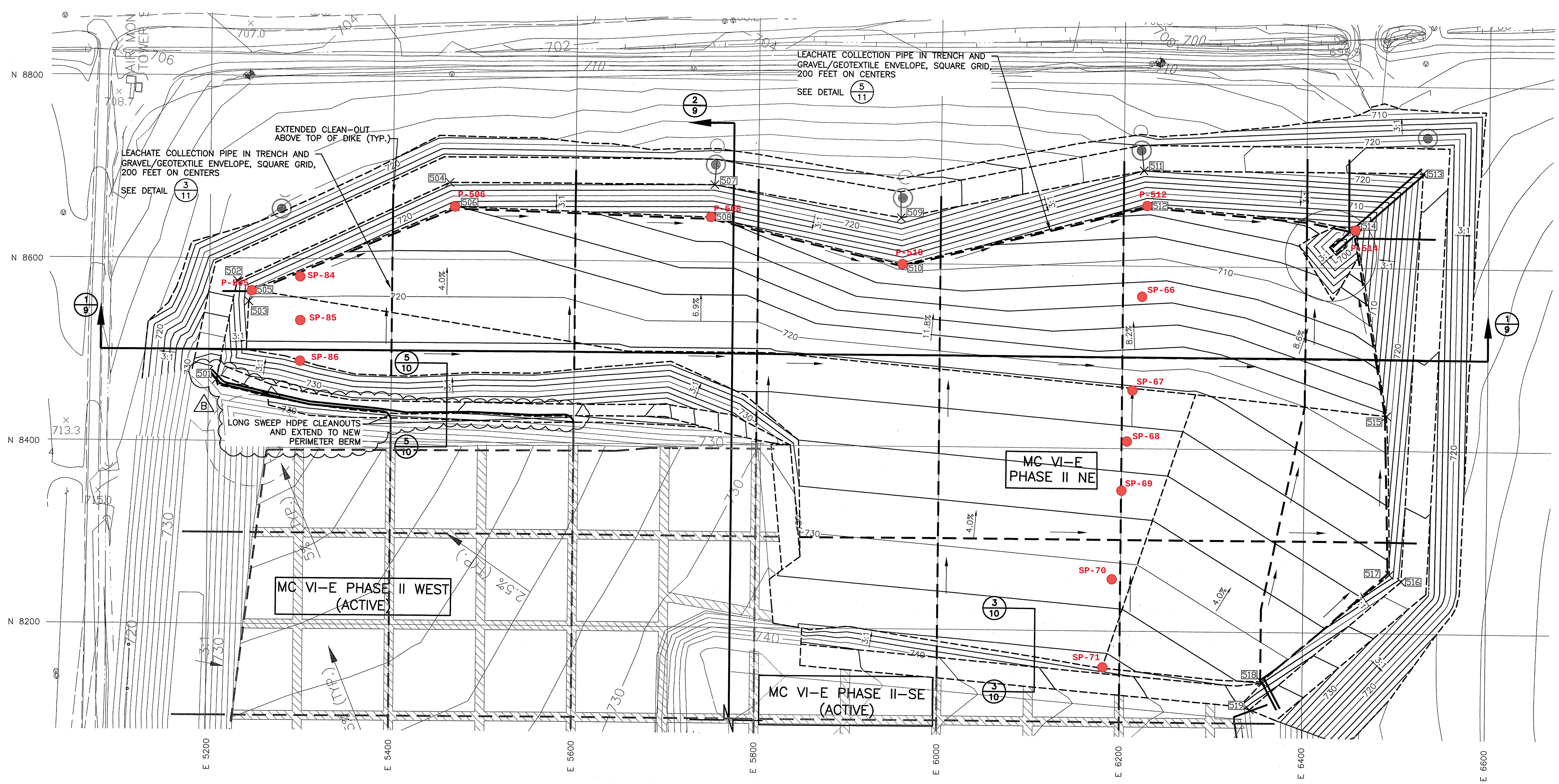
Attachment A-2.1

Settlement Analysis Points



Pt-506
716.070
MC6EP2-W
MC6EP1-SW
MC6 B
MC6 C
Pt-505
719.620
SP-6
736.000
EXISTING MC VI-G
SUBCELL G1-EAST
PHASE 2
SP-1
699.370
MC VI-F
FUTURE
SUBCELL F4
SP-2
712.000
SP-3
722.000
SP-4
727.100
EXISTING
MC VI-G
SUBCELL G3
EXISTING MC VI-G
SUBCELL G1-EAST
PHASE 1
MC VI-G
FUTURE
SUBCELL G7
SP-5
733.880
SP-12
743.040
SP-7
708.000
SP-8
714.000
SP-9
724.000
SP-10
732.000
SP-11
736.860
MC VI-F
FUTURE
SUBCELL F3
MC VI-G
FUTURE
SUBCELL G6
SP-13
743.720
EXISTING MC VI-G
SUBCELL G1
SP-21
731.560
SP-16
718.910
SP-20
726.000
SP-15
714.000
MC VI-F
FUTURE
SUBCELL F2
SP-19
720.000
SUBCELL F1
EXISTING
MC VI-G
SUBCELL G2
MC VI-G
FUTURE
SUBCELL G4
MC VI-G
FUTURE
SUBCELL G5
SP-17
713.690
SP-14
708.730
SP-18
717.230
SP-22
719.710



N

0 30' 60' 120'
SCALE

LEGEND:

—730—	PROPOSED TOP OF DIKE/ PRIMARY CLAY LINER CONTOURS
—730—	EXISTING CONTOUR
— — —	PROPOSED GRADE BREAK
520	PROPOSED PRIMARY CLAY LINER POINT NUMBER ID
	PROPOSED LEACHATE COLLECTION SUMP LOCATION SEE DETAIL 1/11
	EXISTING LEACHATE COLLECTION SUMP LOCATION
	PROPOSED LEACHATE COLLECTION PIPE AND FLOW DIRECTION
	EXISTING LEACHATE COLLECTION PIPE AND FLOW DIRECTION
	EXISTING 2 EXTRA LAYERS OF GEONET, 7.5' WIDE, BENEATH GEOCOMPOSITE IN SQUARE GRID 100 FEET ON CENTERS
±8%	FLOOR SLOPE
	EXISTING LEACHATE SUMP
	EXISTING LEACHATE SUMP VALVE PIT
	EXISTING CLEANOUT
	PROPOSED CLEANOUT

PRIMARY CLAY LINER COORDINATES

POINT NO.	NORTHING	EASTING	ELEVATION
501	8466.47	5208.11	732.36
502	8575.56	5230.55	725.00
503	8552.98	5243.24	720.23
504	8684.58	5461.79	725.00
505	8565.19	5246.41	719.62
506	8657.89	5468.01	716.07
507	8684.58	5752.00	724.00
508	8649.05	5748.66	712.17
509	8650.52	5956.38	726.00
510	8599.09	5958.86	709.36
511	8704.86	6221.78	718.00
512	8666.18	6226.32	705.21
513	8704.86	6527.36	723.50
514	8641.95	6454.04	701.00
515	8437.99	6489.67	718.29
516	8257.01	6507.34	729.00
517	8264.46	6494.44	724.51
518	8146.02	6355.69	731.45
519	8115.19	6342.71	737.66

B
A B

DRAFT

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

Northville, MI	248.553.6300
Detroit, MI	313.237.3900
Lansing, MI	517.484.6900
Grand Rapids, MI	616.957.3690
Exton, PA	610.524.2300
Lehigh Valley, PA	484.893.1440
Cleveland, OH	216.334.4040
Indianapolis, IN	317.735.7649

SUBMITTAL

REV	DESCRIPTION	DATE	BY
A	PER MDEQ COMMENTS	1/23/09	JHL
B	MODIFY FLOOR/TIE IN	8/1/11	DRL

PROJECT NAME:
MASTER CELL VI-E DESIGN MODIFICATION

PROJECT LOCATION:
WDI SITE NO. 2 VAN BUREN TWP., WAYNE COUNTY, MICHGAN

NTH PROJECT NO.: 13-070804-05	CAD FILE NAME: SHEET 5
DESIGNED BY: JHL	INCEP DATE: 1/21/08
DRAWN BY: DRL	DRAWING SCALE: AS SHOWN
CHECKED BY: ISS	SUBMITTED DATE: 8/1/2011

SHEET TITLE:
TOP OF PRIMARY LINER ELEVATION PLAN

SHEET REFERENCE NUMBER:
5

J:\0\2\0114\production sets\pin\permit modifications\5 top of primary liner elevation plan.dwg Plotted: 8/1/2011 10:54 AM by kostrowski

Attachment A-2.2

Sample Calculation

SETTLEMENT POINT	Coordinates		Elevations										
	North	East	OFL	Final	Existing	BOTTOM MC	BOTTOM LC (DRY)	BOTTOM LC (SAT)	BOTTOM SILT	BOTTOM SAND	TOP CLAY	TOP EXISTING WASTE	
SP-2	[ft]	[ft]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	
	8285.65	4957.47	712.00	834.98	715.80	660.00	655.00	643.00	625.00	580.00	670.00	708.50	

	Layer Type	Layer	Layer Height	Eff. Unit Weight	Cut Layer	Inc. Layer Stress	Compression Parameters			Initial Stress	Consolidation Stress	Final Stress	Consolidation Case	Primary Settlement	Secondary Settlement
										(midpoint of layer)					
			H [ft]	γ' [pcf]	1 = yes 0 = no	σ_i [psf]	$\frac{C_c}{1+e_0}$	$\frac{C_r}{1+e_0}$	$\frac{C_\alpha}{1+e_0}$	σ_0' [psf]	σ_c' [psf]	σ_f' [psf]	-	S_c [ft]	S_s [ft]
Overburden	1	Cover	4.00	135.0	0	540.0									
Overburden	2	New Waste	118.98	103.0	0	12254.9									
Overburden	3	OFL	3.80	135.0	TRUE	-513.0									
Overburden	4	Existing Waste	0.00	82.0	1	-									
Overburden		<none>		-	0	-									
Overburden		<none>		-	0	-									
Overburden		<none>		-	0	-									
Consolidation	3	OFL	1.75	135.0	0	236.3	0.102	0.017	0.005	631.1	631.1	12913.1	NC	0.234	0.002
Consolidation	3	OFL	1.75	135.0	0	236.3	0.102	0.017	0.005	867.4	867.4	13149.3	NC	0.211	0.002
Consolidation	4	Existing Waste	4.81	82.0	0	394.6	0.147	0.025	-	1182.8	1182.8	13464.8	NC	0.747	-
Consolidation	4	Existing Waste	4.81	82.0	0	394.6	0.147	0.025	-	1577.4	1577.4	13859.4	NC	0.668	-
Consolidation	4	Existing Waste	4.81	82.0	0	394.6	0.147	0.025	-	1972.1	1972.1	14254.0	NC	0.608	-
Consolidation	4	Existing Waste	4.81	82.0	0	394.6	0.147	0.025	-	2366.7	2366.7	14648.6	NC	0.560	-
Consolidation	4	Existing Waste	4.81	82.0	0	394.6	0.147	0.025	-	2761.3	2761.3	15043.3	NC	0.521	-
Consolidation	4	Existing Waste	4.81	82.0	0	394.6	0.147	0.025	-	3155.9	3155.9	15437.9	NC	0.488	-
Consolidation	4	Existing Waste	4.81	82.0	0	394.6	0.147	0.025	-	3550.6	3550.6	15832.5	NC	0.459	-
Consolidation	4	Existing Waste	4.81	82.0	0	394.6	0.147	0.025	-	3945.2	3945.2	16227.1	NC	0.434	-
Consolidation	6	Middle Clay	5.00	136.0	0	680.0	0.102	0.017	0.005	4482.5	4950.0	16764.4	OC-2	0.274	0.006
Consolidation	6	Middle Clay	5.00	136.0	0	680.0	0.102	0.017	0.005	5162.5	5630.0	17444.4	OC-2	0.254	0.006
Consolidation	7	Lower Clay (Moist)	5.00	128.0	0	640.0	0.171	0.029	0.009	5822.5	6290.0	18104.4	OC-2	0.397	0.011
Consolidation	8	Lower Clay (Sat)	6.00	65.6	0	393.6	0.171	0.029	0.009	6339.3	6806.8	18621.2	OC-2	0.454	0.014
Consolidation	8	Lower Clay (Sat)	6.00	65.6	0	393.6	0.171	0.029	0.009	6732.9	7200.4	19014.8	OC-2	0.438	0.014
Consolidation	9	Silt	9.00	62.6	0	563.4	0.150	-	-	7211.4	7678.9	19493.3	OC-2	0.546	-
Consolidation	9	Silt	9.00	62.6	0	563.4	0.150	-	-	7774.8	8242.3	20056.7	OC-2	0.521	-
Consolidation	10	Sand	9.00	52.6	0	473.4	0.100	-	-	8293.2	8760.7	20575.1	OC-2	0.334	-
Consolidation	10	Sand	9.00	52.6	0	473.4	0.100	-	-	8766.6	9234.1	21048.5	OC-2	0.322	-
Consolidation	10	Sand	9.00	52.6	0	473.4	0.100	-	-	9240.0	9707.5	21521.9	OC-2	0.311	-
Consolidation	10	Sand	9.00	52.6	0	473.4	0.100	-	-	9713.4	10180.9	21995.3	OC-2	0.301	-
Consolidation	10	Sand	9.00	52.6	0	473.4	0.100	-	-	10186.8	10654.3	22468.7	OC-2	0.292	-
														9.373	0.056
											Total Settlement [ft]			9.43	

Variables & Constants	
Point Name	SP-2
Settlement Layer [ft]	132.0
ERROR	0.0
# of Layers	22
t / t_p [ratio]	1.8

- Use the master "Material Properties" sheet to input the correct "Layer Type" into column C. This will auto-populate the density and compression parameters. Coordinates and elevations are referenced from the "Points" sheet for comparison to the total consolidation layer.
- Split layers greater than 10 feet thick.
- Existing layers that are to be removed are to be marked with a "1" in the "Cut Layer" column.

SETTLEMENT POINT	Coordinates		Elevations									
SP-3	North	East	OFL	Final	Existing	BOTTOM MC	BOTTOM LC (DRY)	BOTTOM LC (SAT)	BOTTOM SILT	BOTTOM SAND	TOP CLAY	TOP EXISTING WASTE
	[ft]	[ft]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]	[ft MSL]
	8085.65	4957.47	722.00	884.76	715.71	660.00	655.00	643.00	625.00	580.00	670.00	712.28

	Layer Type	Layer	Layer Height H [ft]	Eff. Unit Weight γ' [pcf]	Cut Layer 1 = yes 0 = no	Inc. Layer Stress σ_i [psf]	Compression Parameters $\frac{C_c}{1+e_0}$	$\frac{C_r}{1+e_0}$	$\frac{C_\alpha}{1+e_0}$	Initial Stress (midpoint of layer) p_0' [psf]	Consolidation Stress (midpoint of layer) p_c' [psf]	Final Stress (midpoint of layer) p_f' [psf]	Consolidation Case -	Primary Settlement S_c [ft]	Secondary Settlement S_s [ft]
Overburden	1	Cover	4.00	135.0	0	540.0									
Overburden	2	New Waste	158.76	103.0	0	16352.3									
Overburden	3	OFL	6.29	135.0	FALSE	849.1									
Overburden	4	Existing Waste	0.00	82.0	1	-									
Overburden		<none>		-	0	-									
Overburden		<none>		-	0	-									
Overburden		<none>		-	0	-									
Consolidation	3	OFL	4.86	135.0	0	656.1	0.102	0.017	0.005	328.1	328.1	18069.5	NC	0.863	0.006
Consolidation	3	OFL	4.86	135.0	0	656.1	0.102	0.017	0.005	984.2	984.2	18725.6	NC	0.634	0.006
Consolidation	4	Existing Waste	5.29	82.0	0	433.4	0.147	0.025	-	1528.9	1528.9	19270.3	NC	0.855	-
Consolidation	4	Existing Waste	5.29	82.0	0	433.4	0.147	0.025	-	1962.3	1962.3	19703.7	NC	0.778	-
Consolidation	4	Existing Waste	5.29	82.0	0	433.4	0.147	0.025	-	2395.6	2395.6	20137.1	NC	0.718	-
Consolidation	4	Existing Waste	5.29	82.0	0	433.4	0.147	0.025	-	2829.0	2829.0	20570.4	NC	0.669	-
Consolidation	4	Existing Waste	5.29	82.0	0	433.4	0.147	0.025	-	3262.4	3262.4	21003.8	NC	0.628	-
Consolidation	4	Existing Waste	5.29	82.0	0	433.4	0.147	0.025	-	3695.7	3695.7	21437.2	NC	0.593	-
Consolidation	4	Existing Waste	5.29	82.0	0	433.4	0.147	0.025	-	4129.1	4129.1	21870.5	NC	0.562	-
Consolidation	4	Existing Waste	5.29	82.0	0	433.4	0.147	0.025	-	4562.5	4562.5	22303.9	NC	0.535	-
Consolidation	6	Middle Clay	5.00	136.0	0	680.0	0.102	0.017	0.005	5119.2	4950.0	22860.6	NC	0.331	0.006
Consolidation	6	Middle Clay	5.00	136.0	0	680.0	0.102	0.017	0.005	5799.2	5630.0	23540.6	NC	0.310	0.006
Consolidation	7	Lower Clay (Moist)	5.00	128.0	0	640.0	0.171	0.029	0.009	6459.2	6290.0	24200.6	NC	0.490	0.011
Consolidation	8	Lower Clay (Sat)	6.00	65.6	0	393.6	0.171	0.029	0.009	6976.0	6806.8	24717.4	NC	0.564	0.014
Consolidation	8	Lower Clay (Sat)	6.00	65.6	0	393.6	0.171	0.029	0.009	7369.6	7200.4	25111.0	NC	0.546	0.014
Consolidation	9	Silt	9.00	62.6	0	563.4	0.150	-	-	7848.1	7678.9	25589.5	NC	0.693	-
Consolidation	9	Silt	9.00	62.6	0	563.4	0.150	-	-	8411.5	8242.3	26152.9	NC	0.665	-
Consolidation	10	Sand	9.00	52.6	0	473.4	0.100	-	-	8929.9	8760.7	26671.3	NC	0.428	-
Consolidation	10	Sand	9.00	52.6	0	473.4	0.100	-	-	9403.3	9234.1	27144.7	NC	0.414	-
Consolidation	10	Sand	9.00	52.6	0	473.4	0.100	-	-	9876.7	9707.5	27618.1	NC	0.402	-
Consolidation	10	Sand	9.00	52.6	0	473.4	0.100	-	-	10350.1	10180.9	28091.5	NC	0.390	-
Consolidation	10	Sand	9.00	52.6	0	473.4	0.100	-	-	10823.5	10654.3	28564.9	NC	0.379	-
														12.451	0.064
												Total Settlement [ft]		12.52	

Variables & Constants	
Point Name	SP-3
Settlement Layer [ft]	142.0
ERROR	0.0
# of Layers	22
t / t_p [ratio]	1.8

- Use the master "Material Properties" sheet to input the correct "Layer Type" into column C. This will auto-populate the density and compression parameters. Coordinates and elevations are referenced from the "Points" sheet for comparison to the total consolidation layer.
- Split layers greater than 10 feet thick.
- Existing layers that are to be removed are to be marked with a "1" in the "Cut Layer" column.

Attachment A-3

Pipe Strength and Deflection Calculations

CALCULATION SHEET

Client: Wayne Disposal	Project No.: 1218070017		
Project: WDI MC VI-G4 - G7 Liner and Final Cover Grading Modification	Calculated By: NSG	Date: 10/5/2021
Calculation: SSR Pipe Strength and Deflection	Checked By: CAB	Date: 10/7/2021
	Approved By: XZ	Date: 10/7/2021

Leachate Collection Sump Pipe Strength and Deflection

OBJECTIVE

Evaluate the strength and deflection of the leachate collection sump riser pipes for Master Cell VI-G4 through G7. In addition, evaluate the strength of existing MC VI-EP2-W sump risers with the proposed final grade adjustments.

DESIGN CRITERIA, ASSUMPTIONS AND METHODOLOGY

The leachate sump risers for MC VI-G4 through G7 are:

- 24-inch diameter – either HDPE SDR-9 or SDR-11 perforated pipe
- Sump riser pipe will operate at "non-pressurized" condition.
- The Sump Riser is perforated with a pattern of 8 perforations, 1/2 inch diameter, around the circumference (45 degree spacing), at 6 inches between sets of holes (See Figure 1).

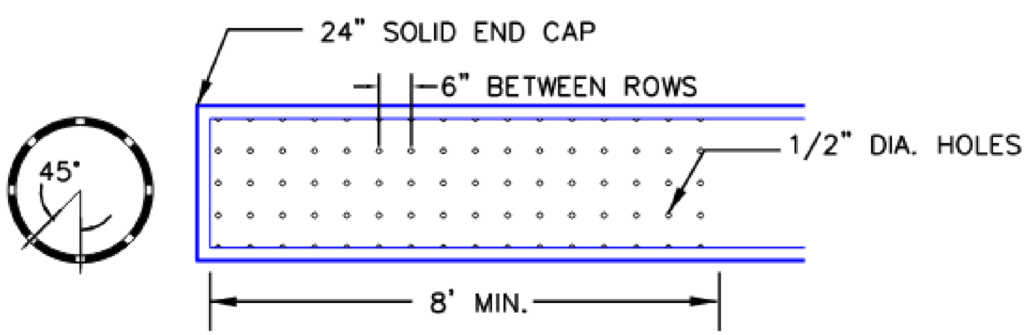


Figure 1 - Pipe Perforation Detail for MC VI G4 – G7

The leachate sump risers for MC VI EP2-W analysis are:

- MC VI-EP2-W Sump riser pipes: 18-inch diameter – HDPE SDR-7.3 perforated pipe and 20-inch diameter HDPE SDR-7.3
- Sump riser pipe will operate at "non-pressurized" condition.
- The Sump Riser is perforated with a pattern of 8 perforations, 3/8" diameter, around the circumference (45 degree spacing), at 3 inches between sets of holes (See Figure 1).

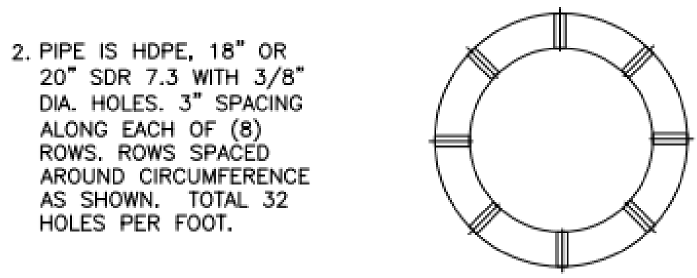


Figure 2 - MC VI EP2-W Sump Perforation Detail

Leachate sump pipes will be subjected to static loadings from the deposited waste vehicular traffic during the early stages of waste disposal. Previous analyses demonstrated that the live loading due to equipment loading was insignificant in comparison with the static loading at full height of the landfill so long as the initial cover over the riser pipes was at least 5 feet. The modification does not change this.

Static Loading

Pipe static loads were calculated using the Prism Load Method. The overburden load on the leachate collection pipe, (from top to bottom) includes the protective cover layer, waste layer, and the drainage layer. Because all of the layer thicknesses are constant except the waste layer, the most critical case (maximum static load) occurs where the waste thickness is greatest.

A comparison between the final cover grade plan and leachate collection system plan shows that the maximum waste thickness for Cells G4 through G7 is in the MC VI-G7 Sump. Waste thickness is 50 feet with 4 feet of cover soil in the cap system and 4 feet of drainage gravel in the sump. For MC VI-EP2-W sump riser, the height of waste above the riser has been adjusted to approximately 105 feet. Note that the other existing sumps were evaluated and the proposed final grade adjustments did not affect the remaining cells' maximum height of waste over the sumps. Figure 2 illustrates the thicknesses and unit weights of the various soil materials above the sump risers.

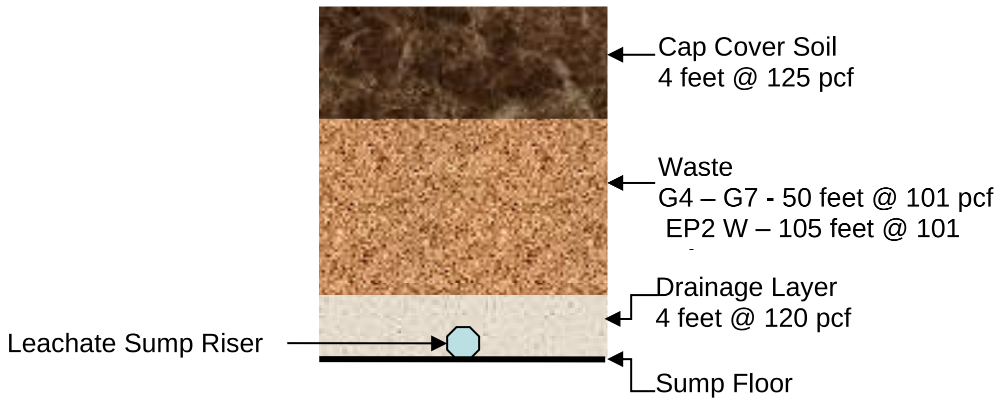


Figure 3. Cross Section of Typical Profile of Leachate Pipe for Static Loading Analysis
Figure Not To Scale

The Prism Load Method is most conservative as it does not make use of any reduction factors (Moser 1990). Equation 1 shows how the pressure on the pipe is calculated.

$$\sigma_s = \gamma_{c.s}\ h_{c.s.} + \gamma_{waste}\ h_{waste} + \gamma_{l.s}\ h_{l.s} \qquad (1)$$

Where:

σ_s = static load on the leachate pipes, pounds per square foot [psf]
$\gamma_{c.s}$ = unit weight of final cover soil, pounds per cubic foot [pcf]
$h_{c.s}$ = thickness of final cover soil [ft]
γ_{waste} = unit weight of waste [pcf]
h_{waste} = depth of waste above the pipe [ft]
$\gamma_{l.s}$ = unit weight of sumpfloor aggregate above the pipe [pcf]
$h_{l.s}$ = thickness of sump floor aggregate above the pipe [ft]

Pipe and Soil Properties Sources

The maximum allowable deflection ratios of HDPE pipes is 7.5% (ASTM F1962-11). As stated in the Handbook of PE Pipe, “for non-pressure applications, a 7.5 percent defection limit provides a large safety factor against instability and strain and is considered a safe design defection. Some engineers will design profile wall pipe and other non-pressure pipe applications to a 5% defection limit, but allow spot defections up to 7.5% during field inspection.” (Plastic Pipe Institute, 2020). Based on this, a 5% deflection limit will be used for this design.

The elastic modulus for HDPE pipe material (E_p) was reduced to 21,170 pounds per square inch (psi) to account for potential creep effects assuming a temperature of 100^{o} F for 50 years (Plastic Pipe Institute, 2020).

The soil reaction modulus (E’) depends on the soil elastic modulus (E_s) which is in turn based on soil stress.

(Qian et al 2001).

$$E' = 2 \times E_s \qquad (2)$$

Where:

E' = soil reaction modulus, psi
E_s = soil elastic modulus, psi

The soil elastic modulus was conservatively selected as 4,151 psi for MC VI-G7 (*see Attachment 2 – Determination of Soil Elasticity Modulus*). The soil elastic modulus for MC VI EP2W is 5098 psi (*see Attachment 2 – Determination of Soil Elasticity Modulus*).

Parameter Sources

Table 2 summarizes the sources used to gather the various parameters made in these calculations.

Table 1. Sources of Pipe and Soil Parameters

Parameter		Source
HDPE Pipe	Dimensions (*OD, ID*, t_p)	ISCO Product Catalog
	Perforation	CTI 2020
	Elastic Modulus (E_p)	Plastic Pipe Institute, 2020
	Acceptable Deflection	ASTM F1962-11
Soil	Unit Weights (γ_c, γ_d, γ_{waste})	Soil – typical values Waste – based on historical site-specific waste density
	Elastic Modulus (E_s)	Attachment 1
Misc.	Modified Iowa Method Parameters	Moser 1990

CALCULATIONS AND RESULTS

Vertical Deflection – Modified Iowa State Method

An engineering approach to estimate the deflection of buried pipes was developed by a group of research faculty and students at Iowa State University. Equation 6 is a summary of the effort of the Iowa State Group's to model buried, flexible pipe deflection (Moser 1990).

$$y \approx \frac{D_L K_b W_P}{\left(E_P I / r^3\right) + \left(0.061 E'\right)} \qquad (3)$$

Where:

y = vertical pipe deflection [in]

D_L = deflection lag factor

K_b = bedding constant

W_P = vertical load per unit length (in the pipe length direction) [lb/in]

$= W \times \left(\frac{12}{12 - (D \times N)} \right)$

W = unadjusted (for perforation) vertical load per unit length [lb/ft]

$= \sum \gamma_i H_i$

  γ_i = unit weight of material i on the pipe

  H_i = thickness of material i

OD = outside diameter of pipe [in]

D = diameter of perforations [in]

N = number of perforation per row per linear foot of pipe

E_P = modulus of elasticity of pipe material [psi]

I = moment of inertia of the pipe wall per unit length [in^3]

r = mean radius of pipe [in]

$= \frac{OD - t_p}{2}$

E' = soil reaction modulus [psi]

Since the conservative Prism Load Method is being applied, no adjustment for lag is required. Therefore the deflection lag factor is set to 1.0. It is typical in designs to assume a bedding constant of 0.1, as this is also a conservative value (Moser 1990).

Once the vertical pipe deflection is determined, the corresponding percent pipe wall strain/deflection ratio can be calculated as follows.

$$\varepsilon = \frac{y}{2r} \times 100\% \qquad (4)$$

Where:

ε = pipe wall strain/deflection ratio

y = vertical pipe deflection [in]

r = mean radius of pipe [in]

Wall Buckling

Local wall buckling is a longitudinal wrinkling of the pipe wall. Although wall buckling is seldom the limiting factor in the design of a pipe-soil system, a check can be made according to Equation 8 (Moser 1990).

$$FS = \frac{P_{cb}}{\sigma_z} = \frac{0.8\sqrt{\dfrac{2E'E_P}{SDR^3}}}{\sigma_z} \tag{5}$$

Where:

P_{cb}	=	critical buckling pressure at top of pipe [psi]
σ_z	=	actual vertical pressure on the pipe [psi]
E'	=	modulus of soil reaction [psi]
E_p	=	modulus of elasticity of pipe material [psi]
SDR	=	standard dimension ratio = OD/t_p
OD	=	outside diameter of pipe [in]
T_p	=	pipe wall thickness [in]

A calculation spreadsheet, based on equations presented in the previous section, was developed to analyze pipe strength. See Table 3 for calculation details of HDPE pipes in the proposed modification area.

CALCULATION SHEET
Client: Wayne Disposal
Project: WDI MC VI-G4 - G7 Liner and Final Cover Grading Modification
Calculation: SSR Pipe Strength and Deflection
Project No.: 1218070017
Calculated By: NSG Date: 10/5/2021
Checked By: CAB Date: 10/7/2021
Approved By: XZ Date: 10/7/2021

Table 2. Pipe Deflection and Buckling Strength Worksheet for MC VI-G4 through G7 Sump and MC VI-EP2W

Item	Notation	Units	1	1	2	3
			18" HDPE SDR 7.3 Perforated	20" HDPE SDR 7.3 Perforated	24" HDPE SDR 11 Perforated	24" HDPE SDR 9 Perforated
Vertical load						
Design vertical stress on pipe	H_{refuse}	ft	105.0	105.0	50.0	50.0
	σ_z	psf	11,585	11,585	6,030	6,030
		psi	80.5	80.5	41.9	41.9
Outside diameter of pipe	*OD*	in	18.000	20.000	24.000	24.000
Inside Diameter of pipe	*ID*	in	12.773	14.192	19.375	18.347
Pipe Wall Thickness *OD/SDR*	t_p	in	2.466	2.740	2.182	2.667
Unadjusted vertical load per unit length $W = \gamma * H * OD$	*W*	lbs/in	1448	1609	1005	1005
Dia. of perforations	*D*	in	0.375	0.375	0.50	0.50
No. of Perforation Rows per foot	*N*		**4**	**4**	**2**	**2**
Modified Vertical stress $W_p = W*(12/(12-(D*N)))$	W_p	lbs/in	1655	1839	1096	1096
Vertical Deflection (Modified Iowa Method)						
Deflection Lag factor	D_L		1.00	1.00	1.00	1.00
Mean Pipe radius $r = (OD-t_p)/2$	*r*	in	7.77	8.63	10.91	10.67
Bedding Constant	K_b		0.10	0.10	0.10	0.10
Soil Modulus of Elasticity	E_s	psi	5098	5098	4151	4151
Modulus Soil Reaction $E' = 2E_s$	*E'*	psi	10,197	10,197	8,303	8,303
Pipe Modulus of elasticity	E_p	psi	21,170	21,170	21,170	21,170
Moment of Inertia $I = (t_p^3/12)$	*I*	in^3	1.2493	1.7137	0.8655	1.5802
Vertical Deflection $y = [(D_L K_b W_p)/((E_p I/r^3)+(0.061E_s)]$	*y*	in	0.2439	0.2710	0.2106	0.2053
Percentage Deflection *y/(2r) for both PVC and HDPE*	ε	%	**1.6%**	**1.6%**	**0.97%**	**0.96%**
Limiting Strain for HDPE pipe		%	5.0%	5.0%	5.0%	5.0%
Buckling Analysis (for HDPE pipes only)						
Critical Buckling Pressure $P_{bc} = 0.8*(2E_s E_p/SDR^3)^{0.5}$	P_{bc}	psi	842.77	842.77	411.13	555.53
Required Factor of Safety	*FS*		*1.0*	*1.0*	*1.0*	*1.0*
Provided F.S against wall buckling $FS = P_{bc}/[\sigma z/(1-nd/12)]$	*FS*		**9.2**	**9.2**	**9.0**	**12.2**

CONCLUSIONS

The vertical deflection and factors of safety against buckling and collapse were examined for the leachate sump risers in the proposed modification. The strength and deflection analyses are shown in Table 3.

Based on the results in Table 3 for the MC VI-G4 through G7 Sump risers, it is concluded that the calculations indicate acceptable levels of deflection will occur and an adequate factor of safety is provided against buckling for both SDR-9 and SDR-11. Existing sump risers in MC VI-EP2W also achieved acceptable levels of deflection and adequate factor of safety against buckling

REFERENCES

ASTM F1962-11 (2011) "*Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings*"

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ATTACHMENTS

Attachment A-3.1.1
Pipe Properties Charts

TABLE B.1.1

Apparent Elastic Modulus for 73°F (23°C)

Duration of Sustained Loading	Design Values For 73°F (23°C) (1,2,3)					
	PE 2XXX		PE3XXX		PE4XXX	
	psi	MPa	psi	MPa	psi	MPa
0.5hr	62,000	428	78,000	538	82,000	565
1hr	59,000	407	74,000	510	78,000	538
2hr	57,000	393	71,000	490	74,000	510
10hr	50,000	345	62,000	428	65,000	448
12hr	48,000	331	60,000	414	63,000	434
24hr	46,000	317	57,000	393	60,000	414
100hr	42,000	290	52,000	359	55,000	379
1,000hr	35,000	241	44,000	303	46,000	317
1 year	30,000	207	38,000	262	40,000	276
10 years	26,000	179	32,000	221	34,000	234
50 years	22,000	152	28,000	193	29,000	200
100 years	21,000	145	27,000	186	28,000	193

(1) Although there are various factors that determine the exact apparent modulus response of a PE, a major factor is its ratio of crystalline to amorphous content – a parameter that is reflected by a PE's density. Hence, the major headings PE2XXX, PE3XXX and, PE4XXX, which are based on PE's Standard Designation Code. The first numeral of this code denotes the PE's density category in accordance with ASTM D3350 (An explanation of this code is presented in Chapter 5).

(2) The values in this table are applicable to both the condition of sustained and constant loading (under which the resultant strain increases with increased duration of loading) and that of constant strain (under which an initially generated stress gradually relaxes with increased time).

(3) The design values in this table are based on results obtained under uni-axial loading, such as occurs in a test bar that is being subjected to a pulling load. When a PE is subjected to multi-axial stressing its strain response is inhibited, which results in a somewhat higher apparent modulus. For example, the apparent modulus of a PE pipe that is subjected to internal hydrostatic pressure – a condition that induces bi-axial stressing – is about 25% greater than that reported by this table. Thus, the Uni-axial condition represents a conservative estimate of the value that is achieved in most applications.

It should also be kept in mind that these values are for the condition of continually sustained loading. If there is an interruption or a decrease in the loading this, effectively, results in a somewhat larger modulus.

In addition, the values in this table apply to a stress intensity ranging up to about 400psi, a value that is seldom exceeded under normal service conditions.

(Plastic Pipe Institute, 2020, Ch. 3)

TABLE B.1.2

Temperature Compensating Multipliers for Determination of the Apparent Modulus of Elasticity at Temperatures Other than at 73°F (23°C)

Equally Applicable to All Stress-Rated PE's (e.g., All PE2xxx's, All PE3xxx's and All PE4xxx's)

Maximum Sustained Temperature of the Pipe °F (°C)	Compensating Multiplier
-20 (-29)	2.54
-10 (-23)	2.36
0 (-18)	2.18
10 (-12)	2.00
20 (-7)	1.81
30 (-1)	1.65
40 (4)	1.49
50 (10)	1.32
60 (16)	1.18
73.4 (23)	1.00
80 (27)	0.93
90 (32)	0.82
100 (38)	0.73
110 (43)	0.64
120 (49)	0.58
130 (54)	0.50
140 (60)	0.43

(Plastic Pipe Institute, 2020, Ch. 3)

CALCULATION SHEET

Client: Wayne Disposal
Project: WDI MC VI-G4 - G7 Liner and Final Cover Grading Modification
Calculation: SSR Pipe Strength and Deflection

Project No.: 1218070017
Calculated By: NSG Date: 10/5/2021
Checked By: CAB Date: 10/7/2021
Approved By: XZ Date: 10/7/2021

PE 4710 IPS HDPE Pipe Sizes

Pressure Rating	Nominal Size	1"	1 1/4"	1 1/2"	2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"
	Actual O.D.	1.32"	1.660"	1.90"	2.38"	3.500"	4.50"	5.563"	6.625"	8.625"	10.750"	12.75"	14.00"	16.00"	18.00"
DR 7 (333psi)	Min. wall	0.188"	0.237"	0.271"	0.339"	0.500"	0.643"	0.795"	0.946"	1.232"	1.536"	1.821"	2.000"	2.286"	2.571"
	Average I.D.	0.917"	1.157"	1.325"	1.656"	2.440"	3.137"	3.878"	4.619"	6.013"	7.494"	8.889"	9.760"	11.154"	12.549"
	Weight lb/lf	0.291	0.463	0.607	0.950	2.060	3.402	5.200	7.374	12.498	19.416	27.312	32.930	43.010	54.435
DR 7.3 (312psi)	Min. wall	0.180"	0.227"	0.260"	0.325"	0.479"	0.616"	0.762"	0.908"	1.182"	1.473"	1.747"	1.918"	2.192"	2.466"
	Average I.D.	0.933"	1.178"	1.348"	1.685"	2.484"	3.193"	3.947"	4.701"	6.120"	7.628"	9.047"	9.934"	11.353"	12.773"
	Weight lb/lf	0.281	0.450	0.590	0.920	1.990	3.290	5.022	7.130	12.070	18.750	26.380	31.810	41.550	52.580
DR 9 (250psi)	Min. wall	0.146"	0.184"	0.211"	0.264"	0.389"	0.500"	0.618"	0.736"	0.958"	1.194"	1.417"	1.556"	1.778"	2.000"
	Average I.D.	1.005"	1.269"	1.452"	1.816"	2.676"	3.440"	4.253"	5.064"	6.593"	8.218"	9.747"	10.702"	12.231"	13.760"
	Weight lb/lf	0.235	0.374	0.490	0.770	1.664	2.751	4.204	5.963	10.110	15.700	22.085	26.630	34.780	44.020

PE 4710 IPS HDPE Pipe Sizes

20"	22"	24"	26"	28"	30"	32"	34"	36"	42"	48"	54"	63"	Nominal Size	Pressure Rating
20.00"	22.00"	24.00"	26.00"	28.00"	30.00"	32.00"	34.00"	36.00"	42.00"	48.00"	54.00"	62.99"	Actual O.D.	
2.857"	3.143"	3.429"	---	---	---	---	---	---	---	---	---	---	Min. wall	DR 7 (333psi)
13.943"	15.337"	16.731"	---	---	---	---	---	---	---	---	---	---	Average I.D.	
67.203	80.591	95.916	---	---	---	---	---	---	---	---	---	---	Weight lb/lf	
2.740"	3.014"	3.288"	3.562"	---	---	---	---	---	---	---	---	---	Min. wall	DR 7.3 (317psi)
14.192"	15.611"	17.030"	18.449"	---	---	---	---	---	---	---	---	---	Average I.D.	
64.910	78.550	93.480	110.769	---	---	---	---	---	---	---	---	---	Weight lb/lf	
2.222"	2.444"	2.667"	2.889"	3.111"	3.333"	3.556"	---	---	---	---	---	---	Min. wall	DR 9 (250psi)
15.289"	16.818"	18.347"	19.876"	21.404"	22.933"	24.462"	---	---	---	---	---	---	Average I.D.	
54.342	65.754	78.250	92.535	107.312	123.183	140.183	---	---	---	---	---	---	Weight lb/lf	
1.818"	2.000"	2.182"	2.364"	2.545"	2.727"	2.909"	3.091"	3.273"	---	---	---	---	Min. wall	DR 11 (200psi)
16.145"	17.760"	19.375"	20.989"	22.604"	24.218"	25.833"	27.447"	29.062"	---	---	---	---	Average I.D.	
45.541	55.105	65.580	77.440	89.785	103.076	117.285	132.411	148.454	---	---	---	---	Weight lb/lf	

(ISCO Product Catalog)

CALCULATION SHEET

Client: Wayne Disposal		Project No.: 1218070017	
Project: WDI MC VI-G4 - G7 Liner and Final Cover Grading Modification		Calculated By: NSG	Date: 10/5/2021
		Checked By: CAB	Date: 10/7/2021
Calculation: SSR Pipe Strength and Deflection		Approved By: XZ	Date: 10/7/2021

Designation: F1962 – 11

Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings[1]

This standard is issued under the fixed designation F1962; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

X2.6 *Deflection Limits*—The limiting deflection (in percent) is determined by the geometric stability of the deflected pipe, hydraulic capacity, and the strain occurring in the pipe wall. It has been observed that for PE, pressure-rated pipe, subjected to soil pressure only, no upper limit from a practical design point of view seems to exist for the bending strain (**15**). Therefore, for non-pressure pipes or conduits the safe long-term deflection is 7.5 % of the diameter. When subjected to internal pressure in addition to soil pressure, the localized bending strain resulting from deflection combines with the hoop tensile strain caused by internal pressure to produce a higher, localized tensile fiber-stress. However, as the internal pressure is increased the pipe re-rounds and the bending strain is reduced. At high pressures, the bending strain is reduced and the ring tensile stress approaches that due to internal pressure alone. For calculation method, see Ref. (**16**). This fact coupled with the ductility of PE permits the designer to ignore the combined effect of pressure and deflection. In lieu of an exact calculation based on allowable strain, the designer can use the safe long-term design deflection values for pressure pipe shown to Table X2.1.

TABLE X2.1 Safe Long-Term Design Deflection values for Buried Pressurized Polyethylene Pipe

DR or SDR	Deflection Limits as % of Diameter
21	7.5
17	6.0
15.5	6.0
13.5	6.0
11	5.0
9	4.0
7.3	3.0

(**15**) Janson, L.E.,“ Long-Term Studies of PVC and PE Pipes Subjected to Forced Constant Deflection”, Report No. 3, KP-Council, Stockholm, Sweden, 1991.
(**16**) Janson, L.E., *Plastics Pipes for Water Supply and Sewage Disposal*, Borealis, Stockholm, Sweden, 1995.

Attachment A-3.1.2
Determination of Soil Elasticity Modulus

DETERMINATION OF SOIL MODULUS OF ELASTICITY

OBJECTIVE

Determine an appropriately conservative soil modulus of elasticity (E_s) for use in calculating the strength of the MC VI-G4 through G7 leachate collection sump riser.

ASSUMPTIONS AND METHODOLOGY

Calculation of E_s

The following assumptions were made to ensure the accuracy of the final calculated value while preserving conservatism.

- The pipe under strength analysis is to be backfilled with stone (gravel).
- Maximum estimated stress on leachate collection MC VI-G4 through G7 riser = 41.9 psi
- Soil modulus of elasticity can be conservatively calculated as follows (from Table 1).

$$E_s = 2 \cdot q_c \quad \text{[psi]} \tag{1}$$

Where:
q_c = Cone Penetration Test (CPT) value [psi]

The CPT value of the stone is not available through direct test data, but it can be estimated using the friction angle and relative density. The following values were conservatively estimated based on likely properties that the gravel backfill would possess:

- Friction angle (ϕ) = 32º
- Relative Density (D_R) = 70%

Table 1. Equations for computing E_s by making use of SPT and CPT values [kpa] (Murthy 2003)

Soil	SPT	CPT
Sand (normally consolidated)	$500\ (N_{cor} + 15)$	$\boxed{2 \text{ to } 4\ q_c}$
	$(35000 \text{ to } 50000) \log N_{cor}$	$(1 + D_r^2)\ q_c$
	(U.S.S.R Practice)	
Sand (saturated)	$250\ (N_{cor} + 15)$	
Sand (overconsolidated)	–	$6 \text{ to } 30\ q_c$
Gravelly sand and gravel	$1200\ (N_{cor} + 6)$	
Clayey sand	$320\ (N_{cor} + 15)$	$3 \text{ to } 6\ q_c$
Silty sand	$300\ (N_{cor} + 6)$	$1 \text{ to } 2\ q_c$
Soft clay	–	$3 \text{ to } 8\ q_c$

Figure 1 shows an accepted correlation between these two properties and the CPT value, as well as stress state (in terms of horizontal stress, calculated in Equation 2)

$$\sigma_h = k_0 \cdot \sigma_v \quad \text{[psi]} \tag{2}$$

Where:

σ_h = Horizontal stress due to overburden pressure [psi]
k_0 = Lateral earth pressure coefficient
= 0.36 (conservative assumption, Table 2)
σ_v = Stress due to overburden soils
= 41.9 psi for the MC VI-G4 through G7 riser

Table 2. Coefficients of Earth Pressure for "at-rest" condition (Murthy 2003)

Type of soil	I_p	K_0
Loose sand, saturated	–	0.46
Dense sand, saturated	–	0.36
Dense sand, dry (e = 0.6)	–	0.49
Loose sand, dry (e = 0.8)	–	0.64
Compacted clay	9	0.42
Compacted clay	31	0.60
Organic silty clay, undisturbed (w_l = 74%)	45	0.57

Thus, once certain properties are known / calculated, the CPT value can be inferred and ultimately the soil modulus determined.

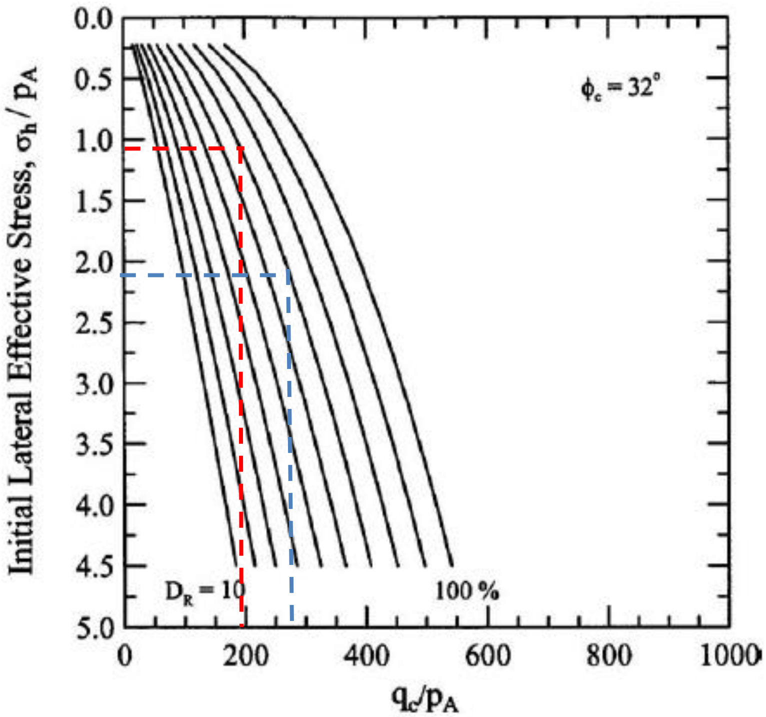

Figure 1. Correlation between Stress, Relative Density and CPT value for ϕ = 32°
(Salgado and Prezzi 2007)

Extrapolation of E_s

In addition to the aforementioned calculation approach (known to be conservative), the previously approved correlation between stress and soil modulus developed by Selig (1990) and referenced by Qian et al (2001) will be extrapolated for comparison with the calculated value.

CALCULATIONS AND RESULTS

MC VI-EP2W

- The horizontal stress (σ_h in Equation 2) was calculated as 15.1 pounds per square inch (psi).
- The σ_h / p_A ratio is therefore 1.1 (p_A = standard reference stress = 1 tsf = 13.88 psi) correlating to a q_c / p_A ratio of approximately 275. This yields a CPT value of 3,800 psi.
- Finally, the soil modulus (E_s in equation 1) is calculated to be **7,600 psi**.

CALCULATION SHEET
Client: Wayne Disposal
Project: WDI MC VI-G4 - G7 Liner and Final Cover Grading Modification
Calculation: Attachment 2 – Soil Modulus Determination

Project No.: 121807017
Calculated By: NSG Date: 10/5/2021
Checked By: CAB Date:
Approved By: Date:

Another method of analysis uses Table 3 as the basis of determining the soil modulus E_s.

Table 3. Elasticity of Soil Under Stress (Selig 1990 c/o *Qian et al 2001*)

Soil Type	Stress Level		85% Standard Density			95% Standard Density		
			E_s			E_s		
	psi	kPa	psi	MPa	ν_s	psi	MPa	ν_s
SW, SP, GW, GP	1	7	1,300	9	0.26	1,600	11	0.40
	5	35	2,100	14	0.21	4,100	28	0.29
	10	70	2,600	18	0.19	6,000	41	0.24
	20	140	3,300	23	0.19	8,600	59	0.23
	40	280	4,100	28	0.23	13,000	90	0.25
	60	420	4,700	32	0.28	16,000	110	0.29
GM, SM, ML, and GC, SC with < 20% fines	1	7	600	4	0.25	1,800	12	0.34
	5	35	700	5	0.24	2,500	17	0.29
	10	70	800	6	0.23	2,900	20	0.27
	20	140	850	6	0.30	3,200	22	0.29
	40	280	900	6	0.38	3,700	25	0.32
	60	420	1,000	7	0.41	4,100	28	0.35
CL, MH, GC, SC	1	7	100	1	0.33	400	3	0.42
	5	35	250	2	0.29	800	6	0.35
	10	70	400	3	0.28	1,100	8	0.32
	20	140	600	4	0.25	1,300	9	0.30
	40	280	700	5	0.35	1,400	10	0.35
	60	420	800	6	0.40	1,500	10	0.38

- This approved correlation is plotted in Figure 2, showing a coefficient of determination (i.e. accuracy of trend line).

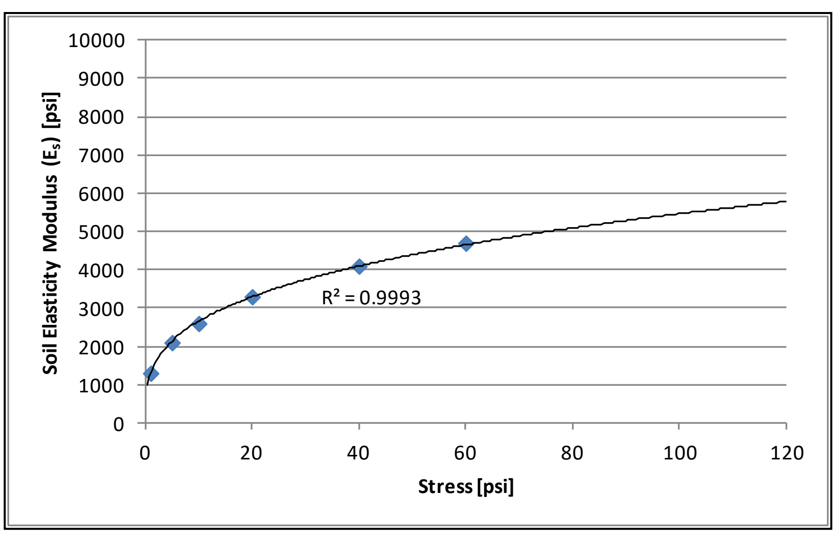

Figure 2. Correlation between overburden stress and soil elasticity modulus (from Table 3)

- The equation of the trend line shown is given below. Equation 3 was used to estimate E_s under the specified overburden pressure for both the horizontal and vertical expansion cases.

$$E_s = 1281.6\sigma_v{}^{0.3147} \qquad (3)$$

- This correlation indicates that at 80.5 psi (estimated overburden scenario) the soil modulus of elasticity will be approximately **5,098 psi**.

- To preserve a conservative calculation, the smaller values of elastic modulus – 5,098 psi for MC VI-EP2W will be used in the pipe strength and deflection analysis.

<u>MC VI-G4 through G7</u>

- The horizontal stress (σ_h in Equation 2) was calculated as 29.0 pounds per square inch (psi).

- The σ_h / p_A ratio is therefore 2.1 (p_A = standard reference stress = 1 tsf = 13.88 psi) correlating to a q_c / p_A ratio of approximately 190. This yields a CPT value of 2,700 psi.

- Finally, the soil modulus (E_s in equation 1) is calculated to be **5,400 psi**.

Using the trendline equation for Es vs overburden pressure:

- This correlation indicates that at 41.9 psi (estimated overburden scenario) the soil modulus of elasticity will be approximately **4,151 psi**.

- To preserve a conservative calculation, the smaller values of elastic modulus – 4,152 psi for MC VI G4 through G7 will be used in the pipe strength and deflection analysis.

REFERENCES

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Salgado, R. and Prezzi, M. (2007). "Computation of Cavity Expansion Pressure and Penetration Resistance in Sands." International Journal of Geomechanics. American Society of Civil Engineers.

Xuede Qian, Robert M. Koerner and Donald H. Gray (2001). "Geotechnical Aspects of Landfill Design and Construction" Prentice Hall, New Jersey.

CALCULATION SHEET

Client: Wayne Disposal
Project: WDI MC VI-G4 - G7 Liner and Final Cover Grading Modification
Calculation: LCS Pipe Strength and Deflection

Project No.: 1218070017
Calculated By: NSG Date: 10/5/2021
Checked By: CAB Date: 10/7/2021
Approved By: XZ Date: 10/7/2021

Leachate Collection Pipe Strength and Deflection

OBJECTIVE

Evaluate the strength and deflection of the proposed and existing leachate collection pipes for Master Cell VI-G, Master Cell VI-F, and Master Cell VI-E due to the proposed final grade adjustments.

DESIGN CRITERIA, ASSUMPTIONS AND METHODOLOGY

The leachate collection pipes selected for this analysis are:

- Leachate collection pipes: 8-inch diameter HDPE SDR-11 (MC VI G4 – G7) or SDR-9 perforated pipe (MC VI G4 – G7) or 6-inch SDR-7 (existing MC VI E, MC VI G1 – G3) or 6-inch SDR-7.3 (existing MC VI E, MC VI G1 – G3)
- Leachate collection pipes will operate at "non-pressurized" condition.
- The leachate collection pipes for MC VI-G4 – G7 are perforated with a pattern of 4 perforations around the circumference (90 degree spacing), at 6 inches between sets of holes (See Figure 1). Perforations are 0.5-inch diameter.
- The leachate collection pipes for existing MC VI-E cells, MC VI-G1 – G3 are perforated with a pattern of 4 perforations around the circumference (90 degree spacing), at 2 inches between holes (6 rows per foot). Perforations are 0.25-inch diameter.

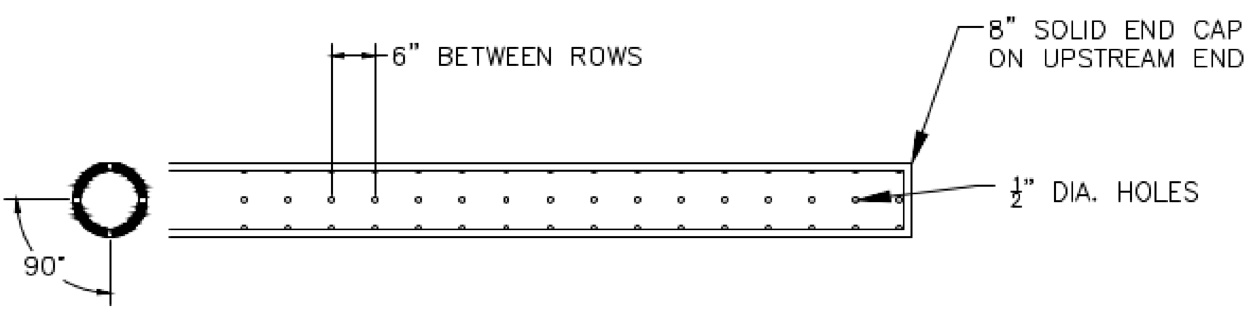


Figure 1 - Pipe Perforation Detail for MC VI-G4 through G7

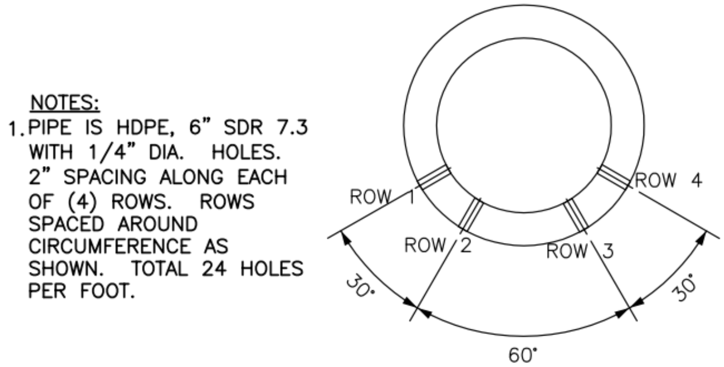


Figure 2 - Pipe Perforation Detail for MC VI-E, G1 – G3

Leachate collection pipes will be subjected to static loadings from the deposited waste vehicular traffic during the early stages of waste disposal. Previous analyses demonstrated that the live loading due to equipment loading was insignificant in comparison with the static loading at full height of the landfill so long as the initial cover over the riser pipes was at least 5 feet. The modification does not change this.

Static Loading

Pipe static loads were calculated using the Prism Load Method. The overburden load on the leachate collection pipe, (from top to bottom) includes the protective cover layer, waste layer, and the drainage layer. Because all of the layer thicknesses are constant except the waste layer, the most critical case (maximum static load) occurs where the waste thickness is greatest.

A comparison between the final cover grading plan and leachate collection system plan shows that the maximum waste thickness in MC VI E, MC VI F, and MC VI G is approximately 210 feet, 185 feet, and 250 feet, respectively. Each cell also includes 4 feet of cover soil in the cap system and a 1-foot drainage layer below the waste. Existing pipes in MC VI E is 6" SDR 7 or 6" SDR-7.3 and existing MC VI G1 is 8" SDR 9. The proposed pipes in MC VI G and MC VI F are to be either 8" SDR-9 or 8" SDR-11. To be conservative, the calculation will be performed using 250 feet of waste thickness for 8" SDR-9, 8" SDR-11, 6" SDR-7.3 and 6" SDR-7. Figure 2 illustrates the thicknesses and unit weights of the various soil material layers above the sump riser.

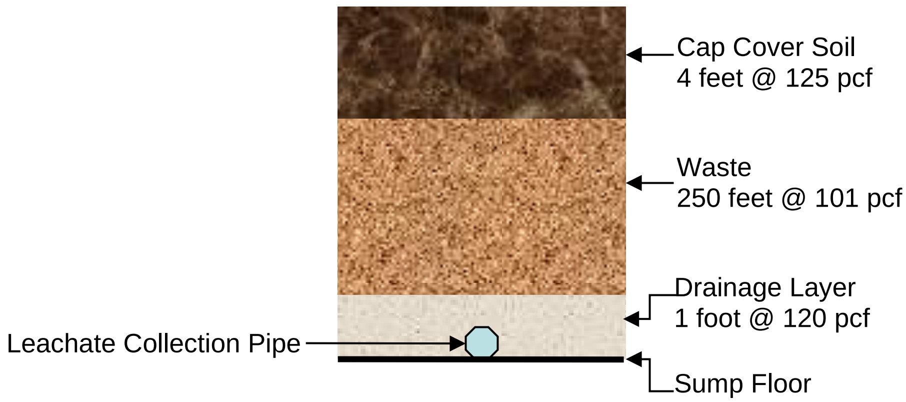


Figure 3. Cross Section of Typical Profile of Leachate Pipe for Static Loading Analysis
Figure Not To Scale

The Prism Load Method is most conservative as it does not make use of any reduction factors (Moser 1990). Equation 1 shows how the pressure on the pipe is calculated.

$$\sigma_s = \gamma_{c.s}\ h_{c.s.} + \gamma_{waste}\ h_{waste} + \gamma_{l.s}\ h_{l.s} \qquad (1)$$

Where:
σ_s = static load on the leachate pipes, pounds per square foot [psf]
$\gamma_{c.s}$ = unit weight of final cover soil, pounds per cubic foot [pcf]
$h_{c.s}$ = thickness of final cover soil [ft]
γ_{waste} = unit weight of waste [pcf]
h_{waste} = depth of waste above the pipe [ft]
$\gamma_{l.s}$ = unit weight of sumpfloor aggregate above the pipe [pcf]
$h_{l.s}$ = thickness of sump floor aggregate above the pipe [ft]

Pipe and Soil Properties Sources

The maximum allowable deflection ratios of HDPE pipes is 7.5% (ASTM F1962-11). As stated in the Handbook of PE Pipe, “for non-pressure applications, a 7.5 percent defection limit provides a large safety factor against instability and strain and is considered a safe design defection. Some engineers will design profile wall pipe and other non-pressure pipe applications to a 5% defection limit but allow spot defections up to 7.5% during field inspection.” (Plastic Pipe Institute, 2019). Based on this, a 5% deflection limit will be used for this design to be conservative.

The elastic modulus for HDPE pipe material (E_p) was reduced to 21,170 pounds per square inch (psi) to account for potential creep effects assuming a temperature of 100° F for 50 years (Plastic Pipe Institute, 2020).

The soil reaction modulus (E’) depends on the soil elastic modulus (E_s) which is in turn based on soil stress. (Qian et al 2001).

$$E' = 2 \times E_s \quad (2)$$

Where:

E' = soil reaction modulus, psi
E_s = soil elastic modulus, psi

The soil elastic modulus was estimated as 6,525 psi (*See Attachment 2 – Determination of Soil Elasticity Modulus*).

Parameter Sources

Table 2 summarizes the sources used to gather the various parameters made in these calculations.

Table 1. Sources of Pipe and Soil Parameters

	Parameter	Source
HDPE Pipe	Dimensions (*OD, ID,* t_p)	ISCO Pipe Catalog
	Perforation	CTI 2020
	Elastic Modulus (E_p)	Plastic Pipe Institute, 2020
	Acceptable Deflection	ASTM F1962-11, Handbook of PE Pipe
Soil	Unit Weights (γ_c, γ_d, γ_{waste})	Soil – typical values Waste – based on historical site-specific waste density
	Elastic Modulus (E_s)	Attachment 1
Misc.	Modified Iowa Method Parameters	Moser 1990

CALCULATIONS AND RESULTS

Vertical Deflection – Modified Iowa State Method

An engineering approach to estimate the deflection of buried pipes was developed by a group of research faculty and students at Iowa State University. Equation 6 is a summary of the effort of the Iowa State Group's to model buried, flexible pipe deflection (Moser 1990).

$$y \approx \frac{D_L K_b W_P}{\left(E_P I / r^3\right) + \left(0.061 E'\right)} \quad (3)$$

Where:

y = vertical pipe deflection [in]
D_L = deflection lag factor

K_b = bedding constant

W_P = vertical load per unit length (in the pipe length direction) [lb/in]

$$= W \times \left(\frac{12}{12 - (D \times N)} \right)$$

W = unadjusted (for perforation) vertical load per unit length [lb/ft]

$$= \sum \gamma_i H_i$$

γ_i = unit weight of material i on the pipe

H_i = thickness of material i

OD = outside diameter of pipe [in]

D = diameter of perforations [in]

N = number of perforation per row per linear foot of pipe

E_P = modulus of elasticity of pipe material [psi]

I = moment of inertia of the pipe wall per unit length [in^3]

r = mean radius of pipe [in]

$$= \frac{OD - t_p}{2}$$

E' = soil reaction modulus [psi]

Since the conservative Prism Load Method is being applied, no adjustment for lag is required. Therefore the deflection lag factor is set to 1.0. It is typical in designs to assume a bedding constant of 0.1, as this is also a conservative value (Moser 1990).

Once the vertical pipe deflection is determined, the corresponding percent pipe wall strain/deflection ratio can be calculated as follows.

$$\varepsilon = \frac{y}{2r} \times 100\% \qquad (4)$$

Where:

ε = pipe wall strain/deflection ratio

y = vertical pipe deflection [in]

r = mean radius of pipe [in]

Wall Buckling

Local wall buckling is a longitudinal wrinkling of the pipe wall. Although wall buckling is seldom the limiting factor in the design of a pipe-soil system, a check can be made according to Equation 8 (Moser 1990).

$$FS = \frac{P_{cb}}{\sigma_z} = \frac{0.8\sqrt{\frac{2E'E_P}{SDR^3}}}{\sigma_z} \tag{5}$$

Where:

P_{cb} = critical buckling pressure at top of pipe [psi]
σ_z = actual vertical pressure on the pipe [psi]
E' = modulus of soil reaction [psi]
E_p = modulus of elasticity of pipe material [psi]
SDR = standard dimension ratio = OD/t_p
OD = outside diameter of pipe [in]
T_p = pipe wall thickness [in]

A calculation spreadsheet, based on equations presented in the previous section, was developed to analyze pipe strength. See Table 3 for calculation details of HDPE pipes in the proposed modification area.

CALCULATION SHEET

Client: Wayne Disposal
Project: WDI MC VI-G4 - G7 Liner and Final Cover Grading Modification
Calculation: LCS Pipe Strength and Deflection

Project No.: 1218070017
Calculated By: NSG Date: 10/5/2021
Checked By: CAB Date: 10/7/2021
Approved By: XZ Date: 10/7/2021

Table 2. Pipe Deflection and Buckling Strength Worksheet for MC VI E, MC VI F, and MC VI G Leachate Collection pipes

Item	Notation	Units	1	2	3	4
			8" HDPE SDR 11 Perforated	8" HDPE SDR 9 Perforated	6" HDPE SDR 7 Perforated	6" HDPE SDR 7.3 Perforated
Vertical load						
Design vertical stress on pipe	H_{refuse}	ft	250.0	250.0	250.0	250.0
	σ_z	psf	25,870	25,870	25,870	25,870
		psi	179.7	179.7	179.7	179.7
Outside diameter of pipe	*OD*	in	8.625	8.625	6.625	6.625
Inside Diameter of pipe	*ID*	in	6.963	6.593	4.619	4.701
Pipe Wall Thickness *OD/SDR*	t_p	in	0.784	0.958	0.946	0.908
Unadjusted vertical load per unit length $W = \gamma * H * OD$	*W*	lbs/in	1550	1550	1190	1190
Dia. of perforations	*D*	in	0.50	0.50	0.25	0.25
No. of Perforation Rows per foot	*N*		**2**	**2**	**6**	**6**
Modified Vertical stress $W_p = W*(12/(12-(D*N)))$	W_p	lbs/in	1690	1690	1360	1360
Vertical Deflection (Modified Iowa Method)						
Deflection Lag factor	D_L		1.00	1.00	1.00	1.00
Mean Pipe radius $r = (OD-t_p)/2$	*r*	in	3.92	3.83	2.84	2.86
Bedding Constant	K_b		0.10	0.10	0.10	0.10
Soil Modulus of Elasticity	E_s	psi	6564.8	6564.8	6564.8	6564.8
Modulus Soil Reaction $E' = 2E_s$	*E'*	psi	13,130	13,130	13,130	13,130
Pipe Modulus of elasticity	E_p	psi	21,170	21,170	21,170	21,170
Moment of Inertia $I = (t_p^3/12)$	*I*	in^3	0.0402	0.0733	0.0706	0.0623
Vertical Deflection $y = [(D_L K_b W_p)/((E_p I/r^3)+(0.061E_s)]$	*y*	in	0.2074	0.2040	0.1570	0.1587
Percentage Deflection *y/(2r) for both PVC and HDPE*	ε	%	**2.6%**	**2.7%**	**2.8%**	**2.8%**
Limiting Strain for HDPE pipe		%	5.0%	5.0%	5.0%	5.0%
Buckling Analysis (for HDPE pipes only)						
Critical Buckling Pressure $P_{bc} = 0.8*(2E_s E_p/SDR^3)^{0.5}$	P_{bc}	psi	517.01	698.60	1018.46	956.33
Required Factor of Safety	*FS*		*1.0*	*1.0*	*1.0*	*1.0*
Provided F.S against wall buckling $FS = P_{bc}/[\sigma z/(1-nd/12)]$	*FS*		**2.6**	**3.6**	**5.0**	**4.7**

CONCLUSIONS

The vertical deflection and factors of safety against buckling and collapse were examined for the leachate collection pipes in the proposed modification. The strength and deflection analyses are shown in Table 3.

Based on the results in Table 3 for the MC VI E, MC VI F, and MC VI G leachate collection pipes, it is concluded that the calculations indicate acceptable levels of deflection will occur and an adequate factor of safety is provided against buckling for 8" SDR-11, 8" SDR-9, 6" SDR-7.3, and 6" SDR-7.

REFERENCES

ASTM F1962-11 (2011) "*Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings*"

ISCO Product Catalog, Section B: ASTM HDPE Materials, 4710 HDPE Pipe Sizes. https://isco-pipe.com/wp-content/uploads/2019/03/Q3_2018_Entire-Catalog_Final_web.pdf (accessed Sept 9, 2020)

Moser, A.P. (1990) *Buried Pipe Design*, McGraw-Hill, New York.

Plastic Pipe Institute, Second Edition Handbook of PE Pipe. https://plasticpipe.org/publications/pe-handbook.html (accessed Sept 9, 2020)

Xuede Qian, Robert M. Koerner and Donald H. Gray (2001) "*Geotechnical Aspects of Landfill Design and Construction*" Prentice Hall, New Jersey.

ATTACHMENTS

Attachment A-3.2.1
Pipe Properties Charts

TABLE B.1.1
Apparent Elastic Modulus for 73°F (23°C)

Duration of Sustained Loading	Design Values For 73°F (23°C) (1,2,3)					
	PE 2XXX		PE3XXX		PE4XXX	
	psi	MPa	psi	MPa	psi	MPa
0.5hr	62,000	428	78,000	538	82,000	565
1hr	59,000	407	74,000	510	78,000	538
2hr	57,000	393	71,000	490	74,000	510
10hr	50,000	345	62,000	428	65,000	448
12hr	48,000	331	60,000	414	63,000	434
24hr	46,000	317	57,000	393	60,000	414
100hr	42,000	290	52,000	359	55,000	379
1,000hr	35,000	241	44,000	303	46,000	317
1 year	30,000	207	38,000	262	40,000	276
10 years	26,000	179	32,000	221	34,000	234
50 years	22,000	152	28,000	193	29,000	200
100 years	21,000	145	27,000	186	28,000	193

(1) Although there are various factors that determine the exact apparent modulus response of a PE, a major factor is its ratio of crystalline to amorphous content – a parameter that is reflected by a PE's density. Hence, the major headings PE2XXX, PE3XXX and, PE4XXX, which are based on PE's Standard Designation Code. The first numeral of this code denotes the PE's density category in accordance with ASTM D3350 (An explanation of this code is presented in Chapter 5).

(2) The values in this table are applicable to both the condition of sustained and constant loading (under which the resultant strain increases with increased duration of loading) and that of constant strain (under which an initially generated stress gradually relaxes with increased time).

(3) The design values in this table are based on results obtained under uni-axial loading, such as occurs in a test bar that is being subjected to a pulling load. When a PE is subjected to multi-axial stressing its strain response is inhibited, which results in a somewhat higher apparent modulus. For example, the apparent modulus of a PE pipe that is subjected to internal hydrostatic pressure – a condition that induces bi-axial stressing – is about 25% greater than that reported by this table. Thus, the Uni-axial condition represents a conservative estimate of the value that is achieved in most applications.

It should also be kept in mind that these values are for the condition of continually sustained loading. If there is an interruption or a decrease in the loading this, effectively, results in a somewhat larger modulus.

In addition, the values in this table apply to a stress intensity ranging up to about 400psi, a value that is seldom exceeded under normal service conditions.

(Plastic Pipe Institute, 2020, Ch. 3)

TABLE B.1.2

Temperature Compensating Multipliers for Determination of the Apparent Modulus of Elasticity at Temperatures Other than at 73°F (23°C)

Equally Applicable to All Stress-Rated PE's (e.g., All PE2xxx's, All PE3xxx's and All PE4xxx's)

Maximum Sustained Temperature of the Pipe °F (°C)	Compensating Multiplier
-20 (-29)	2.54
-10 (-23)	2.36
0 (-18)	2.18
10 (-12)	2.00
20 (-7)	1.81
30 (-1)	1.65
40 (4)	1.49
50 (10)	1.32
60 (16)	1.18
73.4 (23)	1.00
80 (27)	0.93
90 (32)	0.82
100 (38)	0.73
110 (43)	0.64
120 (49)	0.58
130 (54)	0.50
140 (60)	0.43

(Plastic Pipe Institute, 2020, Ch. 3)

PE 4710 IPS HDPE Pipe Sizes

Pressure Rating	Nominal Size	1"	1 1/4"	1 1/2"	2"	3"	4"	5"	6"	8"	10"
	Actual O.D.	1.32"	1.660"	1.90"	2.38"	3.500"	4.50"	5.563"	6.625"	8.625"	10.750"
DR 7 (333psi)	Min. wall	0.188"	0.237"	0.271"	0.339"	0.500"	0.643"	0.795"	0.946"	1.232"	1.536"
	Average I.D.	0.917"	1.157"	1.325"	1.656"	2.440"	3.137"	3.878"	4.619"	6.013"	7.494"
	Weight lb/lf	0.291	0.463	0.607	0.950	2.060	3.402	5.200	7.374	12.498	19.416
DR 7.3 (312psi)	Min. wall	0.180"	0.227"	0.260"	0.325"	0.479"	0.616"	0.762"	0.908"	1.182"	1.473"
	Average I.D.	0.933"	1.178"	1.348"	1.685"	2.484"	3.193"	3.947"	4.701"	6.120"	7.628"
	Weight lb/lf	0.281	0.450	0.590	0.920	1.990	3.290	5.022	7.130	12.070	18.750
DR 9 (250psi)	Min. wall	0.146"	0.184"	0.211"	0.264"	0.389"	0.500"	0.618"	0.736"	0.958"	1.194"
	Average I.D.	1.005"	1.269"	1.452"	1.816"	2.676"	3.440"	4.253"	5.064"	6.593"	8.218"
	Weight lb/lf	0.235	0.374	0.490	0.770	1.664	2.751	4.204	5.963	10.110	15.700
DR 11 (200psi)	Min. wall	0.120"	0.151"	0.173"	0.216"	0.318"	0.409"	0.506"	0.602"	0.784"	0.977"
	Average I.D.	1.062"	1.340"	1.534"	1.917"	2.825"	3.633"	4.491"	5.348"	6.963"	8.678"
	Weight lb/lf	0.200	0.314	0.411	0.642	1.395	2.310	3.523	5.000	8.470	13.160

(*ISCO Product Catalog*)

CALCULATION SHEET

Client: Wayne Disposal

Project: WDI MC VI-G4 - G7 Liner and Final Cover Grading Modification

Calculation: LCS Pipe Strength and Deflection

Project No.: 1218070017

Calculated By: NSG Date: 10/5/2021

Checked By: CAB Date: 10/7/2021

Approved By: XZ Date: 10/7/2021

Designation: F1962 – 11

Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings[1]

This standard is issued under the fixed designation F1962; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

X2.6 *Deflection Limits*—The limiting deflection (in percent) is determined by the geometric stability of the deflected pipe, hydraulic capacity, and the strain occurring in the pipe wall. It has been observed that for PE, pressure-rated pipe, subjected to soil pressure only, no upper limit from a practical design point of view seems to exist for the bending strain (**15**). Therefore, for non-pressure pipes or conduits the safe long-term deflection is 7.5 % of the diameter. When subjected to internal pressure in addition to soil pressure, the localized bending strain resulting from deflection combines with the hoop tensile strain caused by internal pressure to produce a higher, localized tensile fiber-stress. However, as the internal pressure is increased the pipe re-rounds and the bending strain is reduced. At high pressures, the bending strain is reduced and the ring tensile stress approaches that due to internal pressure alone. For calculation method, see Ref. (**16**). This fact coupled with the ductility of PE permits the designer to ignore the combined effect of pressure and deflection. In lieu of an exact calculation based on allowable strain, the designer can use the safe long-term design deflection values for pressure pipe shown to Table X2.1.

TABLE X2.1 Safe Long-Term Design Deflection values for Buried Pressurized Polyethylene Pipe

DR or SDR	Deflection Limits as % of Diameter
21	7.5
17	6.0
15.5	6.0
13.5	6.0
11	5.0
9	4.0
7.3	3.0

(15) Janson, L.E.," Long-Term Studies of PVC and PE Pipes Subjected to Forced Constant Deflection", Report No. 3, KP-Council, Stockholm, Sweden, 1991.

(16) Janson, L.E., *Plastics Pipes for Water Supply and Sewage Disposal*, Borealis, Stockholm, Sweden, 1995.

Attachment A-3.2.2
Determination of Soil Elasticity Modulus

DETERMINATION OF SOIL MODULUS OF ELASTICITY

OBJECTIVE

Determine an appropriately conservative soil modulus of elasticity (E_s) for use in calculating the strength of the for Master Cell VI-G, Master Cell VI-F, and Master Cell VI-E leachate pipes due to the proposed final grade adjustments.

ASSUMPTIONS AND METHODOLOGY

Calculation of E_s

The following assumptions were made to ensure the accuracy of the final calculated value while preserving conservatism.

- The pipe under strength analysis is to be backfilled with stone (gravel).
- Maximum estimated stress on leachate collection for Master Cell VI-G, Master Cell VI-F, and Master Cell VI-E leachate collection pipes = 179.7 psi
- Soil modulus of elasticity can be conservatively calculated as follows (from Table 1).

$$E_s = 2 \cdot q_c \quad \text{[psi]} \tag{1}$$

Where:
q_c = Cone Penetration Test (CPT) value [psi]

The CPT value of the stone is not available through direct test data, but it can be estimated using the friction angle and relative density. The following values were conservatively estimated based on likely properties that the gravel backfill would possess:

- Friction angle (ϕ) = 32º
- Relative Density (D_R) = 70%

Table 1. Equations for computing E_s by making use of SPT and CPT values [kpa] (Murthy 2003)

Soil	SPT	CPT
Sand (normally consolidated)	$500\,(N_{cor}+15)$ $(35000 \text{ to } 50000) \log N_{cor}$ (U.S.S.R Practice)	$\boxed{2 \text{ to } 4\, q_c}$ $(1+D_r^2)\, q_c$
Sand (saturated)	$250\,(N_{cor}+15)$	
Sand (overconsolidated)	–	$6 \text{ to } 30\, q_c$
Gravelly sand and gravel	$1200\,(N_{cor}+6)$	
Clayey sand	$320\,(N_{cor}+15)$	$3 \text{ to } 6\, q_c$
Silty sand	$300\,(N_{cor}+6)$	$1 \text{ to } 2\, q_c$
Soft clay	–	$3 \text{ to } 8\, q_c$

Figure 1 shows an accepted correlation between these two properties and the CPT value, as well as stress state (in terms of horizontal stress, calculated in Equation 2)

$$\sigma_h = k_0 \cdot \sigma_v \quad \text{[psi]} \tag{2}$$

Where:

σ_h = Horizontal stress due to overburden pressure [psi]
k_0 = Lateral earth pressure coefficient
= 0.36 (conservative assumption, Table 2)
σ_v = Stress due to overburden soils
= 179.7 psi for the for Master Cell VI-G, Master Cell VI-F, and Master Cell VI-E leachate collection pipes

Table 2. Coefficients of Earth Pressure for “at-rest” condition (Murthy 2003)

Type of soil	I_p	K_0
Loose sand, saturated	–	0.46
Dense sand, saturated	–	0.36
Dense sand, dry (e = 0.6)	–	0.49
Loose sand, dry (e = 0.8)	–	0.64
Compacted clay	9	0.42
Compacted clay	31	0.60
Organic silty clay, undisturbed (w_l = 74%)	45	0.57

Thus, once certain properties are known / calculated, the CPT value can be inferred and ultimately the soil modulus determined.

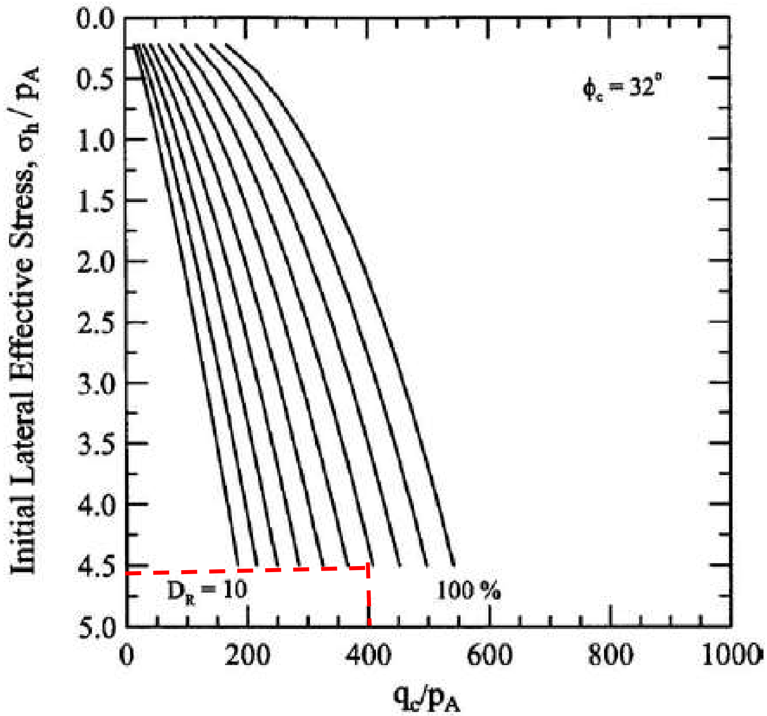


Figure 1. Correlation between Stress, Relative Density and CPT value for $\phi = 32^o$ (Salgado and Prezzi 2007)

Extrapolation of E_s

In addition to the aforementioned calculation approach (known to be conservative), the previously approved correlation between stress and soil modulus developed by Selig (1990) and referenced by Qian et al (2001) will be extrapolated for comparison with the calculated value.

CALCULATIONS AND RESULTS

- The horizontal stress (σ_h in Equation 2) was calculated as 64.7 pounds per square inch (psi).
- The σ_h / p_A ratio is therefore 4.6 (p_A = standard reference stress = 1 tsf = 13.88 psi) correlating to a q_c / p_A ratio of approximately 400. This yields a CPT value of 11,100 psi.
- Finally, the soil modulus (E_s in equation 1) is calculated to be **22,200 psi**.

Another method of analysis uses Table 3 as the basis of determining the soil modulus E_s.

Table 3. Elasticity of Soil Under Stress (Selig 1990 c/o *Qian et al 2001*)

Soil Type	Stress Level		85% Standard Density			95% Standard Density		
			E_s			E_s		
	psi	kPa	psi	MPa	ν_s	psi	MPa	ν_s
SW, SP, GW, GP	1	7	1,300	9	0.26	1,600	11	0.40
	5	35	2,100	14	0.21	4,100	28	0.29
	10	70	2,600	18	0.19	6,000	41	0.24
	20	140	3,300	23	0.19	8,600	59	0.23
	40	280	4,100	28	0.23	13,000	90	0.25
	60	420	4,700	32	0.28	16,000	110	0.29
GM, SM, ML, and GC, SC with < 20% fines	1	7	600	4	0.25	1,800	12	0.34
	5	35	700	5	0.24	2,500	17	0.29
	10	70	800	6	0.23	2,900	20	0.27
	20	140	850	6	0.30	3,200	22	0.29
	40	280	900	6	0.38	3,700	25	0.32
	60	420	1,000	7	0.41	4,100	28	0.35
CL, MH, GC, SC	1	7	100	1	0.33	400	3	0.42
	5	35	250	2	0.29	800	6	0.35
	10	70	400	3	0.28	1,100	8	0.32
	20	140	600	4	0.25	1,300	9	0.30
	40	280	700	5	0.35	1,400	10	0.35
	60	420	800	6	0.40	1,500	10	0.38

- This approved correlation is plotted in Figure 2, showing a coefficient of determination (i.e. accuracy of trend line).

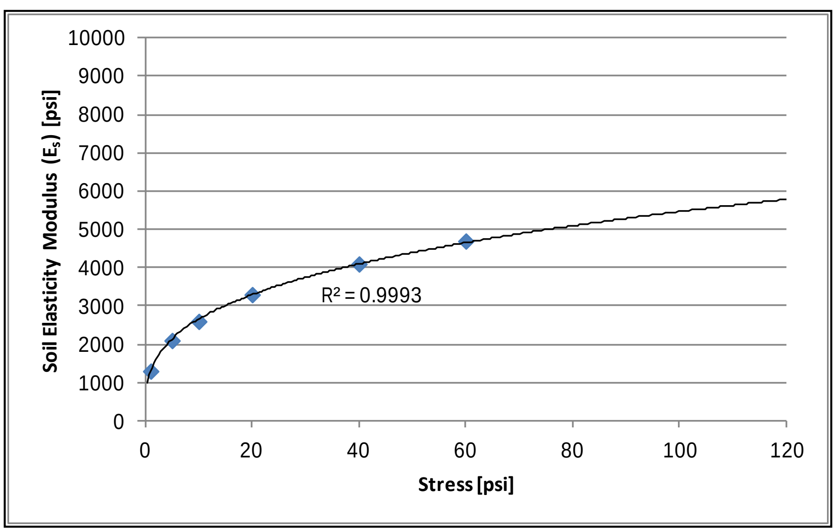


Figure 2. Correlation between overburden stress and soil elasticity modulus (from Table 3)

- The equation of the trend line shown is given below. Equation 3 was used to estimate E_s under the specified overburden pressure for both the horizontal and vertical expansion cases.

$$E_s = 1281.6\sigma_v{}^{0.3147} \tag{3}$$

- This correlation indicates that at 179.7 psi (estimated overburden scenario) the soil modulus of elasticity will be approximately **6,565 psi**.

- To preserve a conservative calculation, the smaller values of elastic modulus – 6,565 psi for horizontal expansion cells will be used in the pipe strength and deflection analysis.

REFERENCES

Murthy, V.N.S. (2003) *Geotechnical Engineering: Principles and Practices of Soils Mechanics and Foundation Engineering* Marcel Dekker, Inc., New York, NY.

Salgado, R. and Prezzi, M. (2007). "Computation of Cavity Expansion Pressure and Penetration Resistance in Sands." International Journal of Geomechanics. American Society of Civil Engineers.

Xuede Qian, Robert M. Koerner and Donald H. Gray (2001). "Geotechnical Aspects of Landfill Design and Construction" Prentice Hall, New Jersey.

Attachment A-4

Leachate Collection System Flow Capacity Analysis

CALCULATION SHEET

Client: US Ecology - Wayne Disposal	Project No.: 1218070017		
Project: WDI MC VI-G4 - G7 Liner and Final Cover Grading Modification	Calculated By: LEH	Date: 6/2/21
Calculation: Leachate Collection System Flow Capacity Analysis	Checked By: NSG	Date: 10/4/2021
	Approved By: XZ	Date: 10/6/2021

Leachate Collection System Flow Capacity Analysis

Objective

To evaluate the flow capacity of the leachate collection system as a part of the proposed MC VI-G operation in Cell G4, G5, G6 and G7 at Wayne Disposal Inc. (WDI).

Design Criteria, Assumptions, and Methodology

1. The leachate collection system of the proposed design MC VI G4, G5, G6 and G7 are described below:

   a. The constructed system in MC VI G4, G5, G6, and G7 all consist of one layer of geocomposite, a 8-inch HDPE SDR-9 or 11 perforation pipe, and a 12-inch thick drainage sand layer.

2. Use Manning's equation to calculate the allowable leachate collection pipe flow:

$$Q_{pipe} = \frac{1.49}{n} A R_h^{2/3} S^{1/2} \qquad (1)$$

where;
- Q_{pipe} = allowable flow rate, cubic feet per second (ft^3/sec),
- n = Manning's roughness coefficient ≈ 0.011 for HDPE or PVC pipe,
- A = cross-sectional area of the pipe, square feet (ft^2)
- R_h = hydraulic radius, feet = ID/4 for full flow,
- S = slope of pipe, minimum 1% after settlement.

For a partial flow pipe:

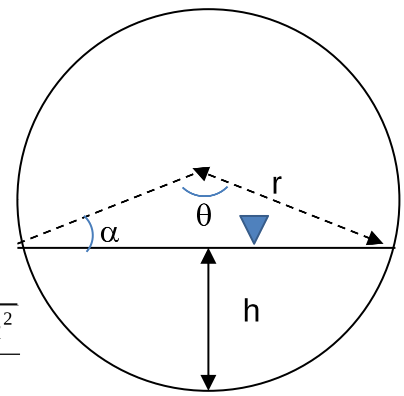
$$\alpha = \sin^{-1}\frac{r-h}{r} \quad \text{in radians}$$

$$\theta = \pi - 2\alpha$$

$$\text{Wet Area: } A = r^2\frac{\theta}{2} - (r-h)\left(\sqrt{2rh-h^2}\right)$$

$$\text{Wet Perimeter: } P = r\theta$$

$$\text{Hydraulic Radius: } R_h = \frac{A}{P} = \frac{r}{2} - \frac{(r-h)\sqrt{2rh-h^2}}{r\theta}$$



Where:

r = pipe radius (ft)
h = liquid depth in the pipe (ft)

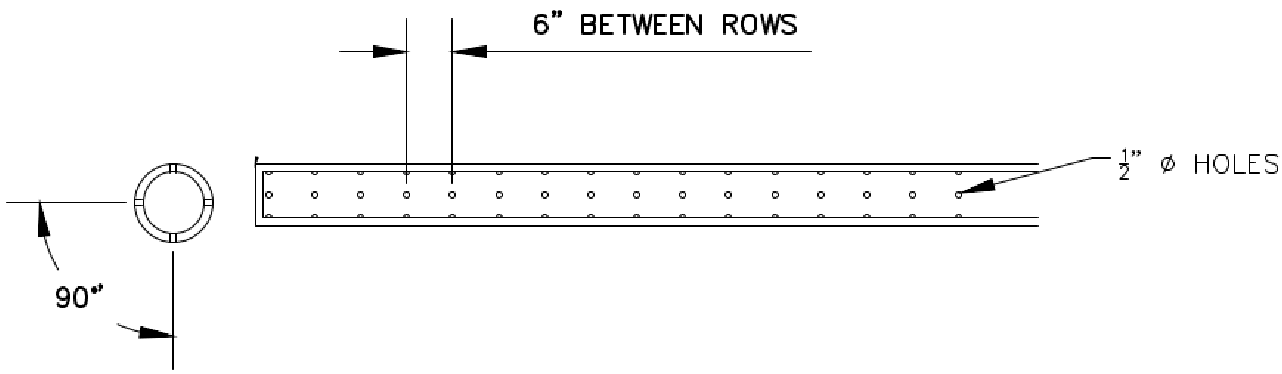
3. Leachate collection pipes used (or to be used) in Cell G4, G5, G6 and G7 are 8-inch diameter SDR 9 or 11 HDPE pipes with an average inside diameter (ID) of 6.593 inches (SDR 9 ID used for conservatism).

4. Flow rate for each orifice (pipe perforation) is calculated as follows [1]:

$$Q_{orifice} = CAV_{ent} \tag{2}$$

Where	$Q_{orifice}$	= flow rate, cubic feet per second (ft^3/sec)
	C	= discharge coefficient = 0.62 [1]
	A	= area of orifice, square feet (ft^2)
	V_{ent}	= limit leachate entrance velocity, 0.1 feet per square second (ft/sec)

5. Perforations of leachate collection pipes used in MC VI G4, G5, G6 and G7 are ½ inches in diameter. Four rows of perforations along the bottom portion of the pipe were drilled with 6-inch spacing between perforations. To be conservative, it is assumed that only the bottom two rows of perforations are submerged under leachate.



6. The 8-inch leachate collection pipes in MV VI G4, G5, G6 and G7 are assumed to flow ½ full (See Appendix B-1 for detail).

7. Leachate generation was modeled using the HELP Model. The estimated leachate generation rate for the floor area and the sideslope areas is 6,560 gallons/acre/day (gpad) and 6,674 gpad, respectively. For the analysis area, the higher value of 6,674 gpad for the sideslopes was used for all pipes for conservatism.

Calculation

Leachate Collection System - Pipe Flow Capacity

MC VI G4, G5, G6 & G7:

Assuming the pipe is flowing full.

$$Q_{allow} = \frac{1.49}{n} A R_h^{\frac{2}{3}} S^{\frac{1}{2}} = \frac{1.49}{0.011}\left(\frac{\pi}{4}\left(\frac{6.593}{12}\right)^2\right)\left(\frac{6.593}{4 \times 12}\right)^{\frac{2}{3}}(0.01)^{\frac{1}{2}} = 0.85\frac{ft^3}{s} = 552{,}498 gpd$$

Assuming the pipe is flowing ½ full (r=h, θ=π).

$$Q_{allow} = \frac{1.49}{n} A R_h^{2/3} S^{1/2} = (1.49/0.011)(0.119)(0.137)^{2/3}(0.01)^{1/2}$$

$$= 0.43 \text{ ft}^3\text{/s} = 192 \text{ gpm} = 276{,}249 \text{ gpd}$$

Where:

$$A = r^2 \frac{\theta}{2} = \left(\frac{3.2965}{12}\right)^2 \times \frac{3.14}{2} = 0.119\ ft^2$$

$$R_h = \frac{A}{P} = \frac{r}{2} = \left(\frac{3.2965}{12}\right) \times \frac{1}{2} = 0.137 ft$$

S = 1%

Leachate Collection System – Perforation Flow Capacity

MC VI G4, G5, G6 & G7 :

$$Q_{orifice} = CVA = 0.62 \times 0.1 \times \frac{\pi d^2}{4}$$

$$= 0.062 \times \frac{\pi (0.5/12)^2}{4}$$

$$= 8.45 \times 10^{-5} \text{ ft}^3\text{/sec}$$

$$= 54.64 \text{ gallon/day}$$

The total flow capacity for the perforations can be determined using the following equation and the results are presented in Table 1:

$$Q_{perforation} = n \times L \times Q_{orifice}$$

Where

$Q_{perforation}$ = total flow capacity through the perforations (gpd)

n = number perforation per foot (4 holes per foot)

L = perforated pipe length (ft)

CALCULATION SHEET

Client: US Ecology - Wayne Disposal
Project: WDI MC VI-G4 - G7 Liner and Final Cover Grading Modification
Calculation: Leachate Collection System Flow Capacity Analysis

Project No.: 1218070017
Calculated By: LEH Date: 6/2/21
Checked By: NSG Date: 10/4/2021
Approved By: XZ Date: 10/6/2021

Table 1. Flow Capacity for the Pipe Perforations

	MC VI G4	MC VI F2	MC VI F3	MC VI F4
Leachate collection pipe length (ft)	364	507	681	595
Maximum flow capacity of perforation (gpd)	79,549	110,801	148,827	130,032
Estimated leachate generation based upon HELP Model (gpd)	24,714	33,509	47,693	40,253

Conclusion

Based on the above calculations, flow capacities of leachate collection pipes and perforations are shown in Table 2. Note that the geocomposite layer and stone pack around the pipe can provide additional flow capacity for leachate collection system. Therefore, the presented value is conservative.

Table 2. Flow Capacity for the Leachate Collection Systems

	MC VI G4	MC VI G5	MC VI G6	MC VI G7
Flow Capacity of Collection pipe (gpd)	276,249	276,249	276,249	276,249
Maximum flow capacity of perforation (gpd)	79,549	110,801	148,827	130,032
Cell Acreage (acres)	3.70	5.02	7.15	6.03
Estimated leachate generation based upon HELP Model (gpd)	24,714	33,509	47,693	40,253

Note: Pipe flow capacities are based on half full pipe conditions

Reference

1. Qian, Xuede; Koerner, Robert; and Gray, Donald "Geotechnical Aspects of Landfill Design and Construction" Prentice Hall, 2001.

ATTACHMENT A-4.1

PIPE SIZES

CALCULATION SHEET

Client: US Ecology - Wayne Disposal
Project: WDI MC VI-G4 - G7 Liner and Final Cover Grading Modification
Calculation: Leachate Collection System Flow Capacity Analysis

Project No.: 1218070017
Calculated By: LEH Date: 6/2/21
Checked By: NSG Date: 10/4/2021
Approved By: XZ Date: 10/6/2021

HDPE Pipe

Source: www.hdpepipeco.com

PE 3608/3408 IPS HDPE PIPE SIZES

Pressure Rating		DR 7 (267psi)			DR 7.3 (254psi)			DR 9 (200psi)			DR 11 (160psi)			DR 13.5 (128psi)			DR 15.5 (110psi)		
Nominal Size	Actual O.D.	Min. wall	Average I.D.	Weight lb/lf	Min. wall	Average I.D.	Weight lb/lf	Min. wall	Average I.D.	Weight lb/lf	Min. wall	Average I.D.	Weight lb/lf	Min. wall	Average I.D.	Weight lb/lf	Min. wall	Average I.D.	Weight lb/lf
3/4"	1.05"	0.150"	0.732"	0.184	0.144"	0.745"	0.178	0.117"	0.803"	0.150	0.095"	0.848"	0.125	---	---	---	---	---	---
1"	1.315"	0.188"	0.917"	0.289	0.180"	0.933"	0.279	0.146"	1.005"	0.234	0.120"	1.062"	0.197	---	---	---	---	---	---
1 1/4"	1.66"	0.237"	1.157"	0.460	0.227"	1.178"	0.444	0.184"	1.269"	0.372	0.151"	1.340"	0.312	---	---	---	---	---	---
1 1/2"	1.90"	0.271"	1.325"	0.603	0.260"	1.348"	0.582	0.211"	1.452"	0.488	0.173"	1.534"	0.409	---	---	---	---	---	---
2"	2.375"	0.339"	1.656"	0.943	0.325"	1.685"	0.762	0.264"	1.816"	0.762	0.216"	1.917"	0.639	0.176"	2.002"	0.531	0.153"	2.050"	0.467
3"	3.500"	0.500"	2.440"	2.047	0.479"	2.484"	1.656	0.389"	2.676"	1.656	0.318"	2.825"	1.387	0.259"	2.950"	1.153	0.226"	3.021"	1.015
4"	4.500"	0.643"	3.137"	3.384	0.616"	3.193"	2.737	0.500"	3.440"	2.737	0.409"	3.633"	2.294	0.333"	3.793"	1.906	0.290"	3.885"	1.678
5"	5.375"	0.768"	3.747"	4.830	0.736"	3.814"	4.663	0.597"	4.109"	3.903	0.489"	4.339"	3.272	0.398"	4.531"	2.718	0.347"	4.640"	2.396
5"	5.563"	0.795"	3.878"	5.172	0.762"	3.947"	4.182	0.618"	4.253"	4.182	0.506"	4.491"	3.505	0.412"	4.689"	2.912	0.359"	4.802"	2.564
6"	6.625"	0.946"	4.619"	7.336	0.908"	4.701"	5.932	0.736"	5.064"	5.932	0.602"	5.348"	4.971	0.491"	5.585"	4.130	0.427"	5.719"	3.637
7"	7.125"	1.018"	4.967"	8.195	0.976"	5.056"	8.200	0.792"	5.447"	6.863	0.648"	5.752"	5.750	0.528"	6.006"	4.779	0.460"	6.150"	3.985
8"	8.625"	1.232"	6.013"	12.433	1.182"	6.120"	10.054	0.958"	6.593"	10.054	0.784"	6.963"	8.425	0.639"	7.271"	7.001	0.556"	7.445"	6.164
10"	10.750"	1.536"	7.494"	19.314	1.473"	7.628"	15.618	1.194"	8.218"	15.618	0.977"	8.678"	13.089	0.796"	9.062"	10.875	0.694"	9.280"	9.576
12"	12.750"	1.821"	8.889"	27.170	1.747"	9.047"	21.970	1.417"	9.747"	21.970	1.159"	10.293"	18.412	0.944"	10.748"	15.298	0.823"	11.006"	13.471
14"	14.000"	2.000"	9.760"	32.758	1.918"	9.934"	26.489	1.556"	10.702"	26.489	1.273"	11.302"	22.199	1.037"	11.801"	18.445	0.903"	12.085"	16.242
16"	16.00"	2.286"	11.154"	42.786	2.192"	11.353"	34.598	1.778"	12.231"	34.598	1.455"	12.916"	28.994	1.185"	13.487"	24.092	1.032"	13.812"	21.214
18"	18.00"	2.571"	12.549"	54.151	2.466"	12.773"	43.788	2.000"	13.760"	43.788	1.636"	14.531"	36.696	1.333"	15.173"	30.491	1.161"	15.538"	26.849
20"	20.00"	2.857"	13.943"	66.853	2.740"	14.192"	54.059	2.222"	15.289"	54.059	1.818"	16.145"	45.304	1.481"	16.859"	37.643	1.290"	17.265"	33.146
22"	22.00"	3.143"	15.337"	80.170	3.014"	15.611"	65.412	2.444"	16.818"	65.412	2.000"	17.760"	54.818	1.630"	18.545"	45.548	1.419"	18.991"	40.107
24"	24.00"	3.429"	16.731"	96.267	3.288"	17.030"	92.988	2.667"	18.347"	77.845	2.182"	19.375"	65.237	1.778"	20.231"	54.206	1.548"	20.717"	47.731
26"	26.00"	---	---	---	3.562"	18.449"	110.192	2.889"	19.876"	92.050	2.364"	20.989"	76.563	1.926"	21.917"	63.617	1.677"	22.444"	56.018
28"	28.00"	---	---	---	---	---	---	3.111"	21.404"	106.750	2.545"	22.604"	88.795	2.074"	23.603"	73.781	1.806"	24.170"	64.967
30"	30.00"	---	---	---	---	---	---	3.333"	22.933"	121.633	2.727"	24.218"	101.934	2.222"	25.289"	84.697	1.935"	25.897"	74.580
32"	32.00"	---	---	---	---	---	---	3.556"	24.462"	139.452	2.909"	25.833"	116.670	2.370"	26.975"	96.367	2.065"	27.623"	84.855
34"	34.00"	---	---	---	---	---	---	---	---	---	3.091"	27.447"	130.930	2.519"	28.661"	109.332	2.194"	29.350"	96.209
36"	36.00"	---	---	---	---	---	---	---	---	---	3.273"	29.062"	146.780	2.667"	30.347"	121.960	2.323"	31.076"	107.395
42"	42.00"	---	---	---	---	---	---	---	---	---	---	---	---	3.111"	35.404"	166.800	2.710"	36.255"	146.176
48"	48.00"	---	---	---	---	---	---	---	---	---	---	---	---	3.556"	40.462"	217.895	3.097"	41.435"	175.891
54"	54.00"	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	3.484"	46.614"	242.649
63"	62.99"	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

NOTE

Attachment A-5

Head-on-Liner Calculations and Minimum Geocomposite Transmissivity

CALCULATION SHEET | Project No.: 1218070017
Client: US Ecology – Wayne Disposal | Calculated By: LEH | Date: 06/02/2021
Project: WDI MC VI-G4 - G7 Liner and Final Cover Grading Modification | Checked By: NSG | Date: 10/04/2021
Calculation: Leachate Head-on-Liner Analysis | Approved By: XZ | Date: 10/5/2021

Leachate Head-on-Liner Analysis for Liner Sideslopes

Objective

To determine the required geocomposite drainage layer transmissivity to maintain less than 1 foot of head on the liner system for the sideslopes for Master Cell VI-G4 through Master Cell VI-G7 at Wayne Disposal Inc. (WDI).

Design Criteria, Assumptions, and Methodology

The analysis was conducted using the following procedures:

1. Estimate the anticipated leachate impingement rate using the leachate generation estimate from the Hydrologic Evaluation of Landfill Performance (HELP) Model. Two separate models were developed for the 3H:1V sideslope area and the floor area. The resultant impingement rate for the floor and sideslope areas are 6,560 and 6,674 gal/acre/day, respectively. See Attachment 5.2 for additional details.

2. MC VI-G4 through MC VI-G7 have a 5% floor slope and sideslopes at 3H:1V. See Figure 1. Two critical sideslopes were analyzed for this analysis. The first was MC VI-G5 which the longest total slope length has a 39 foot long 3H:1V sideslope and 365 feet of 5% floor. The second critical slope was for MC VI-G7. The longest total slope length was a 85 foot long 3.3% floor, a 63 foot long 22.35% sideslope, a 324 foot long 5% floor and a 12 foot long 3H:1V sideslope.

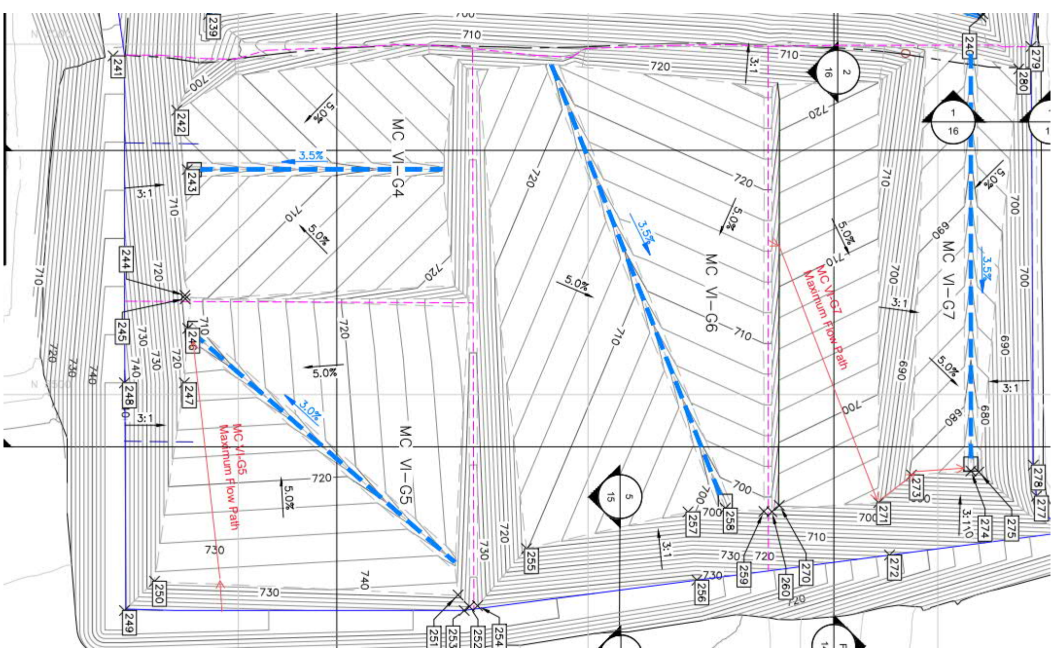


Figure 1 - Cell Layout

3. When the drainage geocomposite is used as part of the leachate collection system, the protection/drainage soil layer is constructed on top of the geocomposite layer. The combine (apparent) hydraulic conductivity of both layers can be calculated as [1]:

$$K_{combined} = K_{geonet} + \left(K_{sand} - K_{geonet}\right)\frac{t_{sand}^{\ 2}}{\left(t_{sand} + t_{geonet}\right)^2} \qquad (1)$$

where,

$K_{combined}$ = combined hydraulic conductivity of the saturated drainage layer (cm/s)
K_{sand} = hydraulic conductivity of the protective/drainage soil (cm/s)
K_{geonet} = hydraulic conductivity of the geonet or geocomposite (cm/s)
t_{sand} = thickness of the saturated protective/drainage soil layer (in)
t_{geonet} = thickness of the geocomposite (in)

4. Vary the transmissivity of the geocomposite to estimate the minimum required drainage geocomposite transmissivity required. An additional cumulative reduction-factor of 5.28 is also applied to the transmissivity of the geocomposite drainage layer based on the following reduction factors based on GRI GC8:

   Reduction Factor for Intrusion – 1.0 – 100 hour test results to be used
   Reduction Factor for Creep – 1.2 – Typical value for high performance geocomposite under high loading
   Reduction factor for Chemical Clogging – 2.0 – highest value from GRI GC8
   Reduction Factor for Biological Clogging – 1.1 – not expected to be significant due to the nature of the waste
   Factor of Safety – 2.0

5. Head-on-Liner Calculation – Numerical Solution of McEnroe's Equation

   The design for MC VI-G4 through MC VI-G7 utilizes a leachate collection pipe that is laid on top of the base liner within a recessed trench.

   The McEnroe 93 Method is an analytical solution form the differential flow governing equation under a free draining condition. However, the differential flow governing equation can be integrated numerically to describe the saturated depth profile without preconditions such as the free draining requirement. This numerical solution of McEnroe's equation can be used to calculate the maximum head-on-liner calculation for all cells (See Attachment 5.1.2: Slope Combined Numerical Method).

   The differential flow governing equation is:

$$Ky\left(\frac{dy}{dx} - \tan\alpha\right)\cos^2\alpha + rx = 0 \qquad (2)$$

where,

K = hydraulic conductivity of the saturated drainage layer (cm/s)
y = saturated liquid depth over the liner (cm or inch)
x = horizontal coordinate (cm or inch)
r = leachate infiltration rate (cm/s)
α = slope angle

Equation 2 can be rearranged in a finite differential form:

$$y_{i+1} = y_i + \left(\tan\alpha - \frac{r x_i}{K y_i \cos^2\alpha} \right) dx \qquad (3)$$
$$dx = x_{i+1} - x_i$$

Equation 3 can be numerically integrated using a pre-selected saturated liquid depth (y_L) at the low end of the slope where "*x*" is equivalent to the maximum drainage length (Figure 1). The procedure will result in a full phreatic surface profile and from which, the maximum head-on-liner value can be determined.

Two cases were analyzed: (1) assuming the geocomposite drainage layer in the sand are both conveying leachate to the sump and (2) the case in which the leachate head is maintained within the thickness of the geonet and the sand layer serves only as a protective cover layer above the geocomposite and not as a lateral leachate drainage layer. For the first case, the calculated saturated depth of the sand was iterated until the predicted head on the liner and the saturated thickness converged at approximately 12 inches by varying the geocomposite transmissivity. For the second case, the transmissivity of the geocomposite was adjusted until the flow depth was equal to the thickness of the geonet component (0.20 inches).

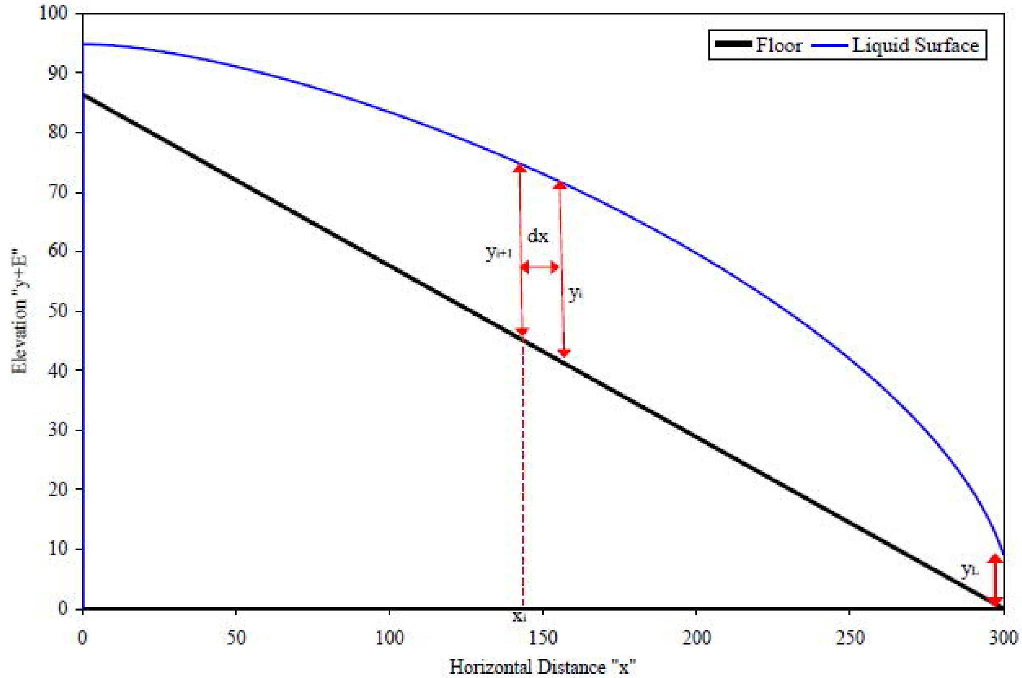


Figure 1. Example of Phreatic Leachate Surface

Calculation

For all cells, the starting leachate depth (y_L) is 0.1-inch since the leachate collection pipes were laid in recessed trenches. An interval of 0.5 inches was used as the incremental distance (dx) to generate a smooth surface. Geocomposite drainage layer transmissivity was adjusted until the predicted leachate thickness was less than 12 inches or less than 0.20 inches for the geocomposite/sand combination or geocomposite-alone analyses, respectively.

Results and Conclusion

The results are summarized in Table 1 for all cells. The minimum transmissivity for MC VI-G5 should be utilized for MC VI-G4 and MC VI-G6 to be conservative. The MC VI-G7 minimum transmissivity is to be utilized for only that cell because of its unique geometry. If the geocomposite transmissivity exceeds the minimum value for each cell neglecting the sand then the sand layer will serve only as a protective cover layer and not serve as a lateral leachate drainage layer.

The maximum leachate head on liner at the toe of the sideslope is below 1 inch in all cases.

Table 1 – Input Parameters and Minimum Required Geocomposite Transmissivity Results

Parameter	**MC VI-G5**	**MC VI-G5 - Neglecting Sand (2)**	**MC VI-G7**	**MC VI-G7 - Neglecting Sand (2)**
Estimated leachate generation rate - floor (gpad)	6,560	6,560	6,560	6,560
Floor slope used in calculation	5.0%	5.0%	5.0%	5.0%
Maximum drainage distance on floor (ft)	365	365	409	109
Length of 3H:1V sideslope	39	39	75	75
Estimated leachate generation rate - sideslopes (gpad)	6,674	6,674	6,674	6,674
Maximum allowable head-on-liner (in)	12	0.2	12	0.2
Maximum leachate depth at discharge point (in) (at leachate collection pipe)	0.1	0.1	0.1	0.1
Assumed sand permeability (cm/sec) (1)	1.0E-03	n/a	1.0E-03	n/a
Minimum required transmissivity for geocomposite on floor (m^2/sec)	**4.2E-04**	**9.4E-04**	**7.4E-04**	**1.7E-03**
Estimated Maximum Head-on-Liner (inches)	**11.91**	**0.2**	**11.86**	**0.2**

NOTES

(1) Minimum requirement for protective sand layer in Part 115 Rules R299.4423(2)(ii) with geocomposite
(2) Minimum requirement of the geocomposite drainage layer to keep the flow within the thickness of the geonet.

Reference

1. Qian, Xuede; Gray, D.H.; Koerner, R.M. 2004, “Estimation of Maximum Liquid Head over Landfill Barriers”, Journal of Geotechnical and Geoenvironmental Engineering, Vol. 130, No.5, Page 488-497.

2. McEnroe, B (1993) “Maximum Saturated Depth over Landfill Liner” Journal of Environmental Engineering, Val. 119, No.2, Page 262-270

CALCULATION SHEET
Client: US Ecology – Wayne Disposal
Project: WDI MC VI-G4 - G7 Liner and Final Cover Grading Modification
Calculation: Leachate Head-on-Liner Analysis

Project No.: 1218070017
Calculated By: LEH Date: 06/02/2021
Checked By: NSG Date: 10/04/2021
Approved By: XZ Date: 10/5/2021

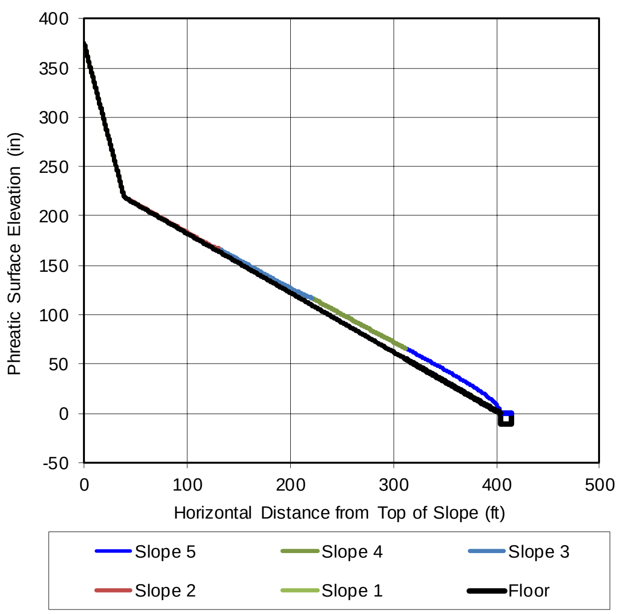
ATTACHMENT A-5.1.1

Head-on-Liner Calculation Spreadsheets

WDI MC VI G5
R.01

Prepared by: LH 6/2/21							
Reviewed by:			**SLOPE 5**	**SLOPE 4**	**SLOPE 3**	**SLOPE 2**	**SLOPE 1**
Approved by:	*minimum y (in)*	*0.010*	**Bottom**				**Top**
Slope in the direction of flow	S	ft./ft.	**5.00%**	**5.00%**	**5.00%**	**5.00%**	**33.33%**
Slope angle	α	radians	0.0500	0.0500	0.0500	0.0500	0.3217
Flow length in the direction of flow	L	ft.	**92**	**91**	**91**	**91**	**39**
Rate of vertical inflow per unit area	r	gal/acre/day	**6,560**	**6,560**	**6,560**	**6,560**	**6,674**
Saturated thickness of sand (or protective soil)	t_{sand}	in	**12.0**	**11.0**	**7.2**	**2.8**	**0.3**
		ft.	*1.000*	*0.916*	*0.598*	*0.231*	*0.028*
Permeability of sand (or protective soil)	K_{sand}	cm/sec	**1.00E-03**	**1.00E-03**	**1.00E-03**	**1.00E-03**	**1.00E-03**
Thickness of geonet	t_{geonet}	in.	**0.200**	**0.200**	**0.200**	**0.200**	**0.200**
		ft.	**0.017**	**0.017**	**0.017**	**0.017**	**0.017**
Geocomposite transmissivity	m2/s	m2/s	**4.15E-04**	**4.15E-04**	**4.15E-04**	**4.15E-04**	**4.15E-04**
Reduction Factor			**5.28**	**5.28**	**5.28**	**5.28**	**5.28**
Permeability of geocomposite	K_{geonet}	cm/sec	1.55E+00	1.55E+00	1.55E+00	1.55E+00	1.55E+00
Combined (apparent) permeability	K_{app}	**cm/sec**	**5.13E-02**	**5.58E-02**	**8.37E-02**	**2.02E-01**	**9.34E-01**
Leachate Head at Discharge Point	**h at L=0**	in	**0.10**	**10.99**	**7.18**	**2.77**	**0.34**
Step Size	dL	in	0.1	0.1	0.1	0.1	0.1
Unit Width	W	ft	1	1	1	1	1

Maximum head on liner (McEnroe numerical) in each slope	**in**	**11.91**	**10.99**	**7.18**	**2.77**	**0.34**
Maximum head on liner location (McEnroe numerical) in each slope	**ft**	**356.68**	**312.00**	**221.00**	**130.00**	**39.00**
		0.08	0.04	0.04	0.04	0.04
Maximum head on liner (McEnroe numerical) in all slope	**in**	**11.91**				



McEnroe 1993 "Maximum Saturated Depth over Landfill Liner"
Journal of Environmental Engineering

For Slope 1

$$y_{i+1} = y_i + \left(\tan\alpha_1 - \frac{r_1 x_i}{k_1 y_i \cos^2 \alpha_1} \right)(x_{i+1} - x_i)$$

Fore Slopes 2 - 5

$$y_{i+1} = y_i + \left(\tan\alpha_j - \frac{\sum_{f=1}^{j-1} r_f L_f + r_j \left(x_i - \sum_{f=1}^{j-1} L_f \right)}{k_j y_i \cos^2 \alpha_j} \right)(x_{i+1} - x_i)$$

CALCULATION SHEET

Client: US Ecology – Wayne Disposal

Project: WDI MC VI-G4 - G7 Liner and Final Cover Grading Modification

Calculation: Leachate Head-on-Liner Analysis

Project No.: 1218070017

Calculated By: LEH Date: 06/02/2021

Checked By: NSG Date: 10/04/2021

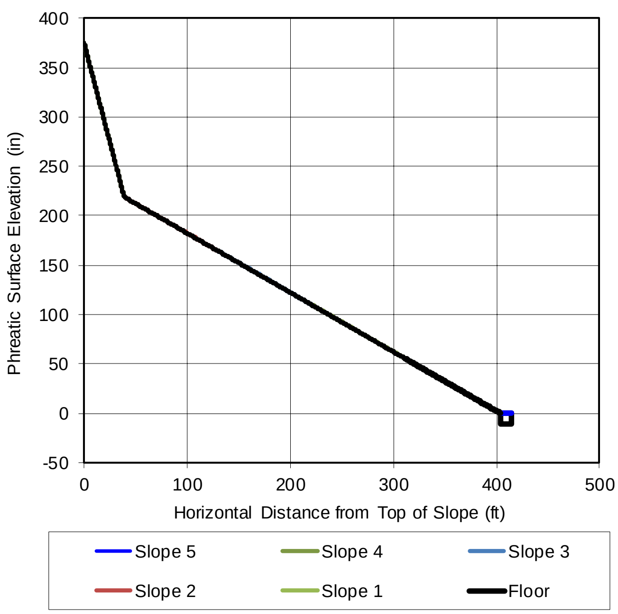
Approved By: XZ Date: 10/5/2021

WDI MC VI G5 - Neglected Sand

R.01

Prepared by: LH 6/2/21							
Reviewed by:			**SLOPE 5**	**SLOPE 4**	**SLOPE 3**	**SLOPE 2**	**SLOPE 1**
Approved by:	*minimum y (in)*	*0.010*	**Bottom**				**Top**
Slope in the direction of flow	S	ft./ft.	**5.00%**	**5.00%**	**5.00%**	**5.00%**	**33.33%**
Slope angle	α	radians	0.0500	0.0500	0.0500	0.0500	0.3217
Flow length in the direction of flow	L	ft.	**92**	**91**	**91**	**91**	**39**
Rate of vertical inflow per unit area	r	gal/acre/day	**6,560**	**6,560**	**6,560**	**6,560**	**6,674**
Saturated thickness of sand (or protective soil)	t_{sand}	in	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
		ft.	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Permeability of sand (or protective soil)	K_{sand}	cm/sec	**1.00E-03**	**1.00E-03**	**1.00E-03**	**1.00E-03**	**1.00E-03**
Thickness of geonet	t_{geonet}	in.	**0.200**	**0.200**	**0.200**	**0.200**	**0.200**
		ft.	**0.017**	**0.017**	**0.017**	**0.017**	**0.017**
Geocomposite transmissivity	m2/s	m2/s	**9.40E-04**	**9.40E-04**	**9.40E-04**	**9.40E-04**	**9.40E-04**
Reduction Factor			**5.28**	**5.28**	**5.28**	**5.28**	**5.28**
Permeability of geocomposite	K_{geonet}	cm/sec	3.50E+00	3.50E+00	3.50E+00	3.50E+00	3.50E+00
Combined (apparent) permeability	K_{app}	**cm/sec**	**3.50E+00**	**3.50E+00**	**3.50E+00**	**3.50E+00**	**3.50E+00**
Leachate Head at Discharge Point	**h at L=0**	in	**0.10**	**0.15**	**0.11**	**0.06**	**0.02**
Step Size	dL	in	0.1	0.1	0.1	0.1	0.1
Unit Width	W	ft	1	1	1	1	1

Maximum head on liner (McEnroe numerical) in each slope	**in**	**0.20**	**0.15**	**0.11**	**0.06**	**0.02**
Maximum head on liner location (McEnroe numerical) in each slope	**ft**	**402.08**	**312.00**	**221.00**	**130.00**	**39.00**
		0.00	*0.00*	*0.01*	*0.02*	*0.03*
Maximum head on liner (McEnroe numerical) in all slope	**in**	**0.20**				



McEnroe 1993 "Maximum Saturated Depth over Landfill Liner"
Journal of Environmental Engineering

For Slope 1

$$y_{i+1} = y_i + \left(\tan \alpha_1 - \frac{r_1 x_i}{k_1 y_i \cos^2 \alpha_1} \right) (x_{i+1} - x_i)$$

Fore Slopes 2 - 5

$$y_{i+1} = y_i + \left(\tan \alpha_j - \frac{\sum_{f=1}^{j-1} r_f L_f + r_j \left(x_i - \sum_{f=1}^{j-1} L_f \right)}{k_j y_i \cos^2 \alpha_j} \right) (x_{i+1} - x_i)$$

CALCULATION SHEET

Client: US Ecology – Wayne Disposal

Project: WDI MC VI-G4 - G7 Liner and Final Cover Grading Modification

Calculation: Leachate Head-on-Liner Analysis

Project No.: 1218070017

Calculated By: LEH Date: 06/02/2021

Checked By: NSG Date: 10/04/2021

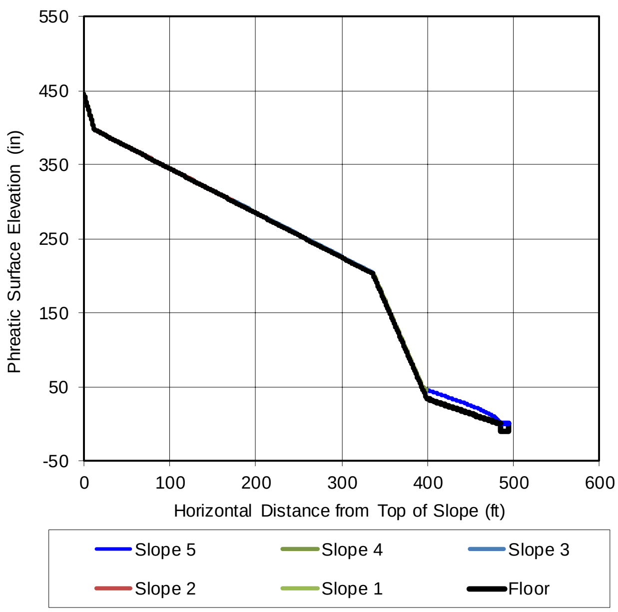
Approved By: XZ Date: 10/5/2021

WDI MC VI G7

R.01

			SLOPE 5	SLOPE 4	SLOPE 3	SLOPE 2	SLOPE 1
Prepared by: LH 6/2/21							
Reviewed by:							
Approved by:	*minimum y (in)*	*0.010*	**Bottom**				**Top**
Slope in the direction of flow	S	ft./ft.	**3.33%**	**22.35%**	**5.00%**	**5.00%**	**33.33%**
Slope angle	α	radians	0.0333	0.2199	0.0500	0.0500	0.3217
Flow length in the direction of flow	L	ft.	**85**	**63**	**162**	**162**	**12**
Rate of vertical inflow per unit area	r	gal/acre/day	**6,560**	**6,674**	**6,560**	**6,560**	**6,674**
Saturated thickness of sand (or protective soil)	t_{sand}	in	**12.0**	**11.7**	**1.5**	**0.5**	**0.0**
		ft.	*1.000*	*0.976*	*0.121*	*0.040*	*0.002*
Permeability of sand (or protective soil)	K_{sand}	cm/sec	**1.00E-03**	**1.00E-03**	**1.00E-03**	**1.00E-03**	**1.00E-03**
Thickness of geonet	t_{geonet}	in.	**0.200**	**0.200**	**0.200**	**0.200**	**0.200**
		ft.	**0.017**	**0.017**	**0.017**	**0.017**	**0.017**
Geocomposite transmissivity	m2/s	m2/s	**7.40E-04**	**7.40E-04**	**7.40E-04**	**7.40E-04**	**7.40E-04**
Reduction Factor			**5.28**	**5.28**	**5.28**	**5.28**	**5.28**
Permeability of geocomposite	K_{geonet}	cm/sec	2.76E+00	2.76E+00	2.76E+00	2.76E+00	2.76E+00
Combined (apparent) permeability	K_{app}	**cm/sec**	**9.07E-02**	**9.28E-02**	**6.29E-01**	**1.38E+00**	**2.74E+00**
Leachate Head at Discharge Point	**h at L=0**	in	**0.10**	**11.71**	**1.45**	**0.48**	**0.02**
Step Size	dL	in	0.1	0.1	0.1	0.1	0.1
Unit Width	W	ft	1	1	1	1	1

Maximum head on liner (McEnroe numerical) in each slope	**in**	**11.86**	**11.71**	**1.45**	**0.48**	**0.02**
Maximum head on liner location (McEnroe numerical) in each slope	**ft**	**418.33**	**399.00**	**336.00**	**174.00**	**12.00**
		0.12	*0.04*	*0.04*	*0.04*	*0.04*
Maximum head on liner (McEnroe numerical) in all slope	**in**	**11.86**				



McEnroe 1993 "Maximum Saturated Depth over Landfill Liner"
Journal of Environmental Engineering

For Slope 1

$$y_{i+1} = y_i + \left(\tan \alpha_1 - \frac{r_1 x_i}{k_1 y_i \cos^2 \alpha_1} \right) (x_{i+1} - x_i)$$

Fore Slopes 2 - 5

$$y_{i+1} = y_i + \left(\tan \alpha_j - \frac{\sum_{f=1}^{j-1} r_f L_f + r_j \left(x_i - \sum_{f=1}^{j-1} L_f \right)}{k_j y_i \cos^2 \alpha_j} \right) (x_{i+1} - x_i)$$

CALCULATION SHEET

Client: US Ecology – Wayne Disposal

Project: WDI MC VI-G4 - G7 Liner and Final Cover Grading Modification

Calculation: Leachate Head-on-Liner Analysis

Project No.: 1218070017

Calculated By: LEH   Date: 06/02/2021

Checked By: NSG   Date: 10/04/2021

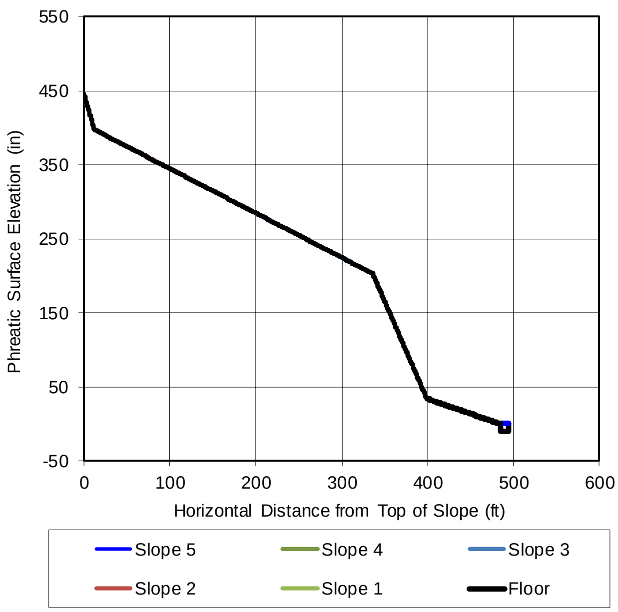
Approved By: XZ   Date: 10/5/2021

WDI MC VI G7 - Neglected Sand

R.01

Prepared by: LH 6/2/21							
Reviewed by:			**SLOPE 5**	**SLOPE 4**	**SLOPE 3**	**SLOPE 2**	**SLOPE 1**
Approved by:	*minimum y (in)*	*0.010*	**Bottom**				**Top**
Slope in the direction of flow	S	ft./ft.	**3.33%**	**22.35%**	**5.00%**	**5.00%**	**33.33%**
Slope angle	α	radians	0.0333	0.2199	0.0500	0.0500	0.3217
Flow length in the direction of flow	L	ft.	**85**	**63**	**162**	**162**	**12**
Rate of vertical inflow per unit area	r	gal/acre/day	**6,560**	**6,674**	**6,560**	**6,560**	**6,674**
Saturated thickness of sand (or protective soil)	t_{sand}	in	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
		ft.	*0.000*	*0.000*	*0.000*	*0.000*	*0.000*
Permeability of sand (or protective soil)	K_{sand}	cm/sec	**1.00E-03**	**1.00E-03**	**1.00E-03**	**1.00E-03**	**1.00E-03**
Thickness of geonet	t_{geonet}	in.	**0.200**	**0.200**	**0.200**	**0.200**	**0.200**
		ft.	**0.017**	**0.017**	**0.017**	**0.017**	**0.017**
Geocomposite transmissivity	m2/s	m2/s	**1.70E-03**	**1.70E-03**	**1.70E-03**	**1.70E-03**	**1.70E-03**
Reduction Factor			**5.28**	**5.28**	**5.28**	**5.28**	**5.28**
Permeability of geocomposite	K_{geonet}	cm/sec	6.34E+00	6.34E+00	6.34E+00	6.34E+00	6.34E+00
Combined (apparent) permeability	K_{app}	**cm/sec**	**6.34E+00**	**6.34E+00**	**6.34E+00**	**6.34E+00**	**6.34E+00**
Leachate Head at Discharge Point	**h at L=0**	in	**0.10**	**0.16**	**0.02**	**0.05**	**0.01**
Step Size	dL	in	0.1	0.1	0.1	0.1	0.1
Unit Width	W	ft	1	1	1	1	1

Maximum head on liner (McEnroe numerical) in each slope	**in**	**0.20**	**0.16**	**0.09**	**0.05**	**0.01**
Maximum head on liner location (McEnroe numerical) in each slope	**ft**	**481.23**	**399.00**	**335.03**	**174.00**	**12.00**
		0.00	*0.00*	*0.01*	*0.02*	*0.04*
Maximum head on liner (McEnroe numerical) in all slope	**in**	**0.20**				



McEnroe 1993 "Maximum Saturated Depth over Landfill Liner"
Journal of Environmental Engineering

For Slope 1

$$y_{i+1} = y_i + \left(\tan \alpha_1 - \frac{r_1 x_i}{k_1 y_i \cos^2 \alpha_1} \right) \left(x_{i+1} - x_i \right)$$

Fore Slopes 2 - 5

$$y_{i+1} = y_i + \left(\tan \alpha_j - \frac{\sum_{f=1}^{j-1} r_f L_f + r_j \left(x_i - \sum_{f=1}^{j-1} L_f \right)}{k_j y_i \cos^2 \alpha_j} \right) \left(x_{i+1} - x_i \right)$$

ATTACHMENT A-5.1.2

Slope Combined Numerical Method

CALCULATION SHEET			
Client: Landfill	Project No.:		
	Calculated By: XZ	Date: 3/6/2012	
Project: Head-on-Liner Calculation	Checked By: TY	Date: 3/9/2012	
Calculation: Head-on-liner calculation using numerical approach	Approved By: KF	Date: 5/30/2012	

HEAD-ON-LINER CALCULATION USING NUMERICAL APPROACH

OBJECTIVE

To determine the maximum saturated leachate depth within leachate drainage media above an impermeable liner using a numerical implementation of the McEnroe (1993) Equations .

DESIGN CRITERIA, ASSUMPTIONS AND METHODOLOGY

The head-on-liner calculation is conducted according to the following procedure:

1. Determine the average transmissivity value of drainage geocomposite using test results obtained under the design normal stress. This value is reduced through the application of several reduction factors as described in following equation (Koerner 2005):

$$\theta_{allow} = \frac{\theta_{test}}{RF_{IN} \times RF_{CR} \times RF_{CC} \times RF_{BC}} \tag{1}$$

Where,

RF_{IN} = reduction factor for intrusion (or elastic deformation)
RF_{CR} = reduction factor for creep deformation
RF_{CC} = reduction factor for chemical clogging
RF_{BC} = reduction factor for biological clogging
θ_{allow} = allowable transmissivity for the geocomposite, m^2/s
θ_{test} = tested transmissivity for the geocomposite, m^2/s

2. Determine the combined (apparent) hydraulic conductivity of the drainage layer (geocomposite overlain by a sand layer) using the equation by Qian et al. (2004):

$$k_{combined} = k_{geonet} + \left(k_{sand} - k_{geonet}\right)\frac{t_{sand}{}^{2}}{\left(t_{sand} + t_{geonet}\right)^{2}} \tag{2}$$

where,

$k_{combined}$ = combined hydraulic conductivity of the saturated drainage layer (cm/s)
k_{sand} = hydraulic conductivity of sand (cm/s)
k_{geonet} = hydraulic conductivity of geocomposite (cm/s)
t_{sand} = thickness of the saturated sand layer (in)
t_{geonet} = thickness of geocomposite (in)

3. Head-on-liner calculation – McEnroe (1993) Method (valid only for free draining condition)

A commonly used method for calculating the maximum head-on-liner was developed by McEnroe (1993). McEnroe (1993) developed a differential equation to describe the flow in the drainage layer using the extended Dupuit assumptions. McEnroe also derived an analytical solution from the governing differential equation to determine the maximum head (saturated depth) buildup under free draining conditions. McEnroe's 1993 method (under free draining conditions) is expressed as:

If R<1/4

$$y_{\max} = LS*\left(R - RS + R^2S^2\right)^{1/2} * \left\{\left[(1 - A - 2R)(1 + A - 2RS)\right] / \left[(1 + A - 2R)(1 - A - 2RS)\right]\right\}^{1/(2A)} \quad (3)$$

If R=1/4

$$y_{\max} = LSR*(1 - 2RS)/(1 - 2R)*\exp\left\{2R*(S - 1)/\left[(1 - 2RS)(1 - 2R)\right]\right\} \quad (4)$$

If R>=1/4

$$y_{\max} = LS*\left(R - RS + R^2S^2\right)^{1/2} * \exp\left\{(1/B)*\tan^{-1}\left[(2RS - 1)/B\right] - (1/B)*\tan^{-1}\left[(2R - 1)/B\right]\right\} \quad (5)$$

The parameters "R", "A", and "B" used in the above equations are defined as:

$$R = q/\left(k\sin^2\alpha\right) \quad (6)$$

$$A = (1 - 4R)^{1/2} \quad (7)$$

$$B = (4R - 1)^{1/2} \quad (8)$$

Where:
- k = hydraulic conductivity of the saturated drainage layer
- L = drainage length
- q = leachate infiltration rate
- α = slope angle

There are several limitations to the McEnroe (1993) method:

a. The analytical solution requires "free draining conditions".
b. Hydraulic conductivity, leachate infiltration rate, and slope angle must be consistent along the entire drainage length.

4. Head-on-liner calculation –numerical approach

The McEnroe (1993) method is an analytical solution of the differential equation governing flow under free draining conditions. However, this differential equation can be integrated numerically to describe the saturated depth profile based on the boundary conditions. In other words, the governing differential equation can be solved numerically without preconditions such as the free-draining requirement.

The differential equation governing flow along a single drainage length is McEnroe (1993):

$$ky\left(\frac{dy}{dx} - \tan\alpha\right)\cos^2\alpha + rx = 0 \quad (9)$$

where,

k = hydraulic conductivity of the combined saturated drainage layer (cm/s)
y = saturated liquid depth over the liner (cm or in)
x = horizontal coordinate (cm or in)
r = leachate infiltration rate (cm/s)
α = slope angle

Equation 9 can be rearranged into finite difference form:

$$y_{i+1} = y_i + \left(\tan\alpha - \frac{rx_i}{ky_i \cos^2\alpha} \right) dx \qquad (10)$$
$$dx = x_{i+1} - x_i$$

Equation 10 can be numerically integrated using a pre-selected saturated liquid depth (y_L) at the low point of the drainage path, where "x" is equivalent to the maximum drainage length (Figure 1). The procedure will result in a full phreatic surface profile. From this profile the maximum head-on-liner value can be determined.

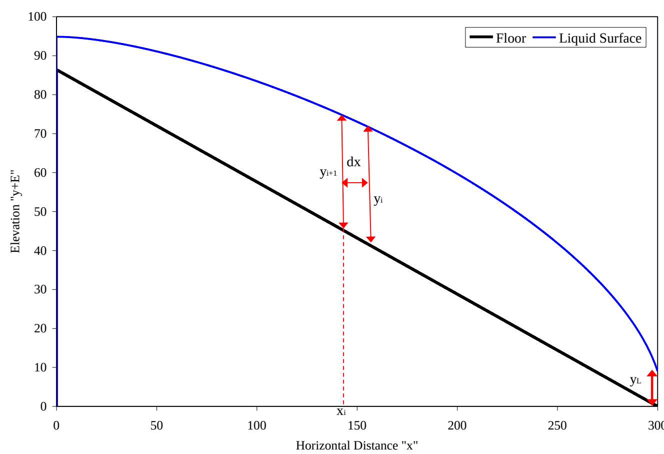


Figure 1. Example of Phreatic Leachate Surface

For a drainage system with multiple slopes (Figure 2), Equation 10 is arranged for each slope segment. Note that dimensions shown in Figure 2 are arbitrarily selected for illustrative purposes.

For slope segment 1: $0 \le x_i \le L_1$

$$y_{i+1} = y_i + \left(\tan\alpha_1 - \frac{r_1 x_i}{k_1 y_i \cos^2\alpha_1} \right)(x_{i+1} - x_i) \qquad \text{Eq. 11}$$

at $x = L_1$: y is equal to the value calculated from segment 2 at the same value of x.

For other slope segments (segment j where j >1): $\sum_{f=1}^{j-1} L_f \le x_i \le \sum_{f=1}^{j} L_f$:

$$y_{i+1} = y_i + \left(\tan\alpha_j - \frac{\sum_{f=1}^{j-1} r_f L_f + r_j \left(x_i - \sum_{f=1}^{j-1} L_f \right)}{k_j y_i \cos^2 \alpha_j} \right) \left(x_{i+1} - x_i \right) \qquad \text{Eq. 12}$$

at $x = \sum_{f=1}^{j-1} L_f$: y is equal to the value calculated from segment *j-1* at the same value of x.

Where

k_1 and k_j = combined hydraulic conductivity of the saturated drainage layer in slope segments 1 and *j*, respectively

r_1 and r_j = leachate infiltration rate to slope segments 1 and *j*, respectively

α_1 and α_j = slope angle of slope segments 1 and *j*, respectively

L_1 and L_j = total drainage length of slope segments 1 and *j*, respectively

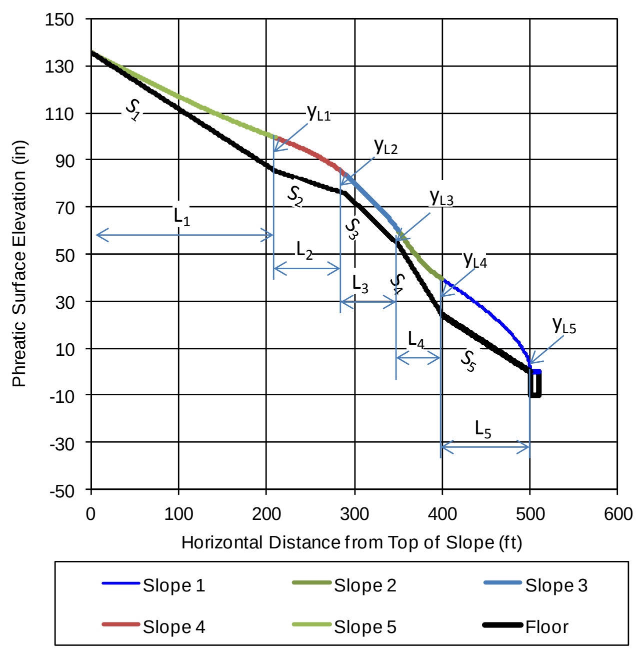


Figure 2. Example of Multiple Phreatic Leachate Surface

VERIFICATION OF THE NUMERICAL MODEL

A spreadsheet (in Microsoft Excel) was developed for the numerical integration of Equations 11 and 12. This spreadsheet included five slope segments. Multiple input parameters can be adjusted independently for each slope segment (Figure 3). To verify the accuracy of the numerical model results, the maximum values of leachate head on liner were calculated using a variety of input parameters and compared to the results estimated using the McEnroe (1993) method. Due to the limitations of the McEnroe (1993) method, constant values of leachate infiltration rate, slope angle, and permeability were applied to all slope segments in the numerical model and the free draining conditions were simulated using the numerical approach by applying a small leachate depth at the lowest point of the slope.

<u>Test 1: Step distance for numerical integration</u>

The maximum head-on-liner values were calculated using both the McEnroe (1993) Method and the numerical approach for six different permeability values (Table 1) and five leachate infiltration rates (Table 2). Four integration step distances (ranging from 0.2 to 3 inches) were used. In both tests, the results from the numerical approach are very close to the results calculated using McEnroe (1993) method. Therefore, the numerical approach was verified. Moreover, the incremental variation in numerical integration step distance (dx) did not significantly impact the results under the trial conditions. To minimize the file size and reduce computation time, an integration step distance of **<u>0.5 inches</u>** is recommended when using the numerical modeling approach.

Table 1. Sensitivity of Numerical Approach to Integration Step Distance for Various Permeability Values.

INPUT PARAMETERS					
		Infiltration Rate (gpad)	**Drainage Length (ft)**	**Slope**	**Liquid Depth at Lowest Point (in)**
Numerical Solution	Slope 1	3,000	140	2.00%	-
	Slope 2	3,000	235	2.00%	-
	Slope 3	3,000	200	2.00%	-
	Slope 4	3,000	75	2.00%	-
	Slope 5	3,000	350	2.00%	1.0
McEnroe 93 Method		3,000	1,000	2.00%	free drain

RESULTS					
Sand k (cm/s)	**Ymax (in)**				
	McEnroe 93	**Numerical**			
		dx=0.2 in	**dx=0.5 in**	**dx=1.0 in**	**dx=3.0 in**
0.01	112.35	102.98	112.35	112.38	112.56
0.05	30.64	30.61	30.65	30.65	30.67
0.10	16.63	16.63	16.64	16.64	16.65
0.50	3.70	3.70	3.70	3.70	3.70
1.00	1.89	1.89	1.89	1.89	1.89
5.00*	0.39	0.39	0.39	0.39	0.57

Table 2. Sensitivity of Numerical Approach to Integration Step Distance for Various Permeability Values and Leachate Infiltration Rates

INPUT PARAMETERS				
		Drainage Length (ft)	Slope	Liquid Depth at Lowest Point (in)
Numerical Solution	Slope 1	140	2.00%	-
	Slope 2	235	2.00%	-
	Slope 3	200	2.00%	-
	Slope 4	75	2.00%	-
	Slope 5	350	2.00%	1.0
McEnroe 93 Method		1,000	2.00%	free drain

RESULTS							
			Ymax (in)				
Infiltration Rate r (gpad)	Sand k (cm/s)	r/k*	McEnroe 93	Numerical			
				dx=0.2 in	dx=0.5 in	dx=1.0 in	dx=3.0 in
100	0.01	1.08E-05	6.02	6.02	6.02	6.02	6.03
500	0.01	5.41E-05	26.16	26.16	26.17	26.17	26.19
1,000	0.05	2.17E-05	11.50	11.50	11.50	11.50	11.51
3,000	0.05	6.50E-05	30.64	30.61	30.65	30.65	30.67
5,000	0.05	1.08E-04	47.18	47.18	47.18	47.19	47.23
5,000	0.10	5.41E-05	26.16	26.16	26.17	26.17	26.19
5,000	0.50	1.08E-05	6.02	6.02	6.02	6.02	6.03

Note:
* The ratio of infiltration rate and hydraulic conductivity of the drainage layer will control the maximum leachate depth on the liner (see Eq. 12).

Test 2: Starting leachate depth

In the numerical integration approach, a starting leachate depth at the lowest point (discharge point) of the slopes will be needed to initialize the integration. Four starting leachate depths were used in this test. The maximum head-on-liner values from both the McEnroe (1993) Method and the numerical solution were calculated for four different permeability values (Table 3). The results from the numerical approach are very close to the results calculated using the McEnroe (1993) method with one exception. Under the high permeability condition, the maximum head-on-linear was determined to be 3.70 inches using McEnroe 93 method. The results from numerical approach with a starting leachate depth of 1 inch or less were same as the value calculated from the McEnroe (1993) method. However, if the starting leachate depth was selected as 9 inches, the maximum leachate depth will occur at the starting point. This result indicates that the numerical integration approach can be used to determine the maximum head-on-liner when the "free draining" condition is not satisfied. In most cases, a starting leachate depth of **1.0 inch** can be used to represent the "free draining” condition. Note that under same conditions such as very high value of the ratio between infiltration rate and conductivity (high infiltration rate and low conductivity), the low starting leachate depth may result unstable solutions from the model. If it is occurred, user can adjust the staring value. A stable result can be verified by the trails and demonstrate that the the numerical solution is stable and not unduly affected by the starting leachate depth

Table 3. Sensitivity of Numerical Solution to the Starting Leachate Depth

INPUT PARAMETERS					
		Infiltration Rate (gpad)	**Drainage Length (ft)**	**Slope**	**Liquid Depth at Lowest Point (in)**
Numerical Solution	Slope 1	3,000	140	2.00%	-
	Slope 2	3,000	235	2.00%	-
	Slope 3	3,000	200	2.00%	-
	Slope 4	3,000	75	2.00%	-
	Slope 5	3,000	350	2.00%	-
McEnroe 93 Method		3,000	1,000	2.00%	free drain

RESULTS					
Sand k (cm/s)	**Ymax (in)**				
	McEnroe 93	**Numerical dx=0.5 in**			
		Yo=0.1 in	**Yo=0.5 in**	**Yo=1 in**	**Yo=9 in**
0.01	112.35	112.83	112.37	112.35	112.45
0.05	30.64	30.67	30.65	30.65	30.80
0.10	16.63	16.64	16.64	16.64	16.85
0.50	3.70	3.70	3.70	3.70	9.00

Test 3: Add geocomposite layer

To improve the drainage capacity of the drainage layer, a geocomposite layer can be added under the sand drainage layer. The combined hydraulic conductivity can be calculated using Equation 2. Two permeability values for sand with and without geocomposite layer were tested. The results from the numerical approach are very close to the values calculated using McEnroe 93 method (Table 4).

Table 4. Head-on-Liner Calculation with and without Geocomposite Layer

INPUT PARAMETERS					
		Infiltration Rate (gpad)	Drainage Length (ft)	Slope	Liquid Depth at Lowest Point (in)
Numerical Solution	Slope 1	3,000	70	2.00%	-
	Slope 2	3,000	117	2.00%	-
	Slope 3	3,000	100	2.00%	-
	Slope 4	3,000	38	2.00%	-
	Slope 5	3,000	175	2.00%	1.0
McEnroe 93 Method		3,000	500	2.00%	free drain

RESULTS					
				Ymax (in)	
Sand k (cm/s)	Geocomposite	Saturated Depth (inch)	Combined k (cm/s)	McEnroe 93	Numerical dx=0.5 in
0.0100	no	n/e	0.010	112.35	112.35
0.0100	yes	6.4	0.138	6.19	6.20
0.0010	no	n/e	0.001	267.21	266.93
0.0010	yes	7.8	0.108	7.78	7.79

n/e: no effect on the results.

DESIGN EXAMPLES USING THE NUMERICAL APPROACH

Six design examples are presented below to demonstrate the application of the numerical approach to the calculation of the maximum head-on-liner values. Descriptions and results for each example are summarized in Table 5. The detailed input parameters and phreatic surface plot for each example is presented in Figures 4 to 9, respectively. As demonstrated in Table 5, the numerical approach can accomodate multiple design conditions. In all design examples, the head-on-liner value cannot be estimated using the McEnroe (1993) method due to the complexity of the system.

Table 5. Summary of Design Examples

EXAMPLE	DESCRIPTION	Max Head-on-Liner (INCHES)
1	Single slope with different leachate infiltration rates for each slope segment	8.08
2	Five slopes with constant leachate infiltration rate for each slope segment	16.64
3	Five slopes with different leachate infiltration rates for each slope segment	8.08
4	Single slope with constant leachate infiltration rate; Increased flow capacity in bottom two slope segments by installing geocomposite layer	11.73
5	Five slopes with different leachate infiltration rates for each slope segment; High infiltration rate at top of the slope (representing open conditions); Increased flow capacity in bottom two slope segments by installing geocomposite layer	10.48
6	Single slope with constant leachate infiltration rate; Increased flow capacity by installing geocomposite layer in all slope segments; Applied different leachate depths for each slope segment; no trench at lowest point of the slope (no "free drain") and the leachate depth is 9 inches at lowest point (discharge point).	10.74

CONCLUSION

A numerical approach was developed to solve the differential equation governing flow in permeable media above an impermeable barrier presented by McEnroe (1993). This new approach was verified by analyzing multiple different boundary conditions and comparing the results to those calculated using analytical solutions developed by McEnroe (1993). Several design examples were provided to demonstrate the capability of this approach.

REFERENCES

Koerner, R. M. (2005). *Designing with Geosynthetics*, 5th ed. Upper Saddle River, NJ: Prentice Hall.

McEnroe, B. (1993) "Maximum Saturated Depth over Landfill Liner" Journal of Environmental Engineering, Val. 119, No.2, Page 262-270

Qian, X.D., Gray, D.H., and Koerner, R.M. (2004), "Estimation of Maximum Liquid Head over Landfill Barriers," Journal of Geotechnical and Geoenvironmental Engineering, ASCE, 130:5, 488-497

CALCULATION SHEET

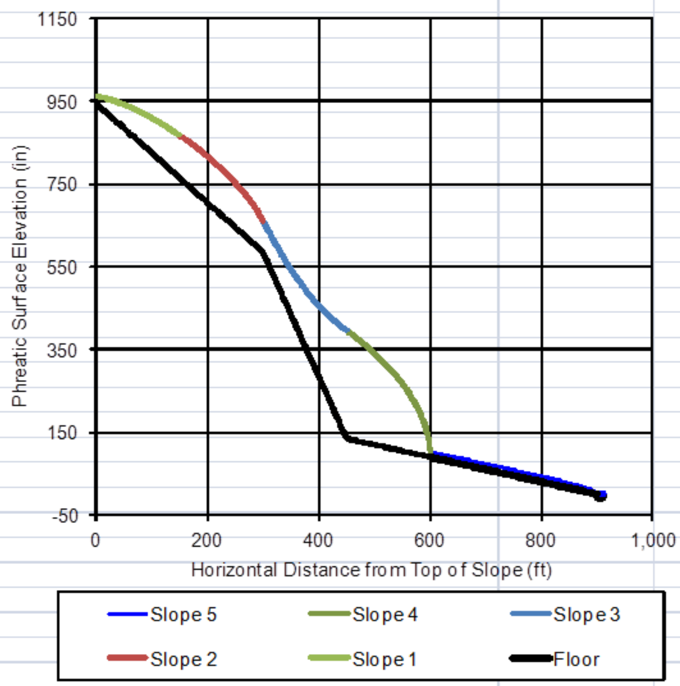
Client: Landfill	Project No.:			
Project: Head-on-Liner Calculation	Calculated By: XZ	Date: 3/6/2012		
Calculation: Head-on-liner calculation using numerical approach	Checked By: TY	Date: 3/9/2012		
	Approved By: KF	Date: 5/30/2012		

HEAD ON LINER CALCULATIONS

			SLOPE 5	SLOPE 4	SLOPE 3	SLOPE 2	SLOPE 1
			Bottom				Top
Slope in the direction of flow	S	ft./ft.	2.50%	2.50%	25.00%	10.00%	10.00%
Slope angle	α	radians	0.0250	0.0250	0.2450	0.0997	0.0997
Flow length in the direction of flow	L	ft.	300	150	150	150	150
Rate of vertical inflow per unit area	r	gal/acre/day	1,000	2,000	3,000	4,000	4,000
Thickness of sand (or protective soil)	t_{sand}	in	10.3	10.0	12.0	12.0	12.0
		ft.	*0.858*	*0.833*	*1.000*	*1.000*	*1.000*
Permeability of sand (or protective soil)	K_{sand}	cm/sec	1.00E-03	1.00E-03	1.00E-03	1.00E-03	1.00E-03
Thickness of geonet	t_{geonet}	in.	0.200	0.000	0.000	0.000	0.000
		ft.	**0.017**	**0.000**	**0.000**	**0.000**	**0.000**
Geonet transmissivity	m2/s	m2/s	1.00E-03	1.00E-03	1.00E-03	1.00E-03	1.00E-03
Reduction Factor			9.11	9.11	9.11	9.11	9.11
Permeability of geonet	K_{geonet}	cm/sec	2.16E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Combined (apparent) permeability	K_{app}	**cm/sec**	**8.25E-02**	**1.00E-03**	**1.00E-03**	**1.00E-03**	**1.00E-03**
			7.97E-03	1.00E-03	1.00E-03	1.00E-03	1.00E-03
Leachate Head at Discharge Point	h at L=0	in	1.0	**12.56**	**260.82**	**76.52**	**102.66**
Step Size	dL	in	0.5	0.5	0.5	0.5	0.5
Unit Width	W	ft	1	1	1	1	1
Maximum head on liner (McEnroe numerical) in each slope		**in**	**13.31**	**260.82**	**260.82**	**112.22**	**102.66**
Maximum head on liner location (McEnroe numerical) in each slope		**ft**	**760.75**	**450.00**	**450.00**	**213.79**	**150.00**
			9.04	*62910.07*	*61910.79*	*10044.19*	*8218.51*
Maximum head on liner (McEnroe numerical) in all slope		**in**	**260.82**				

Maximum head on liner (McEnroe 93 with free drain)	**in**	**5.32**
	R	**0.02**
Maximum head on liner (McEnroe 93 with free drain+Superposition)	**in**	**6.32**

		Average
	McEnroe 93	
k	*2.82E-02*	*HOL*
S	*8.75%*	*(in)*
q	*2500*	*11.44*



McEnroe 1993 "Maximum Saturated Depth over Landfill Liner"
Journal of Environmental Engineering

For Slope 1

$$y_{i+1} = y_i + \left(\tan\alpha_1 - \frac{r_1 x_i}{k_1 y_i \cos^2\alpha_1} \right)(x_{i+1} - x_i)$$

Fore Slopes 2 - 5

$$y_{i+1} = y_i + \left(\tan\alpha_j - \frac{\sum_{f=1}^{j-1} r_f L_f + r_j \left(x_i - \sum_{f=1}^{j-1} L_f \right)}{k_j y_i \cos^2\alpha_j} \right)(x_{i+1} - x_i)$$

Figure 3. Input and Output Sheet in the Head-on-Liner Calculation Spreadsheet

CALCULATION SHEET

Client: Landfill	Project No.:		
Project: Head-on-Liner Calculation	Calculated By: XZ	Date: 3/6/2012	
Calculation: Head-on-liner calculation using numerical approach	Checked By: TY	Date: 3/9/2012	
	Approved By: KF	Date: 5/30/2012	

EXAMPLE 1: Variance in Leachate Infiltration Rates

INPUT PARAMETERS (dx=0.5 in)							
		Infiltration Rate (gpad)	Drainage Length (ft)	Slope	Combined k (cm/s)	Liquid Depth at Lowest Point (in)	Max Head-on-Liner (in)
Numerical Solution	Slope 1	3,000	140	2.00%	0.10	-	2.90
	Slope 2	2,000	235	2.00%	0.10	-	5.95
	Slope 3	1,000	200	2.00%	0.10	-	7.18
	Slope 4	500	75	2.00%	0.10	-	7.43
	Slope 5	500	350	2.00%	0.10	1.0	8.08
						OVERALL	8.08
McEnroe 93 Method		3,000	1,000	2.00%	0.10	free drain	16.63

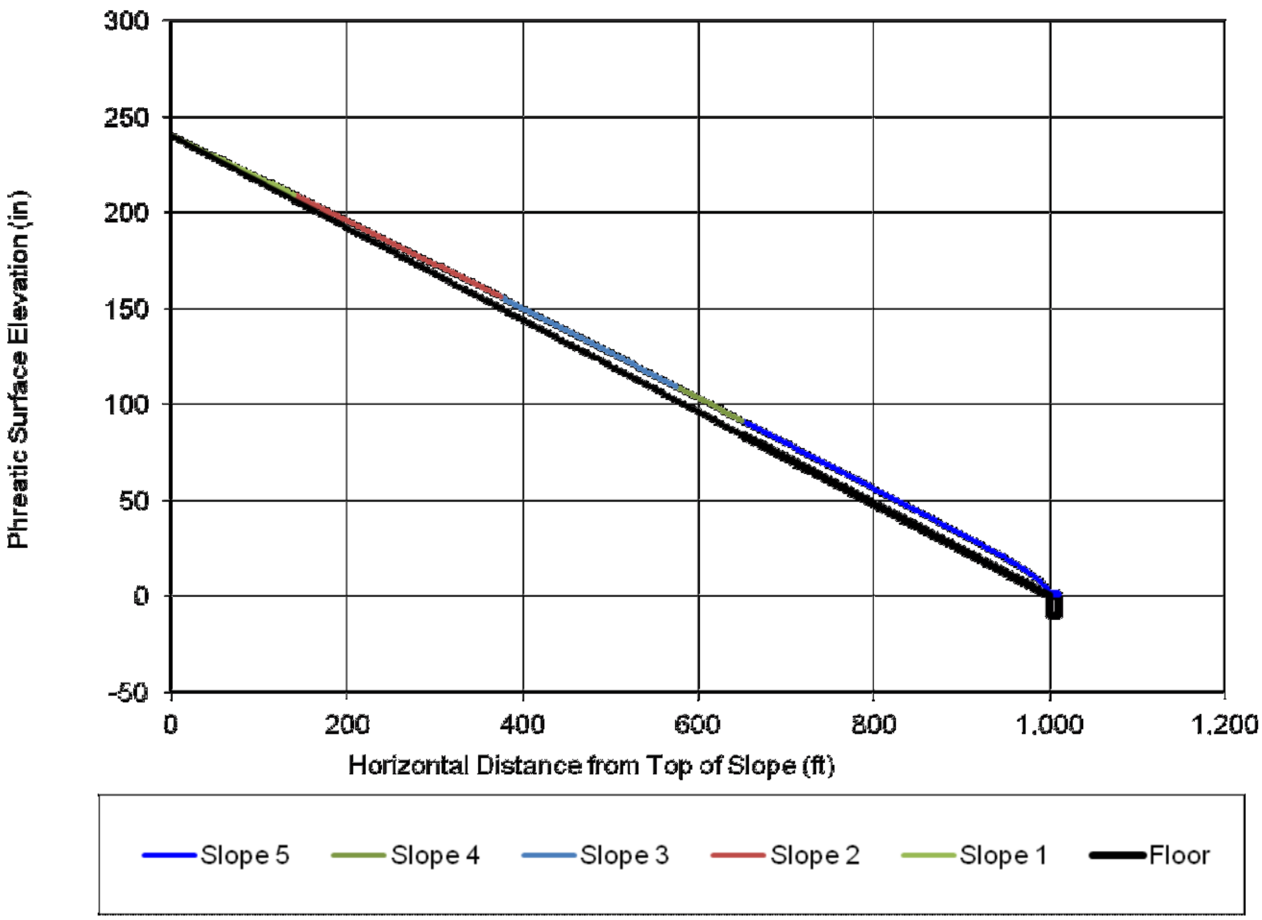


Figure 4. Design Example 1
Variance in Leachate Infiltration Rates

EXAMPLE 2: Variance in Slopes

INPUT PARAMETERS (dx=0.5 in)							
		Infiltration Rate (gpad)	Drainage Length (ft)	Slope	Combined k (cm/s)	Liquid Depth at Lowest Point (in)	Max Head-on-Liner (in)
Numerical Solution	Slope 1	3,000	140	20.00%	0.10	-	0.83
	Slope 2	3,000	235	12.00%	0.10	-	1.48
	Slope 3	3,000	200	10.00%	0.10	-	12.28
	Slope 4	3,000	75	2.00%	0.10	-	13.82
	Slope 5	3,000	350	2.00%	0.10	1.0	16.64
						OVERALL	16.64
McEnroe 93 Method		3,000	1,000	2.00%	0.10	free drain	16.63

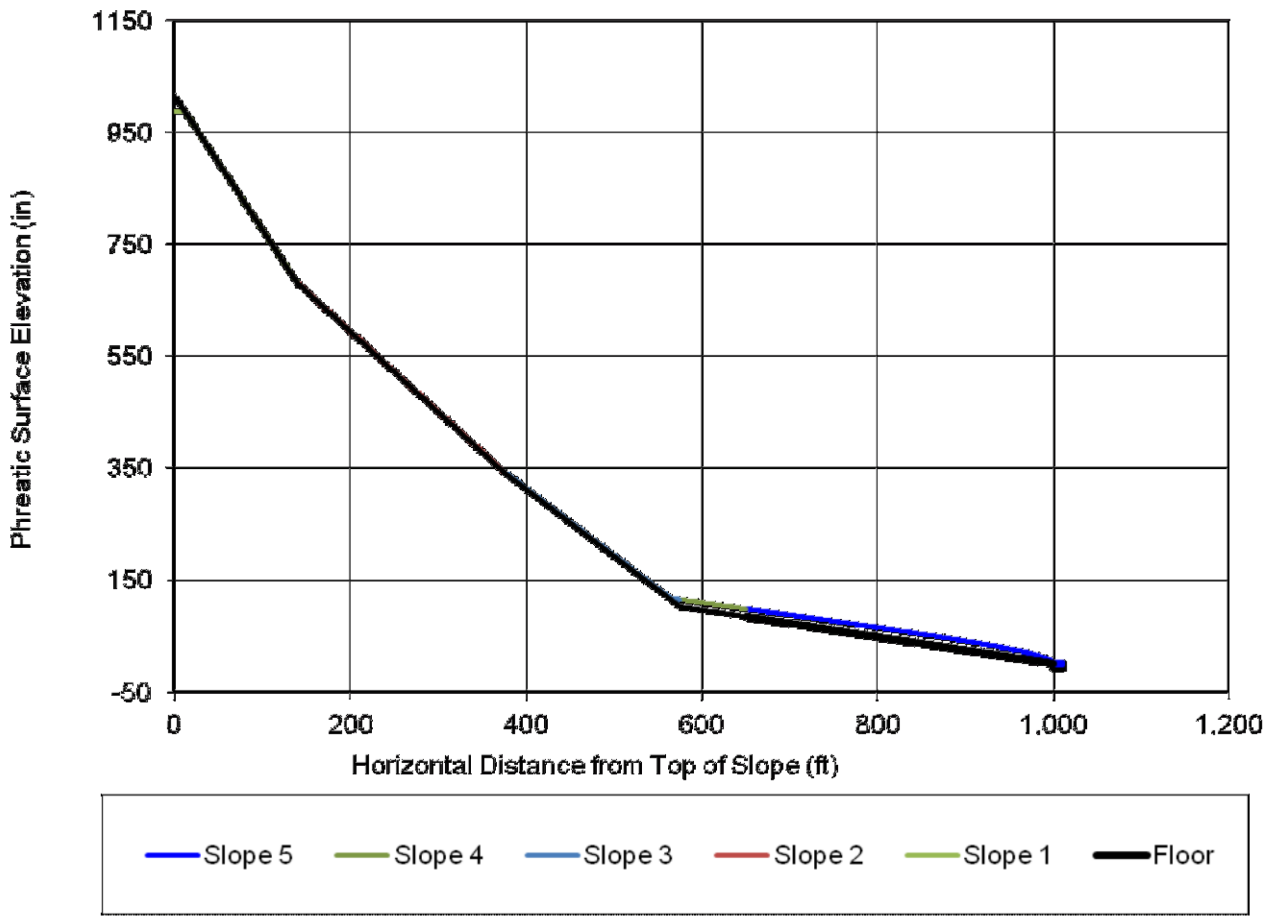


Figure 5. Design Example 2
Variance in Slopes

CALCULATION SHEET

Client: Landfill
Project: Head-on-Liner Calculation
Calculation: Head-on-liner calculation using numerical approach

Project No.:
Calculated By: XZ Date: 3/6/2012
Checked By: TY Date: 3/9/2012
Approved By: KF Date: 5/30/2012

EXAMPLE 3: Variance in Slopes and Leachate Infiltration Rates

INPUT PARAMETERS (dx=0.5 in)							
		Infiltration Rate (gpad)	Drainage Length (ft)	Slope	Combined k (cm/s)	Liquid Depth at Lowest Point (in)	Max Head-on-Liner (in)
Numerical Solution	Slope 1	3,000	140	20.00%	0.10	-	0.83
	Slope 2	2,000	235	12.00%	0.10	-	1.17
	Slope 3	1,000	200	10.00%	0.10	-	7.18
	Slope 4	500	75	2.00%	0.10	-	7.43
	Slope 5	500	350	2.00%	0.10	1.0	8.08
						OVERALL	8.08
McEnroe 93 Method		3,000	1,000	2.00%	0.10	free drain	16.63

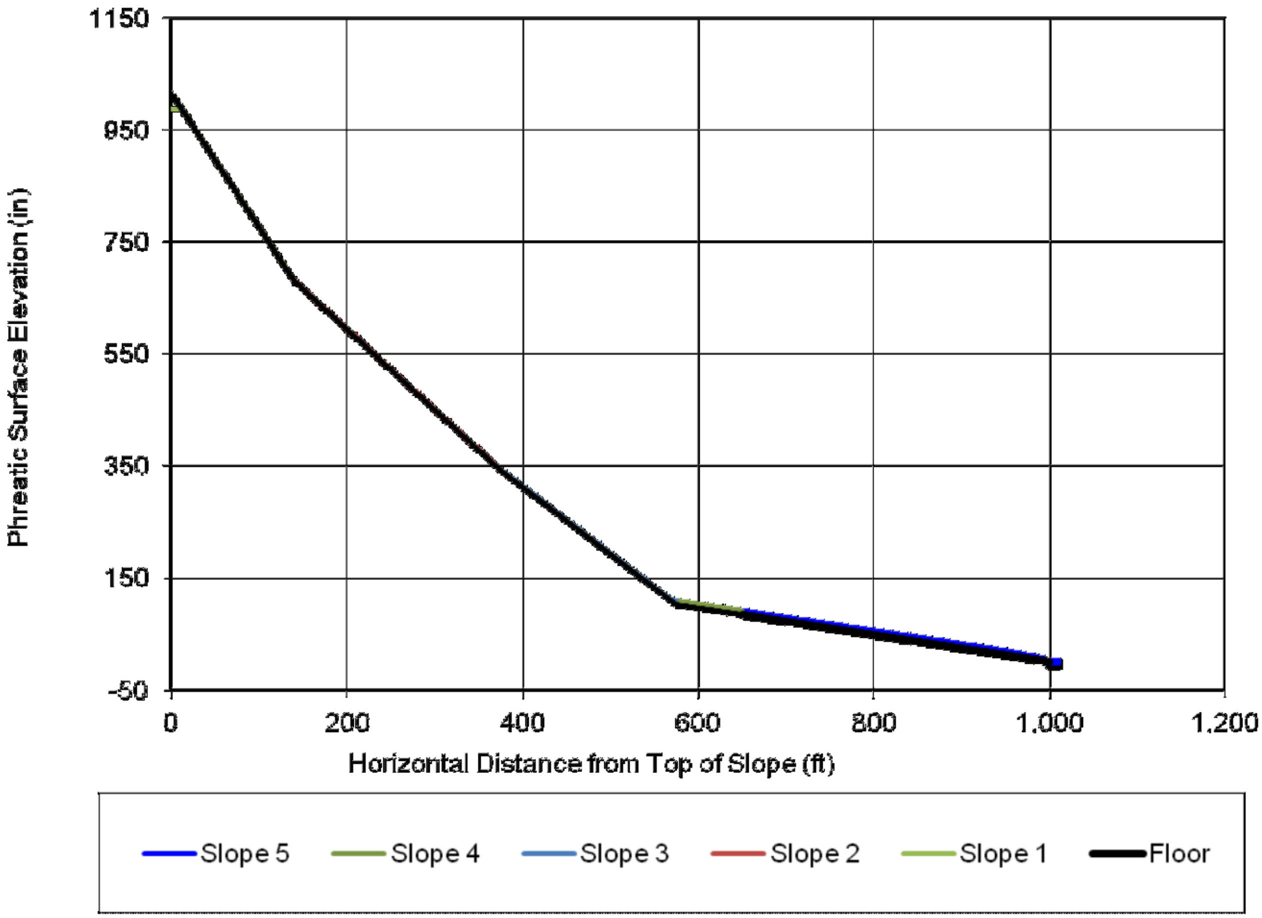


Figure 6. Design Example 3
Variance in Leachate Infiltration Rates and Slopes

CALCULATION SHEET
Client: Landfill
Project: Head-on-Liner Calculation
Calculation: Head-on-liner calculation using numerical approach

Project No.:
Calculated By: XZ Date: 3/6/2012
Checked By: TY Date: 3/9/2012
Approved By: KF Date: 5/30/2012

EXAMPLE 4: Variance in Combined Permeabilitiy

INPUT PARAMETERS (dx=0.5 in)									
		Infiltration Rate (gpad)	Drainage Length (ft)	Slope	Combined k (cm/s)	Geonet Layer	Saturated Sand Thickness (in)	Liquid Depth at Lowest Point (in)	Max Head-on-Liner (in)
Numerical Solution	Slope 1	3,000	150	2.50%	0.050	no	-	-	5.30
	Slope 2	3,000	150	2.50%	0.050	no	-	-	10.35
	Slope 3	3,000	150	2.50%	0.050	no	-	-	11.73
	Slope 4	3,000	150	2.50%	0.184	yes	6.00	-	5.84
	Slope 5	3,000	150	2.50%	0.166	yes	7.00	1.0	6.49
								OVERALL	11.73
McEnroe 93 Method		3,000	750	2.50%	0.050			free drain	19.45

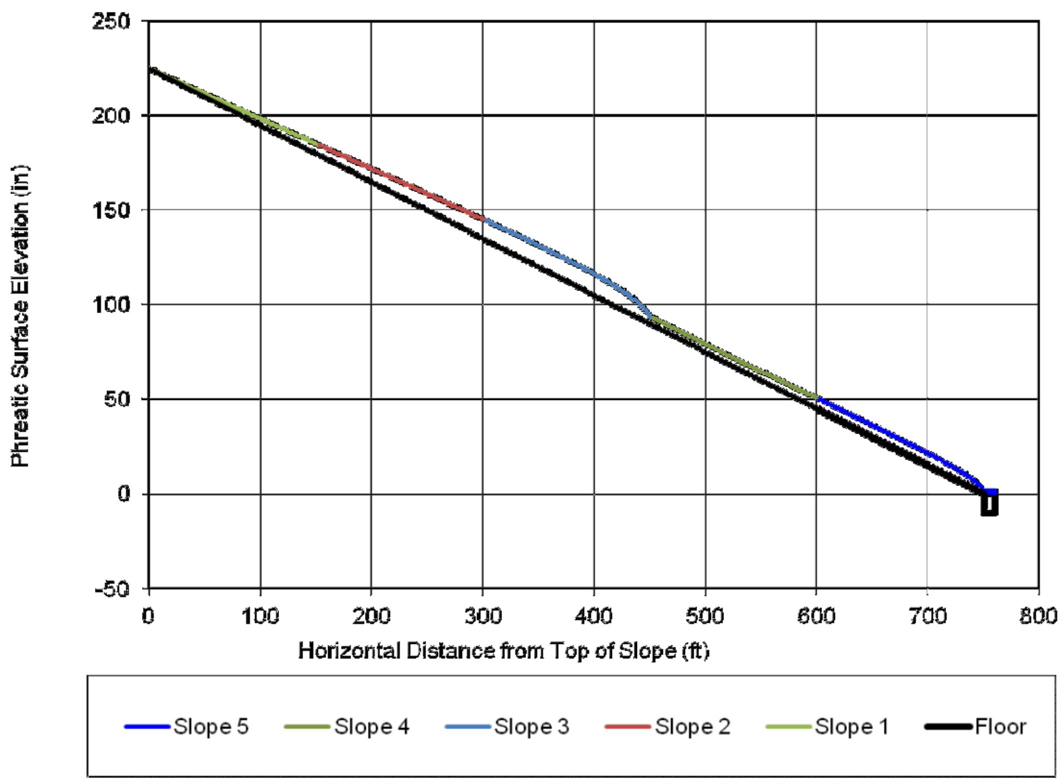


Figure 7. Design Example 4:
Variance in Combined Permeability (using geocomposite)

CALCULATION SHEET

Client: Landfill	Project No.:		
Project: Head-on-Liner Calculation	Calculated By: XZ	Date: 3/6/2012	
Calculation: Head-on-liner calculation using numerical approach	Checked By: TY	Date: 3/9/2012	
	Approved By: KF	Date: 5/30/2012	

EXAMPLE 5: Variance in Slopes, Leachate Infiltration Rates, and Combined Permeability

INPUT PARAMETERS (dx=0.5 in)									
		Infiltration Rate (gpad)	Drainage Length (ft)	Slope	Combined k (cm/s)	Geonet Layer	Saturated Sand Thickness (in)	Liquid Depth at Lowest Point (in)	Max Head-on-Liner (in)
Numerical Solution	Slope 1	4,000	150	10.00%	0.020	no	-	-	4.03
	Slope 2	4,000	150	10.00%	0.020	no	-	-	7.39
	Slope 3	3,000	150	25.00%	0.020	no	-	-	8.48
	Slope 4	2,000	150	2.50%	0.103	yes	10.00	-	10.15
	Slope 5	500	300	2.50%	0.101	yes	10.30	1.0	10.48
								OVERALL	10.48
McEnroe 93 Method		4,000	900	2.50%	0.020			free drain	64.99

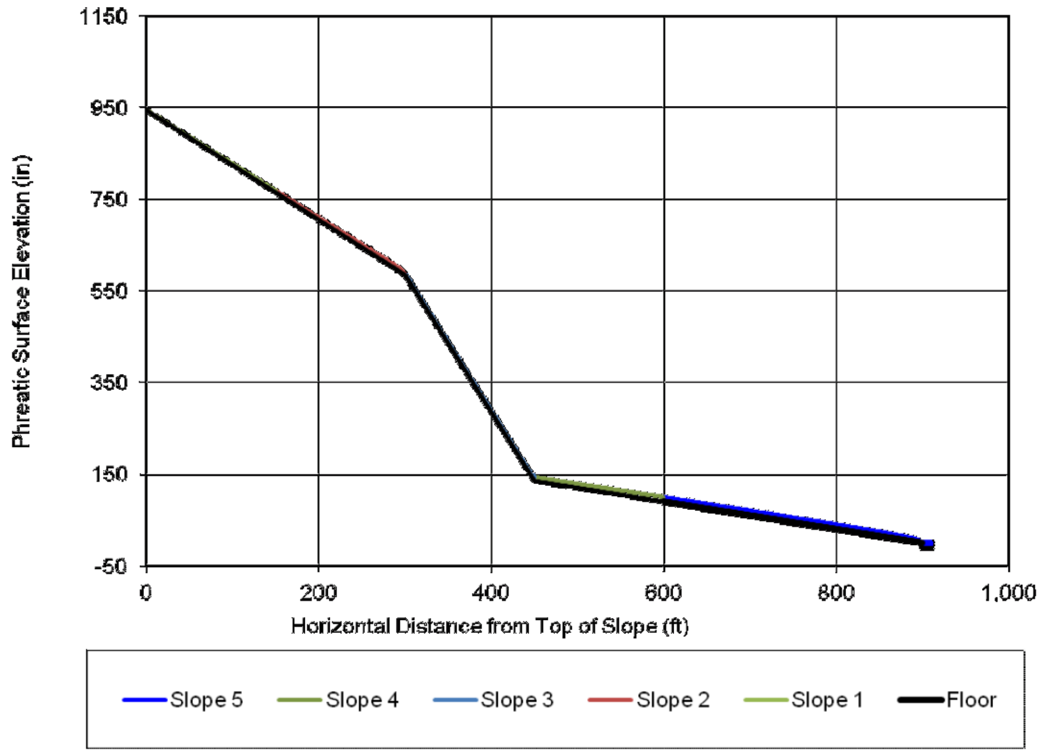


Figure 8. Design Example 5:
Variance in Slopes, Leachate Infiltration Rates, and Combined Permeability

EXAMPLE 6: No Resisted Trench (free drain condition is not satisfied)

INPUT PARAMETERS (dx=0.5 in)									
		Infiltration Rate (gpad)	Drainage Length (ft)	Slope	Combined k (cm/s)	Geonet Layer	Saturated Sand Thickness (in)	Liquid Depth at Lowest Point (in)	Max Head-on-Liner (in)
Numerical Solution	Slope 1	3,000	100	2.00%	0.661	yes	1.00	-	0.96
	Slope 2	3,000	100	2.00%	0.248	yes	3.79	-	3.94
	Slope 3	3,000	100	2.00%	0.120	yes	7.72	-	7.89
	Slope 4	3,000	100	2.00%	0.095	yes	10.22	-	10.39
	Slope 5	3,000	100	2.00%	0.078	yes	10.63	9.0	10.74
								OVERALL	10.74
McEnroe 93 Method		3,000	500	2.00%	0.078			free drain+superposition	19.39

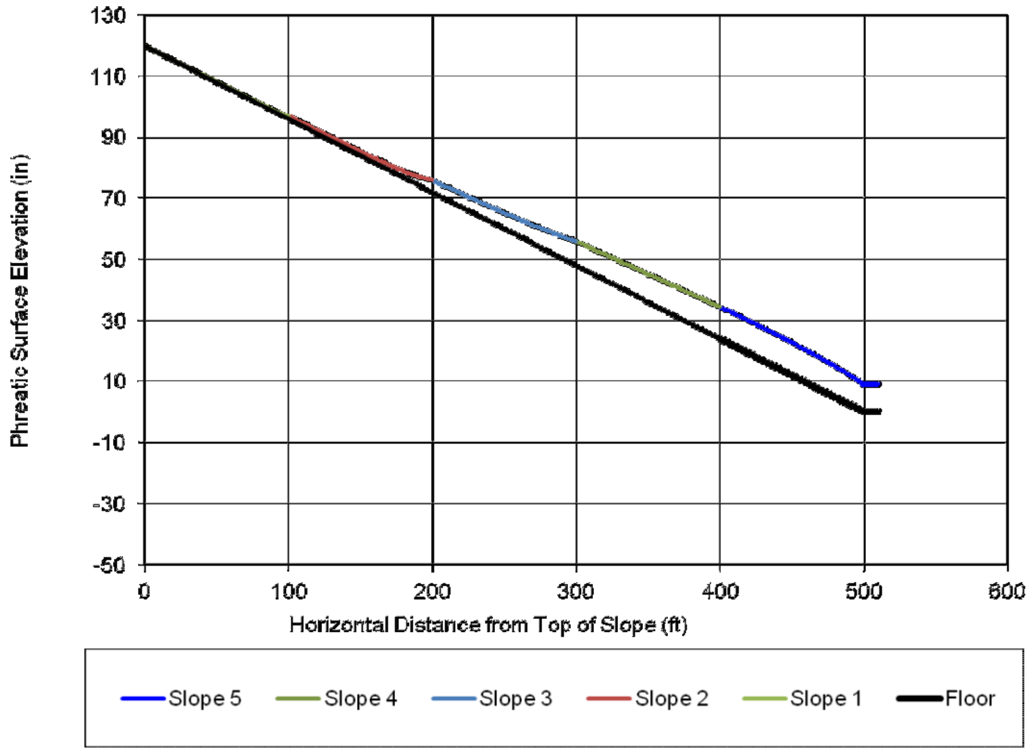


**Figure 9. Design Example 6:
Free drain condition is not satisfied**

CALCULATION SHEET

Client: US Ecology – Wayne Disposal	Project No.: 1218070017	
Project: WDI MC VI-G4 - G7 Liner and Final Cover Grading Modification	Calculated By: LEH	Date: 06/01/2021
	Checked By: NSG	Date: 10/4/2021
Calculation: Leachate Generation (HELP Model) Analysis	Approved By: XZ	Date: 10/5/21

LEACHATE GENERATION (HELP MODEL) ANALYSIS

OBJECTIVE

Estimate the leachate generation rate in the proposed cells for MC6G Cells 4 to 7 at Wayne Disposal Inc. (WDI) using the Hydraulic Evaluation of Landfill Performance (HELP) computer program. Select the appropriate leachate generation rate for the design of leachate collection and removal system.

DESIGN CRITERIA, ASSUMPTIONS AND METHODOLOGY

In the HELP model analysis, only the open condition was considered since it is expected to be the highest leachate generation and therefore the most critical period for a leachate collection system from a flow capacity standpoint. All 4 Cells have 5% floor slopes and 3H:1V sideslopes.

Steeper floor sections lead to additional leachate generation in HELP Model, so the floor section for all 4 cells was modeled as a 5% slope with a drainage flow length of 390 feet. For the sideslope section, a slope of 33.33% and a flow length of 135 feet was utilized. A modeling period of 5 years was utilized for open conditions.

Initial soil moisture contents were set equal to the field capacity for each vertical percolation layer assuming a steady state condition. For waste, the is conservatively modeled as a loamy fine sand with a thickness of 10 feet. Other soil and geosynthetic properties are generally modeled using HELP default values.

The hydrologic evaluation was conducted using HELP Model (4.0.1) from USEPA for both data input and result output.

HELP Model Version 4 Input

1. Synthetically generated climatological data for Belleville, Michigan was used to simulate the weather conditions at the site. Wind speed and humidity data which are used by HELP to simulate evapotranspiration were imported from the National Solar Radiation Data Base for Willow Run Airport, which is adjacent to WDI.
2. The growing season was estimated at approximately 160 days in length (http://geo.msu.edu/extra/geogmich/growseason&frost.html) starting on Day 100 (mid-April) and ending on day 260 (mid-September).
3. The pinhole density for the geomembrane liner is assumed to be one hole per acre. The diameter of the hole is assumed as 0.1 cm with a corresponding opening area of approximately 0.008 cm^2. Note that the above assumption was made for conservatism since pinholes (manufacturing defects) are very unlikely when producing polyethylene (PE) geomembranes.
4. The installation defect for the geomembrane liner was assumed at a density of one hole per

acre. The area of the hole was assumed to be 1.0 cm^2.

5. The placement quality for the geomembrane liner was assumed to be "good." According to the HELP Model User's Guide for Version 4, a "good" placement quality assumes "good field installation with well-prepared, smooth soil surface, and geomembrane wrinkle control to insure good contact between geomembrane and adjacent soil that limits drainage rate."

5. A one-acre design area was used for modeling purposes to compute unit quantities.

6. The following system was used to model the leachate generation for the proposed cell floor and sideslope liner system (from top to bottom):

   - 120 inches of waste material – modeled as a custom waste layer based on HELP default material #5 (loamy fine sand)
   - 12-inch sand protective layer – modeled as a sand with $1x10^{-3}$ cm/s permeability
   - Geocomposite drainage layer
   - 80-mil HDPE geomembrane
   - 2 layers of Geosynthetic clay liner (GCL) – modeled as a GCL with 2x thickness
   - 60 inches of clayey soil – modeled as HELP default material #25 – clay loam.
   - Geocomposite drainage layer
   - 80-mil HDPE geomembrane
   - 2 layers of (GCL) – modeled as a GCL with 2x thickness
   - 24-inch compacted soil layer – modeled as HELP default material #14 Silty Clay

6. Open condition inputs:

   - Bare soil conditions.
   - Evaporative zone depth = 12 in.
   - Maximum leaf area index = 0 (recommended by HELP Model for bare ground).
   - Fraction of area allowing runoff = 0 %.

CALCULATIONS AND RESULTS

Multiple simulations were conducted for cell floor, side slope, and overfill liner conditions by varying drainage length of the drainage layer for each cell. The output from HELP for each of the analyzed scenarios is included in Attachments 5.2.1 and 5.2.2. The peak daily leachate generation rates for the cell floor, side slope and overfill liner under open and intermediate cover conditions were estimated and presented in the following table.

Table 1- Leachate Percolation Rate

Scenario	Percolation (in/day)	Percolation (gal/acre/day)
Sideslopes (33.33%)	0.2458	6,674
Floor (5%)	0.2416	6,560

CONCLUSIONS

Results of the HELP analyses are summarized in Table 1. These maximum percolation rates will be used in the leachate collection pipes and geocomposite drainage layer.

ATTACHMENT 5.2.1

HELP Model Analysis - Sideslope

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 4.0 BETA (2018)
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY

Title:	Wayne Disposal-Initial Lift-Si…	**Simulated On:**	3/10/2021 12:59

Layer 1
Type 1 - Vertical Percolation Layer (Cover Soil)
Sandy Waste Material
Material Texture Number 83

Thickness	=	120	inches
Porosity	=	0.457	vol/vol
Field Capacity	=	0.131	vol/vol
Wilting Point	=	0.058	vol/vol
Initial Soil Water Content	=	0.2206	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-03	cm/sec

Layer 2
Type 1 - Vertical Percolation Layer
Custom Soil 1
Material Texture Number 43

Thickness	=	12	inches
Porosity	=	0.417	vol/vol
Field Capacity	=	0.045	vol/vol
Wilting Point	=	0.018	vol/vol
Initial Soil Water Content	=	0.1689	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-03	cm/sec

Layer 3
Type 2 - Lateral Drainage Layer
Drainage Net (0.5 cm)
Material Texture Number 20

Thickness	=	0.2	inches
Porosity	=	0.85	vol/vol
Field Capacity	=	0.01	vol/vol
Wilting Point	=	0.005	vol/vol
Initial Soil Water Content	=	0.0115	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E+01	cm/sec
Slope	=	33.33333	%
Drainage Length	=	135	ft

Layer 4

Type 4 - Flexible Membrane Liner
HDPE Membrane
Material Texture Number 35

Thickness	=	0.08	inches
Effective Sat. Hyd. Conductivity	=	2.00E-13	cm/sec
FML Pinhole Density	=	1	Holes/Acre
FML Installation Defects	=	1	Holes/Acre
FML Placement Quality	=	3	Good

Layer 5

Type 3 - Barrier Soil Liner
Bentonite (High)
Material Texture Number 17

Thickness	=	0.5	inches
Porosity	=	0.75	vol/vol
Field Capacity	=	0.747	vol/vol
Wilting Point	=	0.4	vol/vol
Initial Soil Water Content	=	0.75	vol/vol
Effective Sat. Hyd. Conductivity	=	3.00E-09	cm/sec

Layer 6

Type 1 - Vertical Percolation Layer
CL - Clay Loam (Moderate)
Material Texture Number 25

Thickness	=	60	inches
Porosity	=	0.437	vol/vol
Field Capacity	=	0.373	vol/vol
Wilting Point	=	0.266	vol/vol
Initial Soil Water Content	=	0.373	vol/vol
Effective Sat. Hyd. Conductivity	=	3.60E-06	cm/sec

Layer 7

Type 2 - Lateral Drainage Layer
Drainage Net (0.5 cm)
Material Texture Number 20

Thickness	=	0.5	inches
Porosity	=	0.85	vol/vol
Field Capacity	=	0.01	vol/vol
Wilting Point	=	0.005	vol/vol
Initial Soil Water Content	=	0.01	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E+01	cm/sec
Slope	=	33.33333	%
Drainage Length	=	135	ft

Layer 8

Type 4 - Flexible Membrane Liner

HDPE Membrane

Material Texture Number 35

Thickness	=	0.08	inches
Effective Sat. Hyd. Conductivity	=	2.00E-13	cm/sec
FML Pinhole Density	=	1	Holes/Acre
FML Installation Defects	=	1	Holes/Acre
FML Placement Quality	=	3	Good

Layer 9

Type 3 - Barrier Soil Liner

Bentonite (High)

Material Texture Number 17

Thickness	=	0.5	inches
Porosity	=	0.75	vol/vol
Field Capacity	=	0.747	vol/vol
Wilting Point	=	0.4	vol/vol
Initial Soil Water Content	=	0.75	vol/vol
Effective Sat. Hyd. Conductivity	=	3.00E-09	cm/sec

Layer 10

Type 1 - Vertical Percolation Layer

SiC - Silty Clay

Material Texture Number 14

Thickness	=	24	inches
Porosity	=	0.479	vol/vol
Field Capacity	=	0.371	vol/vol
Wilting Point	=	0.251	vol/vol
Initial Soil Water Content	=	0.3709	vol/vol
Effective Sat. Hyd. Conductivity	=	2.50E-05	cm/sec

Note: Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	97.2	
Fraction of Area Allowing Runoff	=	0	%
Area projected on a horizontal plane	=	1	acres
Evaporative Zone Depth	=	12	inches
Initial Water in Evaporative Zone	=	0.696	inches
Upper Limit of Evaporative Storage	=	5.484	inches
Lower Limit of Evaporative Storage	=	0.696	inches

Initial Snow Water	=	0	inches
Initial Water in Layer Materials	=	60.544	inches
Total Initial Water	=	60.544	inches
Total Subsurface Inflow	=	0	inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

Evapotranspiration and Weather Data

Station Latitude	=	42.18	Degrees
Maximum Leaf Area Index	=	0	
Start of Growing Season (Julian Date)	=	100	days
End of Growing Season (Julian Date)	=	260	days
Average Wind Speed	=	9	mph
Average 1st Quarter Relative Humidity	=	72	%
Average 2nd Quarter Relative Humidity	=	68	%
Average 3rd Quarter Relative Humidity	=	73	%
Average 4th Quarter Relative Humidity	=	74	%

Note: Evapotranspiration data was obtained for Belleville, Michigan

Normal Mean Monthly Precipitation (inches)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
1.538481	1.745211	2.296427	2.857607	4.464435	2.825752
2.250299	3.02094	2.983072	2.062363	2.406094	1.756356

Note: Precipitation was simulated based on HELP V4 weather simulation for:
Lat/Long: 42.18/-83.49

Normal Mean Monthly Temperature (Degrees Fahrenheit)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
25.6	33.7	47.8	46.5	63.1	73.4
83.7	75.9	66.4	54.7	44.5	44

Note: Temperature was simulated based on HELP V4 weather simulation for:
Lat/Long: 42.18/-83.49
Solar radiation was simulated based on HELP V4 weather simulation for:
Lat/Long: 42.18/-83.49

Daily Output for Year 1

Column key: Head #1: drainage from Layer 4 | Head #2: drainage from Layer 8
Drain #1: drainage from Layer 3 | Drain #2: drainage from Layer 7
Leak #1: leakage thru Layer 5 | Leak #2: leakage thru Layer 9 | Leak #3: leakage thru Layer 10

Title: Wayne Disposal-Initial Lift-Sideslope
Simulated On: 3/10/2021 13:00

Day	Freezing Status* Air	Soil	Rain (inches)	Runoff (inches)	ET (inches)	Evap. Zone Water (in/in)	Head #1 (inches)	Drain #1 (inches)	Leak #1 (inches)	Head #2 (inches)	Drain #2 (inches)	Leak #2 (inches)	Head #3 (inches)	Drain #3 (inches)	Leak #3 (inches)
1			0.00	0.000	0.000	0.0580	0.0003	0.0409	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
2			0.04	0.000	0.006	0.0580	0.0004	0.0467	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
3			0.04	0.000	0.006	0.0580	0.0002	0.0258	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
4	*		0.34	0.000	0.025	0.0580	0.0003	0.0377	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
5			0.10	0.000	0.000	0.0580	0.0006	0.0698	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
6			0.02	0.000	0.005	0.0580	0.0004	0.0513	6.19E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
7	*		0.00	0.000	0.003	0.0580	0.0009	0.1182	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
8			0.00	0.000	0.000	0.0580	0.0010	0.1211	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
9			0.00	0.000	0.000	0.0580	0.0008	0.0979	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
10			0.00	0.000	0.000	0.0580	0.0006	0.0753	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
11			0.04	0.000	0.006	0.0580	0.0005	0.0676	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
12			0.02	0.000	0.008	0.0580	0.0002	0.0266	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
13			0.00	0.000	0.000	0.0580	0.0003	0.0347	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
14	*		0.00	0.000	0.000	0.0580	0.0004	0.0463	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
15	*		0.23	0.000	0.026	0.0580	0.0004	0.0565	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
16	*		0.08	0.000	0.024	0.0580	0.0004	0.0465	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
17	*		0.00	0.000	0.029	0.0580	0.0004	0.0501	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
18			0.00	0.000	0.019	0.0580	0.0005	0.0619	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
19	*		0.00	0.000	0.000	0.0580	0.0004	0.0478	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
20	*		0.00	0.000	0.000	0.0580	0.0007	0.0900	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
21	*		0.00	0.000	0.000	0.0580	0.0007	0.0909	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
22	*		0.14	0.000	0.030	0.0580	0.0007	0.0870	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
23	*		0.86	0.000	0.023	0.0580	0.0005	0.0645	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
24	*		0.05	0.000	0.011	0.0580	0.0004	0.0564	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
25	*		0.00	0.000	0.012	0.0580	0.0004	0.0550	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
26	*	*	0.16	0.000	0.005	0.0580	0.0004	0.0512	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
27	*	*	0.08	0.000	0.000	0.0580	0.0005	0.0656	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
28	*	*	0.00	0.000	0.021	0.0580	0.0005	0.0671	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
29	*	*	0.00	0.000	0.019	0.0580	0.0005	0.0641	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
30	*	*	0.00	0.000	0.023	0.0580	0.0005	0.0603	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
31		*	0.05	0.000	0.000	0.0621	0.0005	0.0570	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
32	*	*	0.00	0.000	0.028	0.0621	0.0004	0.0545	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
33		*	0.00	0.000	0.000	0.1490	0.0004	0.0529	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
34	*	*	0.03	0.000	0.031	0.1490	0.0004	0.0521	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
35	*	*	0.00	0.000	0.001	0.1490	0.0004	0.0518	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
36	*	*	0.10	0.000	0.010	0.1490	0.0004	0.0518	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
37	*	*	0.16	0.000	0.000	0.1490	0.0004	0.0520	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

38		*	0.00	0.000	0.012	0.1673	0.0004	0.0524	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
39		*	0.00	0.000	0.014	0.1673	0.0004	0.0526	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
40		*	0.01	0.000	0.001	0.1677	0.0004	0.0529	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
41		*	0.14	0.000	0.001	0.1794	0.0004	0.0530	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
42		*	0.00	0.000	0.000	0.1794	0.0004	0.0530	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
43		*	0.00	0.000	0.001	0.1795	0.0004	0.0529	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
44		*	0.19	0.000	0.001	0.1949	0.0004	0.0527	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
45		*	0.27	0.000	0.001	0.2172	0.0004	0.0524	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
46		*	0.00	0.000	0.000	0.2172	0.0004	0.0520	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
47		*	0.00	0.000	0.000	0.2172	0.0004	0.0516	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
48			0.00	0.000	0.102	0.1777	0.0004	0.0544	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
49			0.00	0.000	0.049	0.1632	0.0004	0.0491	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
50	*		0.00	0.000	0.000	0.1581	0.0003	0.0381	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
51	*		0.01	0.000	0.005	0.1544	0.0003	0.0400	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
52	*		0.00	0.000	0.003	0.1516	0.0004	0.0539	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
53			0.02	0.000	0.084	0.1439	0.0005	0.0648	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
54			0.10	0.000	0.048	0.1455	0.0005	0.0638	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
55	*		0.53	0.000	0.018	0.1464	0.0004	0.0562	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
56	*		0.00	0.000	0.008	0.1472	0.0005	0.0607	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
57	*		0.07	0.000	0.004	0.1480	0.0005	0.0574	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
58	*		0.19	0.000	0.007	0.1489	0.0004	0.0503	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
59	*		0.13	0.000	0.000	0.1498	0.0004	0.0455	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
60	*		0.01	0.000	0.000	0.1506	0.0003	0.0392	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
61			0.00	0.000	0.000	0.2136	0.0003	0.0326	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
62			0.04	0.000	0.085	0.1824	0.0003	0.0373	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
63			0.00	0.000	0.070	0.1662	0.0001	0.0151	3.84E-09	0.0000	0.0000	1.73E-10	0.0000	0.0000	0.00E+00
64			0.00	0.000	0.073	0.1553	0.0000	0.0005	1.70E-09	0.0000	0.0000	1.64E-10	0.0000	0.0000	0.00E+00
65			1.31	0.000	0.102	0.2352	0.0001	0.0187	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
66			0.00	0.000	0.055	0.1810	0.0002	0.0223	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
67			0.00	0.000	0.083	0.1635	0.0001	0.0186	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
68			0.10	0.000	0.095	0.1588	0.0002	0.0260	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
69			0.01	0.000	0.054	0.1523	0.0002	0.0301	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
70			0.06	0.000	0.100	0.1452	0.0003	0.0395	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
71			0.13	0.000	0.086	0.1475	0.0003	0.0410	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
72	*		0.05	0.000	0.073	0.1449	0.0003	0.0404	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
73	*		0.10	0.000	0.015	0.1455	0.0003	0.0366	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
74	*		0.00	0.000	0.008	0.1460	0.0003	0.0316	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
75	*	*	0.05	0.000	0.005	0.1460	0.0002	0.0278	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
76	*	*	0.00	0.000	0.062	0.1460	0.0002	0.0214	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
77		*	0.00	0.000	0.026	0.1460	0.0001	0.0083	6.81E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
78		*	0.75	0.000	0.001	0.2081	0.0000	0.0001	1.17E-09	0.0000	0.0000	1.57E-10	0.0000	0.0000	0.00E+00
79		*	0.24	0.000	0.001	0.2277	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
80		*	0.11	0.000	0.001	0.2368	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
81		*	0.00	0.000	0.000	0.2368	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
82		*	0.00	0.000	0.000	0.2368	0.0000	0.0004	1.62E-09	0.0000	0.0000	1.63E-10	0.0000	0.0000	0.00E+00

83		*	0.00	0.000	0.000	0.2368	0.0001	0.0113	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
84		*	0.00	0.000	0.000	0.2368	0.0002	0.0270	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
85		*	0.00	0.000	0.000	0.2368	0.0003	0.0409	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
86	*	*	0.00	0.000	0.000	0.2368	0.0004	0.0519	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
87	*	*	0.00	0.000	0.000	0.2368	0.0005	0.0596	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
88		*	0.21	0.000	0.001	0.2545	0.0005	0.0647	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
89		*	0.06	0.000	0.001	0.2593	0.0005	0.0677	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
90		*	0.00	0.000	0.000	0.2593	0.0005	0.0692	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
91			0.74	0.000	0.124	0.2223	0.0006	0.0731	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
92			0.11	0.000	0.219	0.1793	0.0003	0.0431	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
93			0.00	0.000	0.237	0.1510	0.0007	0.0860	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
94			0.00	0.000	0.197	0.1302	0.0007	0.0932	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
95			0.00	0.000	0.118	0.1196	0.0007	0.0877	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
96			0.00	0.000	0.049	0.1151	0.0008	0.0968	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
97			0.00	0.000	0.038	0.1106	0.0006	0.0816	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
98			0.01	0.000	0.032	0.1072	0.0005	0.0611	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
99			0.02	0.000	0.028	0.1060	0.0003	0.0349	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
100			0.02	0.000	0.026	0.1049	0.0002	0.0231	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
101			0.01	0.000	0.024	0.1028	0.0001	0.0131	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
102	*		0.10	0.000	0.031	0.1040	0.0000	0.0050	6.81E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
103	*		0.20	0.000	0.034	0.1052	0.0001	0.0141	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
104	*		0.21	0.000	0.034	0.1064	0.0002	0.0261	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
105			0.00	0.000	0.069	0.1291	0.0003	0.0394	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
106			0.02	0.000	0.022	0.1284	0.0004	0.0526	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
107			0.01	0.000	0.021	0.1272	0.0005	0.0594	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
108			0.19	0.000	0.020	0.1410	0.0006	0.0729	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
109			0.00	0.000	0.156	0.1277	0.0006	0.0739	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
110			0.33	0.000	0.019	0.1521	0.0007	0.0853	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
111			0.00	0.000	0.165	0.1357	0.0006	0.0699	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
112	*		0.09	0.000	0.041	0.1337	0.0007	0.0851	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
113	*		0.29	0.000	0.021	0.1315	0.0006	0.0780	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
114			0.00	0.000	0.052	0.1483	0.0006	0.0743	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
115			0.56	0.000	0.112	0.1821	0.0006	0.0769	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
116			0.11	0.000	0.303	0.1417	0.0008	0.0960	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
117			0.30	0.000	0.308	0.1336	0.0005	0.0626	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
118			0.00	0.000	0.291	0.1057	0.0007	0.0886	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
119			0.06	0.000	0.119	0.0995	0.0008	0.1018	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
120			0.05	0.000	0.050	0.0964	0.0008	0.1018	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
121			0.34	0.000	0.038	0.1198	0.0006	0.0744	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
122			0.03	0.000	0.206	0.0995	0.0007	0.0856	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
123			0.08	0.000	0.032	0.0960	0.0004	0.0475	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
124	*		0.00	0.000	0.000	0.0939	0.0002	0.0279	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
125	*		0.00	0.000	0.028	0.0902	0.0004	0.0487	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
126			0.00	0.000	0.025	0.0871	0.0004	0.0535	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
127			0.00	0.000	0.023	0.0845	0.0004	0.0508	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

128	0.00	0.000	0.022	0.0821	0.0004	0.0444	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
129	0.00	0.000	0.020	0.0799	0.0003	0.0370	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
130	0.00	0.000	0.019	0.0779	0.0002	0.0301	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
131	0.09	0.000	0.019	0.0830	0.0002	0.0281	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
132	0.43	0.000	0.018	0.0970	0.0002	0.0289	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
133	0.63	0.000	0.126	0.1046	0.0002	0.0209	6.30E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
134	0.56	0.000	0.066	0.1044	0.0000	0.0041	2.03E-09	0.0000	0.0000	1.67E-10	0.0000	0.0000	0.00E+00
135	0.03	0.000	0.075	0.0858	0.0001	0.0181	5.69E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
136	0.06	0.000	0.105	0.0773	0.0004	0.0514	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
137	0.00	0.000	0.125	0.0586	0.0006	0.0705	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
138	0.03	0.000	0.017	0.0592	0.0005	0.0598	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
139	0.00	0.000	0.006	0.0580	0.0006	0.0812	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
140	0.00	0.000	0.000	0.0580	0.0005	0.0626	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
141	0.03	0.000	0.004	0.0580	0.0004	0.0496	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
142	0.20	0.000	0.015	0.0580	0.0002	0.0287	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
143	0.20	0.000	0.014	0.0580	0.0000	0.0000	1.50E-10	0.0000	0.0000	8.22E-11	0.0000	0.0000	0.00E+00
144	0.27	0.000	0.129	0.0580	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
145	0.20	0.000	0.070	0.0580	0.0004	0.0504	6.78E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
146	0.00	0.000	0.000	0.0580	0.0002	0.0234	5.44E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
147	0.56	0.000	0.044	0.0646	0.0009	0.1115	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
148	0.48	0.000	0.074	0.0645	0.0001	0.0181	4.76E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
149	0.03	0.000	0.027	0.0613	0.0005	0.0652	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
150	0.02	0.000	0.012	0.0621	0.0008	0.1009	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
151	0.00	0.000	0.014	0.0600	0.0008	0.0957	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
152	0.00	0.000	0.010	0.0580	0.0005	0.0661	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
153	0.00	0.000	0.000	0.0580	0.0001	0.0171	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
154	0.00	0.000	0.000	0.0580	0.0000	0.0003	1.39E-09	0.0000	0.0000	1.61E-10	0.0000	0.0000	0.00E+00
155	0.00	0.000	0.000	0.0580	0.0001	0.0073	5.11E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
156	0.00	0.000	0.000	0.0580	0.0003	0.0418	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
157	0.00	0.000	0.000	0.0580	0.0006	0.0815	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
158	0.02	0.000	0.003	0.0580	0.0009	0.1100	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
159	0.00	0.000	0.000	0.0580	0.0010	0.1221	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
160	0.00	0.000	0.000	0.0580	0.0011	0.1380	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
161	0.00	0.000	0.000	0.0580	0.0011	0.1371	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
162	0.00	0.000	0.000	0.0580	0.0011	0.1326	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
163	0.09	0.000	0.003	0.0580	0.0010	0.1287	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
164	0.00	0.000	0.000	0.0580	0.0009	0.1147	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
165	0.50	0.000	0.008	0.0645	0.0011	0.1326	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
166	0.58	0.000	0.117	0.0646	0.0009	0.1078	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
167	0.33	0.000	0.145	0.0642	0.0008	0.1044	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
168	0.00	0.000	0.024	0.0586	0.0012	0.1496	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
169	0.00	0.000	0.003	0.0580	0.0011	0.1376	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
170	0.69	0.000	0.046	0.0648	0.0011	0.1399	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
171	0.00	0.000	0.019	0.0593	0.0003	0.0389	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
172	0.00	0.000	0.006	0.0580	0.0006	0.0780	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

173	0.06	0.000	0.025	0.0580	0.0008	0.1042	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
174	0.00	0.000	0.003	0.0580	0.0005	0.0650	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
175	0.00	0.000	0.000	0.0580	0.0003	0.0413	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
176	0.22	0.000	0.018	0.0580	0.0002	0.0282	5.33E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
177	0.00	0.000	0.000	0.0580	0.0000	0.0008	8.92E-10	0.0000	0.0000	1.51E-10	0.0000	0.0000	0.00E+00
178	0.00	0.000	0.000	0.0580	0.0003	0.0412	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
179	0.08	0.000	0.003	0.0580	0.0006	0.0705	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
180	0.85	0.000	0.012	0.0649	0.0004	0.0463	6.45E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
181	0.49	0.000	0.078	0.0645	0.0006	0.0705	5.43E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
182	0.00	0.000	0.025	0.0584	0.0012	0.1565	6.97E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
183	0.00	0.000	0.001	0.0580	0.0013	0.1695	6.98E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
184	0.00	0.000	0.003	0.0580	0.0010	0.1298	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
185	0.27	0.000	0.024	0.0580	0.0006	0.0697	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
186	0.03	0.000	0.013	0.0580	0.0001	0.0092	2.64E-09	0.0000	0.0000	1.70E-10	0.0000	0.0000	0.00E+00
187	0.44	0.000	0.018	0.0580	0.0005	0.0691	6.26E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
188	0.07	0.000	0.023	0.0580	0.0004	0.0493	4.15E-09	0.0000	0.0000	1.74E-10	0.0000	0.0000	0.00E+00
189	0.00	0.000	0.003	0.0580	0.0013	0.1686	6.98E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
190	0.01	0.000	0.005	0.0580	0.0010	0.1303	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
191	0.00	0.000	0.000	0.0580	0.0006	0.0696	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
192	0.00	0.000	0.000	0.0580	0.0004	0.0541	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
193	0.00	0.000	0.000	0.0580	0.0006	0.0815	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
194	0.04	0.000	0.004	0.0580	0.0009	0.1168	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
195	0.03	0.000	0.003	0.0580	0.0011	0.1425	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
196	0.00	0.000	0.000	0.0580	0.0014	0.1770	6.99E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
197	0.00	0.000	0.000	0.0580	0.0014	0.1798	6.99E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
198	0.24	0.000	0.010	0.0580	0.0013	0.1610	6.97E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
199	0.01	0.000	0.003	0.0580	0.0011	0.1428	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
200	0.00	0.000	0.000	0.0580	0.0013	0.1691	6.98E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
201	0.00	0.000	0.000	0.0580	0.0011	0.1445	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
202	0.00	0.000	0.000	0.0580	0.0010	0.1225	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
203	0.00	0.000	0.000	0.0580	0.0009	0.1100	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
204	1.03	0.000	0.013	0.0651	0.0009	0.1080	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
205	0.04	0.000	0.012	0.0626	0.0006	0.0771	6.39E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
206	0.07	0.000	0.014	0.0631	0.0012	0.1562	6.97E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
207	0.09	0.000	0.024	0.0631	0.0012	0.1456	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
208	0.00	0.000	0.022	0.0587	0.0008	0.0952	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
209	0.00	0.000	0.002	0.0580	0.0006	0.0797	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
210	0.00	0.000	0.000	0.0580	0.0005	0.0663	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
211	0.00	0.000	0.000	0.0580	0.0004	0.0444	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
212	0.82	0.000	0.016	0.0649	0.0003	0.0432	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
213	0.00	0.000	0.025	0.0584	0.0001	0.0188	3.46E-09	0.0000	0.0000	1.72E-10	0.0000	0.0000	0.00E+00
214	0.00	0.000	0.001	0.0580	0.0010	0.1218	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
215	0.00	0.000	0.000	0.0580	0.0011	0.1337	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
216	0.75	0.000	0.024	0.0648	0.0008	0.0980	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
217	0.01	0.000	0.021	0.0605	0.0001	0.0092	2.60E-09	0.0000	0.0000	1.70E-10	0.0000	0.0000	0.00E+00

218		0.06	0.000	0.010	0.0629	0.0010	0.1202	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
219		0.43	0.000	0.041	0.0644	0.0008	0.1014	6.75E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
220		0.27	0.000	0.050	0.0641	0.0001	0.0144	2.98E-09	0.0000	0.0000	1.71E-10	0.0000	0.0000	0.00E+00
221		0.00	0.000	0.024	0.0585	0.0009	0.1116	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
222		0.00	0.000	0.002	0.0580	0.0011	0.1432	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
223		0.11	0.000	0.012	0.0580	0.0006	0.0784	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
224		0.02	0.000	0.006	0.0580	0.0001	0.0079	3.31E-09	0.0000	0.0000	1.72E-10	0.0000	0.0000	0.00E+00
225		0.02	0.000	0.005	0.0580	0.0004	0.0538	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
226		0.14	0.000	0.004	0.0580	0.0007	0.0838	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
227		0.02	0.000	0.004	0.0580	0.0010	0.1254	6.67E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
228		0.00	0.000	0.000	0.0580	0.0015	0.1918	7.00E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
229		0.14	0.000	0.003	0.0580	0.0013	0.1621	6.98E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
230		0.17	0.000	0.027	0.0580	0.0009	0.1180	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
231		0.00	0.000	0.000	0.0580	0.0015	0.1839	7.00E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
232		0.00	0.000	0.000	0.0580	0.0016	0.2031	7.01E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
233		0.00	0.000	0.000	0.0580	0.0011	0.1427	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
234		0.03	0.000	0.005	0.0580	0.0009	0.1074	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
235		0.01	0.000	0.004	0.0580	0.0007	0.0873	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
236		0.00	0.000	0.002	0.0580	0.0009	0.1074	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
237		0.08	0.000	0.003	0.0580	0.0010	0.1198	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
238		0.47	0.000	0.012	0.0645	0.0009	0.1104	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
239		0.17	0.000	0.053	0.0638	0.0009	0.1191	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
240		0.00	0.000	0.009	0.0606	0.0014	0.1713	6.98E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
241		0.00	0.000	0.014	0.0580	0.0014	0.1712	6.98E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
242		0.01	0.000	0.012	0.0580	0.0010	0.1282	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
243		0.39	0.000	0.024	0.0580	0.0008	0.1025	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
244		0.00	0.000	0.000	0.0580	0.0001	0.0146	3.23E-09	0.0000	0.0000	1.72E-10	0.0000	0.0000	0.00E+00
245		0.17	0.000	0.018	0.0580	0.0008	0.1069	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
246		0.07	0.000	0.004	0.0580	0.0003	0.0427	5.89E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
247		0.00	0.000	0.000	0.0580	0.0007	0.0857	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
248		0.00	0.000	0.000	0.0580	0.0008	0.1065	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
249		0.00	0.000	0.000	0.0580	0.0006	0.0758	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
250		0.00	0.000	0.000	0.0580	0.0004	0.0491	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
251		0.04	0.000	0.003	0.0580	0.0003	0.0438	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
252		0.02	0.000	0.003	0.0580	0.0003	0.0332	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
253		0.03	0.000	0.003	0.0580	0.0006	0.0764	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
254		0.60	0.000	0.009	0.0647	0.0008	0.1029	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
255		0.00	0.000	0.008	0.0607	0.0008	0.0948	6.58E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
256		0.00	0.000	0.005	0.0597	0.0014	0.1765	6.99E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
257		0.07	0.000	0.010	0.0631	0.0013	0.1621	6.98E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
258		0.01	0.000	0.006	0.0615	0.0007	0.0827	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
259	*	0.58	0.000	0.033	0.0624	0.0006	0.0735	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
260		0.00	0.000	0.041	0.0645	0.0005	0.0688	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
261		0.00	0.000	0.013	0.0601	0.0002	0.0206	3.83E-09	0.0000	0.0000	1.73E-10	0.0000	0.0000	0.00E+00
262		0.00	0.000	0.011	0.0580	0.0009	0.1150	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

263		0.00	0.000	0.000	0.0580	0.0009	0.1173	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
264		0.00	0.000	0.000	0.0580	0.0007	0.0890	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
265		0.00	0.000	0.004	0.0580	0.0005	0.0588	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
266		0.07	0.000	0.019	0.0580	0.0004	0.0490	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
267		0.21	0.000	0.055	0.0580	0.0002	0.0242	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
268		0.00	0.000	0.000	0.0580	0.0004	0.0531	5.45E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
269		0.00	0.000	0.000	0.0580	0.0010	0.1264	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
270		0.28	0.000	0.016	0.0580	0.0010	0.1242	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
271		0.00	0.000	0.003	0.0580	0.0005	0.0674	5.93E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
272		0.17	0.000	0.031	0.0580	0.0011	0.1433	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
273		0.02	0.000	0.017	0.0580	0.0005	0.0624	6.17E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
274		0.02	0.000	0.012	0.0580	0.0010	0.1228	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
275		0.29	0.000	0.023	0.0580	0.0009	0.1163	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
276		0.00	0.000	0.000	0.0580	0.0002	0.0286	4.63E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
277	*	0.00	0.000	0.000	0.0580	0.0008	0.1060	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
278	*	0.00	0.000	0.002	0.0580	0.0008	0.0991	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
279		0.00	0.000	0.000	0.0580	0.0006	0.0746	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
280		0.00	0.000	0.000	0.0580	0.0004	0.0553	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
281	*	0.00	0.000	0.000	0.0580	0.0004	0.0468	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
282	*	0.00	0.000	0.002	0.0580	0.0004	0.0490	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
283		0.00	0.000	0.000	0.0580	0.0005	0.0585	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
284		0.00	0.000	0.000	0.0580	0.0006	0.0704	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
285		0.06	0.000	0.003	0.0580	0.0007	0.0841	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
286		0.04	0.000	0.003	0.0580	0.0006	0.0784	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
287		0.12	0.000	0.003	0.0580	0.0007	0.0902	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
288		0.51	0.000	0.008	0.0646	0.0008	0.1050	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
289		0.00	0.000	0.005	0.0611	0.0007	0.0939	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
290		0.00	0.000	0.006	0.0599	0.0012	0.1459	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
291		0.01	0.000	0.008	0.0602	0.0011	0.1410	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
292		0.00	0.000	0.007	0.0591	0.0009	0.1152	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
293		0.00	0.000	0.008	0.0580	0.0006	0.0806	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
294		0.13	0.000	0.013	0.0580	0.0006	0.0742	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
295		0.14	0.000	0.011	0.0580	0.0002	0.0273	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
296		0.22	0.000	0.042	0.0580	0.0001	0.0103	5.36E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
297		0.00	0.000	0.000	0.0580	0.0002	0.0225	4.24E-09	0.0000	0.0000	1.74E-10	0.0000	0.0000	0.00E+00
298		0.00	0.000	0.000	0.0580	0.0007	0.0937	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
299	*	0.00	0.000	0.000	0.0580	0.0009	0.1092	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
300		0.00	0.000	0.000	0.0580	0.0007	0.0900	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
301		0.00	0.000	0.000	0.0580	0.0005	0.0683	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
302		0.00	0.000	0.000	0.0580	0.0004	0.0512	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
303		0.00	0.000	0.003	0.0580	0.0003	0.0405	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
304		0.00	0.000	0.000	0.0580	0.0003	0.0367	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
305		0.19	0.000	0.013	0.0580	0.0003	0.0396	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
306		0.00	0.000	0.000	0.0580	0.0003	0.0360	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
307	*	0.00	0.000	0.000	0.0580	0.0005	0.0647	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

308	*	0.18	0.000	0.022	0.0580	0.0006	0.0751	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
309	*	0.07	0.000	0.012	0.0580	0.0005	0.0621	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
310		0.00	0.000	0.023	0.0580	0.0005	0.0667	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
311		0.00	0.000	0.000	0.0580	0.0004	0.0466	6.67E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
312		0.45	0.000	0.011	0.0645	0.0008	0.1059	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
313		0.80	0.000	0.022	0.0649	0.0004	0.0516	6.41E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
314		0.00	0.000	0.005	0.0610	0.0006	0.0708	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
315		0.00	0.000	0.005	0.0600	0.0008	0.0988	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
316		0.33	0.000	0.029	0.0642	0.0010	0.1273	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
317		0.00	0.000	0.004	0.0611	0.0003	0.0391	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
318		0.40	0.000	0.019	0.0644	0.0008	0.0977	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
319	*	0.00	0.000	0.003	0.0615	0.0002	0.0203	5.88E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
320	*	0.08	0.000	0.020	0.0624	0.0006	0.0741	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
321		0.00	0.000	0.044	0.0613	0.0007	0.0868	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
322		0.00	0.000	0.004	0.0605	0.0005	0.0608	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
323		0.06	0.000	0.008	0.0629	0.0003	0.0406	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
324	*	0.00	0.000	0.003	0.0612	0.0000	0.0042	1.34E-09	0.0000	0.0000	1.60E-10	0.0000	0.0000	0.00E+00
325		0.07	0.000	0.004	0.0632	0.0001	0.0165	4.80E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
326	*	0.14	0.000	0.029	0.0624	0.0001	0.0082	3.65E-09	0.0000	0.0000	1.73E-10	0.0000	0.0000	0.00E+00
327		0.05	0.000	0.052	0.0633	0.0005	0.0676	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
328		0.00	0.000	0.004	0.0611	0.0005	0.0686	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
329		0.00	0.000	0.006	0.0600	0.0010	0.1289	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
330		0.01	0.000	0.009	0.0601	0.0010	0.1253	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
331		0.18	0.000	0.036	0.0638	0.0010	0.1220	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
332		0.00	0.000	0.006	0.0609	0.0006	0.0709	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
333		1.21	0.000	0.044	0.0652	0.0008	0.0960	6.54E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
334		0.00	0.000	0.008	0.0607	0.0007	0.0865	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
335		0.00	0.000	0.008	0.0594	0.0011	0.1374	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
336		0.03	0.000	0.007	0.0611	0.0011	0.1441	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
337		0.00	0.000	0.006	0.0601	0.0008	0.1027	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
338		0.00	0.000	0.009	0.0586	0.0004	0.0519	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
339		0.00	0.000	0.002	0.0580	0.0002	0.0197	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
340		0.72	0.000	0.047	0.0648	0.0003	0.0343	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
341		0.02	0.000	0.004	0.0624	0.0002	0.0279	3.95E-09	0.0000	0.0000	1.73E-10	0.0000	0.0000	0.00E+00
342		0.02	0.000	0.007	0.0622	0.0011	0.1427	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
343		0.00	0.000	0.006	0.0607	0.0010	0.1279	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
344		0.00	0.000	0.005	0.0598	0.0007	0.0865	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
345		0.00	0.000	0.007	0.0586	0.0005	0.0589	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
346		0.00	0.000	0.002	0.0580	0.0004	0.0511	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
347	*	0.00	0.000	0.000	0.0580	0.0005	0.0689	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
348		0.00	0.000	0.000	0.0580	0.0007	0.0902	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
349		0.20	0.000	0.016	0.0580	0.0009	0.1071	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
350		0.02	0.000	0.004	0.0580	0.0008	0.1070	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
351	*	0.07	0.000	0.027	0.0580	0.0012	0.1470	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
352		0.00	0.000	0.027	0.0580	0.0011	0.1342	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

353		0.02	0.000	0.006	0.0580	0.0010	0.1312	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
354		0.05	0.000	0.005	0.0580	0.0009	0.1135	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
355		0.06	0.000	0.005	0.0580	0.0008	0.0957	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
356		0.06	0.000	0.005	0.0580	0.0008	0.1063	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
357		0.06	0.000	0.006	0.0580	0.0009	0.1162	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
358		0.22	0.000	0.036	0.0580	0.0010	0.1275	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
359		0.15	0.000	0.009	0.0580	0.0008	0.0965	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
360		0.00	0.000	0.000	0.0580	0.0010	0.1213	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
361		0.00	0.000	0.000	0.0580	0.0012	0.1467	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
362	*	0.00	0.000	0.004	0.0580	0.0010	0.1280	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
363	*	0.00	0.000	0.000	0.0580	0.0008	0.0964	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
364	*	0.00	0.000	0.000	0.0580	0.0006	0.0703	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
365	*	0.00	0.000	0.000	0.0580	0.0004	0.0517	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

* = Frozen (air or soil)

Annual Totals for Year 1			
	inches	cubic feet	percent
Precipitation	35.38	128,415.6	100.00
Runoff	0.000	0.0000	0.00
Evapotranspiration	8.395	30,473.1	23.73
Drainage Collected from Layer 3	26.9861	97,959.4	76.28
Percolation/Leakage through Layer 5	0.000002	0.0086	0.00
Average Head on Top of Layer 4	0.0006	---	---
Drainage Collected from Layer 7	0.0000	0.0084	0.00
Percolation/Leakage through Layer 9	0.000000	0.0002	0.00
Average Head on Top of Layer 8	0.0000	---	---
Percolation/Leakage through Layer 10	0.000000	0.0000	0.00
Change in Water Storage	-0.0047	-17.0	-0.01
Soil Water at Start of Year	60.5438	219,774.0	171.14
Soil Water at End of Year	60.5391	219,757.0	171.13
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

Daily Output for Year 2

Column key: Head #1: drainage from Layer 4 — Head #2: drainage from Layer 8
Drain #1: drainage from Layer 3 — Drain #2: drainage from Layer 7
Leak #1: leakage thru Layer 5 — Leak #2: leakage thru Layer 9 — Leak #3: leakage thru Layer 10

Title: Wayne Disposal-Initial Lift-Sideslope
Simulated On: 3/10/2021 13:00

Day	Freezing Status* Air	Soil	Rain (inches)	Runoff (inches)	ET (inches)	Evap. Zone Water (in/in)	Head #1 (inches)	Drain #1 (inches)	Leak #1 (inches)	Head #2 (inches)	Drain #2 (inches)	Leak #2 (inches)	Head #3 (inches)	Drain #3 (inches)	Leak #3 (inches)
1	*		0.12	0.000	0.008	0.0580	0.0004	0.0463	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
2	*		0.00	0.000	0.005	0.0580	0.0002	0.0301	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
3	*		0.00	0.000	0.006	0.0580	0.0003	0.0349	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
4	*		0.07	0.000	0.008	0.0580	0.0004	0.0487	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
5	*		0.00	0.000	0.005	0.0580	0.0005	0.0630	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
6	*		0.05	0.000	0.007	0.0580	0.0006	0.0736	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
7	*		0.00	0.000	0.005	0.0580	0.0006	0.0800	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
8	*	*	0.00	0.000	0.003	0.0580	0.0006	0.0797	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
9	*	*	0.30	0.000	0.004	0.0580	0.0007	0.0914	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
10	*	*	0.00	0.000	0.017	0.0580	0.0007	0.0878	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
11	*	*	0.00	0.000	0.023	0.0580	0.0006	0.0812	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
12	*	*	0.38	0.000	0.021	0.0580	0.0006	0.0753	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
13		*	0.07	0.000	0.000	0.1072	0.0006	0.0709	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
14		*	0.00	0.000	0.018	0.1190	0.0005	0.0679	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
15		*	0.00	0.000	0.000	0.1190	0.0005	0.0661	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
16		*	0.00	0.000	0.000	0.1190	0.0005	0.0651	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
17		*	0.00	0.000	0.000	0.1190	0.0005	0.0645	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
18	*	*	0.00	0.000	0.000	0.1190	0.0005	0.0642	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
19	*	*	0.00	0.000	0.000	0.1190	0.0005	0.0640	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
20	*	*	0.01	0.000	0.006	0.1190	0.0005	0.0638	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
21		*	0.00	0.000	0.000	0.1190	0.0005	0.0636	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
22		*	0.00	0.000	0.000	0.1190	0.0005	0.0632	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
23		*	0.00	0.000	0.000	0.1190	0.0005	0.0627	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
24	*	*	0.11	0.000	0.017	0.1190	0.0005	0.0621	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
25	*	*	0.00	0.000	0.011	0.1190	0.0005	0.0615	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
26	*	*	0.00	0.000	0.005	0.1190	0.0005	0.0608	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
27	*	*	0.00	0.000	0.007	0.1190	0.0005	0.0600	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
28	*	*	0.02	0.000	0.000	0.1190	0.0005	0.0592	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
29	*	*	0.00	0.000	0.016	0.1190	0.0005	0.0584	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
30	*	*	0.00	0.000	0.006	0.1190	0.0005	0.0575	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
31	*	*	0.00	0.000	0.025	0.1190	0.0004	0.0566	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
32	*	*	0.00	0.000	0.039	0.1190	0.0004	0.0557	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
33		*	0.00	0.000	0.007	0.1190	0.0004	0.0549	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
34	*	*	0.00	0.000	0.000	0.1190	0.0004	0.0540	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
35		*	0.00	0.000	0.000	0.1190	0.0004	0.0531	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
36	*	*	0.64	0.000	0.030	0.1190	0.0004	0.0522	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
37	*	*	0.00	0.000	0.013	0.1190	0.0004	0.0514	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

38	*	*	0.00	0.000	0.022	0.1190	0.0004	0.0505	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
39		*	0.00	0.000	0.000	0.1665	0.0004	0.0497	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
40	*	*	0.00	0.000	0.000	0.1665	0.0004	0.0489	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
41	*	*	0.01	0.000	0.007	0.1665	0.0004	0.0481	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
42	*	*	0.02	0.000	0.019	0.1665	0.0004	0.0473	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
43	*	*	0.00	0.000	0.003	0.1665	0.0004	0.0466	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
44	*	*	0.00	0.000	0.000	0.1665	0.0004	0.0458	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
45	*	*	0.00	0.000	0.000	0.1665	0.0004	0.0451	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
46		*	0.00	0.000	0.000	0.1665	0.0004	0.0444	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
47	*	*	0.00	0.000	0.001	0.1665	0.0003	0.0437	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
48		*	0.16	0.000	0.001	0.1799	0.0003	0.0430	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
49		*	0.12	0.000	0.001	0.1899	0.0003	0.0424	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
50		*	0.08	0.000	0.001	0.1967	0.0003	0.0417	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
51		*	0.03	0.000	0.001	0.1988	0.0003	0.0411	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
52		*	0.02	0.000	0.001	0.2001	0.0003	0.0405	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
53		*	0.00	0.000	0.000	0.2001	0.0003	0.0399	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
54	*	*	0.00	0.000	0.000	0.2001	0.0003	0.0393	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
55		*	0.00	0.000	0.000	0.2001	0.0003	0.0387	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
56		*	0.00	0.000	0.000	0.2001	0.0003	0.0382	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
57	*	*	0.00	0.000	0.000	0.2001	0.0003	0.0376	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
58	*	*	0.01	0.000	0.012	0.2001	0.0003	0.0371	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
59		*	0.23	0.000	0.001	0.2196	0.0003	0.0366	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
60		*	0.02	0.000	0.001	0.2210	0.0003	0.0361	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
61		*	0.20	0.000	0.001	0.2376	0.0003	0.0356	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
62		*	0.00	0.000	0.000	0.2376	0.0003	0.0351	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
63		*	0.03	0.000	0.001	0.2403	0.0003	0.0346	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
64	*	*	0.05	0.000	0.051	0.2403	0.0003	0.0342	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
65	*	*	0.03	0.000	0.017	0.2403	0.0003	0.0337	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
66	*	*	0.21	0.000	0.015	0.2403	0.0003	0.0333	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
67		*	0.07	0.000	0.011	0.2633	0.0003	0.0329	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
68	*	*	0.42	0.000	0.016	0.2633	0.0003	0.0324	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
69	*	*	0.27	0.000	0.016	0.2633	0.0003	0.0320	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
70	*	*	0.00	0.000	0.024	0.2633	0.0003	0.0316	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
71		*	0.00	0.000	0.000	0.3163	0.0002	0.0312	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
72	*	*	0.00	0.000	0.000	0.3163	0.0002	0.0308	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
73		*	0.00	0.000	0.000	0.3163	0.0002	0.0305	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
74	*	*	0.00	0.000	0.000	0.3163	0.0002	0.0301	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
75	*	*	0.14	0.000	0.034	0.3163	0.0002	0.0297	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
76		*	0.01	0.000	0.119	0.3165	0.0002	0.0294	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
77		*	0.45	0.000	0.001	0.3540	0.0002	0.0290	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
78		*	0.33	0.000	0.001	0.3810	0.0002	0.0287	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
79	*	*	0.00	0.000	0.000	0.3810	0.0002	0.0284	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
80	*	*	0.01	0.000	0.010	0.3810	0.0002	0.0281	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
81	*	*	0.00	0.000	0.000	0.3810	0.0002	0.0277	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
82		*	0.00	0.000	0.000	0.3810	0.0002	0.0274	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

83		*	0.00	0.000	0.000	0.3810	0.0002	0.0271	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
84		*	0.00	0.000	0.000	0.3810	0.0002	0.0268	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
85		*	0.06	0.000	0.001	0.3860	0.0002	0.0265	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
86	*	*	0.68	0.000	0.016	0.3860	0.0002	0.0262	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
87	*	*	0.02	0.000	0.029	0.3860	0.0002	0.0260	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
88	*	*	0.00	0.000	0.018	0.3860	0.0002	0.0257	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
89		*	0.11	0.000	0.000	0.4487	0.0002	0.0254	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
90	*	*	0.06	0.000	0.032	0.4487	0.0002	0.0251	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
91	*	*	0.38	0.000	0.012	0.4487	0.0002	0.0249	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
92	*	*	0.03	0.000	0.000	0.4487	0.0002	0.0246	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
93	*	*	0.05	0.000	0.000	0.4487	0.0002	0.0244	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
94	*	*	0.27	0.000	0.018	0.4487	0.0002	0.0241	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
95	*	*	0.00	0.000	0.045	0.4487	0.0002	0.0239	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
96	*	*	0.72	0.000	0.027	0.4487	0.0002	0.0237	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
97		*	0.10	0.000	0.000	0.4570	0.0002	0.0248	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
98		*	0.07	0.000	0.001	0.4570	0.0001	0.0095	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
99		*	0.04	0.000	0.001	0.4570	0.0001	0.0183	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
100		*	0.10	0.000	0.001	0.4570	0.0002	0.0239	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
101	*	*	0.00	0.000	0.000	0.4570	0.0002	0.0272	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
102	*	*	0.00	0.000	0.000	0.4570	0.0002	0.0288	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
103	*	*	0.00	0.000	0.000	0.4570	0.0002	0.0293	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
104		*	0.06	0.000	0.001	0.4570	0.0003	0.0440	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
105	*	*	0.00	0.000	0.003	0.4570	0.0002	0.0205	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
106		*	0.00	0.000	0.000	0.4570	0.0002	0.0219	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
107		*	0.00	0.000	0.000	0.4570	0.0002	0.0228	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
108		*	0.00	0.000	0.000	0.4570	0.0002	0.0242	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
109		*	0.00	0.000	0.000	0.4570	0.0002	0.0276	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
110		*	0.00	0.000	0.000	0.4570	0.0002	0.0286	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
111		*	0.00	0.000	0.000	0.4570	0.0002	0.0279	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
112		*	0.00	0.000	0.000	0.4570	0.0002	0.0263	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
113		*	0.00	0.000	0.000	0.4570	0.0002	0.0242	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
114		*	0.10	0.000	0.001	0.4570	0.0002	0.0222	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
115			0.00	0.000	0.221	0.2440	0.0000	0.0024	2.87E-09	0.0000	0.0000	1.71E-10	0.0000	0.0000	0.00E+00
116			0.00	0.000	0.122	0.2181	0.0000	0.0031	6.81E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
117			0.00	0.000	0.237	0.1904	0.0001	0.0065	6.81E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
118			0.00	0.000	0.130	0.1746	0.0001	0.0091	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
119			0.00	0.000	0.054	0.1678	0.0001	0.0139	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
120			0.08	0.000	0.042	0.1691	0.0002	0.0256	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
121			0.00	0.000	0.035	0.1638	0.0002	0.0229	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
122			0.39	0.000	0.032	0.1915	0.0002	0.0208	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
123			0.06	0.000	0.260	0.1724	0.0002	0.0189	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
124			0.83	0.000	0.029	0.2380	0.0001	0.0174	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
125			0.00	0.000	0.212	0.2115	0.0001	0.0140	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
126			0.36	0.000	0.170	0.2140	0.0001	0.0098	4.97E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
127			0.15	0.000	0.191	0.2021	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00

128	0.09	0.000	0.282	0.1812	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
129	0.02	0.000	0.220	0.1608	0.0000	0.0000	2.35E-10	0.0000	0.0000	1.02E-10	0.0000	0.0000	0.00E+00
130	0.18	0.000	0.133	0.1620	0.0000	0.0045	6.36E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
131	0.36	0.000	0.186	0.1756	0.0001	0.0106	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
132	0.00	0.000	0.294	0.1494	0.0003	0.0345	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
133	0.00	0.000	0.126	0.1374	0.0002	0.0256	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
134	0.00	0.000	0.054	0.1237	0.0002	0.0260	6.56E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
135	0.47	0.000	0.042	0.1547	0.0000	0.0003	4.05E-10	0.0000	0.0000	1.25E-10	0.0000	0.0000	0.00E+00
136	0.10	0.000	0.335	0.1313	0.0002	0.0206	5.00E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
137	0.15	0.000	0.036	0.1297	0.0005	0.0576	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
138	0.06	0.000	0.153	0.1111	0.0004	0.0487	6.72E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
139	0.21	0.000	0.032	0.1197	0.0004	0.0498	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
140	0.05	0.000	0.106	0.1131	0.0009	0.1102	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
141	0.15	0.000	0.081	0.1143	0.0008	0.1008	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
142	0.01	0.000	0.084	0.1071	0.0006	0.0750	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
143	0.06	0.000	0.103	0.0990	0.0007	0.0891	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
144	0.02	0.000	0.093	0.0865	0.0004	0.0484	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
145	0.14	0.000	0.055	0.0931	0.0001	0.0148	5.06E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
146	0.07	0.000	0.042	0.0916	0.0005	0.0669	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
147	0.00	0.000	0.035	0.0845	0.0004	0.0472	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
148	0.11	0.000	0.032	0.0899	0.0003	0.0345	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
149	0.15	0.000	0.288	0.0669	0.0007	0.0861	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
150	0.16	0.000	0.029	0.0778	0.0002	0.0279	4.90E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
151	0.00	0.000	0.125	0.0591	0.0006	0.0758	6.47E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
152	0.00	0.000	0.002	0.0587	0.0006	0.0762	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
153	0.00	0.000	0.002	0.0584	0.0007	0.0880	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
154	0.00	0.000	0.001	0.0580	0.0006	0.0749	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
155	0.00	0.000	0.000	0.0580	0.0005	0.0619	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
156	0.00	0.000	0.000	0.0580	0.0004	0.0528	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
157	0.18	0.000	0.009	0.0580	0.0005	0.0574	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
158	0.03	0.000	0.003	0.0580	0.0002	0.0249	6.75E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
159	0.00	0.000	0.000	0.0580	0.0004	0.0548	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
160	0.01	0.000	0.003	0.0580	0.0007	0.0830	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
161	0.00	0.000	0.000	0.0580	0.0006	0.0797	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
162	0.00	0.000	0.000	0.0580	0.0006	0.0755	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
163	0.00	0.000	0.000	0.0580	0.0006	0.0702	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
164	0.00	0.000	0.000	0.0580	0.0005	0.0667	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
165	0.00	0.000	0.000	0.0580	0.0005	0.0653	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
166	0.00	0.000	0.000	0.0580	0.0005	0.0656	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
167	0.00	0.000	0.000	0.0580	0.0005	0.0669	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
168	0.63	0.000	0.007	0.0647	0.0006	0.0736	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
169	0.21	0.000	0.142	0.0638	0.0003	0.0406	6.17E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
170	0.06	0.000	0.014	0.0629	0.0007	0.0923	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
171	0.00	0.000	0.014	0.0599	0.0008	0.1007	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
172	0.00	0.000	0.010	0.0580	0.0008	0.1019	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

173	0.00	0.000	0.000	0.0580	0.0007	0.0870	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
174	0.00	0.000	0.000	0.0580	0.0006	0.0739	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
175	0.00	0.000	0.000	0.0580	0.0005	0.0570	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
176	0.00	0.000	0.000	0.0580	0.0003	0.0415	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
177	0.00	0.000	0.000	0.0580	0.0002	0.0295	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
178	0.00	0.000	0.000	0.0580	0.0002	0.0224	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
179	0.00	0.000	0.000	0.0580	0.0002	0.0207	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
180	0.00	0.000	0.000	0.0580	0.0002	0.0240	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
181	0.00	0.000	0.000	0.0580	0.0002	0.0307	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
182	0.09	0.000	0.003	0.0580	0.0004	0.0449	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
183	0.00	0.000	0.000	0.0580	0.0003	0.0316	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
184	0.00	0.000	0.000	0.0580	0.0005	0.0584	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
185	0.00	0.000	0.000	0.0580	0.0005	0.0683	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
186	0.00	0.000	0.000	0.0580	0.0006	0.0704	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
187	0.00	0.000	0.000	0.0580	0.0006	0.0697	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
188	0.00	0.000	0.000	0.0580	0.0005	0.0683	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
189	0.00	0.000	0.000	0.0580	0.0005	0.0669	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
190	0.00	0.000	0.000	0.0580	0.0005	0.0657	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
191	0.00	0.000	0.000	0.0580	0.0005	0.0649	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
192	0.77	0.000	0.007	0.0649	0.0005	0.0686	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
193	1.02	0.000	0.110	0.0650	0.0003	0.0400	6.56E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
194	0.00	0.000	0.021	0.0590	0.0005	0.0603	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
195	0.03	0.000	0.017	0.0600	0.0007	0.0849	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
196	0.10	0.000	0.024	0.0632	0.0008	0.1061	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
197	0.59	0.000	0.056	0.0647	0.0007	0.0895	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
198	0.00	0.000	0.024	0.0585	0.0001	0.0165	6.03E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
199	0.01	0.000	0.010	0.0580	0.0004	0.0472	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
200	0.21	0.000	0.056	0.0580	0.0007	0.0902	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
201	0.04	0.000	0.032	0.0580	0.0002	0.0212	5.84E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
202	0.22	0.000	0.024	0.0580	0.0006	0.0773	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
203	0.00	0.000	0.000	0.0580	0.0000	0.0055	2.28E-09	0.0000	0.0000	1.68E-10	0.0000	0.0000	0.00E+00
204	0.00	0.000	0.000	0.0580	0.0005	0.0590	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
205	0.00	0.000	0.000	0.0580	0.0005	0.0624	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
206	0.00	0.000	0.000	0.0580	0.0003	0.0407	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
207	0.00	0.000	0.000	0.0580	0.0002	0.0200	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
208	0.00	0.000	0.000	0.0580	0.0001	0.0125	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
209	0.00	0.000	0.000	0.0580	0.0002	0.0214	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
210	0.00	0.000	0.000	0.0580	0.0003	0.0417	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
211	0.00	0.000	0.000	0.0580	0.0005	0.0645	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
212	0.00	0.000	0.000	0.0580	0.0007	0.0831	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
213	0.00	0.000	0.000	0.0580	0.0008	0.0954	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
214	0.00	0.000	0.000	0.0580	0.0008	0.1022	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
215	0.00	0.000	0.000	0.0580	0.0008	0.1052	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
216	0.00	0.000	0.000	0.0580	0.0008	0.1057	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
217	0.00	0.000	0.000	0.0580	0.0008	0.1048	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

218	0.00	0.000	0.000	0.0580	0.0008	0.1032	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
219	0.00	0.000	0.000	0.0580	0.0008	0.1011	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
220	0.14	0.000	0.003	0.0580	0.0008	0.1007	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
221	0.00	0.000	0.000	0.0580	0.0007	0.0869	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
222	0.00	0.000	0.000	0.0580	0.0008	0.1003	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
223	0.00	0.000	0.000	0.0580	0.0008	0.0980	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
224	0.00	0.000	0.000	0.0580	0.0007	0.0920	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
225	0.01	0.000	0.002	0.0580	0.0007	0.0870	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
226	0.00	0.000	0.000	0.0580	0.0006	0.0793	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
227	0.02	0.000	0.002	0.0580	0.0007	0.0819	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
228	0.00	0.000	0.000	0.0580	0.0005	0.0657	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
229	0.00	0.000	0.000	0.0580	0.0006	0.0743	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
230	0.00	0.000	0.000	0.0580	0.0006	0.0755	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
231	0.00	0.000	0.000	0.0580	0.0006	0.0739	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
232	0.00	0.000	0.000	0.0580	0.0006	0.0714	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
233	0.00	0.000	0.000	0.0580	0.0005	0.0689	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
234	0.04	0.000	0.002	0.0580	0.0006	0.0704	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
235	0.10	0.000	0.002	0.0580	0.0005	0.0608	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
236	0.00	0.000	0.000	0.0580	0.0004	0.0515	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
237	0.00	0.000	0.000	0.0580	0.0005	0.0657	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
238	0.00	0.000	0.000	0.0580	0.0005	0.0683	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
239	0.00	0.000	0.000	0.0580	0.0005	0.0663	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
240	0.00	0.000	0.000	0.0580	0.0005	0.0629	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
241	0.00	0.000	0.000	0.0580	0.0005	0.0593	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
242	0.22	0.000	0.006	0.0580	0.0005	0.0617	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
243	0.00	0.000	0.000	0.0580	0.0003	0.0367	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
244	0.00	0.000	0.000	0.0580	0.0004	0.0544	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
245	0.00	0.000	0.000	0.0580	0.0005	0.0587	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
246	0.00	0.000	0.000	0.0580	0.0005	0.0571	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
247	0.00	0.000	0.000	0.0580	0.0004	0.0534	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
248	0.37	0.000	0.005	0.0580	0.0005	0.0589	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
249	0.11	0.000	0.014	0.0580	0.0003	0.0374	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
250	0.02	0.000	0.020	0.0580	0.0001	0.0135	6.01E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
251	0.00	0.000	0.000	0.0580	0.0003	0.0395	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
252	0.00	0.000	0.000	0.0580	0.0004	0.0527	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
253	1.08	0.000	0.029	0.0651	0.0006	0.0780	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
254	0.03	0.000	0.014	0.0623	0.0002	0.0276	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
255	0.00	0.000	0.017	0.0591	0.0003	0.0376	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
256	0.05	0.000	0.009	0.0626	0.0003	0.0420	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
257	0.00	0.000	0.007	0.0606	0.0004	0.0515	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
258	0.00	0.000	0.010	0.0590	0.0004	0.0559	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
259	0.00	0.000	0.005	0.0580	0.0004	0.0470	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
260	0.00	0.000	0.000	0.0580	0.0003	0.0409	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
261	0.03	0.000	0.005	0.0580	0.0003	0.0349	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
262	0.30	0.000	0.016	0.0580	0.0002	0.0303	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

263		0.03	0.000	0.005	0.0580	0.0000	0.0002	2.81E-10	0.0000	0.0000	1.10E-10	0.0000	0.0000	0.00E+00
264		0.00	0.000	0.000	0.0580	0.0000	0.0019	2.07E-09	0.0000	0.0000	1.67E-10	0.0000	0.0000	0.00E+00
265		0.00	0.000	0.000	0.0580	0.0002	0.0229	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
266		0.00	0.000	0.000	0.0580	0.0003	0.0316	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
267		0.00	0.000	0.000	0.0580	0.0002	0.0288	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
268		0.42	0.000	0.016	0.0644	0.0003	0.0363	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
269		0.07	0.000	0.009	0.0631	0.0000	0.0018	7.13E-10	0.0000	0.0000	1.45E-10	0.0000	0.0000	0.00E+00
270		0.00	0.000	0.003	0.0612	0.0000	0.0011	1.14E-09	0.0000	0.0000	1.56E-10	0.0000	0.0000	0.00E+00
271		0.00	0.000	0.002	0.0607	0.0002	0.0280	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
272		0.00	0.000	0.002	0.0603	0.0004	0.0466	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
273		0.38	0.000	0.011	0.0643	0.0004	0.0565	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
274		0.00	0.000	0.007	0.0608	0.0000	0.0025	6.03E-10	0.0000	0.0000	1.39E-10	0.0000	0.0000	0.00E+00
275		0.00	0.000	0.013	0.0586	0.0002	0.0251	6.71E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
276		0.29	0.000	0.026	0.0642	0.0005	0.0628	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
277		0.00	0.000	0.008	0.0607	0.0001	0.0072	3.71E-09	0.0000	0.0000	1.73E-10	0.0000	0.0000	0.00E+00
278		0.00	0.000	0.011	0.0589	0.0003	0.0425	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
279		0.00	0.000	0.004	0.0580	0.0004	0.0561	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
280		0.00	0.000	0.000	0.0580	0.0004	0.0524	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
281		0.00	0.000	0.000	0.0580	0.0003	0.0407	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
282		0.00	0.000	0.000	0.0580	0.0002	0.0261	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
283	*	0.00	0.000	0.000	0.0580	0.0001	0.0149	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
284		0.00	0.000	0.000	0.0580	0.0001	0.0106	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
285	*	0.00	0.000	0.000	0.0580	0.0001	0.0145	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
286		0.00	0.000	0.000	0.0580	0.0002	0.0247	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
287		0.00	0.000	0.000	0.0580	0.0003	0.0382	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
288		0.13	0.000	0.003	0.0580	0.0004	0.0562	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
289		0.00	0.000	0.003	0.0580	0.0004	0.0470	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
290		0.00	0.000	0.000	0.0580	0.0006	0.0790	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
291		0.16	0.000	0.005	0.0580	0.0007	0.0923	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
292		0.00	0.000	0.000	0.0580	0.0005	0.0630	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
293		0.00	0.000	0.000	0.0580	0.0007	0.0925	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
294		0.00	0.000	0.000	0.0580	0.0007	0.0911	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
295		0.00	0.000	0.000	0.0580	0.0007	0.0827	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
296		0.55	0.000	0.008	0.0646	0.0007	0.0830	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
297		0.00	0.000	0.005	0.0610	0.0003	0.0315	6.07E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
298		0.00	0.000	0.006	0.0599	0.0006	0.0802	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
299		0.02	0.000	0.008	0.0606	0.0008	0.0967	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
300		0.28	0.000	0.038	0.0641	0.0008	0.1041	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
301		0.00	0.000	0.006	0.0609	0.0002	0.0271	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
302		0.00	0.000	0.014	0.0589	0.0005	0.0607	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
303		0.00	0.000	0.004	0.0580	0.0005	0.0652	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
304		0.12	0.000	0.008	0.0580	0.0006	0.0755	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
305		0.00	0.000	0.000	0.0580	0.0001	0.0131	4.93E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
306		0.03	0.000	0.005	0.0580	0.0004	0.0519	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
307		0.00	0.000	0.000	0.0580	0.0002	0.0294	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

308		0.00	0.000	0.000	0.0580	0.0003	0.0399	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
309		0.00	0.000	0.000	0.0580	0.0003	0.0390	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
310	*	0.00	0.000	0.000	0.0580	0.0003	0.0350	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
311	*	0.00	0.000	0.000	0.0580	0.0003	0.0319	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
312		0.00	0.000	0.000	0.0580	0.0002	0.0313	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
313		0.00	0.000	0.000	0.0580	0.0003	0.0335	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
314		0.00	0.000	0.000	0.0580	0.0003	0.0380	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
315	*	0.24	0.000	0.020	0.0580	0.0004	0.0491	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
316		0.18	0.000	0.005	0.0580	0.0003	0.0430	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
317	*	0.03	0.000	0.033	0.0580	0.0002	0.0286	5.14E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
318	*	0.43	0.000	0.011	0.0580	0.0007	0.0928	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
319		0.22	0.000	0.000	0.0647	0.0008	0.1011	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
320		0.00	0.000	0.003	0.0612	0.0003	0.0319	6.74E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
321	*	0.00	0.000	0.003	0.0605	0.0005	0.0692	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
322		0.00	0.000	0.005	0.0597	0.0007	0.0860	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
323		0.00	0.000	0.004	0.0590	0.0007	0.0883	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
324	*	0.00	0.000	0.000	0.0590	0.0006	0.0718	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
325		0.00	0.000	0.004	0.0583	0.0005	0.0578	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
326		0.00	0.000	0.000	0.0580	0.0003	0.0369	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
327		0.00	0.000	0.000	0.0580	0.0002	0.0264	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
328		0.00	0.000	0.000	0.0580	0.0002	0.0197	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
329		0.00	0.000	0.000	0.0580	0.0001	0.0182	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
330		0.00	0.000	0.000	0.0580	0.0002	0.0217	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
331		0.00	0.000	0.000	0.0580	0.0002	0.0291	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
332		0.00	0.000	0.000	0.0580	0.0003	0.0384	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
333		0.02	0.000	0.004	0.0580	0.0004	0.0527	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
334		0.34	0.000	0.014	0.0580	0.0004	0.0483	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
335		0.16	0.000	0.010	0.0580	0.0004	0.0550	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
336		0.00	0.000	0.000	0.0580	0.0004	0.0458	6.26E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
337		0.00	0.000	0.000	0.0580	0.0009	0.1074	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
338		0.00	0.000	0.000	0.0580	0.0009	0.1111	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
339		0.00	0.000	0.000	0.0580	0.0007	0.0934	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
340		0.00	0.000	0.000	0.0580	0.0006	0.0752	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
341	*	0.00	0.000	0.000	0.0580	0.0005	0.0603	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
342		0.01	0.000	0.004	0.0580	0.0004	0.0502	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
343		0.00	0.000	0.000	0.0580	0.0003	0.0399	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
344	*	0.00	0.000	0.000	0.0580	0.0003	0.0377	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
345	*	0.00	0.000	0.000	0.0580	0.0003	0.0377	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
346		0.06	0.000	0.003	0.0580	0.0004	0.0470	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
347		0.11	0.000	0.003	0.0580	0.0003	0.0349	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
348		0.00	0.000	0.000	0.0580	0.0002	0.0247	6.43E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
349		0.01	0.000	0.003	0.0580	0.0005	0.0601	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
350		0.21	0.000	0.010	0.0580	0.0006	0.0774	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
351		0.05	0.000	0.006	0.0580	0.0004	0.0459	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
352		0.00	0.000	0.000	0.0580	0.0004	0.0524	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

353		0.00	0.000	0.000	0.0580	0.0006	0.0807	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
354		0.00	0.000	0.000	0.0580	0.0006	0.0791	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
355		0.02	0.000	0.005	0.0580	0.0006	0.0736	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
356		0.02	0.000	0.004	0.0580	0.0005	0.0577	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
357		0.05	0.000	0.004	0.0580	0.0004	0.0558	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
358		0.00	0.000	0.002	0.0580	0.0001	0.0180	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
359		0.13	0.000	0.003	0.0580	0.0004	0.0531	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
360		0.03	0.000	0.003	0.0580	0.0002	0.0239	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
361	*	0.00	0.000	0.000	0.0580	0.0003	0.0317	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
362	*	0.00	0.000	0.000	0.0580	0.0005	0.0569	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
363	*	0.01	0.000	0.010	0.0580	0.0005	0.0611	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
364	*	0.00	0.000	0.000	0.0580	0.0005	0.0576	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
365	*	0.10	0.000	0.024	0.0580	0.0005	0.0600	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

* = Frozen (air or soil)

Annual Totals for Year 2			
	inches	cubic feet	percent
Precipitation	23.58	85,610.0	100.00
Runoff	0.000	0.0000	0.00
Evapotranspiration	6.793	24,658.8	28.80
Drainage Collected from Layer 3	17.9510	65,162.2	76.12
Percolation/Leakage through Layer 5	0.000002	0.0088	0.00
Average Head on Top of Layer 4	0.0004	---	---
Drainage Collected from Layer 7	0.0000	0.0085	0.00
Percolation/Leakage through Layer 9	0.000000	0.0002	0.00
Average Head on Top of Layer 8	0.0000	---	---
Percolation/Leakage through Layer 10	0.000000	0.0000	0.00
Change in Water Storage	-1.1600	-4,211.0	-4.92
Soil Water at Start of Year	60.5391	219,757.0	256.70
Soil Water at End of Year	59.3276	215,359.3	251.56
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0514	186.8	0.22
Annual Water Budget Balance	0.0000	0.0000	0.00

Daily Output for Year 3

Column key: Head #1: drainage from Layer 4 | Head #2: drainage from Layer 8
Drain #1: drainage from Layer 3 | Drain #2: drainage from Layer 7
Leak #1: leakage thru Layer 5 | Leak #2: leakage thru Layer 9 | Leak #3: leakage thru Layer 10

Title: Wayne Disposal-Initial Lift-Sideslope
Simulated On: 3/10/2021 13:00

Day	Freezing Status* Air	Soil	Rain (inches)	Runoff (inches)	ET (inches)	Evap. Zone Water (in/in)	Head #1 (inches)	Drain #1 (inches)	Leak #1 (inches)	Head #2 (inches)	Drain #2 (inches)	Leak #2 (inches)	Head #3 (inches)	Drain #3 (inches)	Leak #3 (inches)
1			0.01	0.000	0.055	0.0580	0.0003	0.0342	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
2			0.00	0.000	0.000	0.0580	0.0003	0.0374	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
3	*		0.00	0.000	0.000	0.0580	0.0003	0.0398	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
4			0.00	0.000	0.000	0.0580	0.0003	0.0402	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
5			0.00	0.000	0.000	0.0580	0.0003	0.0398	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
6	*		0.00	0.000	0.000	0.0580	0.0003	0.0395	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
7	*		0.00	0.000	0.000	0.0580	0.0003	0.0394	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
8	*		0.00	0.000	0.000	0.0580	0.0003	0.0397	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
9	*		0.00	0.000	0.000	0.0580	0.0003	0.0403	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
10	*		0.00	0.000	0.000	0.0580	0.0003	0.0411	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
11			0.04	0.000	0.003	0.0580	0.0004	0.0477	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
12	*		0.10	0.000	0.017	0.0580	0.0003	0.0396	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
13	*		0.00	0.000	0.018	0.0580	0.0003	0.0379	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
14	*		0.15	0.000	0.022	0.0580	0.0003	0.0395	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
15	*		0.00	0.000	0.027	0.0580	0.0003	0.0421	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
16	*		0.00	0.000	0.025	0.0580	0.0004	0.0457	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
17	*	*	0.13	0.000	0.023	0.0580	0.0003	0.0423	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
18	*	*	0.13	0.000	0.000	0.0580	0.0005	0.0579	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
19	*	*	0.10	0.000	0.022	0.0580	0.0005	0.0616	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
20	*	*	0.00	0.000	0.018	0.0580	0.0005	0.0601	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
21	*	*	0.00	0.000	0.000	0.0580	0.0005	0.0568	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
22	*	*	0.21	0.000	0.008	0.0580	0.0004	0.0530	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
23	*	*	0.00	0.000	0.017	0.0580	0.0004	0.0495	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
24	*	*	0.00	0.000	0.000	0.0580	0.0004	0.0464	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
25		*	0.00	0.000	0.011	0.0710	0.0003	0.0438	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
26	*	*	0.16	0.000	0.016	0.0710	0.0003	0.0417	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
27		*	0.12	0.000	0.000	0.1217	0.0003	0.0400	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
28		*	0.00	0.000	0.000	0.1217	0.0003	0.0387	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
29		*	0.00	0.000	0.000	0.1217	0.0003	0.0377	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
30		*	0.00	0.000	0.000	0.1217	0.0003	0.0370	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
31		*	0.00	0.000	0.000	0.1217	0.0003	0.0364	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
32		*	0.01	0.000	0.001	0.1223	0.0003	0.0360	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
33		*	0.26	0.000	0.001	0.1435	0.0003	0.0357	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
34	*	*	0.00	0.000	0.000	0.1435	0.0003	0.0355	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
35		*	0.19	0.000	0.001	0.1595	0.0003	0.0354	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
36		*	0.00	0.000	0.000	0.1595	0.0003	0.0352	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
37		*	0.00	0.000	0.000	0.1595	0.0003	0.0351	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

38		*	0.00	0.000	0.000	0.1595	0.0003	0.0351	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
39			0.00	0.000	0.097	0.1422	0.0003	0.0369	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
40			0.00	0.000	0.104	0.1266	0.0003	0.0369	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
41			0.00	0.000	0.048	0.1199	0.0003	0.0334	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
42			0.10	0.000	0.092	0.1181	0.0003	0.0318	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
43			0.00	0.000	0.084	0.1083	0.0002	0.0314	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
44			0.05	0.000	0.066	0.1059	0.0002	0.0233	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
45			0.43	0.000	0.051	0.1365	0.0003	0.0372	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
46	*		0.00	0.000	0.028	0.1333	0.0003	0.0344	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
47	*		0.01	0.000	0.015	0.1333	0.0003	0.0344	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
48	*		0.04	0.000	0.031	0.1333	0.0004	0.0450	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
49	*		0.01	0.000	0.006	0.1316	0.0004	0.0508	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
50	*		0.01	0.000	0.012	0.1297	0.0003	0.0405	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
51	*		0.00	0.000	0.000	0.1281	0.0002	0.0308	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
52	*		0.00	0.000	0.000	0.1267	0.0002	0.0273	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
53	*		0.00	0.000	0.000	0.1255	0.0002	0.0272	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
54	*		0.23	0.000	0.008	0.1260	0.0002	0.0281	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
55	*		0.01	0.000	0.000	0.1268	0.0002	0.0295	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
56			0.06	0.000	0.046	0.1427	0.0003	0.0340	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
57	*		0.03	0.000	0.033	0.1423	0.0002	0.0257	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
58			0.00	0.000	0.063	0.1346	0.0003	0.0411	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
59			0.00	0.000	0.128	0.1205	0.0003	0.0348	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
60			0.09	0.000	0.091	0.1191	0.0002	0.0235	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
61			0.09	0.000	0.097	0.1170	0.0002	0.0253	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
62	*		0.00	0.000	0.057	0.1100	0.0002	0.0270	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
63	*		0.00	0.000	0.050	0.1043	0.0002	0.0195	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
64	*		0.00	0.000	0.000	0.1038	0.0001	0.0162	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
65	*		0.00	0.000	0.056	0.0978	0.0002	0.0300	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
66			0.00	0.000	0.073	0.0907	0.0002	0.0288	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
67			0.08	0.000	0.053	0.0921	0.0002	0.0255	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
68			0.02	0.000	0.045	0.0896	0.0002	0.0265	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
69			0.00	0.000	0.034	0.0867	0.0002	0.0288	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
70			0.08	0.000	0.030	0.0906	0.0003	0.0343	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
71			0.07	0.000	0.026	0.0937	0.0002	0.0300	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
72	*		0.00	0.000	0.023	0.0916	0.0002	0.0247	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
73			0.00	0.000	0.021	0.0898	0.0002	0.0233	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
74			0.00	0.000	0.019	0.0882	0.0002	0.0234	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
75			0.00	0.000	0.019	0.0867	0.0002	0.0228	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
76			0.01	0.000	0.018	0.0853	0.0002	0.0252	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
77			0.00	0.000	0.018	0.0837	0.0002	0.0211	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
78			0.02	0.000	0.017	0.0839	0.0001	0.0182	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
79			0.23	0.000	0.016	0.1010	0.0001	0.0162	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
80			0.00	0.000	0.074	0.0948	0.0001	0.0132	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
81			0.00	0.000	0.015	0.0936	0.0001	0.0125	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
82			0.00	0.000	0.014	0.0924	0.0001	0.0133	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

83	*		0.00	0.000	0.000	0.0922	0.0001	0.0153	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
84	*		0.12	0.000	0.025	0.0937	0.0001	0.0141	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
85	*		0.00	0.000	0.016	0.0952	0.0001	0.0138	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
86	*		0.00	0.000	0.035	0.0950	0.0001	0.0134	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
87			0.00	0.000	0.014	0.0939	0.0001	0.0120	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
88			0.00	0.000	0.013	0.0928	0.0001	0.0131	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
89	*		0.00	0.000	0.000	0.0926	0.0001	0.0157	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
90	*		0.05	0.000	0.035	0.0938	0.0001	0.0148	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
91			0.00	0.000	0.013	0.0925	0.0001	0.0145	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
92	*		0.00	0.000	0.012	0.0915	0.0001	0.0138	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
93	*		0.16	0.000	0.081	0.0929	0.0001	0.0166	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
94	*		0.04	0.000	0.019	0.0944	0.0001	0.0165	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
95	*		0.00	0.000	0.026	0.0959	0.0001	0.0166	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
96	*		0.00	0.000	0.017	0.0958	0.0001	0.0169	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
97	*		0.00	0.000	0.000	0.0957	0.0001	0.0173	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
98	*		0.00	0.000	0.000	0.0956	0.0001	0.0178	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
99	*		0.00	0.000	0.003	0.0954	0.0001	0.0183	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
100	*	*	0.00	0.000	0.000	0.0954	0.0001	0.0181	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
101	*	*	0.42	0.000	0.008	0.0954	0.0002	0.0194	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
102	*	*	0.37	0.000	0.015	0.0954	0.0002	0.0204	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
103	*	*	0.23	0.000	0.026	0.0954	0.0002	0.0210	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
104	*	*	0.03	0.000	0.017	0.0954	0.0002	0.0215	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
105	*	*	0.00	0.000	0.008	0.0954	0.0002	0.0217	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
106	*	*	0.00	0.000	0.019	0.0954	0.0002	0.0219	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
107	*	*	0.00	0.000	0.000	0.0954	0.0002	0.0220	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
108	*	*	0.02	0.000	0.018	0.0954	0.0002	0.0220	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
109	*	*	0.27	0.000	0.000	0.0954	0.0002	0.0220	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
110		*	0.08	0.000	0.000	0.1028	0.0002	0.0219	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
111		*	0.06	0.000	0.000	0.2092	0.0002	0.0219	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
112		*	0.00	0.000	0.001	0.2095	0.0002	0.0218	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
113		*	0.00	0.000	0.000	0.2095	0.0002	0.0217	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
114		*	0.02	0.000	0.001	0.2108	0.0002	0.0216	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
115		*	0.01	0.000	0.001	0.2117	0.0002	0.0216	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
116		*	0.41	0.000	0.001	0.2461	0.0002	0.0215	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
117		*	0.23	0.000	0.001	0.2650	0.0002	0.0214	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
118		*	0.12	0.000	0.001	0.2748	0.0002	0.0213	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
119		*	0.09	0.000	0.001	0.2824	0.0002	0.0213	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
120			0.08	0.000	0.082	0.2229	0.0002	0.0240	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
121	*		0.00	0.000	0.067	0.2033	0.0001	0.0163	6.77E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
122			0.02	0.000	0.095	0.1908	0.0001	0.0081	6.81E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
123	*		0.18	0.000	0.047	0.1877	0.0001	0.0169	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
124	*		0.00	0.000	0.075	0.1859	0.0002	0.0225	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
125	*		0.00	0.000	0.015	0.1828	0.0002	0.0259	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
126	*	*	0.08	0.000	0.030	0.1828	0.0002	0.0277	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
127	*	*	0.52	0.000	0.025	0.1828	0.0002	0.0284	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

128	*	*	0.01	0.000	0.000	0.1828	0.0002	0.0284	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
129		*	0.00	0.000	0.031	0.1911	0.0002	0.0279	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
130		*	0.19	0.000	0.021	0.2402	0.0002	0.0272	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
131		*	0.11	0.000	0.001	0.2495	0.0002	0.0277	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
132		*	0.00	0.000	0.000	0.2495	0.0002	0.0295	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
133		*	0.00	0.000	0.000	0.2495	0.0002	0.0294	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
134		*	0.35	0.000	0.001	0.2787	0.0002	0.0283	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
135		*	0.01	0.000	0.001	0.2798	0.0002	0.0265	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
136		*	0.26	0.000	0.001	0.3015	0.0002	0.0244	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
137		*	0.00	0.000	0.000	0.3015	0.0002	0.0222	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
138		*	0.24	0.000	0.001	0.3211	0.0002	0.0200	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
139			0.00	0.000	0.289	0.2390	0.0001	0.0188	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
140			0.77	0.000	0.261	0.2667	0.0000	0.0026	1.22E-09	0.0000	0.0000	1.58E-10	0.0000	0.0000	0.00E+00
141			0.00	0.000	0.086	0.2519	0.0000	0.0025	2.84E-09	0.0000	0.0000	1.71E-10	0.0000	0.0000	0.00E+00
142			0.30	0.000	0.199	0.2441	0.0000	0.0045	6.51E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
143			0.00	0.000	0.214	0.2187	0.0000	0.0044	6.81E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
144			0.00	0.000	0.117	0.2023	0.0001	0.0072	6.81E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
145			0.00	0.000	0.182	0.1837	0.0001	0.0094	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
146			0.90	0.000	0.159	0.2427	0.0001	0.0111	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
147			0.00	0.000	0.272	0.2179	0.0001	0.0124	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
148			0.06	0.000	0.221	0.2035	0.0001	0.0134	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
149			0.01	0.000	0.189	0.1877	0.0001	0.0174	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
150			0.33	0.000	0.104	0.2037	0.0002	0.0233	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
151			0.01	0.000	0.082	0.1954	0.0002	0.0201	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
152			0.00	0.000	0.192	0.1763	0.0002	0.0205	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
153			0.00	0.000	0.119	0.1640	0.0001	0.0180	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
154			0.00	0.000	0.054	0.1589	0.0001	0.0080	6.81E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
155			0.01	0.000	0.043	0.1563	0.0001	0.0125	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
156			0.39	0.000	0.036	0.1831	0.0001	0.0169	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
157			0.50	0.000	0.105	0.2128	0.0001	0.0106	5.10E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
158			0.35	0.000	0.318	0.1952	0.0001	0.0132	5.77E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
159			0.18	0.000	0.117	0.1909	0.0000	0.0058	2.98E-09	0.0000	0.0000	1.71E-10	0.0000	0.0000	0.00E+00
160			0.82	0.000	0.222	0.2284	0.0001	0.0064	3.05E-09	0.0000	0.0000	1.71E-10	0.0000	0.0000	0.00E+00
161			0.08	0.000	0.192	0.1826	0.0001	0.0080	3.31E-09	0.0000	0.0000	1.72E-10	0.0000	0.0000	0.00E+00
162			0.00	0.000	0.192	0.1571	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
163			0.04	0.000	0.210	0.1292	0.0000	0.0011	9.63E-10	0.0000	0.0000	1.53E-10	0.0000	0.0000	0.00E+00
164			0.13	0.000	0.357	0.0968	0.0000	0.0021	1.93E-09	0.0000	0.0000	1.66E-10	0.0000	0.0000	0.00E+00
165			0.42	0.000	0.122	0.1177	0.0000	0.0045	6.81E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
166			0.25	0.000	0.118	0.1285	0.0001	0.0103	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
167			0.80	0.000	0.299	0.1448	0.0002	0.0291	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
168			0.16	0.000	0.256	0.1147	0.0001	0.0090	3.68E-09	0.0000	0.0000	1.73E-10	0.0000	0.0000	0.00E+00
169			0.00	0.000	0.157	0.0943	0.0001	0.0074	6.81E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
170			0.00	0.000	0.220	0.0637	0.0001	0.0172	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
171			0.00	0.000	0.069	0.0580	0.0001	0.0149	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
172			0.01	0.000	0.012	0.0580	0.0003	0.0377	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

173	0.00	0.000	0.000	0.0580	0.0003	0.0327	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
174	0.00	0.000	0.000	0.0580	0.0002	0.0286	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
175	0.06	0.000	0.005	0.0580	0.0002	0.0254	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
176	0.03	0.000	0.004	0.0580	0.0000	0.0028	2.63E-09	0.0000	0.0000	1.70E-10	0.0000	0.0000	0.00E+00
177	0.03	0.000	0.004	0.0580	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
178	0.35	0.000	0.012	0.0580	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
179	0.00	0.000	0.000	0.0580	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
180	0.07	0.000	0.004	0.0580	0.0003	0.0374	6.81E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
181	0.05	0.000	0.004	0.0580	0.0002	0.0294	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
182	0.00	0.000	0.000	0.0580	0.0003	0.0416	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
183	0.00	0.000	0.000	0.0580	0.0006	0.0714	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
184	0.18	0.000	0.010	0.0580	0.0006	0.0796	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
185	0.00	0.000	0.003	0.0580	0.0001	0.0179	4.19E-09	0.0000	0.0000	1.74E-10	0.0000	0.0000	0.00E+00
186	0.00	0.000	0.000	0.0580	0.0006	0.0707	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
187	0.00	0.000	0.000	0.0580	0.0006	0.0767	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
188	0.21	0.000	0.009	0.0580	0.0006	0.0789	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
189	0.00	0.000	0.000	0.0580	0.0002	0.0292	5.02E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
190	0.00	0.000	0.000	0.0580	0.0007	0.0855	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
191	0.11	0.000	0.003	0.0580	0.0008	0.0990	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
192	0.00	0.000	0.000	0.0580	0.0003	0.0391	6.10E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
193	0.00	0.000	0.000	0.0580	0.0007	0.0866	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
194	0.02	0.000	0.003	0.0580	0.0007	0.0896	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
195	0.00	0.000	0.000	0.0580	0.0006	0.0709	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
196	0.00	0.000	0.000	0.0580	0.0006	0.0735	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
197	0.06	0.000	0.003	0.0580	0.0006	0.0789	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
198	0.00	0.000	0.000	0.0580	0.0004	0.0490	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
199	0.00	0.000	0.000	0.0580	0.0006	0.0800	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
200	0.00	0.000	0.000	0.0580	0.0007	0.0861	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
201	0.00	0.000	0.000	0.0580	0.0007	0.0845	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
202	0.00	0.000	0.000	0.0580	0.0006	0.0815	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
203	0.07	0.000	0.003	0.0580	0.0007	0.0840	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
204	0.07	0.000	0.003	0.0580	0.0005	0.0682	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
205	0.05	0.000	0.003	0.0580	0.0006	0.0694	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
206	0.21	0.000	0.006	0.0580	0.0006	0.0768	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
207	0.00	0.000	0.000	0.0580	0.0005	0.0659	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
208	0.00	0.000	0.000	0.0580	0.0010	0.1210	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
209	0.00	0.000	0.000	0.0580	0.0009	0.1125	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
210	0.29	0.000	0.006	0.0642	0.0009	0.1088	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
211	0.00	0.000	0.020	0.0591	0.0003	0.0367	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
212	0.00	0.000	0.001	0.0589	0.0005	0.0604	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
213	0.02	0.000	0.003	0.0601	0.0006	0.0767	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
214	0.00	0.000	0.001	0.0600	0.0006	0.0710	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
215	0.00	0.000	0.001	0.0598	0.0005	0.0587	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
216	0.00	0.000	0.001	0.0597	0.0004	0.0472	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
217	0.00	0.000	0.001	0.0595	0.0003	0.0381	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

218		0.00	0.000	0.001	0.0594	0.0003	0.0322	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
219		0.00	0.000	0.001	0.0592	0.0002	0.0296	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
220		2.00	0.000	0.010	0.0654	0.0002	0.0299	5.18E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
221		0.00	0.000	0.013	0.0601	0.0001	0.0134	4.55E-09	0.0000	0.0000	1.74E-10	0.0000	0.0000	0.00E+00
222		0.00	0.000	0.011	0.0580	0.0004	0.0524	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
223		0.00	0.000	0.000	0.0580	0.0007	0.0937	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
224		0.00	0.000	0.000	0.0580	0.0006	0.0799	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
225		0.08	0.000	0.006	0.0580	0.0005	0.0584	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
226		0.12	0.000	0.005	0.0580	0.0001	0.0129	3.52E-09	0.0000	0.0000	1.73E-10	0.0000	0.0000	0.00E+00
227		0.03	0.000	0.005	0.0580	0.0000	0.0001	2.43E-10	0.0000	0.0000	1.04E-10	0.0000	0.0000	0.00E+00
228		0.75	0.000	0.015	0.0648	0.0004	0.0465	6.21E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
229		1.24	0.000	0.194	0.0652	0.0001	0.0181	3.66E-09	0.0000	0.0000	1.73E-10	0.0000	0.0000	0.00E+00
230		0.00	0.000	0.022	0.0588	0.0008	0.1013	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
231		0.00	0.000	0.008	0.0580	0.0012	0.1543	6.97E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
232		0.25	0.000	0.091	0.0580	0.0008	0.1015	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
233		0.01	0.000	0.009	0.0580	0.0001	0.0183	4.11E-09	0.0000	0.0000	1.74E-10	0.0000	0.0000	0.00E+00
234		0.00	0.000	0.000	0.0580	0.0004	0.0517	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
235		0.00	0.000	0.000	0.0580	0.0004	0.0550	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
236		0.00	0.000	0.000	0.0580	0.0008	0.0962	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
237		0.00	0.000	0.000	0.0580	0.0012	0.1478	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
238		0.00	0.000	0.000	0.0580	0.0014	0.1796	6.99E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
239		0.11	0.000	0.004	0.0580	0.0015	0.1865	7.00E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
240		0.94	0.000	0.020	0.0650	0.0015	0.1894	7.00E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
241		0.55	0.000	0.144	0.0646	0.0017	0.2111	7.02E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
242		0.08	0.000	0.029	0.0631	0.0019	0.2416	7.05E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
243		0.12	0.000	0.058	0.0634	0.0017	0.2137	7.02E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
244		0.00	0.000	0.022	0.0588	0.0008	0.1059	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
245		0.00	0.000	0.004	0.0580	0.0004	0.0557	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
246		0.00	0.000	0.000	0.0580	0.0003	0.0385	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
247		0.05	0.000	0.005	0.0580	0.0004	0.0560	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
248		0.00	0.000	0.000	0.0580	0.0009	0.1125	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
249		0.00	0.000	0.000	0.0580	0.0014	0.1763	6.99E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
250		0.00	0.000	0.000	0.0580	0.0014	0.1788	6.99E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
251	*	0.00	0.000	0.000	0.0580	0.0014	0.1753	6.99E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
252		0.00	0.000	0.000	0.0580	0.0014	0.1721	6.99E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
253		0.00	0.000	0.000	0.0580	0.0013	0.1685	6.98E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
254		0.00	0.000	0.000	0.0580	0.0013	0.1641	6.98E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
255		0.07	0.000	0.003	0.0580	0.0013	0.1579	6.97E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
256		1.10	0.000	0.015	0.0651	0.0012	0.1475	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
257		0.41	0.000	0.068	0.0644	0.0012	0.1500	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
258		0.11	0.000	0.048	0.0634	0.0016	0.1973	7.01E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
259		0.00	0.000	0.007	0.0607	0.0014	0.1752	6.99E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
260		0.00	0.000	0.014	0.0584	0.0012	0.1473	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
261		0.00	0.000	0.001	0.0580	0.0006	0.0804	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
262		0.00	0.000	0.000	0.0580	0.0003	0.0329	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

263		0.00	0.000	0.000	0.0580	0.0001	0.0148	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
264		0.51	0.000	0.024	0.0646	0.0003	0.0405	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
265		0.00	0.000	0.014	0.0599	0.0006	0.0724	5.10E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
266		0.00	0.000	0.010	0.0580	0.0013	0.1691	6.98E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
267		0.00	0.000	0.000	0.0580	0.0011	0.1379	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
268		0.00	0.000	0.000	0.0580	0.0008	0.1048	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
269		0.00	0.000	0.000	0.0580	0.0007	0.0895	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
270		0.00	0.000	0.000	0.0580	0.0007	0.0935	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
271		0.00	0.000	0.000	0.0580	0.0008	0.1068	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
272		0.00	0.000	0.000	0.0580	0.0010	0.1200	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
273		0.00	0.000	0.000	0.0580	0.0010	0.1288	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
274		0.00	0.000	0.000	0.0580	0.0011	0.1329	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
275		0.05	0.000	0.003	0.0580	0.0011	0.1337	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
276		0.06	0.000	0.003	0.0580	0.0010	0.1238	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
277		0.00	0.000	0.000	0.0580	0.0010	0.1309	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
278		0.01	0.000	0.003	0.0580	0.0012	0.1476	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
279		0.04	0.000	0.003	0.0580	0.0011	0.1346	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
280		0.00	0.000	0.000	0.0580	0.0009	0.1091	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
281		0.57	0.000	0.009	0.0646	0.0010	0.1274	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
282		0.00	0.000	0.013	0.0601	0.0007	0.0865	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
283		0.00	0.000	0.001	0.0598	0.0011	0.1440	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
284		0.00	0.000	0.001	0.0596	0.0011	0.1357	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
285		0.00	0.000	0.001	0.0594	0.0008	0.1046	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
286		0.00	0.000	0.001	0.0592	0.0006	0.0777	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
287		0.00	0.000	0.001	0.0590	0.0005	0.0581	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
288		0.00	0.000	0.001	0.0588	0.0004	0.0461	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
289		0.00	0.000	0.001	0.0586	0.0003	0.0415	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
290		0.00	0.000	0.001	0.0584	0.0003	0.0430	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
291		0.00	0.000	0.001	0.0580	0.0004	0.0483	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
292		0.00	0.000	0.000	0.0580	0.0004	0.0560	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
293		0.00	0.000	0.000	0.0580	0.0005	0.0636	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
294		0.00	0.000	0.000	0.0580	0.0006	0.0693	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
295		0.03	0.000	0.003	0.0580	0.0006	0.0772	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
296	*	0.42	0.000	0.018	0.0580	0.0005	0.0673	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
297	*	0.00	0.000	0.011	0.0580	0.0006	0.0722	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
298	*	0.00	0.000	0.022	0.0580	0.0006	0.0789	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
299	*	0.00	0.000	0.023	0.0580	0.0007	0.0837	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
300		0.00	0.000	0.017	0.0580	0.0007	0.0878	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
301		0.09	0.000	0.006	0.0580	0.0006	0.0800	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
302		0.41	0.000	0.024	0.0644	0.0007	0.0878	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
303		0.08	0.000	0.008	0.0632	0.0005	0.0647	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
304		0.04	0.000	0.010	0.0626	0.0008	0.0997	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
305		0.00	0.000	0.008	0.0611	0.0008	0.0998	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
306		0.05	0.000	0.005	0.0629	0.0008	0.1063	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
307		0.39	0.000	0.023	0.0644	0.0008	0.0946	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

308	*		0.00	0.000	0.000	0.0615	0.0002	0.0247	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
309	*		0.01	0.000	0.010	0.0611	0.0003	0.0436	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
310			0.14	0.000	0.025	0.0636	0.0006	0.0762	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
311	*		0.02	0.000	0.024	0.0615	0.0002	0.0291	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
312			0.11	0.000	0.006	0.0635	0.0005	0.0661	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
313			0.05	0.000	0.006	0.0629	0.0002	0.0294	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
314			0.00	0.000	0.011	0.0602	0.0002	0.0289	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
315			0.00	0.000	0.009	0.0588	0.0003	0.0441	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
316			0.00	0.000	0.003	0.0580	0.0003	0.0429	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
317			0.70	0.000	0.019	0.0648	0.0004	0.0519	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
318			0.14	0.000	0.033	0.0636	0.0000	0.0009	3.72E-10	0.0000	0.0000	1.22E-10	0.0000	0.0000	0.00E+00
319			0.00	0.000	0.007	0.0607	0.0001	0.0117	5.92E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
320			0.00	0.000	0.003	0.0601	0.0003	0.0434	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
321	*		0.00	0.000	0.003	0.0596	0.0005	0.0691	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
322	*		0.00	0.000	0.002	0.0592	0.0005	0.0578	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
323	*		0.00	0.000	0.000	0.0592	0.0003	0.0386	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
324			0.43	0.000	0.018	0.0644	0.0003	0.0328	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
325	*		0.00	0.000	0.000	0.0615	0.0000	0.0004	5.06E-10	0.0000	0.0000	1.34E-10	0.0000	0.0000	0.00E+00
326	*		0.00	0.000	0.002	0.0611	0.0001	0.0166	5.08E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
327	*		0.01	0.000	0.007	0.0606	0.0003	0.0438	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
328			0.37	0.000	0.025	0.0643	0.0005	0.0586	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
329			0.00	0.000	0.004	0.0611	0.0000	0.0018	1.17E-09	0.0000	0.0000	1.57E-10	0.0000	0.0000	0.00E+00
330			0.00	0.000	0.003	0.0605	0.0004	0.0508	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
331	*		0.00	0.000	0.000	0.0605	0.0006	0.0703	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
332			0.00	0.000	0.004	0.0598	0.0005	0.0597	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
333			0.00	0.000	0.006	0.0588	0.0003	0.0420	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
334			0.00	0.000	0.003	0.0580	0.0003	0.0316	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
335	*		0.03	0.000	0.022	0.0580	0.0003	0.0388	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
336	*		0.08	0.000	0.020	0.0580	0.0004	0.0533	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
337	*		0.07	0.000	0.024	0.0580	0.0005	0.0589	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
338			0.05	0.000	0.043	0.0580	0.0006	0.0788	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
339	*		0.16	0.000	0.022	0.0580	0.0006	0.0819	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
340	*		0.00	0.000	0.009	0.0580	0.0009	0.1101	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
341	*		0.00	0.000	0.005	0.0580	0.0009	0.1118	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
342	*		0.00	0.000	0.012	0.0580	0.0008	0.1068	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
343	*		0.00	0.000	0.014	0.0580	0.0008	0.1004	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
344			0.13	0.000	0.005	0.0580	0.0008	0.1027	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
345	*	*	0.00	0.000	0.000	0.0580	0.0006	0.0711	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
346	*	*	0.00	0.000	0.000	0.0580	0.0008	0.1065	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
347	*	*	0.00	0.000	0.000	0.0580	0.0008	0.1005	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
348		*	0.00	0.000	0.000	0.0580	0.0007	0.0874	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
349		*	0.00	0.000	0.000	0.0580	0.0006	0.0761	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
350		*	0.24	0.000	0.002	0.0782	0.0005	0.0680	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
351		*	0.12	0.000	0.002	0.0880	0.0005	0.0631	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
352		*	0.38	0.000	0.002	0.1197	0.0005	0.0607	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

353		*	0.02	0.000	0.002	0.1215	0.0005	0.0602	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
354		*	0.01	0.000	0.002	0.1225	0.0005	0.0607	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
355	*	*	0.00	0.000	0.000	0.1225	0.0005	0.0618	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
356	*	*	0.00	0.000	0.000	0.1225	0.0005	0.0631	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
357	*	*	0.07	0.000	0.020	0.1225	0.0005	0.0642	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
358	*	*	0.01	0.000	0.010	0.1225	0.0005	0.0650	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
359	*	*	0.13	0.000	0.015	0.1225	0.0005	0.0656	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
360		*	0.23	0.000	0.000	0.1548	0.0005	0.0658	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
361		*	0.03	0.000	0.002	0.1571	0.0005	0.0657	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
362		*	0.00	0.000	0.000	0.1571	0.0005	0.0655	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
363		*	0.00	0.000	0.000	0.1571	0.0005	0.0650	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
364		*	0.00	0.000	0.000	0.1571	0.0005	0.0644	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
365		*	0.00	0.000	0.000	0.1571	0.0005	0.0637	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

* = Frozen (air or soil)

Annual Totals for Year 3			
	inches	cubic feet	percent
Precipitation	30.94	112,313.6	100.00
Runoff	0.000	0.0000	0.00
Evapotranspiration	10.446	37,918.7	33.76
Drainage Collected from Layer 3	19.5834	71,087.9	63.29
Percolation/Leakage through Layer 5	0.000002	0.0087	0.00
Average Head on Top of Layer 4	0.0004	---	---
Drainage Collected from Layer 7	0.0000	0.0084	0.00
Percolation/Leakage through Layer 9	0.000000	0.0002	0.00
Average Head on Top of Layer 8	0.0000	---	---
Percolation/Leakage through Layer 10	0.000000	0.0000	0.00
Change in Water Storage	0.9110	3,307.0	2.94
Soil Water at Start of Year	59.3276	215,359.3	191.75
Soil Water at End of Year	60.2901	218,853.1	194.86
Snow Water at Start of Year	0.0514	186.8	0.17
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

Daily Output for Year 4

Column key: Head #1: drainage from Layer 4 | Head #2: drainage from Layer 8
Drain #1: drainage from Layer 3 | Drain #2: drainage from Layer 7
Leak #1: leakage thru Layer 5 | Leak #2: leakage thru Layer 9 | Leak #3: leakage thru Layer 10

Title: Wayne Disposal-Initial Lift-Sideslope
Simulated On: 3/10/2021 13:00

Day	Freezing Status* Air	Soil	Rain (inches)	Runoff (inches)	ET (inches)	Evap. Zone Water (in/in)	Head #1 (inches)	Drain #1 (inches)	Leak #1 (inches)	Head #2 (inches)	Drain #2 (inches)	Leak #2 (inches)	Head #3 (inches)	Drain #3 (inches)	Leak #3 (inches)
1		*	0.00	0.000	0.000	0.1571	0.0005	0.0629	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
2		*	0.31	0.000	0.002	0.1826	0.0005	0.0620	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
3			0.00	0.000	0.026	0.1477	0.0005	0.0642	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
4			0.00	0.000	0.028	0.1372	0.0005	0.0575	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
5			0.00	0.000	0.029	0.1306	0.0004	0.0441	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
6	*		0.00	0.000	0.027	0.1256	0.0004	0.0557	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
7	*		0.00	0.000	0.028	0.1214	0.0006	0.0703	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
8	*		0.00	0.000	0.023	0.1180	0.0006	0.0747	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
9			0.00	0.000	0.029	0.1147	0.0006	0.0700	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
10	*		0.02	0.000	0.019	0.1139	0.0005	0.0682	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
11	*		0.01	0.000	0.007	0.1130	0.0005	0.0600	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
12	*		0.08	0.000	0.005	0.1138	0.0004	0.0519	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
13	*		0.00	0.000	0.004	0.1147	0.0004	0.0450	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
14	*		0.00	0.000	0.005	0.1157	0.0003	0.0393	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
15	*	*	0.07	0.000	0.000	0.1157	0.0002	0.0313	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
16		*	0.04	0.000	0.028	0.1234	0.0003	0.0324	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
17	*	*	0.12	0.000	0.033	0.1234	0.0002	0.0313	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
18	*	*	0.51	0.000	0.029	0.1234	0.0002	0.0293	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
19		*	0.00	0.000	0.010	0.1369	0.0002	0.0274	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
20		*	0.40	0.000	0.000	0.2032	0.0002	0.0258	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
21	*	*	0.36	0.000	0.018	0.2032	0.0002	0.0248	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
22		*	0.07	0.000	0.000	0.2376	0.0002	0.0245	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
23		*	0.09	0.000	0.002	0.2448	0.0002	0.0249	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
24		*	0.00	0.000	0.001	0.2449	0.0002	0.0258	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
25		*	0.00	0.000	0.000	0.2449	0.0002	0.0271	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
26		*	0.00	0.000	0.000	0.2449	0.0002	0.0288	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
27		*	0.00	0.000	0.000	0.2449	0.0002	0.0305	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
28		*	0.00	0.000	0.000	0.2449	0.0003	0.0323	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
29		*	0.00	0.000	0.000	0.2449	0.0003	0.0339	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
30		*	0.00	0.000	0.000	0.2449	0.0003	0.0355	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
31	*	*	0.01	0.000	0.006	0.2449	0.0003	0.0368	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
32		*	0.00	0.000	0.000	0.2449	0.0003	0.0379	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
33	*	*	0.13	0.000	0.038	0.2449	0.0003	0.0388	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
34	*	*	0.00	0.000	0.034	0.2449	0.0003	0.0395	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
35	*	*	0.10	0.000	0.017	0.2449	0.0003	0.0400	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
36	*	*	0.06	0.000	0.000	0.2449	0.0003	0.0404	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
37	*	*	0.01	0.000	0.000	0.2449	0.0003	0.0406	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

38	*	*	0.00	0.000	0.020	0.2449	0.0003	0.0408	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
39	*	*	0.00	0.000	0.033	0.2449	0.0003	0.0408	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
40		*	0.00	0.000	0.037	0.2523	0.0003	0.0407	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
41		*	0.00	0.000	0.029	0.2523	0.0003	0.0406	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
42		*	0.06	0.000	0.002	0.2568	0.0003	0.0404	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
43	*	*	0.00	0.000	0.000	0.2568	0.0003	0.0401	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
44	*	*	0.20	0.000	0.012	0.2568	0.0003	0.0398	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
45		*	0.02	0.000	0.017	0.2723	0.0003	0.0395	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
46		*	0.00	0.000	0.000	0.2723	0.0003	0.0392	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
47		*	0.09	0.000	0.002	0.2794	0.0003	0.0388	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
48		*	0.05	0.000	0.002	0.2835	0.0003	0.0385	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
49		*	0.00	0.000	0.000	0.2835	0.0003	0.0381	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
50		*	0.08	0.000	0.002	0.2900	0.0003	0.0377	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
51			0.06	0.000	0.155	0.2158	0.0003	0.0399	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
52			0.33	0.000	0.224	0.2127	0.0002	0.0215	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
53			0.00	0.000	0.075	0.1988	0.0002	0.0295	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
54			0.00	0.000	0.052	0.1921	0.0003	0.0419	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
55			0.01	0.000	0.057	0.1856	0.0004	0.0469	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
56			0.03	0.000	0.136	0.1728	0.0004	0.0498	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
57			0.00	0.000	0.109	0.1607	0.0004	0.0450	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
58			0.00	0.000	0.086	0.1519	0.0003	0.0434	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
59	*		0.00	0.000	0.000	0.1497	0.0003	0.0415	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
60	*		0.00	0.000	0.000	0.1484	0.0003	0.0389	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
61	*		0.02	0.000	0.024	0.1474	0.0003	0.0402	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
62			0.20	0.000	0.055	0.1585	0.0003	0.0433	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
63	*		0.00	0.000	0.000	0.1581	0.0003	0.0345	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
64	*		0.00	0.000	0.000	0.1572	0.0003	0.0370	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
65			0.02	0.000	0.108	0.1483	0.0003	0.0315	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
66			0.06	0.000	0.093	0.1444	0.0002	0.0284	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
67			0.00	0.000	0.109	0.1353	0.0001	0.0168	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
68			0.03	0.000	0.049	0.1328	0.0002	0.0226	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
69			0.10	0.000	0.054	0.1371	0.0001	0.0130	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
70	*		0.05	0.000	0.039	0.1366	0.0002	0.0202	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
71	*		0.01	0.000	0.005	0.1361	0.0001	0.0103	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
72			0.23	0.000	0.041	0.1511	0.0001	0.0104	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
73			0.12	0.000	0.078	0.1541	0.0000	0.0046	1.98E-09	0.0000	0.0000	1.66E-10	0.0000	0.0000	0.00E+00
74			0.09	0.000	0.110	0.1489	0.0001	0.0145	6.74E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
75			0.00	0.000	0.064	0.1389	0.0000	0.0056	6.81E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
76			0.27	0.000	0.189	0.1419	0.0000	0.0014	5.27E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
77			0.00	0.000	0.149	0.1256	0.0000	0.0001	1.61E-09	0.0000	0.0000	1.63E-10	0.0000	0.0000	0.00E+00
78			0.26	0.000	0.245	0.1254	0.0000	0.0025	2.88E-09	0.0000	0.0000	1.71E-10	0.0000	0.0000	0.00E+00
79			0.00	0.000	0.284	0.0981	0.0001	0.0133	4.86E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
80			0.02	0.000	0.070	0.0860	0.0002	0.0206	6.42E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
81			0.09	0.000	0.054	0.0869	0.0000	0.0027	3.07E-09	0.0000	0.0000	1.71E-10	0.0000	0.0000	0.00E+00
82			0.00	0.000	0.040	0.0782	0.0002	0.0236	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

83		0.00	0.000	0.034	0.0724	0.0001	0.0114	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
84		0.35	0.000	0.031	0.0955	0.0003	0.0319	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
85		0.01	0.000	0.028	0.0828	0.0003	0.0385	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
86		0.00	0.000	0.025	0.0778	0.0002	0.0228	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
87		0.11	0.000	0.024	0.0847	0.0002	0.0311	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
88		0.04	0.000	0.023	0.0845	0.0003	0.0402	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
89		0.00	0.000	0.020	0.0795	0.0004	0.0487	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
90		0.00	0.000	0.021	0.0763	0.0003	0.0319	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
91		0.13	0.000	0.020	0.0855	0.0002	0.0238	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
92		0.00	0.000	0.018	0.0804	0.0004	0.0460	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
93		0.14	0.000	0.019	0.0900	0.0002	0.0207	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
94		0.66	0.000	0.057	0.1055	0.0003	0.0364	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
95		0.05	0.000	0.068	0.0887	0.0001	0.0088	4.62E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
96	*	0.41	0.000	0.030	0.0890	0.0001	0.0096	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
97		0.15	0.000	0.000	0.0972	0.0002	0.0250	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
98		0.29	0.000	0.000	0.1059	0.0003	0.0389	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
99	*	0.52	0.000	0.023	0.0912	0.0000	0.0061	6.41E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
100	*	0.17	0.000	0.034	0.0897	0.0001	0.0132	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
101		0.00	0.000	0.097	0.1044	0.0003	0.0363	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
102		0.00	0.000	0.079	0.0824	0.0001	0.0104	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
103		0.06	0.000	0.119	0.0709	0.0001	0.0158	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
104		0.01	0.000	0.058	0.0610	0.0002	0.0218	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
105		0.30	0.000	0.058	0.0641	0.0003	0.0428	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
106		0.01	0.000	0.015	0.0613	0.0001	0.0092	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
107		0.03	0.000	0.017	0.0620	0.0002	0.0309	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
108		0.03	0.000	0.009	0.0625	0.0003	0.0415	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
109	*	0.02	0.000	0.019	0.0611	0.0003	0.0353	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
110		0.00	0.000	0.010	0.0593	0.0002	0.0307	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
111		0.00	0.000	0.006	0.0580	0.0001	0.0147	6.09E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
112	*	0.14	0.000	0.052	0.0580	0.0000	0.0037	3.10E-09	0.0000	0.0000	1.71E-10	0.0000	0.0000	0.00E+00
113		0.00	0.000	0.065	0.0580	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
114		0.00	0.000	0.000	0.0580	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
115		0.00	0.000	0.000	0.0580	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
116		0.01	0.000	0.004	0.0580	0.0001	0.0101	6.78E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
117		0.00	0.000	0.004	0.0580	0.0002	0.0267	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
118		0.00	0.000	0.004	0.0580	0.0004	0.0551	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
119		1.05	0.000	0.017	0.0651	0.0006	0.0770	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
120		0.12	0.000	0.043	0.0635	0.0004	0.0546	6.09E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
121		0.04	0.000	0.021	0.0624	0.0010	0.1210	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
122		0.00	0.000	0.010	0.0601	0.0010	0.1303	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
123		0.00	0.000	0.008	0.0589	0.0009	0.1193	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
124		0.00	0.000	0.004	0.0580	0.0007	0.0847	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
125		0.00	0.000	0.000	0.0580	0.0005	0.0568	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
126		0.00	0.000	0.000	0.0580	0.0003	0.0351	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
127		0.16	0.000	0.010	0.0580	0.0003	0.0336	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

128	0.01	0.000	0.004	0.0580	0.0000	0.0058	2.90E-09	0.0000	0.0000	1.71E-10	0.0000	0.0000	0.00E+00
129	0.00	0.000	0.000	0.0580	0.0004	0.0482	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
130	0.00	0.000	0.000	0.0580	0.0006	0.0740	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
131	0.00	0.000	0.000	0.0580	0.0006	0.0785	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
132	0.17	0.000	0.011	0.0580	0.0007	0.0840	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
133	0.00	0.000	0.000	0.0580	0.0004	0.0564	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
134	0.08	0.000	0.003	0.0580	0.0009	0.1087	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
135	0.34	0.000	0.010	0.0580	0.0006	0.0786	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
136	0.00	0.000	0.000	0.0580	0.0005	0.0658	6.37E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
137	0.00	0.000	0.000	0.0580	0.0011	0.1394	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
138	0.45	0.000	0.055	0.0645	0.0012	0.1513	6.97E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
139	0.02	0.000	0.028	0.0611	0.0003	0.0407	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
140	0.91	0.000	0.142	0.0650	0.0008	0.1004	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
141	0.28	0.000	0.069	0.0641	0.0004	0.0462	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
142	0.63	0.000	0.078	0.0647	0.0006	0.0769	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
143	0.03	0.000	0.028	0.0615	0.0006	0.0762	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
144	0.01	0.000	0.012	0.0603	0.0008	0.1018	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
145	0.20	0.000	0.097	0.0638	0.0007	0.0820	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
146	0.09	0.000	0.019	0.0633	0.0004	0.0493	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
147	0.00	0.000	0.014	0.0599	0.0000	0.0023	6.60E-10	0.0000	0.0000	1.42E-10	0.0000	0.0000	0.00E+00
148	0.00	0.000	0.010	0.0580	0.0001	0.0069	5.35E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
149	0.00	0.000	0.000	0.0580	0.0002	0.0275	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
150	0.00	0.000	0.000	0.0580	0.0005	0.0579	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
151	0.01	0.000	0.005	0.0580	0.0007	0.0881	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
152	0.00	0.000	0.000	0.0580	0.0009	0.1150	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
153	0.00	0.000	0.000	0.0580	0.0011	0.1400	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
154	0.10	0.000	0.004	0.0580	0.0012	0.1459	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
155	0.00	0.000	0.000	0.0580	0.0011	0.1423	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
156	0.00	0.000	0.000	0.0580	0.0013	0.1664	6.98E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
157	0.00	0.000	0.000	0.0580	0.0012	0.1519	6.97E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
158	0.00	0.000	0.000	0.0580	0.0011	0.1382	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
159	0.00	0.000	0.000	0.0580	0.0010	0.1292	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
160	0.00	0.000	0.000	0.0580	0.0010	0.1235	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
161	0.67	0.000	0.009	0.0648	0.0010	0.1219	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
162	0.03	0.000	0.017	0.0620	0.0007	0.0940	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
163	0.00	0.000	0.022	0.0580	0.0013	0.1626	6.98E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
164	0.00	0.000	0.000	0.0580	0.0011	0.1368	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
165	0.00	0.000	0.000	0.0580	0.0009	0.1110	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
166	0.11	0.000	0.005	0.0580	0.0008	0.0960	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
167	0.11	0.000	0.005	0.0580	0.0003	0.0316	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
168	0.04	0.000	0.004	0.0580	0.0002	0.0264	4.96E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
169	0.04	0.000	0.004	0.0580	0.0007	0.0828	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
170	0.00	0.000	0.003	0.0580	0.0007	0.0860	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
171	0.00	0.000	0.000	0.0580	0.0007	0.0944	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
172	0.41	0.000	0.011	0.0580	0.0007	0.0935	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

173	0.98	0.000	0.097	0.0650	0.0003	0.0332	4.28E-09	0.0000	0.0000	1.74E-10	0.0000	0.0000	0.00E+00
174	0.16	0.000	0.054	0.0637	0.0004	0.0487	6.58E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
175	0.04	0.000	0.014	0.0626	0.0008	0.0974	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
176	0.00	0.000	0.024	0.0580	0.0010	0.1241	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
177	0.00	0.000	0.000	0.0580	0.0008	0.0975	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
178	0.00	0.000	0.000	0.0580	0.0005	0.0666	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
179	0.00	0.000	0.000	0.0580	0.0002	0.0259	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
180	0.00	0.000	0.000	0.0580	0.0000	0.0043	6.81E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
181	0.22	0.000	0.016	0.0580	0.0001	0.0177	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
182	0.00	0.000	0.000	0.0580	0.0003	0.0342	4.72E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
183	0.74	0.000	0.013	0.0648	0.0009	0.1153	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
184	0.00	0.000	0.027	0.0580	0.0007	0.0822	6.06E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
185	0.00	0.000	0.000	0.0580	0.0014	0.1745	6.99E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
186	0.26	0.000	0.056	0.0580	0.0013	0.1616	6.97E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
187	0.00	0.000	0.003	0.0580	0.0004	0.0479	5.22E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
188	0.14	0.000	0.005	0.0580	0.0010	0.1224	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
189	0.00	0.000	0.004	0.0580	0.0004	0.0500	5.58E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
190	0.00	0.000	0.000	0.0580	0.0008	0.1007	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
191	0.00	0.000	0.000	0.0580	0.0006	0.0794	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
192	0.00	0.000	0.000	0.0580	0.0005	0.0624	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
193	0.04	0.000	0.004	0.0580	0.0005	0.0659	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
194	0.05	0.000	0.004	0.0580	0.0006	0.0700	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
195	0.00	0.000	0.000	0.0580	0.0009	0.1079	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
196	0.00	0.000	0.000	0.0580	0.0012	0.1468	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
197	0.00	0.000	0.000	0.0580	0.0011	0.1382	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
198	0.00	0.000	0.000	0.0580	0.0010	0.1271	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
199	0.00	0.000	0.000	0.0580	0.0010	0.1202	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
200	0.00	0.000	0.000	0.0580	0.0009	0.1165	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
201	0.00	0.000	0.000	0.0580	0.0009	0.1144	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
202	0.06	0.000	0.003	0.0580	0.0009	0.1145	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
203	0.00	0.000	0.000	0.0580	0.0008	0.1006	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
204	0.02	0.000	0.003	0.0580	0.0010	0.1199	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
205	0.00	0.000	0.000	0.0580	0.0009	0.1081	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
206	0.00	0.000	0.000	0.0580	0.0009	0.1137	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
207	0.00	0.000	0.000	0.0580	0.0009	0.1082	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
208	0.00	0.000	0.000	0.0580	0.0008	0.1015	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
209	0.00	0.000	0.000	0.0580	0.0008	0.0959	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
210	0.00	0.000	0.000	0.0580	0.0007	0.0915	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
211	0.00	0.000	0.000	0.0580	0.0007	0.0882	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
212	0.00	0.000	0.000	0.0580	0.0007	0.0856	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
213	0.00	0.000	0.000	0.0580	0.0007	0.0834	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
214	0.00	0.000	0.000	0.0580	0.0006	0.0815	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
215	0.00	0.000	0.000	0.0580	0.0006	0.0798	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
216	0.00	0.000	0.000	0.0580	0.0006	0.0782	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
217	0.00	0.000	0.000	0.0580	0.0006	0.0766	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

218	0.00	0.000	0.000	0.0580	0.0006	0.0750	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
219	0.00	0.000	0.000	0.0580	0.0006	0.0735	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
220	0.15	0.000	0.003	0.0580	0.0006	0.0747	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
221	0.00	0.000	0.000	0.0580	0.0005	0.0616	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
222	0.04	0.000	0.003	0.0580	0.0006	0.0772	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
223	0.00	0.000	0.000	0.0580	0.0005	0.0605	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
224	0.00	0.000	0.000	0.0580	0.0006	0.0703	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
225	0.01	0.000	0.003	0.0580	0.0006	0.0733	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
226	0.00	0.000	0.000	0.0580	0.0005	0.0626	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
227	0.00	0.000	0.000	0.0580	0.0005	0.0633	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
228	0.32	0.000	0.006	0.0580	0.0005	0.0672	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
229	0.00	0.000	0.000	0.0580	0.0003	0.0352	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
230	0.00	0.000	0.000	0.0580	0.0005	0.0655	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
231	0.01	0.000	0.003	0.0580	0.0006	0.0732	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
232	0.10	0.000	0.003	0.0580	0.0006	0.0763	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
233	0.18	0.000	0.006	0.0580	0.0003	0.0367	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
234	0.00	0.000	0.000	0.0580	0.0002	0.0273	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
235	0.00	0.000	0.000	0.0580	0.0004	0.0486	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
236	0.20	0.000	0.006	0.0580	0.0007	0.0821	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
237	0.00	0.000	0.000	0.0580	0.0002	0.0221	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
238	0.03	0.000	0.002	0.0580	0.0004	0.0448	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
239	0.24	0.000	0.006	0.0580	0.0005	0.0670	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
240	0.28	0.000	0.048	0.0580	0.0003	0.0319	5.22E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
241	0.16	0.000	0.028	0.0580	0.0001	0.0094	6.13E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
242	0.29	0.000	0.099	0.0580	0.0002	0.0267	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
243	0.00	0.000	0.002	0.0580	0.0003	0.0360	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
244	0.02	0.000	0.008	0.0580	0.0003	0.0402	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
245	0.04	0.000	0.011	0.0580	0.0004	0.0515	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
246	0.00	0.000	0.000	0.0580	0.0003	0.0428	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
247	0.00	0.000	0.000	0.0580	0.0004	0.0504	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
248	0.00	0.000	0.000	0.0580	0.0003	0.0425	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
249	0.00	0.000	0.000	0.0580	0.0003	0.0361	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
250	0.00	0.000	0.000	0.0580	0.0002	0.0309	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
251	0.00	0.000	0.000	0.0580	0.0002	0.0202	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
252	0.00	0.000	0.000	0.0580	0.0001	0.0083	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
253	0.00	0.000	0.000	0.0580	0.0000	0.0007	2.99E-09	0.0000	0.0000	1.71E-10	0.0000	0.0000	0.00E+00
254	0.00	0.000	0.000	0.0580	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
255	0.00	0.000	0.000	0.0580	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
256	0.00	0.000	0.000	0.0580	0.0000	0.0007	2.88E-09	0.0000	0.0000	1.71E-10	0.0000	0.0000	0.00E+00
257	0.00	0.000	0.000	0.0580	0.0001	0.0084	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
258	0.00	0.000	0.000	0.0580	0.0002	0.0190	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
259	0.26	0.000	0.009	0.0580	0.0003	0.0350	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
260	0.28	0.000	0.009	0.0580	0.0003	0.0336	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
261	0.00	0.000	0.000	0.0580	0.0002	0.0193	4.88E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
262	0.00	0.000	0.003	0.0580	0.0006	0.0731	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

263		0.00	0.000	0.000	0.0580	0.0007	0.0895	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
264		0.00	0.000	0.000	0.0580	0.0007	0.0826	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
265		0.00	0.000	0.000	0.0580	0.0006	0.0700	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
266		0.00	0.000	0.000	0.0580	0.0005	0.0577	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
267		0.00	0.000	0.000	0.0580	0.0004	0.0475	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
268		0.00	0.000	0.000	0.0580	0.0003	0.0397	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
269		0.83	0.000	0.007	0.0649	0.0004	0.0454	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
270	*	0.00	0.000	0.007	0.0608	0.0000	0.0026	2.23E-09	0.0000	0.0000	1.68E-10	0.0000	0.0000	0.00E+00
271		1.07	0.000	0.058	0.0651	0.0004	0.0474	5.46E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
272		0.28	0.000	0.045	0.0641	0.0002	0.0261	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
273		0.11	0.000	0.048	0.0634	0.0004	0.0494	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
274		0.00	0.000	0.014	0.0599	0.0005	0.0597	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
275		0.00	0.000	0.007	0.0589	0.0006	0.0811	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
276		0.02	0.000	0.018	0.0593	0.0005	0.0654	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
277		0.09	0.000	0.015	0.0632	0.0004	0.0519	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
278		0.04	0.000	0.009	0.0627	0.0002	0.0271	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
279		0.06	0.000	0.010	0.0630	0.0000	0.0017	2.45E-09	0.0000	0.0000	1.69E-10	0.0000	0.0000	0.00E+00
280		0.00	0.000	0.005	0.0610	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
281		0.00	0.000	0.003	0.0603	0.0001	0.0091	4.18E-09	0.0000	0.0000	1.74E-10	0.0000	0.0000	0.00E+00
282		0.05	0.000	0.005	0.0629	0.0004	0.0490	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
283		0.00	0.000	0.003	0.0612	0.0004	0.0497	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
284		0.00	0.000	0.002	0.0606	0.0006	0.0722	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
285		0.00	0.000	0.002	0.0602	0.0007	0.0894	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
286		0.00	0.000	0.002	0.0599	0.0008	0.0952	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
287		0.16	0.000	0.011	0.0637	0.0008	0.1027	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
288		0.27	0.000	0.010	0.0641	0.0007	0.0857	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
289		0.00	0.000	0.007	0.0608	0.0006	0.0764	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
290		0.01	0.000	0.006	0.0610	0.0011	0.1426	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
291	*	0.00	0.000	0.003	0.0608	0.0010	0.1302	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
292		0.02	0.000	0.010	0.0618	0.0008	0.1013	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
293		0.42	0.000	0.024	0.0644	0.0007	0.0926	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
294		0.03	0.000	0.012	0.0623	0.0002	0.0209	4.59E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
295		0.02	0.000	0.018	0.0617	0.0007	0.0880	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
296		0.34	0.000	0.056	0.0642	0.0010	0.1213	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
297		0.20	0.000	0.039	0.0639	0.0002	0.0244	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
298		0.50	0.000	0.022	0.0645	0.0005	0.0605	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
299		0.04	0.000	0.006	0.0627	0.0005	0.0568	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
300		0.47	0.000	0.031	0.0645	0.0007	0.0861	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
301		0.00	0.000	0.007	0.0608	0.0004	0.0550	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
302		0.00	0.000	0.010	0.0592	0.0007	0.0907	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
303		0.00	0.000	0.006	0.0580	0.0007	0.0887	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
304		0.00	0.000	0.000	0.0580	0.0005	0.0654	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
305		0.02	0.000	0.012	0.0580	0.0002	0.0262	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
306		0.28	0.000	0.021	0.0580	0.0001	0.0105	3.05E-09	0.0000	0.0000	1.71E-10	0.0000	0.0000	0.00E+00
307		0.00	0.000	0.000	0.0580	0.0000	0.0017	1.14E-09	0.0000	0.0000	1.56E-10	0.0000	0.0000	0.00E+00

308			0.00	0.000	0.000	0.0580	0.0004	0.0532	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
309			0.00	0.000	0.000	0.0580	0.0006	0.0756	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
310			0.00	0.000	0.000	0.0580	0.0006	0.0787	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
311	*		0.00	0.000	0.000	0.0580	0.0007	0.0850	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
312			0.00	0.000	0.000	0.0580	0.0008	0.0958	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
313			0.00	0.000	0.000	0.0580	0.0008	0.1070	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
314			0.00	0.000	0.000	0.0580	0.0009	0.1154	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
315			0.00	0.000	0.000	0.0580	0.0010	0.1204	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
316			0.00	0.000	0.000	0.0580	0.0010	0.1223	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
317			0.00	0.000	0.000	0.0580	0.0010	0.1222	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
318			0.03	0.000	0.004	0.0580	0.0010	0.1217	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
319			0.09	0.000	0.004	0.0580	0.0009	0.1105	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
320			0.42	0.000	0.011	0.0644	0.0009	0.1163	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
321	*		0.49	0.000	0.023	0.0624	0.0008	0.1070	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
322	*		0.11	0.000	0.008	0.0624	0.0012	0.1521	6.97E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
323	*		0.35	0.000	0.005	0.0624	0.0010	0.1312	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
324	*		0.09	0.000	0.000	0.0624	0.0008	0.1050	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
325			0.37	0.000	0.000	0.0652	0.0006	0.0799	5.83E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
326	*		0.00	0.000	0.006	0.0613	0.0004	0.0480	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
327			0.00	0.000	0.005	0.0603	0.0007	0.0908	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
328			0.00	0.000	0.004	0.0597	0.0009	0.1188	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
329	*		0.00	0.000	0.000	0.0597	0.0007	0.0902	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
330	*		0.00	0.000	0.000	0.0597	0.0004	0.0507	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
331	*		0.00	0.000	0.000	0.0597	0.0001	0.0170	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
332	*		0.00	0.000	0.000	0.0597	0.0000	0.0059	6.81E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
333	*		0.00	0.000	0.000	0.0597	0.0002	0.0207	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
334	*		0.00	0.000	0.000	0.0597	0.0004	0.0507	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
335	*		0.46	0.000	0.014	0.0613	0.0006	0.0805	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
336	*		0.02	0.000	0.013	0.0624	0.0008	0.1046	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
337	*	*	0.05	0.000	0.000	0.0624	0.0009	0.1077	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
338	*	*	0.00	0.000	0.009	0.0624	0.0010	0.1205	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
339	*	*	0.00	0.000	0.017	0.0624	0.0010	0.1219	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
340		*	0.00	0.000	0.000	0.0995	0.0009	0.1196	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
341		*	0.00	0.000	0.000	0.0995	0.0009	0.1164	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
342		*	0.00	0.000	0.000	0.0995	0.0009	0.1130	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
343		*	0.08	0.000	0.002	0.1062	0.0009	0.1097	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
344		*	0.02	0.000	0.002	0.1075	0.0008	0.1064	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
345		*	0.00	0.000	0.000	0.1075	0.0008	0.1033	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
346		*	0.79	0.000	0.002	0.1736	0.0008	0.1002	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
347		*	0.11	0.000	0.002	0.1825	0.0008	0.0973	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
348		*	0.02	0.000	0.002	0.1842	0.0008	0.0945	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
349		*	0.09	0.000	0.002	0.1917	0.0007	0.0918	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
350			0.03	0.000	0.042	0.1490	0.0007	0.0914	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
351			0.12	0.000	0.076	0.1442	0.0006	0.0770	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
352			0.12	0.000	0.049	0.1476	0.0005	0.0692	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

353			0.05	0.000	0.043	0.1472	0.0010	0.1200	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
354			0.03	0.000	0.061	0.1399	0.0009	0.1084	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
355			0.01	0.000	0.033	0.1344	0.0006	0.0738	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
356	*		0.15	0.000	0.016	0.1338	0.0005	0.0646	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
357	*		0.12	0.000	0.014	0.1331	0.0005	0.0683	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
358	*		0.02	0.000	0.000	0.1329	0.0005	0.0595	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
359	*	*	0.00	0.000	0.011	0.1329	0.0004	0.0507	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
360	*	*	0.08	0.000	0.000	0.1329	0.0005	0.0578	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
361	*	*	0.00	0.000	0.009	0.1329	0.0004	0.0536	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
362	*	*	0.00	0.000	0.015	0.1329	0.0004	0.0463	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
363	*	*	0.00	0.000	0.015	0.1329	0.0003	0.0393	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
364	*	*	0.00	0.000	0.000	0.1329	0.0003	0.0340	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
365	*	*	0.17	0.000	0.000	0.1329	0.0002	0.0310	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

* = Frozen (air or soil)

Annual Totals for Year 4			
	inches	cubic feet	percent
Precipitation	29.81	108,212.4	100.00
Runoff	0.000	0.0000	0.00
Evapotranspiration	6.909	25,079.9	23.18
Drainage Collected from Layer 3	22.3213	81,026.5	74.88
Percolation/Leakage through Layer 5	0.000002	0.0087	0.00
Average Head on Top of Layer 4	0.0005	---	---
Drainage Collected from Layer 7	0.0000	0.0084	0.00
Percolation/Leakage through Layer 9	0.000000	0.0002	0.00
Average Head on Top of Layer 8	0.0000	---	---
Percolation/Leakage through Layer 10	0.000000	0.0000	0.00
Change in Water Storage	0.5801	2,105.9	1.95
Soil Water at Start of Year	60.2901	218,853.1	202.24
Soil Water at End of Year	60.4704	219,507.6	202.85
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.3998	1,451.4	1.34
Annual Water Budget Balance	0.0000	0.0000	0.00

Daily Output for Year 5

Column key: Head #1: drainage from Layer 4 | Head #2: drainage from Layer 8
Drain #1: drainage from Layer 3 | Drain #2: drainage from Layer 7
Leak #1: leakage thru Layer 5 | Leak #2: leakage thru Layer 9 | Leak #3: leakage thru Layer 10

Title: Wayne Disposal-Initial Lift-Sideslope
Simulated On: 3/10/2021 13:00

Day	Freezing Status* Air	Soil	Rain (inches)	Runoff (inches)	ET (inches)	Evap. Zone Water (in/in)	Head #1 (inches)	Drain #1 (inches)	Leak #1 (inches)	Head #2 (inches)	Drain #2 (inches)	Leak #2 (inches)	Head #3 (inches)	Drain #3 (inches)	Leak #3 (inches)
1		*	0.00	0.000	0.000	0.1663	0.0003	0.0317	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
2		*	0.00	0.000	0.000	0.1663	0.0003	0.0345	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
3		*	0.00	0.000	0.000	0.1663	0.0003	0.0382	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
4		*	0.00	0.000	0.000	0.1663	0.0003	0.0422	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
5		*	0.00	0.000	0.000	0.1663	0.0004	0.0459	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
6		*	0.14	0.000	0.002	0.1781	0.0004	0.0492	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
7		*	0.01	0.000	0.002	0.1785	0.0004	0.0519	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
8		*	0.07	0.000	0.002	0.1844	0.0004	0.0540	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
9		*	0.00	0.000	0.000	0.1844	0.0004	0.0554	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
10		*	0.00	0.000	0.000	0.1844	0.0004	0.0564	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
11	*	*	0.01	0.000	0.010	0.1844	0.0005	0.0569	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
12	*	*	0.00	0.000	0.000	0.1844	0.0005	0.0571	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
13	*	*	0.00	0.000	0.000	0.1844	0.0005	0.0571	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
14	*	*	0.00	0.000	0.000	0.1844	0.0005	0.0568	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
15	*	*	0.00	0.000	0.000	0.1844	0.0004	0.0564	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
16		*	0.26	0.000	0.002	0.2056	0.0004	0.0559	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
17		*	0.01	0.000	0.002	0.2061	0.0004	0.0553	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
18	*	*	0.00	0.000	0.000	0.2061	0.0004	0.0547	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
19	*	*	0.01	0.000	0.006	0.2061	0.0004	0.0540	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
20	*	*	0.00	0.000	0.000	0.2061	0.0004	0.0533	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
21	*	*	0.00	0.000	0.000	0.2061	0.0004	0.0525	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
22	*	*	0.00	0.000	0.000	0.2061	0.0004	0.0518	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
23	*	*	0.07	0.000	0.015	0.2061	0.0004	0.0510	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
24		*	0.03	0.000	0.034	0.2098	0.0004	0.0502	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
25	*	*	0.02	0.000	0.018	0.2098	0.0004	0.0495	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
26		*	0.01	0.000	0.002	0.2101	0.0004	0.0487	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
27	*	*	0.01	0.000	0.013	0.2101	0.0004	0.0480	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
28	*	*	0.28	0.000	0.016	0.2101	0.0004	0.0472	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
29	*	*	0.00	0.000	0.007	0.2101	0.0004	0.0465	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
30	*	*	0.09	0.000	0.004	0.2101	0.0004	0.0458	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
31	*	*	0.10	0.000	0.000	0.2101	0.0004	0.0451	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
32	*	*	0.67	0.000	0.009	0.2101	0.0004	0.0444	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
33	*	*	0.00	0.000	0.005	0.2101	0.0003	0.0438	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
34	*	*	0.00	0.000	0.000	0.2101	0.0003	0.0431	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
35	*	*	0.00	0.000	0.000	0.2101	0.0003	0.0425	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
36	*	*	0.00	0.000	0.000	0.2101	0.0003	0.0418	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
37		*	0.01	0.000	0.000	0.3011	0.0003	0.0412	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

38		*	0.00	0.000	0.000	0.3011	0.0003	0.0406	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
39		*	0.00	0.000	0.000	0.3011	0.0003	0.0400	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
40		*	0.02	0.000	0.002	0.3029	0.0003	0.0394	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
41		*	0.09	0.000	0.002	0.3104	0.0003	0.0389	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
42		*	0.19	0.000	0.002	0.3262	0.0003	0.0383	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
43		*	0.00	0.000	0.000	0.3262	0.0003	0.0378	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
44		*	0.20	0.000	0.002	0.3431	0.0003	0.0373	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
45	*	*	0.00	0.000	0.000	0.3431	0.0003	0.0368	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
46	*	*	0.10	0.000	0.014	0.3431	0.0003	0.0363	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
47	*	*	0.00	0.000	0.017	0.3431	0.0003	0.0358	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
48		*	0.00	0.000	0.060	0.3435	0.0003	0.0353	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
49	*	*	0.00	0.000	0.000	0.3435	0.0003	0.0348	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
50	*	*	0.00	0.000	0.000	0.3435	0.0003	0.0344	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
51	*	*	0.00	0.000	0.000	0.3435	0.0003	0.0339	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
52	*	*	0.21	0.000	0.010	0.3435	0.0003	0.0335	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
53	*	*	0.06	0.000	0.018	0.3435	0.0003	0.0330	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
54	*	*	0.18	0.000	0.009	0.3435	0.0003	0.0326	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
55	*	*	0.13	0.000	0.006	0.3435	0.0003	0.0322	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
56	*	*	0.00	0.000	0.004	0.3435	0.0003	0.0318	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
57	*	*	0.55	0.000	0.003	0.3435	0.0002	0.0314	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
58	*	*	0.04	0.000	0.006	0.3435	0.0002	0.0310	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
59	*	*	0.38	0.000	0.003	0.3435	0.0002	0.0306	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
60	*	*	0.00	0.000	0.000	0.3435	0.0002	0.0303	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
61		*	0.04	0.000	0.000	0.4448	0.0002	0.0299	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
62		*	0.00	0.000	0.003	0.4570	0.0002	0.0307	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
63		*	0.00	0.000	0.000	0.4570	0.0002	0.0260	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
64		*	0.00	0.000	0.000	0.4570	0.0002	0.0281	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
65		*	0.00	0.000	0.000	0.4570	0.0002	0.0292	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
66	*	*	0.00	0.000	0.000	0.4570	0.0002	0.0296	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
67		*	0.00	0.000	0.000	0.4570	0.0002	0.0295	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
68		*	0.07	0.000	0.002	0.4570	0.0003	0.0328	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
69		*	0.56	0.000	0.002	0.4570	0.0002	0.0293	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
70		*	0.07	0.000	0.002	0.4570	0.0001	0.0110	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
71		*	0.00	0.000	0.000	0.4570	0.0002	0.0213	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
72		*	0.00	0.000	0.000	0.4570	0.0002	0.0278	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
73			0.00	0.000	0.069	0.2543	0.0003	0.0323	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
74			0.00	0.000	0.101	0.2284	0.0003	0.0319	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
75			0.21	0.000	0.056	0.2321	0.0003	0.0324	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
76			0.00	0.000	0.093	0.2187	0.0003	0.0322	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
77			0.00	0.000	0.118	0.2051	0.0003	0.0320	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
78			0.00	0.000	0.109	0.1925	0.0003	0.0405	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
79			0.22	0.000	0.084	0.2013	0.0003	0.0389	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
80			0.00	0.000	0.168	0.1852	0.0003	0.0334	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
81			0.00	0.000	0.175	0.1681	0.0002	0.0291	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
82			0.00	0.000	0.154	0.1546	0.0002	0.0258	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

83		0.00	0.000	0.130	0.1432	0.0002	0.0231	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
84		0.00	0.000	0.054	0.1377	0.0002	0.0209	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
85		0.01	0.000	0.042	0.1339	0.0001	0.0133	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
86	*	0.05	0.000	0.045	0.1337	0.0000	0.0004	1.29E-09	0.0000	0.0000	1.59E-10	0.0000	0.0000	0.00E+00
87		0.04	0.000	0.036	0.1333	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
88		0.33	0.000	0.032	0.1577	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
89		0.50	0.000	0.029	0.1967	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
90		0.02	0.000	0.240	0.1727	0.0000	0.0020	2.72E-09	0.0000	0.0000	1.70E-10	0.0000	0.0000	0.00E+00
91		0.00	0.000	0.071	0.1540	0.0000	0.0001	7.39E-10	0.0000	0.0000	1.46E-10	0.0000	0.0000	0.00E+00
92		0.00	0.000	0.229	0.1229	0.0001	0.0065	4.87E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
93		0.20	0.000	0.131	0.1212	0.0001	0.0074	4.62E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
94		0.00	0.000	0.054	0.1128	0.0005	0.0570	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
95		0.00	0.000	0.041	0.1075	0.0008	0.0980	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
96		0.10	0.000	0.036	0.1114	0.0008	0.1014	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
97		0.02	0.000	0.032	0.1092	0.0007	0.0889	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
98		0.16	0.000	0.029	0.1197	0.0006	0.0700	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
99		0.16	0.000	0.027	0.1305	0.0005	0.0600	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
100		0.00	0.000	0.270	0.1077	0.0004	0.0460	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
101		0.00	0.000	0.024	0.1055	0.0003	0.0409	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
102		0.00	0.000	0.022	0.1023	0.0003	0.0415	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
103		0.00	0.000	0.021	0.0987	0.0002	0.0305	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
104		0.00	0.000	0.020	0.0948	0.0002	0.0297	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
105		0.00	0.000	0.019	0.0914	0.0002	0.0277	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
106		0.00	0.000	0.018	0.0888	0.0003	0.0429	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
107	*	0.07	0.000	0.067	0.0880	0.0005	0.0578	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
108	*	0.02	0.000	0.035	0.0859	0.0005	0.0661	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
109		0.14	0.000	0.018	0.0957	0.0005	0.0681	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
110		0.03	0.000	0.018	0.0960	0.0005	0.0675	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
111		0.46	0.000	0.017	0.1328	0.0005	0.0646	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
112		0.00	0.000	0.138	0.1024	0.0006	0.0730	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
113	*	0.03	0.000	0.053	0.0940	0.0004	0.0443	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
114	*	0.00	0.000	0.001	0.0919	0.0004	0.0484	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
115	*	0.00	0.000	0.000	0.0907	0.0006	0.0739	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
116	*	0.09	0.000	0.039	0.0914	0.0006	0.0798	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
117	*	0.01	0.000	0.036	0.0912	0.0006	0.0751	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
118	*	0.10	0.000	0.020	0.0923	0.0005	0.0670	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
119	*	0.22	0.000	0.027	0.0935	0.0005	0.0586	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
120	*	0.06	0.000	0.012	0.0947	0.0004	0.0513	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
121	*	0.05	0.000	0.010	0.0960	0.0004	0.0454	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
122	*	0.07	0.000	0.009	0.0973	0.0003	0.0410	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
123	*	0.30	0.000	0.009	0.0987	0.0003	0.0383	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
124	*	0.00	0.000	0.018	0.1001	0.0003	0.0369	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
125	*	0.62	0.000	0.000	0.1016	0.0003	0.0361	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
126	*	0.66	0.000	0.000	0.1032	0.0003	0.0375	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
127		0.59	0.000	0.000	0.1554	0.0004	0.0469	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

128	0.32	0.000	0.000	0.1546	0.0001	0.0179	4.62E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
129	0.17	0.000	0.139	0.1248	0.0003	0.0383	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
130	0.14	0.000	0.096	0.1233	0.0005	0.0612	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
131	1.28	0.000	0.136	0.1532	0.0006	0.0817	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
132	0.15	0.000	0.165	0.1208	0.0003	0.0399	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
133	0.27	0.000	0.424	0.0964	0.0006	0.0762	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
134	0.04	0.000	0.231	0.0622	0.0004	0.0525	5.02E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
135	0.11	0.000	0.020	0.0635	0.0005	0.0608	6.59E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
136	0.00	0.000	0.019	0.0592	0.0004	0.0524	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
137	0.00	0.000	0.006	0.0580	0.0001	0.0092	4.03E-09	0.0000	0.0000	1.74E-10	0.0000	0.0000	0.00E+00
138	0.84	0.000	0.024	0.0649	0.0000	0.0051	1.41E-09	0.0000	0.0000	1.61E-10	0.0000	0.0000	0.00E+00
139	0.00	0.000	0.028	0.0580	0.0001	0.0171	1.96E-09	0.0000	0.0000	1.66E-10	0.0000	0.0000	0.00E+00
140	0.00	0.000	0.000	0.0580	0.0013	0.1582	6.97E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
141	0.00	0.000	0.000	0.0580	0.0007	0.0851	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
142	0.00	0.000	0.000	0.0580	0.0004	0.0561	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
143	0.02	0.000	0.005	0.0580	0.0010	0.1224	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
144	0.00	0.000	0.000	0.0580	0.0016	0.1985	7.01E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
145	0.00	0.000	0.000	0.0580	0.0018	0.2295	7.04E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
146	0.00	0.000	0.000	0.0580	0.0018	0.2257	7.04E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
147	0.13	0.000	0.003	0.0580	0.0017	0.2121	7.02E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
148	0.12	0.000	0.003	0.0580	0.0016	0.2051	7.02E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
149	0.01	0.000	0.003	0.0580	0.0018	0.2225	7.03E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
150	0.03	0.000	0.003	0.0580	0.0017	0.2159	7.03E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
151	0.00	0.000	0.000	0.0580	0.0014	0.1721	6.99E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
152	0.00	0.000	0.000	0.0580	0.0013	0.1597	6.97E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
153	0.00	0.000	0.000	0.0580	0.0011	0.1407	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
154	0.14	0.000	0.003	0.0580	0.0010	0.1300	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
155	0.00	0.000	0.000	0.0580	0.0009	0.1125	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
156	0.00	0.000	0.000	0.0580	0.0012	0.1461	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
157	0.00	0.000	0.000	0.0580	0.0011	0.1332	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
158	0.17	0.000	0.008	0.0580	0.0010	0.1214	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
159	0.00	0.000	0.000	0.0580	0.0007	0.0919	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
160	0.00	0.000	0.000	0.0580	0.0010	0.1282	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
161	0.00	0.000	0.000	0.0580	0.0009	0.1176	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
162	0.00	0.000	0.000	0.0580	0.0008	0.1034	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
163	0.01	0.000	0.002	0.0580	0.0007	0.0941	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
164	0.25	0.000	0.007	0.0640	0.0007	0.0926	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
165	0.02	0.000	0.002	0.0625	0.0005	0.0677	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
166	0.09	0.000	0.002	0.0633	0.0008	0.1011	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
167	0.07	0.000	0.002	0.0632	0.0006	0.0795	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
168	0.05	0.000	0.013	0.0628	0.0007	0.0864	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
169	0.00	0.000	0.001	0.0613	0.0008	0.1051	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
170	0.00	0.000	0.001	0.0609	0.0009	0.1147	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
171	0.02	0.000	0.002	0.0620	0.0008	0.1025	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
172	0.01	0.000	0.002	0.0618	0.0007	0.0871	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

173	0.00	0.000	0.001	0.0611	0.0005	0.0672	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
174	0.00	0.000	0.001	0.0608	0.0005	0.0575	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
175	0.00	0.000	0.001	0.0606	0.0004	0.0546	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
176	0.00	0.000	0.001	0.0604	0.0004	0.0538	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
177	0.48	0.000	0.006	0.0645	0.0005	0.0621	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
178	0.12	0.000	0.081	0.0634	0.0002	0.0239	4.95E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
179	0.04	0.000	0.028	0.0622	0.0006	0.0726	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
180	0.01	0.000	0.012	0.0609	0.0007	0.0940	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
181	0.00	0.000	0.006	0.0606	0.0007	0.0892	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
182	0.21	0.000	0.019	0.0639	0.0007	0.0909	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
183	0.00	0.000	0.003	0.0612	0.0002	0.0219	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
184	0.28	0.000	0.014	0.0641	0.0006	0.0763	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
185	0.01	0.000	0.013	0.0613	0.0001	0.0074	3.45E-09	0.0000	0.0000	1.72E-10	0.0000	0.0000	0.00E+00
186	0.00	0.000	0.002	0.0607	0.0003	0.0438	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
187	0.00	0.000	0.002	0.0603	0.0006	0.0721	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
188	0.00	0.000	0.002	0.0599	0.0005	0.0680	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
189	0.00	0.000	0.002	0.0596	0.0004	0.0540	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
190	0.00	0.000	0.002	0.0593	0.0003	0.0393	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
191	0.00	0.000	0.002	0.0590	0.0002	0.0276	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
192	0.00	0.000	0.002	0.0588	0.0002	0.0211	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
193	0.17	0.000	0.009	0.0638	0.0002	0.0299	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
194	0.02	0.000	0.003	0.0623	0.0001	0.0101	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
195	0.00	0.000	0.001	0.0612	0.0002	0.0268	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
196	0.00	0.000	0.001	0.0608	0.0004	0.0514	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
197	0.00	0.000	0.001	0.0605	0.0005	0.0654	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
198	0.01	0.000	0.003	0.0608	0.0005	0.0688	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
199	0.00	0.000	0.001	0.0605	0.0006	0.0698	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
200	0.00	0.000	0.001	0.0603	0.0005	0.0666	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
201	0.10	0.000	0.003	0.0634	0.0006	0.0718	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
202	0.00	0.000	0.001	0.0613	0.0004	0.0524	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
203	0.00	0.000	0.001	0.0609	0.0005	0.0606	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
204	0.00	0.000	0.001	0.0606	0.0006	0.0710	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
205	0.76	0.000	0.007	0.0648	0.0006	0.0802	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
206	0.00	0.000	0.027	0.0580	0.0003	0.0396	6.66E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
207	0.00	0.000	0.000	0.0580	0.0007	0.0832	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
208	0.00	0.000	0.000	0.0580	0.0007	0.0940	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
209	0.00	0.000	0.000	0.0580	0.0008	0.0970	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
210	0.00	0.000	0.002	0.0580	0.0007	0.0820	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
211	0.77	0.000	0.016	0.0649	0.0006	0.0733	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
212	0.10	0.000	0.039	0.0633	0.0000	0.0056	3.59E-09	0.0000	0.0000	1.73E-10	0.0000	0.0000	0.00E+00
213	0.01	0.000	0.028	0.0596	0.0002	0.0310	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
214	0.23	0.000	0.099	0.0639	0.0006	0.0694	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
215	0.31	0.000	0.095	0.0642	0.0005	0.0582	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
216	0.00	0.000	0.011	0.0603	0.0001	0.0067	4.02E-09	0.0000	0.0000	1.74E-10	0.0000	0.0000	0.00E+00
217	0.73	0.000	0.056	0.0648	0.0004	0.0565	5.86E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00

218		0.00	0.000	0.019	0.0592	0.0001	0.0127	5.66E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
219		0.16	0.000	0.032	0.0637	0.0005	0.0653	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
220		0.12	0.000	0.058	0.0634	0.0004	0.0509	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
221		0.00	0.000	0.014	0.0599	0.0004	0.0442	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
222		0.00	0.000	0.010	0.0580	0.0004	0.0508	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
223		0.00	0.000	0.000	0.0580	0.0003	0.0349	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
224		0.00	0.000	0.000	0.0580	0.0001	0.0122	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
225		0.00	0.000	0.000	0.0580	0.0000	0.0001	7.79E-10	0.0000	0.0000	1.47E-10	0.0000	0.0000	0.00E+00
226		0.00	0.000	0.000	0.0580	0.0000	0.0036	3.93E-09	0.0000	0.0000	1.73E-10	0.0000	0.0000	0.00E+00
227		0.32	0.000	0.014	0.0580	0.0003	0.0326	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
228		0.03	0.000	0.004	0.0580	0.0004	0.0486	5.52E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
229		0.00	0.000	0.000	0.0580	0.0010	0.1200	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
230		0.00	0.000	0.000	0.0580	0.0010	0.1287	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
231		0.58	0.000	0.011	0.0646	0.0009	0.1164	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
232		0.28	0.000	0.067	0.0641	0.0004	0.0485	5.76E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
233		0.00	0.000	0.021	0.0590	0.0010	0.1310	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
234		0.00	0.000	0.005	0.0580	0.0012	0.1462	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
235		0.00	0.000	0.000	0.0580	0.0010	0.1279	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
236		0.00	0.000	0.000	0.0580	0.0006	0.0811	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
237		0.00	0.000	0.000	0.0580	0.0003	0.0407	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
238		0.04	0.000	0.005	0.0580	0.0002	0.0258	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
239		0.00	0.000	0.000	0.0580	0.0001	0.0131	4.31E-09	0.0000	0.0000	1.74E-10	0.0000	0.0000	0.00E+00
240		0.11	0.000	0.004	0.0580	0.0005	0.0653	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
241		0.00	0.000	0.000	0.0580	0.0006	0.0710	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
242		0.00	0.000	0.000	0.0580	0.0010	0.1276	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
243		0.00	0.000	0.000	0.0580	0.0010	0.1242	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
244		0.00	0.000	0.000	0.0580	0.0009	0.1137	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
245		0.00	0.000	0.000	0.0580	0.0008	0.1066	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
246		0.00	0.000	0.000	0.0580	0.0008	0.1032	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
247		0.27	0.000	0.009	0.0641	0.0008	0.1068	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
248		0.00	0.000	0.002	0.0613	0.0007	0.0834	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
249		0.01	0.000	0.003	0.0621	0.0009	0.1169	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
250		0.09	0.000	0.003	0.0633	0.0010	0.1233	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
251		0.01	0.000	0.003	0.0618	0.0006	0.0783	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
252		0.00	0.000	0.001	0.0611	0.0008	0.1028	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
253		0.00	0.000	0.001	0.0607	0.0008	0.1044	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
254		0.00	0.000	0.001	0.0604	0.0008	0.0963	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
255		0.00	0.000	0.001	0.0602	0.0007	0.0868	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
256		0.00	0.000	0.001	0.0600	0.0006	0.0793	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
257		0.00	0.000	0.001	0.0598	0.0006	0.0745	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
258		0.14	0.000	0.006	0.0636	0.0006	0.0785	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
259		0.53	0.000	0.007	0.0646	0.0005	0.0638	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
260		0.22	0.000	0.025	0.0640	0.0003	0.0375	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
261		0.97	0.000	0.072	0.0650	0.0008	0.0948	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
262	*	0.00	0.000	0.005	0.0610	0.0007	0.0917	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

263			0.00	0.000	0.004	0.0603	0.0008	0.0984	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
264	*		0.00	0.000	0.000	0.0603	0.0009	0.1137	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
265			0.00	0.000	0.011	0.0584	0.0007	0.0889	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
266			0.00	0.000	0.001	0.0580	0.0005	0.0591	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
267			0.00	0.000	0.000	0.0580	0.0002	0.0281	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
268			1.82	0.000	0.074	0.0654	0.0002	0.0206	4.97E-09	0.0000	0.0000	1.75E-10	0.0000	0.0000	0.00E+00
269	*		0.00	0.000	0.004	0.0611	0.0000	0.0027	1.62E-09	0.0000	0.0000	1.63E-10	0.0000	0.0000	0.00E+00
270	*		0.00	0.000	0.000	0.0609	0.0007	0.0878	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
271			0.34	0.000	0.027	0.0643	0.0007	0.0897	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
272	*		0.11	0.000	0.035	0.0624	0.0001	0.0136	2.79E-09	0.0000	0.0000	1.70E-10	0.0000	0.0000	0.00E+00
273	*		0.00	0.000	0.058	0.0614	0.0006	0.0717	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
274	*		0.11	0.000	0.035	0.0624	0.0004	0.0534	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
275	*		0.04	0.000	0.055	0.0624	0.0003	0.0388	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
276	*		0.01	0.000	0.000	0.0624	0.0007	0.0853	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
277			0.01	0.000	0.019	0.0617	0.0012	0.1455	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
278	*		0.00	0.000	0.000	0.0612	0.0014	0.1823	6.99E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
279	*		0.60	0.000	0.027	0.0624	0.0015	0.1885	7.00E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
280			0.45	0.000	0.000	0.0650	0.0014	0.1727	6.99E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
281			0.03	0.000	0.009	0.0624	0.0014	0.1792	6.99E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
282			0.00	0.000	0.005	0.0610	0.0020	0.2458	7.05E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
283	*		0.00	0.000	0.000	0.0609	0.0013	0.1694	6.98E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
284			0.07	0.000	0.008	0.0632	0.0008	0.0990	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
285			0.00	0.000	0.014	0.0599	0.0002	0.0262	6.35E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
286			0.38	0.000	0.025	0.0643	0.0007	0.0905	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
287			0.04	0.000	0.009	0.0627	0.0009	0.1177	6.03E-09	0.0000	0.0000	1.76E-10	0.0000	0.0000	0.00E+00
288			0.45	0.000	0.022	0.0645	0.0015	0.1833	6.99E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
289	*		0.04	0.000	0.027	0.0624	0.0010	0.1226	6.79E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
290	*		0.00	0.000	0.000	0.0614	0.0016	0.2078	7.02E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
291	*		0.00	0.000	0.004	0.0605	0.0011	0.1416	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
292	*		0.00	0.000	0.000	0.0605	0.0006	0.0773	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
293	*		0.00	0.000	0.000	0.0604	0.0005	0.0571	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
294	*		0.00	0.000	0.000	0.0604	0.0006	0.0751	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
295			0.00	0.000	0.005	0.0595	0.0009	0.1092	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
296			0.00	0.000	0.007	0.0580	0.0011	0.1363	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
297			0.00	0.000	0.000	0.0580	0.0012	0.1539	6.97E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
298			0.00	0.000	0.000	0.0580	0.0013	0.1619	6.98E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
299	*		0.00	0.000	0.000	0.0580	0.0013	0.1579	6.97E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
300	*		0.00	0.000	0.000	0.0580	0.0012	0.1524	6.97E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
301	*		0.00	0.000	0.000	0.0580	0.0012	0.1470	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
302	*	*	0.01	0.000	0.007	0.0580	0.0011	0.1418	6.96E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
303	*	*	0.29	0.000	0.015	0.0580	0.0011	0.1369	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
304	*	*	0.14	0.000	0.000	0.0580	0.0010	0.1321	6.95E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
305		*	0.21	0.000	0.000	0.0898	0.0010	0.1274	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
306		*	0.00	0.000	0.008	0.1069	0.0010	0.1229	6.94E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
307	*	*	0.00	0.000	0.018	0.1069	0.0009	0.1186	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

308	*	*	0.00	0.000	0.014	0.1069	0.0009	0.1145	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
309	*	*	0.20	0.000	0.023	0.1069	0.0009	0.1105	6.93E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
310		*	0.00	0.000	0.037	0.1185	0.0008	0.1068	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
311		*	0.01	0.000	0.001	0.1195	0.0008	0.1032	6.92E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
312		*	0.01	0.000	0.001	0.1206	0.0008	0.0998	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
313		*	0.16	0.000	0.001	0.1340	0.0008	0.0966	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
314		*	0.05	0.000	0.001	0.1379	0.0007	0.0936	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
315		*	0.00	0.000	0.000	0.1379	0.0007	0.0907	6.91E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
316		*	0.00	0.000	0.000	0.1379	0.0007	0.0879	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
317		*	0.00	0.000	0.000	0.1379	0.0007	0.0853	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
318		*	0.27	0.000	0.001	0.1600	0.0007	0.0828	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
319		*	0.00	0.000	0.000	0.1600	0.0006	0.0805	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
320			0.00	0.000	0.111	0.1415	0.0006	0.0805	6.90E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
321			0.00	0.000	0.064	0.1289	0.0006	0.0742	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
322			0.00	0.000	0.032	0.1229	0.0006	0.0708	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
323	*		0.00	0.000	0.028	0.1184	0.0005	0.0690	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
324			0.21	0.000	0.055	0.1299	0.0006	0.0698	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
325			0.00	0.000	0.038	0.1244	0.0006	0.0733	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
326			0.00	0.000	0.041	0.1196	0.0005	0.0668	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
327			0.00	0.000	0.072	0.1122	0.0006	0.0716	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
328			0.00	0.000	0.078	0.1052	0.0005	0.0652	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
329			0.00	0.000	0.039	0.1019	0.0006	0.0710	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
330	*		0.00	0.000	0.000	0.1017	0.0006	0.0720	6.89E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
331	*		0.24	0.000	0.018	0.1032	0.0005	0.0660	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
332	*		0.00	0.000	0.018	0.1047	0.0005	0.0601	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
333	*		0.25	0.000	0.021	0.1061	0.0004	0.0549	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
334			0.01	0.000	0.000	0.1390	0.0004	0.0509	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
335	*		0.08	0.000	0.024	0.1405	0.0004	0.0462	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
336			0.16	0.000	0.011	0.1546	0.0004	0.0474	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
337	*		0.05	0.000	0.028	0.1499	0.0004	0.0454	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
338	*		0.00	0.000	0.025	0.1404	0.0003	0.0409	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
339	*		0.15	0.000	0.027	0.1378	0.0003	0.0352	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
340	*		0.29	0.000	0.022	0.1358	0.0003	0.0317	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
341			0.00	0.000	0.000	0.1368	0.0002	0.0281	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
342			0.04	0.000	0.010	0.1633	0.0003	0.0319	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
343			0.11	0.000	0.065	0.1538	0.0005	0.0625	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
344			0.05	0.000	0.061	0.1454	0.0003	0.0436	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
345			0.00	0.000	0.058	0.1357	0.0002	0.0313	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
346			0.00	0.000	0.056	0.1280	0.0004	0.0443	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
347			0.00	0.000	0.052	0.1215	0.0004	0.0515	6.86E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
348			0.18	0.000	0.052	0.1311	0.0004	0.0529	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
349			0.47	0.000	0.055	0.1640	0.0005	0.0574	6.87E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
350			0.00	0.000	0.045	0.1462	0.0005	0.0620	6.88E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
351			0.00	0.000	0.039	0.1353	0.0003	0.0346	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
352			0.00	0.000	0.031	0.1288	0.0002	0.0259	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

353	*	0.13	0.000	0.029	0.1281	0.0002	0.0304	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
354	*	0.01	0.000	0.024	0.1278	0.0003	0.0326	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
355		0.01	0.000	0.046	0.1270	0.0003	0.0358	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
356	*	0.00	0.000	0.000	0.1256	0.0003	0.0408	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
357		0.00	0.000	0.043	0.1204	0.0003	0.0412	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
358		0.00	0.000	0.044	0.1157	0.0003	0.0354	6.85E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
359		0.00	0.000	0.066	0.1093	0.0002	0.0297	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
360		0.00	0.000	0.055	0.1047	0.0002	0.0238	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
361		0.02	0.000	0.056	0.1020	0.0002	0.0254	6.84E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
362		0.02	0.000	0.058	0.0979	0.0002	0.0246	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
363		0.02	0.000	0.041	0.0950	0.0002	0.0216	6.83E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
364	*	0.00	0.000	0.000	0.0946	0.0001	0.0106	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00
365		0.05	0.000	0.039	0.0950	0.0001	0.0094	6.82E-09	0.0000	0.0000	1.77E-10	0.0000	0.0000	0.00E+00

* = Frozen (air or soil)

Annual Totals for Year 5			
	inches	cubic feet	percent
Precipitation	31.32	113,706.2	100.00
Runoff	0.000	0.0000	0.00
Evapotranspiration	8.373	30,394.8	26.73
Drainage Collected from Layer 3	24.6053	89,317.3	78.55
Percolation/Leakage through Layer 5	0.000002	0.0088	0.00
Average Head on Top of Layer 4	0.0005	---	---
Drainage Collected from Layer 7	0.0000	0.0085	0.00
Percolation/Leakage through Layer 9	0.000000	0.0002	0.00
Average Head on Top of Layer 8	0.0000	---	---
Percolation/Leakage through Layer 10	0.000000	0.0000	0.00
Change in Water Storage	-1.6545	-6,005.9	-5.28
Soil Water at Start of Year	60.4704	219,507.6	193.05
Soil Water at End of Year	59.2157	214,953.2	189.04
Snow Water at Start of Year	0.3998	1,451.4	1.28
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

Average Annual Totals Summary

Title: Wayne Disposal-Initial Lift-Sideslope
Simulated on: 3/10/2021 13:00

	Average Annual Totals for Years 1 - 5*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	30.21	[4.26]	109,651.5	100.00
Runoff	0.000	[0]	0.0000	0.00
Evapotranspiration	8.183	[1.48]	29,705.0	27.09
Subprofile1				
Lateral drainage collected from Layer 3	22.2894	[3.6595]	80,910.7	73.79
Percolation/leakage through Layer 5	0.000002	[0]	0.0087	0.00
Average Head on Top of Layer 4	0.0005	[0.0001]	---	---
Subprofile2				
Lateral drainage collected from Layer 7	0.0000	[0]	0.0085	0.00
Percolation/leakage through Layer 9	0.000000	[0]	0.0002	0.00
Average Head on Top of Layer 8	0.0000	[0]	---	---
Subprofile3				
Percolation/leakage through Layer 10	0.000000	[0]	0.0000	0.00
Water storage				
Change in water storage	-0.2656	[1.1065]	-964.2	-0.88

* Note: Average inches are converted to volume based on the user-specified area.

Peak Values Summary

Title: Wayne Disposal-Initial Lift-Sideslope
Simulated on: 3/10/2021 13:00

	Peak Values for Years 1 - 5*		
	(inches)		(cubic feet)
Precipitation	2.00		7,253.1
Runoff	0.000		0.0000
Subprofile1			
Drainage collected from Layer 3	0.2458		892.2
Percolation/leakage through Layer 5	0.000000		0.0000
Average head on Layer 4	0.0020		---
Maximum head on Layer 4	0.0039		---
Location of maximum head in Layer 3	0.00	(feet from drain)	
Subprofile2			
Drainage collected from Layer 7	0.0000		0.0000
Percolation/leakage through Layer 9	0.000000		0.0000
Average head on Layer 8	0.0000		---
Maximum head on Layer 8	0.0000		---
Location of maximum head in Layer 7	0.00	(feet from drain)	
Subprofile3			
Percolation/leakage through Layer 10	0.000000		0.0000
Other Parameters			
Snow water	1.8054		6,553.5
Maximum vegetation soil water	0.4570	(vol/vol)	
Minimum vegetation soil water	0.0580	(vol/vol)	

Final Water Storage in Landfill Profile at End of Simulation Period

Title: Wayne Disposal-Initial Lift-Sideslope
Simulated on: 3/10/2021 13:00
Simulation period: 5 years

	Final Water Storage	
Layer	(inches)	(vol/vol)
1	25.4912	0.2124
2	1.6853	0.1404
3	0.0021	0.0103
4	0.0000	0.0000
5	0.3750	0.7500
6	22.3800	0.3730
7	0.0050	0.0100
8	0.0000	0.0000
9	0.3750	0.7500
10	8.9022	0.3709
Snow water	0.0000	---

ATTACHMENT 5.2.2

HELP Model Analysis - Floor

HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE
HELP MODEL VERSION 4.0 BETA (2018)
DEVELOPED BY USEPA NATIONAL RISK MANAGEMENT RESEARCH LABORATORY

Title: Wayne Disposal - Initial Lift **Simulated On:** 3/23/2021 12:59

Layer 1

Type 1 - Vertical Percolation Layer (Cover Soil)
Sandy Waste Material
Material Texture Number 83

Thickness	=	120	inches
Porosity	=	0.457	vol/vol
Field Capacity	=	0.131	vol/vol
Wilting Point	=	0.058	vol/vol
Initial Soil Water Content	=	0.1887	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-03	cm/sec

Layer 2

Type 1 - Vertical Percolation Layer
Custom Soil 1
Material Texture Number 43

Thickness	=	12	inches
Porosity	=	0.417	vol/vol
Field Capacity	=	0.045	vol/vol
Wilting Point	=	0.018	vol/vol
Initial Soil Water Content	=	0.0477	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E-03	cm/sec

Layer 3

Type 2 - Lateral Drainage Layer
Drainage Net (0.5 cm)
Material Texture Number 20

Thickness	=	0.2	inches
Porosity	=	0.85	vol/vol
Field Capacity	=	0.01	vol/vol
Wilting Point	=	0.005	vol/vol
Initial Soil Water Content	=	0.01	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E+01	cm/sec
Slope	=	5	%
Drainage Length	=	390	ft

Layer 4

Type 4 - Flexible Membrane Liner
HDPE Membrane
Material Texture Number 35

Thickness	=	0.08	inches
Effective Sat. Hyd. Conductivity	=	2.00E-13	cm/sec
FML Pinhole Density	=	1	Holes/Acre
FML Installation Defects	=	1	Holes/Acre
FML Placement Quality	=	3	Good

Layer 5

Type 3 - Barrier Soil Liner
Bentonite (High)
Material Texture Number 17

Thickness	=	0.5	inches
Porosity	=	0.75	vol/vol
Field Capacity	=	0.747	vol/vol
Wilting Point	=	0.4	vol/vol
Initial Soil Water Content	=	0.75	vol/vol
Effective Sat. Hyd. Conductivity	=	3.00E-09	cm/sec

Layer 6

Type 1 - Vertical Percolation Layer
CL - Clay Loam (Moderate)
Material Texture Number 25

Thickness	=	60	inches
Porosity	=	0.437	vol/vol
Field Capacity	=	0.373	vol/vol
Wilting Point	=	0.266	vol/vol
Initial Soil Water Content	=	0.373	vol/vol
Effective Sat. Hyd. Conductivity	=	3.60E-06	cm/sec

Layer 7

Type 2 - Lateral Drainage Layer
Drainage Net (0.5 cm)
Material Texture Number 20

Thickness	=	0.5	inches
Porosity	=	0.85	vol/vol
Field Capacity	=	0.01	vol/vol
Wilting Point	=	0.005	vol/vol
Initial Soil Water Content	=	0.01	vol/vol
Effective Sat. Hyd. Conductivity	=	1.00E+01	cm/sec
Slope	=	5	%
Drainage Length	=	390	ft

Layer 8

Type 4 - Flexible Membrane Liner

HDPE Membrane

Material Texture Number 35

Thickness	=	0.08	inches
Effective Sat. Hyd. Conductivity	=	2.00E-13	cm/sec
FML Pinhole Density	=	1	Holes/Acre
FML Installation Defects	=	1	Holes/Acre
FML Placement Quality	=	3	Good

Layer 9

Type 3 - Barrier Soil Liner

Bentonite (High)

Material Texture Number 17

Thickness	=	0.5	inches
Porosity	=	0.75	vol/vol
Field Capacity	=	0.747	vol/vol
Wilting Point	=	0.4	vol/vol
Initial Soil Water Content	=	0.75	vol/vol
Effective Sat. Hyd. Conductivity	=	3.00E-09	cm/sec

Layer 10

Type 1 - Vertical Percolation Layer

SiC - Silty Clay

Material Texture Number 14

Thickness	=	24	inches
Porosity	=	0.479	vol/vol
Field Capacity	=	0.371	vol/vol
Wilting Point	=	0.251	vol/vol
Initial Soil Water Content	=	0.3709	vol/vol
Effective Sat. Hyd. Conductivity	=	2.50E-05	cm/sec

Note: Initial moisture content of the layers and snow water were computed as nearly steady-state values by HELP.

General Design and Evaporative Zone Data

SCS Runoff Curve Number	=	96.9	
Fraction of Area Allowing Runoff	=	0	%
Area projected on a horizontal plane	=	1	acres
Evaporative Zone Depth	=	12	inches
Initial Water in Evaporative Zone	=	2.638	inches
Upper Limit of Evaporative Storage	=	5.484	inches
Lower Limit of Evaporative Storage	=	0.696	inches

Initial Snow Water	=	0	inches
Initial Water in Layer Materials	=	55.252	inches
Total Initial Water	=	55.252	inches
Total Subsurface Inflow	=	0	inches/year

Note: SCS Runoff Curve Number was calculated by HELP.

Evapotranspiration and Weather Data

Station Latitude	=	42.18	Degrees
Maximum Leaf Area Index	=	0	
Start of Growing Season (Julian Date)	=	100	days
End of Growing Season (Julian Date)	=	260	days
Average Wind Speed	=	9	mph
Average 1st Quarter Relative Humidity	=	72	%
Average 2nd Quarter Relative Humidity	=	68	%
Average 3rd Quarter Relative Humidity	=	73	%
Average 4th Quarter Relative Humidity	=	74	%

Note: Evapotranspiration data was obtained for Belleville, Michigan

Normal Mean Monthly Precipitation (inches)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
1.727469	1.491737	2.04112	2.196136	3.069454	3.054674
3.434996	2.908791	3.528608	1.797602	1.974739	2.783078

Note: Precipitation was simulated based on HELP V4 weather simulation for:
Lat/Long: 42.18/-83.49

Normal Mean Monthly Temperature (Degrees Fahrenheit)

Jan/Jul	Feb/Aug	Mar/Sep	Apr/Oct	May/Nov	Jun/Dec
33.1	33.8	37.3	60.7	63.6	77.2
82.8	79.7	75.8	60.9	36.2	33.9

Note: Temperature was simulated based on HELP V4 weather simulation for:
Lat/Long: 42.18/-83.49
Solar radiation was simulated based on HELP V4 weather simulation for:
Lat/Long: 42.18/-83.49

Daily Output for Year 1

Column key: Head #1: drainage from Layer 4 — Head #2: drainage from Layer 8
Drain #1: drainage from Layer 3 — Drain #2: drainage from Layer 7
Leak #1: leakage thru Layer 5 — Leak #2: leakage thru Layer 9 — Leak #3: leakage thru Layer 10

Title: Wayne Disposal - Initial Lift
Simulated On: 3/23/2021 13:00

Day	Freezing Status* Air	Soil	Rain (inches)	Runoff (inches)	ET (inches)	Evap. Zone Water (in/in)	Head #1 (inches)	Drain #1 (inches)	Leak #1 (inches)	Head #2 (inches)	Drain #2 (inches)	Leak #2 (inches)	Head #3 (inches)	Drain #3 (inches)	Leak #3 (inches)
1	*		0.00	0.000	0.000	0.2159	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
2	*		0.01	0.000	0.005	0.2133	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
3	*		0.03	0.000	0.024	0.2109	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
4	*		0.11	0.000	0.028	0.2099	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
5	*	*	0.06	0.000	0.029	0.2099	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
6		*	0.07	0.000	0.000	0.2150	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
7	*	*	0.00	0.000	0.026	0.2150	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
8	*	*	0.00	0.000	0.021	0.2150	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
9		*	0.44	0.000	0.000	0.2568	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
10		*	0.02	0.000	0.000	0.2584	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
11	*	*	0.42	0.000	0.025	0.2584	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
12	*	*	0.35	0.000	0.010	0.2584	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
13		*	0.00	0.000	0.030	0.2584	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
14		*	0.00	0.000	0.000	0.2882	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
15		*	0.00	0.000	0.000	0.3169	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
16		*	0.02	0.000	0.000	0.3186	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
17	*	*	0.01	0.000	0.006	0.3186	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
18		*	0.23	0.000	0.000	0.3375	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
19		*	0.00	0.000	0.000	0.3377	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
20	*	*	0.03	0.000	0.030	0.3377	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
21		*	0.01	0.000	0.000	0.3386	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
22		*	0.08	0.000	0.000	0.3456	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
23		*	0.00	0.000	0.000	0.3456	0.0000	0.0000	4.76E-09	0.0000	0.0000	1.90E-09	0.0000	0.0000	0.00E+00
24		*	0.00	0.000	0.000	0.3456	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
25		*	0.03	0.000	0.000	0.3480	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
26		*	0.00	0.000	0.000	0.3480	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
27	*	*	0.45	0.000	0.026	0.3480	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
28		*	0.04	0.000	0.000	0.3694	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
29		*	0.01	0.000	0.056	0.3823	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
30			0.00	0.000	0.080	0.2405	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
31	*		0.00	0.000	0.044	0.2231	0.0000	0.0000	5.87E-11	0.0000	0.0000	5.76E-11	0.0000	0.0000	0.00E+00
32			0.35	0.000	0.054	0.2400	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
33			0.04	0.000	0.071	0.2329	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
34	*		0.00	0.000	0.038	0.2256	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
35			0.00	0.000	0.084	0.2161	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
36	*		0.03	0.000	0.033	0.2118	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
37			0.16	0.000	0.070	0.2155	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00

38			0.07	0.000	0.065	0.2133	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
39			0.43	0.000	0.058	0.2416	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
40	*		0.04	0.000	0.024	0.2409	0.0000	0.0000	2.04E-09	0.0000	0.0000	1.24E-09	0.0000	0.0000	0.00E+00
41	*		0.00	0.000	0.000	0.2373	0.0000	0.0000	2.04E-09	0.0000	0.0000	1.24E-09	0.0000	0.0000	0.00E+00
42	*		0.00	0.000	0.000	0.2286	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
43	*		0.00	0.000	0.000	0.2225	0.0000	0.0000	2.81E-09	0.0000	0.0000	1.49E-09	0.0000	0.0000	0.00E+00
44	*		0.00	0.000	0.047	0.2138	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
45	*		0.06	0.000	0.038	0.2116	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
46	*		0.15	0.000	0.000	0.2099	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
47	*		0.02	0.000	0.031	0.2087	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
48			0.05	0.000	0.044	0.2154	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
49			0.00	0.000	0.093	0.2053	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
50			0.00	0.000	0.082	0.1972	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
51	*		0.09	0.000	0.038	0.1973	0.0000	0.0000	2.72E-09	0.0000	0.0000	1.46E-09	0.0000	0.0000	0.00E+00
52	*		0.13	0.000	0.000	0.1973	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
53			0.09	0.000	0.042	0.2111	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
54			0.00	0.000	0.091	0.2018	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
55	*		0.01	0.000	0.008	0.2009	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
56			0.17	0.000	0.066	0.2085	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
57			0.02	0.000	0.148	0.1967	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
58	*		0.12	0.000	0.059	0.1976	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
59			0.00	0.000	0.117	0.1907	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
60			0.12	0.000	0.054	0.1949	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
61			0.57	0.000	0.061	0.2368	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
62			0.00	0.000	0.092	0.2284	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
63			0.00	0.000	0.065	0.2231	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
64			0.00	0.000	0.056	0.2132	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
65	*		0.00	0.000	0.072	0.2019	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
66	*		0.00	0.000	0.000	0.1980	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
67	*		0.00	0.000	0.000	0.1948	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
68	*		0.00	0.000	0.058	0.1877	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
69	*	*	0.00	0.000	0.000	0.1877	0.0000	0.0000	2.15E-09	0.0000	0.0000	1.28E-09	0.0000	0.0000	0.00E+00
70	*	*	0.08	0.000	0.032	0.1877	0.0000	0.0000	4.08E-09	0.0000	0.0000	1.78E-09	0.0000	0.0000	0.00E+00
71		*	0.00	0.000	0.053	0.1877	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
72	*	*	0.00	0.000	0.000	0.1877	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
73	*	*	0.00	0.000	0.000	0.1877	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
74	*	*	0.00	0.000	0.000	0.1877	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
75	*	*	0.00	0.000	0.000	0.1877	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
76	*	*	0.00	0.000	0.000	0.1877	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
77	*	*	0.00	0.000	0.000	0.1877	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
78	*	*	0.03	0.000	0.029	0.1877	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
79	*	*	0.07	0.000	0.040	0.1877	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
80	*	*	0.69	0.000	0.010	0.1877	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
81	*	*	0.00	0.000	0.013	0.1877	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
82		*	0.08	0.000	0.000	0.2523	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00

83		*	0.00	0.000	0.000	0.2523	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
84	*	*	0.00	0.000	0.000	0.2523	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
85	*	*	0.10	0.000	0.045	0.2523	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
86	*	*	0.00	0.000	0.024	0.2523	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
87		*	0.00	0.000	0.036	0.2523	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
88		*	0.00	0.000	0.000	0.2523	0.0000	0.0000	6.80E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
89	*	*	0.05	0.000	0.045	0.2523	0.0000	0.0000	1.51E-09	0.0000	0.0000	1.02E-09	0.0000	0.0000	0.00E+00
90	*	*	0.00	0.000	0.000	0.2523	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
91		*	0.03	0.000	0.000	0.2547	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
92		*	0.00	0.000	0.000	0.2547	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
93		*	0.00	0.000	0.000	0.2547	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
94		*	0.00	0.000	0.000	0.2547	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
95		*	0.00	0.000	0.000	0.2547	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
96		*	0.00	0.000	0.000	0.2547	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
97		*	0.00	0.000	0.000	0.2547	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
98		*	0.00	0.000	0.000	0.2547	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
99		*	0.00	0.000	0.000	0.2547	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
100		*	0.00	0.000	0.000	0.2547	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
101		*	0.00	0.000	0.000	0.2547	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
102			0.00	0.000	0.305	0.2272	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
103			0.00	0.000	0.137	0.2046	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
104			0.15	0.000	0.153	0.1979	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
105			0.22	0.000	0.153	0.1990	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
106			0.00	0.000	0.288	0.1717	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
107			0.00	0.000	0.130	0.1591	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
108			0.00	0.000	0.054	0.1531	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
109			0.01	0.000	0.042	0.1498	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
110			0.00	0.000	0.035	0.1457	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
111			0.00	0.000	0.031	0.1417	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
112			0.05	0.000	0.028	0.1423	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
113			0.05	0.000	0.026	0.1429	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
114			0.07	0.000	0.024	0.1454	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
115			0.01	0.000	0.023	0.1431	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
116			0.00	0.000	0.021	0.1406	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
117			0.00	0.000	0.020	0.1381	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
118			0.00	0.000	0.019	0.1356	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
119			0.00	0.000	0.018	0.1333	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
120			0.03	0.000	0.018	0.1336	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
121			0.03	0.000	0.017	0.1342	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
122			0.32	0.000	0.017	0.1587	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
123			0.06	0.000	0.016	0.1619	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
124			0.52	0.000	0.016	0.2033	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
125			0.00	0.000	0.108	0.1937	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
126			0.00	0.000	0.259	0.1718	0.0000	0.0003	2.05E-09	0.0000	0.0000	1.24E-09	0.0000	0.0000	0.00E+00
127			0.00	0.000	0.241	0.1517	0.0000	0.0000	2.77E-09	0.0000	0.0000	1.47E-09	0.0000	0.0000	0.00E+00

128		0.02	0.000	0.130	0.1421	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
129		0.20	0.000	0.054	0.1537	0.0000	0.0000	1.36E-09	0.0000	0.0000	9.51E-10	0.0000	0.0000	0.00E+00
130		0.01	0.000	0.042	0.1503	0.0000	0.0000	2.04E-09	0.0000	0.0000	1.24E-09	0.0000	0.0000	0.00E+00
131		0.03	0.000	0.035	0.1498	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
132		0.56	0.000	0.031	0.1933	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
133		0.00	0.000	0.106	0.1843	0.0000	0.0002	4.77E-09	0.0000	0.0000	1.90E-09	0.0000	0.0000	0.00E+00
134	*	0.01	0.000	0.059	0.1799	0.0000	0.0000	6.87E-10	0.0000	0.0000	5.64E-10	0.0000	0.0000	0.00E+00
135		0.63	0.000	0.116	0.2228	0.0000	0.0003	6.13E-09	0.0000	0.0000	2.08E-09	0.0000	0.0000	0.00E+00
136		0.04	0.000	0.288	0.2019	0.0004	0.0031	6.86E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
137		0.00	0.000	0.266	0.1789	0.0006	0.0045	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
138		0.00	0.000	0.242	0.1583	0.0002	0.0014	6.83E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
139		0.00	0.000	0.130	0.1475	0.0000	0.0000	1.06E-09	0.0000	0.0000	7.96E-10	0.0000	0.0000	0.00E+00
140		0.00	0.000	0.054	0.1430	0.0002	0.0012	5.47E-09	0.0000	0.0000	2.00E-09	0.0000	0.0000	0.00E+00
141		0.01	0.000	0.042	0.1405	0.0007	0.0050	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
142		0.05	0.000	0.035	0.1421	0.0010	0.0070	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
143		0.03	0.000	0.031	0.1416	0.0013	0.0092	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
144		0.00	0.000	0.028	0.1393	0.0015	0.0110	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
145		0.00	0.000	0.025	0.1368	0.0022	0.0159	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
146		0.00	0.000	0.024	0.1340	0.0024	0.0173	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
147		0.00	0.000	0.020	0.1312	0.0021	0.0151	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
148		0.40	0.000	0.022	0.1616	0.0017	0.0124	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
149		0.12	0.000	0.021	0.1692	0.0014	0.0100	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
150		0.04	0.000	0.020	0.1704	0.0014	0.0102	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
151		0.00	0.000	0.019	0.1682	0.0016	0.0113	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
152		0.05	0.000	0.019	0.1702	0.0018	0.0127	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
153		0.24	0.000	0.018	0.1883	0.0020	0.0142	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
154		0.11	0.000	0.229	0.1770	0.0027	0.0193	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
155		0.16	0.000	0.297	0.1649	0.0018	0.0128	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
156		0.00	0.000	0.130	0.1540	0.0019	0.0136	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
157		0.04	0.000	0.055	0.1525	0.0029	0.0209	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
158		0.00	0.000	0.041	0.1486	0.0032	0.0232	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
159		0.00	0.000	0.035	0.1453	0.0031	0.0228	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
160		0.04	0.000	0.032	0.1458	0.0032	0.0231	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
161		0.00	0.000	0.028	0.1431	0.0032	0.0233	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
162		0.00	0.000	0.025	0.1407	0.0032	0.0229	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
163		0.32	0.000	0.025	0.1650	0.0031	0.0223	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
164		0.00	0.000	0.022	0.1629	0.0031	0.0224	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
165		0.00	0.000	0.021	0.1609	0.0031	0.0223	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
166		0.06	0.000	0.021	0.1636	0.0030	0.0221	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
167		0.00	0.000	0.020	0.1621	0.0030	0.0219	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
168		0.63	0.000	0.019	0.2125	0.0030	0.0215	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
169		0.35	0.000	0.265	0.2195	0.0027	0.0196	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
170		0.00	0.000	0.148	0.2066	0.0035	0.0255	7.23E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
171		0.00	0.000	0.137	0.1946	0.0030	0.0219	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
172		0.00	0.000	0.200	0.1777	0.0024	0.0176	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00

173	0.00	0.000	0.360	0.1474	0.0025	0.0178	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
174	0.19	0.000	0.131	0.1523	0.0028	0.0201	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
175	0.00	0.000	0.054	0.1477	0.0022	0.0160	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
176	0.00	0.000	0.041	0.1443	0.0024	0.0171	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
177	0.00	0.000	0.035	0.1414	0.0026	0.0185	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
178	0.00	0.000	0.031	0.1387	0.0028	0.0202	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
179	0.00	0.000	0.028	0.1358	0.0034	0.0243	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
180	0.07	0.000	0.027	0.1385	0.0031	0.0224	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
181	0.10	0.000	0.025	0.1438	0.0027	0.0196	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
182	0.03	0.000	0.024	0.1435	0.0024	0.0176	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
183	0.45	0.000	0.022	0.1785	0.0022	0.0159	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
184	0.06	0.000	0.191	0.1670	0.0018	0.0129	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
185	0.67	0.000	0.021	0.2204	0.0019	0.0138	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
186	0.00	0.000	0.171	0.2059	0.0017	0.0126	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
187	0.00	0.000	0.115	0.1954	0.0025	0.0180	7.12E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
188	0.00	0.000	0.253	0.1730	0.0027	0.0194	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
189	0.00	0.000	0.261	0.1508	0.0019	0.0135	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
190	0.00	0.000	0.130	0.1394	0.0023	0.0165	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
191	0.00	0.000	0.054	0.1347	0.0021	0.0150	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
192	0.03	0.000	0.043	0.1333	0.0020	0.0145	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
193	1.04	0.000	0.036	0.2167	0.0025	0.0180	7.12E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
194	0.11	0.000	0.142	0.2137	0.0029	0.0208	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
195	0.14	0.000	0.302	0.1999	0.0031	0.0228	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
196	0.75	0.000	0.320	0.2339	0.0037	0.0266	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
197	0.00	0.000	0.126	0.2224	0.0032	0.0233	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
198	0.22	0.000	0.357	0.2107	0.0023	0.0170	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
199	0.01	0.000	0.306	0.1852	0.0026	0.0192	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
200	0.45	0.000	0.131	0.2113	0.0023	0.0167	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
201	0.00	0.000	0.267	0.1858	0.0030	0.0217	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
202	0.00	0.000	0.201	0.1661	0.0027	0.0193	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
203	0.02	0.000	0.131	0.1560	0.0018	0.0131	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
204	0.00	0.000	0.054	0.1509	0.0015	0.0106	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
205	0.05	0.000	0.043	0.1504	0.0027	0.0195	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
206	0.21	0.000	0.036	0.1638	0.0021	0.0154	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
207	0.80	0.000	0.032	0.2272	0.0017	0.0126	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
208	0.00	0.000	0.112	0.2172	0.0017	0.0123	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
209	0.54	0.000	0.193	0.2449	0.0029	0.0207	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
210	0.00	0.000	0.256	0.2229	0.0019	0.0136	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
211	0.00	0.000	0.250	0.1998	0.0019	0.0136	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
212	0.00	0.000	0.303	0.1688	0.0034	0.0244	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
213	0.00	0.000	0.130	0.1555	0.0027	0.0196	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
214	0.00	0.000	0.054	0.1496	0.0013	0.0095	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
215	0.37	0.000	0.043	0.1730	0.0031	0.0221	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
216	0.28	0.000	0.037	0.1902	0.0024	0.0175	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
217	0.00	0.000	0.128	0.1770	0.0010	0.0071	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00

218	0.00	0.000	0.031	0.1727	0.0010	0.0071	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
219	0.00	0.000	0.028	0.1688	0.0015	0.0110	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
220	0.00	0.000	0.025	0.1653	0.0019	0.0139	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
221	0.00	0.000	0.024	0.1622	0.0022	0.0160	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
222	0.05	0.000	0.024	0.1631	0.0024	0.0174	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
223	0.00	0.000	0.021	0.1605	0.0025	0.0182	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
224	0.00	0.000	0.020	0.1580	0.0026	0.0187	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
225	0.00	0.000	0.019	0.1558	0.0026	0.0189	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
226	0.14	0.000	0.020	0.1651	0.0026	0.0189	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
227	0.14	0.000	0.020	0.1742	0.0026	0.0188	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
228	0.32	0.000	0.273	0.1775	0.0032	0.0232	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
229	0.00	0.000	0.158	0.1642	0.0023	0.0164	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
230	0.20	0.000	0.123	0.1704	0.0025	0.0180	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
231	0.35	0.000	0.138	0.1877	0.0026	0.0190	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
232	0.25	0.000	0.149	0.1953	0.0026	0.0190	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
233	0.39	0.000	0.411	0.1932	0.0027	0.0194	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
234	0.15	0.000	0.127	0.1947	0.0028	0.0203	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
235	0.16	0.000	0.143	0.1952	0.0025	0.0180	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
236	0.00	0.000	0.331	0.1665	0.0024	0.0176	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
237	0.00	0.000	0.238	0.1460	0.0018	0.0134	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
238	0.00	0.000	0.130	0.1348	0.0015	0.0107	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
239	0.02	0.000	0.056	0.1313	0.0012	0.0087	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
240	0.00	0.000	0.041	0.1277	0.0013	0.0091	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
241	0.02	0.000	0.037	0.1262	0.0013	0.0095	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
242	0.50	0.000	0.033	0.1646	0.0014	0.0099	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
243	0.18	0.000	0.390	0.1464	0.0017	0.0126	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
244	0.33	0.000	0.030	0.1713	0.0012	0.0086	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
245	0.28	0.000	0.248	0.1741	0.0012	0.0085	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
246	0.07	0.000	0.299	0.1553	0.0010	0.0076	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
247	0.06	0.000	0.132	0.1497	0.0011	0.0080	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
248	0.00	0.000	0.056	0.1453	0.0011	0.0082	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
249	0.00	0.000	0.041	0.1419	0.0011	0.0082	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
250	0.26	0.000	0.037	0.1602	0.0011	0.0080	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
251	0.00	0.000	0.087	0.1530	0.0011	0.0080	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
252	0.18	0.000	0.033	0.1654	0.0010	0.0075	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
253	0.32	0.000	0.153	0.1790	0.0010	0.0071	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
254	0.19	0.000	0.185	0.1794	0.0010	0.0070	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
255	0.00	0.000	0.212	0.1617	0.0009	0.0066	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
256	0.00	0.000	0.207	0.1445	0.0008	0.0056	6.91E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
257	0.08	0.000	0.132	0.1406	0.0007	0.0053	6.91E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
258	0.08	0.000	0.056	0.1430	0.0007	0.0050	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
259	0.00	0.000	0.041	0.1395	0.0007	0.0047	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
260	0.00	0.000	0.035	0.1366	0.0006	0.0045	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
261	0.00	0.000	0.032	0.1341	0.0006	0.0043	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
262	0.42	0.000	0.029	0.1664	0.0006	0.0042	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00

263		0.09	0.000	0.133	0.1625	0.0006	0.0043	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
264		0.00	0.000	0.067	0.1568	0.0005	0.0039	6.88E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
265	*	0.00	0.000	0.083	0.1499	0.0005	0.0039	6.88E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
266		0.18	0.000	0.055	0.1607	0.0006	0.0040	6.88E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
267		0.00	0.000	0.167	0.1468	0.0006	0.0042	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
268		0.00	0.000	0.041	0.1433	0.0006	0.0044	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
269	*	0.00	0.000	0.035	0.1404	0.0006	0.0046	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
270	*	0.00	0.000	0.000	0.1404	0.0007	0.0049	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
271		0.00	0.000	0.031	0.1379	0.0007	0.0053	6.91E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
272		0.00	0.000	0.028	0.1356	0.0008	0.0057	6.91E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
273		0.00	0.000	0.025	0.1335	0.0008	0.0061	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
274		0.00	0.000	0.024	0.1315	0.0009	0.0065	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
275		0.00	0.000	0.022	0.1296	0.0010	0.0069	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
276		0.00	0.000	0.021	0.1279	0.0010	0.0074	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
277		0.00	0.000	0.020	0.1262	0.0011	0.0079	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
278		0.00	0.000	0.019	0.1246	0.0012	0.0084	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
279		0.08	0.000	0.020	0.1297	0.0013	0.0091	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
280	*	0.01	0.000	0.011	0.1297	0.0013	0.0092	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
281		0.13	0.000	0.019	0.1393	0.0013	0.0098	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
282		0.00	0.000	0.017	0.1379	0.0014	0.0101	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
283		0.00	0.000	0.016	0.1365	0.0014	0.0104	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
284		0.01	0.000	0.017	0.1359	0.0015	0.0109	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
285		0.01	0.000	0.017	0.1353	0.0016	0.0113	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
286		0.00	0.000	0.015	0.1340	0.0016	0.0117	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
287		0.00	0.000	0.015	0.1328	0.0017	0.0121	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
288		0.00	0.000	0.014	0.1316	0.0017	0.0124	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
289		0.00	0.000	0.014	0.1304	0.0018	0.0127	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
290		0.00	0.000	0.014	0.1293	0.0018	0.0130	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
291		0.00	0.000	0.013	0.1282	0.0018	0.0133	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
292		0.00	0.000	0.013	0.1271	0.0019	0.0135	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
293		0.04	0.000	0.014	0.1295	0.0019	0.0137	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
294		0.00	0.000	0.013	0.1284	0.0019	0.0139	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
295		0.00	0.000	0.012	0.1274	0.0019	0.0140	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
296		0.00	0.000	0.012	0.1264	0.0020	0.0143	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
297		0.00	0.000	0.012	0.1254	0.0020	0.0143	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
298		0.00	0.000	0.012	0.1244	0.0020	0.0144	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
299		0.00	0.000	0.012	0.1234	0.0020	0.0145	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
300		0.00	0.000	0.011	0.1225	0.0020	0.0146	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
301		0.00	0.000	0.012	0.1217	0.0020	0.0147	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
302		0.00	0.000	0.011	0.1208	0.0020	0.0147	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
303		0.00	0.000	0.011	0.1199	0.0020	0.0148	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
304		0.00	0.000	0.011	0.1190	0.0020	0.0148	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
305		0.63	0.000	0.011	0.1702	0.0020	0.0148	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
306	*	0.02	0.000	0.045	0.1677	0.0020	0.0149	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
307		0.00	0.000	0.089	0.1602	0.0021	0.0150	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00

308	*	0.12	0.000	0.038	0.1619	0.0020	0.0148	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
309	*	0.01	0.000	0.015	0.1635	0.0020	0.0148	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
310	*	0.13	0.000	0.019	0.1652	0.0020	0.0148	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
311	*	0.39	0.000	0.007	0.1668	0.0020	0.0148	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
312	*	0.06	0.000	0.000	0.1684	0.0020	0.0148	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
313	*	0.04	0.000	0.000	0.1701	0.0020	0.0148	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
314	*	0.28	0.000	0.008	0.1717	0.0020	0.0148	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
315		0.15	0.000	0.000	0.2028	0.0020	0.0148	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
316		0.18	0.000	0.000	0.2664	0.0020	0.0147	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
317	*	0.00	0.000	0.000	0.2500	0.0022	0.0158	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
318	*	0.00	0.000	0.034	0.2328	0.0022	0.0159	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
319		0.00	0.000	0.043	0.2207	0.0021	0.0151	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
320	*	0.00	0.000	0.036	0.2119	0.0020	0.0145	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
321	*	0.00	0.000	0.000	0.2075	0.0019	0.0140	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
322	*	0.07	0.000	0.025	0.2056	0.0018	0.0130	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
323	*	0.01	0.000	0.022	0.2041	0.0007	0.0049	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
324	*	0.00	0.000	0.036	0.1987	0.0009	0.0068	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
325		0.00	0.000	0.069	0.1907	0.0015	0.0109	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
326		0.00	0.000	0.089	0.1814	0.0020	0.0142	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
327		0.00	0.000	0.076	0.1739	0.0022	0.0161	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
328		0.00	0.000	0.049	0.1685	0.0024	0.0176	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
329		0.41	0.000	0.072	0.1952	0.0026	0.0185	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
330		0.32	0.000	0.036	0.2168	0.0026	0.0190	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
331		0.06	0.000	0.073	0.2143	0.0027	0.0193	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
332		0.45	0.000	0.094	0.2433	0.0027	0.0193	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
333		0.00	0.000	0.076	0.2363	0.0026	0.0191	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
334		0.00	0.000	0.065	0.2265	0.0033	0.0239	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
335		0.00	0.000	0.105	0.2101	0.0037	0.0269	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
336		0.00	0.000	0.040	0.2015	0.0030	0.0216	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
337	*	0.05	0.000	0.017	0.1989	0.0015	0.0108	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
338		0.00	0.000	0.048	0.1929	0.0015	0.0110	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
339		0.13	0.000	0.072	0.1961	0.0016	0.0118	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
340		0.05	0.000	0.060	0.1933	0.0017	0.0124	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
341		0.01	0.000	0.047	0.1882	0.0018	0.0128	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
342	*	0.00	0.000	0.000	0.1863	0.0018	0.0130	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
343	*	0.19	0.000	0.008	0.1866	0.0018	0.0131	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
344		0.00	0.000	0.011	0.1985	0.0018	0.0132	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
345		0.00	0.000	0.040	0.1942	0.0018	0.0132	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
346		0.11	0.000	0.068	0.1962	0.0018	0.0132	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
347		0.01	0.000	0.100	0.1886	0.0018	0.0129	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
348		0.35	0.000	0.133	0.2057	0.0021	0.0152	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
349		0.05	0.000	0.047	0.2051	0.0018	0.0133	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
350		0.00	0.000	0.048	0.2005	0.0016	0.0115	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
351	*	0.00	0.000	0.000	0.2003	0.0016	0.0114	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
352	*	0.02	0.000	0.011	0.2003	0.0017	0.0121	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00

353	*	0.36	0.000	0.005	0.2012	0.0022	0.0157	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
354	*	0.14	0.000	0.007	0.2021	0.0022	0.0161	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
355	*	0.01	0.000	0.009	0.2031	0.0019	0.0140	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
356	*	0.07	0.000	0.005	0.2044	0.0016	0.0119	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
357	*	0.07	0.000	0.006	0.2060	0.0012	0.0086	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
358	*	0.14	0.000	0.000	0.2077	0.0014	0.0104	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
359		0.00	0.000	0.012	0.2195	0.0017	0.0120	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
360		0.28	0.000	0.000	0.2816	0.0017	0.0122	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
361		0.08	0.000	0.065	0.2529	0.0015	0.0112	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
362		0.00	0.000	0.059	0.2338	0.0015	0.0111	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
363	*	0.01	0.000	0.029	0.2244	0.0002	0.0017	6.84E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
364		0.00	0.000	0.036	0.2163	0.0002	0.0016	6.84E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
365		0.14	0.000	0.041	0.2198	0.0003	0.0024	6.85E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00

* = Frozen (air or soil)

Annual Totals for Year 1			
	inches	cubic feet	percent
Precipitation	29.83	108,269.8	100.00
Runoff	0.000	0.0000	0.00
Evapotranspiration	22.896	83,111.3	76.76
Drainage Collected from Layer 3	3.1287	11,357.3	10.49
Percolation/Leakage through Layer 5	0.000002	0.0071	0.00
Average Head on Top of Layer 4	0.0012	---	---
Drainage Collected from Layer 7	0.0000	0.0048	0.00
Percolation/Leakage through Layer 9	0.000001	0.0022	0.00
Average Head on Top of Layer 8	0.0000	---	---
Percolation/Leakage through Layer 10	0.000000	0.0000	0.00
Change in Water Storage	3.8020	13,801.2	12.75
Soil Water at Start of Year	55.2523	200,565.8	185.25
Soil Water at End of Year	59.0543	214,367.0	197.99
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

Daily Output for Year 2

Column key: Head #1: drainage from Layer 4 | Head #2: drainage from Layer 8
Drain #1: drainage from Layer 3 | Drain #2: drainage from Layer 7
Leak #1: leakage thru Layer 5 | Leak #2: leakage thru Layer 9 | Leak #3: leakage thru Layer 10

Title: Wayne Disposal - Initial Lift
Simulated On: 3/23/2021 13:00

Day	Freezing Status* Air	Soil	Rain (inches)	Runoff (inches)	ET (inches)	Evap. Zone Water (in/in)	Head #1 (inches)	Drain #1 (inches)	Leak #1 (inches)	Head #2 (inches)	Drain #2 (inches)	Leak #2 (inches)	Head #3 (inches)	Drain #3 (inches)	Leak #3 (inches)
1	*		0.01	0.000	0.005	0.2159	0.0004	0.0032	6.87E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
2	*		0.00	0.000	0.030	0.2108	0.0005	0.0039	6.88E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
3	*		0.00	0.000	0.028	0.2056	0.0006	0.0046	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
4	*		0.00	0.000	0.033	0.2002	0.0007	0.0051	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
5	*	*	0.06	0.000	0.025	0.2002	0.0008	0.0055	6.91E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
6	*	*	0.14	0.000	0.012	0.2002	0.0008	0.0059	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
7	*	*	0.07	0.000	0.010	0.2002	0.0009	0.0063	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
8	*	*	0.02	0.000	0.010	0.2002	0.0009	0.0066	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
9	*	*	0.01	0.000	0.010	0.2002	0.0012	0.0090	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
10	*	*	0.14	0.000	0.000	0.2002	0.0017	0.0125	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
11		*	0.09	0.000	0.000	0.2392	0.0017	0.0121	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
12		*	0.33	0.000	0.000	0.2664	0.0016	0.0114	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
13		*	0.13	0.000	0.000	0.2774	0.0015	0.0108	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
14	*	*	0.11	0.000	0.019	0.2774	0.0014	0.0102	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
15	*	*	0.03	0.000	0.026	0.2774	0.0013	0.0097	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
16		*	0.00	0.000	0.048	0.2810	0.0013	0.0092	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
17		*	0.16	0.000	0.000	0.2943	0.0012	0.0088	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
18		*	0.00	0.000	0.000	0.2943	0.0012	0.0084	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
19		*	0.01	0.000	0.000	0.2952	0.0011	0.0081	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
20		*	0.00	0.000	0.000	0.2952	0.0011	0.0077	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
21	*	*	0.00	0.000	0.000	0.2952	0.0010	0.0074	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
22	*	*	0.00	0.000	0.000	0.2952	0.0010	0.0072	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
23	*	*	0.09	0.000	0.020	0.2952	0.0009	0.0069	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
24		*	0.00	0.000	0.034	0.2984	0.0009	0.0066	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
25	*	*	0.00	0.000	0.000	0.2984	0.0006	0.0045	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
26		*	0.15	0.000	0.000	0.3105	0.0003	0.0019	6.84E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
27		*	0.11	0.000	0.000	0.3193	0.0000	0.0001	4.72E-09	0.0000	0.0000	1.89E-09	0.0000	0.0000	0.00E+00
28	*	*	0.10	0.000	0.021	0.3193	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
29	*	*	0.36	0.000	0.019	0.3193	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
30	*	*	0.21	0.000	0.000	0.3193	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
31	*	*	0.02	0.000	0.024	0.3193	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
32	*	*	0.00	0.000	0.011	0.3193	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
33	*	*	0.00	0.000	0.011	0.3193	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
34	*	*	0.18	0.000	0.016	0.3193	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
35	*	*	0.07	0.000	0.007	0.3193	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
36	*	*	0.06	0.000	0.000	0.3193	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
37	*	*	0.00	0.000	0.000	0.3193	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00

38	*	*	0.00	0.000	0.020	0.3193	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
39	*	*	0.05	0.000	0.008	0.3193	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
40	*	*	0.11	0.000	0.004	0.3193	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
41	*	*	0.13	0.000	0.000	0.3193	0.0000	0.0002	2.73E-09	0.0000	0.0000	1.46E-09	0.0000	0.0000	0.00E+00
42	*	*	0.14	0.000	0.006	0.3193	0.0003	0.0022	6.85E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
43	*	*	0.02	0.000	0.000	0.3193	0.0006	0.0047	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
44	*	*	0.11	0.000	0.000	0.3193	0.0010	0.0071	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
45		*	0.00	0.000	0.000	0.3508	0.0013	0.0094	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
46		*	0.00	0.000	0.000	0.4070	0.0016	0.0116	7.01E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
47		*	0.00	0.000	0.025	0.4361	0.0019	0.0135	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
48		*	0.00	0.000	0.000	0.4361	0.0021	0.0153	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
49		*	0.00	0.000	0.000	0.4361	0.0023	0.0168	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
50	*	*	0.08	0.000	0.032	0.4361	0.0025	0.0182	7.12E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
51	*	*	0.00	0.000	0.044	0.4361	0.0027	0.0193	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
52		*	0.17	0.000	0.053	0.4466	0.0028	0.0202	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
53	*	*	0.00	0.000	0.000	0.4466	0.0029	0.0210	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
54	*	*	0.00	0.000	0.000	0.4466	0.0030	0.0217	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
55		*	0.00	0.000	0.000	0.4466	0.0031	0.0222	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
56	*	*	0.21	0.000	0.014	0.4466	0.0031	0.0226	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
57		*	0.00	0.000	0.035	0.4570	0.0032	0.0236	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
58		*	0.00	0.000	0.000	0.4570	0.0031	0.0224	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
59	*	*	0.00	0.000	0.000	0.4570	0.0031	0.0227	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
60	*	*	0.00	0.000	0.000	0.4570	0.0032	0.0233	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
61	*	*	0.00	0.000	0.000	0.4570	0.0033	0.0236	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
62	*	*	0.02	0.000	0.016	0.4570	0.0033	0.0238	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
63	*	*	0.00	0.000	0.000	0.4570	0.0033	0.0239	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
64	*	*	0.00	0.000	0.000	0.4570	0.0033	0.0238	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
65	*	*	0.00	0.000	0.000	0.4570	0.0033	0.0237	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
66	*	*	0.14	0.000	0.018	0.4570	0.0033	0.0236	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
67		*	0.15	0.000	0.049	0.4570	0.0036	0.0258	7.23E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
68	*	*	1.22	0.000	0.029	0.4570	0.0024	0.0171	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
69	*	*	0.17	0.000	0.026	0.4570	0.0028	0.0203	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
70	*	*	0.00	0.000	0.024	0.4570	0.0032	0.0232	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
71	*	*	0.00	0.000	0.011	0.4570	0.0034	0.0247	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
72		*	0.00	0.000	0.000	0.4570	0.0035	0.0253	7.23E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
73		*	0.00	0.000	0.000	0.4570	0.0043	0.0311	7.31E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
74		*	0.00	0.000	0.000	0.4570	0.0018	0.0128	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
75		*	0.00	0.000	0.000	0.4570	0.0024	0.0171	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
76		*	0.00	0.000	0.000	0.4570	0.0030	0.0217	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
77		*	0.04	0.000	0.000	0.4570	0.0034	0.0245	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
78		*	0.07	0.000	0.000	0.4570	0.0051	0.0372	7.40E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
79		*	0.00	0.000	0.000	0.4570	0.0029	0.0209	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
80		*	0.00	0.000	0.000	0.4570	0.0030	0.0218	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
81		*	0.11	0.000	0.000	0.4570	0.0051	0.0369	7.40E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
82		*	0.01	0.000	0.000	0.4570	0.0023	0.0168	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00

83	*	*	0.00	0.000	0.000	0.4570	0.0023	0.0168	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
84	*	*	0.00	0.000	0.000	0.4570	0.0026	0.0186	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
85	*	*	0.00	0.000	0.000	0.4570	0.0029	0.0208	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
86	*	*	0.01	0.000	0.012	0.4570	0.0036	0.0260	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
87	*	*	0.68	0.000	0.016	0.4570	0.0039	0.0281	7.27E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
88	*	*	0.00	0.000	0.007	0.4570	0.0038	0.0278	7.26E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
89	*	*	0.00	0.000	0.020	0.4570	0.0035	0.0253	7.23E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
90	*	*	0.01	0.000	0.010	0.4570	0.0031	0.0227	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
91		*	0.07	0.000	0.000	0.4570	0.0028	0.0206	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
92		*	0.32	0.000	0.000	0.4570	0.0006	0.0042	6.01E-09	0.0000	0.0000	2.07E-09	0.0000	0.0000	0.00E+00
93		*	0.00	0.000	0.000	0.4570	0.0000	0.0001	1.36E-09	0.0000	0.0000	9.51E-10	0.0000	0.0000	0.00E+00
94		*	0.01	0.000	0.000	0.4570	0.0004	0.0029	6.86E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
95		*	0.13	0.000	0.000	0.4570	0.0030	0.0220	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
96		*	0.03	0.000	0.000	0.4570	0.0004	0.0030	6.86E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
97	*	*	0.05	0.000	0.049	0.4570	0.0007	0.0054	6.91E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
98	*	*	0.00	0.000	0.000	0.4570	0.0012	0.0090	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
99	*	*	0.00	0.000	0.000	0.4570	0.0029	0.0213	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
100	*	*	0.00	0.000	0.000	0.4570	0.0035	0.0254	7.23E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
101	*	*	0.00	0.000	0.000	0.4570	0.0031	0.0228	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
102		*	0.01	0.000	0.000	0.4570	0.0028	0.0206	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
103	*	*	0.00	0.000	0.000	0.4570	0.0026	0.0188	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
104	*	*	0.00	0.000	0.000	0.4570	0.0024	0.0173	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
105	*	*	0.00	0.000	0.000	0.4570	0.0021	0.0155	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
106		*	0.00	0.000	0.000	0.4570	0.0012	0.0088	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
107		*	0.03	0.000	0.000	0.4570	0.0017	0.0122	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
108		*	0.56	0.000	0.000	0.4570	0.0002	0.0012	5.86E-09	0.0000	0.0000	2.05E-09	0.0000	0.0000	0.00E+00
109		*	0.04	0.000	0.000	0.4570	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
110		*	0.25	0.000	0.000	0.4570	0.0016	0.0113	6.32E-09	0.0000	0.0000	2.10E-09	0.0000	0.0000	0.00E+00
111		*	0.07	0.000	0.000	0.4570	0.0000	0.0000	2.72E-09	0.0000	0.0000	1.46E-09	0.0000	0.0000	0.00E+00
112		*	0.65	0.000	0.000	0.4570	0.0022	0.0160	6.39E-09	0.0000	0.0000	2.11E-09	0.0000	0.0000	0.00E+00
113		*	0.00	0.000	0.000	0.4570	0.0000	0.0000	1.96E-09	0.0000	0.0000	1.21E-09	0.0000	0.0000	0.00E+00
114		*	0.00	0.000	0.000	0.4570	0.0004	0.0027	4.13E-09	0.0000	0.0000	1.79E-09	0.0000	0.0000	0.00E+00
115	*	*	0.00	0.000	0.001	0.4570	0.0031	0.0226	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
116		*	0.35	0.000	0.000	0.4570	0.0067	0.0482	7.56E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
117	*	*	0.00	0.000	0.000	0.4570	0.0007	0.0053	6.18E-09	0.0000	0.0000	2.09E-09	0.0000	0.0000	0.00E+00
118	*	*	0.00	0.000	0.000	0.4570	0.0027	0.0197	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
119		*	0.00	0.000	0.000	0.4570	0.0068	0.0496	7.58E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
120	*	*	0.61	0.000	0.052	0.4570	0.0060	0.0438	7.50E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
121		*	0.05	0.000	0.000	0.4570	0.0051	0.0370	7.40E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
122	*	*	0.01	0.000	0.037	0.4570	0.0005	0.0039	5.44E-09	0.0000	0.0000	2.00E-09	0.0000	0.0000	0.00E+00
123		*	0.00	0.000	0.128	0.4570	0.0045	0.0324	6.64E-09	0.0000	0.0000	2.14E-09	0.0000	0.0000	0.00E+00
124		*	0.00	0.000	0.000	0.4570	0.0004	0.0031	6.86E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
125			0.09	0.000	0.099	0.2463	0.0027	0.0194	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
126			0.05	0.000	0.150	0.2246	0.0020	0.0147	5.72E-09	0.0000	0.0000	2.03E-09	0.0000	0.0000	0.00E+00
127			0.00	0.000	0.252	0.1959	0.0105	0.0759	7.94E-09	0.0000	0.0000	2.26E-09	0.0000	0.0000	0.00E+00

128	0.00	0.000	0.246	0.1724	0.0080	0.0579	7.70E-09	0.0000	0.0000	2.24E-09	0.0000	0.0000	0.00E+00
129	0.00	0.000	0.130	0.1580	0.0013	0.0097	6.72E-09	0.0000	0.0000	2.15E-09	0.0000	0.0000	0.00E+00
130	0.00	0.000	0.054	0.1509	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
131	0.00	0.000	0.041	0.1459	0.0037	0.0268	3.81E-09	0.0000	0.0000	1.73E-09	0.0000	0.0000	0.00E+00
132	0.00	0.000	0.035	0.1420	0.0233	0.1688	9.15E-09	0.0000	0.0000	2.34E-09	0.0000	0.0000	0.00E+00
133	1.21	0.000	0.031	0.2389	0.0313	0.2269	9.87E-09	0.0000	0.0000	2.39E-09	0.0000	0.0000	0.00E+00
134	0.31	0.000	0.126	0.2535	0.0333	0.2416	1.01E-08	0.0000	0.0000	2.40E-09	0.0000	0.0000	0.00E+00
135	0.06	0.000	0.182	0.2419	0.0325	0.2357	9.98E-09	0.0000	0.0000	2.40E-09	0.0000	0.0000	0.00E+00
136	0.03	0.000	0.193	0.2173	0.0294	0.2134	9.71E-09	0.0000	0.0000	2.38E-09	0.0000	0.0000	0.00E+00
137	0.10	0.000	0.227	0.2000	0.0289	0.2092	9.66E-09	0.0000	0.0000	2.38E-09	0.0000	0.0000	0.00E+00
138	0.00	0.000	0.221	0.1765	0.0312	0.2264	9.87E-09	0.0000	0.0000	2.39E-09	0.0000	0.0000	0.00E+00
139	0.00	0.000	0.114	0.1639	0.0290	0.2100	9.67E-09	0.0000	0.0000	2.38E-09	0.0000	0.0000	0.00E+00
140	0.00	0.000	0.054	0.1584	0.0265	0.1920	9.44E-09	0.0000	0.0000	2.36E-09	0.0000	0.0000	0.00E+00
141	0.00	0.000	0.041	0.1538	0.0225	0.1630	9.08E-09	0.0000	0.0000	2.34E-09	0.0000	0.0000	0.00E+00
142	0.00	0.000	0.035	0.1497	0.0186	0.1349	8.72E-09	0.0000	0.0000	2.32E-09	0.0000	0.0000	0.00E+00
143	0.08	0.000	0.031	0.1531	0.0169	0.1224	8.56E-09	0.0000	0.0000	2.30E-09	0.0000	0.0000	0.00E+00
144	0.00	0.000	0.028	0.1497	0.0165	0.1195	8.52E-09	0.0000	0.0000	2.30E-09	0.0000	0.0000	0.00E+00
145	0.00	0.000	0.025	0.1467	0.0163	0.1184	8.51E-09	0.0000	0.0000	2.30E-09	0.0000	0.0000	0.00E+00
146	0.00	0.000	0.024	0.1440	0.0168	0.1217	8.55E-09	0.0000	0.0000	2.30E-09	0.0000	0.0000	0.00E+00
147	0.01	0.000	0.023	0.1420	0.0167	0.1210	8.54E-09	0.0000	0.0000	2.30E-09	0.0000	0.0000	0.00E+00
148	0.01	0.000	0.022	0.1402	0.0165	0.1193	8.52E-09	0.0000	0.0000	2.30E-09	0.0000	0.0000	0.00E+00
149	0.16	0.000	0.021	0.1510	0.0162	0.1178	8.50E-09	0.0000	0.0000	2.30E-09	0.0000	0.0000	0.00E+00
150	0.00	0.000	0.019	0.1488	0.0159	0.1154	8.47E-09	0.0000	0.0000	2.30E-09	0.0000	0.0000	0.00E+00
151	0.11	0.000	0.019	0.1560	0.0158	0.1148	8.46E-09	0.0000	0.0000	2.30E-09	0.0000	0.0000	0.00E+00
152	0.15	0.000	0.018	0.1669	0.0155	0.1121	8.43E-09	0.0000	0.0000	2.29E-09	0.0000	0.0000	0.00E+00
153	0.00	0.000	0.017	0.1650	0.0150	0.1086	8.38E-09	0.0000	0.0000	2.29E-09	0.0000	0.0000	0.00E+00
154	0.72	0.000	0.017	0.2234	0.0145	0.1050	8.33E-09	0.0000	0.0000	2.29E-09	0.0000	0.0000	0.00E+00
155	0.00	0.000	0.139	0.2116	0.0139	0.1011	8.28E-09	0.0000	0.0000	2.28E-09	0.0000	0.0000	0.00E+00
156	0.00	0.000	0.128	0.1999	0.0140	0.1013	8.28E-09	0.0000	0.0000	2.28E-09	0.0000	0.0000	0.00E+00
157	0.36	0.000	0.122	0.2195	0.0124	0.0901	8.13E-09	0.0000	0.0000	2.27E-09	0.0000	0.0000	0.00E+00
158	0.00	0.000	0.119	0.2093	0.0132	0.0954	8.21E-09	0.0000	0.0000	2.28E-09	0.0000	0.0000	0.00E+00
159	0.00	0.000	0.119	0.1995	0.0128	0.0931	8.18E-09	0.0000	0.0000	2.28E-09	0.0000	0.0000	0.00E+00
160	0.00	0.000	0.301	0.1733	0.0128	0.0927	8.17E-09	0.0000	0.0000	2.27E-09	0.0000	0.0000	0.00E+00
161	0.00	0.000	0.130	0.1618	0.0119	0.0862	8.08E-09	0.0000	0.0000	2.27E-09	0.0000	0.0000	0.00E+00
162	0.39	0.000	0.054	0.1883	0.0115	0.0836	8.05E-09	0.0000	0.0000	2.27E-09	0.0000	0.0000	0.00E+00
163	0.07	0.000	0.306	0.1676	0.0105	0.0759	7.94E-09	0.0000	0.0000	2.26E-09	0.0000	0.0000	0.00E+00
164	0.08	0.000	0.042	0.1701	0.0106	0.0766	7.95E-09	0.0000	0.0000	2.26E-09	0.0000	0.0000	0.00E+00
165	0.09	0.000	0.035	0.1740	0.0109	0.0788	7.98E-09	0.0000	0.0000	2.26E-09	0.0000	0.0000	0.00E+00
166	0.00	0.000	0.177	0.1584	0.0116	0.0839	8.05E-09	0.0000	0.0000	2.27E-09	0.0000	0.0000	0.00E+00
167	0.00	0.000	0.031	0.1559	0.0106	0.0771	7.96E-09	0.0000	0.0000	2.26E-09	0.0000	0.0000	0.00E+00
168	0.19	0.000	0.028	0.1696	0.0111	0.0804	8.00E-09	0.0000	0.0000	2.26E-09	0.0000	0.0000	0.00E+00
169	0.28	0.000	0.126	0.1823	0.0108	0.0786	7.98E-09	0.0000	0.0000	2.26E-09	0.0000	0.0000	0.00E+00
170	0.37	0.000	0.176	0.1979	0.0098	0.0709	7.88E-09	0.0000	0.0000	2.25E-09	0.0000	0.0000	0.00E+00
171	0.34	0.000	0.305	0.2007	0.0088	0.0639	7.78E-09	0.0000	0.0000	2.24E-09	0.0000	0.0000	0.00E+00
172	0.00	0.000	0.282	0.1773	0.0087	0.0633	7.77E-09	0.0000	0.0000	2.24E-09	0.0000	0.0000	0.00E+00

173	0.00	0.000	0.171	0.1628	0.0090	0.0651	7.80E-09	0.0000	0.0000	2.25E-09	0.0000	0.0000	0.00E+00
174	0.83	0.000	0.131	0.2205	0.0086	0.0626	7.76E-09	0.0000	0.0000	2.24E-09	0.0000	0.0000	0.00E+00
175	0.10	0.000	0.301	0.2033	0.0081	0.0584	7.70E-09	0.0000	0.0000	2.24E-09	0.0000	0.0000	0.00E+00
176	0.05	0.000	0.327	0.1791	0.0082	0.0593	7.72E-09	0.0000	0.0000	2.24E-09	0.0000	0.0000	0.00E+00
177	0.02	0.000	0.178	0.1650	0.0069	0.0498	7.58E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
178	0.09	0.000	0.131	0.1612	0.0068	0.0495	7.58E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
179	0.22	0.000	0.055	0.1749	0.0074	0.0539	7.64E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
180	0.26	0.000	0.337	0.1676	0.0083	0.0600	7.73E-09	0.0000	0.0000	2.24E-09	0.0000	0.0000	0.00E+00
181	0.00	0.000	0.041	0.1641	0.0074	0.0539	7.64E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
182	0.00	0.000	0.035	0.1611	0.0075	0.0546	7.65E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
183	0.00	0.000	0.031	0.1585	0.0074	0.0536	7.64E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
184	0.00	0.000	0.028	0.1561	0.0072	0.0522	7.62E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
185	0.00	0.000	0.025	0.1538	0.0071	0.0516	7.61E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
186	0.00	0.000	0.024	0.1518	0.0067	0.0484	7.56E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
187	0.48	0.000	0.023	0.1899	0.0065	0.0469	7.54E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
188	0.08	0.000	0.128	0.1859	0.0066	0.0480	7.56E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
189	0.00	0.000	0.229	0.1663	0.0062	0.0451	7.52E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
190	0.00	0.000	0.130	0.1554	0.0056	0.0409	7.46E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
191	0.00	0.000	0.054	0.1509	0.0057	0.0417	7.47E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
192	0.41	0.000	0.042	0.1816	0.0059	0.0429	7.49E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
193	0.00	0.000	0.375	0.1502	0.0060	0.0435	7.49E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
194	0.02	0.000	0.036	0.1488	0.0059	0.0426	7.48E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
195	0.00	0.000	0.032	0.1465	0.0058	0.0418	7.47E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
196	0.07	0.000	0.029	0.1494	0.0057	0.0412	7.46E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
197	0.09	0.000	0.027	0.1548	0.0056	0.0405	7.45E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
198	0.00	0.000	0.024	0.1527	0.0055	0.0398	7.44E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
199	0.00	0.000	0.022	0.1507	0.0054	0.0389	7.43E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
200	0.08	0.000	0.022	0.1553	0.0053	0.0383	7.42E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
201	0.00	0.000	0.020	0.1535	0.0052	0.0378	7.41E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
202	0.00	0.000	0.019	0.1518	0.0052	0.0374	7.41E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
203	0.00	0.000	0.018	0.1501	0.0051	0.0370	7.40E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
204	0.01	0.000	0.019	0.1492	0.0051	0.0366	7.39E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
205	0.01	0.000	0.018	0.1481	0.0050	0.0363	7.39E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
206	0.11	0.000	0.018	0.1558	0.0050	0.0360	7.38E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
207	0.00	0.000	0.016	0.1544	0.0049	0.0357	7.38E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
208	0.00	0.000	0.016	0.1530	0.0049	0.0353	7.37E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
209	0.04	0.000	0.017	0.1552	0.0048	0.0350	7.37E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
210	0.23	0.000	0.016	0.1732	0.0048	0.0347	7.37E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
211	0.32	0.000	0.287	0.1750	0.0050	0.0362	7.39E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
212	0.01	0.000	0.179	0.1605	0.0048	0.0350	7.37E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
213	0.06	0.000	0.111	0.1556	0.0043	0.0315	7.32E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
214	0.00	0.000	0.054	0.1509	0.0042	0.0303	7.30E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
215	0.00	0.000	0.041	0.1473	0.0043	0.0313	7.32E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
216	0.00	0.000	0.035	0.1443	0.0044	0.0322	7.33E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
217	0.05	0.000	0.032	0.1454	0.0045	0.0324	7.33E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00

218	0.42	0.000	0.029	0.1777	0.0046	0.0331	7.34E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
219	0.52	0.000	0.314	0.1938	0.0049	0.0353	7.37E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
220	0.00	0.000	0.315	0.1675	0.0041	0.0299	7.30E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
221	0.00	0.000	0.312	0.1414	0.0043	0.0310	7.31E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
222	0.00	0.000	0.130	0.1306	0.0043	0.0314	7.32E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
223	0.08	0.000	0.055	0.1329	0.0043	0.0313	7.32E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
224	0.00	0.000	0.041	0.1295	0.0043	0.0313	7.32E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
225	0.00	0.000	0.035	0.1266	0.0043	0.0309	7.31E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
226	0.00	0.000	0.029	0.1242	0.0042	0.0305	7.30E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
227	0.00	0.000	0.028	0.1219	0.0041	0.0299	7.30E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
228	0.00	0.000	0.019	0.1203	0.0040	0.0293	7.29E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
229	0.29	0.000	0.026	0.1427	0.0040	0.0287	7.28E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
230	0.00	0.000	0.022	0.1408	0.0039	0.0281	7.27E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
231	0.02	0.000	0.023	0.1408	0.0038	0.0275	7.26E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
232	0.21	0.000	0.022	0.1564	0.0037	0.0271	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
233	0.08	0.000	0.021	0.1617	0.0037	0.0265	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
234	0.00	0.000	0.018	0.1602	0.0036	0.0261	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
235	0.00	0.000	0.018	0.1587	0.0035	0.0257	7.23E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
236	0.44	0.000	0.019	0.1940	0.0035	0.0253	7.23E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
237	0.00	0.000	0.253	0.1729	0.0034	0.0250	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
238	0.19	0.000	0.224	0.1699	0.0034	0.0247	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
239	0.52	0.000	0.317	0.1865	0.0034	0.0245	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
240	0.28	0.000	0.239	0.1900	0.0033	0.0239	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
241	0.00	0.000	0.290	0.1658	0.0033	0.0237	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
242	0.00	0.000	0.130	0.1550	0.0033	0.0236	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
243	0.00	0.000	0.054	0.1505	0.0032	0.0232	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
244	0.00	0.000	0.041	0.1471	0.0032	0.0231	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
245	0.03	0.000	0.037	0.1466	0.0032	0.0229	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
246	0.06	0.000	0.033	0.1490	0.0031	0.0227	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
247	0.01	0.000	0.030	0.1475	0.0031	0.0226	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
248	0.02	0.000	0.028	0.1465	0.0031	0.0224	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
249	0.01	0.000	0.026	0.1453	0.0031	0.0222	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
250	0.00	0.000	0.022	0.1434	0.0030	0.0220	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
251	0.00	0.000	0.021	0.1417	0.0030	0.0219	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
252	0.21	0.000	0.022	0.1574	0.0030	0.0217	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
253	0.29	0.000	0.021	0.1799	0.0030	0.0215	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
254	0.13	0.000	0.234	0.1713	0.0029	0.0214	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
255	0.03	0.000	0.240	0.1537	0.0029	0.0212	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
256	0.04	0.000	0.132	0.1456	0.0029	0.0211	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
257	0.00	0.000	0.054	0.1411	0.0029	0.0209	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
258	0.00	0.000	0.041	0.1377	0.0029	0.0207	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
259	0.00	0.000	0.035	0.1348	0.0028	0.0206	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
260	0.00	0.000	0.031	0.1322	0.0028	0.0204	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
261	0.00	0.000	0.028	0.1299	0.0028	0.0203	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
262	0.08	0.000	0.027	0.1341	0.0028	0.0202	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00

263		0.23	0.000	0.025	0.1511	0.0028	0.0200	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
264		0.00	0.000	0.022	0.1492	0.0027	0.0199	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
265		0.00	0.000	0.021	0.1475	0.0027	0.0197	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
266		0.10	0.000	0.021	0.1538	0.0027	0.0196	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
267		0.02	0.000	0.020	0.1540	0.0027	0.0195	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
268		0.00	0.000	0.018	0.1525	0.0027	0.0197	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
269		0.00	0.000	0.018	0.1510	0.0027	0.0192	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
270		0.00	0.000	0.017	0.1495	0.0026	0.0190	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
271		0.00	0.000	0.016	0.1481	0.0026	0.0187	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
272		0.00	0.000	0.016	0.1468	0.0026	0.0186	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
273		0.00	0.000	0.016	0.1455	0.0025	0.0185	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
274		0.00	0.000	0.015	0.1442	0.0025	0.0184	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
275		0.04	0.000	0.016	0.1461	0.0025	0.0183	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
276	*	0.00	0.000	0.000	0.1461	0.0025	0.0183	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
277	*	0.00	0.000	0.000	0.1461	0.0025	0.0182	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
278	*	0.01	0.000	0.006	0.1461	0.0025	0.0181	7.12E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
279		0.00	0.000	0.014	0.1449	0.0025	0.0180	7.12E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
280		0.00	0.000	0.014	0.1437	0.0025	0.0179	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
281		0.00	0.000	0.014	0.1425	0.0025	0.0179	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
282		0.00	0.000	0.014	0.1415	0.0024	0.0177	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
283		1.06	0.000	0.014	0.2286	0.0024	0.0175	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
284	*	0.22	0.000	0.025	0.2302	0.0024	0.0174	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
285		0.09	0.000	0.087	0.2449	0.0024	0.0173	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
286		0.00	0.000	0.056	0.2379	0.0025	0.0179	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
287	*	0.03	0.000	0.030	0.2315	0.0025	0.0181	7.12E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
288		0.29	0.000	0.055	0.2429	0.0024	0.0175	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
289		0.00	0.000	0.067	0.2317	0.0023	0.0168	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
290	*	0.00	0.000	0.039	0.2252	0.0022	0.0156	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
291		0.00	0.000	0.065	0.2151	0.0022	0.0163	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
292	*	0.00	0.000	0.000	0.2099	0.0022	0.0160	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
293	*	0.00	0.000	0.000	0.2057	0.0022	0.0157	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
294		0.00	0.000	0.099	0.1941	0.0021	0.0155	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
295	*	0.00	0.000	0.055	0.1875	0.0019	0.0135	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
296	*	0.00	0.000	0.055	0.1804	0.0023	0.0164	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
297	*	0.00	0.000	0.000	0.1782	0.0017	0.0126	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
298	*	0.00	0.000	0.000	0.1763	0.0012	0.0091	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
299		0.00	0.000	0.071	0.1691	0.0015	0.0112	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
300	*	0.00	0.000	0.000	0.1684	0.0019	0.0141	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
301		0.00	0.000	0.100	0.1589	0.0025	0.0178	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
302		0.00	0.000	0.131	0.1468	0.0025	0.0184	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
303		0.03	0.000	0.055	0.1436	0.0028	0.0203	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
304		0.16	0.000	0.042	0.1526	0.0028	0.0200	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
305		0.06	0.000	0.036	0.1543	0.0028	0.0204	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
306		0.02	0.000	0.032	0.1526	0.0028	0.0205	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
307		0.00	0.000	0.028	0.1501	0.0028	0.0204	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00

308		0.20	0.000	0.026	0.1640	0.0028	0.0201	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
309		0.00	0.000	0.041	0.1602	0.0027	0.0197	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
310		0.27	0.000	0.095	0.1744	0.0028	0.0203	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
311	*	0.10	0.000	0.029	0.1760	0.0026	0.0185	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
312		0.33	0.000	0.009	0.2069	0.0027	0.0194	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
313		0.15	0.000	0.091	0.2116	0.0031	0.0221	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
314		0.04	0.000	0.048	0.2109	0.0024	0.0175	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
315	*	0.14	0.000	0.019	0.2121	0.0026	0.0191	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
316	*	0.00	0.000	0.013	0.2130	0.0028	0.0204	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
317	*	0.00	0.000	0.025	0.2140	0.0024	0.0171	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
318		0.03	0.000	0.059	0.2138	0.0016	0.0117	7.01E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
319		0.00	0.000	0.070	0.2080	0.0014	0.0105	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
320		0.03	0.000	0.055	0.2060	0.0018	0.0130	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
321	*	0.19	0.000	0.023	0.2066	0.0024	0.0174	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
322	*	0.02	0.000	0.013	0.2064	0.0022	0.0161	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
323	*	0.13	0.000	0.012	0.2063	0.0021	0.0150	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
324		0.00	0.000	0.017	0.2227	0.0019	0.0138	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
325		0.00	0.000	0.059	0.2161	0.0016	0.0118	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
326		0.05	0.000	0.067	0.2135	0.0011	0.0077	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
327	*	0.01	0.000	0.030	0.2092	0.0017	0.0123	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
328	*	0.00	0.000	0.029	0.2056	0.0007	0.0053	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
329	*	0.00	0.000	0.000	0.2054	0.0000	0.0000	1.29E-09	0.0000	0.0000	9.16E-10	0.0000	0.0000	0.00E+00
330	*	0.00	0.000	0.000	0.2040	0.0010	0.0073	6.26E-09	0.0000	0.0000	2.10E-09	0.0000	0.0000	0.00E+00
331	*	0.00	0.000	0.027	0.1997	0.0017	0.0123	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
332		0.44	0.000	0.036	0.2312	0.0008	0.0061	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
333		0.06	0.000	0.045	0.2312	0.0006	0.0044	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
334		0.06	0.000	0.038	0.2309	0.0011	0.0077	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
335		0.00	0.000	0.039	0.2275	0.0000	0.0000	3.26E-09	0.0000	0.0000	1.60E-09	0.0000	0.0000	0.00E+00
336	*	0.20	0.000	0.029	0.2249	0.0017	0.0122	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
337		0.12	0.000	0.020	0.2416	0.0015	0.0112	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
338		0.00	0.000	0.057	0.2330	0.0008	0.0056	6.91E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
339		0.00	0.000	0.091	0.2232	0.0005	0.0037	6.87E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
340		0.00	0.000	0.084	0.2101	0.0015	0.0109	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
341		0.00	0.000	0.073	0.1990	0.0006	0.0040	6.88E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
342		0.00	0.000	0.052	0.1906	0.0000	0.0000	1.55E-10	0.0000	0.0000	1.48E-10	0.0000	0.0000	0.00E+00
343	*	0.05	0.000	0.023	0.1895	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
344		0.32	0.000	0.054	0.2100	0.0001	0.0004	4.77E-09	0.0000	0.0000	1.90E-09	0.0000	0.0000	0.00E+00
345	*	0.20	0.000	0.021	0.2097	0.0003	0.0023	6.85E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
346	*	0.00	0.000	0.021	0.2094	0.0006	0.0041	6.88E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
347	*	0.04	0.000	0.020	0.2098	0.0008	0.0055	6.91E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
348		0.06	0.000	0.017	0.2213	0.0009	0.0068	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
349		0.14	0.000	0.066	0.2260	0.0012	0.0086	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
350		0.78	0.000	0.062	0.2847	0.0012	0.0087	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
351		0.00	0.000	0.038	0.2488	0.0023	0.0165	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
352	*	0.00	0.000	0.000	0.2339	0.0014	0.0099	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00

353	*	0.11	0.000	0.008	0.2268	0.0010	0.0071	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
354	*	0.02	0.000	0.000	0.2222	0.0011	0.0079	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
355		0.00	0.000	0.034	0.2217	0.0012	0.0085	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
356		0.08	0.000	0.040	0.2208	0.0013	0.0091	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
357		0.04	0.000	0.039	0.2180	0.0013	0.0095	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
358		0.00	0.000	0.063	0.2100	0.0014	0.0098	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
359		0.00	0.000	0.078	0.2008	0.0014	0.0100	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
360		0.00	0.000	0.072	0.1922	0.0014	0.0102	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
361		0.04	0.000	0.083	0.1862	0.0014	0.0103	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
362		0.01	0.000	0.080	0.1796	0.0014	0.0104	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
363		0.09	0.000	0.068	0.1801	0.0014	0.0104	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
364		0.00	0.000	0.033	0.1768	0.0014	0.0103	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
365		0.12	0.000	0.041	0.1823	0.0017	0.0122	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00

* = Frozen (air or soil)

Annual Totals for Year 2			
	inches	cubic feet	percent
Precipitation	29.49	107,053.6	100.00
Runoff	0.000	0.0000	0.00
Evapotranspiration	18.094	65,681.8	61.35
Drainage Collected from Layer 3	11.5467	41,914.7	39.15
Percolation/Leakage through Layer 5	0.000003	0.0091	0.00
Average Head on Top of Layer 4	0.0044	---	---
Drainage Collected from Layer 7	0.0000	0.0063	0.00
Percolation/Leakage through Layer 9	0.000001	0.0028	0.00
Average Head on Top of Layer 8	0.0000	---	---
Percolation/Leakage through Layer 10	0.000000	0.0000	0.00
Change in Water Storage	-0.1496	-542.9	-0.51
Soil Water at Start of Year	59.0543	214,367.0	200.24
Soil Water at End of Year	58.9047	213,824.1	199.74
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

Daily Output for Year 3

Column key: Head #1: drainage from Layer 4 | Head #2: drainage from Layer 8
Drain #1: drainage from Layer 3 | Drain #2: drainage from Layer 7
Leak #1: leakage thru Layer 5 | Leak #2: leakage thru Layer 9 | Leak #3: leakage thru Layer 10

Title: Wayne Disposal - Initial Lift
Simulated On: 3/23/2021 13:00

Day	Freezing Status* Air	Freezing Status* Soil	Rain (inches)	Runoff (inches)	ET (inches)	Evap. Zone Water (in/in)	Head #1 (inches)	Drain #1 (inches)	Leak #1 (inches)	Head #2 (inches)	Drain #2 (inches)	Leak #2 (inches)	Head #3 (inches)	Drain #3 (inches)	Leak #3 (inches)
1			0.15	0.000	0.068	0.1884	0.0019	0.0141	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
2			0.00	0.000	0.067	0.1826	0.0018	0.0131	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
3			0.00	0.000	0.052	0.1776	0.0020	0.0144	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
4			0.05	0.000	0.039	0.1779	0.0018	0.0134	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
5			0.12	0.000	0.045	0.1834	0.0017	0.0126	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
6			0.01	0.000	0.066	0.1787	0.0016	0.0118	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
7	*		0.03	0.000	0.023	0.1784	0.0015	0.0112	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
8	*		0.05	0.000	0.012	0.1797	0.0015	0.0106	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
9	*		0.10	0.000	0.017	0.1811	0.0014	0.0100	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
10	*		0.00	0.000	0.025	0.1825	0.0013	0.0095	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
11	*		0.00	0.000	0.010	0.1840	0.0013	0.0091	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
12	*		0.13	0.000	0.007	0.1854	0.0012	0.0087	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
13	*		0.01	0.000	0.014	0.1867	0.0011	0.0083	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
14	*		0.00	0.000	0.008	0.1880	0.0011	0.0080	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
15	*		0.00	0.000	0.027	0.1894	0.0011	0.0076	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
16			0.00	0.000	0.064	0.1848	0.0010	0.0073	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
17			0.34	0.000	0.094	0.2054	0.0006	0.0043	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
18			0.32	0.000	0.113	0.2219	0.0006	0.0044	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
19			0.00	0.000	0.073	0.2156	0.0000	0.0003	3.94E-09	0.0000	0.0000	1.75E-09	0.0000	0.0000	0.00E+00
20	*		0.00	0.000	0.034	0.2123	0.0001	0.0004	5.29E-09	0.0000	0.0000	1.98E-09	0.0000	0.0000	0.00E+00
21	*		0.00	0.000	0.002	0.2122	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
22			0.00	0.000	0.058	0.2074	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
23			0.00	0.000	0.046	0.2019	0.0001	0.0008	4.78E-09	0.0000	0.0000	1.90E-09	0.0000	0.0000	0.00E+00
24			0.00	0.000	0.047	0.1949	0.0000	0.0000	2.56E-09	0.0000	0.0000	1.41E-09	0.0000	0.0000	0.00E+00
25	*		0.00	0.000	0.041	0.1889	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
26			0.02	0.000	0.043	0.1849	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
27	*		0.00	0.000	0.039	0.1797	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
28			0.07	0.000	0.043	0.1803	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
29			0.07	0.000	0.053	0.1812	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
30			0.04	0.000	0.057	0.1793	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
31			0.00	0.000	0.096	0.1700	0.0001	0.0007	5.08E-09	0.0000	0.0000	1.95E-09	0.0000	0.0000	0.00E+00
32	*		0.02	0.000	0.045	0.1665	0.0002	0.0015	6.16E-09	0.0000	0.0000	2.08E-09	0.0000	0.0000	0.00E+00
33	*		0.31	0.000	0.011	0.1672	0.0002	0.0017	6.84E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
34	*		0.08	0.000	0.018	0.1682	0.0007	0.0047	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
35	*		0.00	0.000	0.018	0.1693	0.0014	0.0103	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
36	*	*	0.00	0.000	0.023	0.1693	0.0016	0.0118	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
37		*	0.19	0.000	0.000	0.2072	0.0025	0.0181	7.12E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00

38		*	0.00	0.000	0.000	0.2072	0.0031	0.0222	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
39		*	0.00	0.000	0.000	0.2072	0.0033	0.0242	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
40		*	0.06	0.000	0.000	0.2118	0.0034	0.0249	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
41		*	0.04	0.000	0.000	0.2147	0.0034	0.0247	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
42		*	0.02	0.000	0.000	0.2162	0.0033	0.0241	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
43		*	0.01	0.000	0.000	0.2166	0.0032	0.0233	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
44		*	0.00	0.000	0.000	0.2166	0.0031	0.0223	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
45		*	0.00	0.000	0.000	0.2166	0.0029	0.0213	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
46	*	*	0.11	0.000	0.037	0.2166	0.0028	0.0204	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
47	*	*	0.00	0.000	0.018	0.2166	0.0027	0.0196	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
48	*	*	0.16	0.000	0.016	0.2166	0.0026	0.0189	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
49	*	*	0.04	0.000	0.000	0.2166	0.0025	0.0183	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
50		*	0.02	0.000	0.028	0.2357	0.0025	0.0178	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
51		*	0.21	0.000	0.000	0.2529	0.0024	0.0174	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
52		*	0.00	0.000	0.000	0.2529	0.0024	0.0172	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
53		*	0.00	0.000	0.000	0.2529	0.0024	0.0171	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
54	*	*	0.05	0.000	0.025	0.2529	0.0024	0.0171	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
55		*	0.15	0.000	0.020	0.2653	0.0024	0.0171	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
56		*	0.04	0.000	0.000	0.2689	0.0024	0.0173	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
57		*	0.01	0.000	0.000	0.2697	0.0024	0.0175	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
58			0.08	0.000	0.175	0.2353	0.0029	0.0212	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
59			0.04	0.000	0.225	0.2111	0.0028	0.0201	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
60			0.00	0.000	0.182	0.1899	0.0025	0.0178	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
61			0.00	0.000	0.127	0.1752	0.0009	0.0068	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
62			0.00	0.000	0.130	0.1623	0.0007	0.0048	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
63			0.00	0.000	0.054	0.1554	0.0021	0.0154	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
64			0.02	0.000	0.042	0.1520	0.0031	0.0227	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
65			0.00	0.000	0.035	0.1477	0.0037	0.0271	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
66			0.01	0.000	0.031	0.1451	0.0041	0.0294	7.29E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
67			0.01	0.000	0.028	0.1427	0.0042	0.0304	7.30E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
68			0.01	0.000	0.026	0.1402	0.0048	0.0349	7.37E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
69	*		0.08	0.000	0.071	0.1405	0.0039	0.0280	7.27E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
70	*		0.00	0.000	0.024	0.1382	0.0038	0.0278	7.26E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
71	*		0.00	0.000	0.000	0.1375	0.0044	0.0322	7.33E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
72	*		0.00	0.000	0.000	0.1370	0.0041	0.0295	7.29E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
73	*		0.00	0.000	0.025	0.1348	0.0037	0.0272	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
74			0.00	0.000	0.021	0.1325	0.0038	0.0273	7.26E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
75	*		0.00	0.000	0.020	0.1300	0.0037	0.0267	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
76			0.00	0.000	0.019	0.1278	0.0031	0.0228	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
77			0.00	0.000	0.018	0.1257	0.0027	0.0198	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
78			0.91	0.000	0.018	0.1994	0.0028	0.0203	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
79			0.00	0.000	0.155	0.1857	0.0025	0.0181	7.12E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
80			0.00	0.000	0.159	0.1722	0.0012	0.0090	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
81			0.49	0.000	0.244	0.1927	0.0014	0.0103	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
82			0.00	0.000	0.196	0.1762	0.0014	0.0103	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00

83		0.00	0.000	0.188	0.1602	0.0015	0.0110	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
84		0.00	0.000	0.227	0.1412	0.0011	0.0078	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
85		0.23	0.000	0.130	0.1492	0.0016	0.0115	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
86		0.00	0.000	0.054	0.1443	0.0016	0.0114	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
87		0.00	0.000	0.041	0.1404	0.0013	0.0091	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
88	*	0.00	0.000	0.000	0.1400	0.0011	0.0083	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
89	*	0.00	0.000	0.000	0.1396	0.0010	0.0069	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
90	*	0.00	0.000	0.000	0.1393	0.0009	0.0062	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
91	*	0.00	0.000	0.000	0.1390	0.0008	0.0062	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
92	*	0.01	0.000	0.049	0.1359	0.0008	0.0060	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
93		0.08	0.000	0.031	0.1395	0.0010	0.0071	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
94		0.18	0.000	0.028	0.1516	0.0011	0.0081	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
95		0.60	0.000	0.026	0.1989	0.0012	0.0090	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
96		0.00	0.000	0.121	0.1886	0.0014	0.0100	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
97		0.36	0.000	0.065	0.2125	0.0017	0.0126	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
98		0.22	0.000	0.110	0.2216	0.0017	0.0124	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
99		0.00	0.000	0.147	0.2090	0.0017	0.0122	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
100		0.00	0.000	0.371	0.1774	0.0018	0.0131	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
101		0.00	0.000	0.427	0.1413	0.0015	0.0111	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
102		0.00	0.000	0.130	0.1303	0.0015	0.0109	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
103		0.00	0.000	0.054	0.1258	0.0017	0.0122	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
104		0.00	0.000	0.041	0.1224	0.0022	0.0157	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
105		0.00	0.000	0.035	0.1195	0.0025	0.0178	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
106		0.84	0.000	0.031	0.1866	0.0032	0.0231	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
107		0.00	0.000	0.241	0.1650	0.0033	0.0242	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
108		0.16	0.000	0.028	0.1743	0.0029	0.0208	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
109		0.11	0.000	0.239	0.1624	0.0026	0.0187	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
110		0.82	0.000	0.026	0.2273	0.0024	0.0175	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
111		0.10	0.000	0.093	0.2269	0.0022	0.0159	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
112		0.03	0.000	0.086	0.2211	0.0022	0.0159	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
113		0.31	0.000	0.224	0.2283	0.0017	0.0121	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
114		0.02	0.000	0.063	0.2245	0.0024	0.0174	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
115	*	0.45	0.000	0.029	0.2229	0.0041	0.0297	7.29E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
116		0.12	0.000	0.006	0.2641	0.0035	0.0254	7.23E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
117		0.00	0.000	0.200	0.2376	0.0032	0.0230	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
118		0.05	0.000	0.091	0.2211	0.0039	0.0280	7.27E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
119		0.05	0.000	0.137	0.2069	0.0034	0.0250	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
120		0.28	0.000	0.191	0.2098	0.0013	0.0095	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
121		0.00	0.000	0.194	0.1900	0.0020	0.0146	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
122		0.00	0.000	0.348	0.1591	0.0031	0.0226	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
123		0.00	0.000	0.130	0.1462	0.0038	0.0273	7.26E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
124		0.54	0.000	0.054	0.1858	0.0041	0.0298	7.29E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
125		0.00	0.000	0.221	0.1666	0.0042	0.0308	7.31E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
126		0.00	0.000	0.041	0.1629	0.0043	0.0308	7.31E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
127		0.00	0.000	0.035	0.1591	0.0042	0.0305	7.30E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00

128	0.00	0.000	0.031	0.1556	0.0044	0.0320	7.33E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
129	0.00	0.000	0.028	0.1523	0.0043	0.0314	7.32E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
130	0.62	0.000	0.026	0.2008	0.0041	0.0296	7.29E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
131	0.00	0.000	0.130	0.1888	0.0042	0.0302	7.30E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
132	0.00	0.000	0.329	0.1612	0.0029	0.0208	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
133	0.00	0.000	0.130	0.1498	0.0033	0.0240	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
134	0.00	0.000	0.054	0.1447	0.0035	0.0251	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
135	0.00	0.000	0.041	0.1407	0.0031	0.0227	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
136	0.14	0.000	0.035	0.1491	0.0028	0.0205	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
137	0.03	0.000	0.031	0.1487	0.0026	0.0187	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
138	0.00	0.000	0.028	0.1461	0.0024	0.0174	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
139	0.00	0.000	0.025	0.1436	0.0021	0.0154	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
140	0.00	0.000	0.024	0.1413	0.0020	0.0143	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
141	0.09	0.000	0.023	0.1466	0.0018	0.0132	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
142	0.35	0.000	0.022	0.1738	0.0017	0.0121	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
143	0.00	0.000	0.178	0.1589	0.0012	0.0090	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
144	0.00	0.000	0.020	0.1568	0.0018	0.0127	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
145	0.00	0.000	0.019	0.1549	0.0014	0.0104	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
146	0.00	0.000	0.018	0.1530	0.0012	0.0087	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
147	0.37	0.000	0.018	0.1820	0.0010	0.0074	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
148	0.01	0.000	0.210	0.1648	0.0014	0.0104	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
149	1.01	0.000	0.132	0.2377	0.0003	0.0023	6.85E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
150	0.25	0.000	0.277	0.2350	0.0012	0.0087	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
151	0.02	0.000	0.260	0.2148	0.0002	0.0011	6.83E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
152	0.00	0.000	0.245	0.1937	0.0009	0.0062	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
153	0.00	0.000	0.197	0.1744	0.0017	0.0126	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
154	0.00	0.000	0.130	0.1613	0.0012	0.0091	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
155	0.00	0.000	0.054	0.1554	0.0008	0.0057	6.91E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
156	0.00	0.000	0.041	0.1500	0.0007	0.0048	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
157	0.00	0.000	0.035	0.1459	0.0002	0.0018	6.60E-09	0.0000	0.0000	2.13E-09	0.0000	0.0000	0.00E+00
158	0.00	0.000	0.031	0.1416	0.0008	0.0061	6.24E-09	0.0000	0.0000	2.09E-09	0.0000	0.0000	0.00E+00
159	0.00	0.000	0.028	0.1371	0.0012	0.0087	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
160	0.00	0.000	0.025	0.1330	0.0009	0.0069	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
161	0.00	0.000	0.024	0.1294	0.0006	0.0045	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
162	0.00	0.000	0.022	0.1261	0.0008	0.0059	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
163	0.00	0.000	0.021	0.1229	0.0015	0.0105	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
164	0.00	0.000	0.020	0.1201	0.0018	0.0130	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
165	0.00	0.000	0.019	0.1183	0.0017	0.0126	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
166	0.00	0.000	0.018	0.1163	0.0031	0.0225	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
167	0.00	0.000	0.018	0.1137	0.0043	0.0313	7.32E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
168	0.00	0.000	0.017	0.1111	0.0040	0.0290	7.28E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
169	0.00	0.000	0.016	0.1087	0.0035	0.0257	7.23E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
170	0.00	0.000	0.016	0.1064	0.0032	0.0235	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
171	0.00	0.000	0.016	0.1043	0.0031	0.0223	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
172	0.00	0.000	0.015	0.1024	0.0030	0.0219	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00

173	0.00	0.000	0.015	0.1005	0.0030	0.0217	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
174	0.06	0.000	0.016	0.1039	0.0030	0.0216	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
175	0.01	0.000	0.015	0.1026	0.0029	0.0212	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
176	0.06	0.000	0.015	0.1062	0.0026	0.0185	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
177	0.00	0.000	0.013	0.1049	0.0029	0.0213	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
178	0.24	0.000	0.014	0.1229	0.0031	0.0227	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
179	0.44	0.000	0.014	0.1577	0.0030	0.0220	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
180	0.00	0.000	0.013	0.1560	0.0031	0.0223	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
181	0.00	0.000	0.012	0.1541	0.0028	0.0206	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
182	0.00	0.000	0.012	0.1525	0.0023	0.0167	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
183	0.00	0.000	0.012	0.1509	0.0020	0.0143	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
184	0.00	0.000	0.012	0.1495	0.0018	0.0133	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
185	0.00	0.000	0.012	0.1482	0.0018	0.0130	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
186	0.00	0.000	0.011	0.1469	0.0018	0.0131	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
187	0.00	0.000	0.011	0.1457	0.0018	0.0134	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
188	0.59	0.000	0.013	0.1931	0.0019	0.0136	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
189	0.34	0.000	0.353	0.1913	0.0028	0.0199	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
190	0.00	0.000	0.355	0.1609	0.0021	0.0154	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
191	0.09	0.000	0.329	0.1399	0.0019	0.0140	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
192	0.14	0.000	0.131	0.1402	0.0011	0.0081	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
193	0.36	0.000	0.055	0.1655	0.0011	0.0081	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
194	0.05	0.000	0.115	0.1596	0.0014	0.0103	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
195	0.16	0.000	0.183	0.1575	0.0017	0.0120	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
196	0.59	0.000	0.140	0.1946	0.0020	0.0143	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
197	0.01	0.000	0.134	0.1846	0.0022	0.0158	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
198	0.00	0.000	0.186	0.1691	0.0023	0.0166	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
199	0.00	0.000	0.202	0.1522	0.0024	0.0171	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
200	0.00	0.000	0.130	0.1414	0.0024	0.0172	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
201	0.16	0.000	0.055	0.1498	0.0024	0.0171	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
202	0.04	0.000	0.043	0.1492	0.0023	0.0169	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
203	0.26	0.000	0.036	0.1677	0.0023	0.0167	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
204	0.11	0.000	0.141	0.1651	0.0023	0.0164	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
205	0.17	0.000	0.269	0.1566	0.0022	0.0160	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
206	0.22	0.000	0.277	0.1516	0.0022	0.0157	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
207	0.31	0.000	0.132	0.1662	0.0021	0.0155	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
208	0.00	0.000	0.226	0.1474	0.0021	0.0152	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
209	1.05	0.000	0.056	0.2301	0.0021	0.0153	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
210	0.00	0.000	0.331	0.2026	0.0020	0.0147	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
211	0.37	0.000	0.128	0.2228	0.0020	0.0146	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
212	0.00	0.000	0.122	0.2126	0.0020	0.0146	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
213	0.07	0.000	0.120	0.2081	0.0020	0.0146	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
214	0.62	0.000	0.250	0.2377	0.0025	0.0183	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
215	0.02	0.000	0.098	0.2294	0.0023	0.0166	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
216	0.03	0.000	0.093	0.2233	0.0016	0.0115	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
217	0.05	0.000	0.116	0.2137	0.0021	0.0150	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00

218	0.20	0.000	0.105	0.2169	0.0021	0.0151	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
219	0.02	0.000	0.124	0.2048	0.0019	0.0140	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
220	0.06	0.000	0.333	0.1795	0.0019	0.0135	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
221	0.00	0.000	0.167	0.1639	0.0015	0.0108	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
222	0.00	0.000	0.129	0.1521	0.0016	0.0115	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
223	0.00	0.000	0.054	0.1464	0.0019	0.0136	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
224	0.97	0.000	0.043	0.2218	0.0026	0.0185	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
225	0.00	0.000	0.219	0.2024	0.0016	0.0118	7.01E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
226	0.00	0.000	0.207	0.1841	0.0021	0.0152	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
227	0.00	0.000	0.209	0.1652	0.0030	0.0215	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
228	0.00	0.000	0.130	0.1534	0.0022	0.0161	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
229	0.70	0.000	0.056	0.2063	0.0023	0.0168	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
230	0.05	0.000	0.237	0.1898	0.0030	0.0215	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
231	0.00	0.000	0.112	0.1804	0.0024	0.0177	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
232	0.00	0.000	0.108	0.1714	0.0030	0.0214	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
233	0.00	0.000	0.102	0.1629	0.0033	0.0240	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
234	0.01	0.000	0.128	0.1529	0.0036	0.0263	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
235	0.05	0.000	0.056	0.1519	0.0038	0.0274	7.26E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
236	0.00	0.000	0.041	0.1480	0.0037	0.0267	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
237	0.00	0.000	0.035	0.1448	0.0034	0.0244	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
238	0.00	0.000	0.031	0.1420	0.0031	0.0225	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
239	0.12	0.000	0.030	0.1493	0.0027	0.0197	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
240	0.81	0.000	0.028	0.2145	0.0028	0.0204	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
241	0.00	0.000	0.120	0.2041	0.0027	0.0198	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
242	0.00	0.000	0.205	0.1864	0.0027	0.0195	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
243	0.00	0.000	0.194	0.1694	0.0030	0.0219	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
244	0.00	0.000	0.234	0.1493	0.0020	0.0144	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
245	0.00	0.000	0.130	0.1380	0.0018	0.0130	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
246	0.10	0.000	0.056	0.1416	0.0014	0.0103	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
247	0.16	0.000	0.044	0.1509	0.0012	0.0085	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
248	0.03	0.000	0.037	0.1508	0.0013	0.0096	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
249	0.10	0.000	0.033	0.1566	0.0015	0.0111	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
250	0.00	0.000	0.028	0.1543	0.0017	0.0122	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
251	0.00	0.000	0.025	0.1522	0.0018	0.0128	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
252	0.00	0.000	0.024	0.1500	0.0021	0.0150	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
253	0.00	0.000	0.022	0.1477	0.0022	0.0162	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
254	0.07	0.000	0.023	0.1507	0.0021	0.0154	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
255	0.37	0.000	0.022	0.1793	0.0019	0.0139	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
256	0.11	0.000	0.123	0.1771	0.0020	0.0144	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
257	0.01	0.000	0.210	0.1601	0.0012	0.0086	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
258	0.70	0.000	0.132	0.2071	0.0012	0.0087	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
259	0.00	0.000	0.091	0.1994	0.0007	0.0050	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
260	0.00	0.000	0.123	0.1889	0.0012	0.0086	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
261	0.00	0.000	0.110	0.1792	0.0016	0.0118	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
262	0.00	0.000	0.099	0.1705	0.0015	0.0109	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00

263		0.08	0.000	0.073	0.1708	0.0017	0.0127	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
264		0.03	0.000	0.071	0.1671	0.0015	0.0110	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
265		0.41	0.000	0.091	0.1936	0.0013	0.0097	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
266		0.01	0.000	0.088	0.1863	0.0014	0.0103	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
267		0.00	0.000	0.100	0.1777	0.0014	0.0105	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
268		0.78	0.000	0.093	0.2347	0.0013	0.0096	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
269		0.00	0.000	0.117	0.2246	0.0016	0.0118	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
270		0.14	0.000	0.289	0.2125	0.0013	0.0094	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
271		0.75	0.000	0.092	0.2663	0.0022	0.0160	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
272		0.00	0.000	0.128	0.2429	0.0022	0.0158	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
273		0.03	0.000	0.158	0.2190	0.0024	0.0176	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
274		0.18	0.000	0.237	0.2064	0.0020	0.0148	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
275		0.00	0.000	0.221	0.1838	0.0008	0.0059	6.91E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
276		0.00	0.000	0.197	0.1654	0.0005	0.0037	6.88E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
277		0.00	0.000	0.081	0.1564	0.0011	0.0082	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
278		0.00	0.000	0.054	0.1500	0.0017	0.0122	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
279		0.00	0.000	0.041	0.1452	0.0021	0.0151	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
280	*	0.00	0.000	0.035	0.1412	0.0024	0.0172	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
281	*	0.00	0.000	0.000	0.1398	0.0026	0.0185	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
282		0.00	0.000	0.031	0.1366	0.0027	0.0193	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
283		0.00	0.000	0.028	0.1338	0.0027	0.0197	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
284		0.00	0.000	0.025	0.1311	0.0027	0.0198	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
285		0.94	0.000	0.025	0.2065	0.0027	0.0197	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
286		0.36	0.000	0.118	0.2260	0.0031	0.0224	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
287		0.01	0.000	0.116	0.2164	0.0025	0.0185	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
288		0.00	0.000	0.115	0.2055	0.0036	0.0265	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
289		0.06	0.000	0.189	0.1945	0.0025	0.0178	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
290		0.00	0.000	0.088	0.1874	0.0019	0.0140	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
291		0.00	0.000	0.108	0.1772	0.0032	0.0230	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
292		0.00	0.000	0.128	0.1656	0.0026	0.0185	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
293		0.00	0.000	0.054	0.1593	0.0026	0.0187	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
294		0.48	0.000	0.042	0.1937	0.0026	0.0185	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
295		0.00	0.000	0.092	0.1847	0.0019	0.0135	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
296		0.00	0.000	0.077	0.1771	0.0015	0.0106	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
297	*	0.00	0.000	0.000	0.1761	0.0011	0.0083	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
298	*	0.00	0.000	0.002	0.1755	0.0006	0.0046	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
299	*	0.00	0.000	0.000	0.1750	0.0010	0.0069	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
300	*	0.00	0.000	0.000	0.1744	0.0014	0.0098	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
301	*	0.00	0.000	0.000	0.1737	0.0016	0.0115	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
302	*	0.00	0.000	0.049	0.1690	0.0015	0.0112	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
303		0.00	0.000	0.062	0.1627	0.0019	0.0139	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
304	*	0.00	0.000	0.000	0.1620	0.0014	0.0103	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
305	*	0.00	0.000	0.000	0.1614	0.0011	0.0083	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
306		0.00	0.000	0.076	0.1542	0.0014	0.0100	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
307		0.00	0.000	0.047	0.1500	0.0007	0.0052	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00

308			0.00	0.000	0.041	0.1463	0.0008	0.0061	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
309	*		0.00	0.000	0.000	0.1458	0.0014	0.0102	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
310	*		0.00	0.000	0.000	0.1452	0.0013	0.0093	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
311	*		0.00	0.000	0.000	0.1448	0.0012	0.0085	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
312	*		0.00	0.000	0.035	0.1414	0.0012	0.0085	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
313			0.00	0.000	0.031	0.1383	0.0011	0.0082	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
314			0.00	0.000	0.028	0.1356	0.0009	0.0066	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
315			0.20	0.000	0.026	0.1500	0.0008	0.0059	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
316	*		0.11	0.000	0.030	0.1515	0.0007	0.0049	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
317	*		0.13	0.000	0.012	0.1529	0.0008	0.0057	6.91E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
318	*		0.00	0.000	0.026	0.1543	0.0009	0.0062	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
319	*		0.00	0.000	0.025	0.1557	0.0009	0.0065	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
320	*	*	0.00	0.000	0.012	0.1557	0.0006	0.0043	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
321	*	*	0.00	0.000	0.005	0.1557	0.0007	0.0050	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
322	*	*	0.19	0.000	0.002	0.1557	0.0008	0.0058	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
323	*	*	0.00	0.000	0.002	0.1557	0.0009	0.0063	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
324	*	*	0.00	0.000	0.004	0.1557	0.0009	0.0067	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
325	*	*	0.00	0.000	0.002	0.1557	0.0009	0.0069	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
326	*	*	0.00	0.000	0.004	0.1557	0.0010	0.0070	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
327	*	*	0.00	0.000	0.002	0.1557	0.0010	0.0070	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
328	*	*	0.00	0.000	0.004	0.1557	0.0010	0.0070	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
329	*	*	0.36	0.000	0.000	0.1557	0.0010	0.0070	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
330	*	*	0.18	0.000	0.000	0.1557	0.0010	0.0070	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
331		*	0.17	0.000	0.000	0.1858	0.0010	0.0070	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
332		*	0.00	0.000	0.027	0.1859	0.0010	0.0070	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
333	*	*	0.00	0.000	0.012	0.1859	0.0010	0.0070	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
334		*	0.00	0.000	0.000	0.2235	0.0010	0.0071	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
335		*	0.12	0.000	0.017	0.2392	0.0010	0.0073	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
336		*	0.00	0.000	0.000	0.2392	0.0010	0.0075	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
337		*	0.16	0.000	0.001	0.2527	0.0011	0.0077	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
338		*	0.00	0.000	0.000	0.2527	0.0011	0.0080	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
339		*	0.18	0.000	0.001	0.2675	0.0011	0.0083	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
340		*	0.34	0.000	0.001	0.2958	0.0012	0.0087	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
341		*	0.00	0.000	0.000	0.2958	0.0012	0.0090	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
342		*	0.00	0.000	0.000	0.2958	0.0013	0.0094	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
343		*	0.00	0.000	0.000	0.2958	0.0014	0.0099	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
344			0.00	0.000	0.037	0.2362	0.0018	0.0133	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
345	*		0.00	0.000	0.000	0.2284	0.0004	0.0030	6.86E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
346			0.00	0.000	0.043	0.2175	0.0002	0.0012	5.86E-09	0.0000	0.0000	2.05E-09	0.0000	0.0000	0.00E+00
347			0.10	0.000	0.037	0.2171	0.0010	0.0071	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
348			0.15	0.000	0.037	0.2221	0.0017	0.0120	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
349	*		0.24	0.000	0.026	0.2207	0.0021	0.0155	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
350	*		0.05	0.000	0.011	0.2203	0.0025	0.0179	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
351	*		0.13	0.000	0.005	0.2187	0.0027	0.0195	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
352	*		0.00	0.000	0.012	0.2180	0.0028	0.0204	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00

353			0.00	0.000	0.000	0.2400	0.0029	0.0209	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
354			0.06	0.000	0.036	0.2404	0.0032	0.0231	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
355			0.02	0.000	0.043	0.2366	0.0031	0.0227	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
356			0.69	0.000	0.033	0.2843	0.0040	0.0292	7.29E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
357			0.00	0.000	0.061	0.2474	0.0034	0.0249	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
358			0.38	0.000	0.057	0.2600	0.0016	0.0114	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
359			0.09	0.000	0.042	0.2552	0.0016	0.0112	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
360	*		0.06	0.000	0.017	0.2429	0.0018	0.0127	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
361	*		0.09	0.000	0.009	0.2365	0.0019	0.0138	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
362	*		0.01	0.000	0.012	0.2309	0.0020	0.0145	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
363	*		0.00	0.000	0.006	0.2268	0.0021	0.0150	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
364	*		0.09	0.000	0.003	0.2239	0.0021	0.0153	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
365	*	*	0.30	0.000	0.000	0.2239	0.0021	0.0154	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00

* = Frozen (air or soil)

Annual Totals for Year 3			
	inches	cubic feet	percent
Precipitation	33.26	120,745.0	100.00
Runoff	0.000	0.0000	0.00
Evapotranspiration	26.041	94,527.5	78.29
Drainage Collected from Layer 3	5.2285	18,979.6	15.72
Percolation/Leakage through Layer 5	0.000003	0.0091	0.00
Average Head on Top of Layer 4	0.0020	---	---
Drainage Collected from Layer 7	0.0000	0.0063	0.00
Percolation/Leakage through Layer 9	0.000001	0.0028	0.00
Average Head on Top of Layer 8	0.0000	---	---
Percolation/Leakage through Layer 10	0.000000	0.0000	0.00
Change in Water Storage	1.9939	7,237.9	5.99
Soil Water at Start of Year	58.9047	213,824.1	177.09
Soil Water at End of Year	60.4915	219,584.1	181.86
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.4071	1,477.9	1.22
Annual Water Budget Balance	0.0000	0.0000	0.00

Daily Output for Year 4

Column key: Head #1: drainage from Layer 4 | Head #2: drainage from Layer 8
Drain #1: drainage from Layer 3 | Drain #2: drainage from Layer 7
Leak #1: leakage thru Layer 5 | Leak #2: leakage thru Layer 9 | Leak #3: leakage thru Layer 10

Title: Wayne Disposal - Initial Lift
Simulated On: 3/23/2021 13:00

Day	Freezing Status* Air	Soil	Rain (inches)	Runoff (inches)	ET (inches)	Evap. Zone Water (in/in)	Head #1 (inches)	Drain #1 (inches)	Leak #1 (inches)	Head #2 (inches)	Drain #2 (inches)	Leak #2 (inches)	Head #3 (inches)	Drain #3 (inches)	Leak #3 (inches)
1		*	0.00	0.000	0.030	0.2239	0.0021	0.0154	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
2		*	0.00	0.000	0.000	0.2553	0.0022	0.0160	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
3	*	*	0.00	0.000	0.000	0.2553	0.0031	0.0228	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
4		*	0.00	0.000	0.000	0.2553	0.0030	0.0215	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
5		*	0.03	0.000	0.000	0.2577	0.0027	0.0196	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
6		*	0.00	0.000	0.000	0.2577	0.0025	0.0179	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
7	*	*	0.05	0.000	0.029	0.2577	0.0023	0.0165	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
8		*	0.00	0.000	0.022	0.2577	0.0021	0.0153	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
9		*	0.07	0.000	0.000	0.2632	0.0020	0.0143	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
10		*	0.05	0.000	0.000	0.2675	0.0018	0.0133	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
11	*	*	0.08	0.000	0.028	0.2675	0.0017	0.0125	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
12	*	*	0.00	0.000	0.013	0.2675	0.0016	0.0118	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
13	*	*	0.03	0.000	0.006	0.2675	0.0013	0.0092	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
14	*	*	0.05	0.000	0.004	0.2675	0.0003	0.0024	6.85E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
15	*	*	0.00	0.000	0.007	0.2675	0.0000	0.0000	1.99E-09	0.0000	0.0000	1.22E-09	0.0000	0.0000	0.00E+00
16	*	*	0.18	0.000	0.000	0.2675	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
17	*	*	0.11	0.000	0.000	0.2675	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
18		*	0.00	0.000	0.000	0.3005	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
19		*	0.00	0.000	0.000	0.3005	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
20		*	0.00	0.000	0.000	0.3005	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
21		*	0.00	0.000	0.000	0.3005	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
22	*	*	0.00	0.000	0.000	0.3005	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
23	*	*	0.05	0.000	0.031	0.3005	0.0000	0.0001	1.36E-09	0.0000	0.0000	9.51E-10	0.0000	0.0000	0.00E+00
24	*	*	0.00	0.000	0.020	0.3005	0.0006	0.0042	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
25		*	0.00	0.000	0.000	0.3005	0.0015	0.0105	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
26		*	0.00	0.000	0.000	0.3005	0.0023	0.0165	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
27		*	0.24	0.000	0.000	0.3201	0.0030	0.0219	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
28		*	0.08	0.000	0.000	0.3269	0.0036	0.0264	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
29		*	0.00	0.000	0.000	0.3269	0.0041	0.0300	7.30E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
30	*	*	0.00	0.000	0.000	0.3269	0.0045	0.0328	7.34E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
31	*	*	0.00	0.000	0.000	0.3269	0.0048	0.0350	7.37E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
32	*	*	0.00	0.000	0.000	0.3269	0.0050	0.0365	7.39E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
33	*	*	0.04	0.000	0.021	0.3269	0.0052	0.0376	7.41E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
34		*	0.00	0.000	0.020	0.3269	0.0053	0.0383	7.42E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
35		*	0.12	0.000	0.000	0.3365	0.0053	0.0388	7.43E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
36		*	0.18	0.000	0.000	0.3512	0.0054	0.0390	7.43E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
37		*	0.17	0.000	0.000	0.3652	0.0054	0.0390	7.43E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00

38		*	0.10	0.000	0.000	0.3738	0.0054	0.0389	7.43E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
39		*	0.01	0.000	0.000	0.3749	0.0053	0.0388	7.43E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
40		*	0.00	0.000	0.000	0.3749	0.0053	0.0385	7.42E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
41		*	0.00	0.000	0.000	0.3749	0.0053	0.0382	7.42E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
42	*	*	0.00	0.000	0.000	0.3749	0.0052	0.0379	7.41E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
43	*	*	0.13	0.000	0.032	0.3749	0.0052	0.0375	7.41E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
44	*	*	0.00	0.000	0.038	0.3749	0.0051	0.0371	7.40E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
45	*	*	0.00	0.000	0.039	0.3749	0.0051	0.0368	7.40E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
46	*	*	0.00	0.000	0.000	0.3749	0.0050	0.0364	7.39E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
47	*	*	0.00	0.000	0.028	0.3749	0.0050	0.0360	7.38E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
48		*	0.00	0.000	0.000	0.3749	0.0049	0.0355	7.38E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
49		*	0.00	0.000	0.000	0.3749	0.0048	0.0351	7.37E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
50		*	0.00	0.000	0.000	0.3749	0.0048	0.0347	7.37E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
51		*	0.00	0.000	0.000	0.3749	0.0047	0.0343	7.36E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
52		*	0.00	0.000	0.000	0.3749	0.0047	0.0339	7.36E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
53		*	0.00	0.000	0.000	0.3752	0.0046	0.0335	7.35E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
54	*	*	0.07	0.000	0.022	0.3752	0.0046	0.0332	7.34E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
55	*	*	0.59	0.000	0.000	0.3752	0.0045	0.0328	7.34E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
56	*	*	0.15	0.000	0.011	0.3752	0.0045	0.0324	7.33E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
57	*	*	0.00	0.000	0.021	0.3752	0.0044	0.0320	7.33E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
58	*	*	0.00	0.000	0.011	0.3752	0.0044	0.0317	7.32E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
59	*	*	0.00	0.000	0.015	0.3752	0.0043	0.0313	7.32E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
60	*	*	0.00	0.000	0.008	0.3752	0.0043	0.0309	7.31E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
61	*	*	0.00	0.000	0.010	0.3752	0.0042	0.0306	7.31E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
62	*	*	0.00	0.000	0.011	0.3752	0.0042	0.0302	7.30E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
63	*	*	0.00	0.000	0.006	0.3752	0.0041	0.0299	7.30E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
64	*	*	0.17	0.000	0.000	0.3752	0.0041	0.0296	7.29E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
65	*	*	0.00	0.000	0.015	0.3752	0.0040	0.0293	7.29E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
66	*	*	0.01	0.000	0.007	0.3752	0.0040	0.0289	7.28E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
67	*	*	0.00	0.000	0.028	0.3752	0.0039	0.0286	7.28E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
68	*	*	0.00	0.000	0.025	0.3752	0.0039	0.0283	7.27E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
69		*	0.21	0.000	0.000	0.3925	0.0039	0.0280	7.27E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
70		*	0.01	0.000	0.013	0.4570	0.0038	0.0277	7.26E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
71	*	*	0.00	0.000	0.000	0.4570	0.0038	0.0272	7.26E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
72		*	0.00	0.000	0.000	0.4570	0.0037	0.0269	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
73	*	*	0.00	0.000	0.000	0.4570	0.0037	0.0269	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
74		*	0.00	0.000	0.000	0.4570	0.0037	0.0267	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
75		*	0.00	0.000	0.000	0.4570	0.0037	0.0265	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
76		*	0.34	0.000	0.000	0.4570	0.0039	0.0281	7.27E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
77		*	0.03	0.000	0.000	0.4570	0.0037	0.0265	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
78		*	0.02	0.000	0.000	0.4570	0.0035	0.0251	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
79		*	0.03	0.000	0.000	0.4570	0.0033	0.0243	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
80	*	*	0.10	0.000	0.034	0.4570	0.0014	0.0104	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
81	*	*	0.00	0.000	0.035	0.4570	0.0028	0.0202	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
82		*	0.00	0.000	0.035	0.4570	0.0038	0.0274	7.26E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00

83		*	0.00	0.000	0.000	0.4570	0.0043	0.0308	7.31E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
84		*	0.00	0.000	0.000	0.4570	0.0044	0.0320	7.33E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
85		*	0.00	0.000	0.000	0.4570	0.0044	0.0322	7.33E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
86	*	*	0.04	0.000	0.037	0.4570	0.0042	0.0307	7.31E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
87	*	*	0.00	0.000	0.000	0.4570	0.0041	0.0294	7.29E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
88		*	0.03	0.000	0.000	0.4570	0.0050	0.0363	7.39E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
89		*	0.00	0.000	0.000	0.4570	0.0029	0.0209	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
90		*	0.00	0.000	0.000	0.4570	0.0028	0.0205	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
91		*	0.17	0.000	0.000	0.4570	0.0041	0.0295	7.29E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
92			0.00	0.000	0.116	0.2378	0.0021	0.0156	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
93	*		0.04	0.000	0.099	0.2200	0.0011	0.0083	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
94			0.03	0.000	0.095	0.2072	0.0018	0.0129	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
95			0.00	0.000	0.134	0.1908	0.0022	0.0161	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
96			0.10	0.000	0.162	0.1827	0.0025	0.0184	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
97	*		0.17	0.000	0.041	0.1817	0.0035	0.0256	7.23E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
98	*		0.00	0.000	0.084	0.1806	0.0046	0.0330	7.34E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
99			0.00	0.000	0.195	0.1632	0.0039	0.0286	7.28E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
100			0.01	0.000	0.130	0.1514	0.0035	0.0255	7.23E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
101			0.00	0.000	0.050	0.1468	0.0032	0.0230	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
102			0.05	0.000	0.042	0.1468	0.0029	0.0208	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
103			0.01	0.000	0.035	0.1436	0.0026	0.0190	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
104			0.00	0.000	0.031	0.1406	0.0019	0.0140	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
105			0.01	0.000	0.028	0.1388	0.0012	0.0084	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
106			0.17	0.000	0.026	0.1503	0.0000	0.0003	5.41E-09	0.0000	0.0000	1.99E-09	0.0000	0.0000	0.00E+00
107			0.00	0.000	0.024	0.1480	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
108			0.00	0.000	0.023	0.1457	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
109			0.00	0.000	0.021	0.1431	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
110			0.00	0.000	0.020	0.1405	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
111			0.00	0.000	0.019	0.1381	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
112			0.00	0.000	0.018	0.1357	0.0000	0.0003	1.37E-09	0.0000	0.0000	9.53E-10	0.0000	0.0000	0.00E+00
113			0.19	0.000	0.018	0.1492	0.0016	0.0116	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
114			0.00	0.000	0.017	0.1472	0.0037	0.0268	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
115			0.00	0.000	0.016	0.1453	0.0055	0.0400	7.44E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
116			0.00	0.000	0.016	0.1434	0.0068	0.0495	7.58E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
117			0.00	0.000	0.016	0.1417	0.0077	0.0555	7.66E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
118			0.00	0.000	0.015	0.1400	0.0081	0.0588	7.71E-09	0.0000	0.0000	2.24E-09	0.0000	0.0000	0.00E+00
119			0.05	0.000	0.015	0.1427	0.0083	0.0603	7.73E-09	0.0000	0.0000	2.24E-09	0.0000	0.0000	0.00E+00
120			0.18	0.000	0.015	0.1558	0.0084	0.0608	7.74E-09	0.0000	0.0000	2.24E-09	0.0000	0.0000	0.00E+00
121			0.14	0.000	0.076	0.1604	0.0085	0.0615	7.75E-09	0.0000	0.0000	2.24E-09	0.0000	0.0000	0.00E+00
122			0.00	0.000	0.142	0.1478	0.0083	0.0599	7.72E-09	0.0000	0.0000	2.24E-09	0.0000	0.0000	0.00E+00
123	*		0.00	0.000	0.000	0.1478	0.0076	0.0553	7.66E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
124			0.00	0.000	0.121	0.1374	0.0084	0.0611	7.74E-09	0.0000	0.0000	2.24E-09	0.0000	0.0000	0.00E+00
125			0.00	0.000	0.054	0.1329	0.0083	0.0603	7.73E-09	0.0000	0.0000	2.24E-09	0.0000	0.0000	0.00E+00
126			0.00	0.000	0.041	0.1292	0.0084	0.0606	7.73E-09	0.0000	0.0000	2.24E-09	0.0000	0.0000	0.00E+00
127			0.09	0.000	0.035	0.1332	0.0080	0.0582	7.70E-09	0.0000	0.0000	2.24E-09	0.0000	0.0000	0.00E+00

128	0.00	0.000	0.031	0.1302	0.0078	0.0563	7.67E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
129	0.00	0.000	0.028	0.1277	0.0074	0.0535	7.64E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
130	0.03	0.000	0.026	0.1274	0.0071	0.0517	7.61E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
131	0.66	0.000	0.024	0.1797	0.0072	0.0520	7.61E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
132	0.22	0.000	0.157	0.1849	0.0071	0.0511	7.60E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
133	0.00	0.000	0.160	0.1714	0.0072	0.0525	7.62E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
134	0.00	0.000	0.194	0.1549	0.0072	0.0520	7.61E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
135	0.14	0.000	0.408	0.1316	0.0073	0.0531	7.63E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
136	0.49	0.000	0.131	0.1615	0.0062	0.0453	7.52E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
137	0.00	0.000	0.145	0.1489	0.0063	0.0456	7.52E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
138	0.00	0.000	0.113	0.1391	0.0063	0.0459	7.53E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
139	0.08	0.000	0.131	0.1348	0.0065	0.0474	7.55E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
140	0.18	0.000	0.055	0.1446	0.0064	0.0466	7.54E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
141	0.01	0.000	0.042	0.1421	0.0066	0.0477	7.55E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
142	0.00	0.000	0.035	0.1390	0.0066	0.0479	7.56E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
143	0.00	0.000	0.031	0.1364	0.0065	0.0474	7.55E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
144	0.00	0.000	0.028	0.1339	0.0064	0.0464	7.54E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
145	0.07	0.000	0.026	0.1379	0.0062	0.0453	7.52E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
146	0.01	0.000	0.025	0.1362	0.0061	0.0440	7.50E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
147	0.66	0.000	0.023	0.1894	0.0059	0.0429	7.49E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
148	0.02	0.000	0.459	0.1519	0.0059	0.0429	7.49E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
149	0.04	0.000	0.147	0.1434	0.0053	0.0383	7.42E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
150	0.01	0.000	0.120	0.1340	0.0054	0.0394	7.43E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
151	0.28	0.000	0.055	0.1531	0.0054	0.0393	7.43E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
152	0.18	0.000	0.325	0.1414	0.0054	0.0390	7.43E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
153	0.19	0.000	0.042	0.1538	0.0053	0.0385	7.42E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
154	0.00	0.000	0.210	0.1362	0.0052	0.0378	7.41E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
155	0.50	0.000	0.036	0.1749	0.0051	0.0370	7.40E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
156	0.09	0.000	0.164	0.1690	0.0050	0.0363	7.39E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
157	0.34	0.000	0.144	0.1851	0.0049	0.0357	7.38E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
158	0.01	0.000	0.119	0.1756	0.0048	0.0351	7.37E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
159	0.02	0.000	0.266	0.1550	0.0048	0.0350	7.37E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
160	0.79	0.000	0.118	0.2107	0.0046	0.0335	7.35E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
161	0.00	0.000	0.224	0.1921	0.0046	0.0333	7.35E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
162	0.00	0.000	0.331	0.1645	0.0046	0.0330	7.34E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
163	0.00	0.000	0.130	0.1537	0.0045	0.0327	7.34E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
164	0.24	0.000	0.055	0.1687	0.0045	0.0324	7.33E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
165	0.00	0.000	0.279	0.1455	0.0044	0.0321	7.33E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
166	0.18	0.000	0.043	0.1569	0.0044	0.0318	7.32E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
167	0.00	0.000	0.035	0.1540	0.0043	0.0315	7.32E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
168	0.00	0.000	0.031	0.1514	0.0043	0.0312	7.31E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
169	0.00	0.000	0.028	0.1491	0.0043	0.0309	7.31E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
170	0.00	0.000	0.025	0.1470	0.0042	0.0306	7.31E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
171	0.44	0.000	0.025	0.1814	0.0042	0.0304	7.30E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
172	0.04	0.000	0.153	0.1719	0.0042	0.0301	7.30E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00

173	0.46	0.000	0.267	0.1873	0.0044	0.0320	7.33E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
174	0.40	0.000	0.125	0.2098	0.0038	0.0275	7.26E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
175	0.00	0.000	0.253	0.1888	0.0039	0.0280	7.27E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
176	0.01	0.000	0.311	0.1634	0.0040	0.0292	7.29E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
177	0.00	0.000	0.130	0.1526	0.0039	0.0280	7.27E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
178	0.00	0.000	0.054	0.1480	0.0039	0.0286	7.28E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
179	0.00	0.000	0.041	0.1443	0.0042	0.0304	7.30E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
180	0.00	0.000	0.035	0.1412	0.0039	0.0282	7.27E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
181	0.00	0.000	0.031	0.1384	0.0037	0.0271	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
182	0.00	0.000	0.028	0.1359	0.0037	0.0266	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
183	0.01	0.000	0.027	0.1346	0.0035	0.0254	7.23E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
184	0.21	0.000	0.025	0.1499	0.0038	0.0276	7.26E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
185	0.24	0.000	0.024	0.1676	0.0037	0.0272	7.26E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
186	0.03	0.000	0.148	0.1573	0.0039	0.0283	7.27E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
187	0.00	0.000	0.021	0.1555	0.0034	0.0246	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
188	0.00	0.000	0.020	0.1538	0.0035	0.0256	7.23E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
189	0.00	0.000	0.019	0.1523	0.0037	0.0265	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
190	0.00	0.000	0.018	0.1507	0.0037	0.0269	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
191	0.00	0.000	0.018	0.1492	0.0037	0.0270	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
192	0.00	0.000	0.017	0.1478	0.0037	0.0269	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
193	0.00	0.000	0.016	0.1465	0.0037	0.0267	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
194	0.00	0.000	0.017	0.1452	0.0036	0.0263	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
195	0.12	0.000	0.017	0.1538	0.0036	0.0260	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
196	0.25	0.000	0.017	0.1732	0.0036	0.0258	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
197	0.18	0.000	0.286	0.1634	0.0037	0.0271	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
198	0.00	0.000	0.339	0.1352	0.0031	0.0228	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
199	0.00	0.000	0.130	0.1243	0.0032	0.0231	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
200	0.15	0.000	0.056	0.1317	0.0034	0.0246	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
201	0.00	0.000	0.041	0.1281	0.0033	0.0243	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
202	0.00	0.000	0.035	0.1249	0.0032	0.0229	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
203	0.00	0.000	0.031	0.1222	0.0031	0.0223	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
204	0.00	0.000	0.028	0.1197	0.0030	0.0218	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
205	0.42	0.000	0.027	0.1522	0.0030	0.0215	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
206	0.23	0.000	0.026	0.1691	0.0029	0.0213	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
207	0.00	0.000	0.374	0.1372	0.0029	0.0211	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
208	0.38	0.000	0.024	0.1668	0.0030	0.0215	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
209	0.13	0.000	0.183	0.1613	0.0030	0.0219	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
210	0.54	0.000	0.201	0.1889	0.0030	0.0214	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
211	0.92	0.000	0.143	0.2533	0.0029	0.0209	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
212	0.00	0.000	0.133	0.2401	0.0026	0.0191	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
213	0.19	0.000	0.212	0.2268	0.0030	0.0214	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
214	0.01	0.000	0.180	0.2063	0.0029	0.0209	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
215	0.00	0.000	0.264	0.1801	0.0028	0.0206	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
216	0.00	0.000	0.131	0.1667	0.0028	0.0204	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
217	0.36	0.000	0.056	0.1891	0.0028	0.0202	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00

218	0.01	0.000	0.271	0.1649	0.0027	0.0196	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
219	0.04	0.000	0.043	0.1626	0.0026	0.0187	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
220	0.00	0.000	0.035	0.1585	0.0015	0.0111	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
221	0.00	0.000	0.031	0.1554	0.0020	0.0147	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
222	0.00	0.000	0.028	0.1526	0.0028	0.0200	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
223	0.00	0.000	0.025	0.1499	0.0032	0.0235	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
224	0.00	0.000	0.024	0.1473	0.0036	0.0262	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
225	0.00	0.000	0.022	0.1449	0.0038	0.0273	7.26E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
226	0.09	0.000	0.023	0.1495	0.0039	0.0284	7.27E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
227	0.40	0.000	0.022	0.1802	0.0036	0.0260	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
228	0.00	0.000	0.195	0.1630	0.0041	0.0299	7.30E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
229	0.21	0.000	0.021	0.1789	0.0028	0.0201	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
230	0.08	0.000	0.075	0.1792	0.0031	0.0225	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
231	0.00	0.000	0.082	0.1723	0.0032	0.0231	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
232	0.00	0.000	0.089	0.1647	0.0030	0.0214	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
233	0.25	0.000	0.132	0.1744	0.0027	0.0196	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
234	0.00	0.000	0.091	0.1665	0.0030	0.0218	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
235	0.00	0.000	0.137	0.1546	0.0033	0.0238	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
236	0.07	0.000	0.132	0.1491	0.0026	0.0187	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
237	0.00	0.000	0.054	0.1442	0.0026	0.0189	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
238	0.02	0.000	0.044	0.1423	0.0023	0.0168	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
239	0.59	0.000	0.037	0.1880	0.0022	0.0157	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
240	0.59	0.000	0.238	0.2169	0.0017	0.0124	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
241	0.00	0.000	0.226	0.1973	0.0024	0.0177	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
242	0.06	0.000	0.166	0.1874	0.0023	0.0166	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
243	0.00	0.000	0.248	0.1659	0.0021	0.0153	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
244	0.68	0.000	0.132	0.2116	0.0012	0.0087	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
245	0.10	0.000	0.115	0.2099	0.0010	0.0070	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
246	0.65	0.000	0.312	0.2374	0.0013	0.0094	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
247	0.04	0.000	0.352	0.2107	0.0016	0.0118	7.01E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
248	0.45	0.000	0.377	0.2167	0.0006	0.0044	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
249	0.00	0.000	0.160	0.2033	0.0009	0.0066	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
250	0.04	0.000	0.248	0.1847	0.0016	0.0114	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
251	1.38	0.000	0.132	0.2871	0.0018	0.0131	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
252	0.00	0.000	0.216	0.2358	0.0017	0.0125	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
253	0.00	0.000	0.146	0.2125	0.0016	0.0114	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
254	0.00	0.000	0.214	0.1876	0.0000	0.0002	4.30E-09	0.0000	0.0000	1.82E-09	0.0000	0.0000	0.00E+00
255	0.00	0.000	0.130	0.1725	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
256	0.00	0.000	0.054	0.1658	0.0001	0.0008	4.78E-09	0.0000	0.0000	1.90E-09	0.0000	0.0000	0.00E+00
257	0.00	0.000	0.041	0.1609	0.0005	0.0036	6.88E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
258	0.04	0.000	0.037	0.1590	0.0008	0.0060	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
259	0.00	0.000	0.026	0.1550	0.0011	0.0080	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
260	0.00	0.000	0.028	0.1507	0.0013	0.0095	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
261	0.00	0.000	0.025	0.1465	0.0015	0.0108	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
262	0.00	0.000	0.024	0.1431	0.0016	0.0117	7.01E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00

263		0.00	0.000	0.022	0.1403	0.0017	0.0124	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
264		0.00	0.000	0.021	0.1378	0.0018	0.0129	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
265		1.16	0.000	0.021	0.2322	0.0018	0.0132	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
266		0.33	0.000	0.288	0.2351	0.0020	0.0148	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
267		0.15	0.000	0.225	0.2273	0.0026	0.0186	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
268		0.19	0.000	0.166	0.2281	0.0020	0.0144	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
269		0.00	0.000	0.097	0.2199	0.0017	0.0120	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
270		0.00	0.000	0.121	0.2064	0.0026	0.0185	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
271		0.00	0.000	0.139	0.1925	0.0021	0.0156	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
272		0.00	0.000	0.154	0.1779	0.0021	0.0154	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
273		0.03	0.000	0.097	0.1702	0.0018	0.0131	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
274		0.19	0.000	0.055	0.1800	0.0017	0.0124	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
275		0.00	0.000	0.067	0.1738	0.0005	0.0036	6.88E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
276	*	0.00	0.000	0.041	0.1697	0.0006	0.0046	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
277		0.00	0.000	0.035	0.1659	0.0014	0.0103	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
278		0.04	0.000	0.032	0.1660	0.0018	0.0128	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
279		0.07	0.000	0.029	0.1681	0.0018	0.0130	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
280		0.00	0.000	0.025	0.1649	0.0017	0.0126	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
281		0.00	0.000	0.024	0.1620	0.0013	0.0097	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
282		0.00	0.000	0.022	0.1593	0.0013	0.0096	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
283		0.00	0.000	0.021	0.1567	0.0014	0.0099	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
284		0.00	0.000	0.020	0.1542	0.0013	0.0093	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
285		0.02	0.000	0.020	0.1538	0.0012	0.0083	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
286		0.00	0.000	0.018	0.1514	0.0012	0.0084	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
287		0.18	0.000	0.019	0.1646	0.0008	0.0055	6.91E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
288		0.00	0.000	0.017	0.1626	0.0008	0.0060	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
289		0.00	0.000	0.016	0.1606	0.0010	0.0071	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
290		0.00	0.000	0.016	0.1587	0.0008	0.0056	6.91E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
291		0.00	0.000	0.016	0.1570	0.0006	0.0046	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
292		0.00	0.000	0.015	0.1553	0.0006	0.0044	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
293		0.46	0.000	0.016	0.1920	0.0006	0.0044	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
294		0.32	0.000	0.203	0.2013	0.0012	0.0090	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
295		0.00	0.000	0.072	0.1950	0.0002	0.0015	6.83E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
296		0.00	0.000	0.078	0.1885	0.0000	0.0000	4.69E-09	0.0000	0.0000	1.88E-09	0.0000	0.0000	0.00E+00
297		0.00	0.000	0.091	0.1809	0.0002	0.0017	6.84E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
298		0.00	0.000	0.096	0.1726	0.0007	0.0047	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
299		0.00	0.000	0.087	0.1651	0.0006	0.0043	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
300		0.00	0.000	0.108	0.1557	0.0008	0.0055	6.91E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
301		0.00	0.000	0.088	0.1481	0.0005	0.0036	6.88E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
302		0.00	0.000	0.054	0.1430	0.0008	0.0059	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
303		0.00	0.000	0.041	0.1391	0.0005	0.0033	6.87E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
304		0.00	0.000	0.035	0.1358	0.0003	0.0020	6.85E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
305		0.00	0.000	0.031	0.1329	0.0002	0.0016	6.84E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
306	*	0.00	0.000	0.000	0.1327	0.0002	0.0013	6.83E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
307	*	0.00	0.000	0.000	0.1325	0.0003	0.0023	6.85E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00

308			0.00	0.000	0.028	0.1302	0.0003	0.0019	6.84E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
309	*		0.00	0.000	0.000	0.1300	0.0008	0.0056	6.91E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
310			0.00	0.000	0.025	0.1276	0.0009	0.0068	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
311	*		0.00	0.000	0.024	0.1254	0.0010	0.0072	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
312	*		0.23	0.000	0.014	0.1270	0.0009	0.0063	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
313	*		0.14	0.000	0.007	0.1287	0.0010	0.0073	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
314			0.16	0.000	0.000	0.1483	0.0012	0.0090	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
315			0.30	0.000	0.000	0.1923	0.0014	0.0103	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
316			0.00	0.000	0.063	0.1869	0.0017	0.0127	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
317			0.00	0.000	0.051	0.1826	0.0016	0.0116	7.01E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
318			0.07	0.000	0.103	0.1796	0.0019	0.0139	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
319			0.19	0.000	0.089	0.1878	0.0017	0.0121	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
320			0.00	0.000	0.163	0.1743	0.0017	0.0125	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
321			0.00	0.000	0.129	0.1635	0.0019	0.0135	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
322			0.02	0.000	0.175	0.1502	0.0027	0.0194	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
323			0.00	0.000	0.129	0.1395	0.0016	0.0116	7.01E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
324			0.00	0.000	0.053	0.1349	0.0020	0.0142	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
325	*		0.14	0.000	0.022	0.1364	0.0019	0.0136	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
326	*		0.26	0.000	0.016	0.1380	0.0021	0.0149	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
327	*		0.00	0.000	0.023	0.1395	0.0022	0.0157	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
328	*		0.00	0.000	0.022	0.1410	0.0023	0.0164	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
329	*		0.00	0.000	0.021	0.1425	0.0023	0.0169	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
330	*		0.00	0.000	0.021	0.1441	0.0024	0.0173	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
331	*		0.00	0.000	0.023	0.1456	0.0025	0.0178	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
332	*		0.00	0.000	0.023	0.1471	0.0025	0.0179	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
333	*		0.00	0.000	0.022	0.1486	0.0025	0.0181	7.12E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
334	*		0.00	0.000	0.011	0.1501	0.0025	0.0183	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
335	*		0.01	0.000	0.006	0.1511	0.0025	0.0183	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
336	*		0.04	0.000	0.004	0.1526	0.0026	0.0186	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
337	*		0.00	0.000	0.012	0.1529	0.0026	0.0189	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
338	*		0.00	0.000	0.000	0.1528	0.0026	0.0190	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
339	*	*	0.46	0.000	0.012	0.1528	0.0025	0.0180	7.12E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
340	*	*	0.11	0.000	0.012	0.1528	0.0026	0.0187	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
341		*	0.14	0.000	0.000	0.1769	0.0027	0.0192	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
342	*	*	0.00	0.000	0.011	0.1769	0.0027	0.0196	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
343	*	*	0.00	0.000	0.006	0.1769	0.0027	0.0198	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
344	*	*	0.01	0.000	0.013	0.1769	0.0027	0.0198	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
345	*	*	0.20	0.000	0.007	0.1769	0.0027	0.0198	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
346	*	*	0.00	0.000	0.015	0.1769	0.0027	0.0197	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
347	*	*	0.00	0.000	0.008	0.1769	0.0027	0.0196	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
348		*	0.00	0.000	0.020	0.1825	0.0027	0.0195	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
349		*	0.00	0.000	0.000	0.2212	0.0027	0.0193	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
350	*	*	0.05	0.000	0.026	0.2212	0.0026	0.0192	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
351	*	*	0.56	0.000	0.022	0.2212	0.0026	0.0190	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
352	*	*	0.00	0.000	0.023	0.2212	0.0026	0.0188	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00

353		*	0.00	0.000	0.000	0.2252	0.0026	0.0187	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
354		*	0.08	0.000	0.000	0.2578	0.0026	0.0185	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
355	*	*	0.12	0.000	0.016	0.2578	0.0025	0.0184	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
356		*	0.57	0.000	0.000	0.3289	0.0025	0.0182	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
357		*	0.00	0.000	0.000	0.3293	0.0025	0.0181	7.12E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
358		*	0.32	0.000	0.000	0.3555	0.0025	0.0180	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
359		*	0.00	0.000	0.000	0.3555	0.0025	0.0179	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
360	*	*	0.00	0.000	0.000	0.3555	0.0025	0.0178	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
361		*	0.00	0.000	0.000	0.3555	0.0024	0.0177	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
362		*	0.08	0.000	0.000	0.3622	0.0024	0.0176	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
363		*	0.20	0.000	0.000	0.3792	0.0024	0.0175	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
364		*	0.70	0.000	0.000	0.4371	0.0024	0.0174	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
365		*	0.14	0.000	0.000	0.4491	0.0024	0.0173	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00

* = Frozen (air or soil)

Annual Totals for Year 4			
	inches	cubic feet	percent
Precipitation	30.39	110,318.2	100.00
Runoff	0.000	0.0000	0.00
Evapotranspiration	22.245	80,750.8	73.20
Drainage Collected from Layer 3	8.2670	30,009.3	27.20
Percolation/Leakage through Layer 5	0.000003	0.0091	0.00
Average Head on Top of Layer 4	0.0031	---	---
Drainage Collected from Layer 7	0.0000	0.0063	0.00
Percolation/Leakage through Layer 9	0.000001	0.0028	0.00
Average Head on Top of Layer 8	0.0000	---	---
Percolation/Leakage through Layer 10	0.000000	0.0000	0.00
Change in Water Storage	-0.1218	-442.0	-0.40
Soil Water at Start of Year	60.4915	219,584.1	199.05
Soil Water at End of Year	60.7769	220,620.0	199.99
Snow Water at Start of Year	0.4071	1,477.9	1.34
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

Daily Output for Year 5

Column key: Head #1: drainage from Layer 4 | Head #2: drainage from Layer 8
Drain #1: drainage from Layer 3 | Drain #2: drainage from Layer 7
Leak #1: leakage thru Layer 5 | Leak #2: leakage thru Layer 9 | Leak #3: leakage thru Layer 10

Title: Wayne Disposal - Initial Lift
Simulated On: 3/23/2021 13:00

Day	Freezing Status* Air	Soil	Rain (inches)	Runoff (inches)	ET (inches)	Evap. Zone Water (in/in)	Head #1 (inches)	Drain #1 (inches)	Leak #1 (inches)	Head #2 (inches)	Drain #2 (inches)	Leak #2 (inches)	Head #3 (inches)	Drain #3 (inches)	Leak #3 (inches)
1		*	0.00	0.000	0.000	0.4491	0.0024	0.0172	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
2		*	0.00	0.000	0.000	0.4491	0.0024	0.0171	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
3		*	0.00	0.000	0.000	0.4491	0.0023	0.0170	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
4	*	*	0.00	0.000	0.000	0.4491	0.0023	0.0169	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
5		*	0.34	0.000	0.000	0.4570	0.0026	0.0185	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
6			0.00	0.000	0.078	0.2403	0.0015	0.0107	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
7			0.00	0.000	0.041	0.2235	0.0011	0.0077	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
8			0.00	0.000	0.041	0.2126	0.0018	0.0130	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
9	*		0.19	0.000	0.018	0.2090	0.0023	0.0168	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
10	*		0.00	0.000	0.024	0.2066	0.0027	0.0193	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
11			0.00	0.000	0.039	0.2095	0.0029	0.0209	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
12			0.00	0.000	0.043	0.2032	0.0030	0.0218	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
13	*		0.01	0.000	0.033	0.1991	0.0034	0.0249	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
14			0.03	0.000	0.053	0.1951	0.0043	0.0310	7.31E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
15			0.05	0.000	0.041	0.1943	0.0042	0.0307	7.31E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
16			0.01	0.000	0.042	0.1903	0.0037	0.0270	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
17			0.00	0.000	0.074	0.1824	0.0033	0.0241	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
18			0.00	0.000	0.054	0.1762	0.0030	0.0217	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
19			0.00	0.000	0.056	0.1699	0.0027	0.0197	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
20	*		0.00	0.000	0.000	0.1692	0.0024	0.0172	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
21	*		0.06	0.000	0.023	0.1702	0.0020	0.0144	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
22	*		0.05	0.000	0.026	0.1713	0.0014	0.0103	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
23	*		0.11	0.000	0.015	0.1723	0.0007	0.0053	6.91E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
24	*		0.29	0.000	0.006	0.1733	0.0001	0.0007	6.53E-09	0.0000	0.0000	2.13E-09	0.0000	0.0000	0.00E+00
25	*		0.08	0.000	0.000	0.1744	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
26	*		0.05	0.000	0.000	0.1754	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
27			0.00	0.000	0.011	0.1957	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
28			0.01	0.000	0.028	0.2087	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
29			0.04	0.000	0.051	0.2069	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
30	*		0.03	0.000	0.019	0.2072	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
31	*		0.00	0.000	0.000	0.2067	0.0007	0.0050	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
32	*	*	0.00	0.000	0.000	0.2067	0.0013	0.0093	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
33	*	*	0.02	0.000	0.010	0.2067	0.0027	0.0197	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
34	*	*	0.17	0.000	0.000	0.2067	0.0038	0.0278	7.26E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
35		*	0.00	0.000	0.045	0.2182	0.0046	0.0334	7.35E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
36		*	0.00	0.000	0.000	0.2182	0.0051	0.0371	7.40E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
37		*	0.00	0.000	0.000	0.2182	0.0055	0.0397	7.44E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00

38		*	0.01	0.000	0.000	0.2192	0.0057	0.0416	7.47E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
39		*	0.00	0.000	0.000	0.2192	0.0059	0.0429	7.49E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
40	*	*	0.00	0.000	0.000	0.2192	0.0061	0.0439	7.50E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
41		*	0.00	0.000	0.000	0.2192	0.0062	0.0447	7.51E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
42	*	*	0.00	0.000	0.000	0.2192	0.0062	0.0452	7.52E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
43	*	*	0.04	0.000	0.030	0.2192	0.0063	0.0456	7.52E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
44	*	*	0.00	0.000	0.006	0.2192	0.0063	0.0459	7.53E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
45	*	*	0.00	0.000	0.000	0.2192	0.0064	0.0460	7.53E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
46		*	0.00	0.000	0.000	0.2192	0.0064	0.0461	7.53E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
47		*	0.00	0.000	0.000	0.2192	0.0064	0.0460	7.53E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
48		*	0.33	0.000	0.000	0.2471	0.0063	0.0459	7.53E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
49	*	*	0.15	0.000	0.035	0.2471	0.0063	0.0457	7.53E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
50		*	0.00	0.000	0.040	0.2478	0.0063	0.0455	7.52E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
51		*	0.00	0.000	0.063	0.2478	0.0062	0.0452	7.52E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
52		*	0.09	0.000	0.000	0.2555	0.0062	0.0448	7.51E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
53		*	0.00	0.000	0.000	0.2555	0.0061	0.0445	7.51E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
54		*	0.00	0.000	0.000	0.2555	0.0061	0.0441	7.50E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
55		*	0.00	0.000	0.000	0.2555	0.0060	0.0436	7.50E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
56		*	0.05	0.000	0.000	0.2598	0.0060	0.0432	7.49E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
57		*	0.00	0.000	0.000	0.2598	0.0059	0.0427	7.48E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
58			0.00	0.000	0.150	0.2355	0.0061	0.0443	7.51E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
59			0.02	0.000	0.098	0.2164	0.0058	0.0423	7.48E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
60			0.13	0.000	0.102	0.2121	0.0054	0.0394	7.43E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
61			0.03	0.000	0.104	0.2011	0.0053	0.0382	7.42E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
62			0.00	0.000	0.172	0.1836	0.0049	0.0356	7.38E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
63			0.00	0.000	0.140	0.1693	0.0046	0.0336	7.35E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
64			0.00	0.000	0.130	0.1571	0.0046	0.0332	7.34E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
65			0.67	0.000	0.054	0.2068	0.0067	0.0488	7.57E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
66			0.01	0.000	0.062	0.2011	0.0067	0.0484	7.56E-09	0.0000	0.0000	2.23E-09	0.0000	0.0000	0.00E+00
67			0.00	0.000	0.172	0.1857	0.0063	0.0457	7.52E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
68			0.00	0.000	0.161	0.1714	0.0066	0.0478	7.56E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
69			0.22	0.000	0.156	0.1760	0.0065	0.0469	7.54E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
70			0.01	0.000	0.127	0.1661	0.0058	0.0417	7.47E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
71			0.10	0.000	0.133	0.1623	0.0062	0.0453	7.52E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
72			0.00	0.000	0.110	0.1522	0.0056	0.0408	7.45E-09	0.0000	0.0000	2.22E-09	0.0000	0.0000	0.00E+00
73			0.00	0.000	0.054	0.1468	0.0049	0.0352	7.37E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
74	*		0.00	0.000	0.000	0.1460	0.0044	0.0315	7.32E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
75	*		0.00	0.000	0.000	0.1454	0.0038	0.0275	7.26E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
76			0.05	0.000	0.041	0.1453	0.0035	0.0254	7.23E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
77			0.00	0.000	0.035	0.1419	0.0033	0.0240	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
78			0.00	0.000	0.031	0.1390	0.0030	0.0219	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
79	*		0.00	0.000	0.028	0.1364	0.0030	0.0218	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
80	*		0.21	0.000	0.037	0.1377	0.0031	0.0222	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
81			0.08	0.000	0.047	0.1535	0.0029	0.0207	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
82			0.16	0.000	0.026	0.1641	0.0028	0.0203	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00

83		0.16	0.000	0.121	0.1665	0.0028	0.0204	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
84		0.00	0.000	0.318	0.1398	0.0021	0.0154	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
85		0.00	0.000	0.110	0.1306	0.0021	0.0151	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
86		0.00	0.000	0.054	0.1260	0.0025	0.0182	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
87		0.62	0.000	0.041	0.1745	0.0026	0.0190	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
88	*	0.47	0.000	0.017	0.1759	0.0027	0.0195	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
89		0.07	0.000	0.060	0.2125	0.0026	0.0189	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
90	*	0.00	0.000	0.000	0.2123	0.0026	0.0187	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
91	*	0.00	0.000	0.000	0.2121	0.0026	0.0188	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
92	*	0.00	0.000	0.102	0.2033	0.0027	0.0199	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
93		0.00	0.000	0.131	0.1924	0.0023	0.0169	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
94		0.00	0.000	0.233	0.1729	0.0026	0.0191	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
95		0.00	0.000	0.210	0.1549	0.0032	0.0233	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
96		0.03	0.000	0.130	0.1454	0.0036	0.0260	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
97		0.00	0.000	0.054	0.1398	0.0030	0.0219	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
98		0.00	0.000	0.041	0.1359	0.0022	0.0156	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
99		0.00	0.000	0.023	0.1335	0.0024	0.0176	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
100		0.00	0.000	0.031	0.1309	0.0025	0.0182	7.12E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
101		0.00	0.000	0.028	0.1275	0.0038	0.0276	7.26E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
102		0.00	0.000	0.025	0.1235	0.0038	0.0277	7.26E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
103		0.08	0.000	0.024	0.1252	0.0035	0.0254	7.23E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
104		0.00	0.000	0.022	0.1211	0.0033	0.0240	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
105		0.17	0.000	0.021	0.1319	0.0031	0.0226	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
106		0.17	0.000	0.020	0.1435	0.0029	0.0213	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
107		0.23	0.000	0.019	0.1600	0.0032	0.0231	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
108		0.00	0.000	0.098	0.1511	0.0034	0.0248	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
109		0.00	0.000	0.157	0.1368	0.0041	0.0300	7.30E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
110		0.11	0.000	0.129	0.1345	0.0034	0.0248	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
111		0.00	0.000	0.054	0.1291	0.0046	0.0335	7.35E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
112		0.00	0.000	0.041	0.1247	0.0046	0.0335	7.35E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
113		0.00	0.000	0.032	0.1214	0.0041	0.0296	7.29E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
114		0.00	0.000	0.025	0.1185	0.0043	0.0314	7.32E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
115		0.00	0.000	0.028	0.1161	0.0038	0.0275	7.26E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
116		0.08	0.000	0.026	0.1201	0.0046	0.0332	7.34E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
117		0.21	0.000	0.024	0.1352	0.0042	0.0305	7.30E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
118		0.00	0.000	0.022	0.1329	0.0040	0.0289	7.28E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
119		0.12	0.000	0.021	0.1406	0.0040	0.0289	7.28E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
120		0.00	0.000	0.020	0.1385	0.0037	0.0267	7.25E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
121	*	0.00	0.000	0.019	0.1365	0.0035	0.0253	7.23E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
122	*	0.00	0.000	0.000	0.1362	0.0034	0.0246	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
123	*	0.33	0.000	0.055	0.1376	0.0033	0.0241	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
124		0.21	0.000	0.000	0.1762	0.0032	0.0235	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
125		0.00	0.000	0.141	0.1642	0.0032	0.0231	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
126	*	0.06	0.000	0.038	0.1656	0.0033	0.0239	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
127		0.00	0.000	0.216	0.1470	0.0035	0.0257	7.23E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00

128		0.00	0.000	0.151	0.1340	0.0028	0.0200	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
129	*	0.08	0.000	0.078	0.1339	0.0024	0.0172	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
130	*	0.00	0.000	0.130	0.1227	0.0027	0.0198	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
131		0.00	0.000	0.054	0.1180	0.0025	0.0183	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
132		0.38	0.000	0.042	0.1457	0.0025	0.0180	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
133		0.25	0.000	0.135	0.1546	0.0028	0.0201	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
134		0.00	0.000	0.169	0.1400	0.0027	0.0197	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
135	*	0.00	0.000	0.100	0.1314	0.0023	0.0170	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
136		0.50	0.000	0.130	0.1622	0.0024	0.0176	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
137		0.00	0.000	0.079	0.1553	0.0023	0.0165	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
138		0.01	0.000	0.227	0.1368	0.0022	0.0161	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
139		0.30	0.000	0.130	0.1510	0.0022	0.0163	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
140		0.49	0.000	0.114	0.1825	0.0025	0.0178	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
141		0.22	0.000	0.185	0.1854	0.0026	0.0187	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
142		0.00	0.000	0.111	0.1761	0.0027	0.0192	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
143	*	0.20	0.000	0.112	0.1778	0.0027	0.0194	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
144		0.03	0.000	0.113	0.1768	0.0027	0.0194	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
145		0.00	0.000	0.229	0.1578	0.0027	0.0193	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
146		0.17	0.000	0.210	0.1548	0.0026	0.0191	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
147		0.01	0.000	0.091	0.1484	0.0026	0.0189	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
148		0.01	0.000	0.132	0.1379	0.0027	0.0194	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
149		0.13	0.000	0.130	0.1375	0.0025	0.0178	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
150		0.00	0.000	0.054	0.1334	0.0025	0.0179	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
151		0.02	0.000	0.042	0.1316	0.0024	0.0175	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
152		0.00	0.000	0.035	0.1287	0.0024	0.0175	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
153		0.00	0.000	0.031	0.1261	0.0024	0.0174	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
154		0.00	0.000	0.028	0.1238	0.0024	0.0173	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
155		0.10	0.000	0.026	0.1299	0.0024	0.0173	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
156		0.01	0.000	0.024	0.1286	0.0024	0.0172	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
157		0.00	0.000	0.022	0.1267	0.0024	0.0172	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
158		0.08	0.000	0.022	0.1316	0.0024	0.0172	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
159		0.29	0.000	0.021	0.1538	0.0024	0.0172	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
160		0.02	0.000	0.199	0.1390	0.0024	0.0172	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
161		0.96	0.000	0.020	0.2176	0.0024	0.0172	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
162		0.91	0.000	0.138	0.2816	0.0024	0.0172	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
163		0.11	0.000	0.160	0.2460	0.0028	0.0201	7.15E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
164		0.02	0.000	0.421	0.2023	0.0026	0.0189	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
165		0.22	0.000	0.287	0.1913	0.0020	0.0144	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
166		0.02	0.000	0.308	0.1629	0.0012	0.0090	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
167		0.15	0.000	0.131	0.1611	0.0010	0.0076	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
168		0.19	0.000	0.055	0.1709	0.0018	0.0133	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
169		0.05	0.000	0.042	0.1702	0.0025	0.0183	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
170		0.06	0.000	0.036	0.1713	0.0030	0.0216	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
171		0.00	0.000	0.031	0.1680	0.0032	0.0235	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
172		0.01	0.000	0.029	0.1662	0.0034	0.0245	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00

173	0.21	0.000	0.026	0.1811	0.0034	0.0249	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
174	0.07	0.000	0.360	0.1555	0.0041	0.0299	7.29E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
175	0.00	0.000	0.024	0.1532	0.0030	0.0220	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
176	0.14	0.000	0.023	0.1627	0.0033	0.0237	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
177	0.00	0.000	0.021	0.1606	0.0034	0.0250	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
178	0.00	0.000	0.020	0.1585	0.0034	0.0249	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
179	0.00	0.000	0.019	0.1564	0.0033	0.0240	7.21E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
180	0.00	0.000	0.018	0.1545	0.0031	0.0227	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
181	0.00	0.000	0.018	0.1526	0.0029	0.0213	7.17E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
182	0.00	0.000	0.017	0.1508	0.0027	0.0198	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
183	0.00	0.000	0.018	0.1494	0.0025	0.0178	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
184	0.13	0.000	0.017	0.1584	0.0025	0.0181	7.12E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
185	0.00	0.000	0.016	0.1567	0.0023	0.0165	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
186	0.00	0.000	0.015	0.1551	0.0020	0.0148	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
187	0.11	0.000	0.016	0.1626	0.0018	0.0133	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
188	0.00	0.000	0.015	0.1612	0.0017	0.0121	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
189	0.03	0.000	0.015	0.1622	0.0015	0.0110	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
190	0.06	0.000	0.015	0.1655	0.0014	0.0098	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
191	0.01	0.000	0.015	0.1650	0.0012	0.0086	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
192	0.00	0.000	0.013	0.1637	0.0012	0.0086	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
193	0.00	0.000	0.013	0.1624	0.0011	0.0083	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
194	0.00	0.000	0.013	0.1612	0.0011	0.0079	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
195	0.00	0.000	0.012	0.1599	0.0010	0.0074	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
196	0.03	0.000	0.014	0.1608	0.0010	0.0069	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
197	0.16	0.000	0.013	0.1726	0.0009	0.0065	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
198	0.00	0.000	0.355	0.1430	0.0006	0.0043	6.89E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
199	0.00	0.000	0.012	0.1416	0.0011	0.0080	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
200	0.22	0.000	0.013	0.1584	0.0010	0.0069	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
201	0.01	0.000	0.013	0.1582	0.0008	0.0059	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
202	0.04	0.000	0.013	0.1600	0.0007	0.0054	6.91E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
203	0.02	0.000	0.013	0.1603	0.0007	0.0053	6.91E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
204	0.00	0.000	0.011	0.1591	0.0008	0.0055	6.91E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
205	0.00	0.000	0.011	0.1580	0.0008	0.0058	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
206	0.00	0.000	0.011	0.1569	0.0009	0.0068	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
207	0.00	0.000	0.010	0.1558	0.0010	0.0071	6.94E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
208	0.00	0.000	0.010	0.1547	0.0010	0.0075	6.95E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
209	0.00	0.000	0.010	0.1537	0.0011	0.0081	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
210	0.00	0.000	0.010	0.1527	0.0012	0.0088	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
211	0.00	0.000	0.010	0.1517	0.0013	0.0095	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
212	0.00	0.000	0.010	0.1507	0.0014	0.0103	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
213	0.38	0.000	0.011	0.1809	0.0015	0.0110	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
214	0.05	0.000	0.268	0.1624	0.0022	0.0160	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
215	0.11	0.000	0.011	0.1706	0.0013	0.0096	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
216	0.00	0.000	0.251	0.1490	0.0021	0.0154	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
217	0.25	0.000	0.011	0.1691	0.0013	0.0093	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00

218	0.01	0.000	0.123	0.1590	0.0017	0.0124	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
219	0.03	0.000	0.011	0.1606	0.0016	0.0119	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
220	0.14	0.000	0.011	0.1711	0.0019	0.0135	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
221	0.00	0.000	0.319	0.1441	0.0023	0.0164	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
222	0.00	0.000	0.009	0.1433	0.0021	0.0151	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
223	0.00	0.000	0.009	0.1425	0.0022	0.0156	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
224	0.00	0.000	0.009	0.1417	0.0023	0.0166	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
225	0.00	0.000	0.009	0.1409	0.0024	0.0172	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
226	0.00	0.000	0.009	0.1401	0.0024	0.0176	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
227	0.00	0.000	0.009	0.1394	0.0024	0.0176	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
228	0.00	0.000	0.009	0.1387	0.0025	0.0178	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
229	0.00	0.000	0.009	0.1379	0.0025	0.0180	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
230	0.00	0.000	0.009	0.1372	0.0025	0.0180	7.12E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
231	0.17	0.000	0.010	0.1501	0.0025	0.0180	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
232	0.00	0.000	0.008	0.1494	0.0025	0.0178	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
233	0.00	0.000	0.008	0.1487	0.0024	0.0177	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
234	0.00	0.000	0.008	0.1480	0.0024	0.0175	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
235	0.00	0.000	0.008	0.1474	0.0024	0.0174	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
236	0.00	0.000	0.008	0.1467	0.0024	0.0172	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
237	0.00	0.000	0.008	0.1460	0.0023	0.0170	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
238	0.00	0.000	0.008	0.1453	0.0023	0.0169	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
239	0.00	0.000	0.008	0.1447	0.0023	0.0167	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
240	0.00	0.000	0.008	0.1440	0.0023	0.0166	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
241	0.00	0.000	0.008	0.1434	0.0023	0.0165	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
242	0.00	0.000	0.008	0.1427	0.0023	0.0165	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
243	0.00	0.000	0.008	0.1421	0.0022	0.0162	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
244	0.04	0.000	0.010	0.1446	0.0022	0.0161	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
245	0.00	0.000	0.008	0.1440	0.0022	0.0160	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
246	0.39	0.000	0.010	0.1755	0.0022	0.0160	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
247	0.00	0.000	0.228	0.1566	0.0022	0.0159	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
248	0.00	0.000	0.008	0.1559	0.0022	0.0159	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
249	0.00	0.000	0.007	0.1553	0.0022	0.0159	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
250	0.26	0.000	0.010	0.1760	0.0022	0.0158	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
251	0.00	0.000	0.176	0.1613	0.0022	0.0158	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
252	0.43	0.000	0.010	0.1962	0.0022	0.0158	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
253	0.01	0.000	0.138	0.1854	0.0022	0.0157	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
254	0.06	0.000	0.375	0.1592	0.0022	0.0160	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
255	0.95	0.000	0.132	0.2277	0.0021	0.0155	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
256	0.63	0.000	0.260	0.2583	0.0021	0.0156	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
257	0.00	0.000	0.251	0.2339	0.0022	0.0161	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
258	0.00	0.000	0.240	0.2017	0.0024	0.0177	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
259	0.00	0.000	0.265	0.1732	0.0023	0.0165	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
260	0.00	0.000	0.130	0.1599	0.0021	0.0155	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
261	0.00	0.000	0.054	0.1527	0.0020	0.0145	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
262	0.00	0.000	0.041	0.1476	0.0019	0.0135	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00

263		0.00	0.000	0.035	0.1416	0.0021	0.0149	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
264		0.00	0.000	0.031	0.1363	0.0020	0.0146	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
265		0.00	0.000	0.028	0.1318	0.0020	0.0143	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
266		0.00	0.000	0.025	0.1278	0.0014	0.0104	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
267	*	0.00	0.000	0.000	0.1264	0.0012	0.0084	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
268		0.24	0.000	0.025	0.1429	0.0015	0.0108	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
269		0.74	0.000	0.024	0.2014	0.0018	0.0128	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
270		0.95	0.000	0.149	0.2675	0.0023	0.0165	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
271		0.00	0.000	0.066	0.2453	0.0036	0.0259	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
272	*	0.00	0.000	0.069	0.2259	0.0038	0.0279	7.27E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
273		0.00	0.000	0.090	0.2105	0.0019	0.0141	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
274		0.10	0.000	0.084	0.2064	0.0018	0.0128	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
275		0.05	0.000	0.105	0.1977	0.0021	0.0153	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
276		0.01	0.000	0.105	0.1865	0.0024	0.0170	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
277		0.22	0.000	0.289	0.1787	0.0025	0.0182	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
278		0.00	0.000	0.197	0.1605	0.0026	0.0188	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
279		0.00	0.000	0.081	0.1523	0.0026	0.0192	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
280		0.03	0.000	0.055	0.1492	0.0027	0.0192	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
281		0.11	0.000	0.042	0.1547	0.0026	0.0191	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
282		0.00	0.000	0.035	0.1514	0.0026	0.0189	7.13E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
283		0.00	0.000	0.031	0.1484	0.0026	0.0185	7.12E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
284		0.00	0.000	0.028	0.1453	0.0025	0.0182	7.12E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
285		0.33	0.000	0.026	0.1700	0.0027	0.0194	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
286		0.00	0.000	0.253	0.1475	0.0032	0.0231	7.19E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
287		0.00	0.000	0.024	0.1456	0.0020	0.0147	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
288		0.05	0.000	0.023	0.1479	0.0020	0.0147	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
289		0.18	0.000	0.022	0.1606	0.0025	0.0178	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
290		0.00	0.000	0.104	0.1512	0.0029	0.0208	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
291		0.66	0.000	0.021	0.2043	0.0020	0.0148	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
292		0.00	0.000	0.067	0.1987	0.0023	0.0164	7.09E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
293		0.01	0.000	0.057	0.1940	0.0024	0.0173	7.10E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
294	*	0.04	0.000	0.025	0.1951	0.0022	0.0160	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
295		0.00	0.000	0.063	0.1893	0.0021	0.0149	7.07E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
296		0.00	0.000	0.102	0.1800	0.0019	0.0139	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
297	*	0.00	0.000	0.050	0.1754	0.0018	0.0129	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
298		0.00	0.000	0.061	0.1702	0.0014	0.0102	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
299		1.64	0.000	0.066	0.3013	0.0013	0.0096	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
300		0.00	0.000	0.112	0.2403	0.0013	0.0096	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
301		0.00	0.000	0.063	0.2222	0.0004	0.0030	6.16E-09	0.0000	0.0000	2.09E-09	0.0000	0.0000	0.00E+00
302		0.00	0.000	0.074	0.2088	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
303		0.00	0.000	0.080	0.1971	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
304		0.00	0.000	0.112	0.1838	0.0001	0.0004	4.77E-09	0.0000	0.0000	1.90E-09	0.0000	0.0000	0.00E+00
305		0.00	0.000	0.168	0.1673	0.0003	0.0020	6.85E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
306		0.00	0.000	0.074	0.1585	0.0005	0.0034	6.87E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
307		0.27	0.000	0.054	0.1750	0.0006	0.0047	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00

308		0.09	0.000	0.072	0.1756	0.0008	0.0058	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
309		0.00	0.000	0.056	0.1699	0.0009	0.0067	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
310		0.01	0.000	0.053	0.1657	0.0011	0.0082	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
311		0.00	0.000	0.093	0.1570	0.0017	0.0125	7.03E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
312		0.00	0.000	0.054	0.1512	0.0022	0.0160	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
313		0.00	0.000	0.041	0.1471	0.0020	0.0146	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
314		0.00	0.000	0.035	0.1436	0.0019	0.0140	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
315		0.04	0.000	0.031	0.1436	0.0018	0.0131	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
316		0.35	0.000	0.028	0.1701	0.0017	0.0123	7.02E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
317		0.00	0.000	0.054	0.1649	0.0016	0.0116	7.01E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
318		0.09	0.000	0.065	0.1659	0.0015	0.0110	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
319	*	0.00	0.000	0.031	0.1629	0.0014	0.0104	6.99E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
320	*	0.00	0.000	0.000	0.1624	0.0014	0.0099	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
321	*	0.00	0.000	0.000	0.1619	0.0013	0.0094	6.98E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
322	*	0.00	0.000	0.000	0.1614	0.0012	0.0089	6.97E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
323	*	0.07	0.000	0.026	0.1625	0.0011	0.0082	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
324		0.00	0.000	0.065	0.1582	0.0009	0.0062	6.92E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
325		0.00	0.000	0.125	0.1470	0.0007	0.0050	6.90E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
326		0.02	0.000	0.130	0.1377	0.0002	0.0011	6.83E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
327		0.00	0.000	0.054	0.1331	0.0000	0.0000	4.22E-10	0.0000	0.0000	3.72E-10	0.0000	0.0000	0.00E+00
328		0.00	0.000	0.041	0.1294	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
329		0.00	0.000	0.035	0.1262	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
330		0.00	0.000	0.031	0.1234	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
331		0.03	0.000	0.028	0.1229	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
332		0.35	0.000	0.026	0.1493	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
333		0.02	0.000	0.024	0.1486	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
334		0.02	0.000	0.023	0.1479	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
335		0.05	0.000	0.021	0.1498	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
336		0.02	0.000	0.020	0.1492	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
337		0.15	0.000	0.019	0.1597	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00	0.0000	0.0000	0.00E+00
338		0.18	0.000	0.066	0.1690	0.0001	0.0004	3.41E-09	0.0000	0.0000	1.64E-09	0.0000	0.0000	0.00E+00
339	*	0.01	0.000	0.029	0.1675	0.0005	0.0039	6.88E-09	0.0000	0.0000	2.16E-09	0.0000	0.0000	0.00E+00
340	*	0.00	0.000	0.000	0.1672	0.0009	0.0064	6.93E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
341	*	0.01	0.000	0.008	0.1670	0.0012	0.0086	6.96E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
342	*	0.00	0.000	0.000	0.1668	0.0015	0.0110	7.00E-09	0.0000	0.0000	2.17E-09	0.0000	0.0000	0.00E+00
343	*	0.02	0.000	0.015	0.1672	0.0018	0.0133	7.04E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
344	*	0.00	0.000	0.000	0.1670	0.0021	0.0156	7.08E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
345	*	0.35	0.000	0.007	0.1685	0.0024	0.0177	7.11E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
346	*	0.00	0.000	0.014	0.1700	0.0027	0.0195	7.14E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
347	*	0.00	0.000	0.014	0.1714	0.0029	0.0211	7.16E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
348		0.00	0.000	0.005	0.1926	0.0031	0.0224	7.18E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
349	*	0.00	0.000	0.034	0.1897	0.0032	0.0233	7.20E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
350	*	0.00	0.000	0.000	0.1896	0.0034	0.0247	7.22E-09	0.0000	0.0000	2.19E-09	0.0000	0.0000	0.00E+00
351	*	0.00	0.000	0.000	0.1895	0.0035	0.0254	7.23E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
352	*	0.63	0.000	0.026	0.1910	0.0036	0.0259	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00

353	*	0.32	0.000	0.024	0.1925	0.0036	0.0263	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
354		0.02	0.000	0.000	0.2647	0.0036	0.0262	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
355		0.28	0.000	0.042	0.2711	0.0039	0.0285	7.27E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
356		0.00	0.000	0.066	0.2459	0.0041	0.0294	7.29E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
357		0.00	0.000	0.085	0.2256	0.0036	0.0265	7.24E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
358		0.13	0.000	0.139	0.2172	0.0020	0.0148	7.06E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
359		0.00	0.000	0.045	0.2084	0.0020	0.0142	7.05E-09	0.0000	0.0000	2.18E-09	0.0000	0.0000	0.00E+00
360		0.01	0.000	0.039	0.2029	0.0035	0.0254	7.23E-09	0.0000	0.0000	2.20E-09	0.0000	0.0000	0.00E+00
361	*	0.01	0.000	0.029	0.1986	0.0045	0.0329	7.34E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
362	*	0.00	0.000	0.000	0.1958	0.0050	0.0364	7.39E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
363		0.00	0.000	0.044	0.1896	0.0052	0.0375	7.41E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
364	*	0.00	0.000	0.001	0.1877	0.0051	0.0372	7.40E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00
365	*	0.00	0.000	0.000	0.1862	0.0050	0.0361	7.39E-09	0.0000	0.0000	2.21E-09	0.0000	0.0000	0.00E+00

* = Frozen (air or soil)

Annual Totals for Year 5			
	inches	cubic feet	percent
Precipitation	27.07	98,265.9	100.00
Runoff	0.000	0.0000	0.00
Evapotranspiration	21.355	77,517.8	78.89
Drainage Collected from Layer 3	6.9638	25,278.6	25.72
Percolation/Leakage through Layer 5	0.000002	0.0090	0.00
Average Head on Top of Layer 4	0.0026	---	---
Drainage Collected from Layer 7	0.0000	0.0062	0.00
Percolation/Leakage through Layer 9	0.000001	0.0027	0.00
Average Head on Top of Layer 8	0.0000	---	---
Percolation/Leakage through Layer 10	0.000000	0.0000	0.00
Change in Water Storage	-1.2481	-4,530.5	-4.61
Soil Water at Start of Year	60.7769	220,620.0	224.51
Soil Water at End of Year	59.5288	216,089.6	219.90
Snow Water at Start of Year	0.0000	0.0000	0.00
Snow Water at End of Year	0.0000	0.0000	0.00
Annual Water Budget Balance	0.0000	0.0000	0.00

Average Annual Totals Summary

Title: Wayne Disposal - Initial Lift
Simulated on: 3/23/2021 13:00

	Average Annual Totals for Years 1 - 5*			
	(inches)	[std dev]	(cubic feet)	(percent)
Precipitation	30.01	[2.22]	108,930.5	100.00
Runoff	0.000	[0]	0.0000	0.00
Evapotranspiration	22.126	[2.863]	80,317.8	73.73
Subprofile1				
Lateral drainage collected from Layer 3	7.0270	[3.1781]	25,507.9	23.42
Percolation/leakage through Layer 5	0.000002	[0]	0.0087	0.00
Average Head on Top of Layer 4	0.0027	[0.0012]	---	---
Subprofile2				
Lateral drainage collected from Layer 7	0.0000	[0]	0.0060	0.00
Percolation/leakage through Layer 9	0.000001	[0]	0.0027	0.00
Average Head on Top of Layer 8	0.0000	[0]	---	---
Subprofile3				
Percolation/leakage through Layer 10	0.000000	[0]	0.0000	0.00
Water storage				
Change in water storage	0.8553	[2.0229]	3,104.8	2.85

* Note: Average inches are converted to volume based on the user-specified area.

Peak Values Summary

Title: Wayne Disposal - Initial Lift
Simulated on: 3/23/2021 13:00

	Peak Values for Years 1 - 5*	
	(inches)	(cubic feet)
Precipitation	1.64	5,960.5
Runoff	0.000	0.0000
Subprofile1		
Drainage collected from Layer 3	0.2416	876.9
Percolation/leakage through Layer 5	0.000000	0.0000
Average head on Layer 4	0.0333	---
Maximum head on Layer 4	0.0665	---
Location of maximum head in Layer 3	0.00	(feet from drain)
Subprofile2		
Drainage collected from Layer 7	0.0000	0.0000
Percolation/leakage through Layer 9	0.000000	0.0000
Average head on Layer 8	0.0000	---
Maximum head on Layer 8	0.0000	---
Location of maximum head in Layer 7	0.00	(feet from drain)
Subprofile3		
Percolation/leakage through Layer 10	0.000000	0.0000
Other Parameters		
Snow water	1.4263	5,177.4
Maximum vegetation soil water	0.4570	(vol/vol)
Minimum vegetation soil water	0.1005	(vol/vol)

Final Water Storage in Landfill Profile at End of Simulation Period

Title: Wayne Disposal - Initial Lift
Simulated on: 3/23/2021 13:00
Simulation period: 5 years

	Final Water Storage	
Layer	(inches)	(vol/vol)
1	25.5927	0.2133
2	1.8928	0.1577
3	0.0061	0.0305
4	0.0000	0.0000
5	0.3750	0.7500
6	22.3800	0.3730
7	0.0050	0.0100
8	0.0000	0.0000
9	0.3750	0.7500
10	8.9022	0.3709
Snow water	0.0000	---

Attachment A-6

Surface Water Calculations

ATTACHMENT A-6

SURFACE WATER MANAGEMENT SYSTEM DESIGN CALCULATIONS

Attachment

ATTACHMENT A-6.1

SURFACE WATER MANAGEMENT SYSTEM DESIGN APPROACH

CALCULATION SHEET
Client: US Ecology - Wayne Disposal
Project: 2021 WDI Permit Modification Application
Calculation: Surface Water Management System Design Approach

Project No.: 1218070017
Calculated By: LEH Date: 10/08/2021
Checked By: TCR Date: 10/08/2021
Approved By: XZ Date: 10/08/2021

Surface Water Management System Design Approach

Objective

Summarize the surface water management system design approach, assumptions, and hydrologic parameters to be used in the analysis of the Wayne Disposal Inc. (WDI) surface water management system.

Design Criteria, Assumptions, and Methodology

1. The WDI surface water management system will consist of diversion berms, downslope channels, ditches, culverts, storm sewers, surface water infiltration, the North Sedimentation Basin (NSB), and the South Sedimentation Basin (SSB).
2. The surface water management system is designed in accordance with Rule 299.9619(6)(b).
3. The channels and basin are designed to collect and control the 25-yr, 24-hr storm event and to manage the 100-yr, 24-hr storm event with no off-site flooding.
4. Use rainfall data from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 8, Version 2. The 25-yr, 24-hour storm event is 3.95 inches, and the 100-yr, 24-hr storm event is 5.12 inches, see Attachment 6.1.1.
5. Conservatively assume hydrologic soil group D to calculate the run-off curve number. Hydrologic soil group D soils have a high runoff potential when thoroughly wet and typically have clayey textures and less than 50 percent sand.
6. Use storm distribution MSE-3 from the Atlas 14 rainfall for Midwest and Southeast States. See Attachment 6.1.2.
7. Run-off curve numbers will be chosen using Table 2-2 of Technical Release 55 (TR-55) Assume a cover type of “Fair Pasture”, CN of 84, for existing and proposed final cover areas as well as adjacent areas except MC I. Assume a cover type of “Good Pasture”, CN of 80, represents the existing established final cover vegetation on MC I. A curve number of 98 represents pond areas. See Attachment 6.1.3
8. Use HydroCAD to evaluate the surface water run-off and management features including the diversion berms, channels, and culverts. HydroCAD is based largely on hydrologic techniques developed by the SCS combined with other hydrologic and hydraulic calculations. For a given rainfall event, these techniques are used to generate hydrographs throughout a watershed. Storage-Indication-Translation Method routing techniques were used to route surface water through the surface water management system. The antecedent moisture condition specifies the moisture level in the ground immediately prior to the storm. A value of "2" for normal conditions is used in the analyses.
9. Use the Storm Water Management Model (SWMM) to evaluate the performance of storm sewers in the SSB watershed. SWMM is a dynamic rainfall-runoff simulation model developed by USEPA used for single event or long-term simulation of runoff quantity and quality from primarily urban areas. SWMM contains a flexible set of hydraulic modeling capabilities used to route runoff and external inflows through a drainage system network of pipes, channels, storage/treatment units and diversion structures. It has been widely used throughout the world

for planning, analysis, and design related to storm water runoff, combined and sanitary sewers, and other drainage systems.

10. Times of concentration were computed by HydroCAD using methodology developed by the SCS. A maximum sheet flow length of 200 ft was used prior to transitioning to shallow concentrated flow.
11. Surface water management system design is based on future final closure conditions.

Calculation

The North Sedimentation Basin (NSB) receives runoff from portions of MC IV, MC VI, MC VII, MC IX, MC X and MC XI consisting of a watershed area of approximately 272.7 acres. The conveyance structures in the NSB watershed include a detention pond, ditches, diversion berms and culverts.

The South Sedimentation Basin (SSB) receives runoff from portions of MC VI, MC I, MC VII, MC X, and MC XI, and portions of the entrance area, and the wastewater treatment plant. The total area of the SSB watershed is approximately 117.1 acres. The storm water conveyance structures in the SSB watershed include a detention pond, ditches, culverts, catch basins, and storm sewers.

The lined pond receives runoff from primarily of paved areas. The conveyance structures in the lined pond watershed consist of a storage basin, catch basins and storm sewers. The watershed area draining to the Lined Pond is reduced from conditions during site operations, therefore, the Lined Pond is anticipated to continue to provide adequate capacity to manage the runoff as originally designed and permitted. The lined pond was not reanalyzed in these calculations.

The proposed subbasin delineations and surface water management feature labels are provided in Attachment A-6.1.4. HydroCAD analyses were done separately for the NSB and the SSB watersheds. HydroCAD and SWMM model outputs are provided in Attachment A-6.1.5. Additional model inputs and output are discussed in the calculations related to the surface water management system components identified below.

Diversion Berms: Diversion berms are used to collect and route surface water run-off from landfill sideslopes to downslope channels. Design calculations are provided in Attachment A-6.2

Downslope Channels: Downslope channels are designed to route surface water from diversion berms down the steeper landfill sideslopes with no erosion. Design calculations are provided in Attachment A-6.3

Ditches: Ditches are used to route surface water run-off around the landfill and to sedimentation basins. Design calculations are provided in Attachment A-6.4

Culverts: Culverts are required to convey surface water run-off under access roads and through berms within the site. Existing and proposed culverts are evaluated in Attachment A-6.5

Storm Sewer: A network of storm sewers, catch basins, and manholes is used to route surface water run-off from a portion of the site the SSB. The storm sewer analysis is discussed in Attachment A-6.6

Sedimentation Basins: – Sedimentation basins on site will contain surface water prior to discharge off-site. The sedimentation basin analysis is provided in Attachment A-6.7

The Attachments to A-6.1 are summarized as follows:

- A-6.1.1 Rainfall Data
- A-6.1.2 Storm Distribution Data
- A-6.1.3 Curve Number Data
- A-6.1.4 Surface Water Management Figures
- A-6.1.5 Surface Water Model Output

Conclusion

The model outputs and above information is used in the design of the surface water management features in the following surface water management system calculations.

Reference

1. "Precipitation-Frequency Atlas of the United States", NOAA Atlas 14, volume 2, Version 3, G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley, National Weather Service, Silver Spring, Maryland, 2004. Location: Van Buren Twp, Michigan, Lat. 42.223, Long. -83.5226.
2. Urban Hydrology for Small Watersheds, TR-55. June 1986, United States Department of Agriculture (USDA).

ATTACHMENT A-6.1.1

RAINFALL DATA

NOAA Atlas 14, Volume 8, Version 2
Location name: Van Buren Twp, Michigan, USA*
Latitude: 42.223°, Longitude: -83.5226°
Elevation: 699.8 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.321** (0.267-0.392)	**0.379** (0.314-0.464)	**0.475** (0.393-0.582)	**0.556** (0.457-0.684)	**0.670** (0.532-0.844)	**0.759** (0.589-0.965)	**0.850** (0.637-1.10)	**0.943** (0.677-1.24)	**1.07** (0.738-1.44)	**1.17** (0.783-1.59)
10-min	**0.470** (0.390-0.575)	**0.555** (0.460-0.679)	**0.696** (0.575-0.853)	**0.814** (0.670-1.00)	**0.981** (0.779-1.24)	**1.11** (0.863-1.41)	**1.24** (0.932-1.61)	**1.38** (0.992-1.82)	**1.57** (1.08-2.11)	**1.71** (1.15-2.32)
15-min	**0.573** (0.476-0.701)	**0.676** (0.561-0.828)	**0.848** (0.702-1.04)	**0.993** (0.817-1.22)	**1.20** (0.951-1.51)	**1.36** (1.05-1.72)	**1.52** (1.14-1.96)	**1.68** (1.21-2.22)	**1.91** (1.32-2.57)	**2.08** (1.40-2.83)
30-min	**0.767** (0.638-0.938)	**0.907** (0.752-1.11)	**1.14** (0.942-1.40)	**1.34** (1.10-1.64)	**1.61** (1.28-2.04)	**1.83** (1.42-2.33)	**2.06** (1.54-2.66)	**2.29** (1.64-3.02)	**2.60** (1.80-3.50)	**2.84** (1.91-3.87)
60-min	**0.970** (0.806-1.19)	**1.15** (0.950-1.40)	**1.44** (1.19-1.77)	**1.70** (1.40-2.09)	**2.07** (1.65-2.61)	**2.36** (1.83-3.01)	**2.66** (2.00-3.46)	**2.98** (2.15-3.94)	**3.42** (2.36-4.61)	**3.76** (2.53-5.12)
2-hr	**1.17** (0.980-1.42)	**1.38** (1.16-1.68)	**1.75** (1.45-2.12)	**2.06** (1.70-2.52)	**2.52** (2.02-3.17)	**2.89** (2.26-3.66)	**3.27** (2.47-4.22)	**3.68** (2.66-4.84)	**4.24** (2.95-5.69)	**4.68** (3.17-6.33)
3-hr	**1.30** (1.09-1.58)	**1.53** (1.28-1.85)	**1.93** (1.61-2.34)	**2.28** (1.89-2.77)	**2.79** (2.25-3.51)	**3.21** (2.53-4.06)	**3.66** (2.78-4.70)	**4.13** (3.00-5.41)	**4.79** (3.35-6.40)	**5.31** (3.61-7.14)
6-hr	**1.55** (1.30-1.85)	**1.79** (1.51-2.15)	**2.23** (1.87-2.68)	**2.62** (2.19-3.16)	**3.21** (2.61-4.01)	**3.70** (2.93-4.66)	**4.22** (3.23-5.41)	**4.79** (3.52-6.25)	**5.59** (3.94-7.44)	**6.24** (4.27-8.33)
12-hr	**1.81** (1.53-2.15)	**2.06** (1.74-2.45)	**2.51** (2.12-2.99)	**2.92** (2.45-3.50)	**3.55** (2.91-4.41)	**4.08** (3.26-5.11)	**4.66** (3.59-5.93)	**5.28** (3.90-6.85)	**6.17** (4.39-8.16)	**6.89** (4.75-9.15)
24-hr	**2.07** (1.77-2.45)	**2.35** (2.00-2.77)	**2.83** (2.41-3.36)	**3.28** (2.77-3.90)	**3.95** (3.26-4.87)	**4.52** (3.63-5.60)	**5.12** (3.97-6.47)	**5.78** (4.30-7.43)	**6.71** (4.80-8.80)	**7.46** (5.18-9.83)
2-day	**2.35** (2.02-2.76)	**2.68** (2.30-3.15)	**3.25** (2.78-3.82)	**3.75** (3.19-4.43)	**4.49** (3.71-5.46)	**5.09** (4.11-6.25)	**5.73** (4.46-7.15)	**6.40** (4.79-8.15)	**7.34** (5.28-9.54)	**8.09** (5.65-10.6)
3-day	**2.58** (2.22-3.01)	**2.92** (2.51-3.41)	**3.51** (3.01-4.11)	**4.03** (3.43-4.73)	**4.78** (3.97-5.79)	**5.40** (4.37-6.59)	**6.05** (4.73-7.51)	**6.73** (5.05-8.53)	**7.68** (5.55-9.94)	**8.44** (5.92-11.0)
4-day	**2.78** (2.40-3.23)	**3.13** (2.70-3.64)	**3.73** (3.21-4.35)	**4.26** (3.64-4.99)	**5.03** (4.18-6.07)	**5.66** (4.59-6.88)	**6.31** (4.95-7.82)	**7.01** (5.27-8.86)	**7.97** (5.77-10.3)	**8.74** (6.15-11.4)
7-day	**3.29** (2.85-3.80)	**3.68** (3.19-4.26)	**4.34** (3.75-5.03)	**4.92** (4.22-5.72)	**5.74** (4.79-6.87)	**6.41** (5.22-7.74)	**7.10** (5.60-8.74)	**7.83** (5.92-9.83)	**8.84** (6.43-11.3)	**9.63** (6.82-12.4)
10-day	**3.75** (3.26-4.32)	**4.17** (3.63-4.81)	**4.89** (4.23-5.64)	**5.50** (4.74-6.38)	**6.38** (5.34-7.59)	**7.08** (5.79-8.51)	**7.81** (6.17-9.55)	**8.56** (6.50-10.7)	**9.60** (7.01-12.2)	**10.4** (7.40-13.4)
20-day	**5.09** (4.46-5.82)	**5.61** (4.90-6.41)	**6.46** (5.63-7.40)	**7.17** (6.22-8.24)	**8.17** (6.86-9.61)	**8.95** (7.35-10.6)	**9.74** (7.74-11.8)	**10.6** (8.06-13.1)	**11.7** (8.56-14.7)	**12.5** (8.94-16.0)
30-day	**6.26** (5.50-7.12)	**6.87** (6.03-7.82)	**7.86** (6.87-8.96)	**8.67** (7.54-9.92)	**9.77** (8.23-11.4)	**10.6** (8.75-12.5)	**11.5** (9.13-13.8)	**12.3** (9.42-15.1)	**13.4** (9.88-16.8)	**14.2** (10.2-18.1)
45-day	**7.79** (6.87-8.83)	**8.55** (7.53-9.69)	**9.75** (8.56-11.1)	**10.7** (9.35-12.2)	**12.0** (10.1-13.9)	**12.9** (10.7-15.1)	**13.8** (11.0-16.5)	**14.7** (11.3-17.9)	**15.8** (11.6-19.7)	**16.5** (11.9-21.0)
60-day	**9.14** (8.08-10.3)	**10.0** (8.87-11.3)	**11.5** (10.1-13.0)	**12.6** (11.0-14.3)	**14.0** (11.8-16.1)	**15.0** (12.4-17.5)	**15.9** (12.7-18.9)	**16.8** (12.9-20.4)	**17.9** (13.2-22.2)	**18.6** (13.5-23.5)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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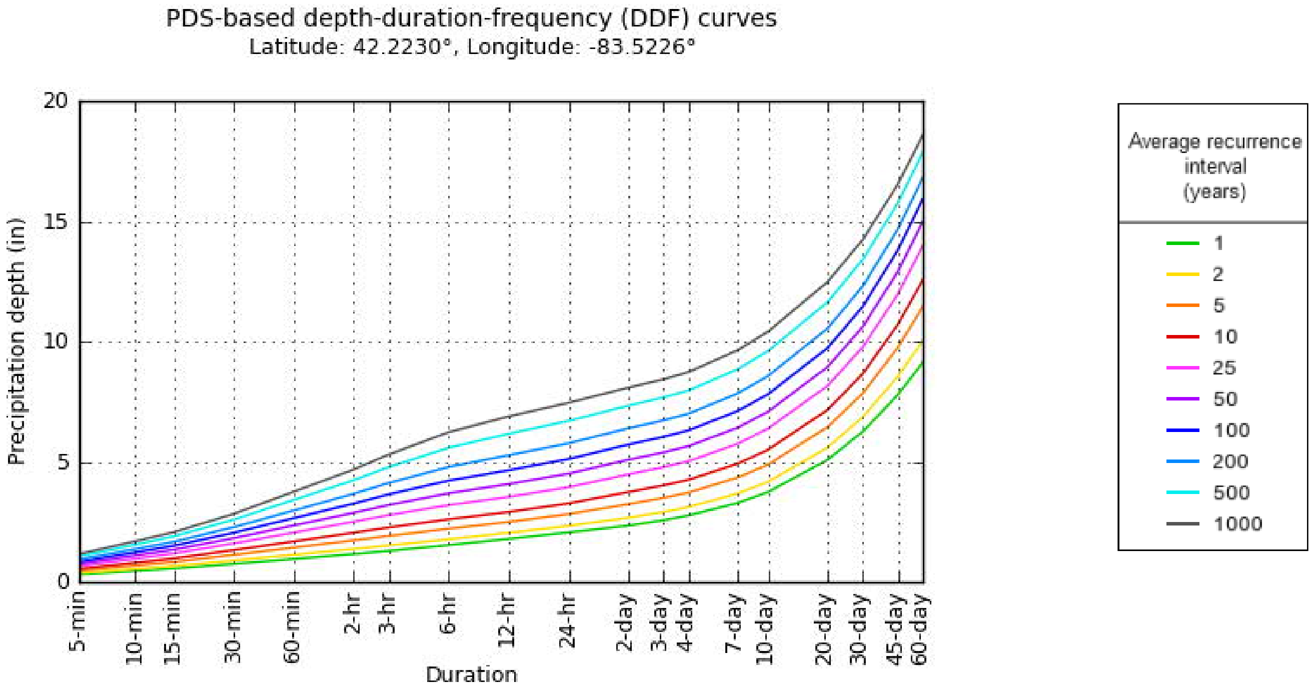
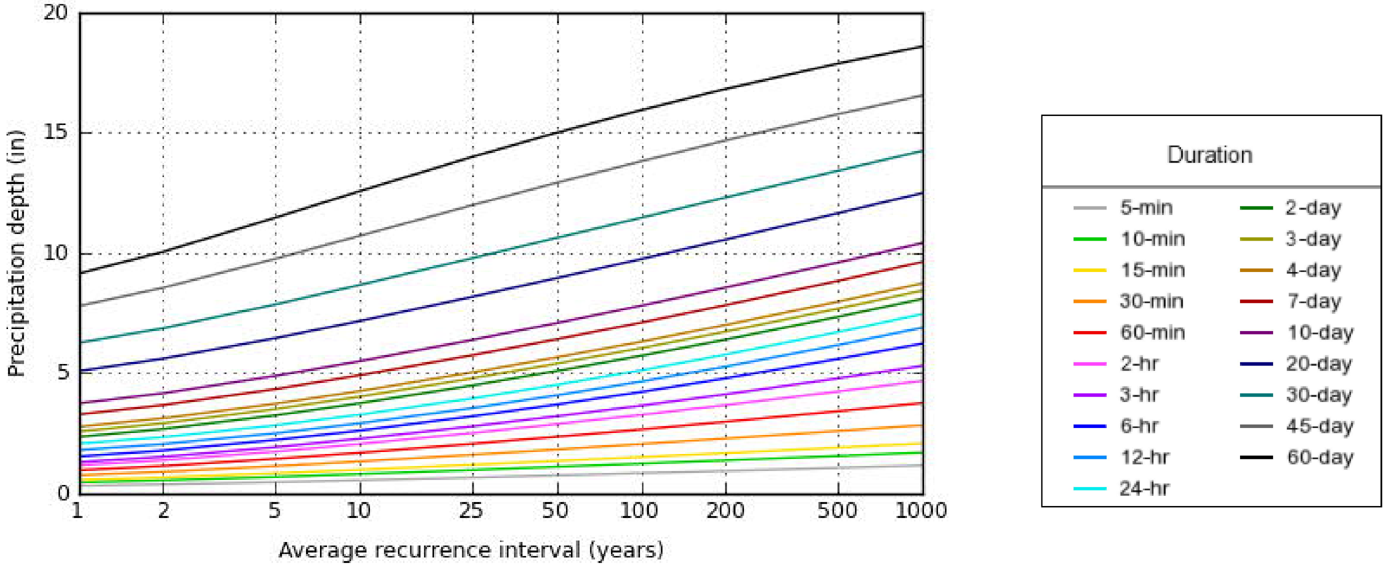
PF graphical





NOAA Atlas 14, Volume 8, Version 2 Created (GMT): Fri Sep 18 16:15:02 2020

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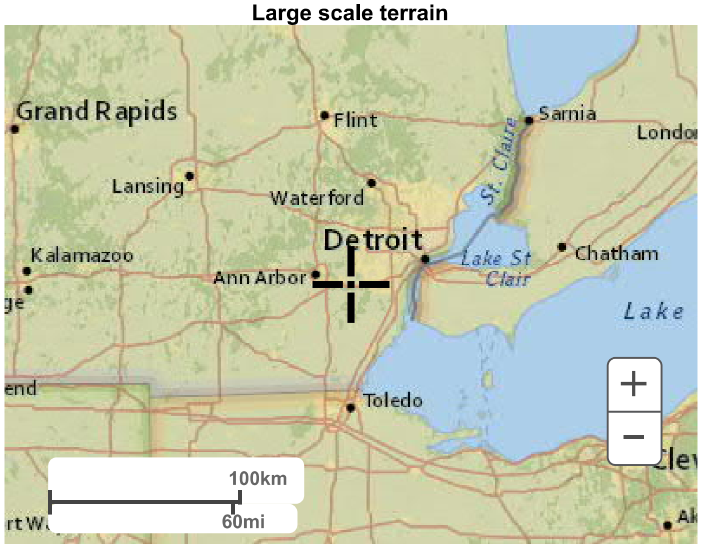
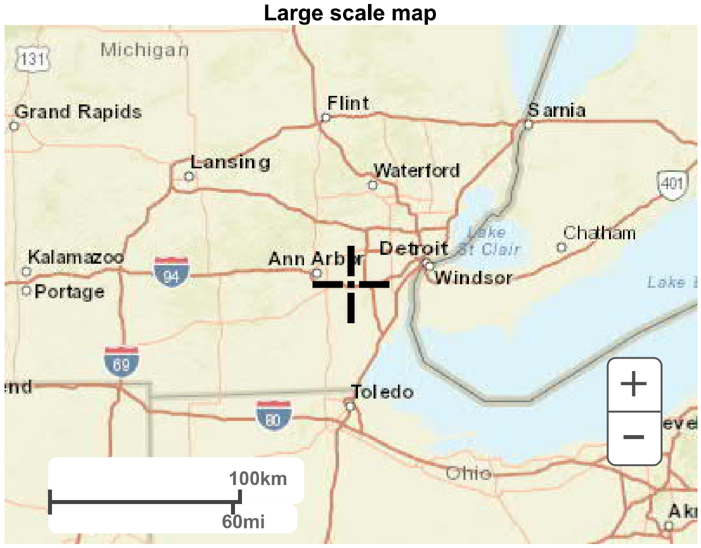
Maps & aerials

Small scale terrain

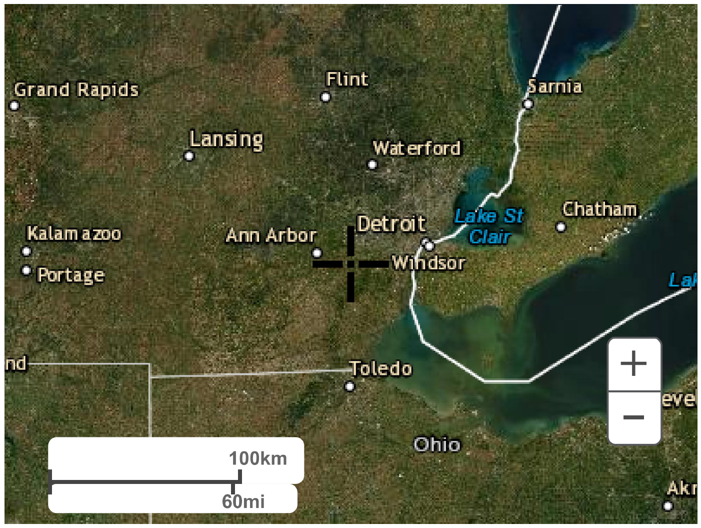
Large scale terrain



Large scale map



Large scale aerial



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National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

ATTACHMENT A-6.1.2

STORM DISTRIBUTION DATA

NOAA Atlas 14 rainfall for Midwest and Southeast states

Compiled by William Merkel and Helen Fox Moody, updated April 29, 2015

Statistics for NOAA Atlas 14 100-year 24-hour rainfall by state and county

Background

NOAA released volumes 8 and 9 of Atlas 14 for the midwest and southeast United States respectively on Monday April 22, 2013. Precipitation-frequency data are available from NOAA Atlas 14 for both annual and partial duration series at the NWS website http://hdsc.nws.noaa.gov/hdsc/pfds/. GIS data for the 100-year 24-hour partial duration rainfall were downloaded and prepared. State and county maps were overlayed on the GIS to derive statistics on a county basis. The GIS Spatial Analyst command Zonal Statistics as Table was used to generate minimum, maximum, range (difference between maximum and minimum), mean, and standard deviation of the 100-year 24-hour rainfall.

Considerable study of the NOAA 14 data (2006) for the Ohio Valley and neighboring states has been completed both by the Water Quality and Quantity Technology Development Team and by hydraulic engineers in the respective state offices and some procedures have been developed to prepare rainfall databases for the WinTR-55 and EFH-2 computer programs and for developing rainfall distributions to replace the Types II and III which were used in the past. Similar procedures are expected to be used in the midwest and southeast states (which border the Ohio Valley NOAA 14 area) due to similar climatic and topographic characteristics.

Instructions

Preparation of rainfall databases

The midwest and southeast states covered by NOAA Atlas 14 volumes 8 and 9 (except for Colorado) have rainfall data included in the WinTR-55 rainfall database by county or by parish in Louisiana. These same data are also included in rainfall data files used with the EFH-2 computer program. One option for users of these computer programs is to visit the NOAA 14 web site and download data at specific project sites. To save user's time and considering that users may not have internet access at all times, rainfall databases and data files are expected to be developed for these states. Whereas the current files are generally based on TP-40 (1961), data from NOAA Atlas 14 will be substituted.

The first step in this process is to develop maximum, minimum, range, and mean of the 100-year 24-hour rainfall by state and county or parish. This has been done by Bill Merkel and Helen Fox Moody . In states where there is enough topographic relief to product orographic effects in the rainfall amounts, such as Virginia, 100-year 24-hour rainfall could vary by up to 5 inches in a single county. To address this situation, if the rainfall varied more than 1.5 inches within a county, the county was split in two or more parts, each having a set of rainfall values in the rainfall database.

Some of the midwest and southeast states have all counties with less than 1.5 inch variation. Other states have several counties with more than 1.5 inches of variation.

If a county is to be split, use the following procedure:

- Split the county along some boundary such that the range of the 100-year 24-hour rainfall of each part is less than 1.5 inches.
- Start with a state/county GIS shapefile and digitize the boundary.
- In split counties, generate the statistics for each part (min, max, range, and mean).
- Select a representative point location in each county or part of split counties. Find a point in the county (or part of county) where the 100-year 24-hour rainfall is equal (or within 0.05 inch) of the mean county value. Record this latitude and longitude.
- Open the NOAA Atlas 14 web site and download the csv (comma separated variable) file for that location. Use the 1-year through 100-year 24-hour rainfall values at this location in the WinTR-55 rainfall database and the EFH-2 rainfall data file. A GIS layer will be developed with the set of locations in each state.
- Bill and Helen will assist any state with these steps if requested.

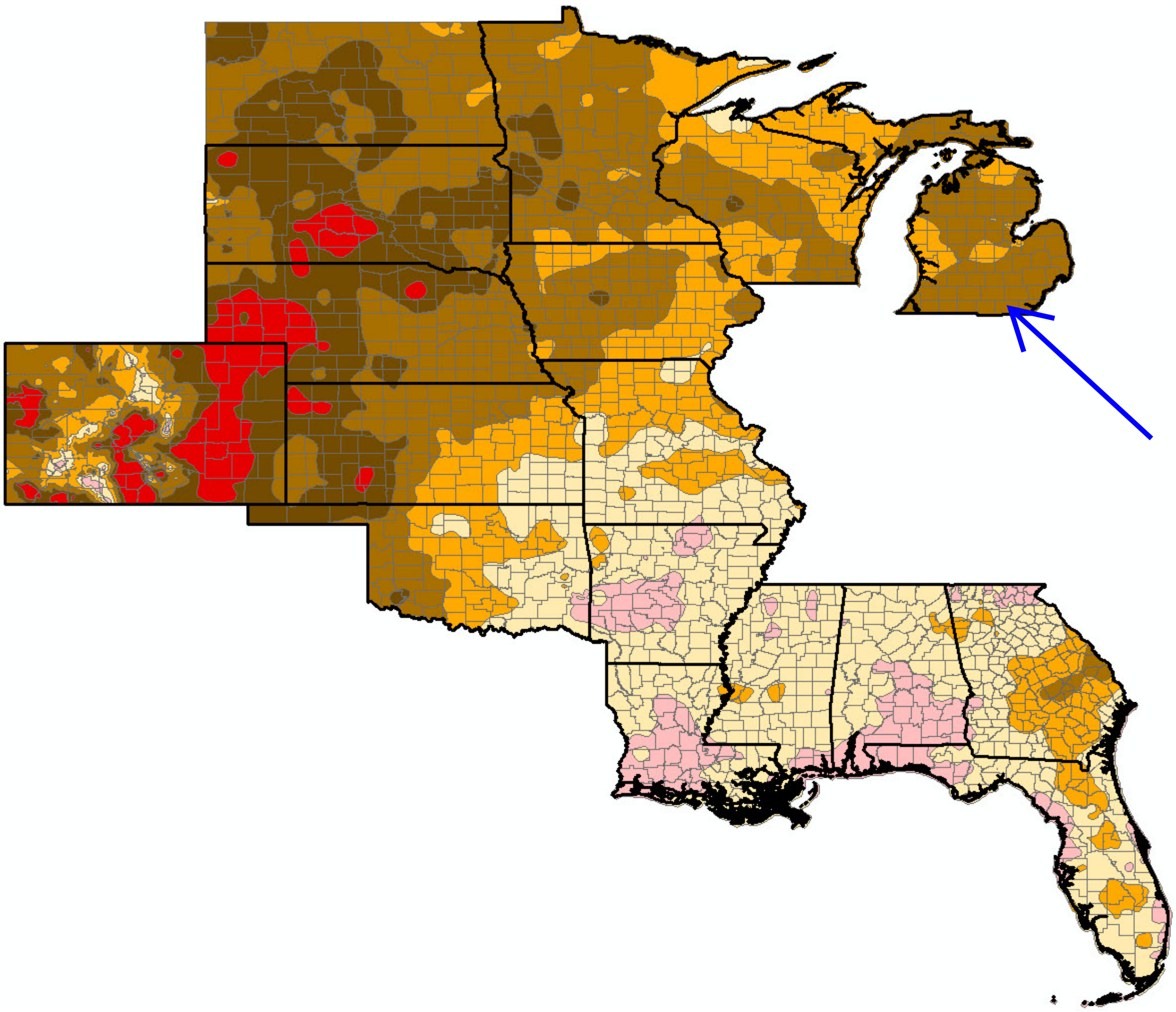
Development of rainfall distributions

The latest draft of Part 630 Chapter 4 Storm Rainfall and Distribution includes the procedures that will be used to develop rainfall distributions for the midwest and southeast states. The purpose of the rainfall distribution is to include all the rainfall amounts at shorter durations in the 24-hour rainfall distribution. For example, for a 25-year 24-hour storm, the 25-year 5-minute rainfall, 25-year 10-minute, rainfall, etc are included within the 24-hour distribution. This is accomplished by placing the 5-minute rainfall in the center (12 hours) and each larger duration being centered at 12 hours. The 60-minute rainfall is located between 11.5 and 12.5 hours. The 2-hour rainfall is located from 10 to 12 hours, etc.

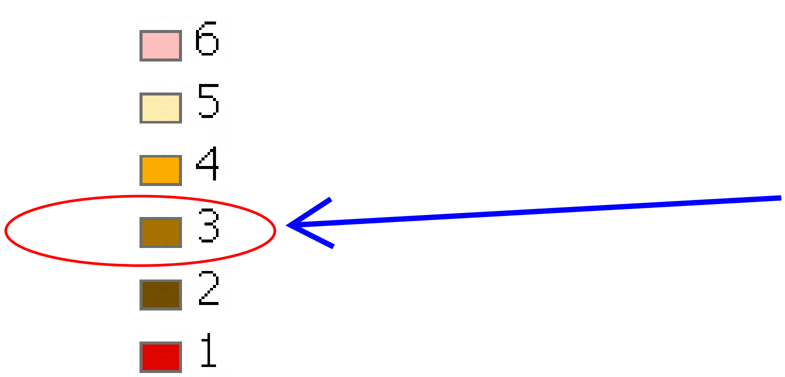
A map has been generated with the ratio of the 60-minute rainfall to the 24-hour rainfall for the 25-year values. In preliminary analyses, this ratio varies from a low value of 0.32 to a high value of 0.75. A rainfall distribution map has 6 rainfall distributions. Based on this ratio, areas within a range of values will be included as a rainfall distribution region. They are named MSE 1, MSE 2, through MSE 6 (MSE is abbreviated from midwest/southeast states). The range of ratio of 60-minute to 24-hour rainfall is in the following table.

Rainfall Distribution Name	Minimum 60-min/24-hour	Maximum 60-min/24-hour
MSE 1	0.58	0.75
MSE 2	0.53	0.58
MSE 3	0.48	0.53
MSE 4	0.43	0.48
MSE 5	0.38	0.43
MSE 6	0.32	0.38

For reference, the 60-minute to 24-hour ratio for the Type II rainfall distribution is 0.45 and the ratio for the Type III is 0.40. Based on the NOAA Atlas 14 data, rainfall distributions less intense, of similar intensity, and more intense than the Types II and III are being used.



Tentative rainfall distribution regions (based on GIS analysis).



Distribution region 1 has the most intense rainfall distribution and region 6 has the least intense rainfall distribution. In preliminary tests, regions 1 and 2 have peak discharges similar to the New Mexico 60 and 65 rainfall distributions (significantly higher than the Type II). Region 4 has peak discharges similar to the Type II rainfall distributions. Region 5 has peak discharges similar to the Type III rainfall distribution. Region 6 has peak discharges less than the Type III rainfall distribution.

Some may question whether to drop the Type II, Type III, and New Mexico rainfall distributions based on these preliminary conclusions. The Type II does not have any documentation remaining on specifically how it was developed and what data were used to develop it. We do not have documentation on the New Mexico rainfall distributions (there may be some documentation saved in the New Mexico state office). The Type III has significant documentation remaining and is based on data from TP-40 and NWS Hydro-35 report. The tentative rainfall distributions (map above) above are based on NOAA 14 data and similar procedures were used to develop rainfall distributions for the Ohio Valley and New York/New England states.

The map above is based entirely on the GIS data and does not consider state or county boundaries. When adjusting the map to fit state desires, the boundaries may be adjusted to follow county/parish boundaries. It is simpler for the field office staff to use a single rainfall distribution in a county. Two general choices have been used in states. One is to select the rainfall distribution that makes up the largest percentage of land area. The other choice is to select the more conservative rainfall distribution that is present in a county. For example, if a county is divided between rainfall distribution MSE 3 and MSE 4, then assign rainfall distribution MSE 3. Whichever choice is made, it is recommended to be consistent for all counties in a state.

Yet several states have chosen to follow the rainfall distributions as defined on the map above. This means that a single county may have more than one rainfall distribution and the user must read the map to determine which rainfall distribution to use.

ATTACHMENT A-6.1.3

CURVE NUMBER DATA

Table 2-2a Runoff curve numbers for urban areas [1]

Cover description		Curve numbers for hydrologic soil group			
Cover type and hydrologic condition	Average percent impervious area [2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

1 Average runoff condition, and $I_a = 0.2S$.
2 The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.
3 CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.
4 Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.
5 Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2b Runoff curve numbers for cultivated agricultural lands [1]

Cover description			Curve numbers for hydrologic soil group			
Cover type	Treatment [2]	Hydrologic condition [3]	A	B	C	D
Fallow	Bare soil	—	77	86	91	94
	Crop residue cover (CR)	Poor	76	85	90	93
		Good	74	83	88	90
Row crops	Straight row (SR)	Poor	72	81	88	91
		Good	67	78	85	89
	SR + CR	Poor	71	80	87	90
		Good	64	75	82	85
	Contoured (C)	Poor	70	79	84	88
		Good	65	75	82	86
	C + CR	Poor	69	78	83	87
		Good	64	74	81	85
	Contoured & terraced (C&T)	Poor	66	74	80	82
		Good	62	71	78	81
	C&T+ CR	Poor	65	73	79	81
		Good	61	70	77	80
Small grain	SR	Poor	65	76	84	88
		Good	63	75	83	87
	SR + CR	Poor	64	75	83	86
		Good	60	72	80	84
	C	Poor	63	74	82	85
		Good	61	73	81	84
	C + CR	Poor	62	73	81	84
		Good	60	72	80	83
	C&T	Poor	61	72	79	82
		Good	59	70	78	81
	C&T+ CR	Poor	60	71	78	81
		Good	58	69	77	80
Close-seeded or broadcast legumes or rotation meadow	SR	Poor	66	77	85	89
		Good	58	72	81	85
	C	Poor	64	75	83	85
		Good	55	69	78	83
	C&T	Poor	63	73	80	83
		Good	51	67	76	80

1 Average runoff condition, and I_a=0.2S
2 Crop residue cover applies only if residue is on at least 5% of the surface throughout the year.
3 Hydraulic condition is based on combination factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes, (d) percent of residue cover on the land surface (good ≥ 20%), and (e) degree of surface roughness.

Poor: Factors impair infiltration and tend to increase runoff.

Good: Factors encourage average and better than average infiltration and tend to decrease runoff.

Table 2-2c Runoff curve numbers for other agricultural lands [1]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. [2]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. [3]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 [4]	48	65	73
Woods—grass combination (orchard or tree farm). [5]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. [6]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 [4]	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

1 Average runoff condition, and $I_a = 0.2S$.
2 *Poor:* <50%) ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: > 75% ground cover and lightly or only occasionally grazed.
3 *Poor:* <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.
4 Actual curve number is less than 30; use CN = 30 for runoff computations.
5 CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.
6 *Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

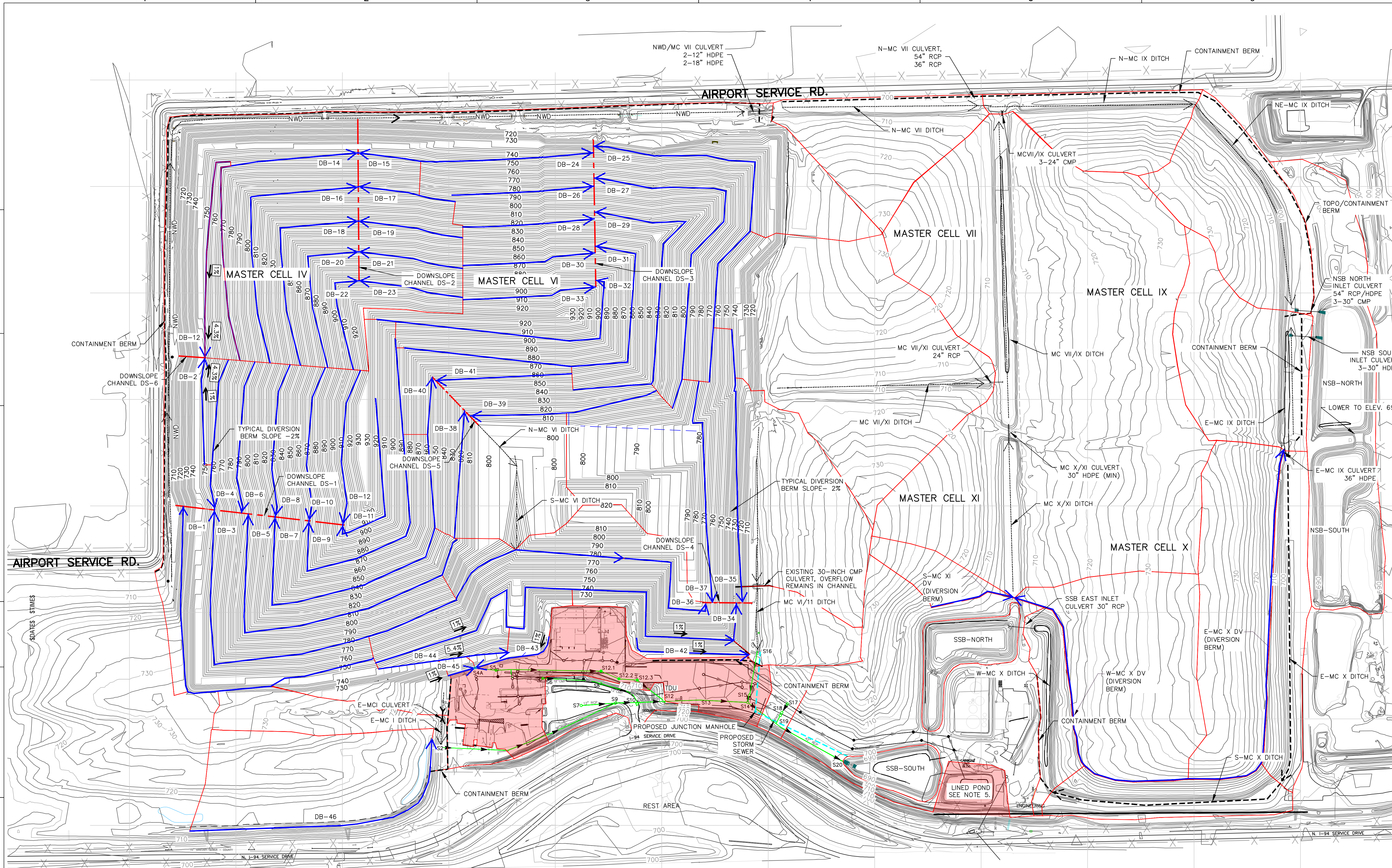
Table 2-2d Runoff curve numbers for arid and semiarid rangelands [1/]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition [2/]	A [3/]	B	C	D
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper—pinyon, juniper, or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	85
	Fair		51	63	70
	Good		35	47	55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor	63	77	85	88
	Fair	55	72	81	86
	Good	49	68	79	84

1 Average runoff condition, and I_a, = 0.2S. For range in humid regions, use table 2-2c.
2 Poor: <30% ground cover (litter, grass, and brush overstory).
Fair: 30 to 70% ground cover.
Good: > 70% ground cover.
3 Curve numbers for group A have been developed only for desert shrub.

ATTACHMENT A-6.1.4

SURFACEWATER MANGEMENT FIGURES



NOTES:

1. THE BASE MAP WAS CREATED USING AN AERIAL SURVEY TAKEN IN DECEMBER, 2020 BY WDI.
2. THE DESIGN SURFACE SHOWN REPRESENTS THE MCVI FINAL GRADES – 2021 REDESIGN BY CTI.
3. CONVEYANCE SYSTEMS ARE DESIGNED TO COLLECT AND CONTROL THE RUNOFF FROM AT LEAST A 25-YR, 24-HR STORM AND MANAGE A 100-YR, 24-HR STORM.
4. SURFACE WATER MANAGEMENT SYSTEM DESIGN INFORMATION PROVIDED IN APPENDIX A. ALTERNATE CONFIGURATIONS AND MATERIALS THAT MEET DESIGN CRITERIA MAY BE UTILIZED..
5. THIS EXPANSION REDUCES THE DRAINAGE AREA TO THE LINED POND. THEREFORE THE DESIGN OF THE LINED POND, LINED POND SEWER, AND ASSOCIATED DRAINAGE AREA WILL CONTINUE TO FUNCTION AS ORIGINALLY DESIGNED AND IS NOT PART OF THE SSB DRAINAGE AREA.

0 200 400
SCALE IN FEET

LEGEND

- 500 EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- DIVERSION BERM
- WATERSHED BOUNDARY
- DITCH FLOW PATH
- DIVERSION BERM
- DOWNSLOPE CHANNEL
- SOUTH SEDIMENTATION BASIN STORM SEWER
- LINED POND STORM SEWER
- CULVERT
- CATCH BASIN, CURB STYLE
- CATCH BASIN INLET
- STORM MANHOLE COVER
- LINED POND WATERSHED (NOT MODELED)
- CONTAINMENT BERM
- PROPOSED STORM SEWER
- PROPOSED CATCH BASIN/MANHOLE

DATE:	10/08/21
DESIGNED BY:	LEH
DRAWN BY:	LEH
CHECKED BY:	TCR
APPROVED BY:	XZ

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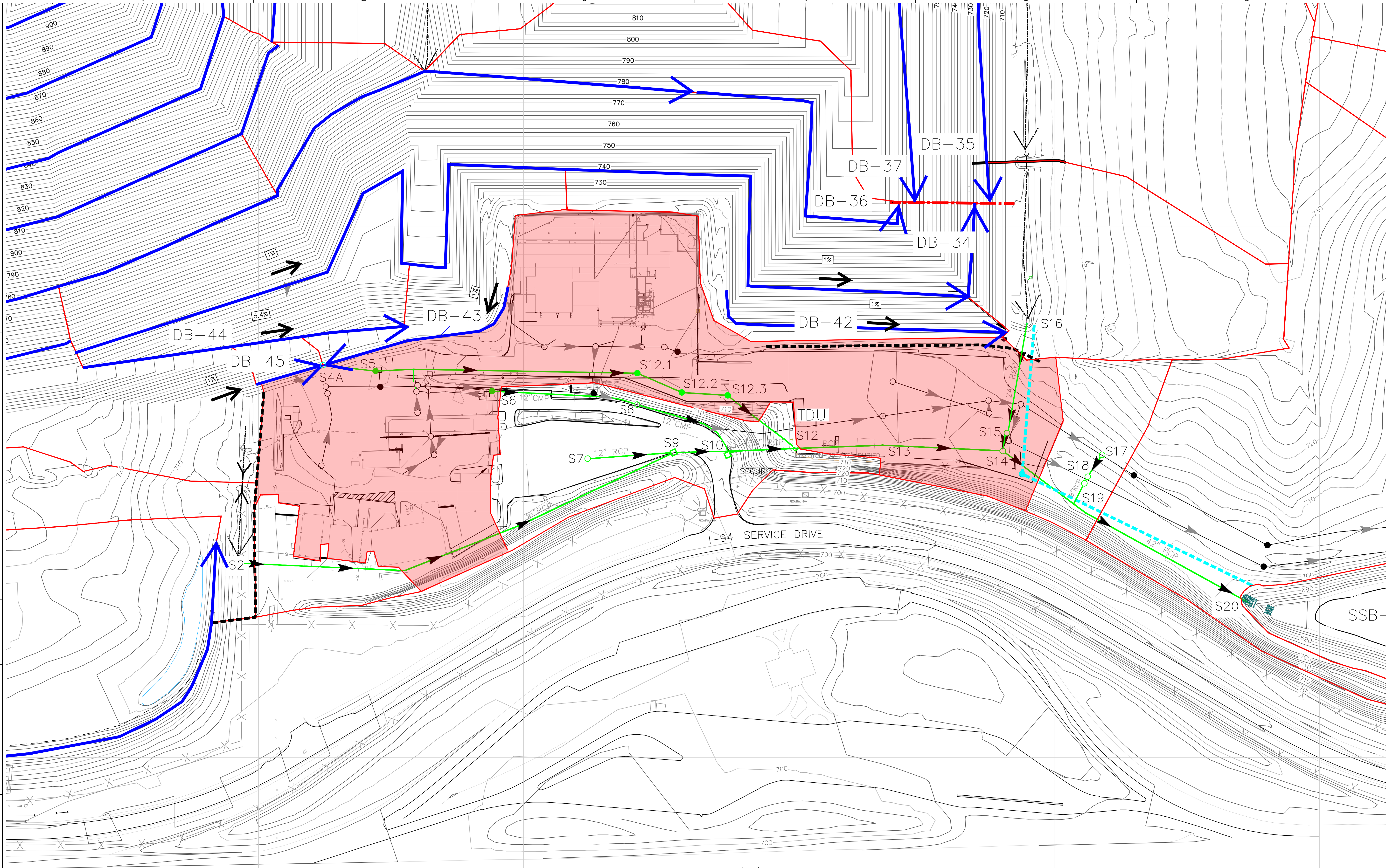
REV	DATE	REVISION DESCRIPTION	DRN	APP

WAYNE DISPOSAL, INC. SITE NO. 2 - MASTER CELL VI - REV I
VAN BUREN TOWNSHIP, WAYNE COUNTY, MICHIGAN

SUBWATERSHED MAP

PROJECT NUMBER 1218070017
SCALE 1" = 200'
DRAWING NO A-6.1.4
FIGURE 1



NOTES:

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0 80 160
SCALE IN FEET

LEGEND

- 500 EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- WATERSHED BOUNDARY
- DITCH FLOW PATH
- DIVERSION BERM
- DOWNSLOPE CHANNEL
- SOUTH SEDIMENTATION BASIN STORM SEWER
- LINED POND STORM SEWER
- CULVERT
- CATCH BASIN, CURB STYLE
- CATCH BASIN INLET
- STORM MANHOLE COVER
- LINED POND WATERSHED (NOT MODELED)
- CONTAINMENT BERM
- PROPOSED STORM SEWER
- PROPOSED CATCH BASIN/MANHOLE

DATE:	10/08/21
DESIGNED BY:	LEH
DRAWN BY:	LEH
CHECKED BY:	TCR
APPROVED BY:	XZ

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REVISIONS

REV	DATE	REVISION DESCRIPTION	DRN	APP

WAYNE DISPOSAL, INC. SITE NO. 2 - MASTER CELL VI - REV I
VAN BUREN TOWNSHIP, WAYNE COUNTY, MICHIGAN

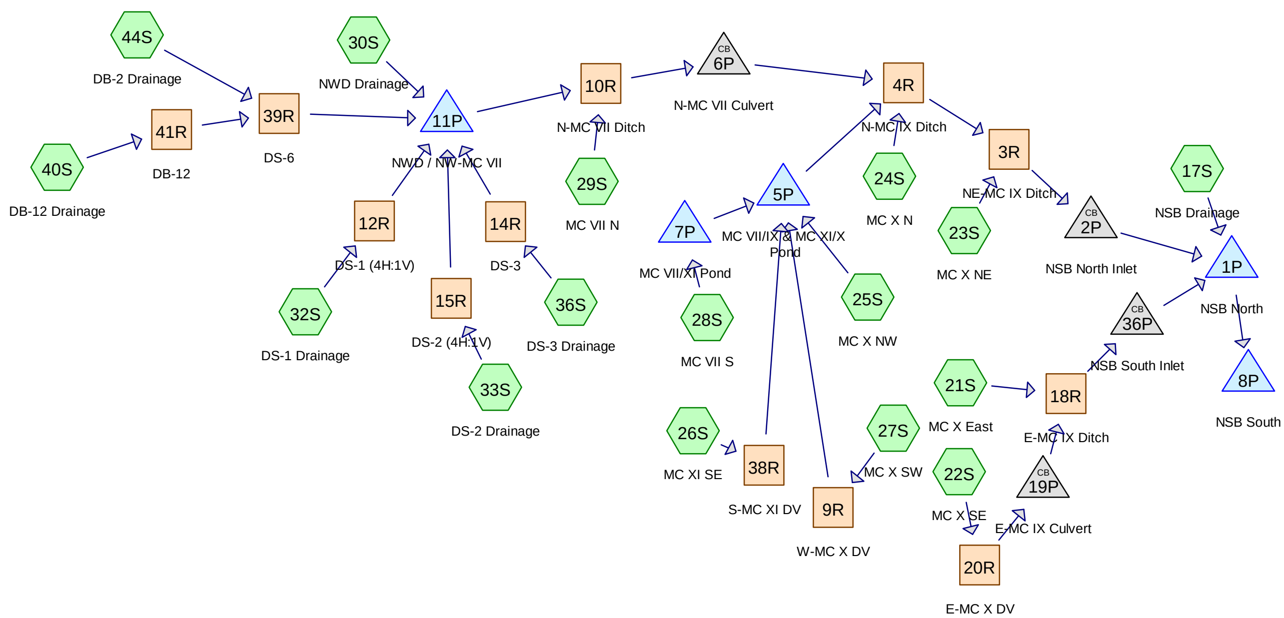
STORM SEWER SYSTEM PLAN

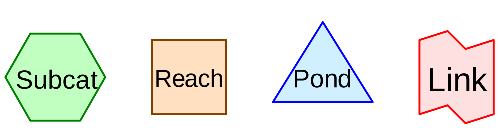
PROJECT NUMBER 1218070017
SCALE 1" = 80'
DRAWING NO A-6.1.4
FIGURE 2

ATTACHMENT A-6.1.5

SURFACE WATER MODEL OUTPUT

North Sedimentation Basin (NSB) HYDROCAD OUTPUT – 25-yr, 24-hr





Routing Diagram for WDI Vert Exp NSB 10-04-21
Prepared by {enter your company name here}, Printed 10/7/2021
HydroCAD® 10.10-5a s/n 11246 © 2020 HydroCAD Software Solutions LLC

Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 17S: NSB Drainage Runoff Area=483,100 sf 0.00% Impervious Runoff Depth=3.38"
Tc=0.0 min CN=95 Runoff=76.09 cfs 3.125 af

Subcatchment 21S: MC X East Runoff Area=443,100 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=650' Slope=0.0370 '/' Tc=21.2 min CN=84 Runoff=25.66 cfs 1.973 af

Subcatchment 22S: MC X SE Runoff Area=527,091 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=240' Slope=0.0540 '/' Tc=15.5 min CN=84 Runoff=35.62 cfs 2.347 af

Subcatchment 23S: MC X NE Runoff Area=435,600 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=440' Slope=0.0590 '/' Tc=15.3 min CN=84 Runoff=29.79 cfs 1.939 af

Subcatchment 24S: MC X N Runoff Area=282,100 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=310' Slope=0.0930 '/' Tc=11.7 min CN=84 Runoff=21.63 cfs 1.256 af

Subcatchment 25S: MC X NW Runoff Area=2,437,500 sf 8.04% Impervious Runoff Depth=2.41"
Flow Length=820' Slope=0.0380 '/' Tc=23.0 min CN=85 Runoff=139.97 cfs 11.253 af

Subcatchment 26S: MC XI SE Runoff Area=95,200 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=405' Slope=0.0770 '/' Tc=13.4 min CN=84 Runoff=6.90 cfs 0.424 af

Subcatchment 27S: MC X SW Runoff Area=600,400 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=240' Slope=0.0400 '/' Tc=17.5 min CN=84 Runoff=38.28 cfs 2.673 af

Subcatchment 28S: MC VII S Runoff Area=998,400 sf 3.90% Impervious Runoff Depth=2.41"
Flow Length=1,070' Tc=20.9 min CN=85 Runoff=60.13 cfs 4.609 af

Subcatchment 29S: MC VII N Runoff Area=349,700 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=560' Slope=0.0390 '/' Tc=19.5 min CN=84 Runoff=21.14 cfs 1.557 af

Subcatchment 30S: NWD Drainage Runoff Area=1,229,971 sf 16.38% Impervious Runoff Depth=2.50"
Tc=0.0 min CN=86 Runoff=159.29 cfs 5.885 af

Subcatchment 32S: DS-1 Drainage Runoff Area=1,563,637 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=2,073' Tc=9.9 min CN=84 Runoff=128.87 cfs 6.961 af

Subcatchment 33S: DS-2 Drainage Runoff Area=922,087 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=1,697' Tc=8.4 min CN=84 Runoff=80.78 cfs 4.105 af

Subcatchment 36S: DS-3 Drainage Runoff Area=1,400,534 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=1,993' Tc=8.8 min CN=84 Runoff=120.53 cfs 6.235 af

Subcatchment 40S: DB-12 Drainage Runoff Area=77,446 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=777' Tc=3.2 min CN=84 Runoff=8.38 cfs 0.345 af

Subcatchment 44S: DB-2 Drainage Runoff Area=33,395 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=540' Tc=3.0 min CN=84 Runoff=3.55 cfs 0.149 af

Reach 3R: NE-MC IX Ditch Avg. Flow Depth=1.36' Max Vel=2.55 fps Inflow=125.65 cfs 46.355 af
n=0.025 L=1,090.0' S=0.0014 '/' Capacity=1,435.24 cfs Outflow=124.53 cfs 46.355 af

Reach 4R: N-MC IX Ditch Avg. Flow Depth=2.37' Max Vel=1.90 fps Inflow=123.14 cfs 44.416 af
n=0.025 L=950.0' S=0.0004 '/' Capacity=458.97 cfs Outflow=120.53 cfs 44.416 af

Reach 9R: W-MC X DV Avg. Flow Depth=1.37' Max Vel=3.22 fps Inflow=38.28 cfs 2.673 af
n=0.025 L=1,400.0' S=0.0050 '/' Capacity=165.41 cfs Outflow=33.14 cfs 2.673 af

Reach 10R: N-MC VII Ditch Avg. Flow Depth=0.97' Max Vel=2.42 fps Inflow=62.78 cfs 25.237 af
n=0.025 L=920.0' S=0.0020 '/' Capacity=424.80 cfs Outflow=60.69 cfs 25.237 af

Reach 12R: DS-1 (4H:1V) Avg. Flow Depth=0.58' Max Vel=16.60 fps Inflow=128.87 cfs 6.961 af
n=0.029 L=764.0' S=0.2500 '/' Capacity=1,087.59 cfs Outflow=125.56 cfs 6.961 af

Reach 14R: DS-3 Avg. Flow Depth=0.62' Max Vel=17.09 fps Inflow=120.53 cfs 6.235 af
n=0.029 L=712.0' S=0.2500 '/' Capacity=930.83 cfs Outflow=116.31 cfs 6.235 af

Reach 15R: DS-2 (4H:1V) Avg. Flow Depth=0.49' Max Vel=14.86 fps Inflow=80.78 cfs 4.105 af
n=0.029 L=616.0' S=0.2500 '/' Capacity=930.83 cfs Outflow=77.93 cfs 4.105 af

Reach 18R: E-MC IX Ditch Avg. Flow Depth=1.04' Max Vel=3.40 fps Inflow=53.67 cfs 4.319 af
n=0.025 L=585.0' S=0.0068 '/' Capacity=457.74 cfs Outflow=52.37 cfs 4.319 af

Reach 20R: E-MC X DV Avg. Flow Depth=1.49' Max Vel=4.71 fps Inflow=35.62 cfs 2.347 af
n=0.025 L=1,780.0' S=0.0100 '/' Capacity=68.87 cfs Outflow=30.87 cfs 2.347 af

Reach 38R: S-MC XI DV Avg. Flow Depth=0.66' Max Vel=3.70 fps Inflow=6.90 cfs 0.424 af
n=0.025 L=750.0' S=0.0180 '/' Capacity=57.72 cfs Outflow=6.40 cfs 0.424 af

Reach 39R: DS-6 Avg. Flow Depth=0.26' Max Vel=4.26 fps Inflow=11.60 cfs 0.493 af
n=0.078 L=78.0' S=0.3333 '/' Capacity=399.61 cfs Outflow=11.33 cfs 0.493 af

Reach 41R: DB-12 Avg. Flow Depth=0.69' Max Vel=5.80 fps Inflow=8.38 cfs 0.345 af
n=0.025 L=191.5' S=0.0430 '/' Capacity=142.25 cfs Outflow=8.03 cfs 0.345 af

Pond 1P: NSB North Peak Elev=693.39' Storage=2,163,542 cf Inflow=147.48 cfs 53.799 af
Outflow=27.48 cfs 8.777 af

Pond 2P: NSB North Inlet Peak Elev=698.30' Inflow=124.53 cfs 46.355 af
Outflow=124.53 cfs 46.355 af

Pond 5P: MC VII/IX & MC XI/X Pond Peak Elev=702.40' Storage=316,954 cf Inflow=197.15 cfs 18.817 af
24.0" Round Culvert x 3.00 n=0.025 L=30.0' S=0.0033 '/' Outflow=62.08 cfs 17.923 af

Pond 6P: N-MC VII Culvert Peak Elev=699.89' Inflow=60.69 cfs 25.237 af
Outflow=60.69 cfs 25.237 af

Pond 7P: MC VII/XI Pond Peak Elev=707.14' Storage=49,037 cf Inflow=60.13 cfs 4.609 af
Outflow=30.71 cfs 4.468 af

Pond 8P: NSB South Peak Elev=683.41' Storage=897,067 cf Inflow=27.48 cfs 8.777 af
Outflow=0.00 cfs 0.000 af

Pond 11P: NWD / NW-MC VII Peak Elev=710.23' Storage=512,970 cf Inflow=366.38 cfs 23.680 af
Outflow=44.48 cfs 23.680 af

Pond 19P: E-MC IX Culvert Peak Elev=704.16' Inflow=30.87 cfs 2.347 af
36.0" Round Culvert n=0.012 L=72.0' S=0.0365 '/' Outflow=30.87 cfs 2.347 af

Pond 36P: NSB South Inlet Peak Elev=697.13' Inflow=52.37 cfs 4.319 af
30.0" Round Culvert x 3.00 n=0.012 L=110.0' S=0.0091 '/' Outflow=52.37 cfs 4.319 af

Total Runoff Area = 272.710 ac Runoff Volume = 54.835 af Average Runoff Depth = 2.41"
96.33% Pervious = 262.692 ac 3.67% Impervious = 10.018 ac

Summary for Subcatchment 17S: NSB Drainage

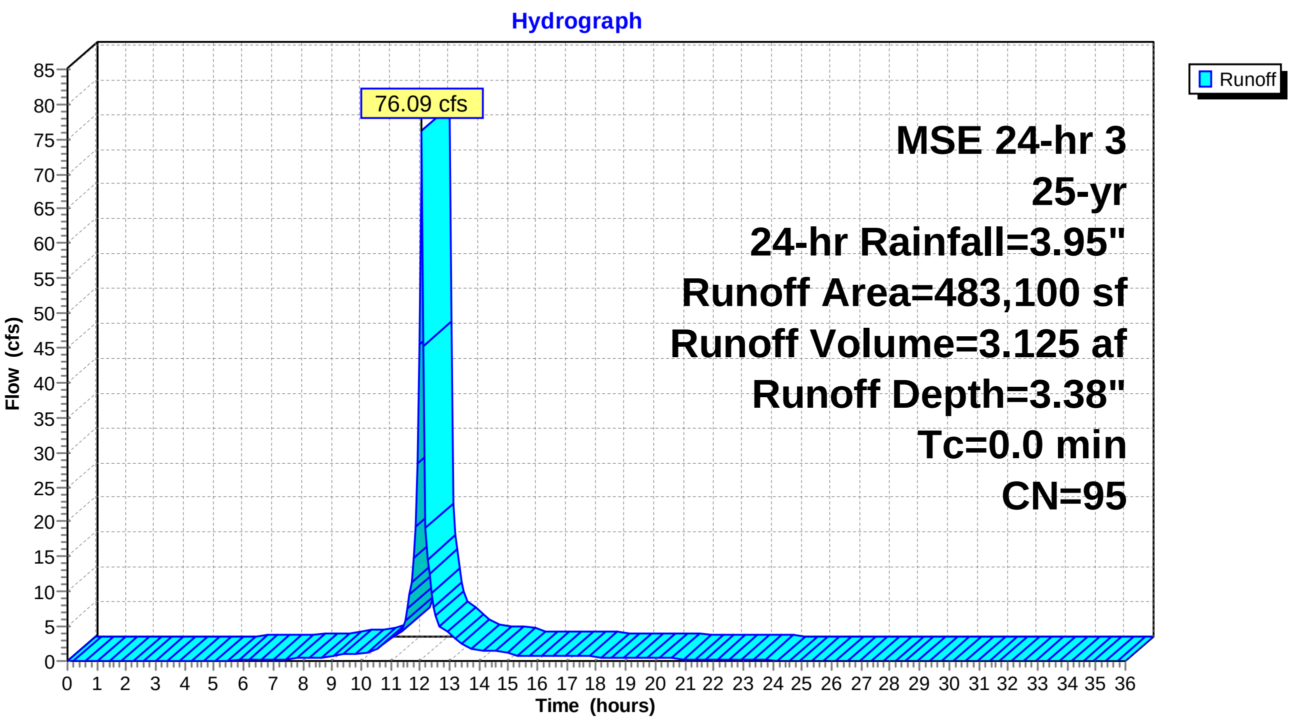
Drainage area is pond area and land area
Land area = 483,100 - 111,900 = 371,200

Runoff = 76.09 cfs @ 12.06 hrs, Volume= 3.125 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
111,900	84	50-75% Grass cover, Fair, HSG D
371,200	98	Water Surface, 0% imp, HSG D
483,100	95	Weighted Average
483,100		100.00% Pervious Area

Subcatchment 17S: NSB Drainage



Summary for Subcatchment 21S: MC X East

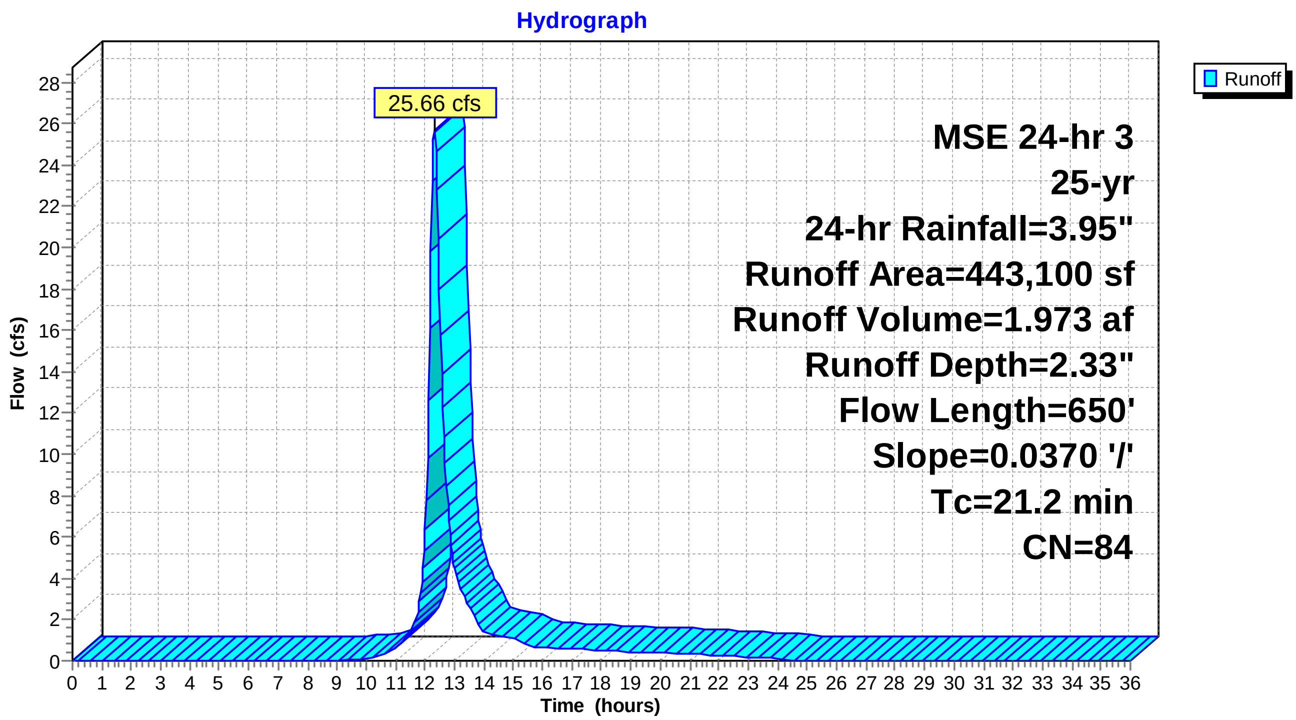
Runoff = 25.66 cfs @ 12.31 hrs, Volume= 1.973 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
443,100	84	50-75% Grass cover, Fair, HSG D
443,100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	200	0.0370	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
5.6	450	0.0370	1.35		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.2	650	Total			

Subcatchment 21S: MC X East



Summary for Subcatchment 22S: MC X SE

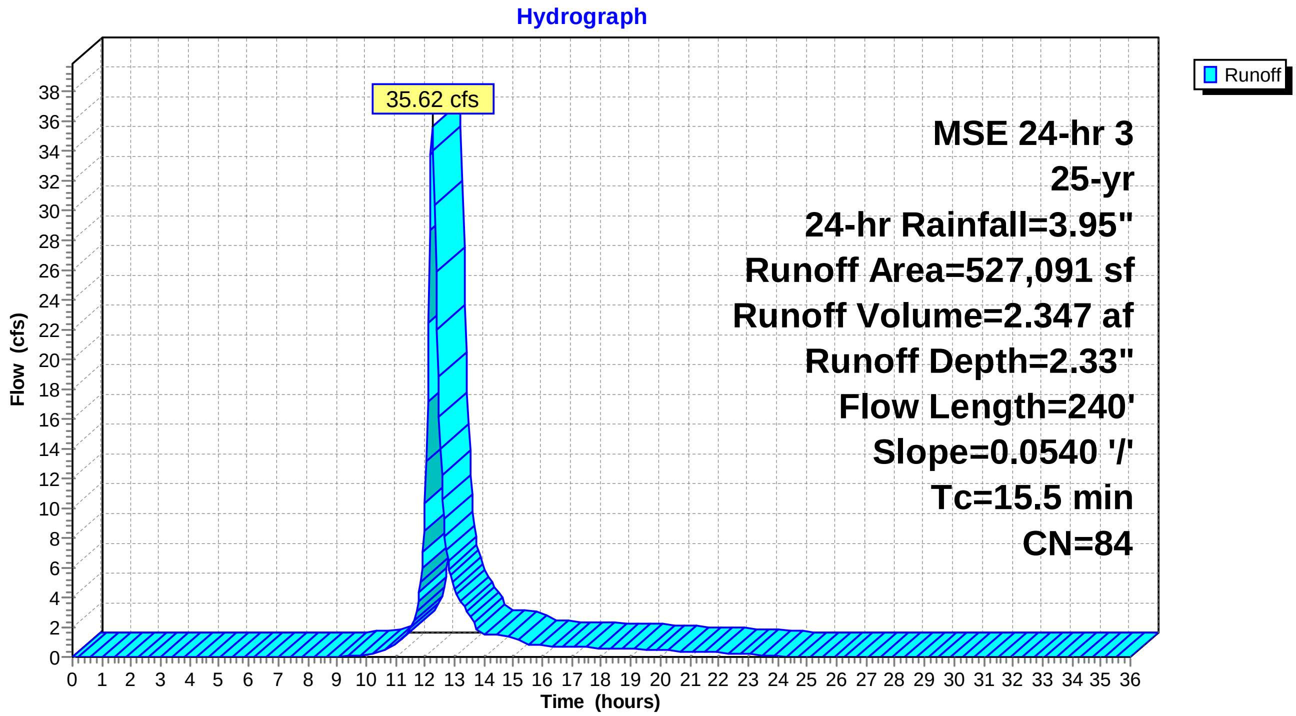
Runoff = 35.62 cfs @ 12.24 hrs, Volume= 2.347 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
527,091	84	50-75% Grass cover, Fair, HSG D
527,091		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	240	0.0540	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"

Subcatchment 22S: MC X SE



Summary for Subcatchment 23S: MC X NE

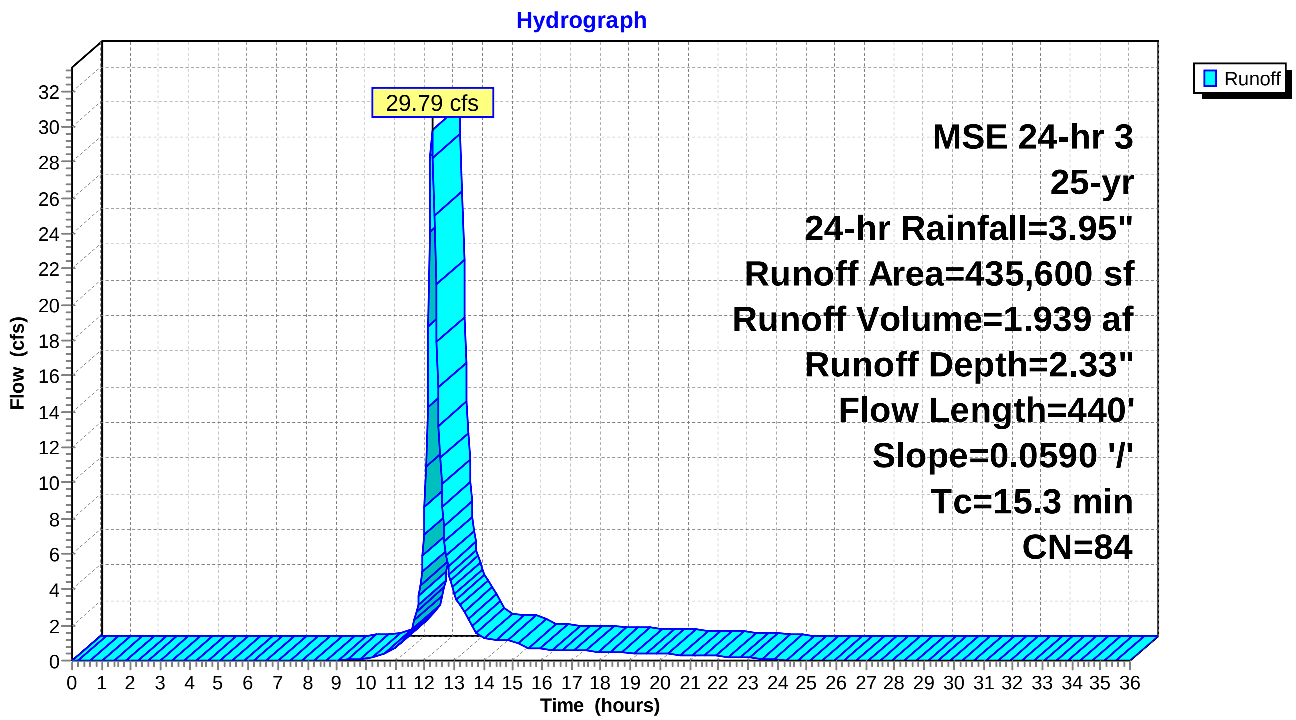
Runoff = 29.79 cfs @ 12.24 hrs, Volume= 1.939 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
435,600	84	50-75% Grass cover, Fair, HSG D
435,600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	200	0.0590	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
2.4	240	0.0590	1.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.3	440	Total			

Subcatchment 23S: MC X NE



Summary for Subcatchment 24S: MC X N

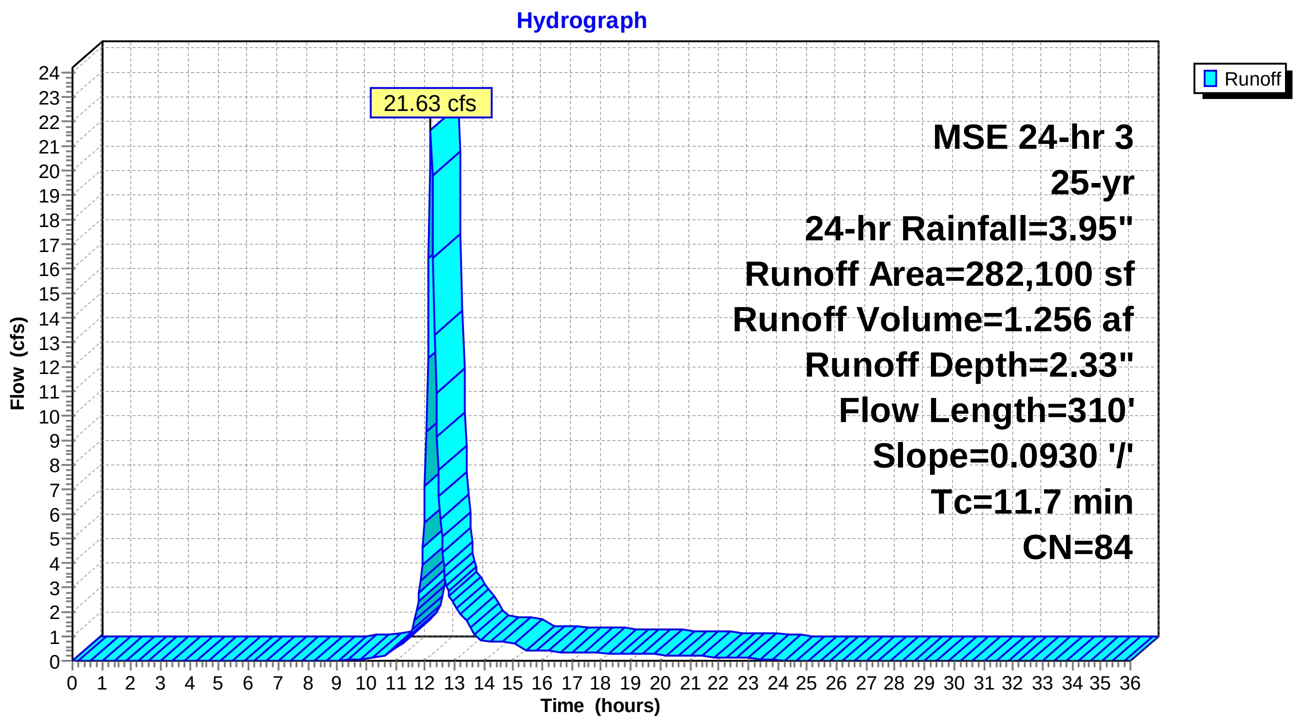
Runoff = 21.63 cfs @ 12.20 hrs, Volume= 1.256 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
282,100	84	50-75% Grass cover, Fair, HSG D
282,100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	200	0.0930	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
0.9	110	0.0930	2.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.7	310	Total			

Subcatchment 24S: MC X N



Summary for Subcatchment 25S: MC X NW

Drainage area is pond area and land area
Land area = 2,437,500 - 196,000 = 2,241,500

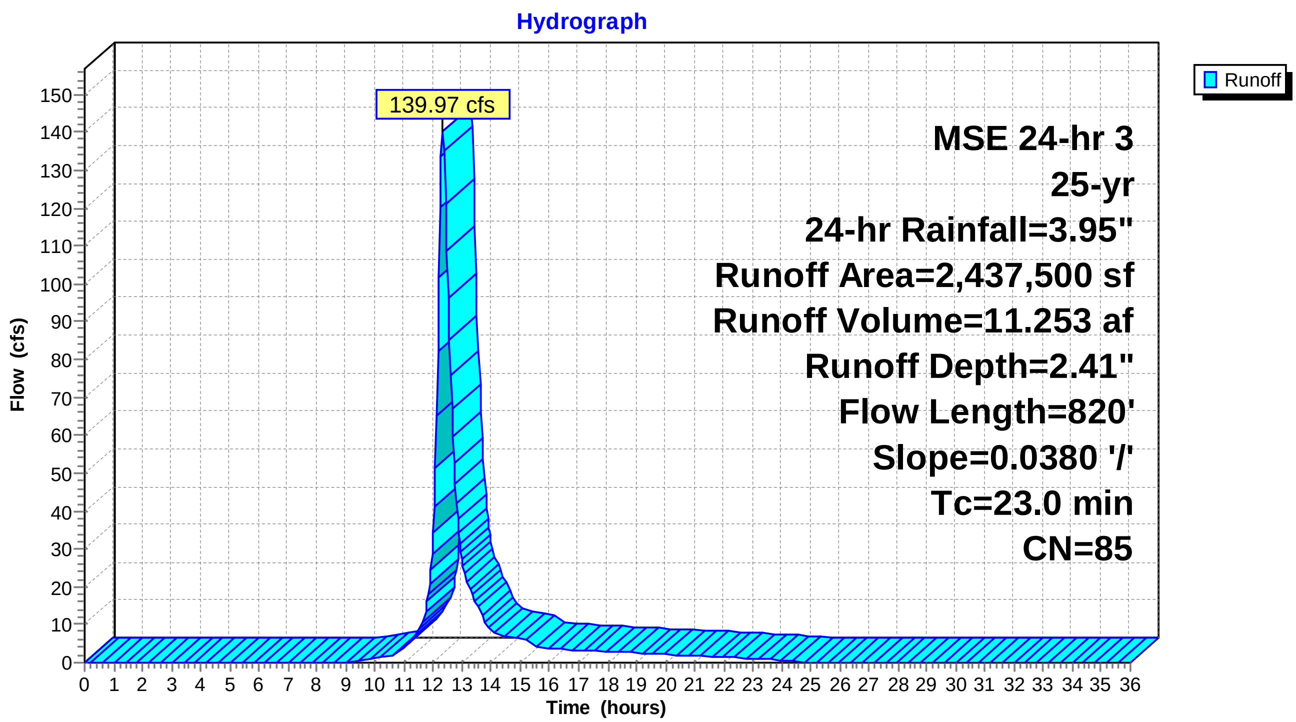
Runoff = 139.97 cfs @ 12.33 hrs, Volume= 11.253 af, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
196,000	98	Water Surface, HSG D
2,241,500	84	50-75% Grass cover, Fair, HSG D
2,437,500	85	Weighted Average
2,241,500		91.96% Pervious Area
196,000		8.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	200	0.0380	0.22		**Sheet Flow,**
					Grass: Short n= 0.150 P2= 2.35"
7.6	620	0.0380	1.36		**Shallow Concentrated Flow,**
					Short Grass Pasture Kv= 7.0 fps
23.0	820	Total			

Subcatchment 25S: MC X NW



Summary for Subcatchment 26S: MC XI SE

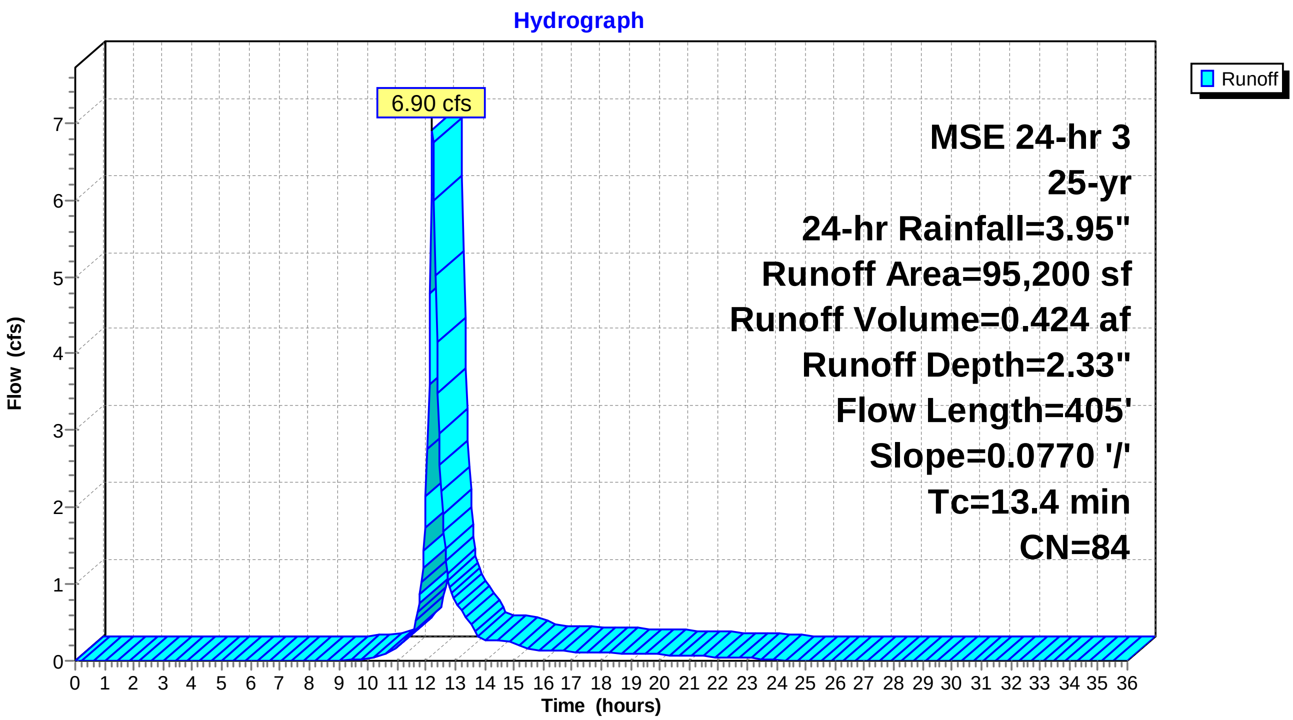
Runoff = 6.90 cfs @ 12.22 hrs, Volume= 0.424 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
95,200	84	50-75% Grass cover, Fair, HSG D
95,200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	200	0.0770	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
1.8	205	0.0770	1.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.4	405	Total			

Subcatchment 26S: MC XI SE



Summary for Subcatchment 27S: MC X SW

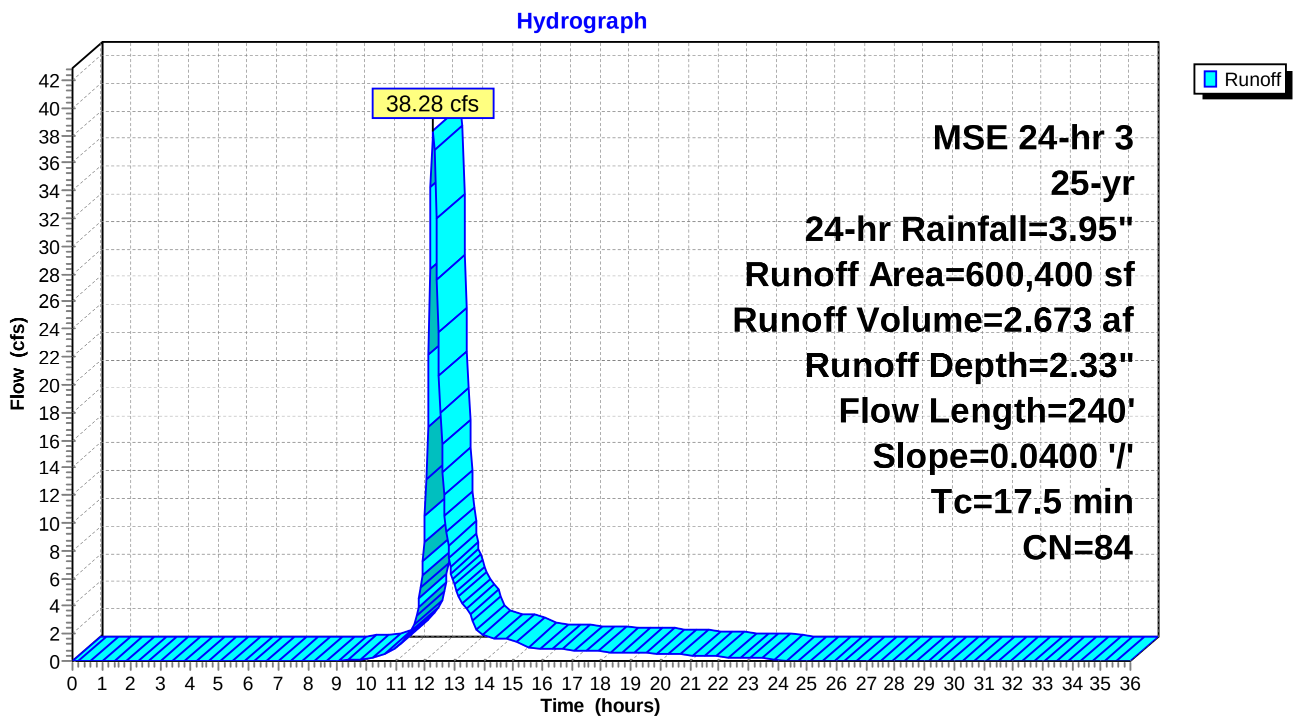
Runoff = 38.28 cfs @ 12.26 hrs, Volume= 2.673 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
600,400	84	50-75% Grass cover, Fair, HSG D
600,400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	240	0.0400	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"

Subcatchment 27S: MC X SW



Summary for Subcatchment 28S: MC VII S

Drainage area is pond area and land area
Land area = 998,400 - 38,900 = 959,500

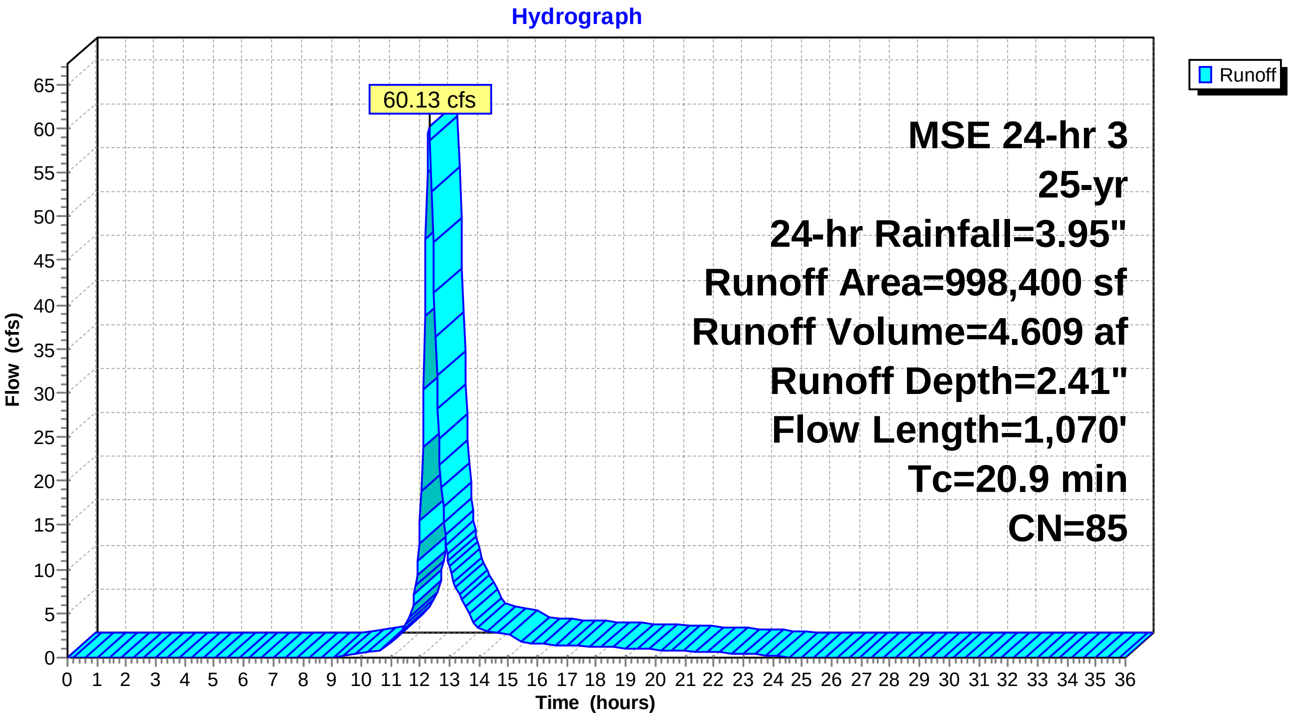
Runoff = 60.13 cfs @ 12.31 hrs, Volume= 4.609 af, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
38,900	98	Water Surface, HSG D
959,500	84	50-75% Grass cover, Fair, HSG D
998,400	85	Weighted Average
959,500		96.10% Pervious Area
38,900		3.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.9	200	0.0300	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
2.3	170	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.7	700	0.0140	7.03	84.40	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, clean & winding
20.9	1,070	Total			

Subcatchment 28S: MC VII S



Summary for Subcatchment 29S: MC VII N

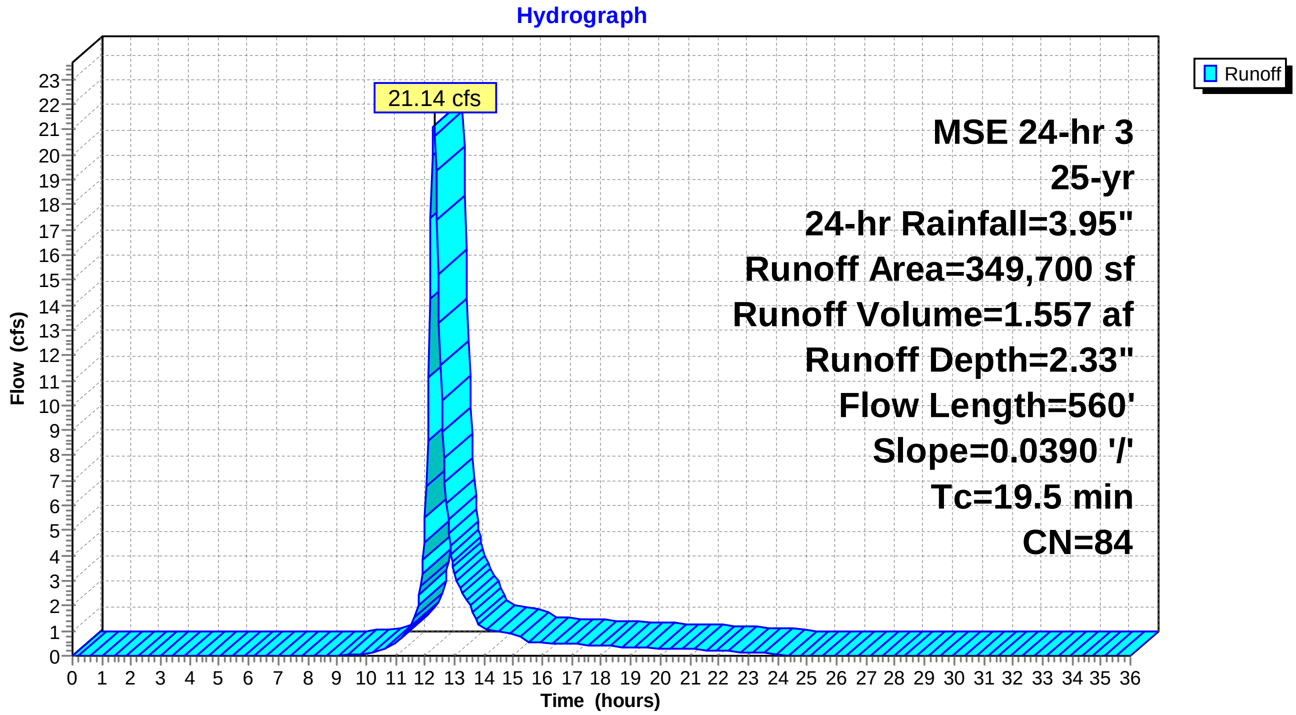
Runoff = 21.14 cfs @ 12.29 hrs, Volume= 1.557 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
349,700	84	50-75% Grass cover, Fair, HSG D
349,700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	200	0.0390	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
4.3	360	0.0390	1.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.5	560	Total			

Subcatchment 29S: MC VII N



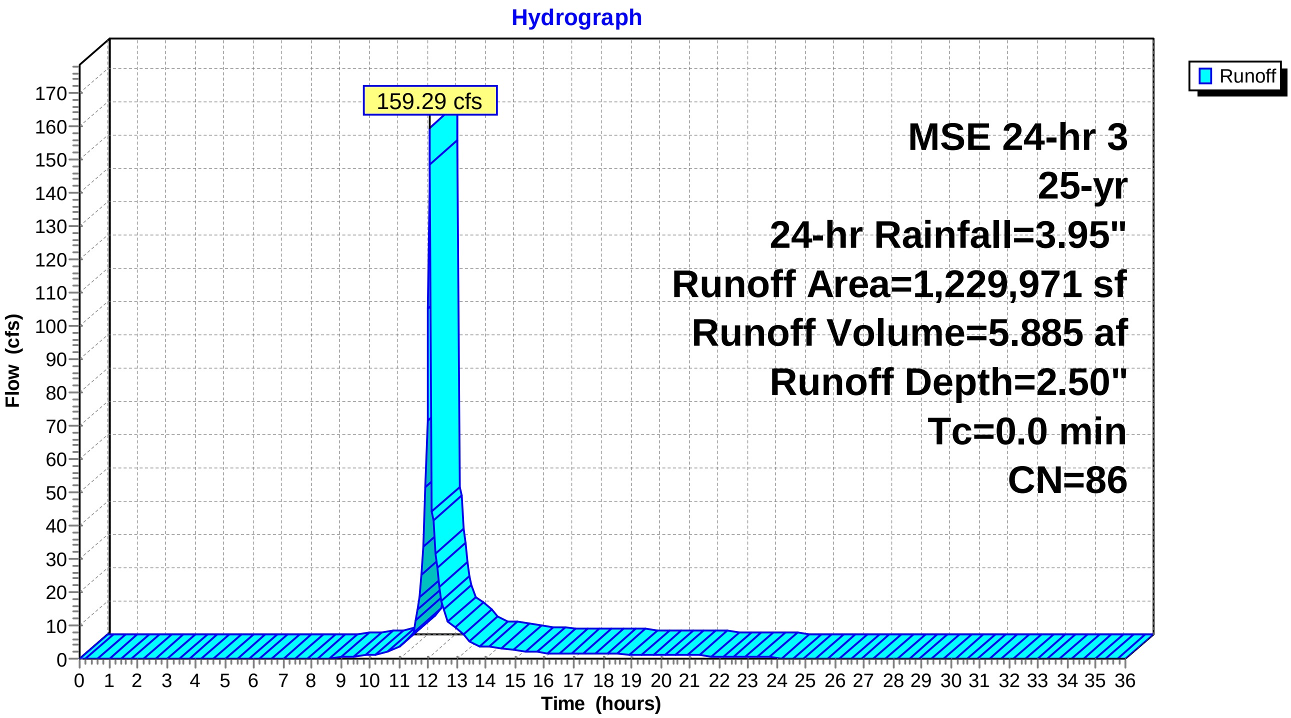
Summary for Subcatchment 30S: NWD Drainage

Runoff = 159.29 cfs @ 12.06 hrs, Volume= 5.885 af, Depth= 2.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
201,500	98	Water Surface, HSG D
1,028,471	84	50-75% Grass cover, Fair, HSG D
1,229,971	86	Weighted Average
1,028,471		83.62% Pervious Area
201,500		16.38% Impervious Area

Subcatchment 30S: NWD Drainage



Summary for Subcatchment 32S: DS-1 Drainage

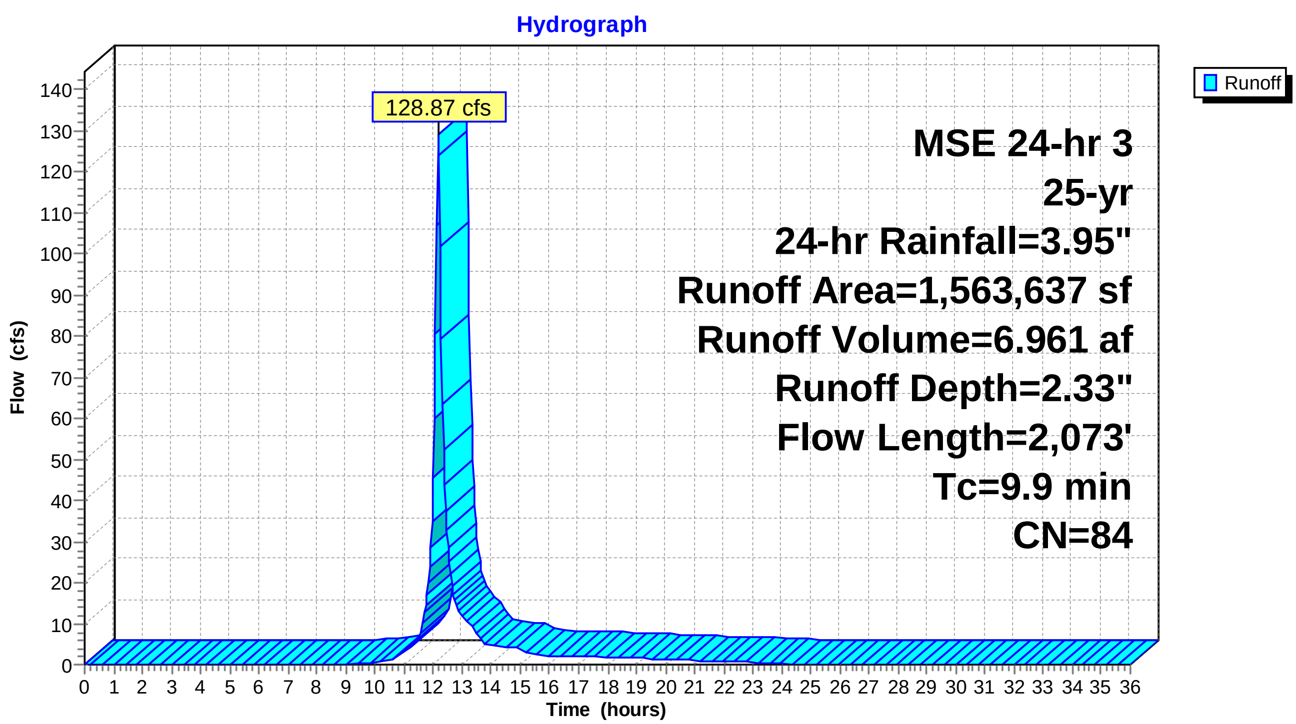
Runoff = 128.87 cfs @ 12.17 hrs, Volume= 6.961 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
1,563,637	84	50-75% Grass cover, Fair, HSG D
1,563,637		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	160	0.2500	0.44		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
3.8	1,913	0.0200	8.41	100.87	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, clean & winding
9.9	2,073	Total			

Subcatchment 32S: DS-1 Drainage



Summary for Subcatchment 33S: DS-2 Drainage

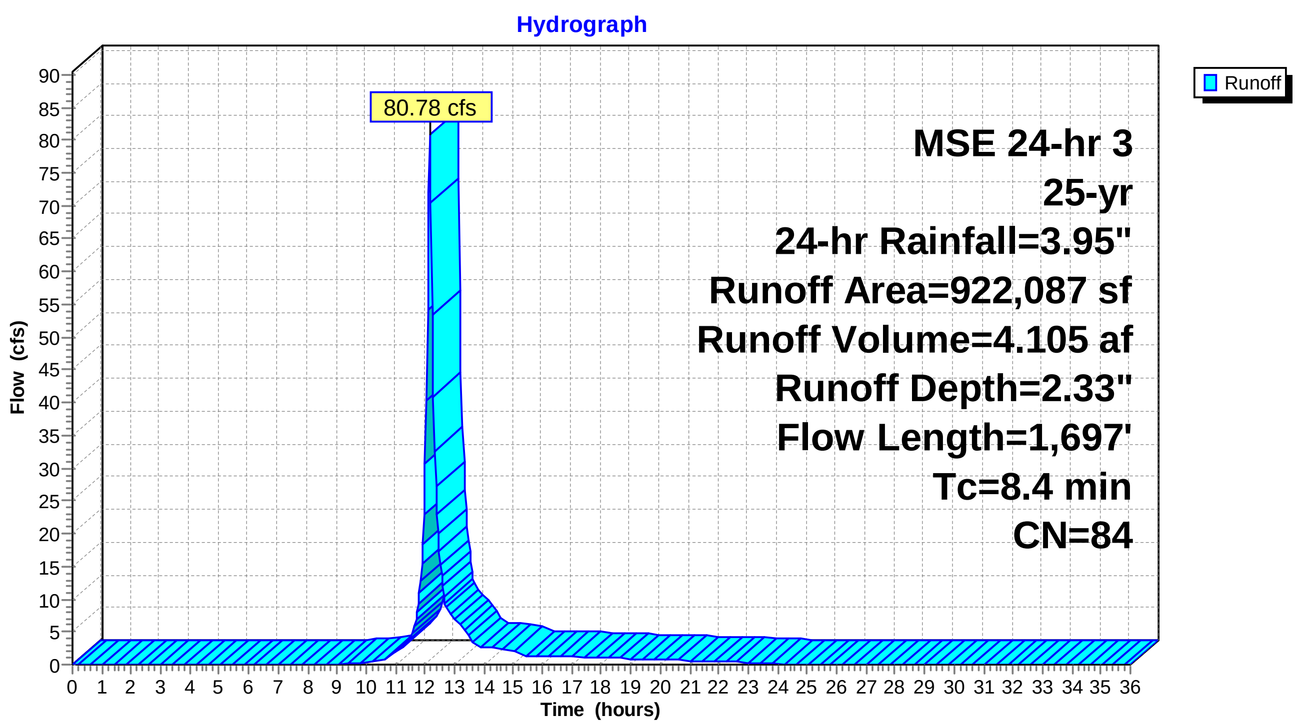
Runoff = 80.78 cfs @ 12.16 hrs, Volume= 4.105 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
922,087	84	50-75% Grass cover, Fair, HSG D
922,087		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	135	0.2500	0.43		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
3.1	1,562	0.0200	8.41	100.87	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, clean & winding
8.4	1,697	Total			

Subcatchment 33S: DS-2 Drainage



Summary for Subcatchment 36S: DS-3 Drainage

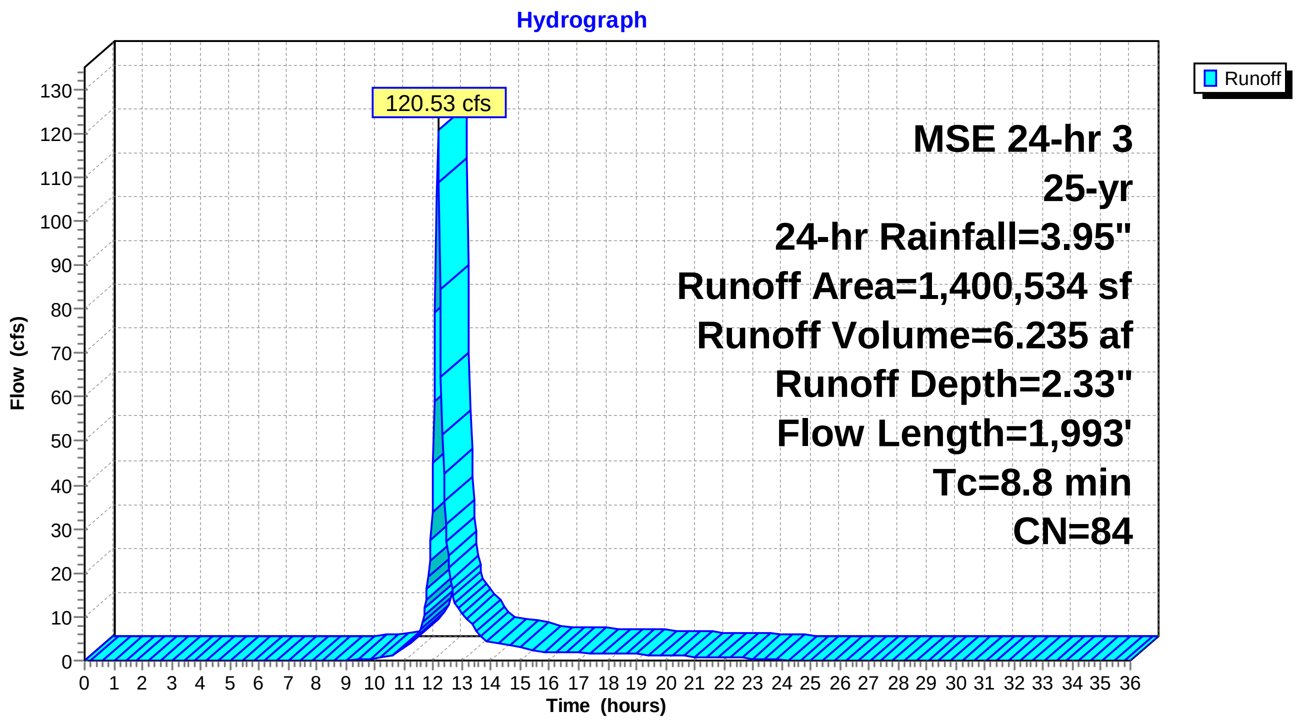
Runoff = 120.53 cfs @ 12.16 hrs, Volume= 6.235 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
1,400,534	84	50-75% Grass cover, Fair, HSG D
1,400,534		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	128	0.2500	0.42		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
3.7	1,865	0.0200	8.41	100.87	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, clean & winding
8.8	1,993	Total			

Subcatchment 36S: DS-3 Drainage



Summary for Subcatchment 40S: DB-12 Drainage

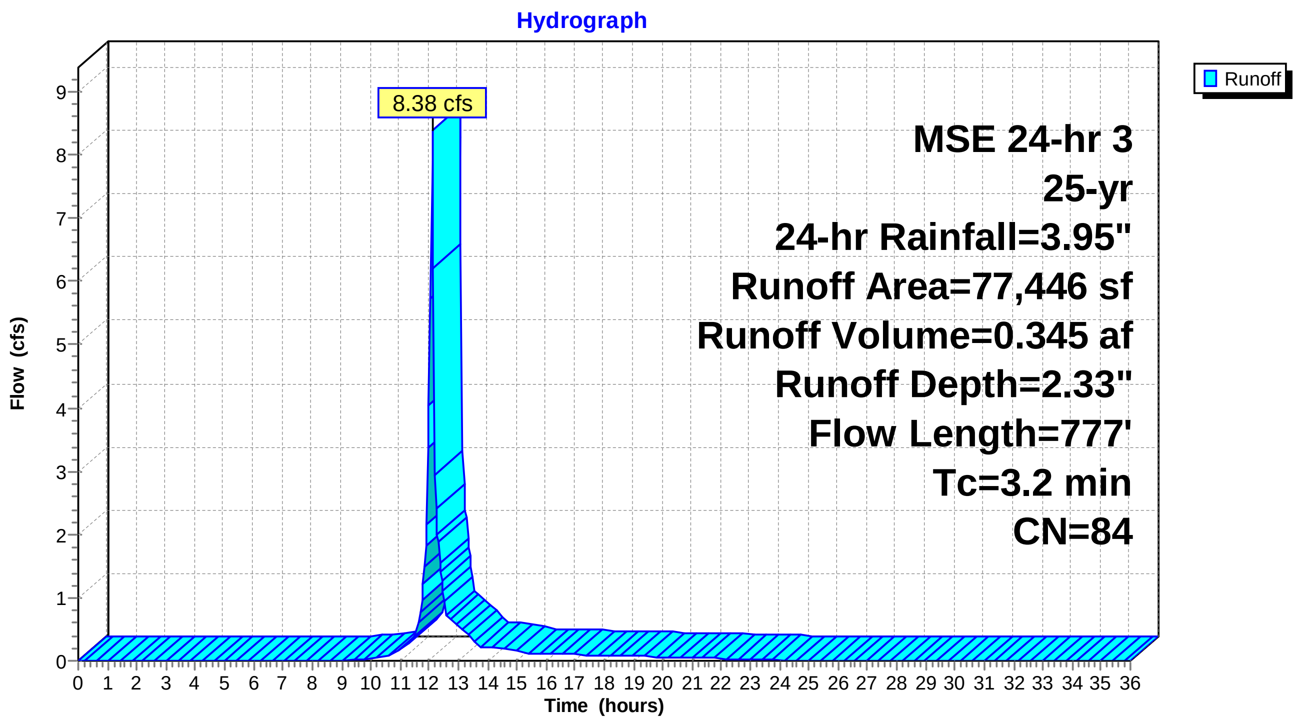
Runoff = 8.38 cfs @ 12.10 hrs, Volume= 0.345 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
77,446	84	50-75% Grass cover, Fair, HSG D
77,446		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	20	0.2500	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
2.1	757	0.0100	5.94	71.33	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025
3.2	777	Total			

Subcatchment 40S: DB-12 Drainage



Summary for Subcatchment 44S: DB-2 Drainage

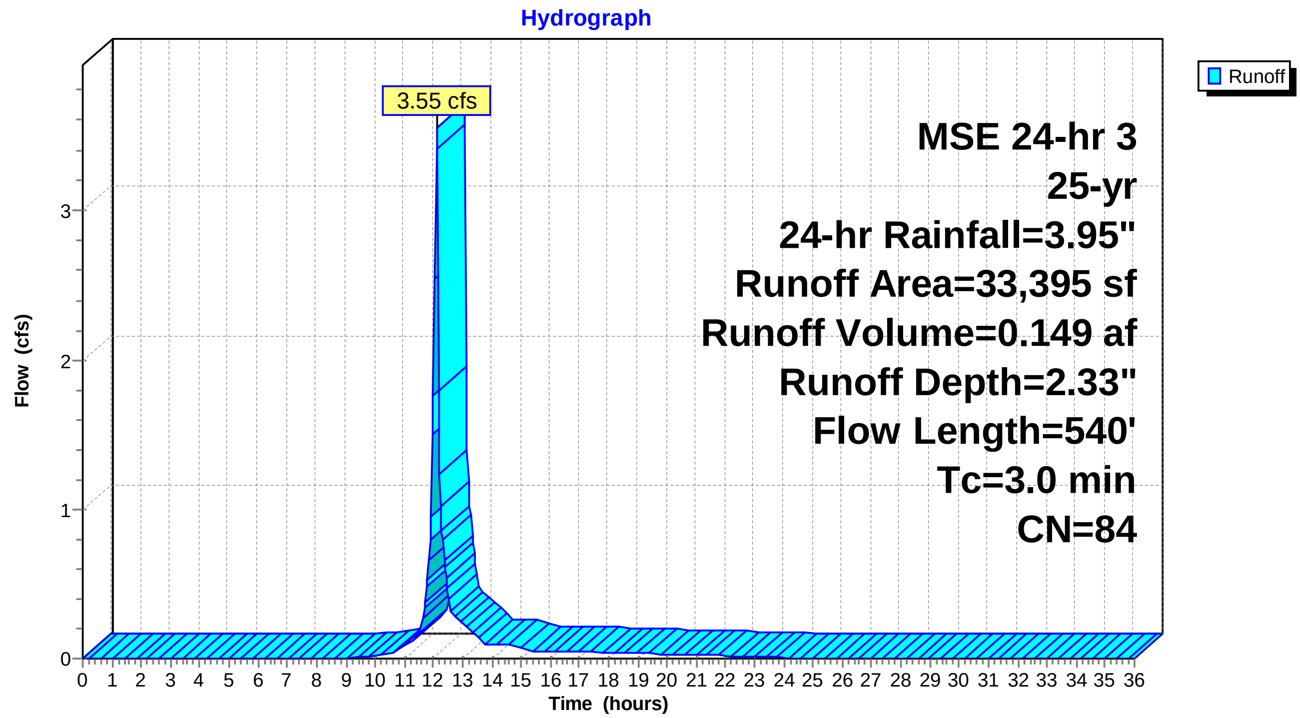
Runoff = 3.55 cfs @ 12.10 hrs, Volume= 0.149 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
33,395	84	50-75% Grass cover, Fair, HSG D
33,395		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	35	0.2500	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
1.1	403	0.0100	5.94	71.33	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025
0.1	102	0.0430	12.33	147.91	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025
3.0	540	Total			

Subcatchment 44S: DB-2 Drainage



Summary for Reach 3R: NE-MC IX Ditch

NSB Culvert backs up (free draining channel assumption is not true), therefore additional freeboard is needed in NE-MC IX Ditch

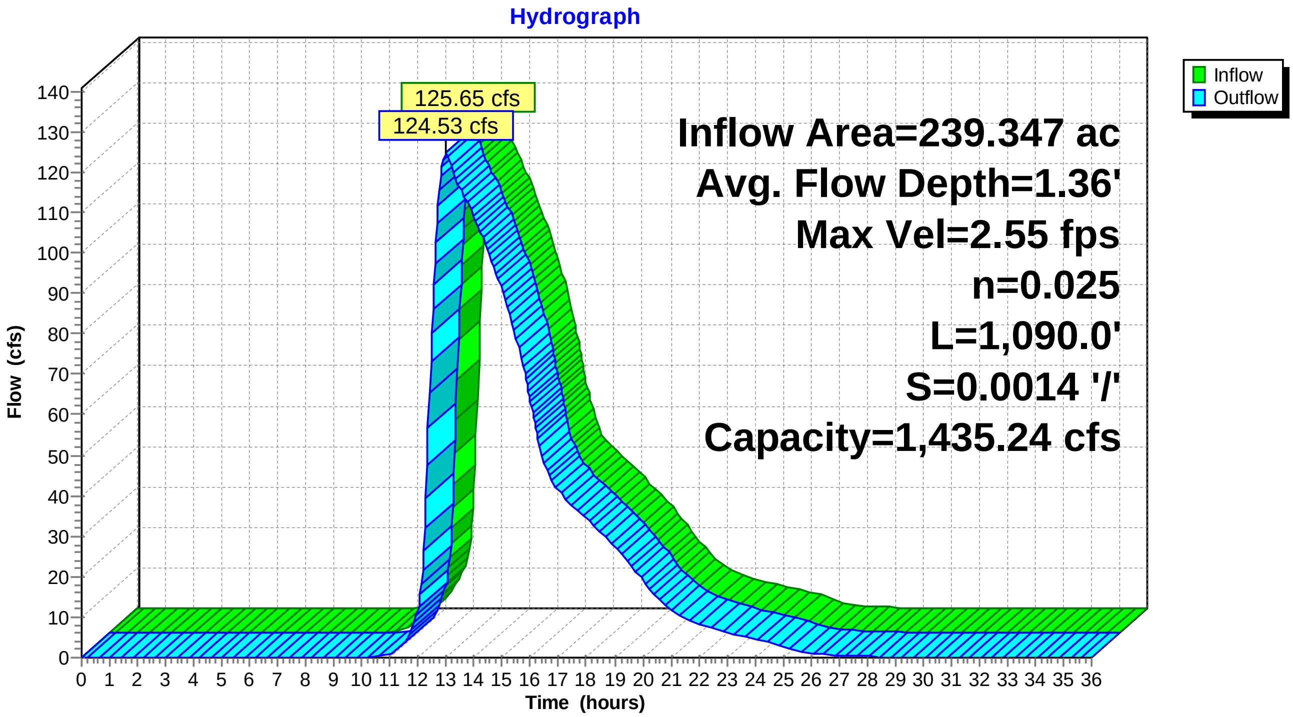
Inflow Area = 239.347 ac, 4.19% Impervious, Inflow Depth = 2.32" for 25-yr, 24-hr event
Inflow = 125.65 cfs @ 12.76 hrs, Volume= 46.355 af
Outflow = 124.53 cfs @ 12.97 hrs, Volume= 46.355 af, Atten= 1%, Lag= 12.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.55 fps, Min. Travel Time= 7.1 min
Avg. Velocity = 0.91 fps, Avg. Travel Time= 19.9 min

Peak Storage= 53,137 cf @ 12.85 hrs
Average Depth at Peak Storage= 1.36' , Surface Width= 38.46'
Bank-Full Depth= 5.60' Flow Area= 247.5 sf, Capacity= 1,435.24 cfs

33.00' x 5.60' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 '/' Top Width= 55.40'
Length= 1,090.0' Slope= 0.0014 '/'
Inlet Invert= 696.40', Outlet Invert= 694.90'

Reach 3R: NE-MC IX Ditch



Summary for Reach 4R: N-MC IX Ditch

Inflow Area = 229.347 ac, 4.37% Impervious, Inflow Depth = 2.32" for 25-yr, 24-hr event
Inflow = 123.14 cfs @ 12.53 hrs, Volume= 44.416 af
Outflow = 120.53 cfs @ 12.80 hrs, Volume= 44.416 af, Atten= 2%, Lag= 16.2 min

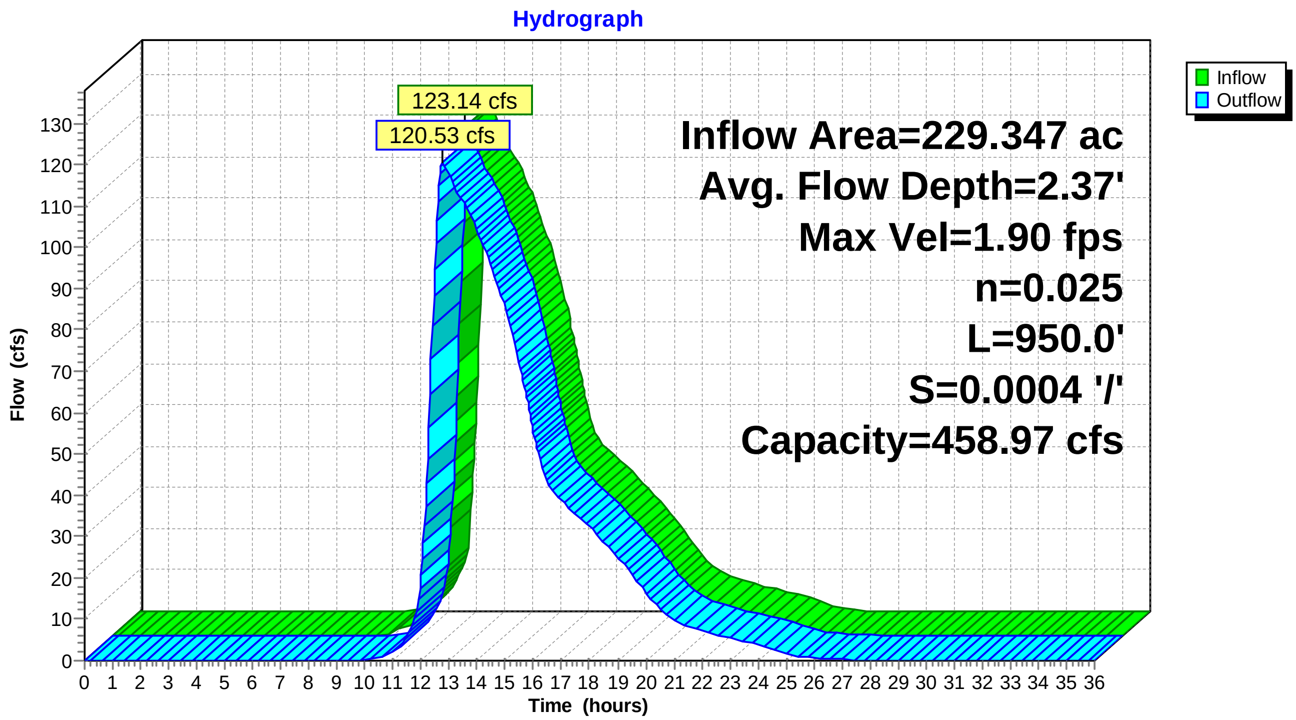
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 1.90 fps, Min. Travel Time= 8.3 min
Avg. Velocity = 0.66 fps, Avg. Travel Time= 24.1 min

Peak Storage= 60,272 cf @ 12.65 hrs
Average Depth at Peak Storage= 2.37' , Surface Width= 31.49'
Bank-Full Depth= 5.00' Flow Area= 160.0 sf, Capacity= 458.97 cfs

22.00' x 5.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 '/' Top Width= 42.00'
Length= 950.0' Slope= 0.0004 '/'
Inlet Invert= 696.80', Outlet Invert= 696.40'

‡

Reach 4R: N-MC IX Ditch



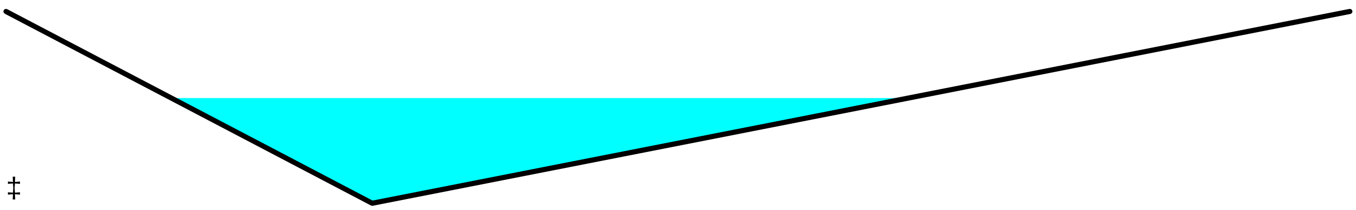
Summary for Reach 9R: W-MC X DV

Inflow Area = 13.783 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 38.28 cfs @ 12.26 hrs, Volume= 2.673 af
Outflow = 33.14 cfs @ 12.47 hrs, Volume= 2.673 af, Atten= 13%, Lag= 12.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.22 fps, Min. Travel Time= 7.2 min
Avg. Velocity = 0.91 fps, Avg. Travel Time= 25.7 min

Peak Storage= 14,416 cf @ 12.35 hrs
Average Depth at Peak Storage= 1.37' , Surface Width= 15.05'
Bank-Full Depth= 2.50' Flow Area= 34.4 sf, Capacity= 165.41 cfs

0.00' x 2.50' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 8.0 '/' Top Width= 27.50'
Length= 1,400.0' Slope= 0.0050 '/'
Inlet Invert= 713.00', Outlet Invert= 706.00'



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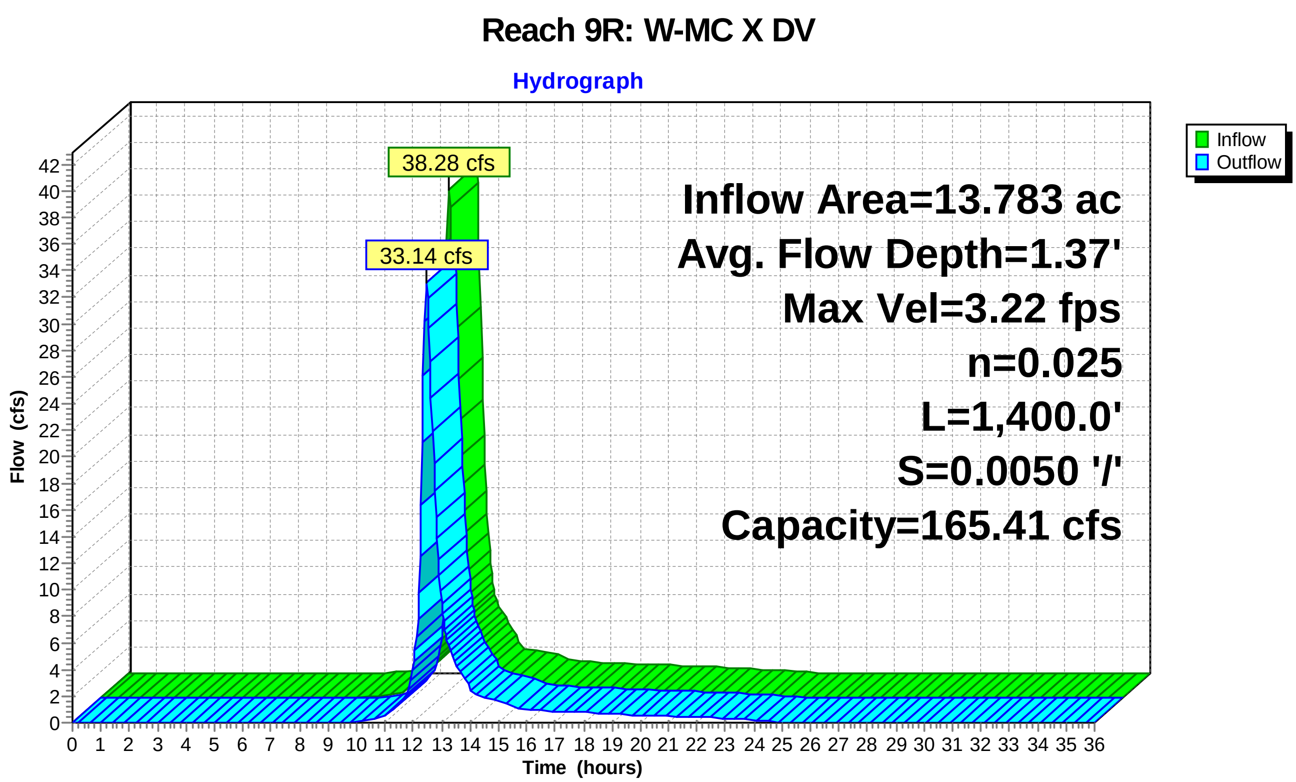


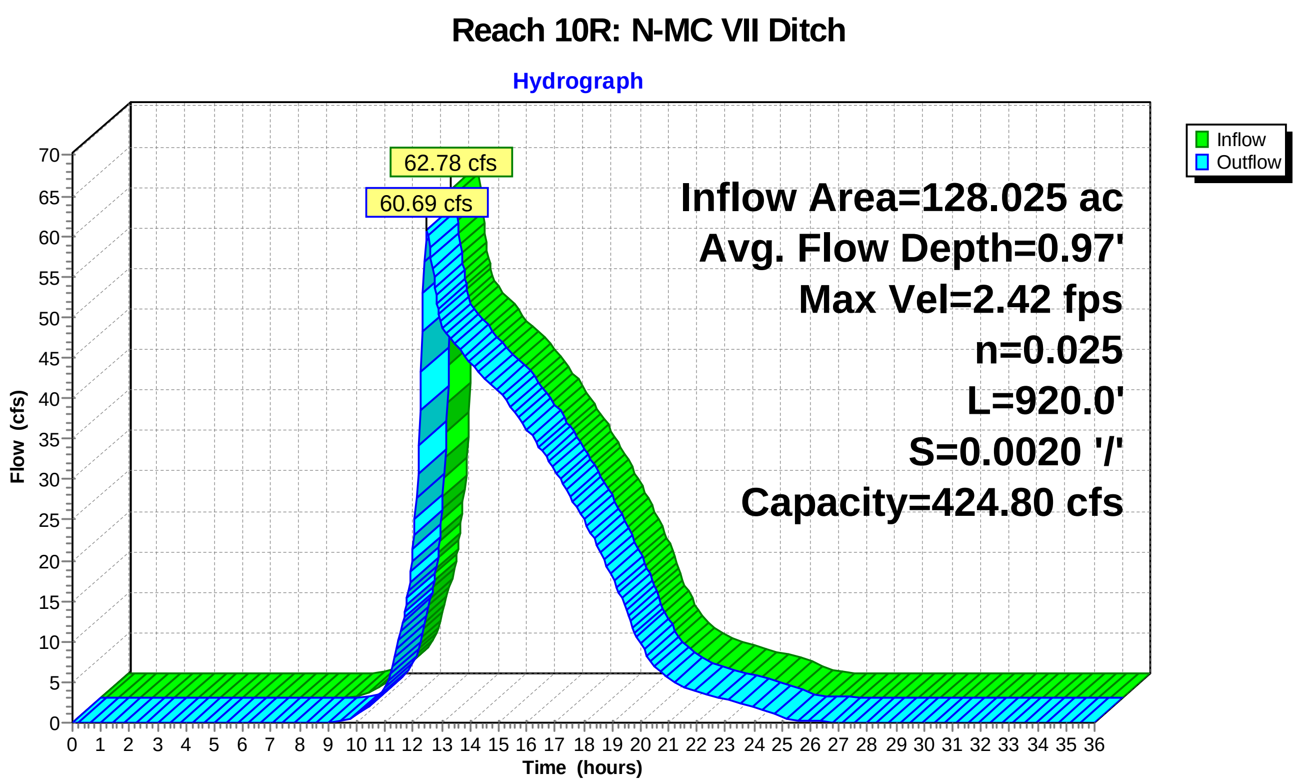
Summary for Reach 10R: N-MC VII Ditch

Inflow Area = 128.025 ac, 3.61% Impervious, Inflow Depth = 2.37" for 25-yr, 24-hr event
Inflow = 62.78 cfs @ 12.32 hrs, Volume= 25.237 af
Outflow = 60.69 cfs @ 12.50 hrs, Volume= 25.237 af, Atten= 3%, Lag= 11.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.42 fps, Min. Travel Time= 6.3 min
Avg. Velocity = 0.91 fps, Avg. Travel Time= 16.8 min

Peak Storage= 23,075 cf @ 12.40 hrs
Average Depth at Peak Storage= 0.97' , Surface Width= 27.87'
Bank-Full Depth= 3.00' Flow Area= 90.0 sf, Capacity= 424.80 cfs

24.00' x 3.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 '/' Top Width= 36.00'
Length= 920.0' Slope= 0.0020 '/'
Inlet Invert= 698.80', Outlet Invert= 697.00'



Summary for Reach 12R: DS-1 (4H:1V)

Inflow Area = 35.896 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 128.87 cfs @ 12.17 hrs, Volume= 6.961 af
Outflow = 125.56 cfs @ 12.20 hrs, Volume= 6.961 af, Atten= 3%, Lag= 1.4 min

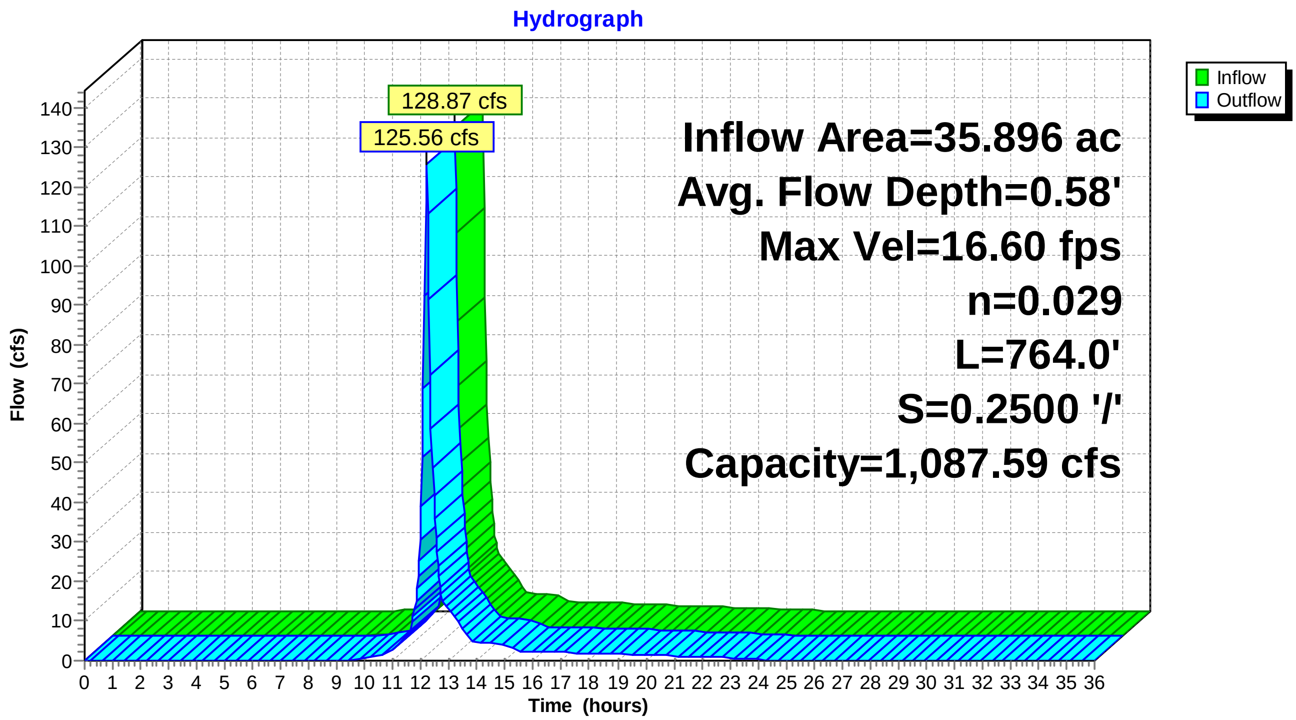
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 16.60 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.77 fps, Avg. Travel Time= 3.4 min

Peak Storage= 5,860 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.58' , Surface Width= 14.33'
Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 1,087.59 cfs

12.00' x 2.00' deep channel, n= 0.029
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 764.0' Slope= 0.2500 '/'
Inlet Invert= 906.00', Outlet Invert= 715.00'

‡

Reach 12R: DS-1 (4H:1V)



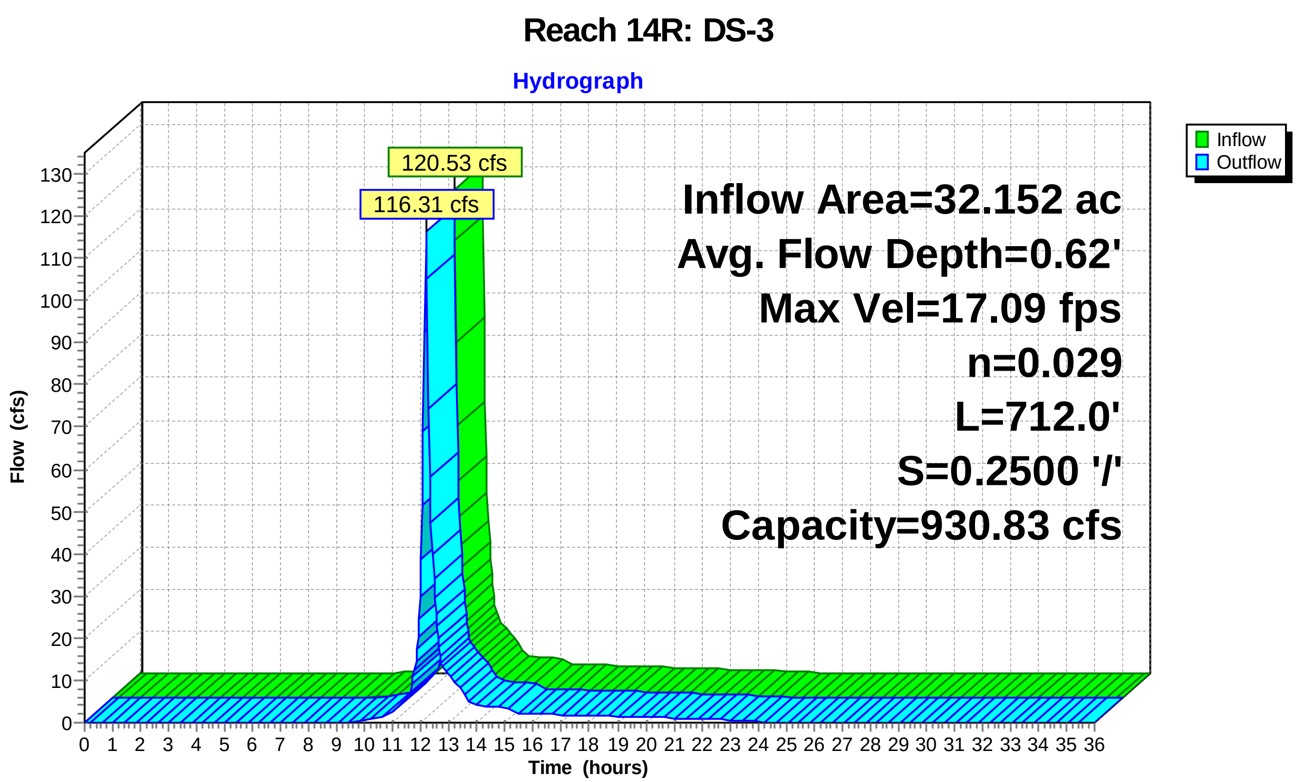
Summary for Reach 14R: DS-3

Inflow Area = 32.152 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 120.53 cfs @ 12.16 hrs, Volume= 6.235 af
Outflow = 116.31 cfs @ 12.18 hrs, Volume= 6.235 af, Atten= 4%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 17.09 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 3.86 fps, Avg. Travel Time= 3.1 min

Peak Storage= 4,973 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.62' , Surface Width= 12.49'
Bank-Full Depth= 2.00' Flow Area= 28.0 sf, Capacity= 930.83 cfs

10.00' x 2.00' deep channel, n= 0.029
Side Slope Z-value= 2.0 '/' Top Width= 18.00'
Length= 712.0' Slope= 0.2500 '/'
Inlet Invert= 900.00', Outlet Invert= 722.00'



Summary for Reach 15R: DS-2 (4H:1V)

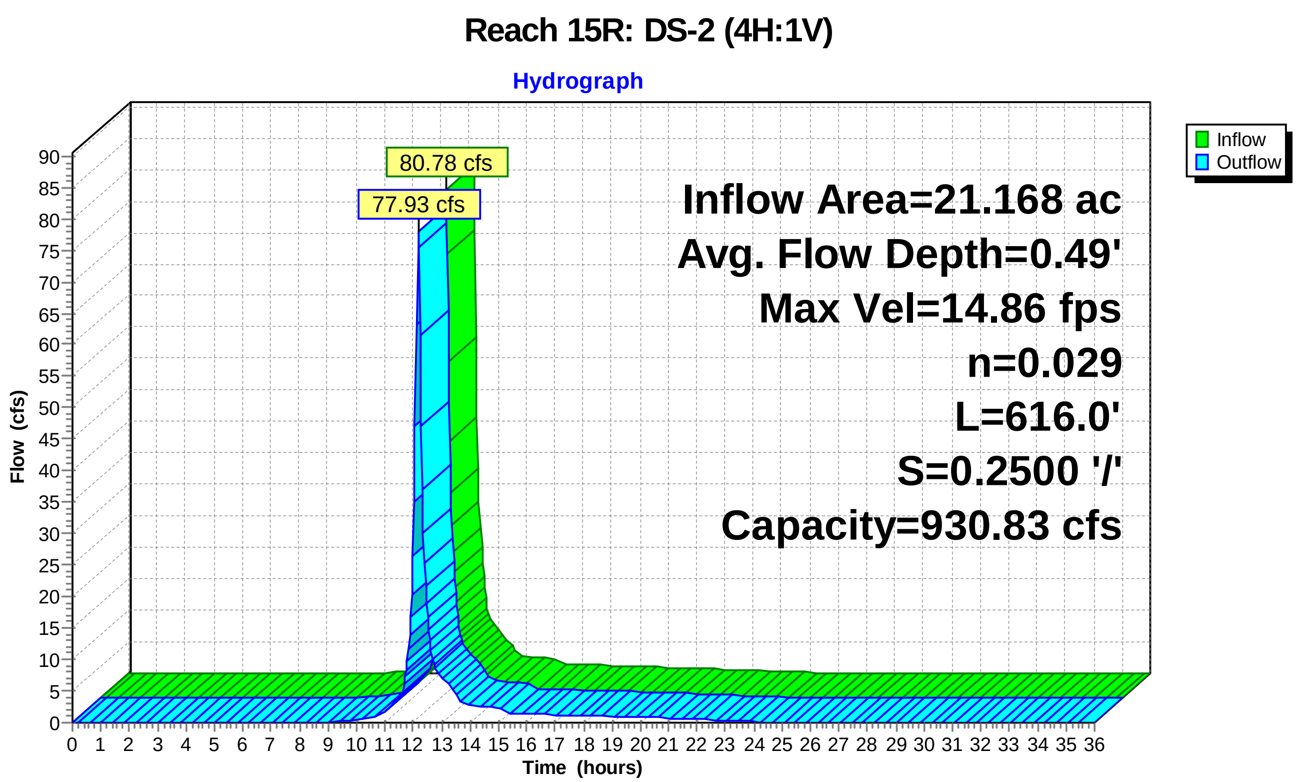
Inflow Area = 21.168 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 80.78 cfs @ 12.16 hrs, Volume= 4.105 af
Outflow = 77.93 cfs @ 12.18 hrs, Volume= 4.105 af, Atten= 4%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 14.86 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 3.34 fps, Avg. Travel Time= 3.1 min

Peak Storage= 3,323 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.49' , Surface Width= 11.96'
Bank-Full Depth= 2.00' Flow Area= 28.0 sf, Capacity= 930.83 cfs

10.00' x 2.00' deep channel, n= 0.029
Side Slope Z-value= 2.0 '/' Top Width= 18.00'
Length= 616.0' Slope= 0.2500 '/'
Inlet Invert= 900.00', Outlet Invert= 746.00'

‡



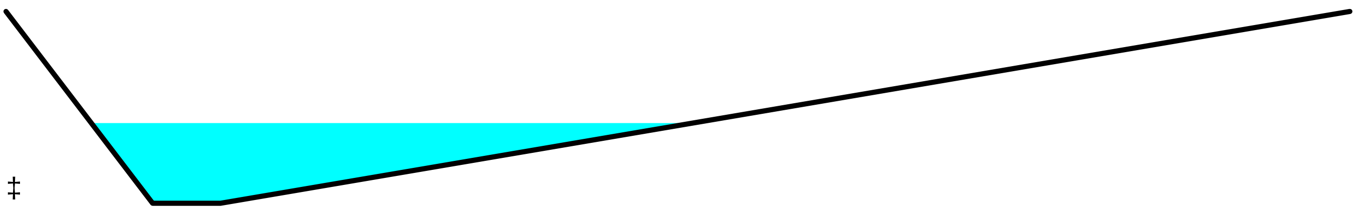
Summary for Reach 18R: E-MC IX Ditch

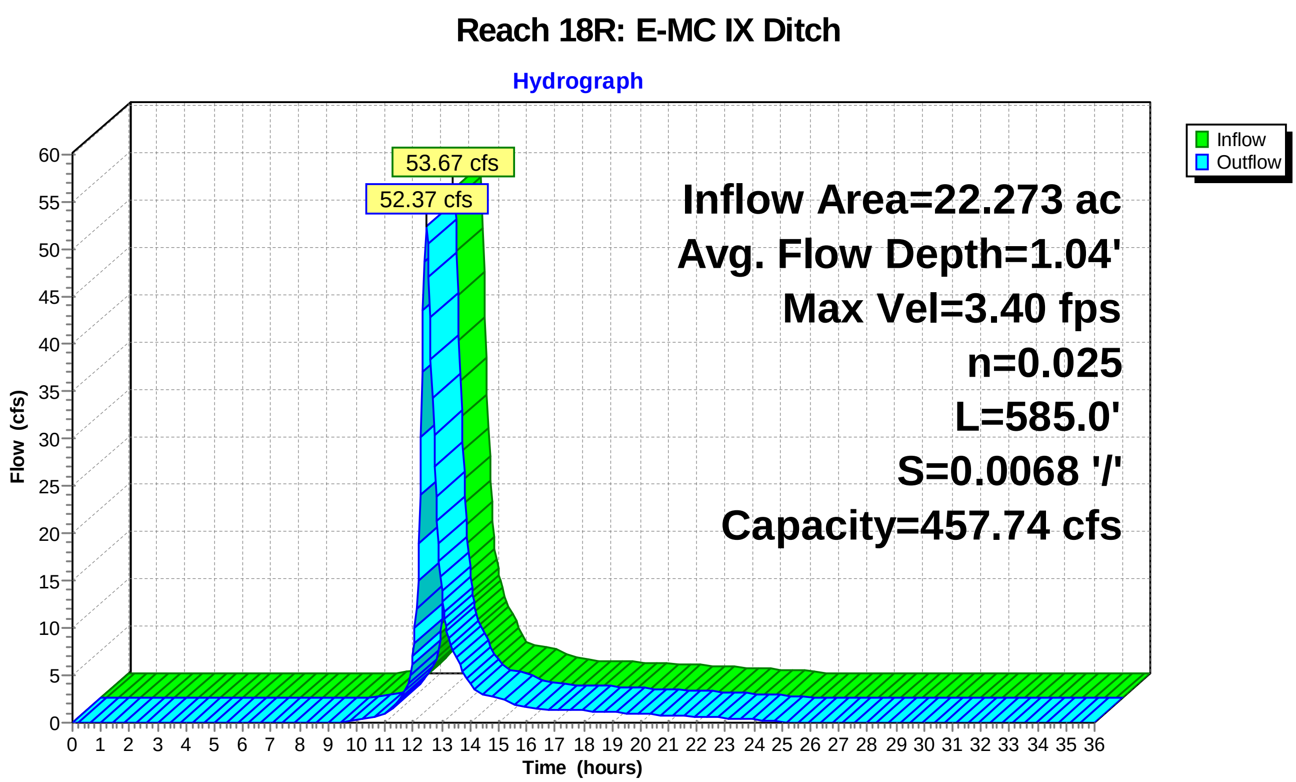
Inflow Area = 22.273 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 53.67 cfs @ 12.38 hrs, Volume= 4.319 af
Outflow = 52.37 cfs @ 12.47 hrs, Volume= 4.319 af, Atten= 2%, Lag= 5.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.40 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 1.00 fps, Avg. Travel Time= 9.7 min

Peak Storage= 9,036 cf @ 12.42 hrs
Average Depth at Peak Storage= 1.04' , Surface Width= 26.59'
Bank-Full Depth= 2.50' Flow Area= 78.1 sf, Capacity= 457.74 cfs

3.00' x 2.50' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.6 20.0 '/' Top Width= 59.50'
Length= 585.0' Slope= 0.0068 '/'
Inlet Invert= 699.00', Outlet Invert= 695.00'





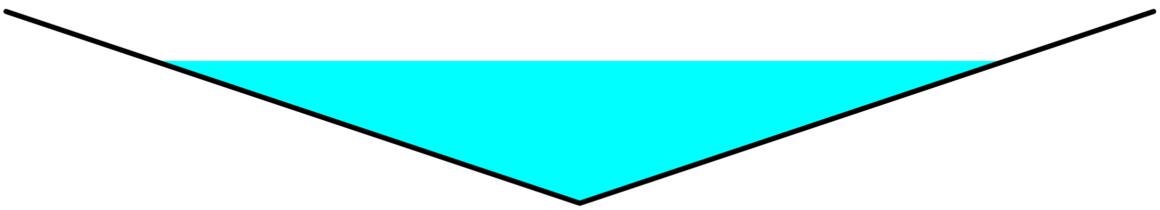
Summary for Reach 20R: E-MC X DV

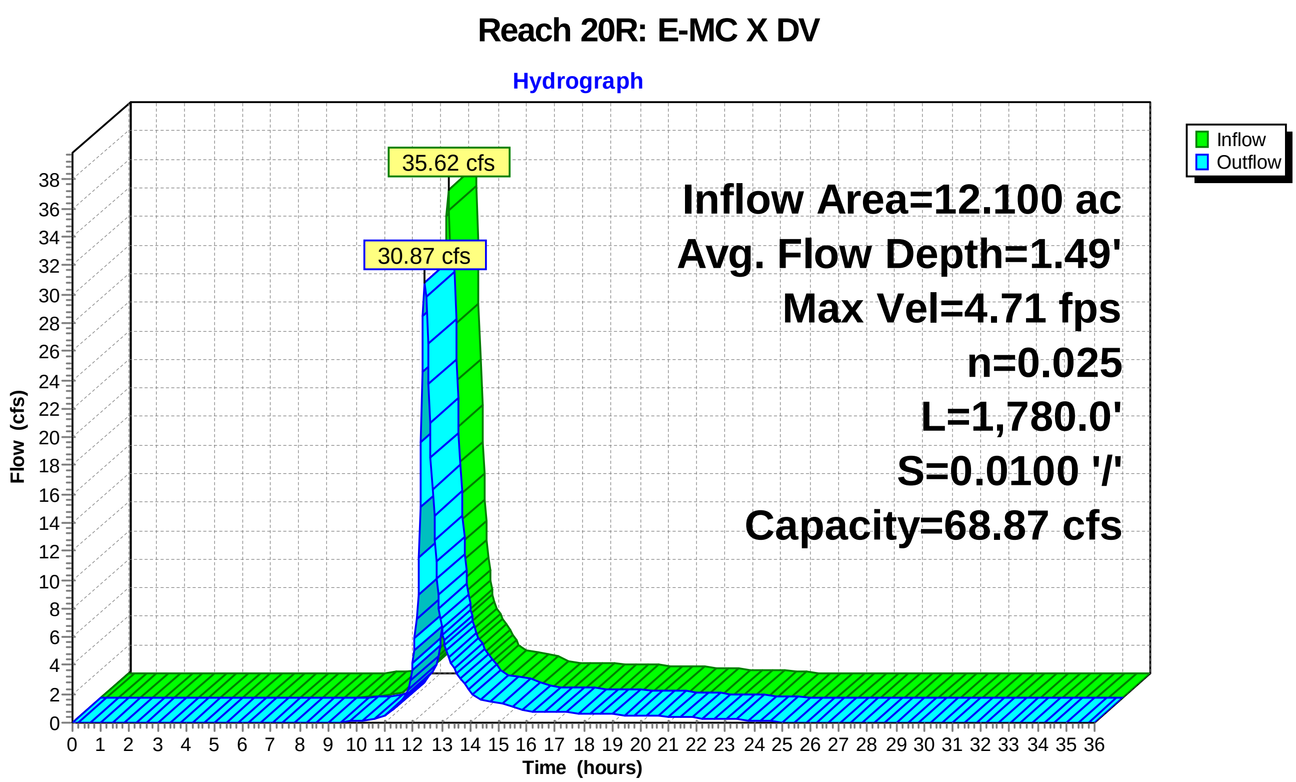
Inflow Area = 12.100 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 35.62 cfs @ 12.24 hrs, Volume= 2.347 af
Outflow = 30.87 cfs @ 12.42 hrs, Volume= 2.347 af, Atten= 13%, Lag= 10.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.71 fps, Min. Travel Time= 6.3 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 22.3 min

Peak Storage= 11,776 cf @ 12.32 hrs
Average Depth at Peak Storage= 1.49' , Surface Width= 8.91'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 68.87 cfs

0.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 12.00'
Length= 1,780.0' Slope= 0.0100 '/'
Inlet Invert= 723.00', Outlet Invert= 705.20'





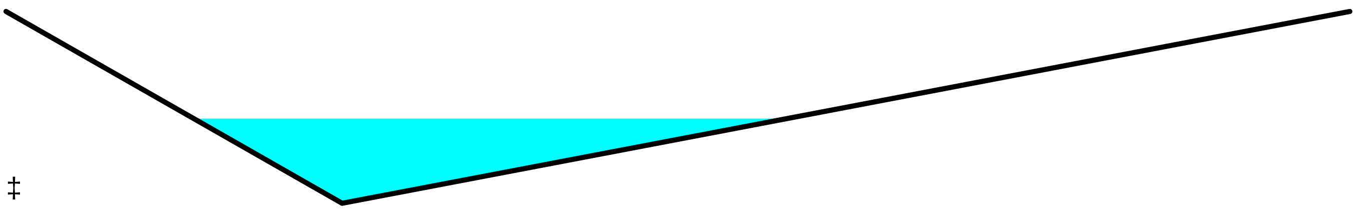
Summary for Reach 38R: S-MC XI DV

Inflow Area = 2.185 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 6.90 cfs @ 12.22 hrs, Volume= 0.424 af
Outflow = 6.40 cfs @ 12.32 hrs, Volume= 0.424 af, Atten= 7%, Lag= 6.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.70 fps, Min. Travel Time= 3.4 min
Avg. Velocity = 1.26 fps, Avg. Travel Time= 9.9 min

Peak Storage= 1,310 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.66' , Surface Width= 5.29'
Bank-Full Depth= 1.50' Flow Area= 9.0 sf, Capacity= 57.72 cfs

0.00' x 1.50' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 6.0 '/' Top Width= 12.00'
Length= 750.0' Slope= 0.0180 '/'
Inlet Invert= 719.00', Outlet Invert= 705.50'



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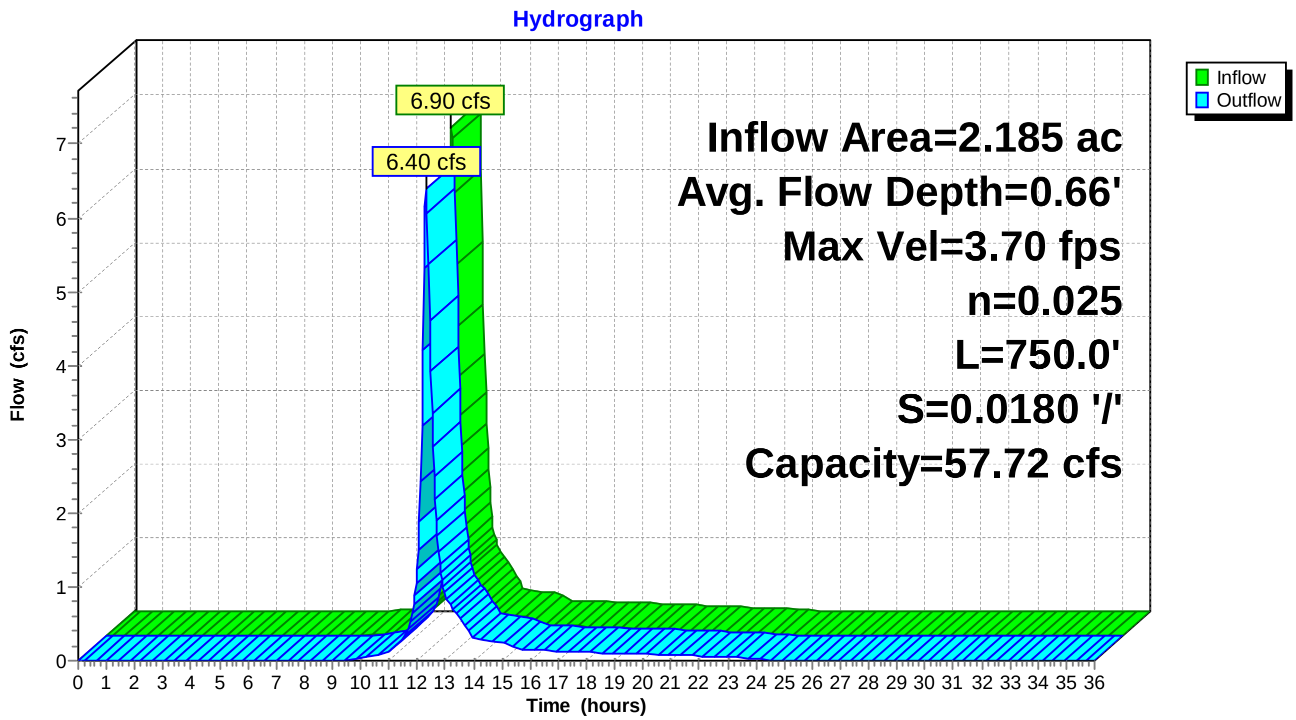
Reach 38R: S-MC XI DV



Summary for Reach 39R: DS-6

Inflow Area = 2.545 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 11.60 cfs @ 12.11 hrs, Volume= 0.493 af
Outflow = 11.33 cfs @ 12.11 hrs, Volume= 0.493 af, Atten= 2%, Lag= 0.4 min

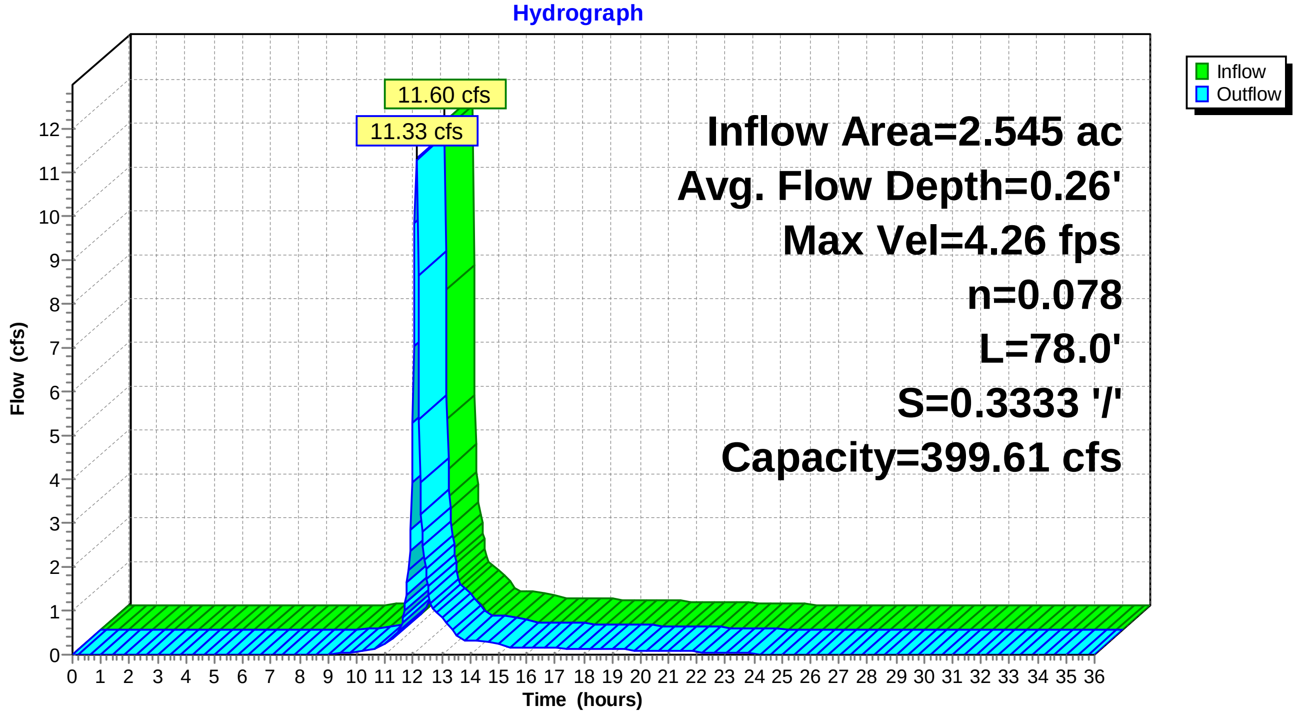
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.26 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.00 fps, Avg. Travel Time= 1.3 min

Peak Storage= 211 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.26' , Surface Width= 11.03'
Bank-Full Depth= 2.00' Flow Area= 28.0 sf, Capacity= 399.61 cfs

10.00' x 2.00' deep channel, n= 0.078 Riprap, 12-inch
Side Slope Z-value= 2.0 '/' Top Width= 18.00'
Length= 78.0' Slope= 0.3333 '/'
Inlet Invert= 742.00', Outlet Invert= 716.00'

‡


Reach 39R: DS-6



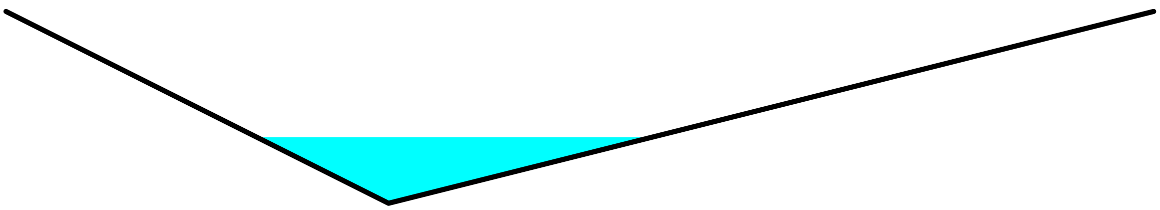
Summary for Reach 41R: DB-12

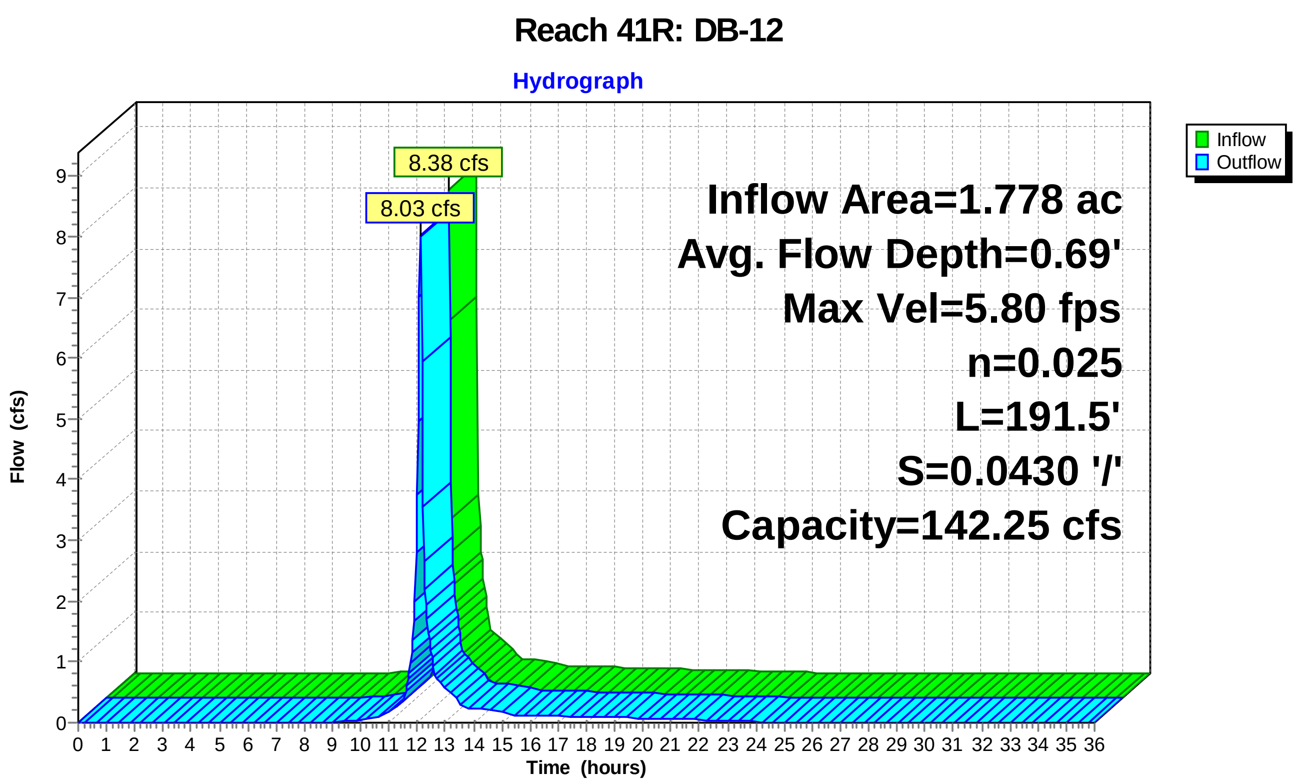
Inflow Area = 1.778 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 8.38 cfs @ 12.10 hrs, Volume= 0.345 af
Outflow = 8.03 cfs @ 12.11 hrs, Volume= 0.345 af, Atten= 4%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.80 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.97 fps, Avg. Travel Time= 1.6 min

Peak Storage= 273 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.69' , Surface Width= 4.14'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 142.25 cfs

0.00' x 2.00' deep channel, n= 0.025
Side Slope Z-value= 2.0 4.0 '/' Top Width= 12.00'
Length= 191.5' Slope= 0.0430 '/'
Inlet Invert= 749.23', Outlet Invert= 741.00'





Summary for Pond 1P: NSB North

Inflow Area = 272.710 ac, 3.67% Impervious, Inflow Depth = 2.37" for 25-yr, 24-hr event
Inflow = 147.48 cfs @ 12.79 hrs, Volume= 53.799 af
Outflow = 27.48 cfs @ 19.20 hrs, Volume= 8.777 af, Atten= 81%, Lag= 384.9 min
Primary = 27.48 cfs @ 19.20 hrs, Volume= 8.777 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Starting Elev= 674.00' Surf.Area= 53,100 sf Storage= 144,600 cf
Peak Elev= 693.39' @ 19.20 hrs Surf.Area= 149,858 sf Storage= 2,163,542 cf (2,018,942 cf above start)

Plug-Flow detention time= 622.1 min calculated for 5.457 af (10% of inflow)
Center-of-Mass det. time= 349.5 min (1,264.5 - 914.9)

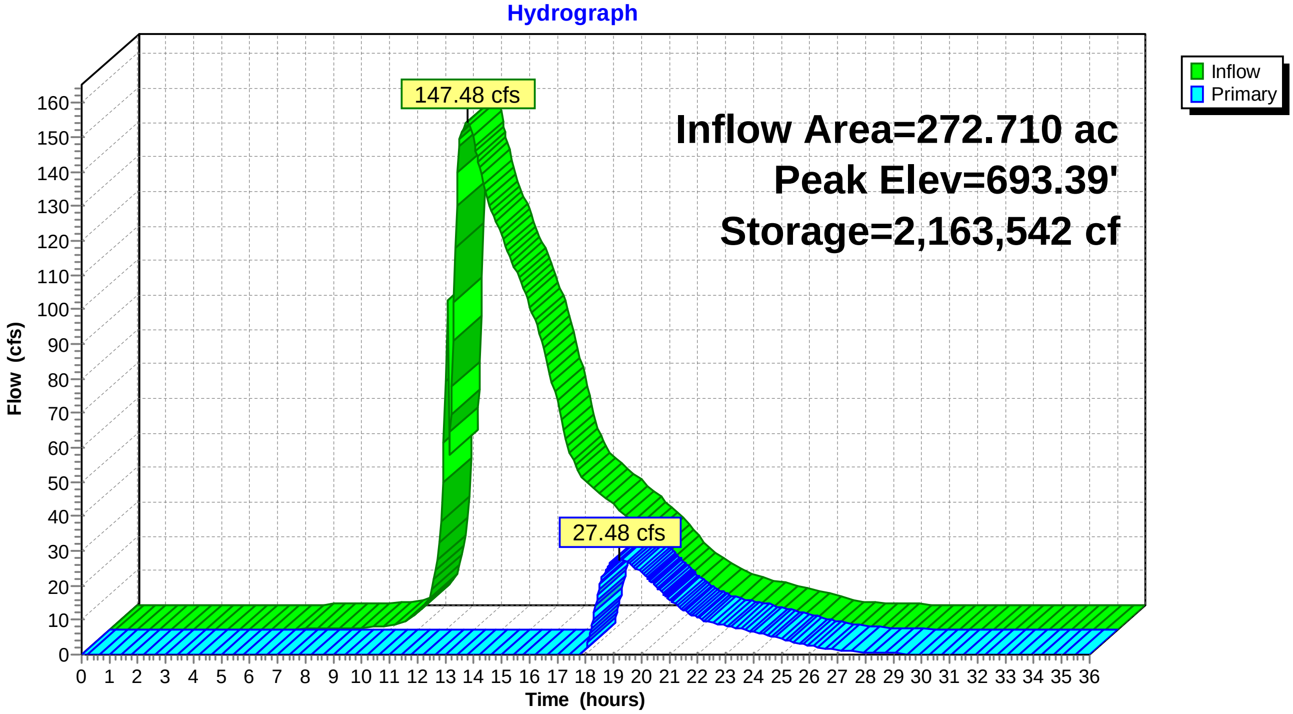
Volume	Invert	Avail.Storage	Storage Description
#1	668.00'	2,910,320 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
668.00	1,200	0	0
670.00	12,400	13,600	13,600
674.00	53,100	131,000	144,600
680.00	87,600	422,100	566,700
690.00	135,200	1,114,000	1,680,700
694.00	152,508	575,416	2,256,116
695.00	158,400	155,454	2,411,570
698.00	174,100	498,750	2,910,320

Device	Routing	Invert	Outlet Devices
#1	Primary	693.00'	**40.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=26.06 cfs @ 19.20 hrs HW=693.39' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 26.06 cfs @ 1.68 fps)

Pond 1P: NSB North



Summary for Pond 2P: NSB North Inlet

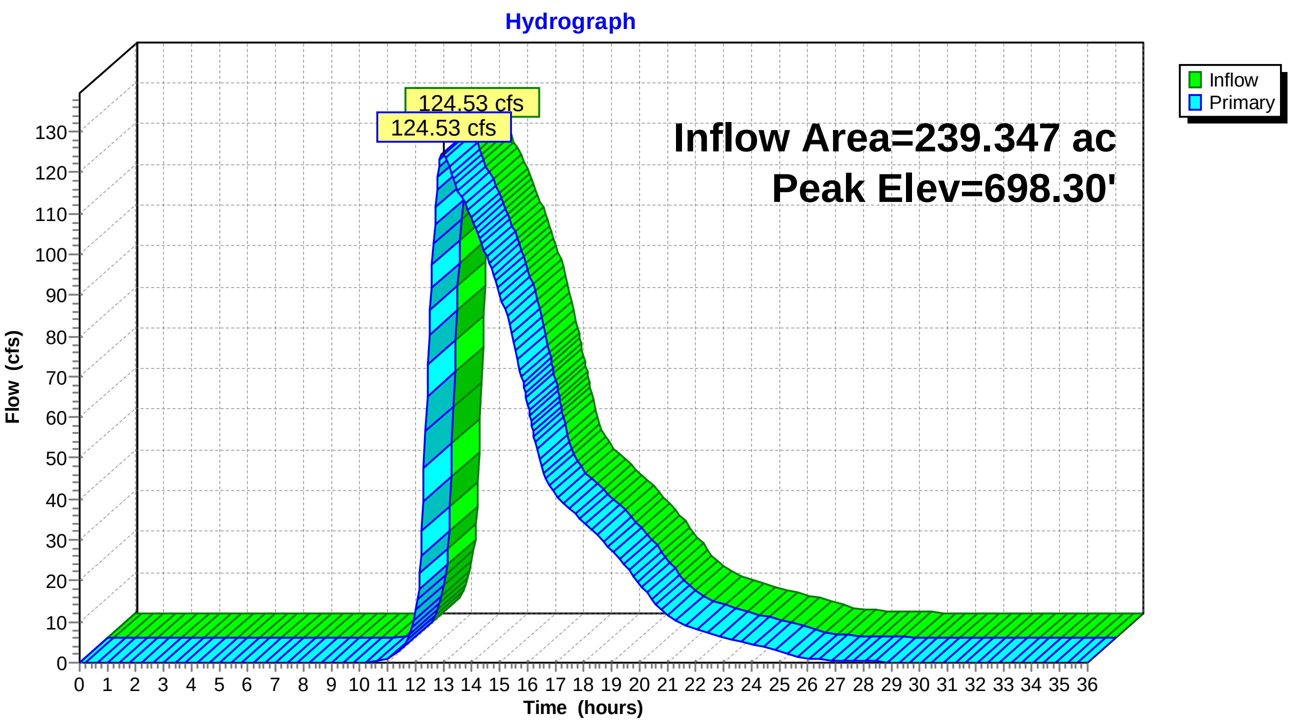
Inflow Area = 239.347 ac, 4.19% Impervious, Inflow Depth = 2.32" for 25-yr, 24-hr event
Inflow = 124.53 cfs @ 12.97 hrs, Volume= 46.355 af
Outflow = 124.53 cfs @ 12.97 hrs, Volume= 46.355 af, Atten= 0%, Lag= 0.0 min
Primary = 124.53 cfs @ 12.97 hrs, Volume= 46.355 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 698.30' @ 12.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	694.96'	**30.0" Round 30" Culverts X 3.00** L= 110.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 694.96' / 694.96' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Primary	694.96'	**54.0" Round 54" Culvert** L= 110.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 694.96' / 690.50' S= 0.0405 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 15.90 sf

Primary OutFlow Max=124.09 cfs @ 12.97 hrs HW=698.30' TW=693.90' (Fixed TW Elev= 693.90')
1=30" Culverts (Barrel Controls 45.43 cfs @ 3.08 fps)
2=54" Culvert (Inlet Controls 78.66 cfs @ 6.22 fps)

Pond 2P: NSB North Inlet



Summary for Pond 5P: MC VII/IX & MC XI/X Pond

MC X/XI Culverts do not restrict flow in ditch (have more capacity than outlet on north end) therefore they are not modeled.

Inflow Area = 94.846 ac, 5.69% Impervious, Inflow Depth = 2.38" for 25-yr, 24-hr event
Inflow = 197.15 cfs @ 12.37 hrs, Volume= 18.817 af
Outflow = 62.08 cfs @ 13.01 hrs, Volume= 17.923 af, Atten= 69%, Lag= 38.5 min
Primary = 62.08 cfs @ 13.01 hrs, Volume= 17.923 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Starting Elev= 697.10' Storage= 0 cf
Peak Elev= 702.40' @ 13.01 hrs Surf.Area= 142,840 sf Storage= 316,954 cf

Plug-Flow detention time= 76.1 min calculated for 17.923 af (95% of inflow)
Center-of-Mass det. time= 51.8 min (869.6 - 817.9)

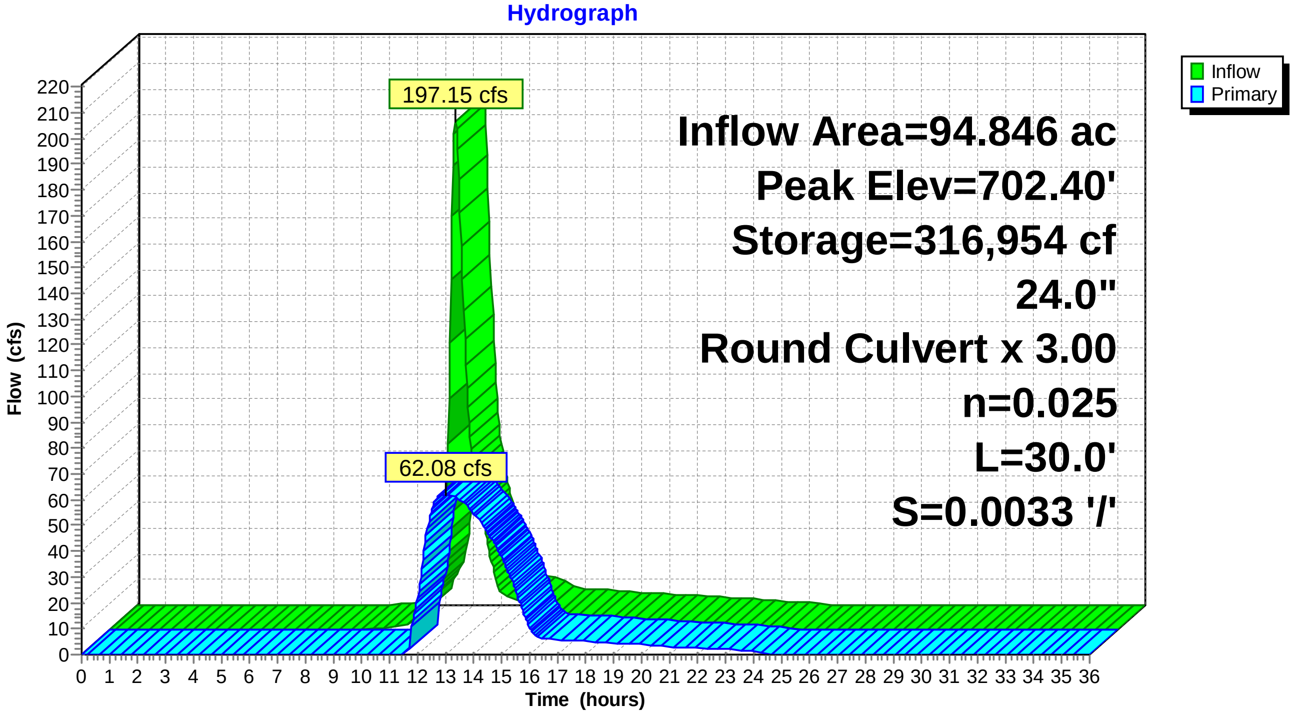
Volume	Invert	Avail.Storage	Storage Description
#1	698.00'	925,600 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
698.00	13,000	0	0
700.00	55,300	68,300	68,300
702.00	137,000	192,300	260,600
704.00	166,000	303,000	563,600
706.00	196,000	362,000	925,600

Device	Routing	Invert	Outlet Devices
#1	Primary	697.10'	**24.0" Round Culvert X 3.00** L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 697.10' / 697.00' S= 0.0033 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=62.08 cfs @ 13.01 hrs HW=702.40' TW=699.40' (Fixed TW Elev= 699.40')
└─**1=Culvert** (Inlet Controls 62.08 cfs @ 6.59 fps)

Pond 5P: MC VII/IX & MC XI/X Pond



Summary for Pond 6P: N-MC VII Culvert

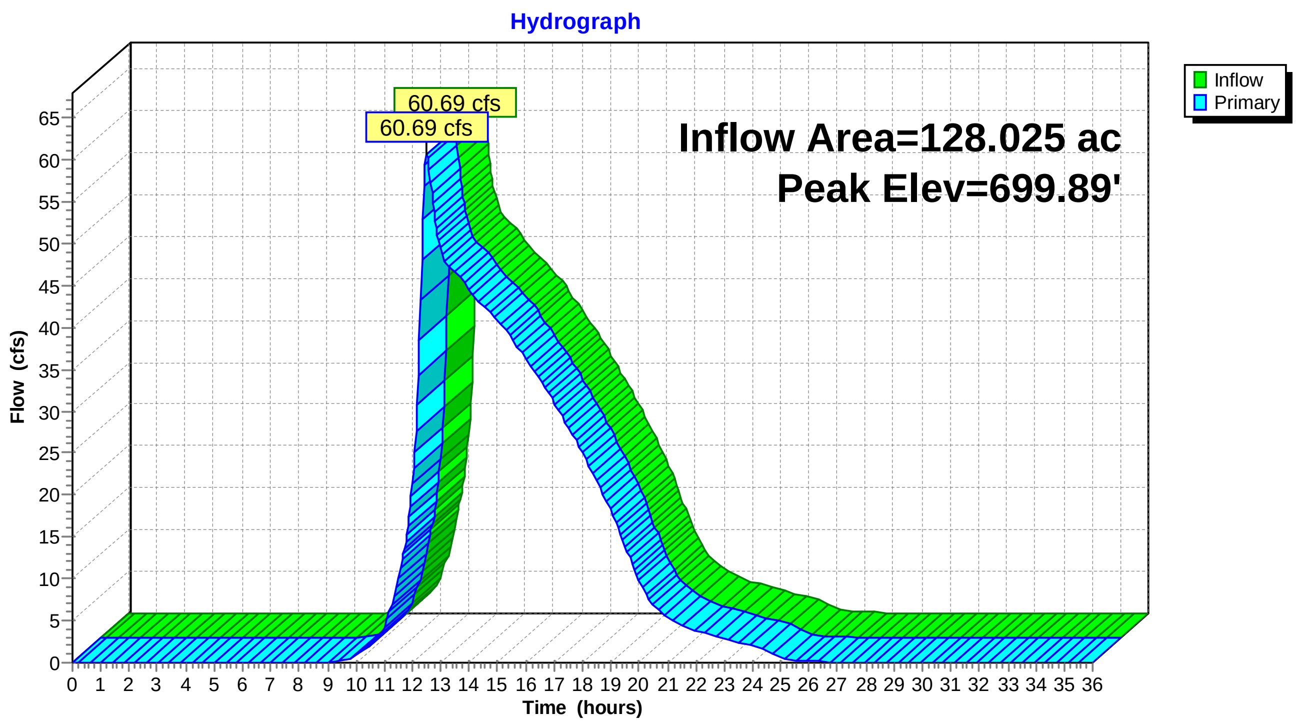
Inflow Area =	128.025 ac,	3.61% Impervious,	Inflow Depth = 2.37"	for 25-yr, 24-hr event
Inflow =	60.69 cfs @	12.50 hrs, Volume=	25.237 af	
Outflow =	60.69 cfs @	12.50 hrs, Volume=	25.237 af,	Atten= 0%, Lag= 0.0 min
Primary =	60.69 cfs @	12.50 hrs, Volume=	25.237 af	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 699.89' @ 12.50 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	696.77'	**54.0" Round 54" Culvert** L= 42.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 696.77' / 696.61' S= 0.0038 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 15.90 sf
#2	Primary	696.77'	**36.0" Round 36" Culvert** L= 42.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 696.77' / 696.61' S= 0.0038 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 7.07 sf

Primary OutFlow Max=60.59 cfs @ 12.50 hrs HW=699.89' TW=699.40' (Fixed TW Elev= 699.40')
1=54" Culvert (Outlet Controls 36.71 cfs @ 4.39 fps)
2=36" Culvert (Inlet Controls 23.88 cfs @ 3.38 fps)

Pond 6P: N-MC VII Culvert



Summary for Pond 7P: MC VII/XI Pond

Inflow Area =	22.920 ac,	3.90% Impervious, Inflow Depth = 2.41"	for 25-yr, 24-hr event	
Inflow =	60.13 cfs @	12.31 hrs, Volume=	4.609 af	
Outflow =	30.71 cfs @	12.57 hrs, Volume=	4.468 af,	Atten= 49%, Lag= 16.1 min
Primary =	30.71 cfs @	12.57 hrs, Volume=	4.468 af	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 707.14' @ 12.58 hrs Surf.Area= 27,634 sf Storage= 49,037 cf

Plug-Flow detention time= 33.5 min calculated for 4.463 af (97% of inflow)
Center-of-Mass det. time= 17.1 min (827.1 - 810.0)

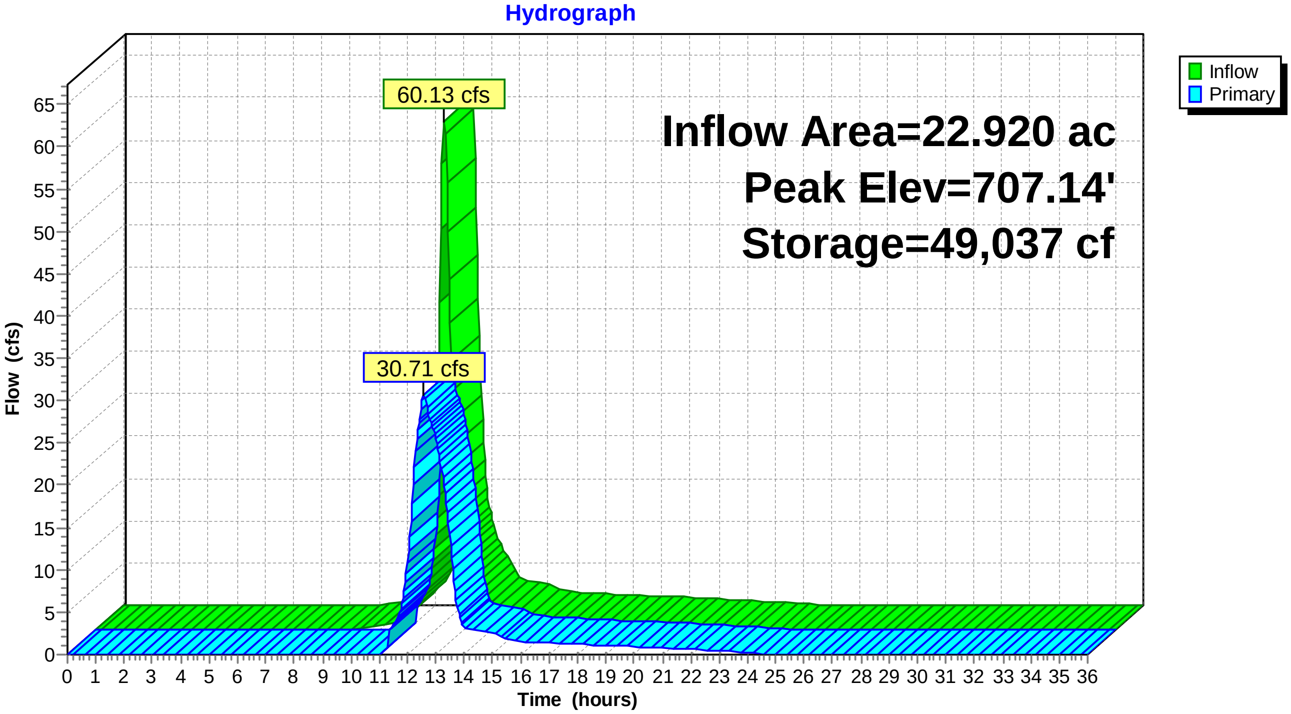
Volume	Invert	Avail.Storage	Storage Description
#1	700.00'	77,700 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
700.00	0	0	0
702.00	1,450	1,450	1,450
704.00	5,200	6,650	8,100
706.00	12,750	17,950	26,050
708.00	38,900	51,650	77,700

Device	Routing	Invert	Outlet Devices
#1	Primary	700.30'	**24.0" Round Culvert** L= 40.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 700.30' / 699.40' S= 0.0225 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#2	Primary	707.00'	**16.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=30.59 cfs @ 12.57 hrs HW=707.14' TW=703.60' (Fixed TW Elev= 703.60')
—**1=Culvert** (Inlet Controls 28.44 cfs @ 9.05 fps)
—**2=Broad-Crested Rectangular Weir** (Weir Controls 2.15 cfs @ 0.99 fps)

Pond 7P: MC VII/XI Pond



Summary for Pond 8P: NSB South

Inflow Area = 272.710 ac, 3.67% Impervious, Inflow Depth > 0.39" for 25-yr, 24-hr event
Inflow = 27.48 cfs @ 19.20 hrs, Volume= 8.777 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

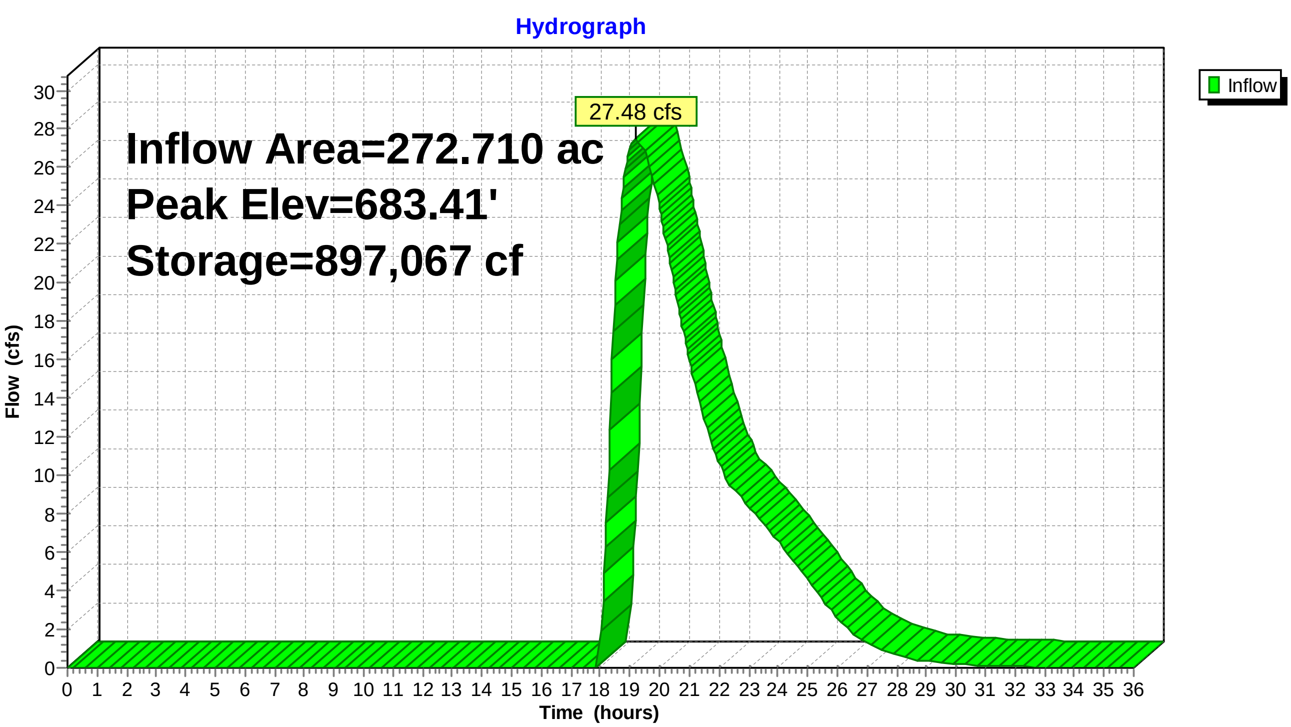
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Starting Elev= 680.00' Surf.Area= 98,500 sf Storage= 514,800 cf
Peak Elev= 683.41' @ 36.00 hrs Surf.Area= 125,528 sf Storage= 897,067 cf (382,267 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	672.00'	2,867,350 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
672.00	30,200	0	0
680.00	98,500	514,800	514,800
690.00	177,700	1,381,000	1,895,800
694.00	203,900	763,200	2,659,000
695.00	212,800	208,350	2,867,350

Pond 8P: NSB South



Summary for Pond 11P: NWD / NW-MC VII

Inflow Area = 119.997 ac, 3.85% Impervious, Inflow Depth = 2.37" for 25-yr, 24-hr event
Inflow = 366.38 cfs @ 12.18 hrs, Volume= 23.680 af
Outflow = 44.48 cfs @ 12.88 hrs, Volume= 23.680 af, Atten= 88%, Lag= 42.0 min
Primary = 44.48 cfs @ 12.88 hrs, Volume= 23.680 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 710.23' @ 12.88 hrs Surf.Area= 153,658 sf Storage= 512,970 cf

Plug-Flow detention time= 121.6 min calculated for 23.653 af (100% of inflow)
Center-of-Mass det. time= 121.5 min (921.3 - 799.8)

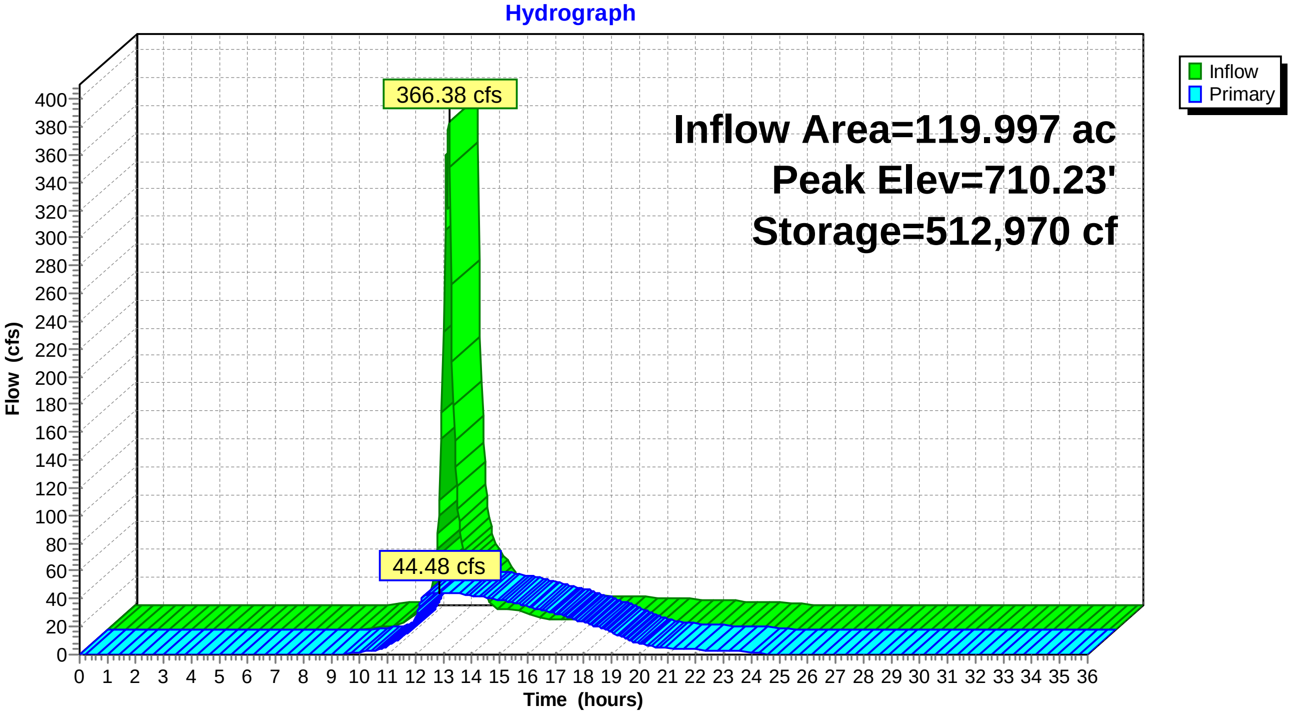
Volume	Invert	Avail.Storage	Storage Description
#1	704.30'	827,625 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
704.30	0	0	0
706.00	68,500	58,225	58,225
708.00	102,200	170,700	228,925
710.00	147,500	249,700	478,625
712.00	201,500	349,000	827,625

Device	Routing	Invert	Outlet Devices
#1	Primary	704.30'	**12.0" Round 12" HDPE Culverts X 2.00** L= 125.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 704.30' / 699.00' S= 0.0424 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Primary	704.30'	**18.0" Round 18" HDPE Culverts X 2.00** L= 125.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 704.30' / 699.00' S= 0.0424 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=44.48 cfs @ 12.88 hrs HW=710.23' TW=699.86' (Fixed TW Elev= 699.86')
1=12" HDPE Culverts (Inlet Controls 13.91 cfs @ 8.86 fps)
2=18" HDPE Culverts (Inlet Controls 30.57 cfs @ 8.65 fps)

Pond 11P: NWD / NW-MC VII



Summary for Pond 19P: E-MC IX Culvert

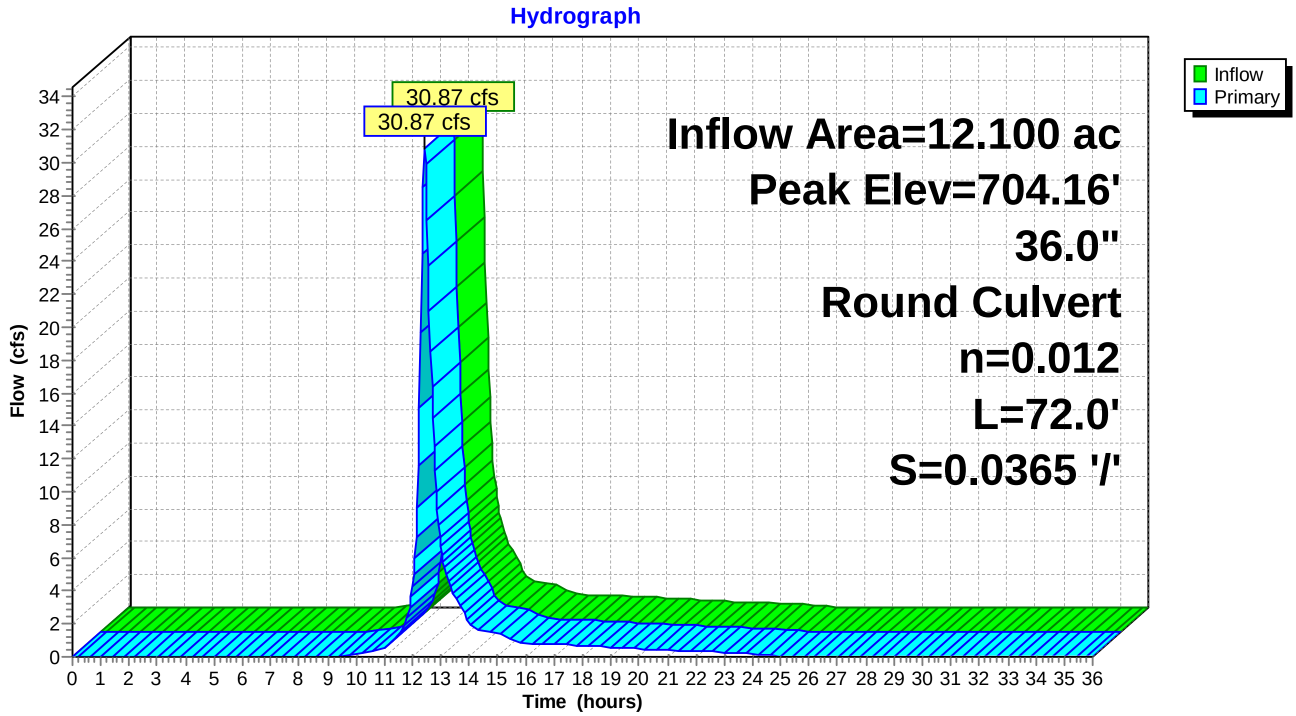
Inflow Area =	12.100 ac,	0.00% Impervious, Inflow Depth =	2.33"	for 25-yr, 24-hr event
Inflow =	30.87 cfs @	12.42 hrs, Volume=	2.347 af	
Outflow =	30.87 cfs @	12.42 hrs, Volume=	2.347 af,	Atten= 0%, Lag= 0.0 min
Primary =	30.87 cfs @	12.42 hrs, Volume=	2.347 af	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 704.16' @ 12.42 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	701.82'	**36.0" Round Culvert** L= 72.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 701.82' / 699.19' S= 0.0365 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=30.66 cfs @ 12.42 hrs HW=704.15' TW=700.23' (Fixed TW Elev= 700.23')
└─**1=Culvert** (Inlet Controls 30.66 cfs @ 5.20 fps)

Pond 19P: E-MC IX Culvert



Summary for Pond 36P: NSB South Inlet

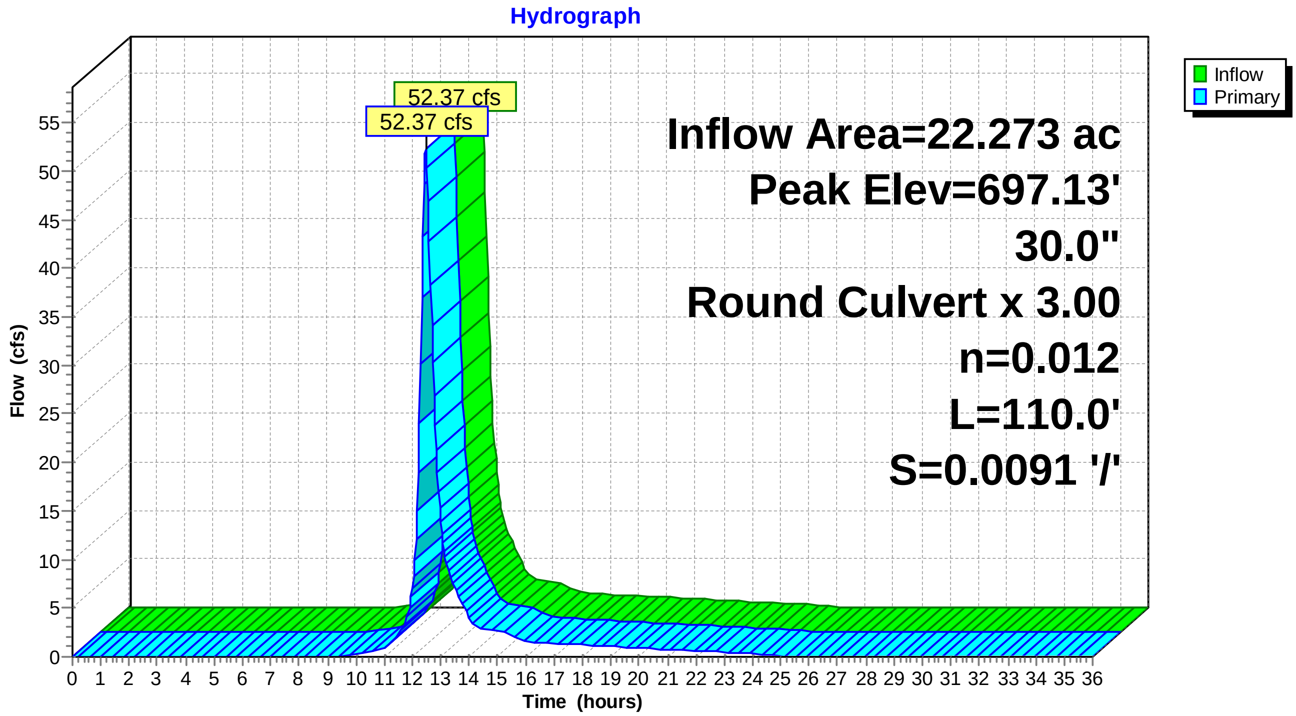
Inflow Area = 22.273 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 52.37 cfs @ 12.47 hrs, Volume= 4.319 af
Outflow = 52.37 cfs @ 12.47 hrs, Volume= 4.319 af, Atten= 0%, Lag= 0.0 min
Primary = 52.37 cfs @ 12.47 hrs, Volume= 4.319 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 697.13' @ 12.47 hrs

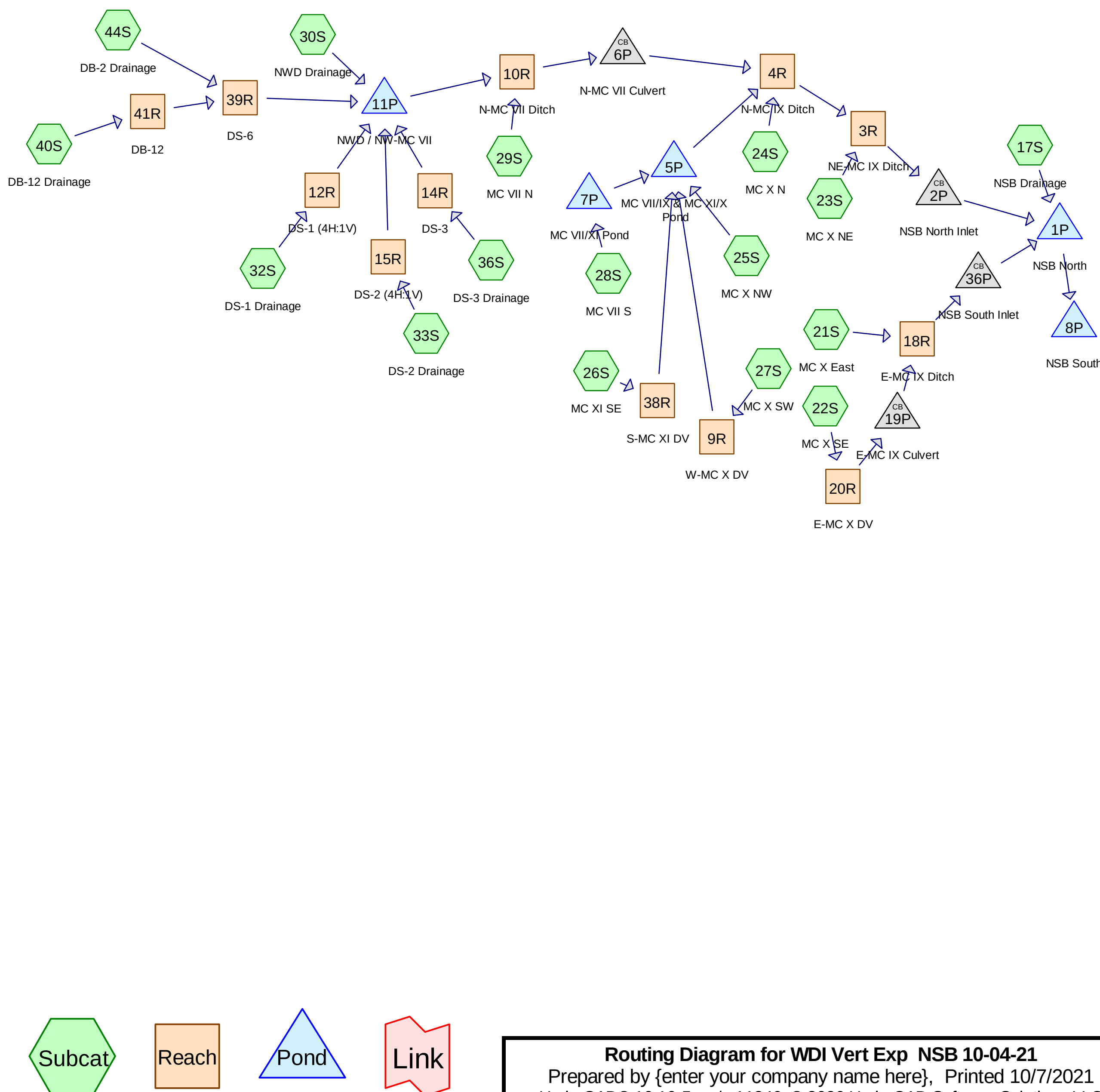
Device	Routing	Invert	Outlet Devices
#1	Primary	695.00'	**30.0" Round 30" Culverts X 3.00** L= 110.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 695.00' / 694.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

Primary OutFlow Max=52.13 cfs @ 12.47 hrs HW=697.12' TW=693.90' (Fixed TW Elev= 693.90')
↑—**1=30" Culverts** (Inlet Controls 52.13 cfs @ 3.91 fps)

Pond 36P: NSB South Inlet



North Sedimentation Basin (NSB) HYDROCAD OUTPUT – 100-yr, 24-hr



Routing Diagram for WDI Vert Exp NSB 10-04-21
Prepared by {enter your company name here}, Printed 10/7/2021
HydroCAD® 10.10-5a s/n 11246 © 2020 HydroCAD Software Solutions LLC

Time span=0.00-36.00 hrs, dt=0.04 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 17S: NSB Drainage Runoff Area=483,100 sf 0.00% Impervious Runoff Depth=4.54"
Tc=0.0 min CN=95 Runoff=100.06 cfs 4.194 af

Subcatchment 21S: MC X East Runoff Area=443,100 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=650' Slope=0.0370 '/' Tc=21.2 min CN=84 Runoff=37.02 cfs 2.865 af

Subcatchment 22S: MC X SE Runoff Area=527,091 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=240' Slope=0.0540 '/' Tc=15.5 min CN=84 Runoff=51.29 cfs 3.409 af

Subcatchment 23S: MC X NE Runoff Area=435,600 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=440' Slope=0.0590 '/' Tc=15.3 min CN=84 Runoff=42.88 cfs 2.817 af

Subcatchment 24S: MC X N Runoff Area=282,100 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=310' Slope=0.0930 '/' Tc=11.7 min CN=84 Runoff=31.08 cfs 1.824 af

Subcatchment 25S: MC X NW Runoff Area=2,437,500 sf 8.04% Impervious Runoff Depth=3.48"
Flow Length=820' Slope=0.0380 '/' Tc=23.0 min CN=85 Runoff=200.20 cfs 16.224 af

Subcatchment 26S: MC XI SE Runoff Area=95,200 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=405' Slope=0.0770 '/' Tc=13.4 min CN=84 Runoff=9.92 cfs 0.616 af

Subcatchment 27S: MC X SW Runoff Area=600,400 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=240' Slope=0.0400 '/' Tc=17.5 min CN=84 Runoff=55.18 cfs 3.883 af

Subcatchment 28S: MC VII S Runoff Area=998,400 sf 3.90% Impervious Runoff Depth=3.48"
Flow Length=1,070' Tc=20.9 min CN=85 Runoff=85.95 cfs 6.645 af

Subcatchment 29S: MC VII N Runoff Area=349,700 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=560' Slope=0.0390 '/' Tc=19.5 min CN=84 Runoff=30.49 cfs 2.261 af

Subcatchment 30S: NWD Drainage Runoff Area=1,229,971 sf 16.38% Impervious Runoff Depth=3.58"
Tc=0.0 min CN=86 Runoff=222.37 cfs 8.422 af

Subcatchment 32S: DS-1 Drainage Runoff Area=1,563,637 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=2,073' Tc=9.9 min CN=84 Runoff=185.01 cfs 10.112 af

Subcatchment 33S: DS-2 Drainage Runoff Area=922,087 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=1,697' Tc=8.4 min CN=84 Runoff=115.79 cfs 5.963 af

Subcatchment 36S: DS-3 Drainage Runoff Area=1,400,534 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=1,993' Tc=8.8 min CN=84 Runoff=172.84 cfs 9.057 af

Subcatchment 40S: DB-12 Drainage Runoff Area=77,446 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=777' Tc=3.2 min CN=84 Runoff=11.69 cfs 0.501 af

Subcatchment 44S: DB-2 Drainage Runoff Area=33,395 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=540' Tc=3.0 min CN=84 Runoff=5.07 cfs 0.216 af

Reach 3R: NE-MC IX Ditch Avg. Flow Depth=1.54' Max Vel=2.76 fps Inflow=154.98 cfs 67.505 af
n=0.025 L=1,090.0' S=0.0014 '/' Capacity=1,435.24 cfs Outflow=153.57 cfs 67.505 af

Reach 4R: N-MC IX Ditch Avg. Flow Depth=2.65' Max Vel=2.02 fps Inflow=149.49 cfs 64.688 af
n=0.025 L=950.0' S=0.0004 '/' Capacity=458.97 cfs Outflow=146.34 cfs 64.688 af

Reach 9R: W-MC X DV Avg. Flow Depth=1.58' Max Vel=3.54 fps Inflow=55.18 cfs 3.883 af
n=0.025 L=1,400.0' S=0.0050 '/' Capacity=165.41 cfs Outflow=48.58 cfs 3.883 af

Reach 10R: N-MC VII Ditch Avg. Flow Depth=1.10' Max Vel=2.62 fps Inflow=78.05 cfs 36.532 af
n=0.025 L=920.0' S=0.0020 '/' Capacity=424.80 cfs Outflow=75.49 cfs 36.532 af

Reach 12R: DS-1 (4H:1V) Avg. Flow Depth=0.72' Max Vel=18.84 fps Inflow=185.01 cfs 10.112 af
n=0.029 L=764.0' S=0.2500 '/' Capacity=1,087.59 cfs Outflow=180.58 cfs 10.112 af

Reach 14R: DS-3 Avg. Flow Depth=0.77' Max Vel=19.38 fps Inflow=172.84 cfs 9.057 af
n=0.029 L=712.0' S=0.2500 '/' Capacity=930.83 cfs Outflow=167.54 cfs 9.057 af

Reach 15R: DS-2 (4H:1V) Avg. Flow Depth=0.61' Max Vel=16.90 fps Inflow=115.79 cfs 5.963 af
n=0.029 L=616.0' S=0.2500 '/' Capacity=930.83 cfs Outflow=112.25 cfs 5.963 af

Reach 18R: E-MC IX Ditch Avg. Flow Depth=1.23' Max Vel=3.76 fps Inflow=79.16 cfs 6.274 af
n=0.025 L=585.0' S=0.0068 '/' Capacity=457.74 cfs Outflow=77.59 cfs 6.274 af

Reach 20R: E-MC X DV Avg. Flow Depth=1.71' Max Vel=5.17 fps Inflow=51.29 cfs 3.409 af
n=0.025 L=1,780.0' S=0.0100 '/' Capacity=68.87 cfs Outflow=45.35 cfs 3.409 af

Reach 38R: S-MC XI DV Avg. Flow Depth=0.76' Max Vel=4.07 fps Inflow=9.92 cfs 0.616 af
n=0.025 L=750.0' S=0.0180 '/' Capacity=57.72 cfs Outflow=9.30 cfs 0.616 af

Reach 39R: DS-6 Avg. Flow Depth=0.32' Max Vel=4.86 fps Inflow=16.60 cfs 0.717 af
n=0.078 L=78.0' S=0.3333 '/' Capacity=399.61 cfs Outflow=16.28 cfs 0.717 af

Reach 41R: DB-12 Avg. Flow Depth=0.79' Max Vel=6.33 fps Inflow=11.69 cfs 0.501 af
n=0.025 L=191.5' S=0.0430 '/' Capacity=142.25 cfs Outflow=11.51 cfs 0.501 af

Pond 1P: NSB North Peak Elev=693.91' Storage=2,241,647 cf Inflow=209.95 cfs 77.973 af
Outflow=91.12 cfs 32.951 af

Pond 2P: NSB North Inlet Peak Elev=698.79' Inflow=153.57 cfs 67.505 af
Outflow=153.57 cfs 67.505 af

Pond 5P: MC VII/IX & MC XI/X Pond Peak Elev=703.60' Storage=498,329 cf Inflow=291.33 cfs 27.225 af
24.0" Round Culvert x 3.00 n=0.025 L=30.0' S=0.0033 '/' Outflow=73.42 cfs 26.332 af

Pond 6P: N-MC VII Culvert Peak Elev=700.09' Inflow=75.49 cfs 36.532 af
Outflow=75.49 cfs 36.532 af

Pond 7P: MC VII/XI Pond Peak Elev=707.70' Storage=66,581 cf Inflow=85.95 cfs 6.645 af
Outflow=55.60 cfs 6.504 af

Pond 8P: NSB South Peak Elev=690.30' Storage=1,950,085 cf Inflow=91.12 cfs 32.951 af
Outflow=0.00 cfs 0.000 af

Pond 11P: NWD / NW-MC VII Peak Elev=711.86' Storage=799,970 cf Inflow=525.99 cfs 34.271 af
Outflow=50.93 cfs 34.271 af

Pond 19P: E-MC IX Culvert Peak Elev=705.10' Inflow=45.35 cfs 3.409 af
36.0" Round Culvert n=0.012 L=72.0' S=0.0365 '/' Outflow=45.35 cfs 3.409 af

Pond 36P: NSB South Inlet Peak Elev=698.17' Inflow=77.59 cfs 6.274 af
30.0" Round Culvert x 3.00 n=0.012 L=110.0' S=0.0091 '/' Outflow=77.59 cfs 6.274 af

Total Runoff Area = 272.710 ac Runoff Volume = 79.009 af Average Runoff Depth = 3.48"
96.33% Pervious = 262.692 ac 3.67% Impervious = 10.018 ac

Summary for Subcatchment 17S: NSB Drainage

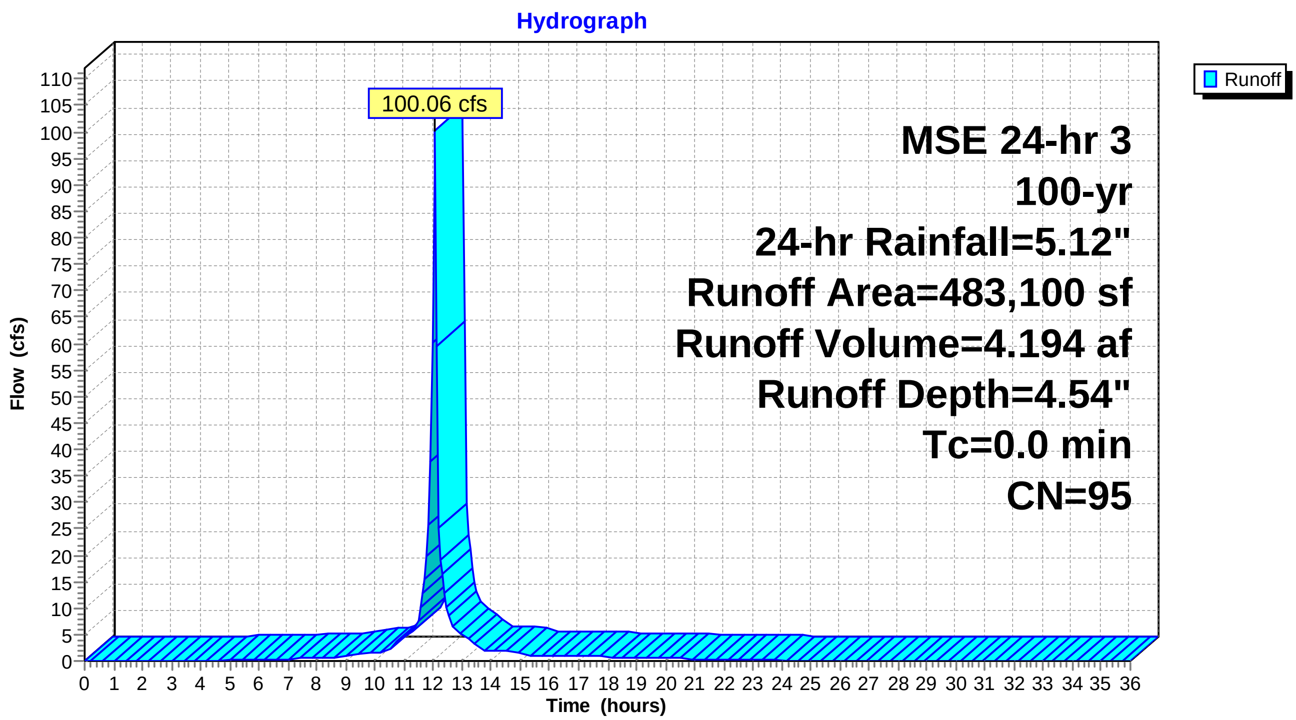
Drainage area is pond area and land area
Land area = 483,100 - 111,900 = 371,200

Runoff = 100.06 cfs @ 12.06 hrs, Volume= 4.194 af, Depth= 4.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
111,900	84	50-75% Grass cover, Fair, HSG D
371,200	98	Water Surface, 0% imp, HSG D
483,100	95	Weighted Average
483,100		100.00% Pervious Area

Subcatchment 17S: NSB Drainage



Summary for Subcatchment 21S: MC X East

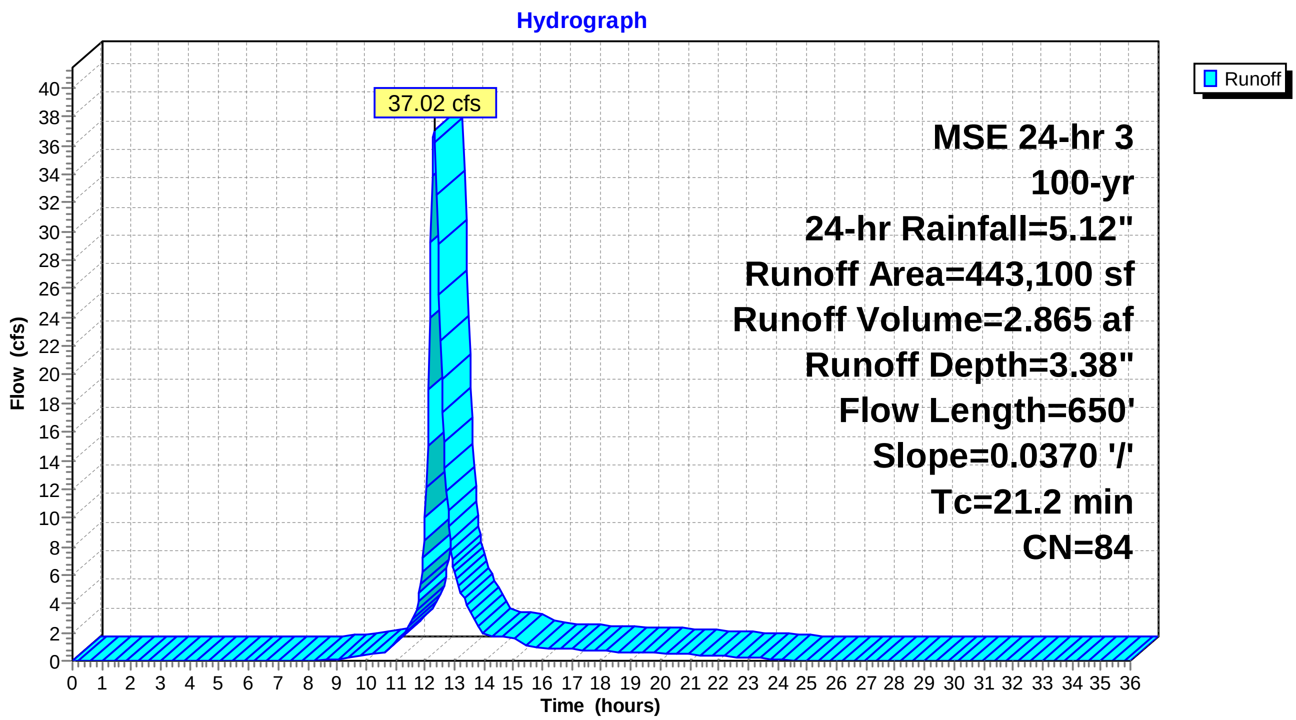
Runoff = 37.02 cfs @ 12.31 hrs, Volume= 2.865 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
443,100	84	50-75% Grass cover, Fair, HSG D
443,100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	200	0.0370	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
5.6	450	0.0370	1.35		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.2	650	Total			

Subcatchment 21S: MC X East



Summary for Subcatchment 22S: MC X SE

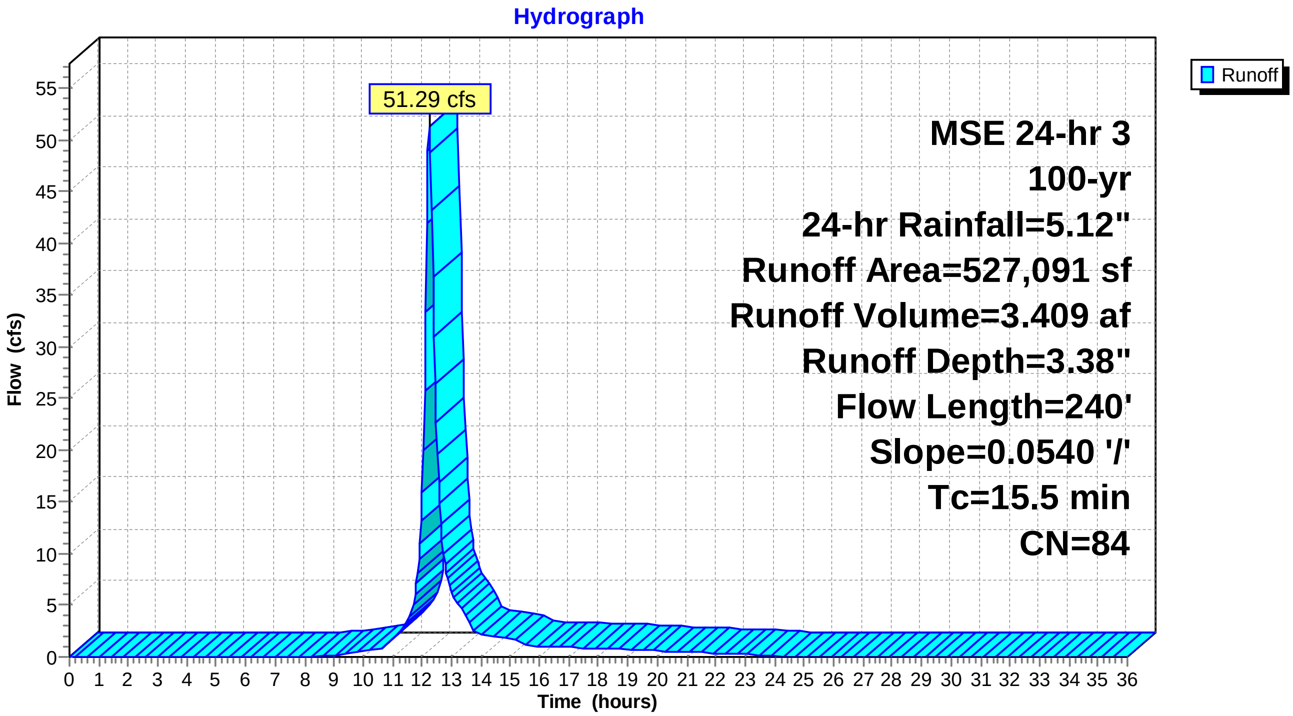
Runoff = 51.29 cfs @ 12.24 hrs, Volume= 3.409 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
527,091	84	50-75% Grass cover, Fair, HSG D
527,091		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	240	0.0540	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"

Subcatchment 22S: MC X SE



Summary for Subcatchment 23S: MC X NE

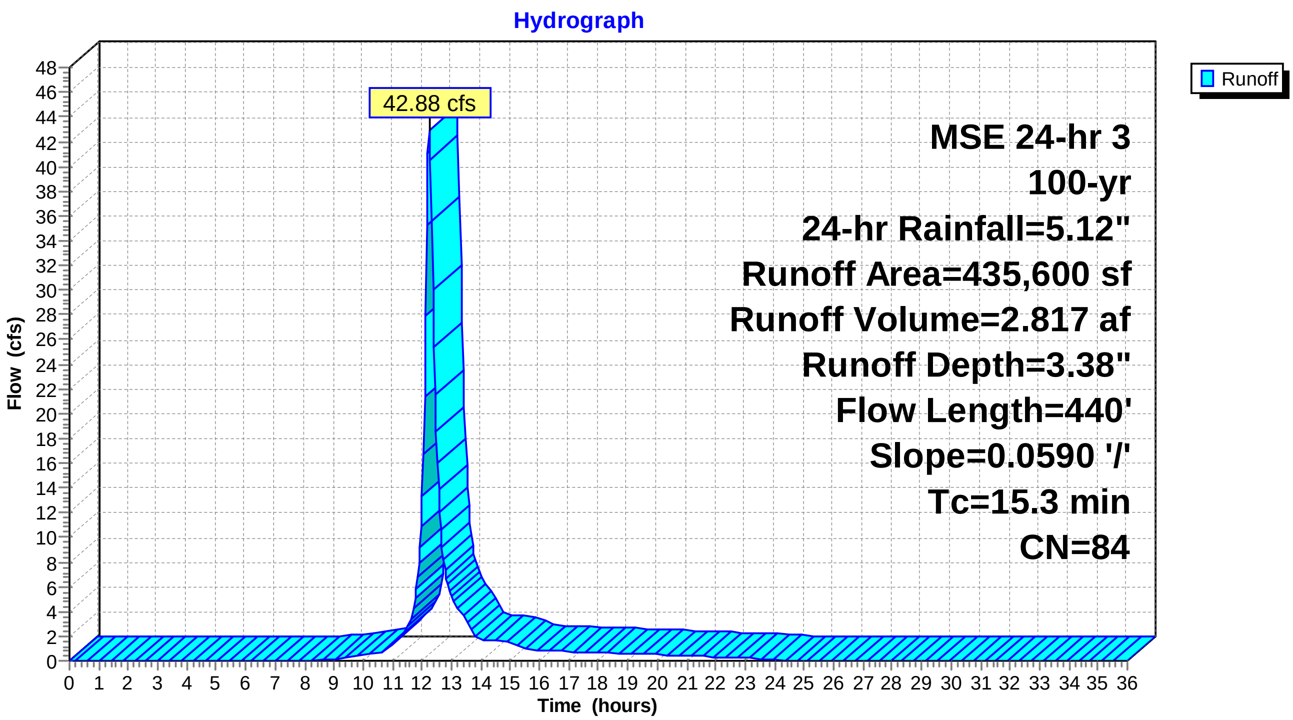
Runoff = 42.88 cfs @ 12.24 hrs, Volume= 2.817 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
435,600	84	50-75% Grass cover, Fair, HSG D
435,600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	200	0.0590	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
2.4	240	0.0590	1.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.3	440	Total			

Subcatchment 23S: MC X NE



Summary for Subcatchment 24S: MC X N

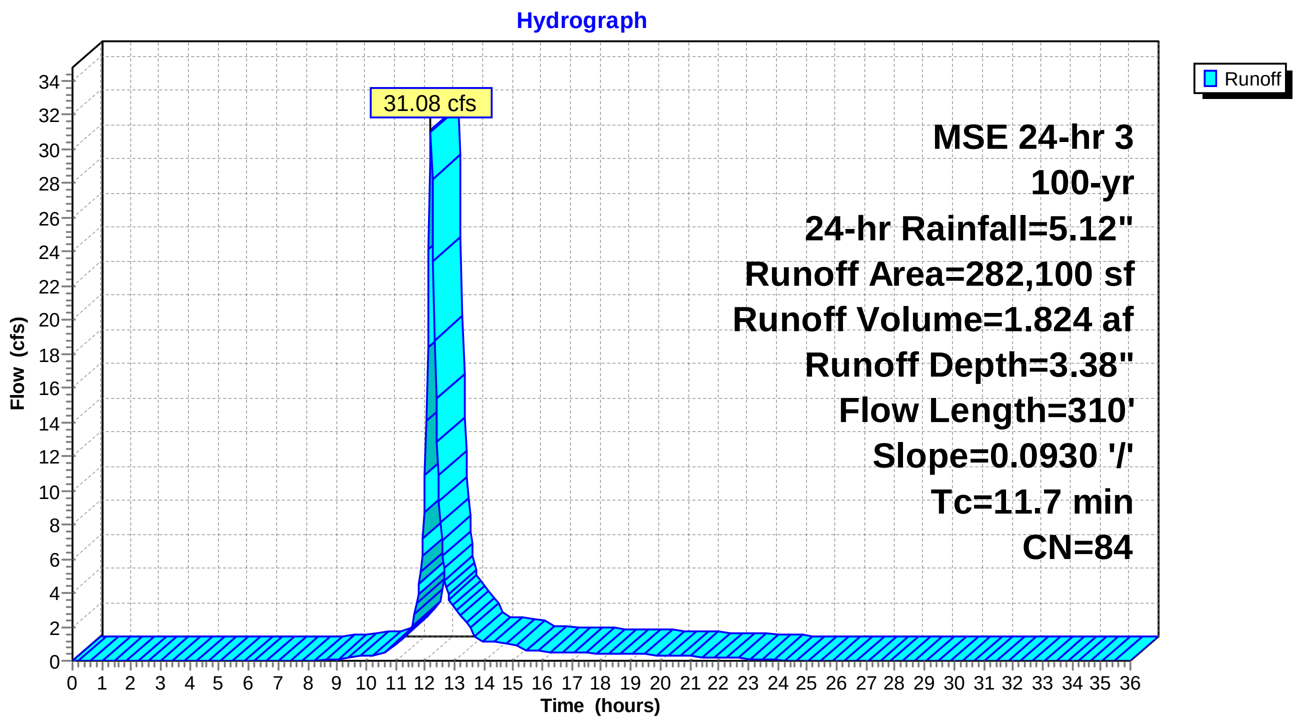
Runoff = 31.08 cfs @ 12.19 hrs, Volume= 1.824 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
282,100	84	50-75% Grass cover, Fair, HSG D
282,100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	200	0.0930	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
0.9	110	0.0930	2.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.7	310	Total			

Subcatchment 24S: MC X N



Summary for Subcatchment 25S: MC X NW

Drainage area is pond area and land area
Land area = 2,437,500 - 196,000 = 2,241,500

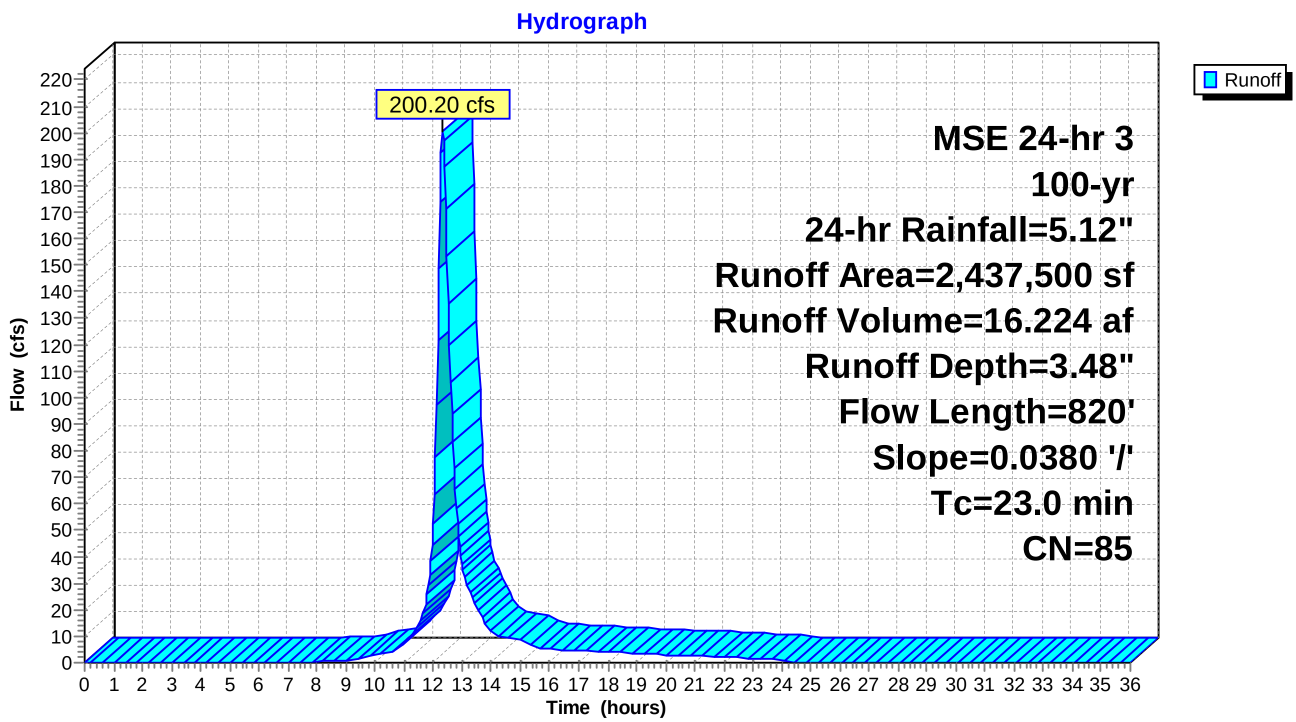
Runoff = 200.20 cfs @ 12.33 hrs, Volume= 16.224 af, Depth= 3.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
196,000	98	Water Surface, HSG D
2,241,500	84	50-75% Grass cover, Fair, HSG D
2,437,500	85	Weighted Average
2,241,500		91.96% Pervious Area
196,000		8.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	200	0.0380	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
7.6	620	0.0380	1.36		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.0	820	Total			

Subcatchment 25S: MC X NW



Summary for Subcatchment 26S: MC XI SE

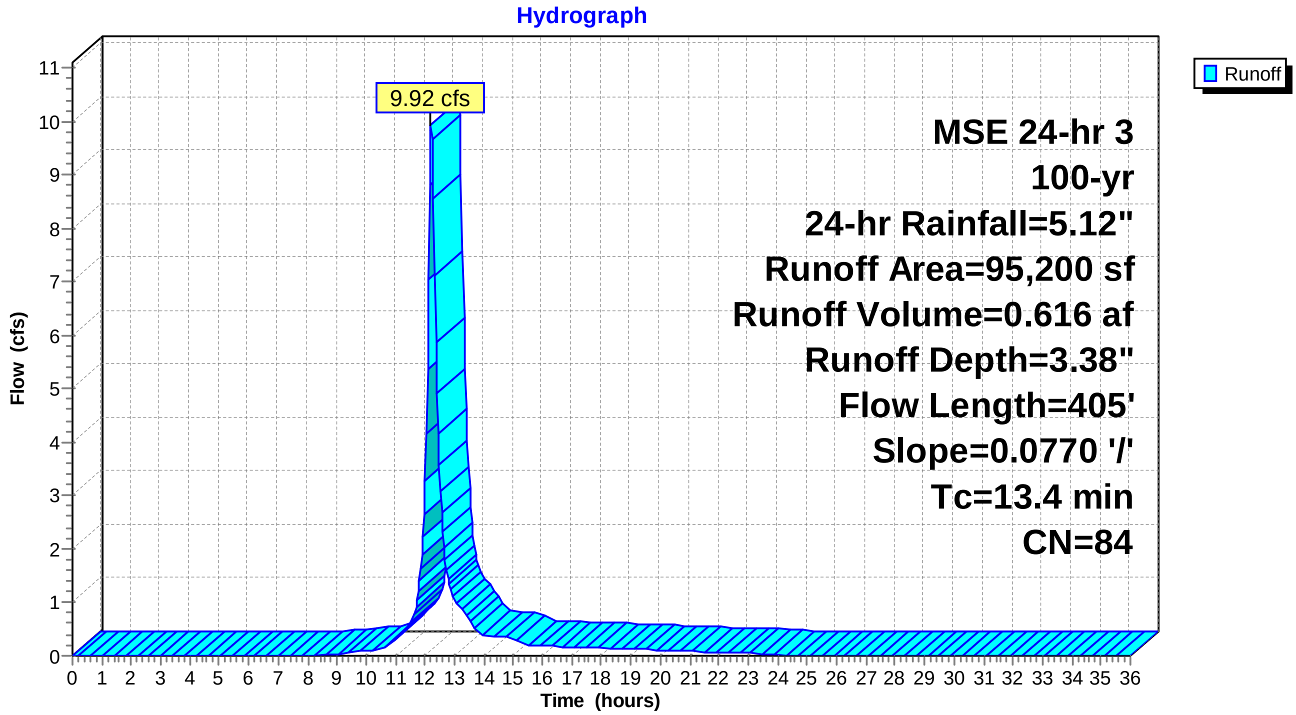
Runoff = 9.92 cfs @ 12.21 hrs, Volume= 0.616 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
95,200	84	50-75% Grass cover, Fair, HSG D
95,200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	200	0.0770	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
1.8	205	0.0770	1.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.4	405	Total			

Subcatchment 26S: MC XI SE



Summary for Subcatchment 27S: MC X SW

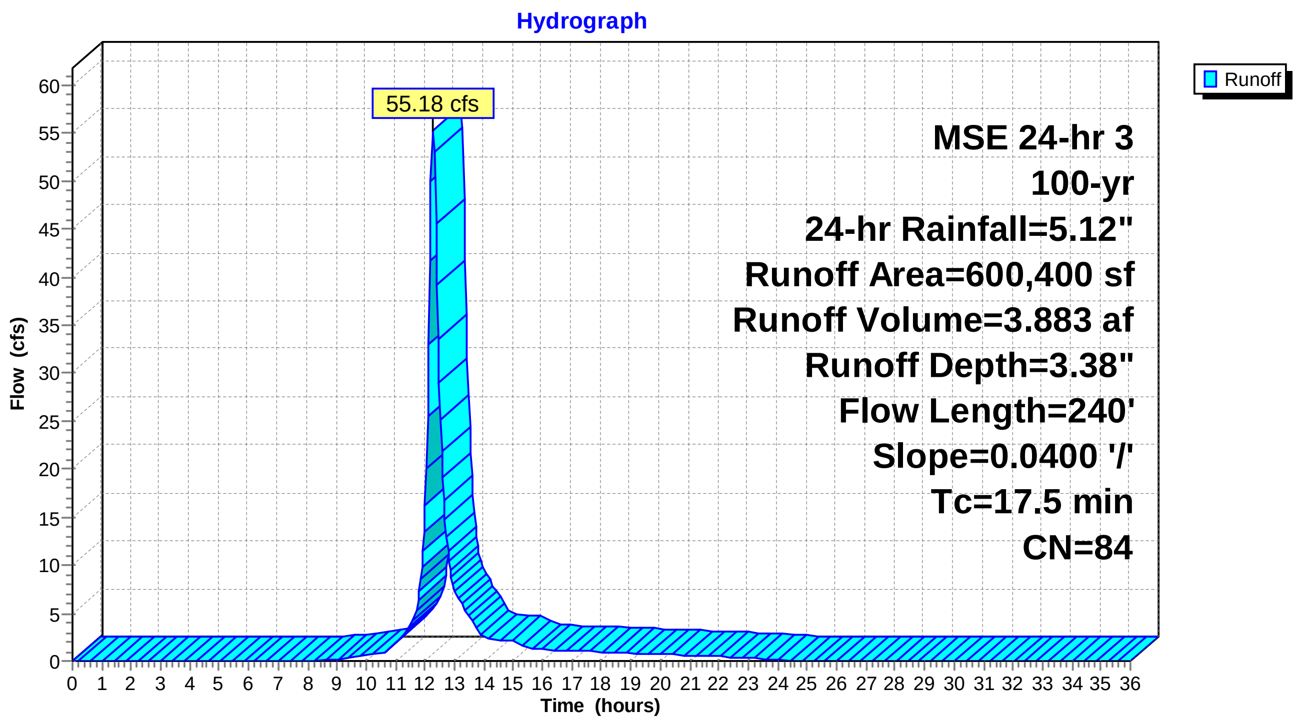
Runoff = 55.18 cfs @ 12.26 hrs, Volume= 3.883 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
600,400	84	50-75% Grass cover, Fair, HSG D
600,400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	240	0.0400	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"

Subcatchment 27S: MC X SW



Summary for Subcatchment 28S: MC VII S

Drainage area is pond area and land area
Land area = 998,400 - 38,900 = 959,500

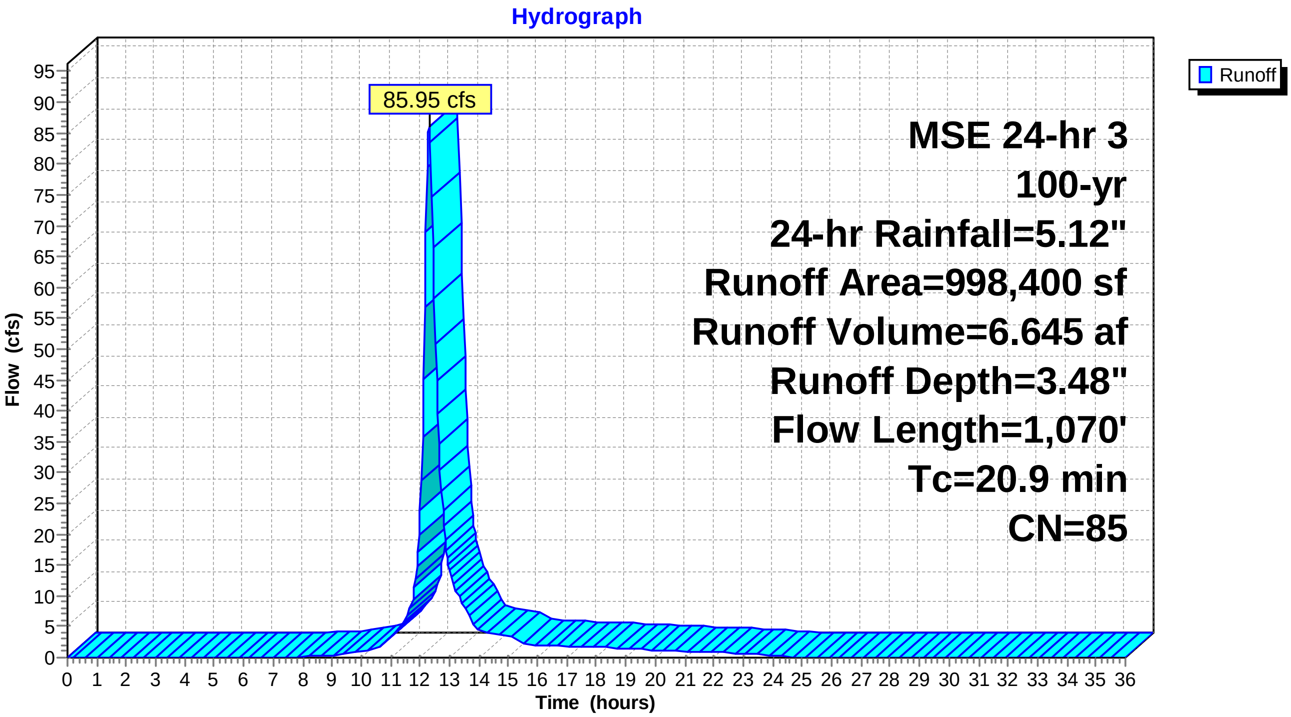
Runoff = 85.95 cfs @ 12.30 hrs, Volume= 6.645 af, Depth= 3.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
38,900	98	Water Surface, HSG D
959,500	84	50-75% Grass cover, Fair, HSG D
998,400	85	Weighted Average
959,500		96.10% Pervious Area
38,900		3.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.9	200	0.0300	0.20		**Sheet Flow,**
					Grass: Short n= 0.150 P2= 2.35"
2.3	170	0.0300	1.21		**Shallow Concentrated Flow,**
					Short Grass Pasture Kv= 7.0 fps
1.7	700	0.0140	7.03	84.40	**Channel Flow,**
					Area= 12.0 sf Perim= 12.0' r= 1.00'
					n= 0.025 Earth, clean & winding
20.9	1,070	Total			

Subcatchment 28S: MC VII S



Summary for Subcatchment 29S: MC VII N

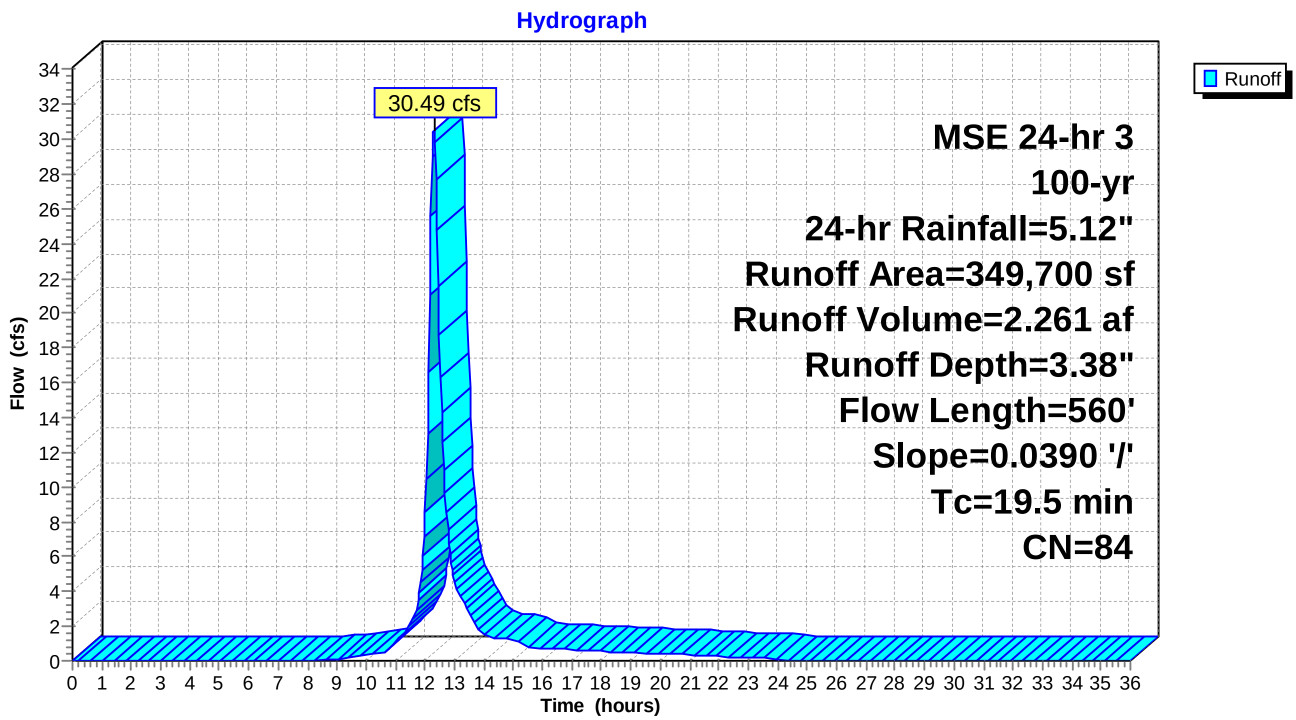
Runoff = 30.49 cfs @ 12.29 hrs, Volume= 2.261 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
349,700	84	50-75% Grass cover, Fair, HSG D
349,700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	200	0.0390	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
4.3	360	0.0390	1.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.5	560	Total			

Subcatchment 29S: MC VII N



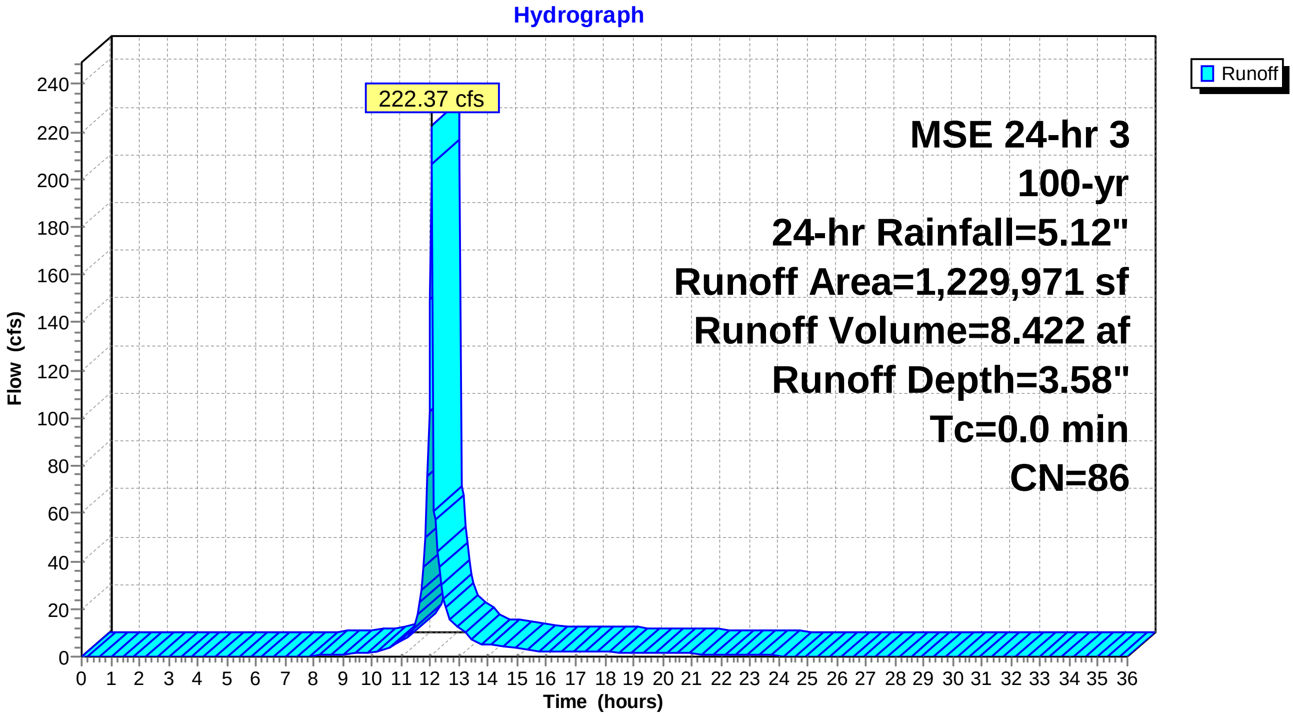
Summary for Subcatchment 30S: NWD Drainage

Runoff = 222.37 cfs @ 12.06 hrs, Volume= 8.422 af, Depth= 3.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
201,500	98	Water Surface, HSG D
1,028,471	84	50-75% Grass cover, Fair, HSG D
1,229,971	86	Weighted Average
1,028,471		83.62% Pervious Area
201,500		16.38% Impervious Area

Subcatchment 30S: NWD Drainage



Summary for Subcatchment 32S: DS-1 Drainage

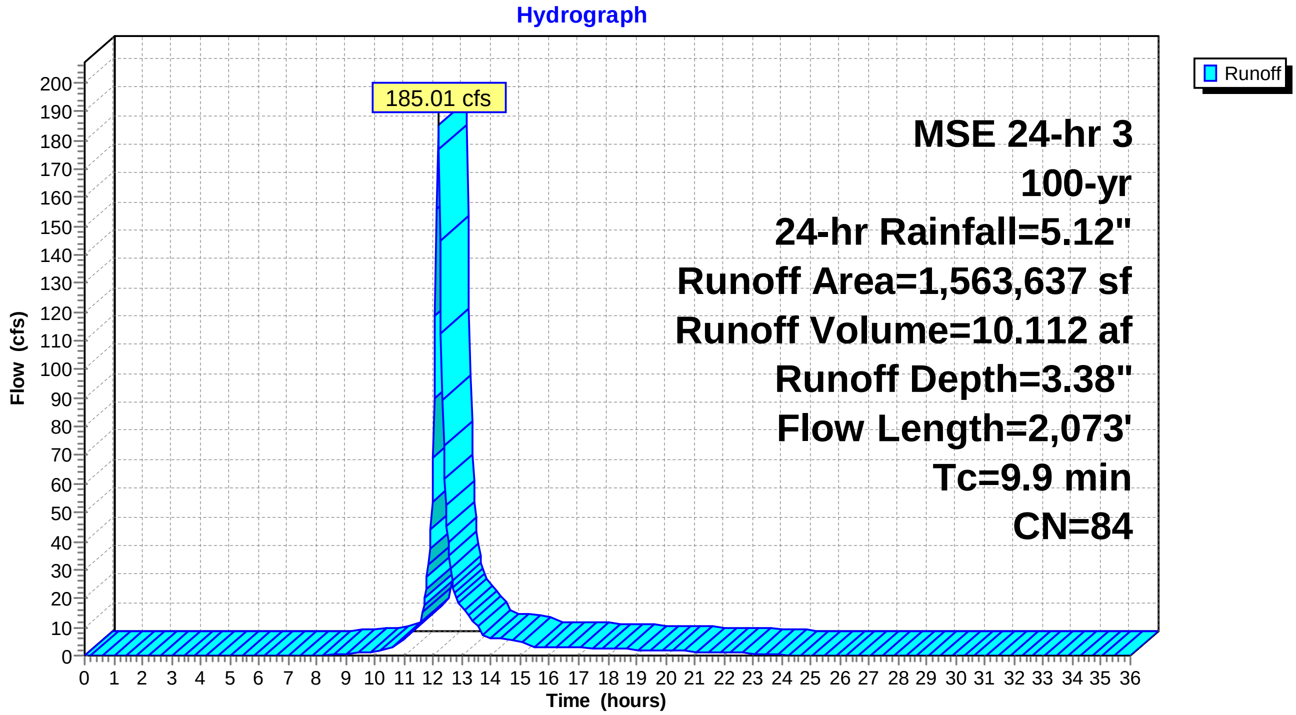
Runoff = 185.01 cfs @ 12.17 hrs, Volume= 10.112 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
1,563,637	84	50-75% Grass cover, Fair, HSG D
1,563,637		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	160	0.2500	0.44		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
3.8	1,913	0.0200	8.41	100.87	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, clean & winding
9.9	2,073	Total			

Subcatchment 32S: DS-1 Drainage



Summary for Subcatchment 33S: DS-2 Drainage

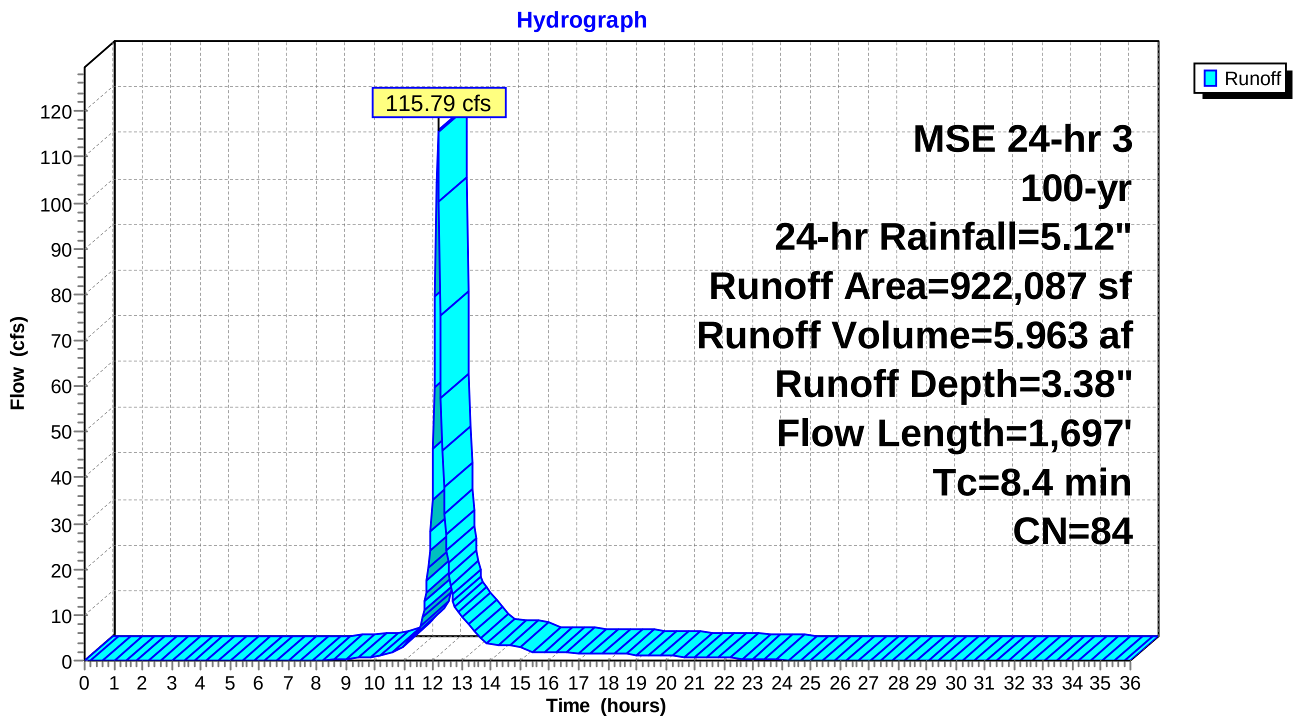
Runoff = 115.79 cfs @ 12.16 hrs, Volume= 5.963 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
922,087	84	50-75% Grass cover, Fair, HSG D
922,087		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	135	0.2500	0.43		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
3.1	1,562	0.0200	8.41	100.87	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, clean & winding
8.4	1,697	Total			

Subcatchment 33S: DS-2 Drainage



Summary for Subcatchment 36S: DS-3 Drainage

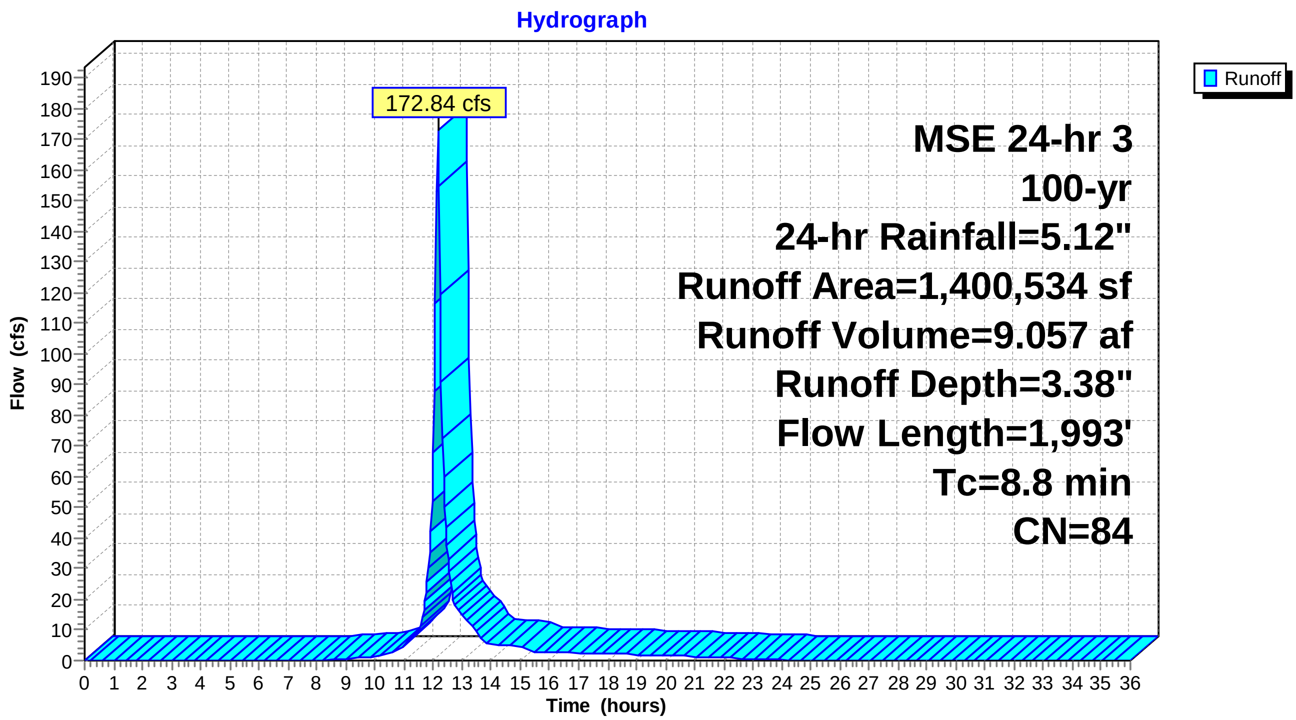
Runoff = 172.84 cfs @ 12.16 hrs, Volume= 9.057 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
1,400,534	84	50-75% Grass cover, Fair, HSG D
1,400,534		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	128	0.2500	0.42		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
3.7	1,865	0.0200	8.41	100.87	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, clean & winding
8.8	1,993	Total			

Subcatchment 36S: DS-3 Drainage



Summary for Subcatchment 40S: DB-12 Drainage

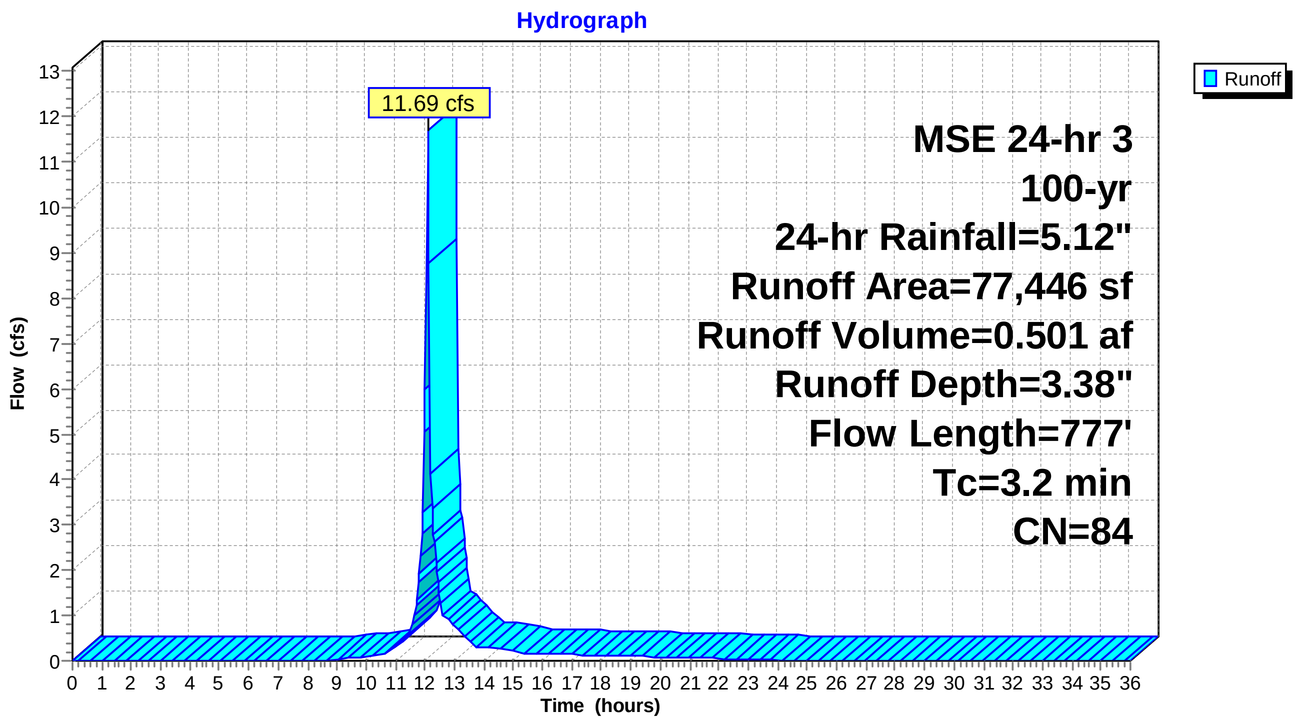
Runoff = 11.69 cfs @ 12.10 hrs, Volume= 0.501 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
77,446	84	50-75% Grass cover, Fair, HSG D
77,446		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	20	0.2500	0.29		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
2.1	757	0.0100	5.94	71.33	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025
3.2	777	Total			

Subcatchment 40S: DB-12 Drainage



Summary for Subcatchment 44S: DB-2 Drainage

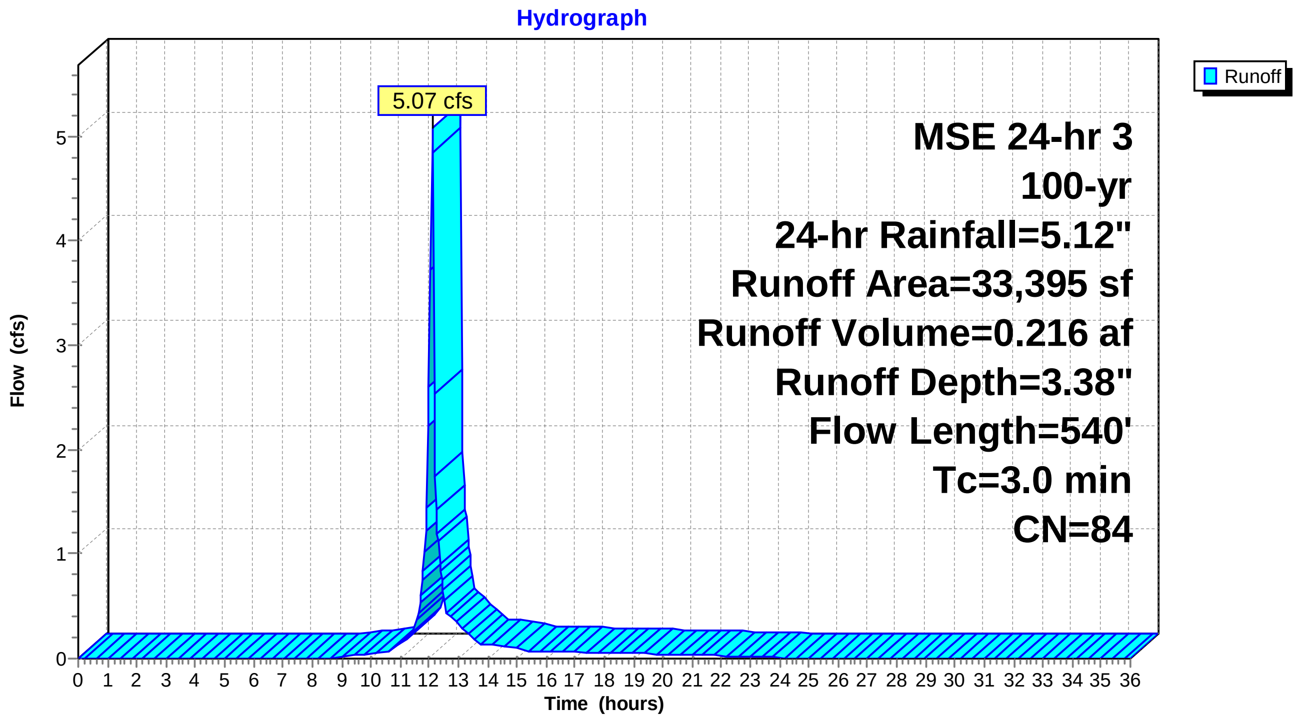
Runoff = 5.07 cfs @ 12.10 hrs, Volume= 0.216 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
33,395	84	50-75% Grass cover, Fair, HSG D
33,395		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	35	0.2500	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
1.1	403	0.0100	5.94	71.33	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025
0.1	102	0.0430	12.33	147.91	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025
3.0	540	Total			

Subcatchment 44S: DB-2 Drainage



Summary for Reach 3R: NE-MC IX Ditch

NSB Culvert backs up (free draining channel assumption is not true), therefore additional freeboard is needed in NE-MC IX Ditch

Inflow Area = 239.347 ac, 4.19% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 154.98 cfs @ 12.68 hrs, Volume= 67.505 af
Outflow = 153.57 cfs @ 12.87 hrs, Volume= 67.505 af, Atten= 1%, Lag= 11.2 min

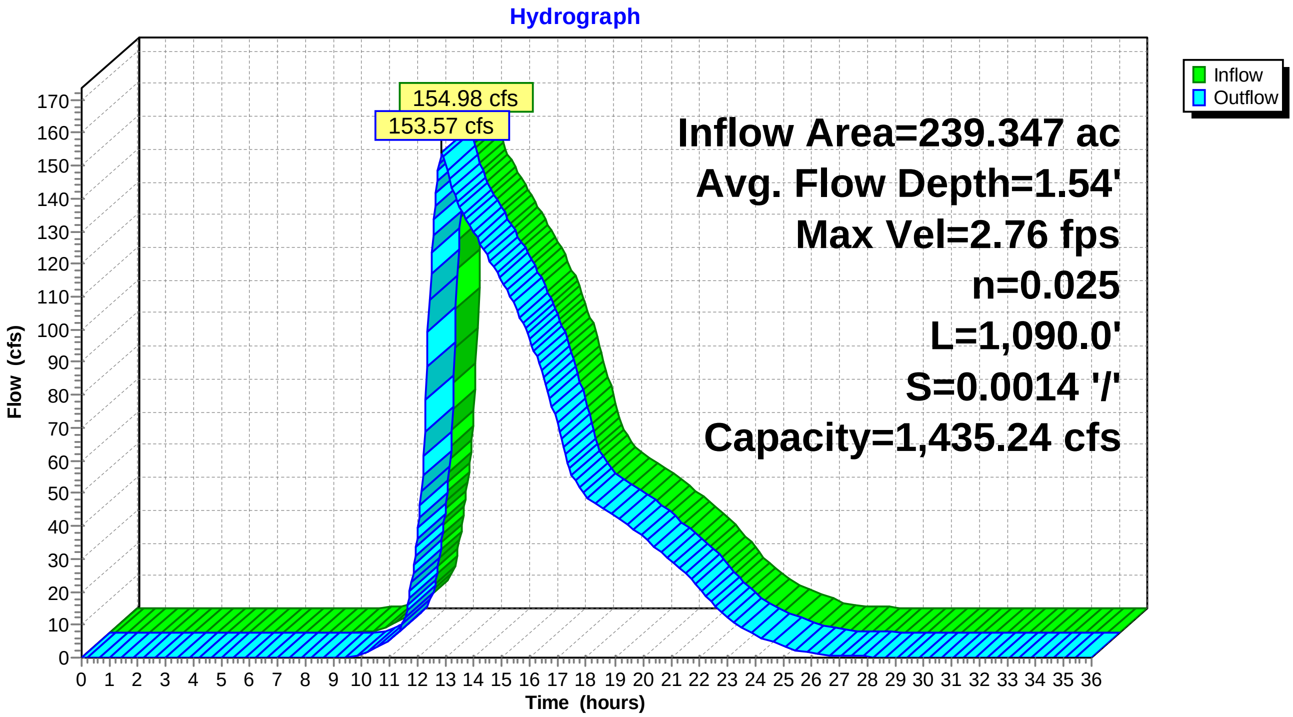
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.76 fps, Min. Travel Time= 6.6 min
Avg. Velocity = 1.04 fps, Avg. Travel Time= 17.4 min

Peak Storage= 60,767 cf @ 12.75 hrs
Average Depth at Peak Storage= 1.54' , Surface Width= 39.18'
Bank-Full Depth= 5.60' Flow Area= 247.5 sf, Capacity= 1,435.24 cfs

33.00' x 5.60' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 '/' Top Width= 55.40'
Length= 1,090.0' Slope= 0.0014 '/'
Inlet Invert= 696.40', Outlet Invert= 694.90'

‡

Reach 3R: NE-MC IX Ditch



Summary for Reach 4R: N-MC IX Ditch

Inflow Area = 229.347 ac, 4.37% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 149.49 cfs @ 12.49 hrs, Volume= 64.688 af
Outflow = 146.34 cfs @ 12.73 hrs, Volume= 64.688 af, Atten= 2%, Lag= 14.3 min

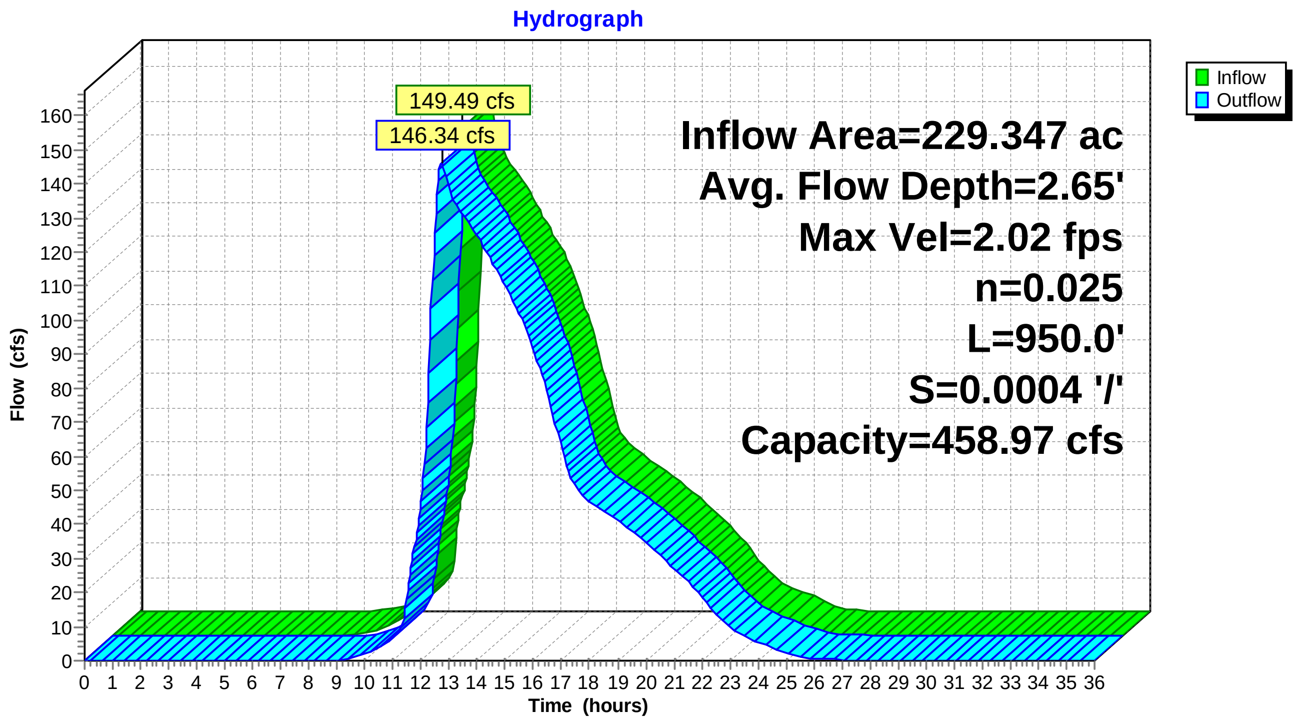
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.02 fps, Min. Travel Time= 7.8 min
Avg. Velocity = 0.75 fps, Avg. Travel Time= 21.0 min

Peak Storage= 68,731 cf @ 12.60 hrs
Average Depth at Peak Storage= 2.65' , Surface Width= 32.60'
Bank-Full Depth= 5.00' Flow Area= 160.0 sf, Capacity= 458.97 cfs

22.00' x 5.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 '/' Top Width= 42.00'
Length= 950.0' Slope= 0.0004 '/'
Inlet Invert= 696.80', Outlet Invert= 696.40'

‡

Reach 4R: N-MC IX Ditch



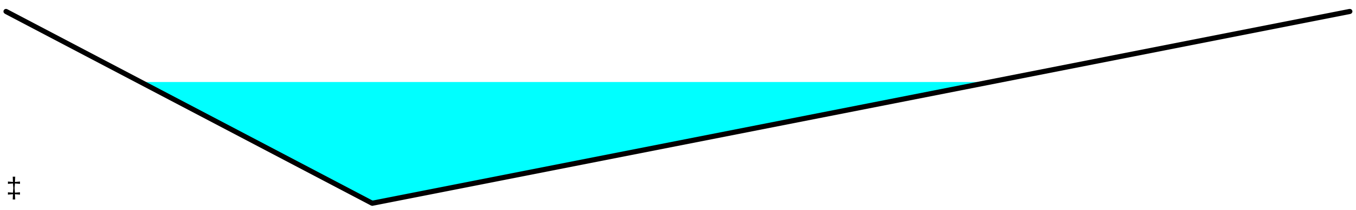
Summary for Reach 9R: W-MC X DV

Inflow Area = 13.783 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 55.18 cfs @ 12.26 hrs, Volume= 3.883 af
Outflow = 48.58 cfs @ 12.45 hrs, Volume= 3.883 af, Atten= 12%, Lag= 11.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.54 fps, Min. Travel Time= 6.6 min
Avg. Velocity = 0.98 fps, Avg. Travel Time= 23.9 min

Peak Storage= 19,274 cf @ 12.34 hrs
Average Depth at Peak Storage= 1.58' , Surface Width= 17.40'
Bank-Full Depth= 2.50' Flow Area= 34.4 sf, Capacity= 165.41 cfs

0.00' x 2.50' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 8.0 '/' Top Width= 27.50'
Length= 1,400.0' Slope= 0.0050 '/'
Inlet Invert= 713.00', Outlet Invert= 706.00'



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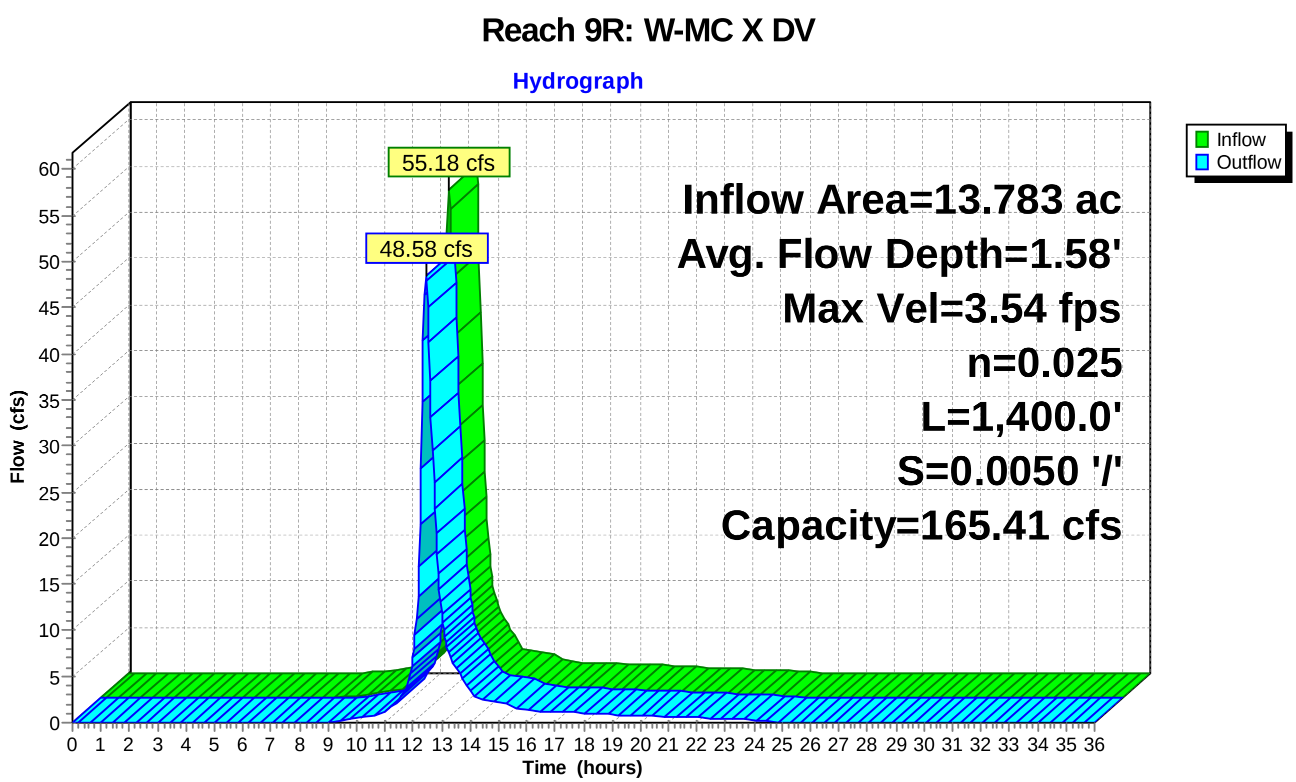


Summary for Reach 10R: N-MC VII Ditch

Inflow Area = 128.025 ac, 3.61% Impervious, Inflow Depth = 3.42" for 100-yr, 24-hr event
Inflow = 78.05 cfs @ 12.30 hrs, Volume= 36.532 af
Outflow = 75.49 cfs @ 12.48 hrs, Volume= 36.532 af, Atten= 3%, Lag= 10.3 min

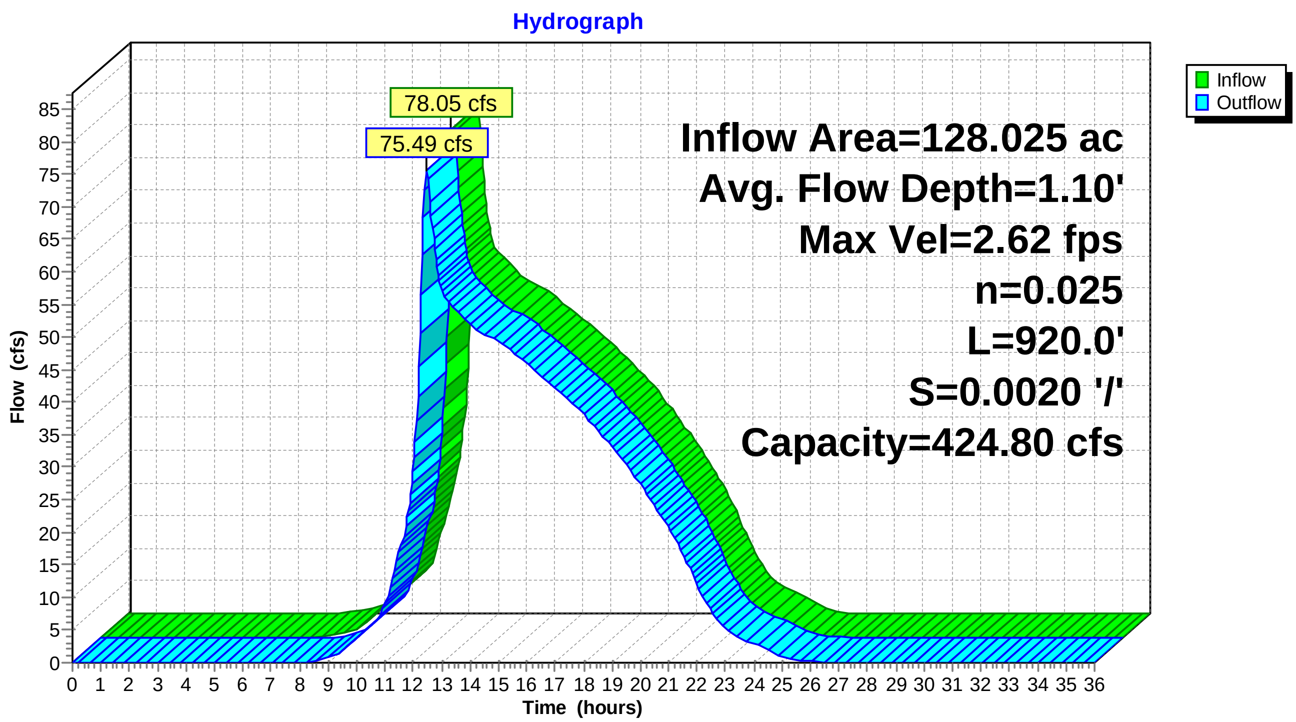
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.62 fps, Min. Travel Time= 5.8 min
Avg. Velocity = 1.05 fps, Avg. Travel Time= 14.6 min

Peak Storage= 26,540 cf @ 12.38 hrs
Average Depth at Peak Storage= 1.10' , Surface Width= 28.40'
Bank-Full Depth= 3.00' Flow Area= 90.0 sf, Capacity= 424.80 cfs

24.00' x 3.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 '/' Top Width= 36.00'
Length= 920.0' Slope= 0.0020 '/'
Inlet Invert= 698.80', Outlet Invert= 697.00'

‡

Reach 10R: N-MC VII Ditch



Summary for Reach 12R: DS-1 (4H:1V)

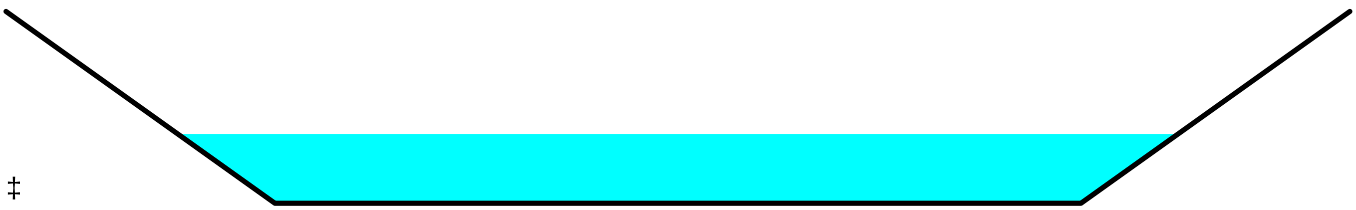
Inflow Area = 35.896 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 185.01 cfs @ 12.17 hrs, Volume= 10.112 af
Outflow = 180.58 cfs @ 12.19 hrs, Volume= 10.112 af, Atten= 2%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 18.84 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 4.16 fps, Avg. Travel Time= 3.1 min

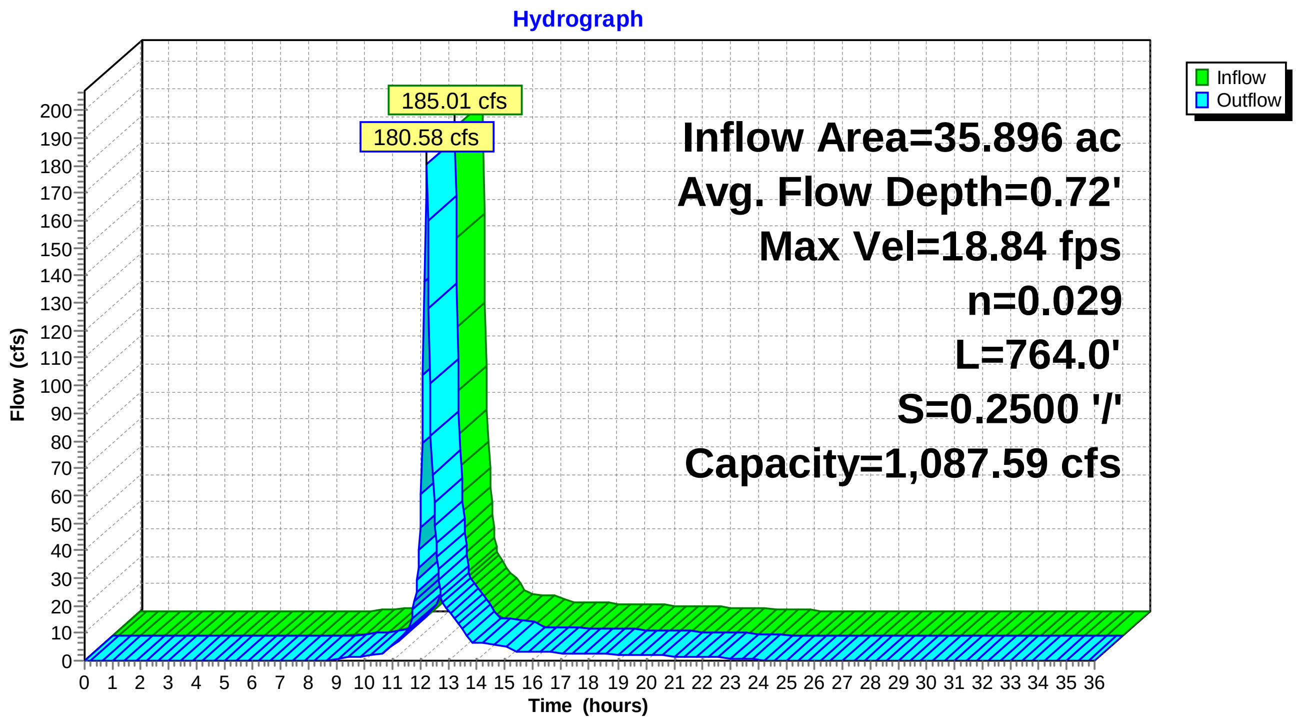
Peak Storage= 7,403 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.72' , Surface Width= 14.88'
Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 1,087.59 cfs

12.00' x 2.00' deep channel, n= 0.029
Side Slope Z-value= 2.0 '/' Top Width= 20.00'
Length= 764.0' Slope= 0.2500 '/'
Inlet Invert= 906.00', Outlet Invert= 715.00'

‡



Reach 12R: DS-1 (4H:1V)



Summary for Reach 14R: DS-3

Inflow Area = 32.152 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 172.84 cfs @ 12.16 hrs, Volume= 9.057 af
Outflow = 167.54 cfs @ 12.18 hrs, Volume= 9.057 af, Atten= 3%, Lag= 1.0 min

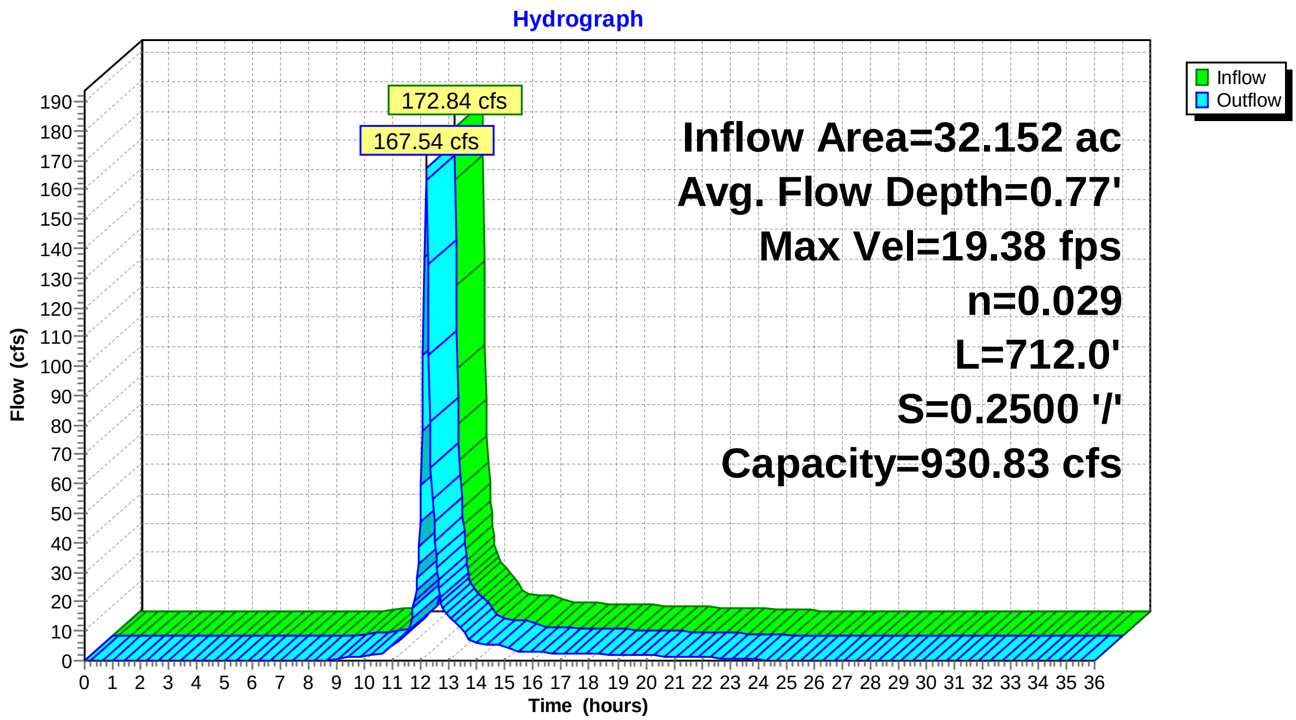
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 19.38 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 4.25 fps, Avg. Travel Time= 2.8 min

Peak Storage= 6,303 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.77' , Surface Width= 13.07'
Bank-Full Depth= 2.00' Flow Area= 28.0 sf, Capacity= 930.83 cfs

10.00' x 2.00' deep channel, n= 0.029
Side Slope Z-value= 2.0 '/' Top Width= 18.00'
Length= 712.0' Slope= 0.2500 '/'
Inlet Invert= 900.00', Outlet Invert= 722.00'

‡

Reach 14R: DS-3



Summary for Reach 15R: DS-2 (4H:1V)

Inflow Area = 21.168 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 115.79 cfs @ 12.16 hrs, Volume= 5.963 af
Outflow = 112.25 cfs @ 12.17 hrs, Volume= 5.963 af, Atten= 3%, Lag= 0.9 min

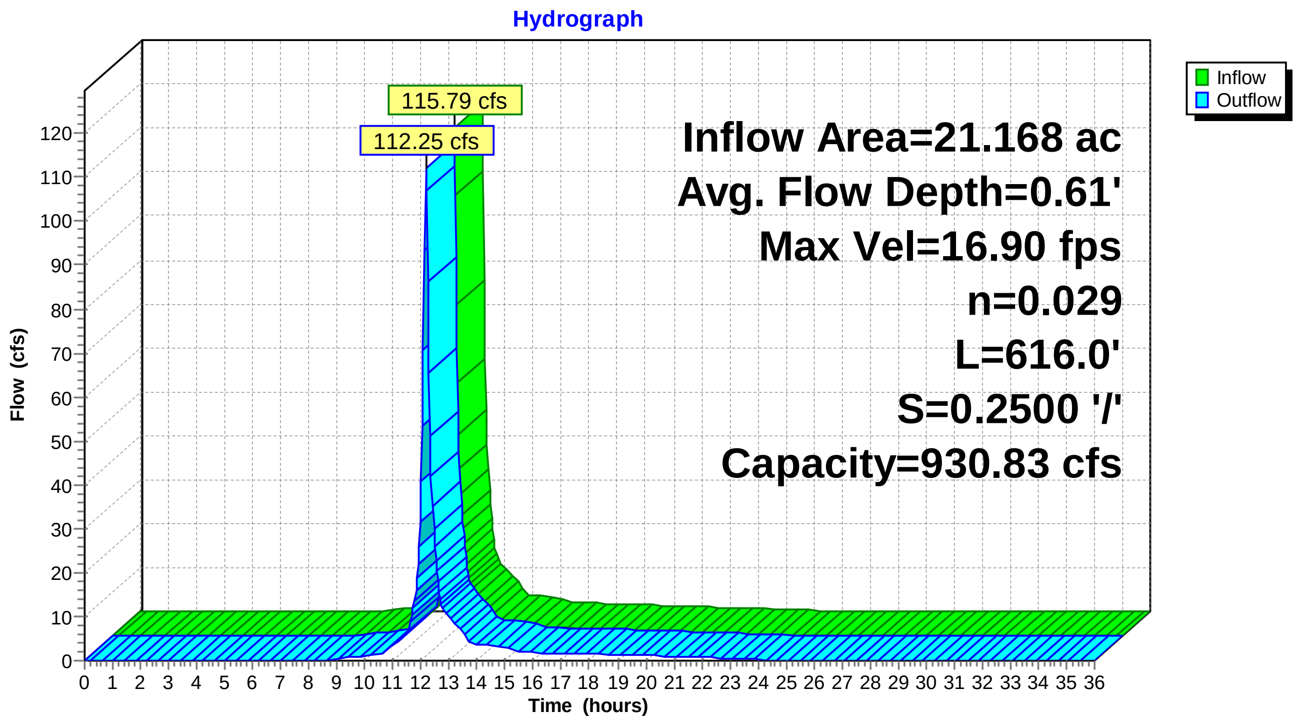
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 16.90 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 3.69 fps, Avg. Travel Time= 2.8 min

Peak Storage= 4,198 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.61' , Surface Width= 12.43'
Bank-Full Depth= 2.00' Flow Area= 28.0 sf, Capacity= 930.83 cfs

10.00' x 2.00' deep channel, n= 0.029
Side Slope Z-value= 2.0 '/' Top Width= 18.00'
Length= 616.0' Slope= 0.2500 '/'
Inlet Invert= 900.00', Outlet Invert= 746.00'

‡

Reach 15R: DS-2 (4H:1V)



Summary for Reach 18R: E-MC IX Ditch

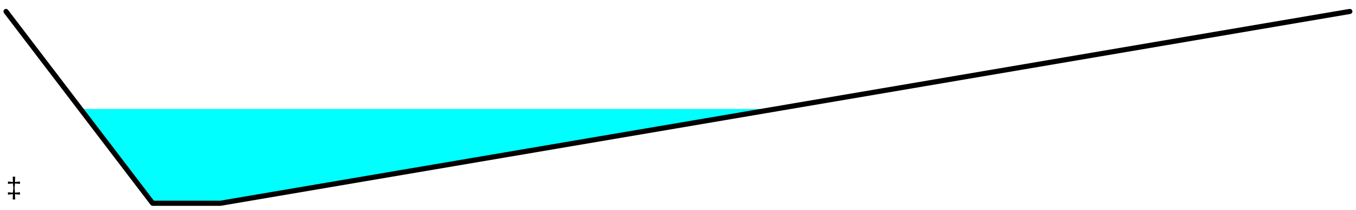
Inflow Area = 22.273 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 79.16 cfs @ 12.37 hrs, Volume= 6.274 af
Outflow = 77.59 cfs @ 12.45 hrs, Volume= 6.274 af, Atten= 2%, Lag= 4.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.76 fps, Min. Travel Time= 2.6 min
Avg. Velocity = 1.08 fps, Avg. Travel Time= 9.1 min

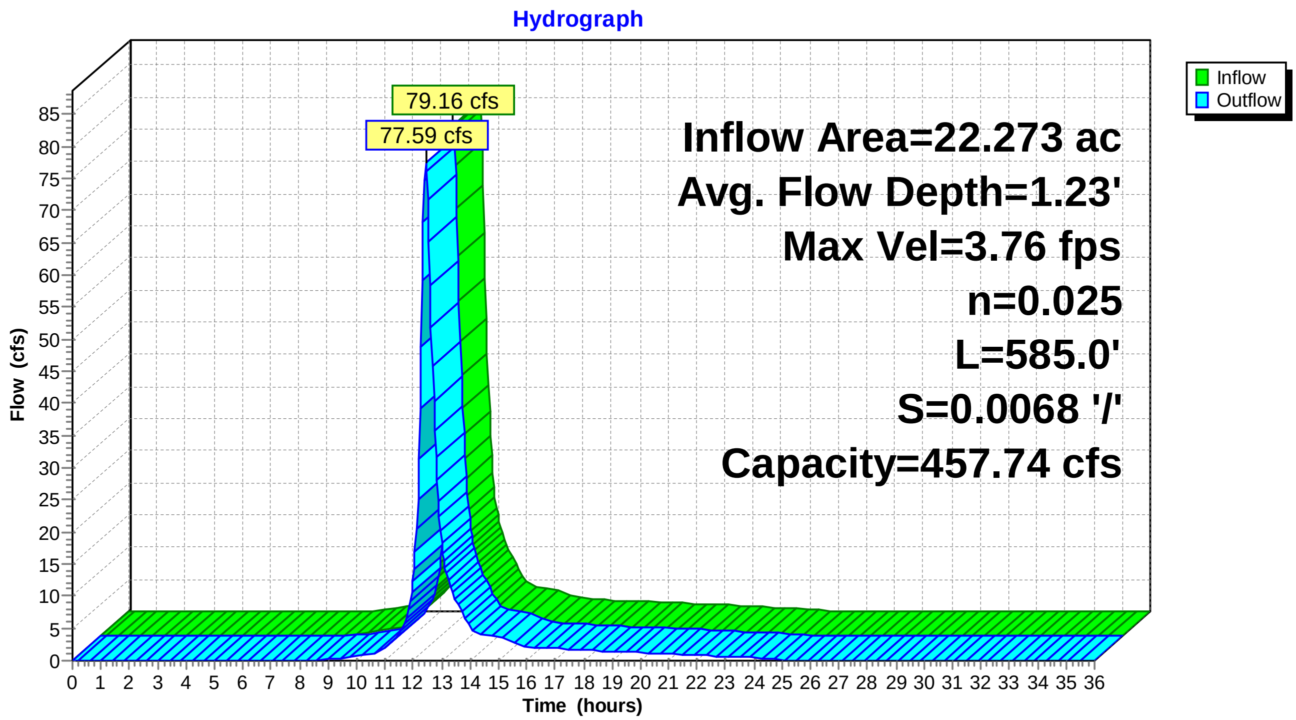
Peak Storage= 12,109 cf @ 12.40 hrs
Average Depth at Peak Storage= 1.23' , Surface Width= 30.73'
Bank-Full Depth= 2.50' Flow Area= 78.1 sf, Capacity= 457.74 cfs

3.00' x 2.50' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.6 20.0 '/' Top Width= 59.50'
Length= 585.0' Slope= 0.0068 '/'
Inlet Invert= 699.00', Outlet Invert= 695.00'

‡



Reach 18R: E-MC IX Ditch



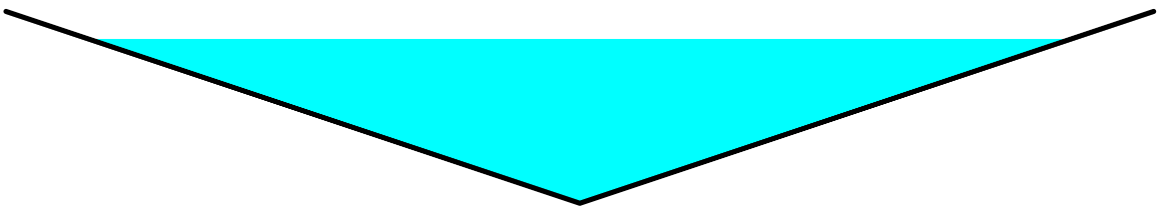
Summary for Reach 20R: E-MC X DV

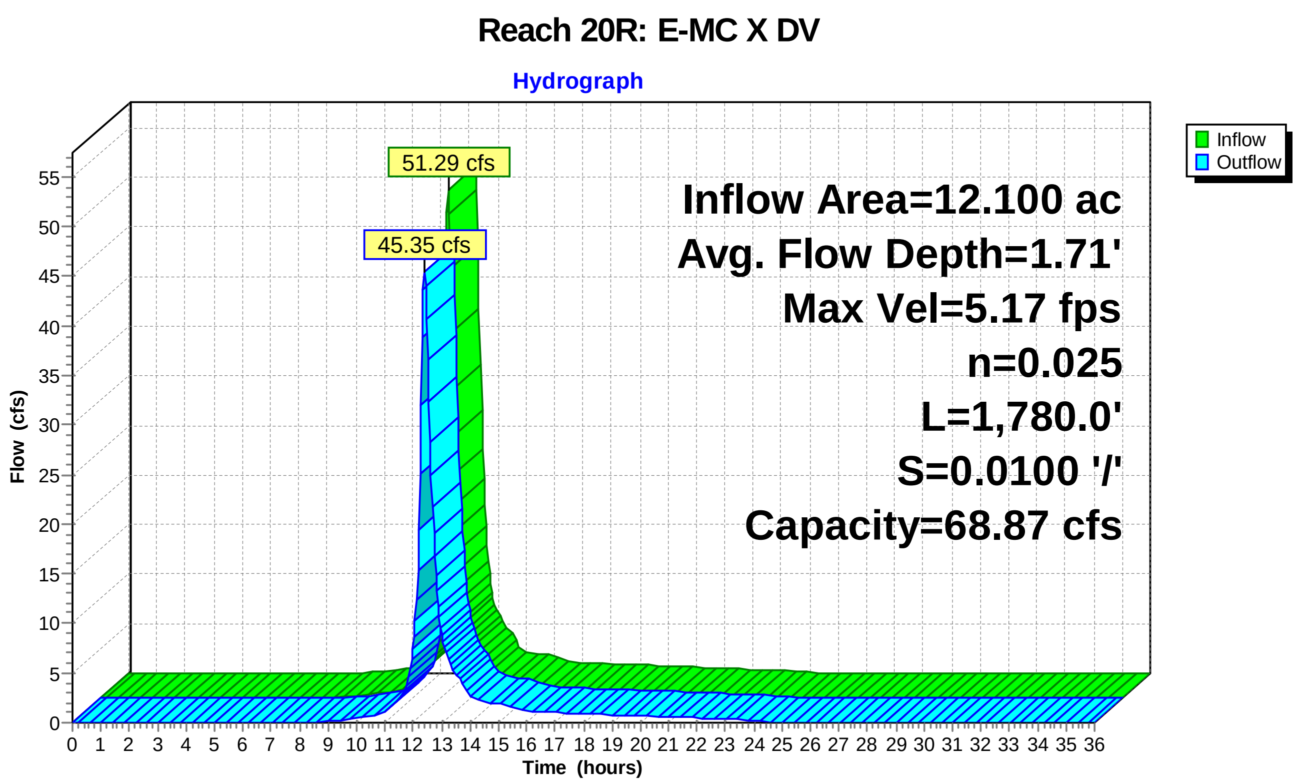
Inflow Area = 12.100 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 51.29 cfs @ 12.24 hrs, Volume= 3.409 af
Outflow = 45.35 cfs @ 12.40 hrs, Volume= 3.409 af, Atten= 12%, Lag= 9.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 5.17 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 1.43 fps, Avg. Travel Time= 20.7 min

Peak Storage= 15,697 cf @ 12.31 hrs
Average Depth at Peak Storage= 1.71' , Surface Width= 10.29'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 68.87 cfs

0.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 12.00'
Length= 1,780.0' Slope= 0.0100 '/'
Inlet Invert= 723.00', Outlet Invert= 705.20'





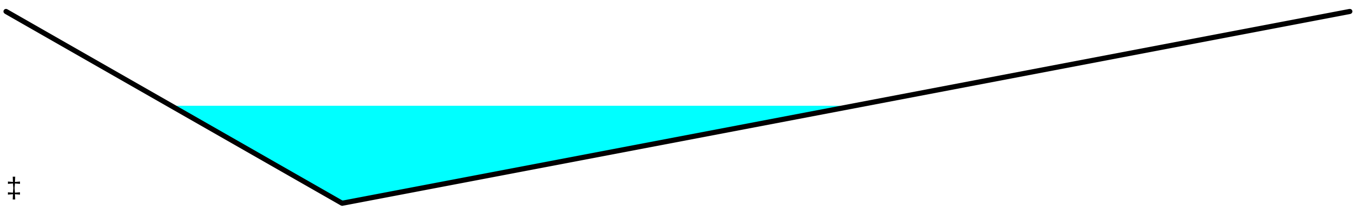
Summary for Reach 38R: S-MC XI DV

Inflow Area = 2.185 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 9.92 cfs @ 12.21 hrs, Volume= 0.616 af
Outflow = 9.30 cfs @ 12.30 hrs, Volume= 0.616 af, Atten= 6%, Lag= 5.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.07 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 9.3 min

Peak Storage= 1,733 cf @ 12.25 hrs
Average Depth at Peak Storage= 0.76' , Surface Width= 6.08'
Bank-Full Depth= 1.50' Flow Area= 9.0 sf, Capacity= 57.72 cfs

0.00' x 1.50' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 6.0 '/' Top Width= 12.00'
Length= 750.0' Slope= 0.0180 '/'
Inlet Invert= 719.00', Outlet Invert= 705.50'



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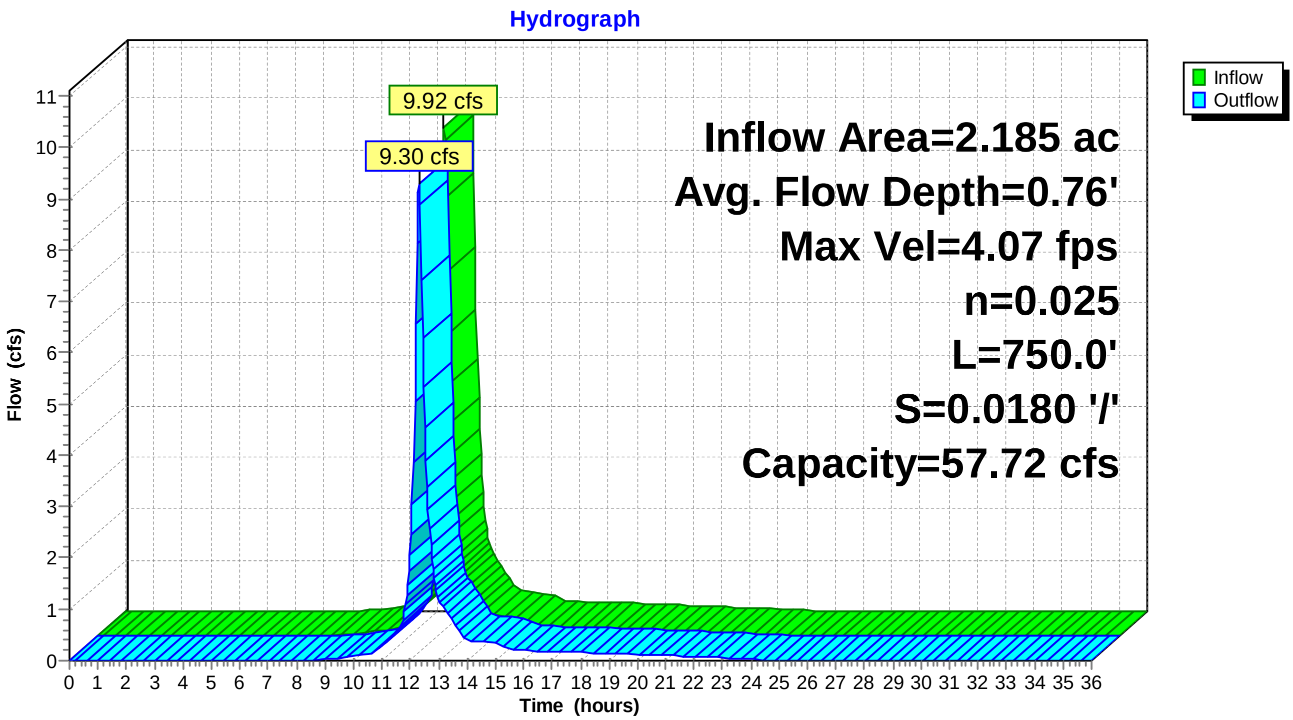
Reach 38R: S-MC XI DV



Summary for Reach 39R: DS-6

Inflow Area = 2.545 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 16.60 cfs @ 12.11 hrs, Volume= 0.717 af
Outflow = 16.28 cfs @ 12.11 hrs, Volume= 0.717 af, Atten= 2%, Lag= 0.3 min

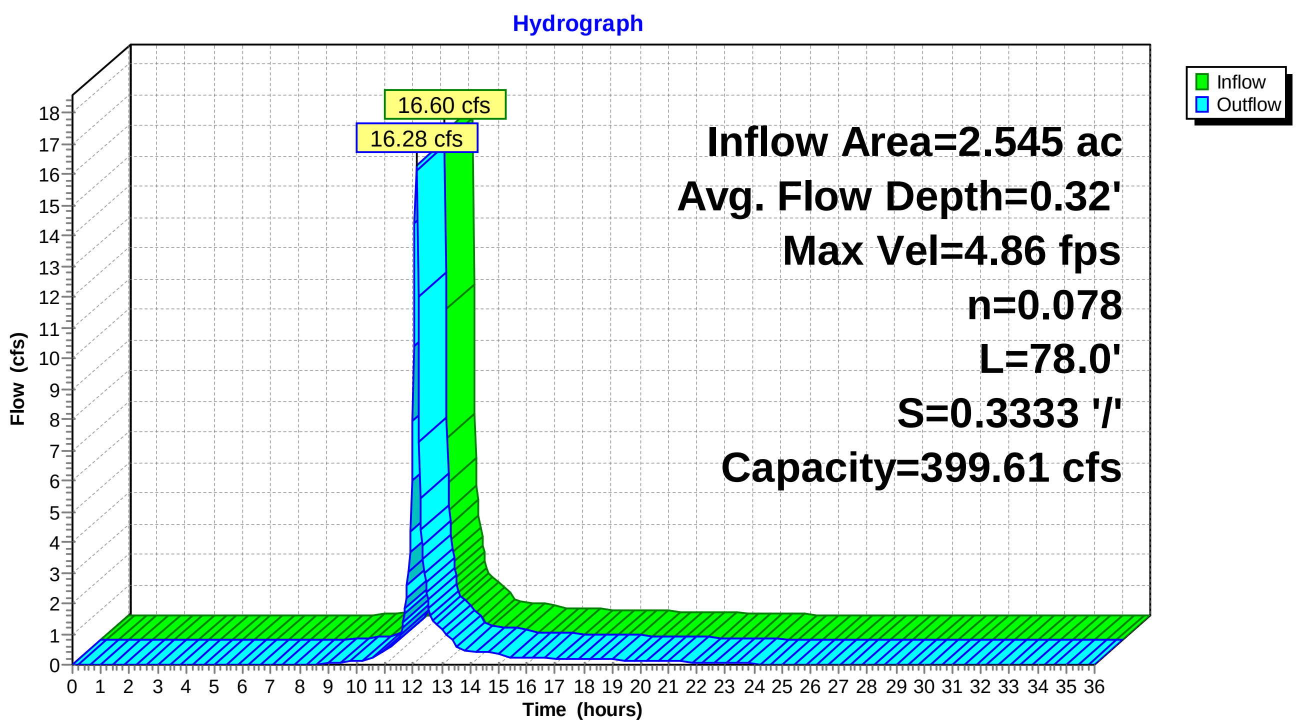
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.86 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.07 fps, Avg. Travel Time= 1.2 min

Peak Storage= 264 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.32' , Surface Width= 11.27'
Bank-Full Depth= 2.00' Flow Area= 28.0 sf, Capacity= 399.61 cfs

10.00' x 2.00' deep channel, n= 0.078 Riprap, 12-inch
Side Slope Z-value= 2.0 '/' Top Width= 18.00'
Length= 78.0' Slope= 0.3333 '/'
Inlet Invert= 742.00', Outlet Invert= 716.00'

‡

Reach 39R: DS-6



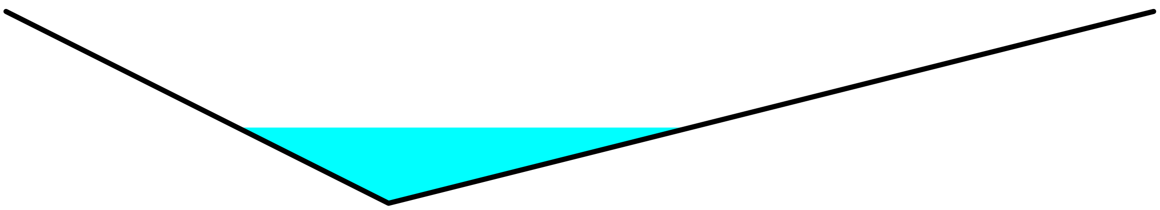
Summary for Reach 41R: DB-12

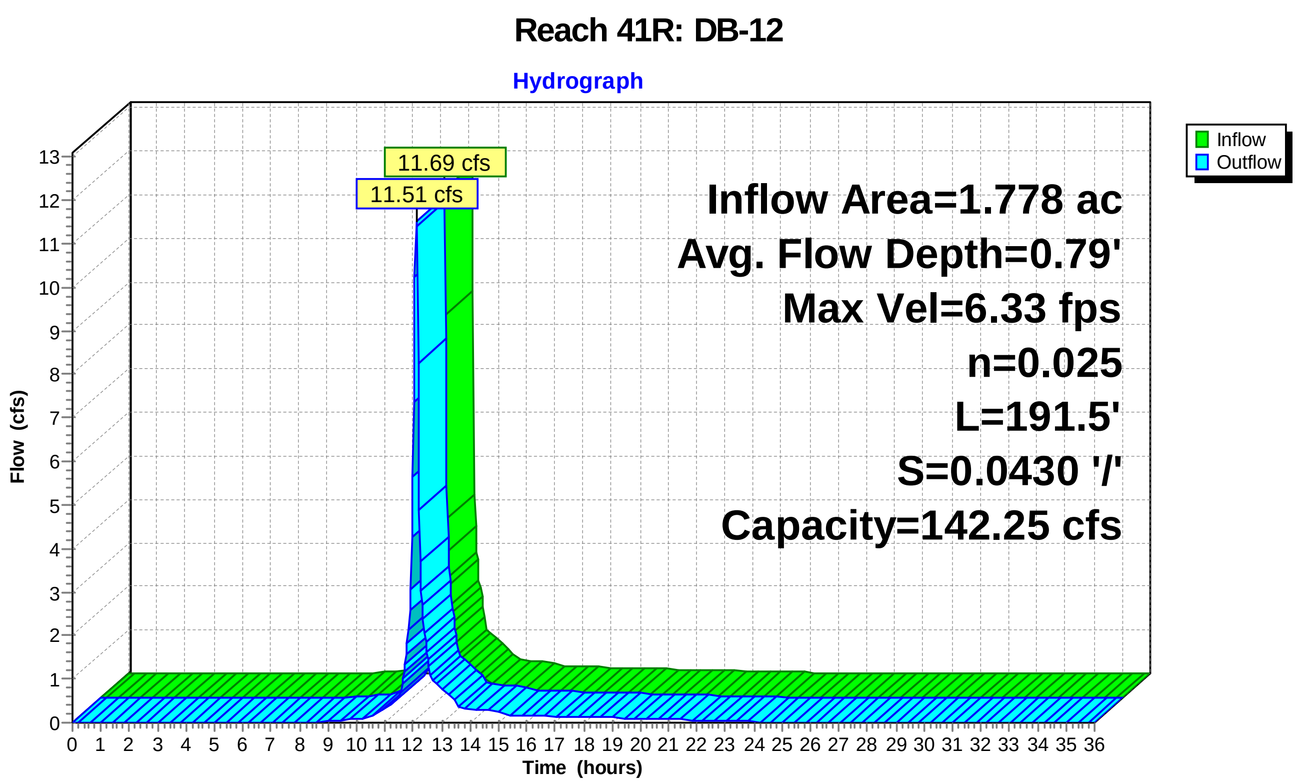
Inflow Area = 1.778 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 11.69 cfs @ 12.10 hrs, Volume= 0.501 af
Outflow = 11.51 cfs @ 12.11 hrs, Volume= 0.501 af, Atten= 2%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.33 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.10 fps, Avg. Travel Time= 1.5 min

Peak Storage= 357 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.79' , Surface Width= 4.74'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 142.25 cfs

0.00' x 2.00' deep channel, n= 0.025
Side Slope Z-value= 2.0 4.0 '/' Top Width= 12.00'
Length= 191.5' Slope= 0.0430 '/'
Inlet Invert= 749.23', Outlet Invert= 741.00'





Summary for Pond 1P: NSB North

Inflow Area = 272.710 ac, 3.67% Impervious, Inflow Depth = 3.43" for 100-yr, 24-hr event
Inflow = 209.95 cfs @ 12.49 hrs, Volume= 77.973 af
Outflow = 91.12 cfs @ 16.36 hrs, Volume= 32.951 af, Atten= 57%, Lag= 232.5 min
Primary = 91.12 cfs @ 16.36 hrs, Volume= 32.951 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Starting Elev= 674.00' Surf.Area= 53,100 sf Storage= 144,600 cf
Peak Elev= 693.91' @ 16.36 hrs Surf.Area= 152,097 sf Storage= 2,241,647 cf (2,097,047 cf above start)

Plug-Flow detention time= 392.0 min calculated for 29.631 af (38% of inflow)
Center-of-Mass det. time= 204.8 min (1,134.6 - 929.8)

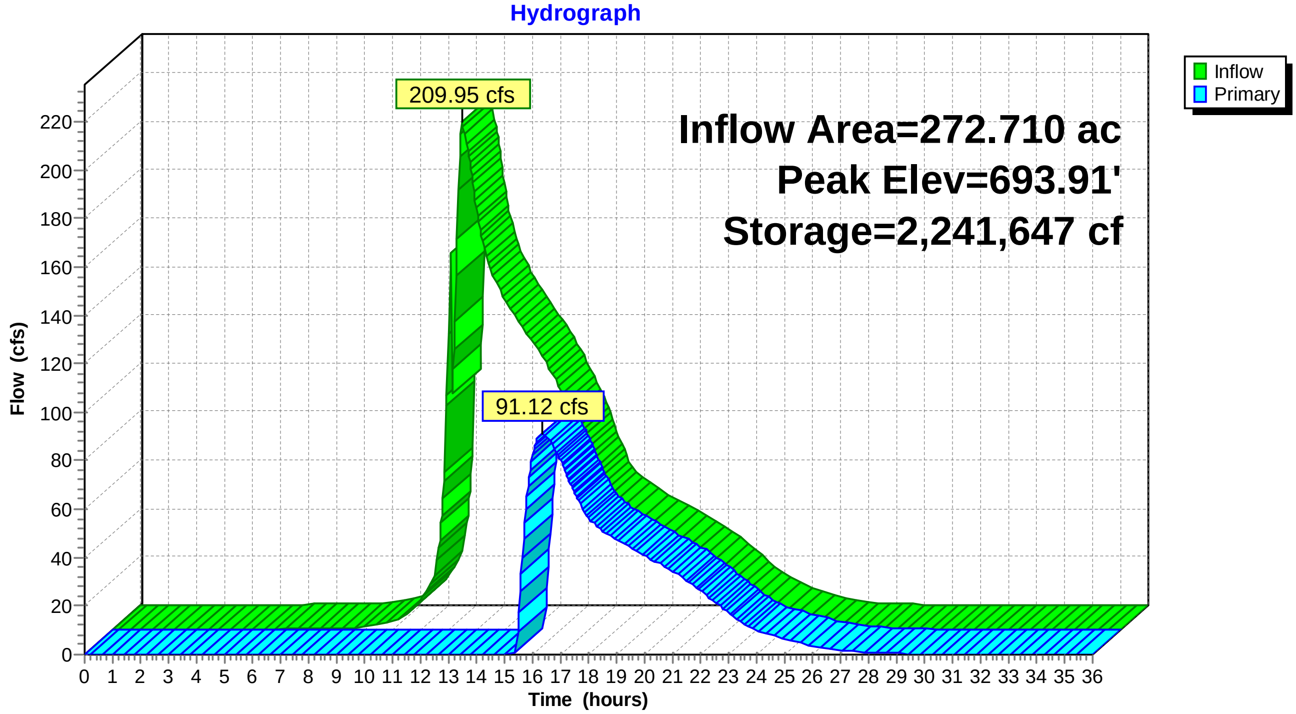
Volume	Invert	Avail.Storage	Storage Description
#1	668.00'	2,910,320 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
668.00	1,200	0	0
670.00	12,400	13,600	13,600
674.00	53,100	131,000	144,600
680.00	87,600	422,100	566,700
690.00	135,200	1,114,000	1,680,700
694.00	152,508	575,416	2,256,116
695.00	158,400	155,454	2,411,570
698.00	174,100	498,750	2,910,320

Device	Routing	Invert	Outlet Devices
#1	Primary	693.00'	**40.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=90.73 cfs @ 16.36 hrs HW=693.90' (Free Discharge)
└—**1=Broad-Crested Rectangular Weir** (Weir Controls 90.73 cfs @ 2.51 fps)

Pond 1P: NSB North



Summary for Pond 2P: NSB North Inlet

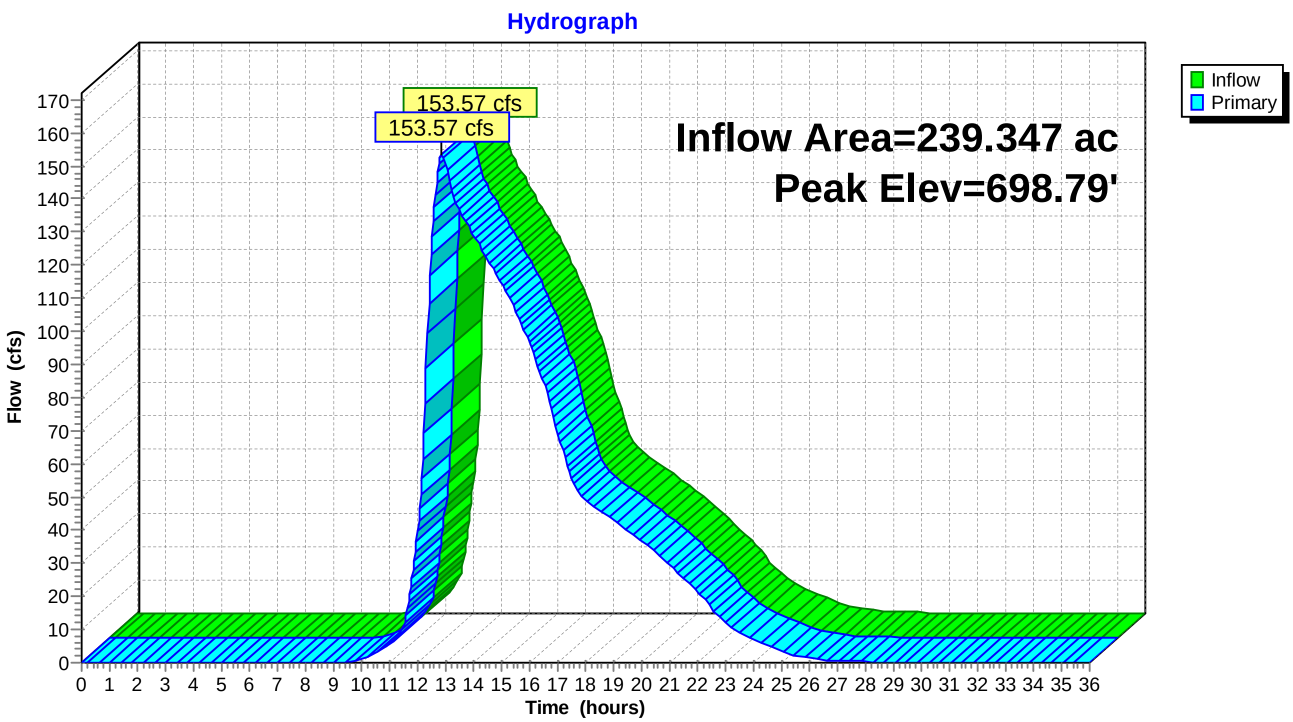
Inflow Area = 239.347 ac, 4.19% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 153.57 cfs @ 12.87 hrs, Volume= 67.505 af
Outflow = 153.57 cfs @ 12.87 hrs, Volume= 67.505 af, Atten= 0%, Lag= 0.0 min
Primary = 153.57 cfs @ 12.87 hrs, Volume= 67.505 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 698.79' @ 12.87 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	694.96'	**30.0" Round 30" Culverts X 3.00** L= 110.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 694.96' / 694.96' S= 0.0000 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Primary	694.96'	**54.0" Round 54" Culvert** L= 110.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 694.96' / 690.50' S= 0.0405 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 15.90 sf

Primary OutFlow Max=153.50 cfs @ 12.87 hrs HW=698.79' TW=693.90' (Fixed TW Elev= 693.90')
1=30" Culverts (Barrel Controls 57.31 cfs @ 3.89 fps)
2=54" Culvert (Inlet Controls 96.19 cfs @ 6.67 fps)

Pond 2P: NSB North Inlet



Summary for Pond 5P: MC VII/IX & MC XI/X Pond

MC X/XI Culverts do not restrict flow in ditch (have more capacity than outlet on north end) therefore they are not modeled.

Inflow Area = 94.846 ac, 5.69% Impervious, Inflow Depth = 3.44" for 100-yr, 24-hr event
Inflow = 291.33 cfs @ 12.38 hrs, Volume= 27.225 af
Outflow = 73.42 cfs @ 13.05 hrs, Volume= 26.332 af, Atten= 75%, Lag= 40.2 min
Primary = 73.42 cfs @ 13.05 hrs, Volume= 26.332 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Starting Elev= 697.10' Storage= 0 cf
Peak Elev= 703.60' @ 13.05 hrs Surf.Area= 160,197 sf Storage= 498,329 cf

Plug-Flow detention time= 86.4 min calculated for 26.332 af (97% of inflow)
Center-of-Mass det. time= 68.5 min (878.9 - 810.3)

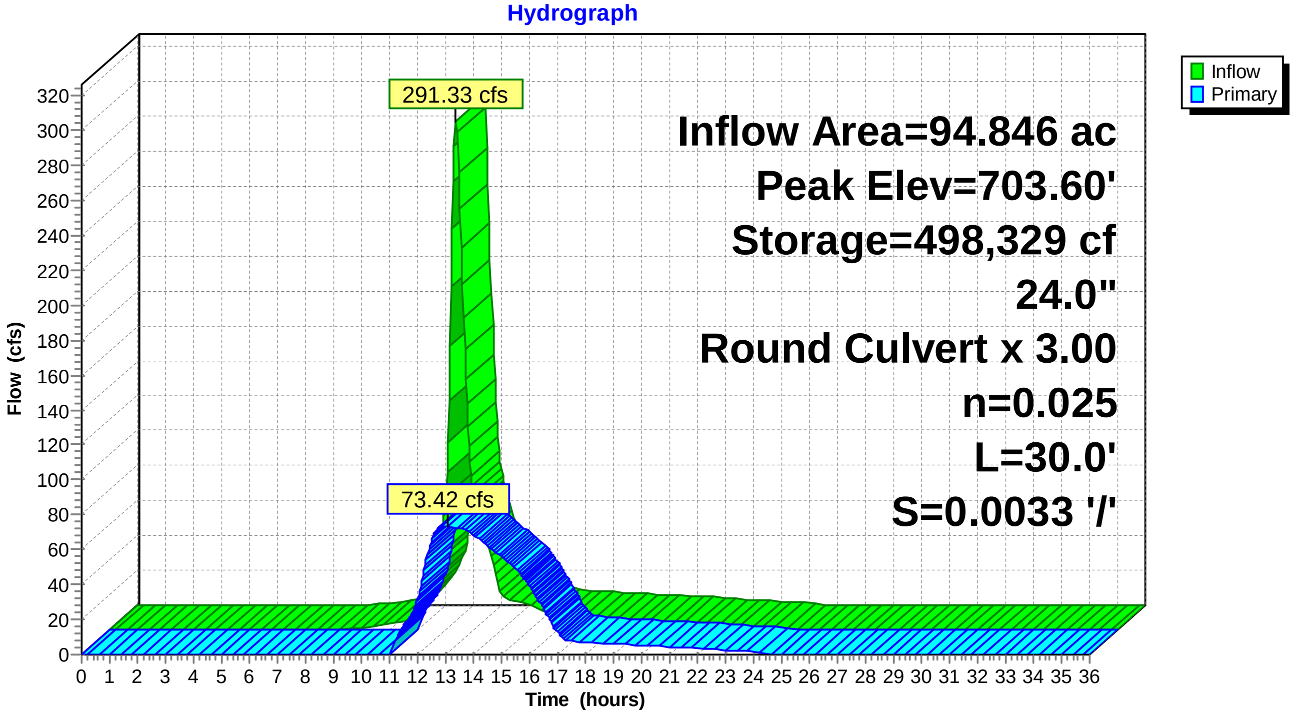
Volume	Invert	Avail.Storage	Storage Description
#1	698.00'	925,600 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
698.00	13,000	0	0
700.00	55,300	68,300	68,300
702.00	137,000	192,300	260,600
704.00	166,000	303,000	563,600
706.00	196,000	362,000	925,600

Device	Routing	Invert	Outlet Devices
#1	Primary	697.10'	**24.0" Round Culvert X 3.00** L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 697.10' / 697.00' S= 0.0033 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=73.42 cfs @ 13.05 hrs HW=703.60' TW=699.40' (Fixed TW Elev= 699.40')
└─**1=Culvert** (Inlet Controls 73.42 cfs @ 7.79 fps)

Pond 5P: MC VII/IX & MC XI/X Pond



Summary for Pond 6P: N-MC VII Culvert

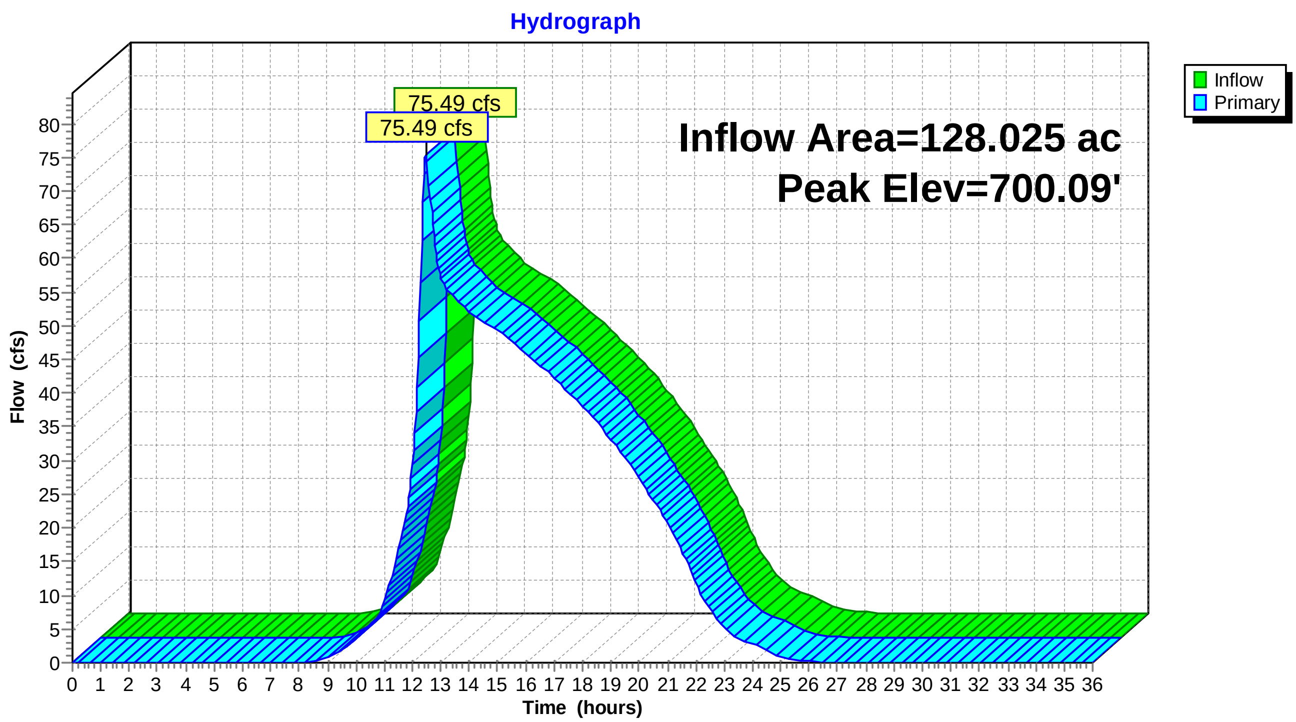
Inflow Area =	128.025 ac,	3.61% Impervious,	Inflow Depth = 3.42"	for 100-yr, 24-hr event
Inflow =	75.49 cfs @	12.48 hrs, Volume=	36.532 af	
Outflow =	75.49 cfs @	12.48 hrs, Volume=	36.532 af, Atten= 0%, Lag= 0.0 min	
Primary =	75.49 cfs @	12.48 hrs, Volume=	36.532 af	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 700.09' @ 12.48 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	696.77'	**54.0" Round 54" Culvert** L= 42.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 696.77' / 696.61' S= 0.0038 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 15.90 sf
#2	Primary	696.77'	**36.0" Round 36" Culvert** L= 42.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 696.77' / 696.61' S= 0.0038 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 7.07 sf

Primary OutFlow Max=75.43 cfs @ 12.48 hrs HW=700.09' TW=699.40' (Fixed TW Elev= 699.40')
1=54" Culvert (Outlet Controls 47.11 cfs @ 5.21 fps)
2=36" Culvert (Inlet Controls 28.31 cfs @ 4.01 fps)

Pond 6P: N-MC VII Culvert



Summary for Pond 7P: MC VII/XI Pond

Inflow Area = 22.920 ac, 3.90% Impervious, Inflow Depth = 3.48" for 100-yr, 24-hr event
Inflow = 85.95 cfs @ 12.30 hrs, Volume= 6.645 af
Outflow = 55.60 cfs @ 12.50 hrs, Volume= 6.504 af, Atten= 35%, Lag= 11.6 min
Primary = 55.60 cfs @ 12.50 hrs, Volume= 6.504 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 707.70' @ 12.50 hrs Surf.Area= 34,963 sf Storage= 66,581 cf

Plug-Flow detention time= 29.0 min calculated for 6.496 af (98% of inflow)
Center-of-Mass det. time= 17.2 min (819.9 - 802.7)

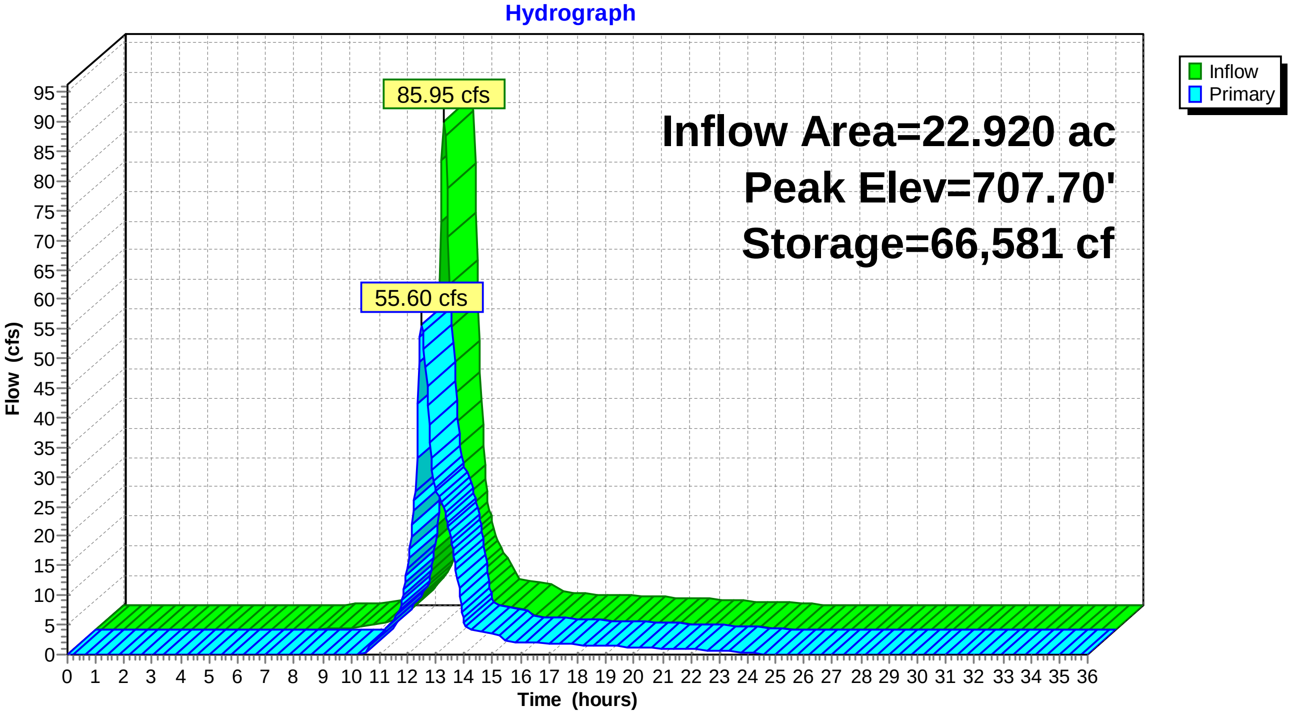
Volume	Invert	Avail.Storage	Storage Description
#1	700.00'	77,700 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
700.00	0	0	0
702.00	1,450	1,450	1,450
704.00	5,200	6,650	8,100
706.00	12,750	17,950	26,050
708.00	38,900	51,650	77,700

Device	Routing	Invert	Outlet Devices
#1	Primary	700.30'	**24.0" Round Culvert** L= 40.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 700.30' / 699.40' S= 0.0225 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#2	Primary	707.00'	**16.0' long x 25.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=55.36 cfs @ 12.50 hrs HW=707.69' TW=703.60' (Fixed TW Elev= 703.60')
1=Culvert (Inlet Controls 30.61 cfs @ 9.74 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 24.75 cfs @ 2.23 fps)

Pond 7P: MC VII/XI Pond



Summary for Pond 8P: NSB South

Inflow Area = 272.710 ac, 3.67% Impervious, Inflow Depth = 1.45" for 100-yr, 24-hr event
Inflow = 91.12 cfs @ 16.36 hrs, Volume= 32.951 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

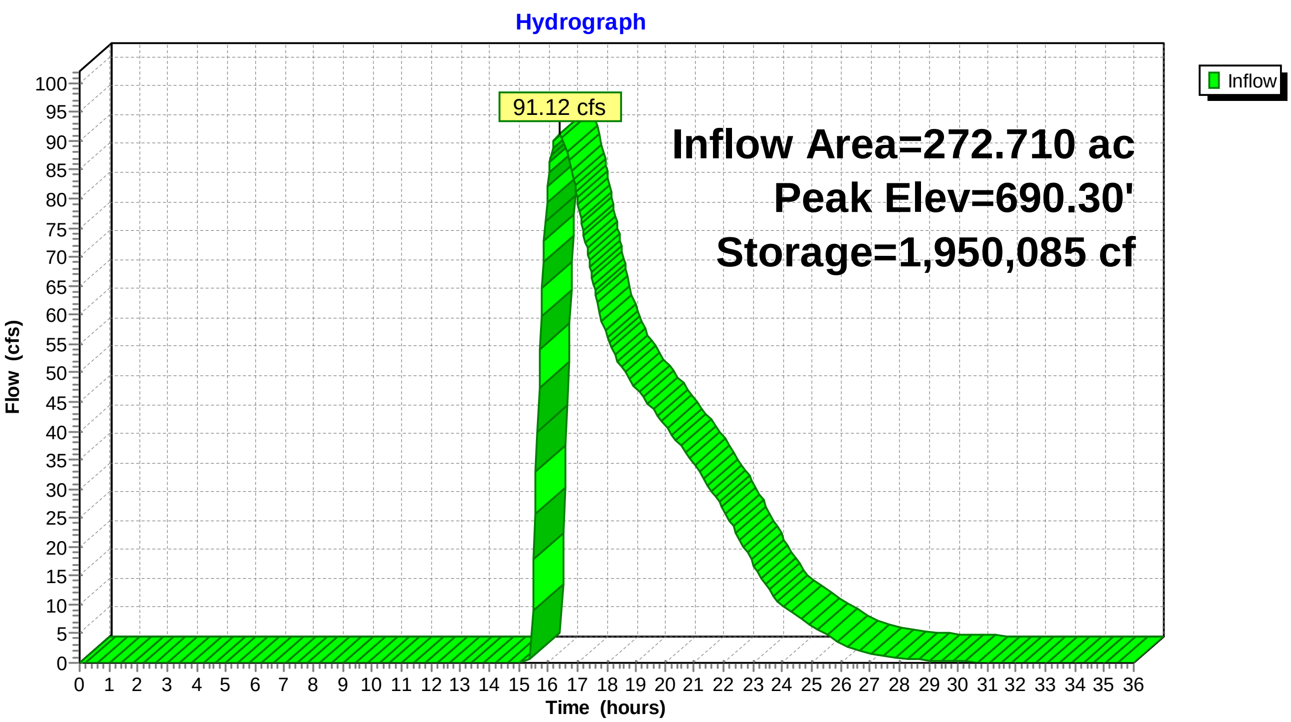
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Starting Elev= 680.00' Surf.Area= 98,500 sf Storage= 514,800 cf
Peak Elev= 690.30' @ 36.00 hrs Surf.Area= 179,690 sf Storage= 1,950,085 cf (1,435,285 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	672.00'	2,867,350 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
672.00	30,200	0	0
680.00	98,500	514,800	514,800
690.00	177,700	1,381,000	1,895,800
694.00	203,900	763,200	2,659,000
695.00	212,800	208,350	2,867,350

Pond 8P: NSB South



Summary for Pond 11P: NWD / NW-MC VII

Inflow Area = 119.997 ac, 3.85% Impervious, Inflow Depth = 3.43" for 100-yr, 24-hr event
Inflow = 525.99 cfs @ 12.18 hrs, Volume= 34.271 af
Outflow = 50.93 cfs @ 13.12 hrs, Volume= 34.271 af, Atten= 90%, Lag= 56.5 min
Primary = 50.93 cfs @ 13.12 hrs, Volume= 34.271 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 711.86' @ 13.12 hrs Surf.Area= 197,760 sf Storage= 799,970 cf

Plug-Flow detention time= 165.6 min calculated for 34.271 af (100% of inflow)
Center-of-Mass det. time= 165.4 min (957.7 - 792.3)

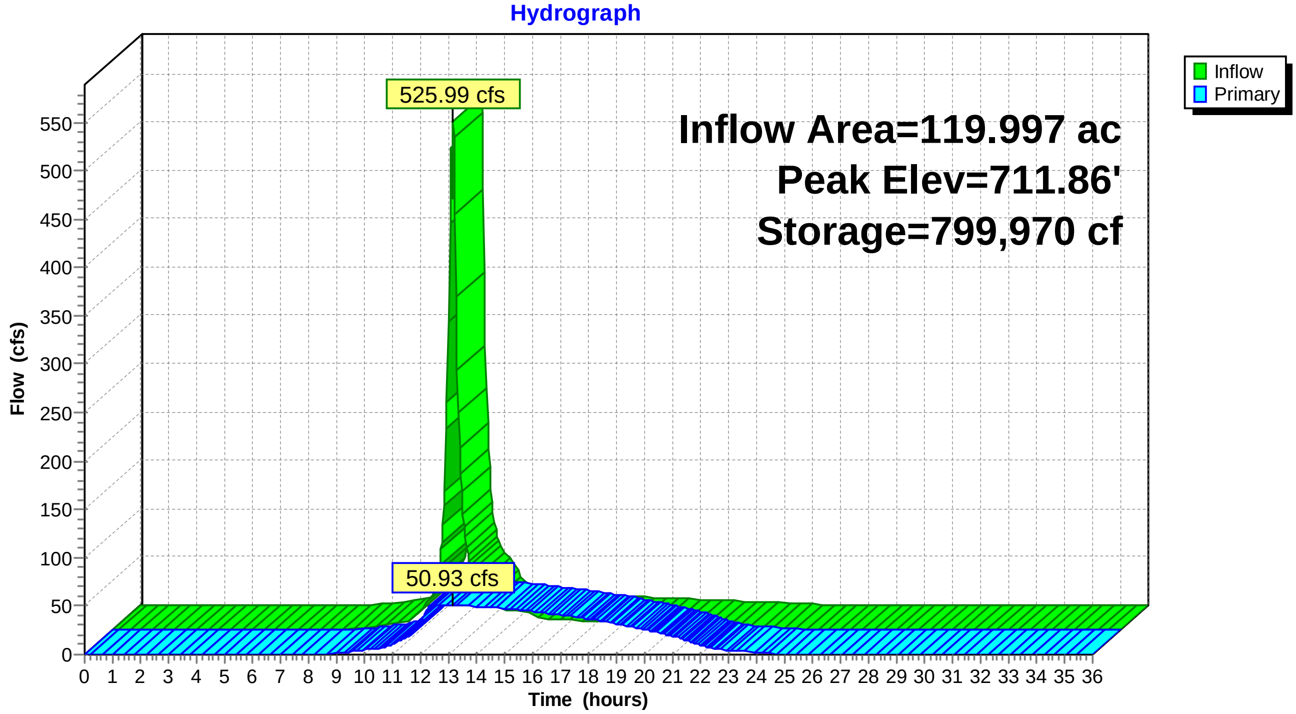
Volume	Invert	Avail.Storage	Storage Description
#1	704.30'	827,625 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
704.30	0	0	0
706.00	68,500	58,225	58,225
708.00	102,200	170,700	228,925
710.00	147,500	249,700	478,625
712.00	201,500	349,000	827,625

Device	Routing	Invert	Outlet Devices
#1	Primary	704.30'	**12.0" Round 12" HDPE Culverts X 2.00** L= 125.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 704.30' / 699.00' S= 0.0424 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Primary	704.30'	**18.0" Round 18" HDPE Culverts X 2.00** L= 125.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 704.30' / 699.00' S= 0.0424 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=50.93 cfs @ 13.12 hrs HW=711.86' TW=699.86' (Fixed TW Elev= 699.86')
- **1=12" HDPE Culverts** (Inlet Controls 15.87 cfs @ 10.10 fps)
- **2=18" HDPE Culverts** (Inlet Controls 35.06 cfs @ 9.92 fps)

Pond 11P: NWD / NW-MC VII



Summary for Pond 19P: E-MC IX Culvert

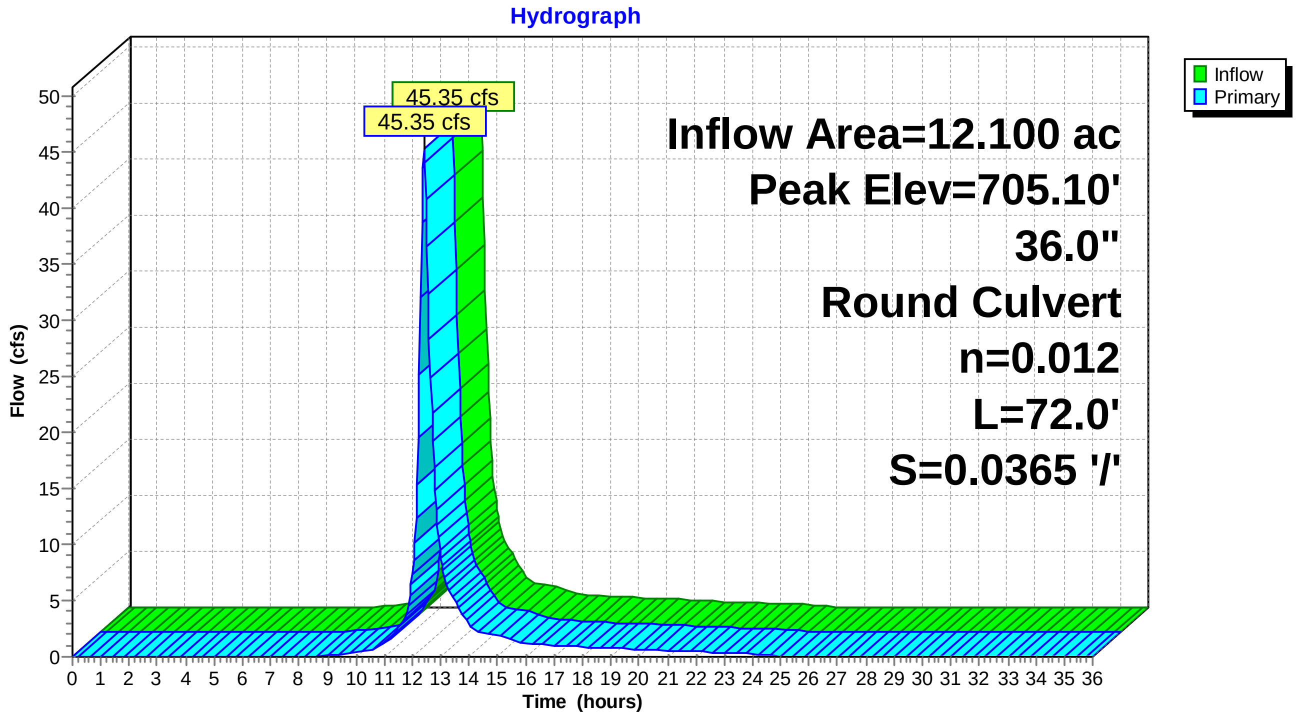
Inflow Area = 12.100 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 45.35 cfs @ 12.40 hrs, Volume= 3.409 af
Outflow = 45.35 cfs @ 12.40 hrs, Volume= 3.409 af, Atten= 0%, Lag= 0.0 min
Primary = 45.35 cfs @ 12.40 hrs, Volume= 3.409 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 705.10' @ 12.40 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	701.82'	**36.0" Round Culvert** L= 72.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 701.82' / 699.19' S= 0.0365 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=45.25 cfs @ 12.40 hrs HW=705.09' TW=700.23' (Fixed TW Elev= 700.23')
↑**1=Culvert** (Inlet Controls 45.25 cfs @ 6.40 fps)

Pond 19P: E-MC IX Culvert



Summary for Pond 36P: NSB South Inlet

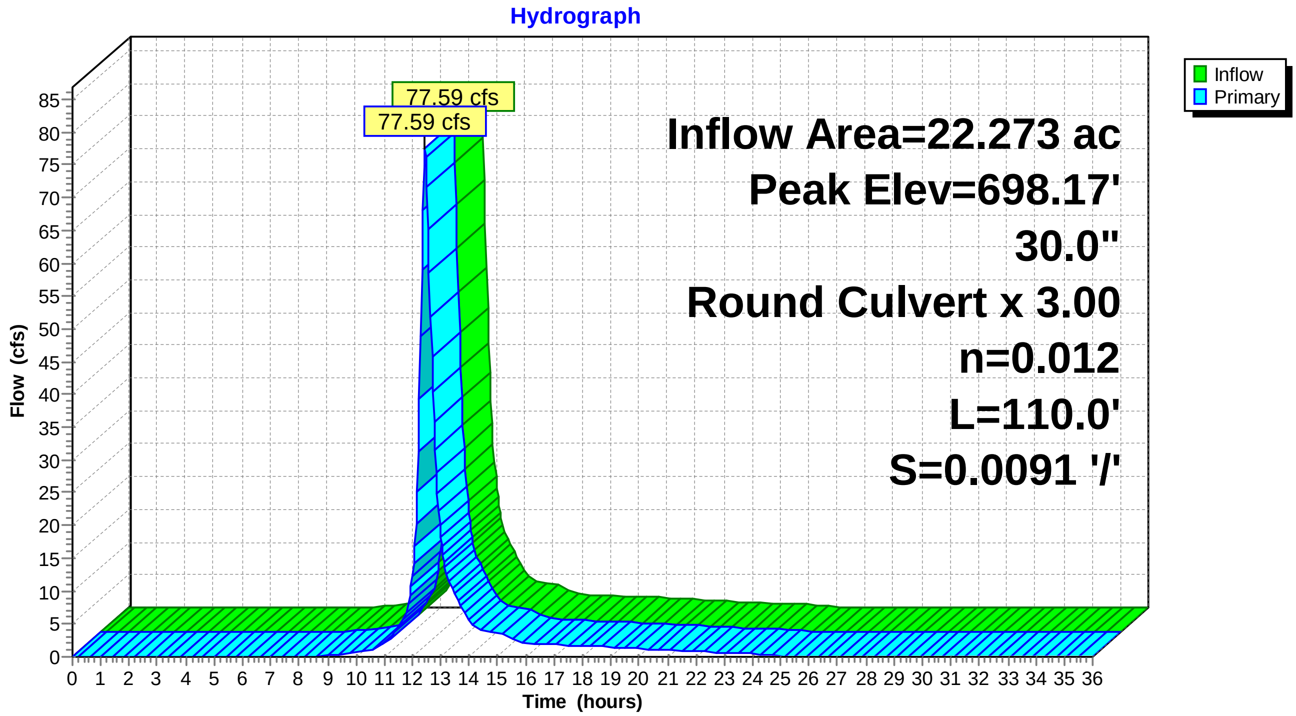
Inflow Area = 22.273 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 77.59 cfs @ 12.45 hrs, Volume= 6.274 af
Outflow = 77.59 cfs @ 12.45 hrs, Volume= 6.274 af, Atten= 0%, Lag= 0.0 min
Primary = 77.59 cfs @ 12.45 hrs, Volume= 6.274 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.04 hrs
Peak Elev= 698.17' @ 12.45 hrs

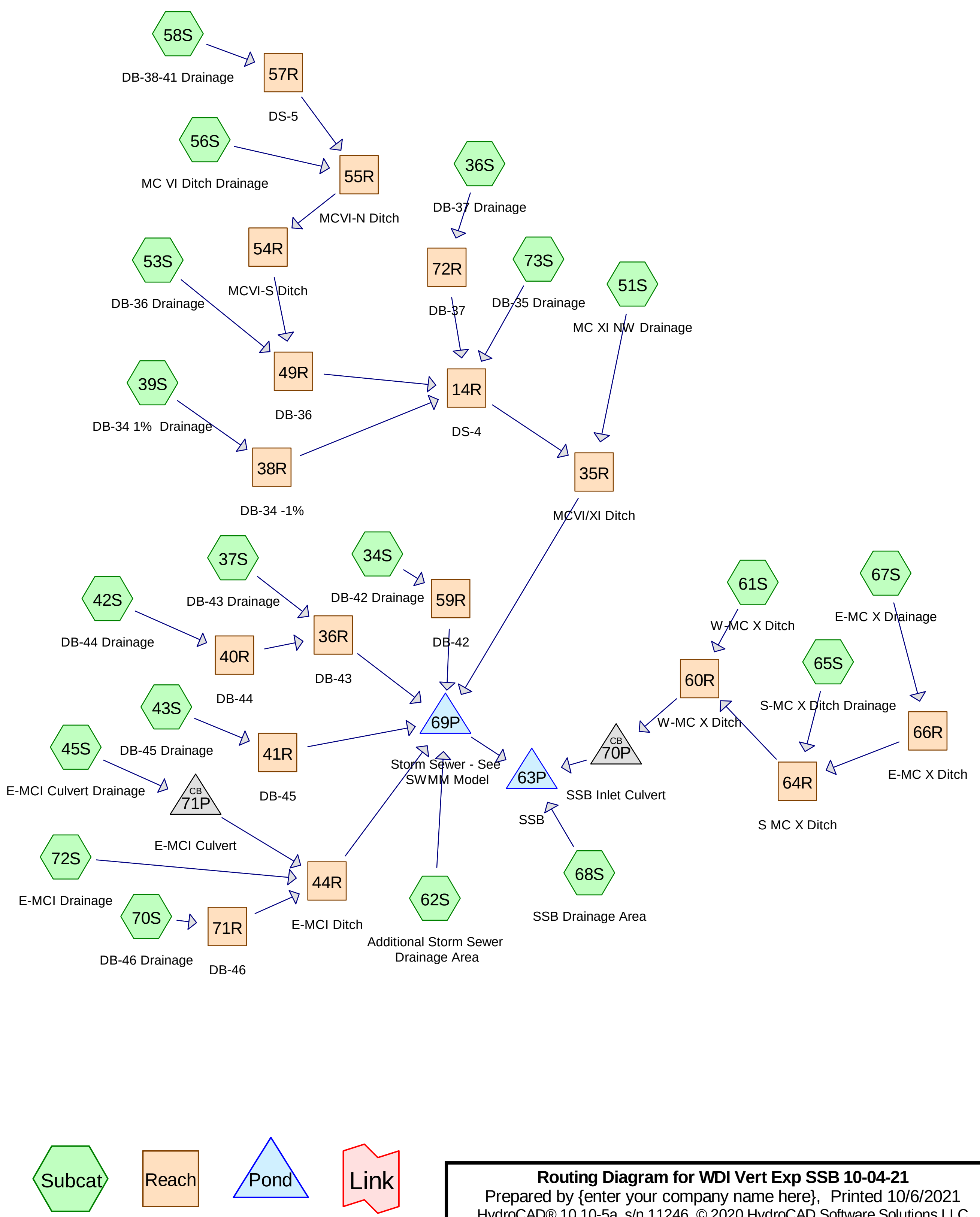
Device	Routing	Invert	Outlet Devices
#1	Primary	695.00'	**30.0" Round 30" Culverts X 3.00** L= 110.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 695.00' / 694.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

Primary OutFlow Max=77.30 cfs @ 12.45 hrs HW=698.16' TW=693.90' (Fixed TW Elev= 693.90')
1=30" Culverts (Inlet Controls 77.30 cfs @ 5.25 fps)

Pond 36P: NSB South Inlet



South Sedimentation Basin (SSB) HYDROCAD OUTPUT – 25-yr, 24-hr



Routing Diagram for WDI Vert Exp SSB 10-04-21
Prepared by {enter your company name here}, Printed 10/6/2021
HydroCAD® 10.10-5a s/n 11246 © 2020 HydroCAD Software Solutions LLC

Time span=0.00-36.00 hrs, dt=0.02 hrs, 1801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 34S: DB-42 Drainage Runoff Area=86,500 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=476' Tc=4.1 min CN=84 Runoff=9.22 cfs 0.385 af

Subcatchment 36S: DB-37 Drainage Runoff Area=393,872 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=691' Tc=19.8 min CN=84 Runoff=23.75 cfs 1.753 af

Subcatchment 37S: DB-43 Drainage Runoff Area=63,437 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=280' Tc=10.1 min CN=84 Runoff=5.23 cfs 0.282 af

Subcatchment 39S: DB-34 1% Drainage Runoff Area=320,470 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=130' Slope=0.2500 '/' Tc=5.1 min CN=84 Runoff=32.56 cfs 1.427 af

Subcatchment 42S: DB-44 Drainage Runoff Area=67,882 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=291' Tc=18.1 min CN=84 Runoff=4.28 cfs 0.302 af

Subcatchment 43S: DB-45 Drainage Runoff Area=8,958 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=77' Tc=7.7 min CN=84 Runoff=0.82 cfs 0.040 af

Subcatchment 45S: E-MCI Culvert Drainage Runoff Area=136,608 sf 0.00% Impervious Runoff Depth=2.00"
Flow Length=667' Tc=20.2 min CN=80 Runoff=6.97 cfs 0.523 af

Subcatchment 51S: MC XI NW Drainage Runoff Area=649,178 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=480' Slope=0.0520 '/' Tc=16.5 min CN=84 Runoff=42.93 cfs 2.890 af

Subcatchment 53S: DB-36 Drainage Runoff Area=181,100 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=495' Tc=7.0 min CN=84 Runoff=17.01 cfs 0.806 af

Subcatchment 56S: MC VI Ditch Drainage Runoff Area=297,466 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=367' Tc=6.9 min CN=84 Runoff=28.08 cfs 1.324 af

Subcatchment 58S: DB-38-41 Drainage Runoff Area=335,816 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=933' Tc=3.8 min CN=84 Runoff=36.23 cfs 1.495 af

Subcatchment 61S: W-MC X Ditch Runoff Area=141,400 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=150' Slope=0.2500 '/' Tc=5.8 min CN=84 Runoff=14.01 cfs 0.629 af

Subcatchment 62S: Additional Storm Sewer Runoff Area=237,200 sf 100.00% Impervious Runoff Depth=3.72"
Tc=0.0 min CN=98 Runoff=35.48 cfs 1.686 af

Subcatchment 65S: S-MC X Ditch Drainage Runoff Area=205,200 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=160' Slope=0.3300 '/' Tc=5.4 min CN=84 Runoff=20.59 cfs 0.914 af

Subcatchment 67S: E-MC X Drainage Runoff Area=253,500 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=110' Slope=0.2500 '/' Tc=4.5 min CN=84 Runoff=26.56 cfs 1.129 af

Subcatchment 68S: SSB Drainage Area Runoff Area=900,800 sf 23.12% Impervious Runoff Depth=2.59"
Flow Length=400' Slope=0.0730 '/' Tc=13.7 min CN=87 Runoff=71.50 cfs 4.465 af

Subcatchment 70S: DB-46 Drainage Runoff Area=455,500 sf 0.00% Impervious Runoff Depth=2.00"
Flow Length=450' Slope=0.0350 '/' Tc=19.1 min CN=80 Runoff=24.00 cfs 1.743 af

Subcatchment 72S: E-MCI Drainage Runoff Area=177,527 sf 0.00% Impervious Runoff Depth=2.00"
Flow Length=1,086' Tc=33.4 min CN=80 Runoff=6.83 cfs 0.679 af

Subcatchment 73S: DB-35 Drainage Runoff Area=188,838 sf 0.00% Impervious Runoff Depth=2.33"
Flow Length=1,373' Tc=6.3 min CN=84 Runoff=18.29 cfs 0.841 af

Reach 14R: DS-4 Avg. Flow Depth=0.59' Max Vel=16.59 fps Inflow=109.24 cfs 7.646 af
n=0.029 L=230.0' S=0.2500 '/' Capacity=930.83 cfs Outflow=108.99 cfs 7.646 af

Reach 35R: MCVI/XI Ditch Avg. Flow Depth=1.79' Max Vel=6.44 fps Inflow=151.77 cfs 10.536 af
n=0.025 L=290.0' S=0.0100 '/' Capacity=898.54 cfs Outflow=150.84 cfs 10.536 af

Reach 36R: DB-43 Avg. Flow Depth=0.88' Max Vel=3.30 fps Inflow=7.80 cfs 0.585 af
n=0.025 L=402.0' S=0.0100 '/' Capacity=68.62 cfs Outflow=7.64 cfs 0.585 af

Reach 38R: DB-34 -1% Avg. Flow Depth=1.30' Max Vel=4.28 fps Inflow=32.56 cfs 1.427 af
n=0.025 L=2,391.0' S=0.0100 '/' Capacity=68.62 cfs Outflow=21.45 cfs 1.427 af

Reach 40R: DB-44 Avg. Flow Depth=0.51' Max Vel=5.36 fps Inflow=4.28 cfs 0.302 af
n=0.025 L=610.0' S=0.0540 '/' Capacity=159.45 cfs Outflow=4.21 cfs 0.302 af

Reach 41R: DB-45 Avg. Flow Depth=0.38' Max Vel=1.88 fps Inflow=0.82 cfs 0.040 af
n=0.025 L=127.1' S=0.0100 '/' Capacity=68.59 cfs Outflow=0.80 cfs 0.040 af

Reach 44R: E-MCI Ditch Avg. Flow Depth=1.86' Max Vel=3.49 fps Inflow=36.31 cfs 2.945 af
n=0.025 L=250.0' S=0.0041 '/' Capacity=129.69 cfs Outflow=36.16 cfs 2.945 af

Reach 49R: DB-36 Avg. Flow Depth=1.77' Max Vel=7.46 fps Inflow=75.20 cfs 3.626 af
n=0.025 L=1,140.0' S=0.0200 '/' Capacity=175.94 cfs Outflow=69.89 cfs 3.626 af

Reach 54R: MCVI-S Ditch Avg. Flow Depth=1.32' Max Vel=8.62 fps Inflow=61.13 cfs 2.819 af
n=0.025 L=370.0' S=0.0380 '/' Capacity=181.62 cfs Outflow=59.88 cfs 2.819 af

Reach 55R: MCVI-N Ditch Avg. Flow Depth=0.61' Max Vel=4.42 fps Inflow=62.51 cfs 2.819 af
n=0.025 L=265.0' S=0.0270 '/' Capacity=230.14 cfs Outflow=61.13 cfs 2.819 af

Reach 57R: DS-5 Avg. Flow Depth=0.76' Max Vel=10.94 fps Inflow=36.23 cfs 1.495 af
n=0.029 L=304.0' S=0.1697 '/' Capacity=476.49 cfs Outflow=35.30 cfs 1.495 af

Reach 59R: DB-42 Avg. Flow Depth=0.90' Max Vel=3.37 fps Inflow=9.22 cfs 0.385 af
n=0.025 L=576.5' S=0.0100 '/' Capacity=68.65 cfs Outflow=8.15 cfs 0.385 af

Reach 60R: W-MC X Ditch Avg. Flow Depth=1.02' Max Vel=2.42 fps Inflow=22.31 cfs 2.672 af
n=0.025 L=833.0' S=0.0024 '/' Capacity=326.61 cfs Outflow=21.03 cfs 2.672 af

Reach 64R: S MC X Ditch Avg. Flow Depth=2.07' Max Vel=2.77 fps Inflow=23.26 cfs 2.042 af
n=0.025 L=1,110.0' S=0.0027 '/' Capacity=103.29 cfs Outflow=17.73 cfs 2.042 af

Reach 66R: E-MC X Ditch Avg. Flow Depth=1.26' Max Vel=1.81 fps Inflow=26.56 cfs 1.129 af
n=0.030 L=1,500.0' S=0.0025 '/' Capacity=145.10 cfs Outflow=14.40 cfs 1.129 af

Reach 71R: DB-46 Avg. Flow Depth=1.00' Max Vel=3.70 fps Inflow=24.00 cfs 1.743 af
n=0.025 L=200.0' S=0.0100 '/' Capacity=152.89 cfs Outflow=23.88 cfs 1.743 af

Reach 72R: DB-37 Avg. Flow Depth=1.17' Max Vel=5.66 fps Inflow=23.75 cfs 1.753 af
n=0.025 L=804.0' S=0.0200 '/' Capacity=97.04 cfs Outflow=23.29 cfs 1.753 af

Pond 63P: SSB Inflow=282.99 cfs 23.314 af
Primary=282.99 cfs 23.314 af

Pond 69P: Storm Sewer - See SWMM Model Inflow=202.39 cfs 16.177 af
Primary=202.39 cfs 16.177 af

Pond 70P: SSB Inlet Culvert Peak Elev=690.92' Inflow=21.03 cfs 2.672 af
30.0" Round Culvert n=0.012 L=113.0' S=-0.0012 '/' Outflow=21.03 cfs 2.672 af

Pond 71P: E-MCI Culvert Peak Elev=705.44' Inflow=6.97 cfs 0.523 af
24.0" Round Culvert n=0.012 L=80.0' S=0.0025 '/' Outflow=6.97 cfs 0.523 af

Total Runoff Area = 117.109 ac Runoff Volume = 23.314 af Average Runoff Depth = 2.39"
91.27% Pervious = 106.881 ac 8.73% Impervious = 10.227 ac

Summary for Subcatchment 34S: DB-42 Drainage

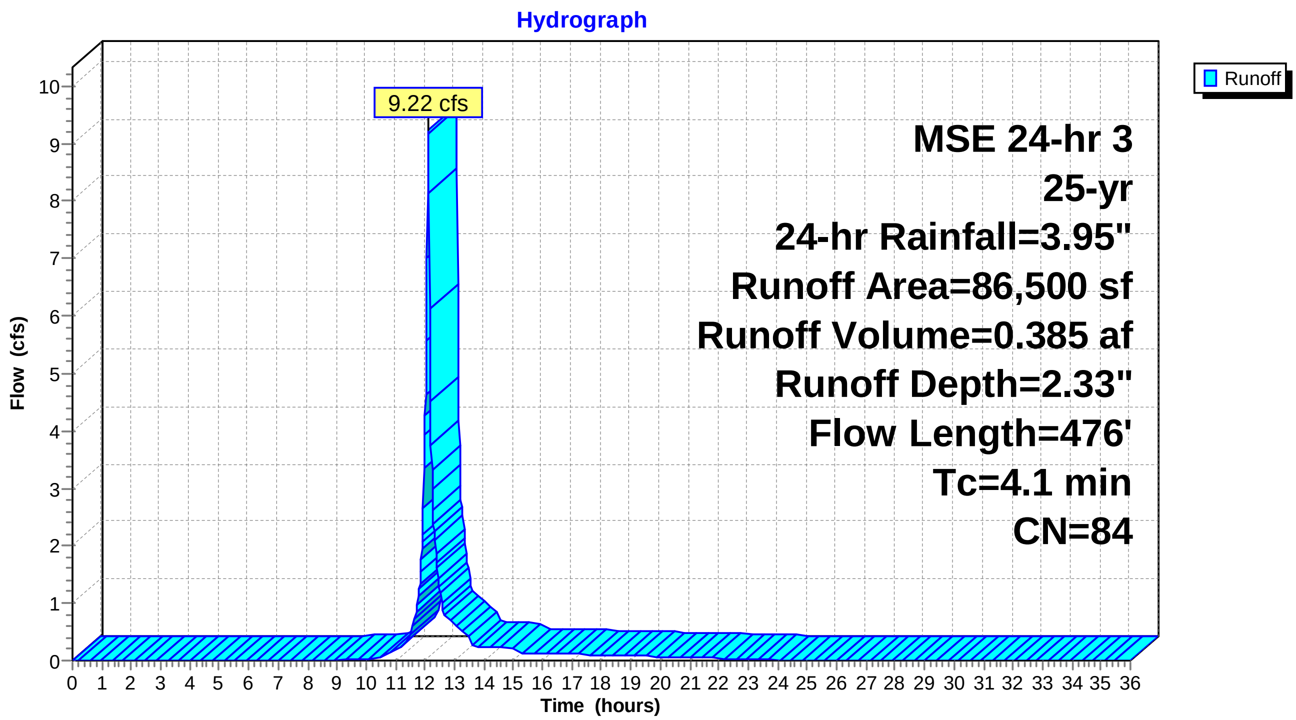
Runoff = 9.22 cfs @ 12.11 hrs, Volume= 0.385 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
86,500	84	50-75% Grass cover, Fair, HSG D
86,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	66	0.2500	0.37		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
1.1	410	0.0100	5.94	71.33	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, clean & winding
4.1	476	Total			

Subcatchment 34S: DB-42 Drainage



Summary for Subcatchment 36S: DB-37 Drainage

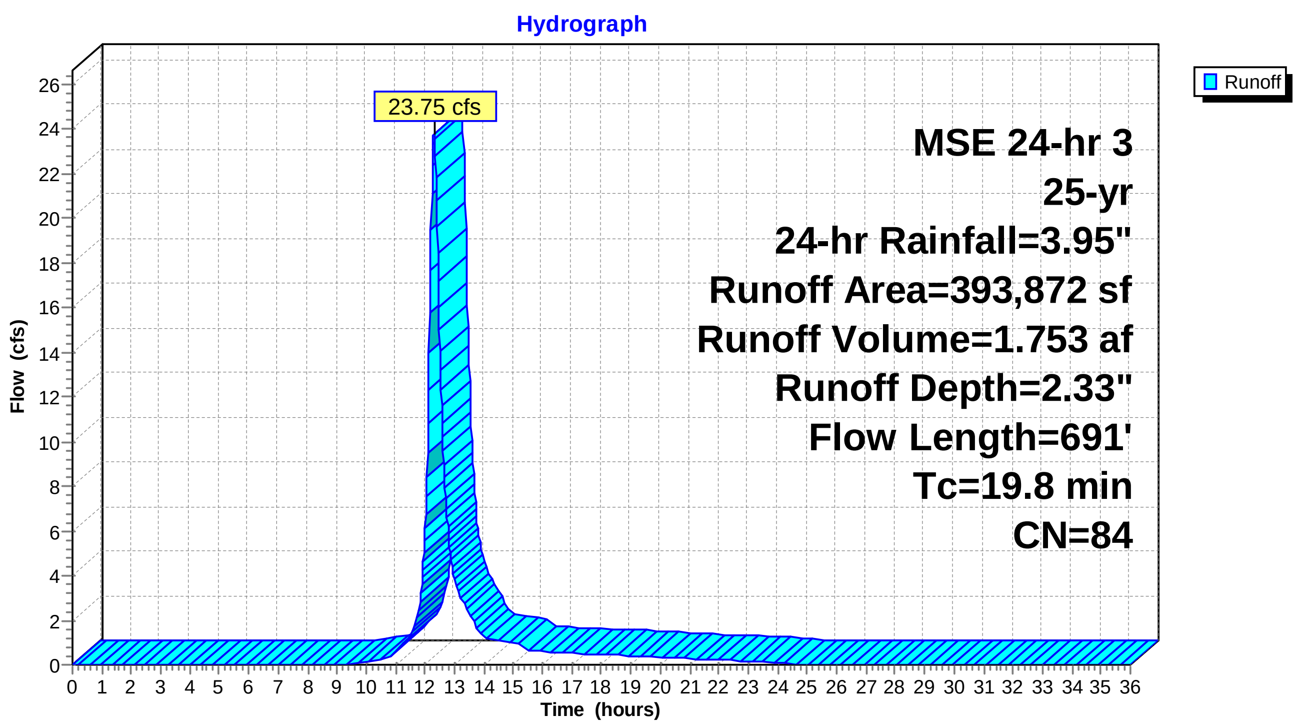
Runoff = 23.75 cfs @ 12.29 hrs, Volume= 1.753 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
393,872	84	50-75% Grass cover, Fair, HSG D
393,872		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	59	0.2500	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
11.4	141	0.0400	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
5.6	474	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	17	0.2500	3.50		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.8	691	Total			

Subcatchment 36S: DB-37 Drainage



Summary for Subcatchment 37S: DB-43 Drainage

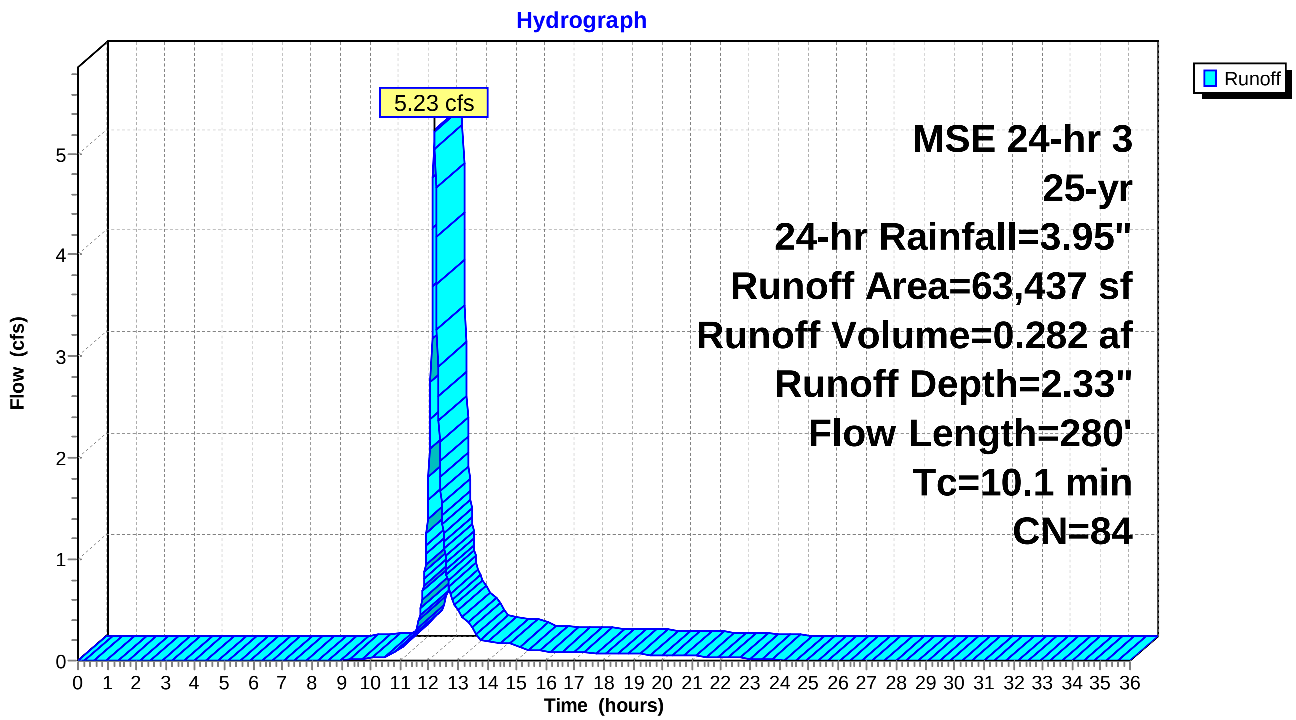
Runoff = 5.23 cfs @ 12.18 hrs, Volume= 0.282 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
63,437	84	50-75% Grass cover, Fair, HSG D
63,437		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	65	0.2500	0.37		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
7.2	215	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.1	280	Total			

Subcatchment 37S: DB-43 Drainage



Summary for Subcatchment 39S: DB-34 1% Drainage

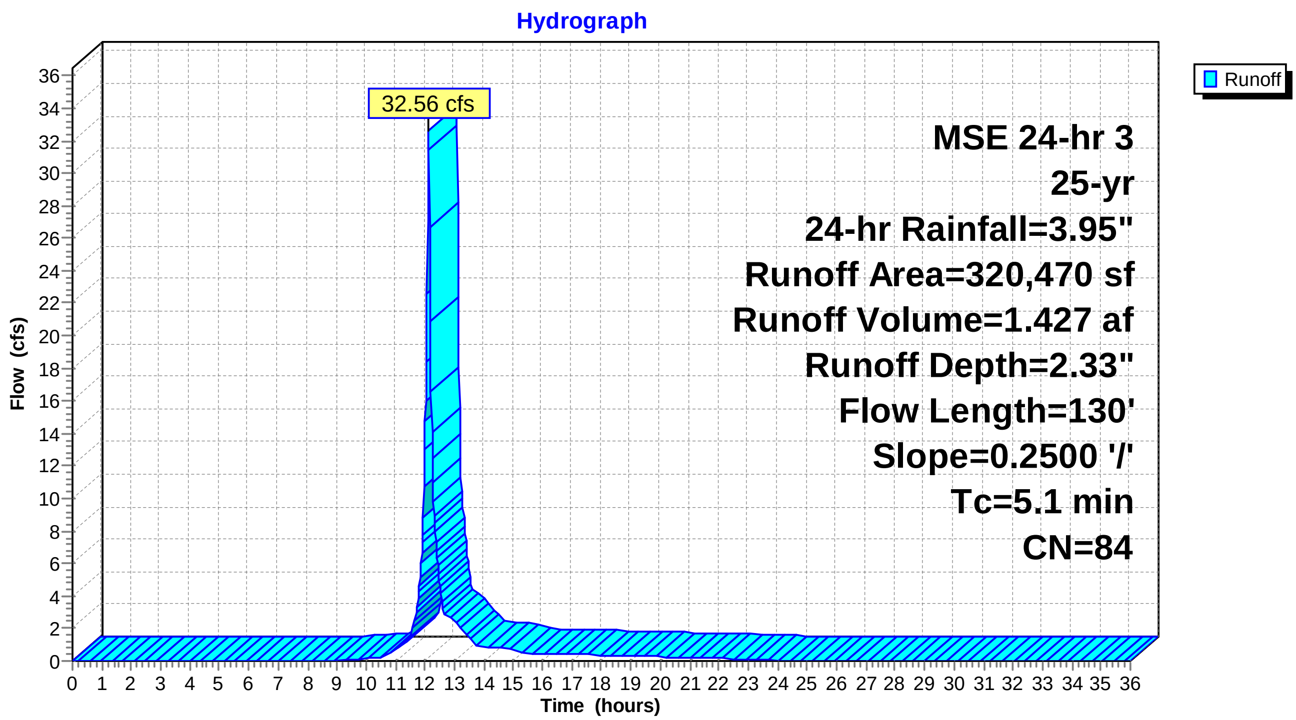
Runoff = 32.56 cfs @ 12.12 hrs, Volume= 1.427 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
320,470	84	50-75% Grass cover, Fair, HSG D
320,470		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	130	0.2500	0.42		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"

Subcatchment 39S: DB-34 1% Drainage



Summary for Subcatchment 42S: DB-44 Drainage

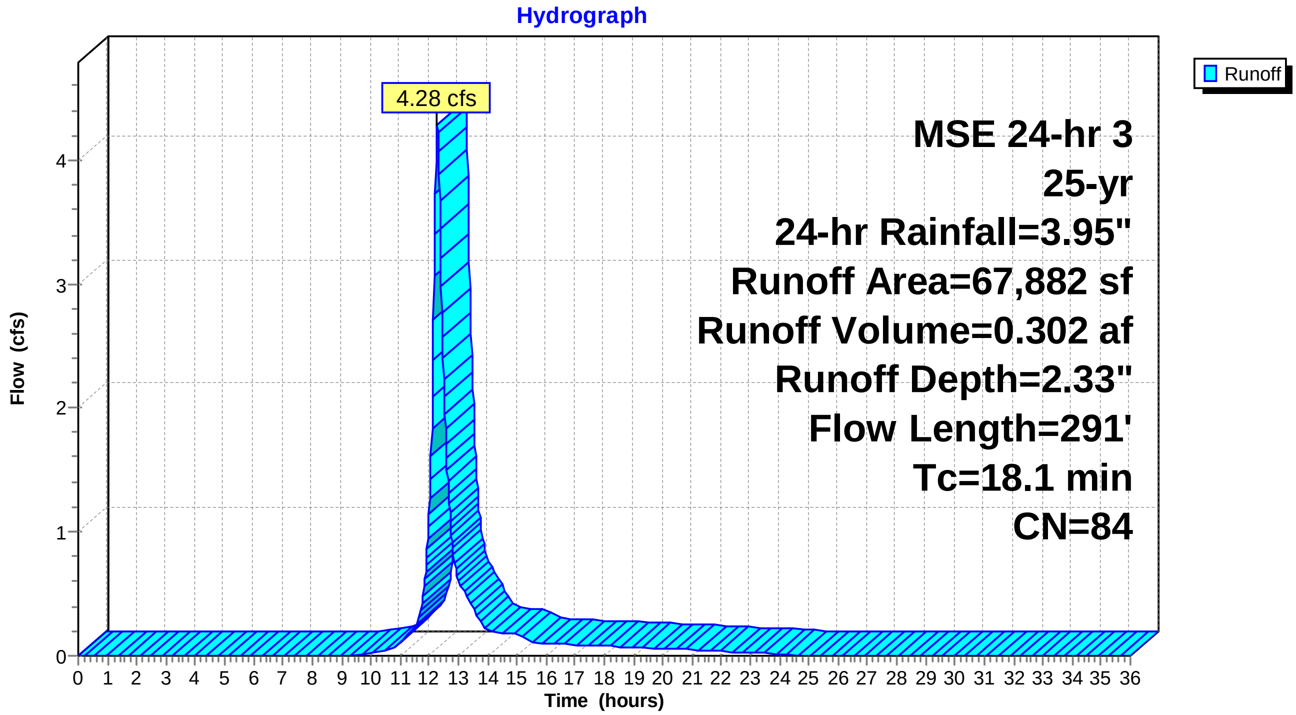
Runoff = 4.28 cfs @ 12.27 hrs, Volume= 0.302 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
67,882	84	50-75% Grass cover, Fair, HSG D
67,882		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.9	199	0.0260	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
0.2	92	0.2500	7.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
18.1	291	Total			

Subcatchment 42S: DB-44 Drainage



Summary for Subcatchment 43S: DB-45 Drainage

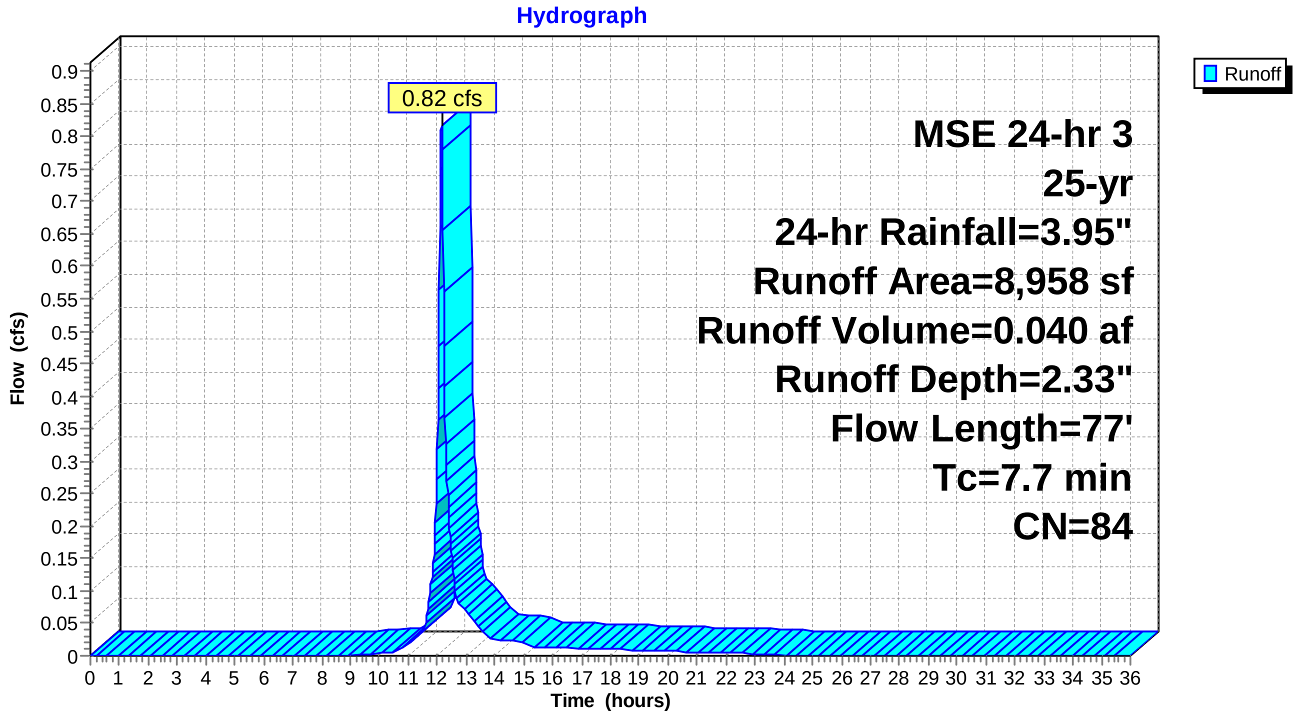
Runoff = 0.82 cfs @ 12.15 hrs, Volume= 0.040 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
8,958	84	50-75% Grass cover, Fair, HSG D
8,958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	29	0.0100	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
2.1	48	0.3300	0.39		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
7.7	77	Total			

Subcatchment 43S: DB-45 Drainage



Summary for Subcatchment 45S: E-MCI Culvert Drainage

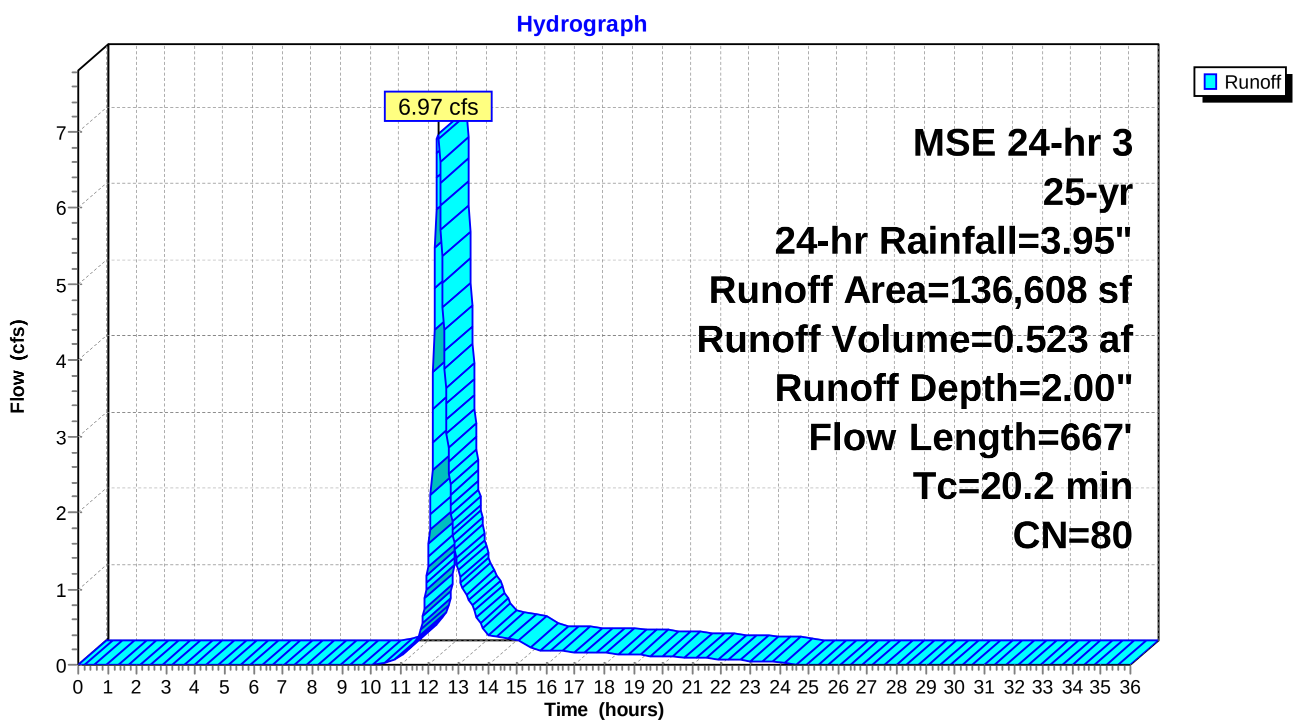
Runoff = 6.97 cfs @ 12.30 hrs, Volume= 0.523 af, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
136,608	80	>75% Grass cover, Good, HSG D
136,608		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	32	0.0100	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
1.6	35	0.3300	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
8.2	133	0.0800	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
4.3	467	0.0670	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.2	667	Total			

Subcatchment 45S: E-MCI Culvert Drainage



Summary for Subcatchment 51S: MC XI NW Drainage

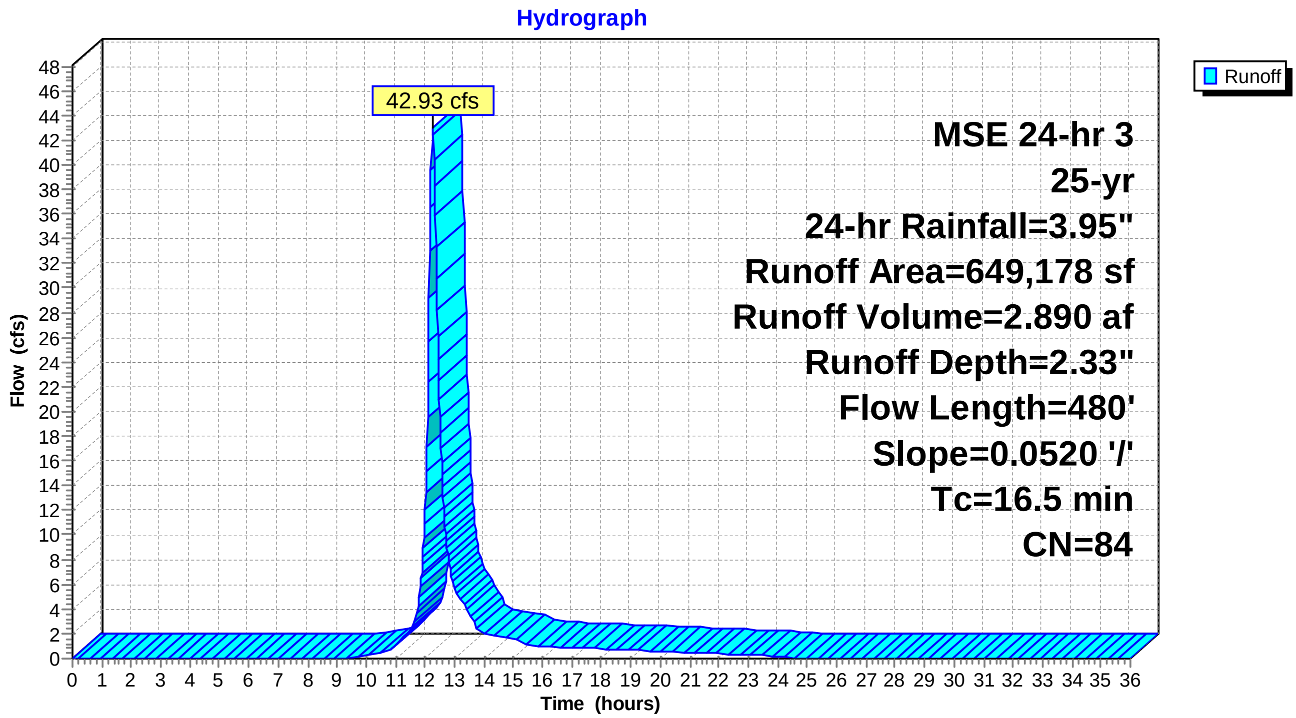
Runoff = 42.93 cfs @ 12.25 hrs, Volume= 2.890 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
475,309	84	50-75% Grass cover, Fair, HSG D
173,869	84	50-75% Grass cover, Fair, HSG D
649,178	84	Weighted Average
649,178		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	200	0.0520	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
2.9	280	0.0520	1.60		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.5	480	Total			

Subcatchment 51S: MC XI NW Drainage



Summary for Subcatchment 53S: DB-36 Drainage

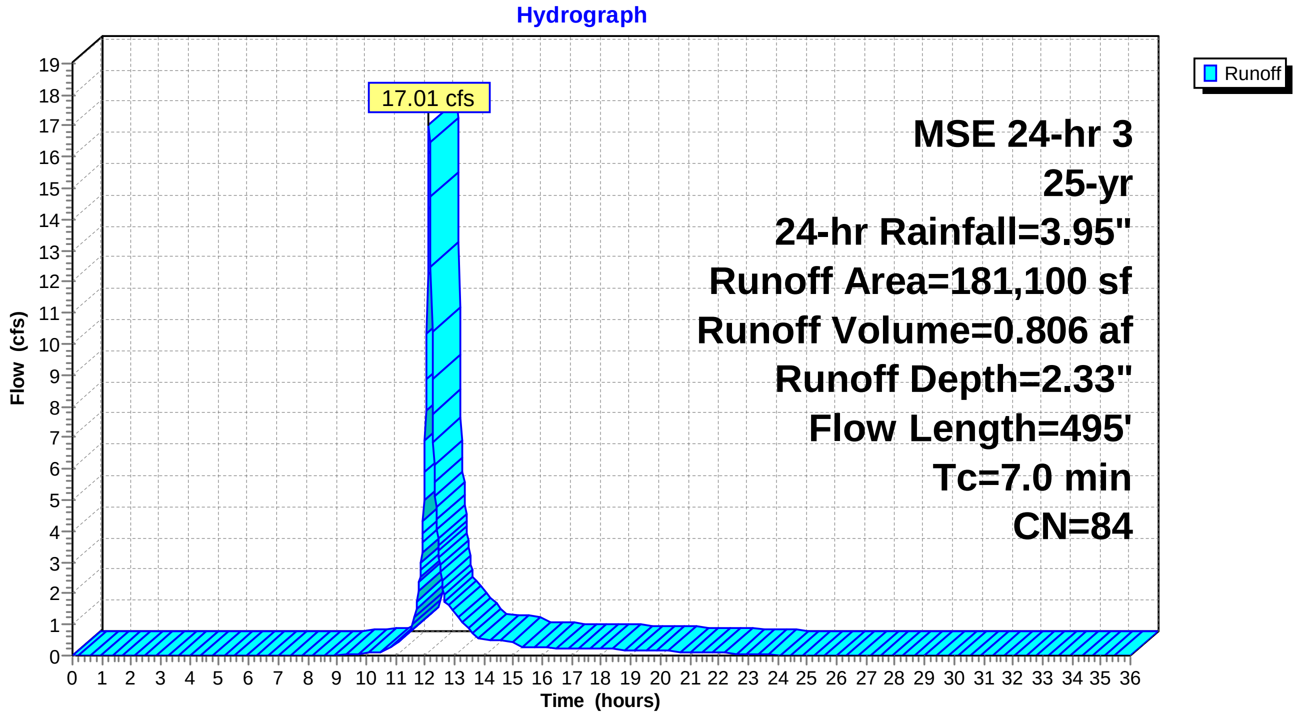
Runoff = 17.01 cfs @ 12.14 hrs, Volume= 0.806 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
181,100	84	50-75% Grass cover, Fair, HSG D
181,100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	170	0.2500	0.45		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
0.6	325	0.0200	8.41	100.87	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, clean & winding
7.0	495	Total			

Subcatchment 53S: DB-36 Drainage



Summary for Subcatchment 56S: MC VI Ditch Drainage

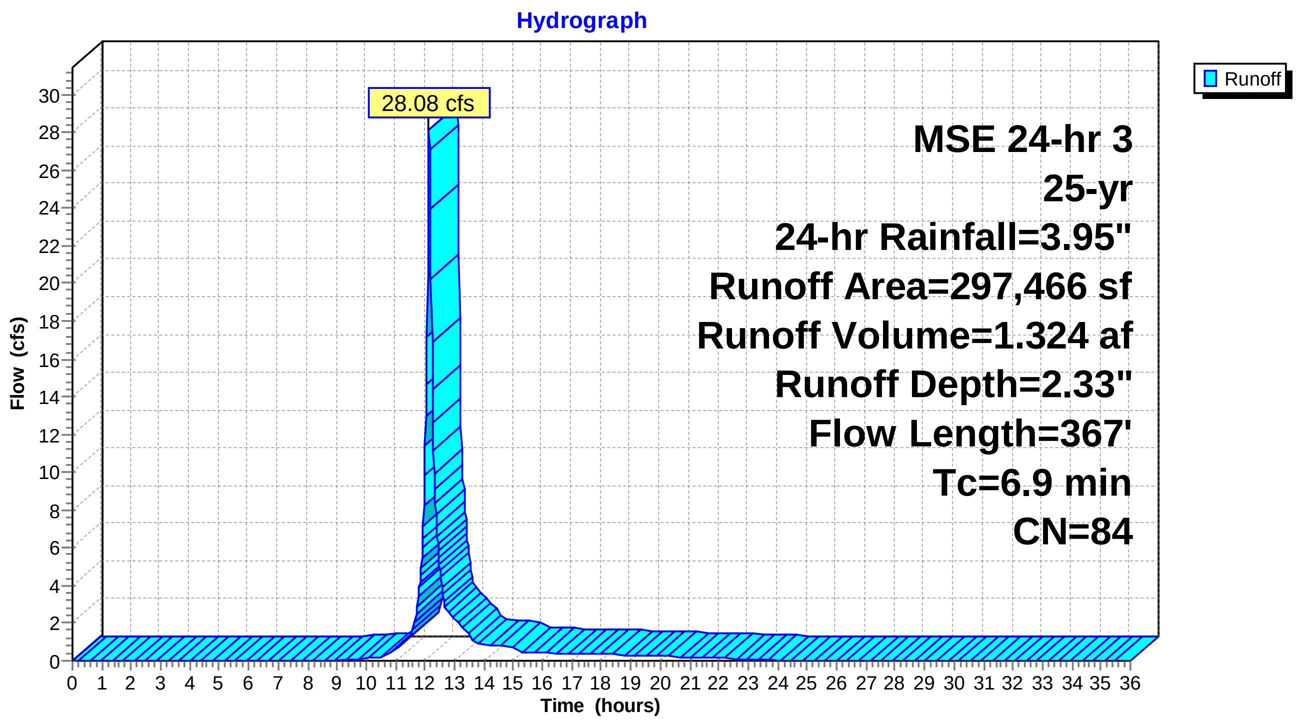
Runoff = 28.08 cfs @ 12.14 hrs, Volume= 1.324 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
297,466	84	50-75% Grass cover, Fair, HSG D
297,466		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	59	0.2500	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
4.2	308	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.9	367	Total			

Subcatchment 56S: MC VI Ditch Drainage



Summary for Subcatchment 58S: DB-38-41 Drainage

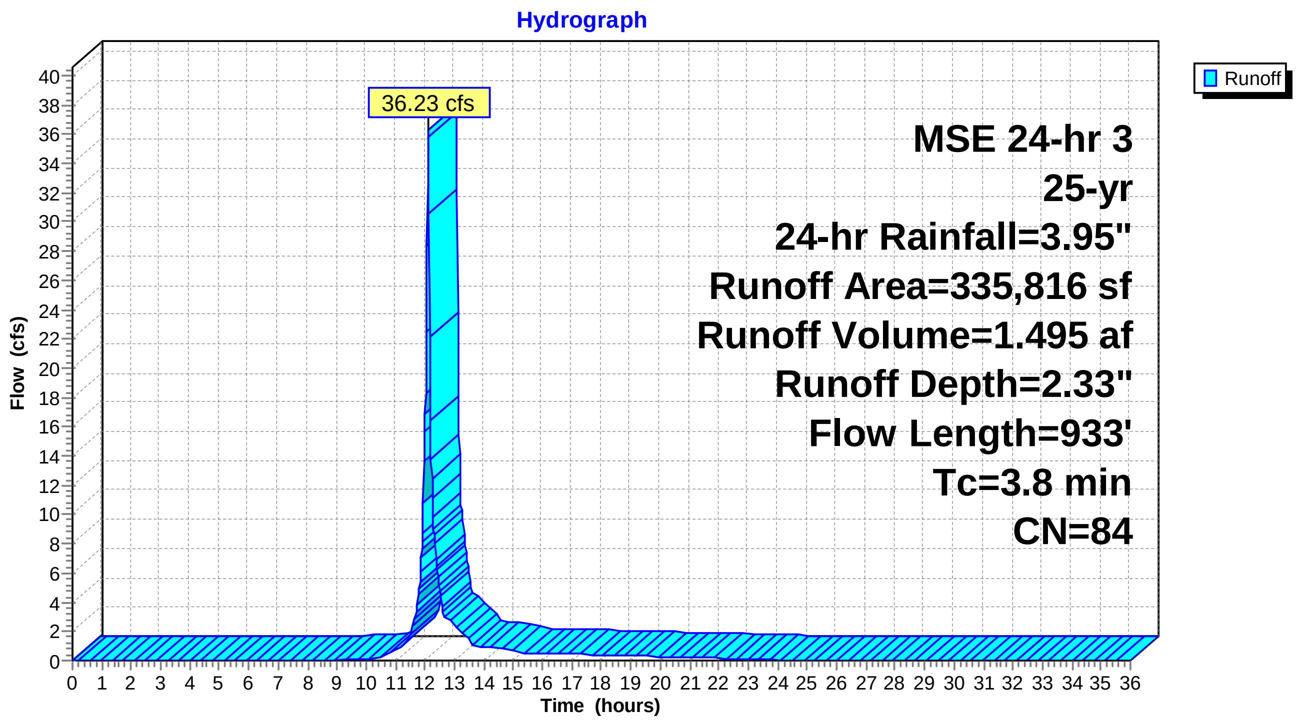
Runoff = 36.23 cfs @ 12.11 hrs, Volume= 1.495 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
335,816	84	50-75% Grass cover, Fair, HSG D
335,816		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	39	0.2500	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
1.8	894	0.0200	8.41	100.87	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, clean & winding
3.8	933	Total			

Subcatchment 58S: DB-38-41 Drainage



Summary for Subcatchment 61S: W-MC X Ditch

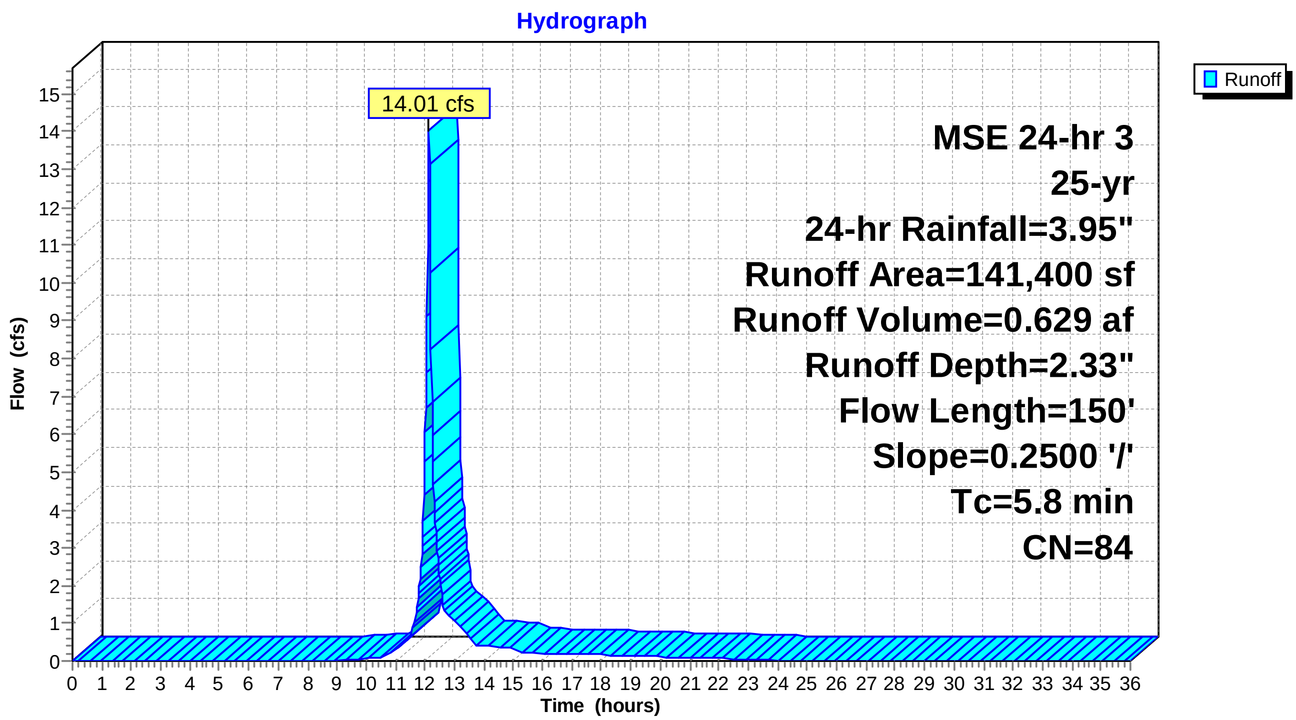
Runoff = 14.01 cfs @ 12.13 hrs, Volume= 0.629 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
141,400	84	50-75% Grass cover, Fair, HSG D
141,400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	150	0.2500	0.43		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"

Subcatchment 61S: W-MC X Ditch



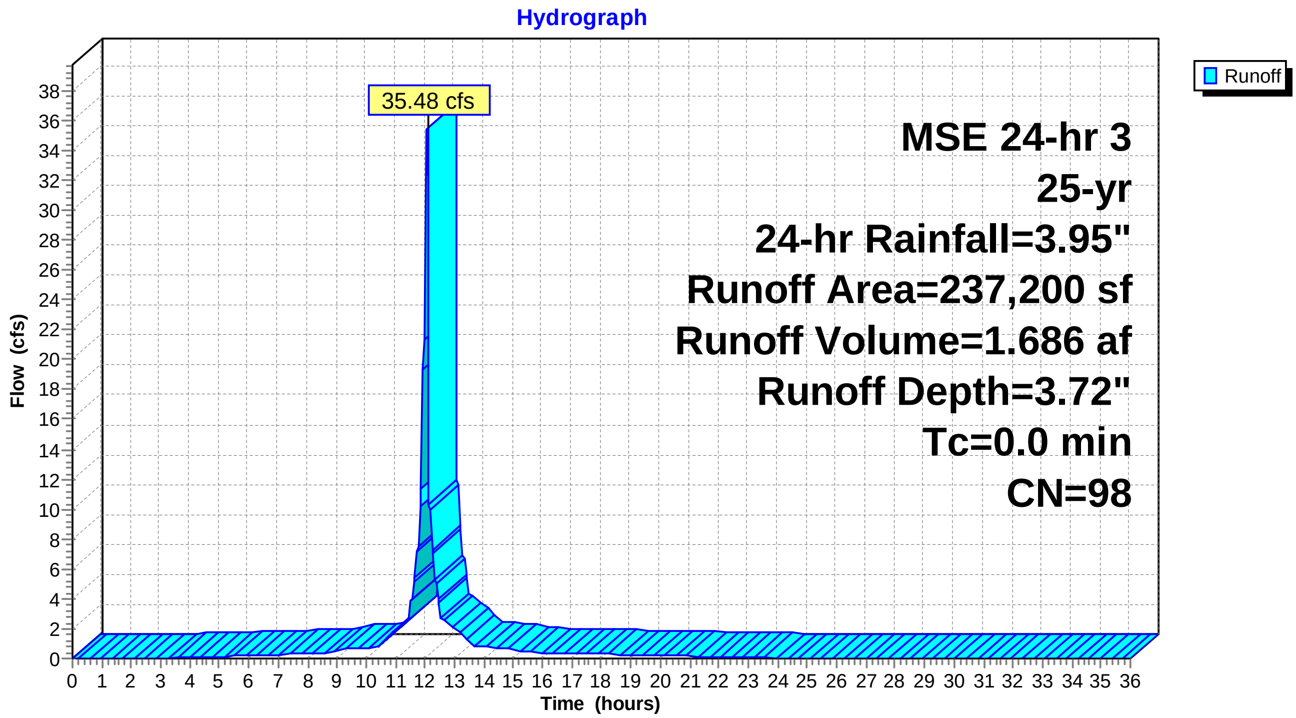
Summary for Subcatchment 62S: Additional Storm Sewer Drainage Area

Runoff = 35.48 cfs @ 12.08 hrs, Volume= 1.686 af, Depth= 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
237,200	98	Paved parking, HSG D
237,200		100.00% Impervious Area

Subcatchment 62S: Additional Storm Sewer Drainage Area



Summary for Subcatchment 65S: S-MC X Ditch Drainage

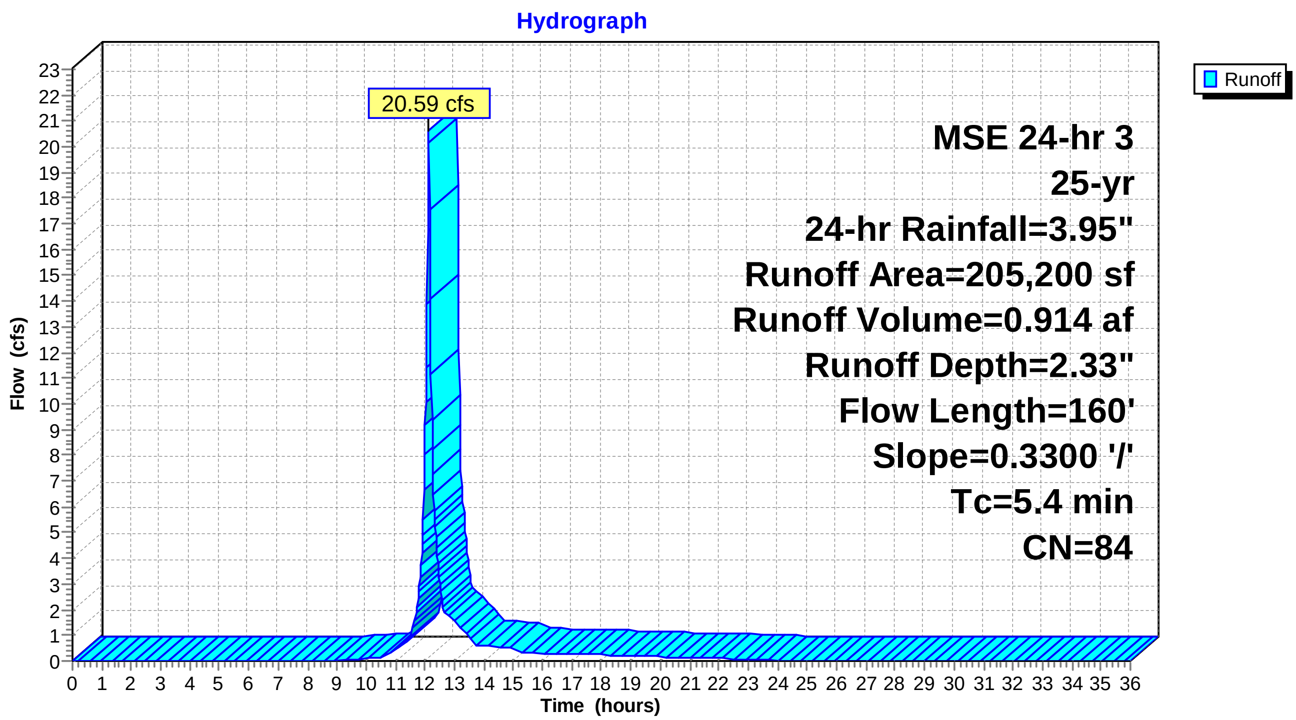
Runoff = 20.59 cfs @ 12.13 hrs, Volume= 0.914 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
205,200	84	50-75% Grass cover, Fair, HSG D
205,200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	160	0.3300	0.49		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"

Subcatchment 65S: S-MC X Ditch Drainage



Summary for Subcatchment 67S: E-MC X Drainage

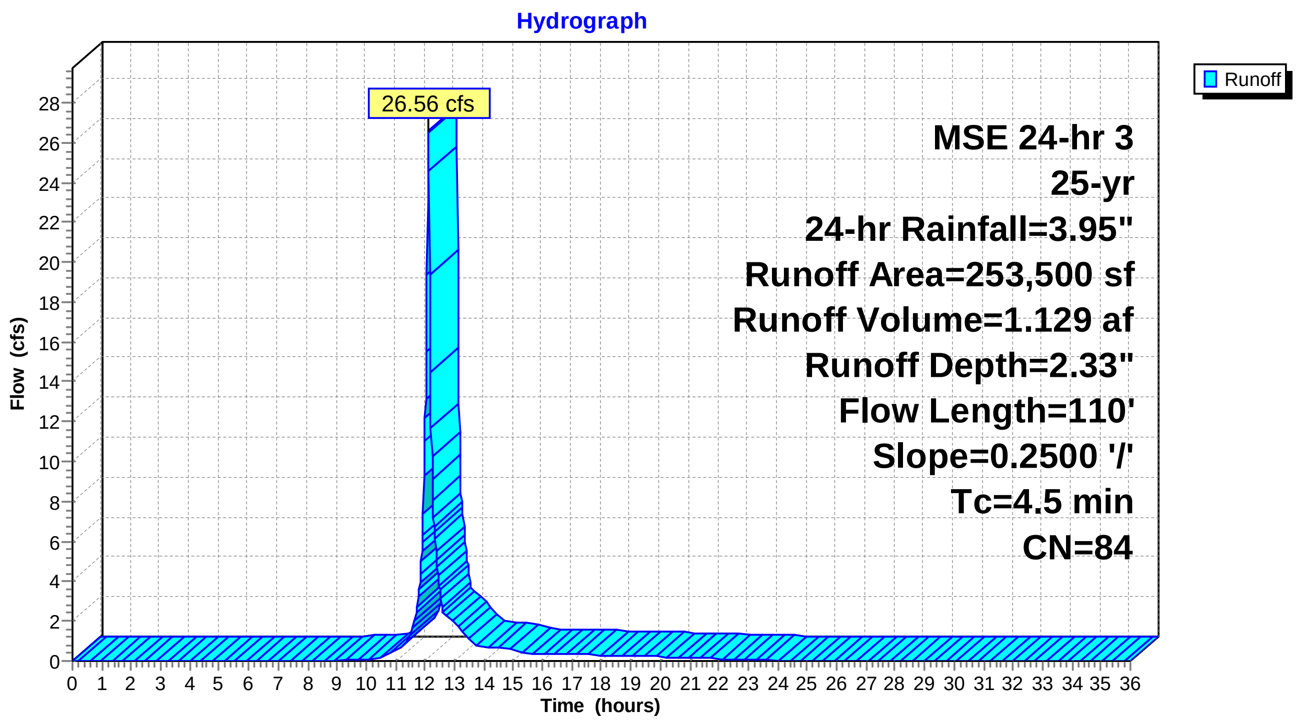
Runoff = 26.56 cfs @ 12.12 hrs, Volume= 1.129 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
253,500	84	50-75% Grass cover, Fair, HSG D
253,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	110	0.2500	0.41		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"

Subcatchment 67S: E-MC X Drainage



Summary for Subcatchment 68S: SSB Drainage Area

Total area is 900,800 sf
Pond area is 208,300 sf
Therefore, surrounding area is 692,500 sf (900,800 - 208,300)

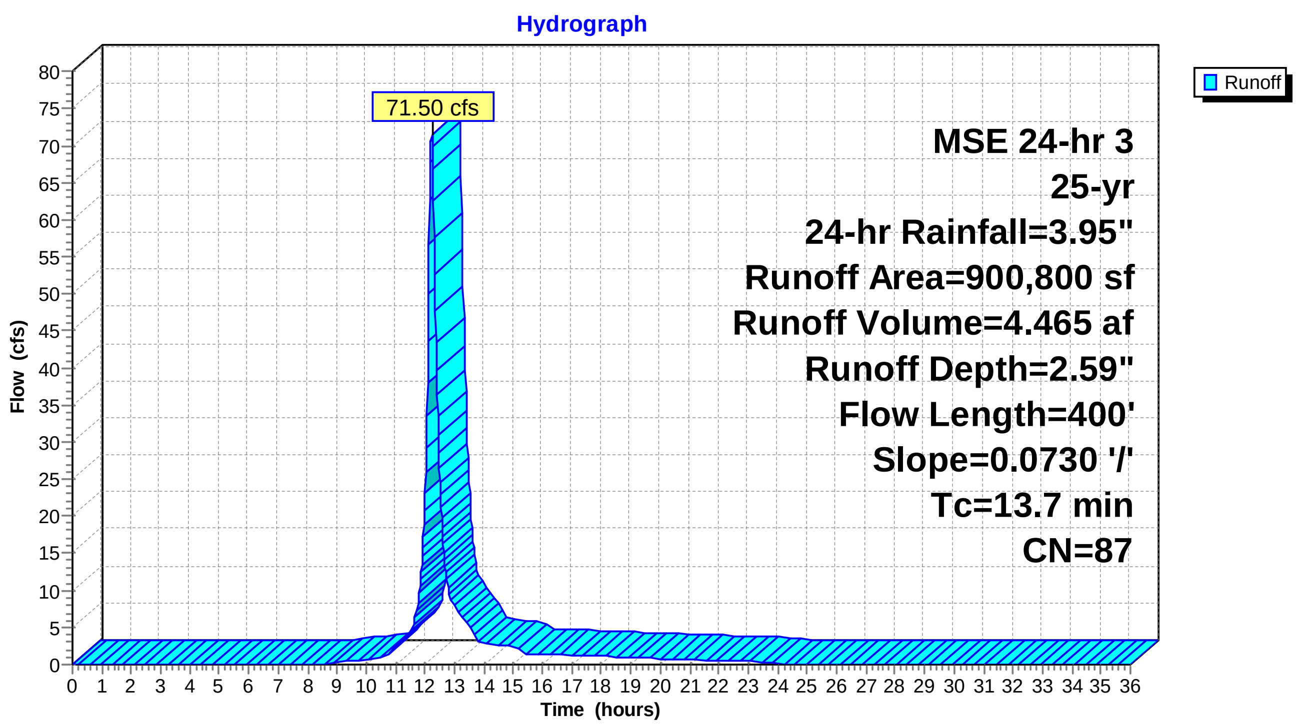
Runoff = 71.50 cfs @ 12.22 hrs, Volume= 4.465 af, Depth= 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
692,500	84	50-75% Grass cover, Fair, HSG D
208,300	98	Water Surface, HSG D
900,800	87	Weighted Average
692,500		76.88% Pervious Area
208,300		23.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	200	0.0730	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
1.8	200	0.0730	1.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.7	400	Total			

Subcatchment 68S: SSB Drainage Area



Summary for Subcatchment 70S: DB-46 Drainage

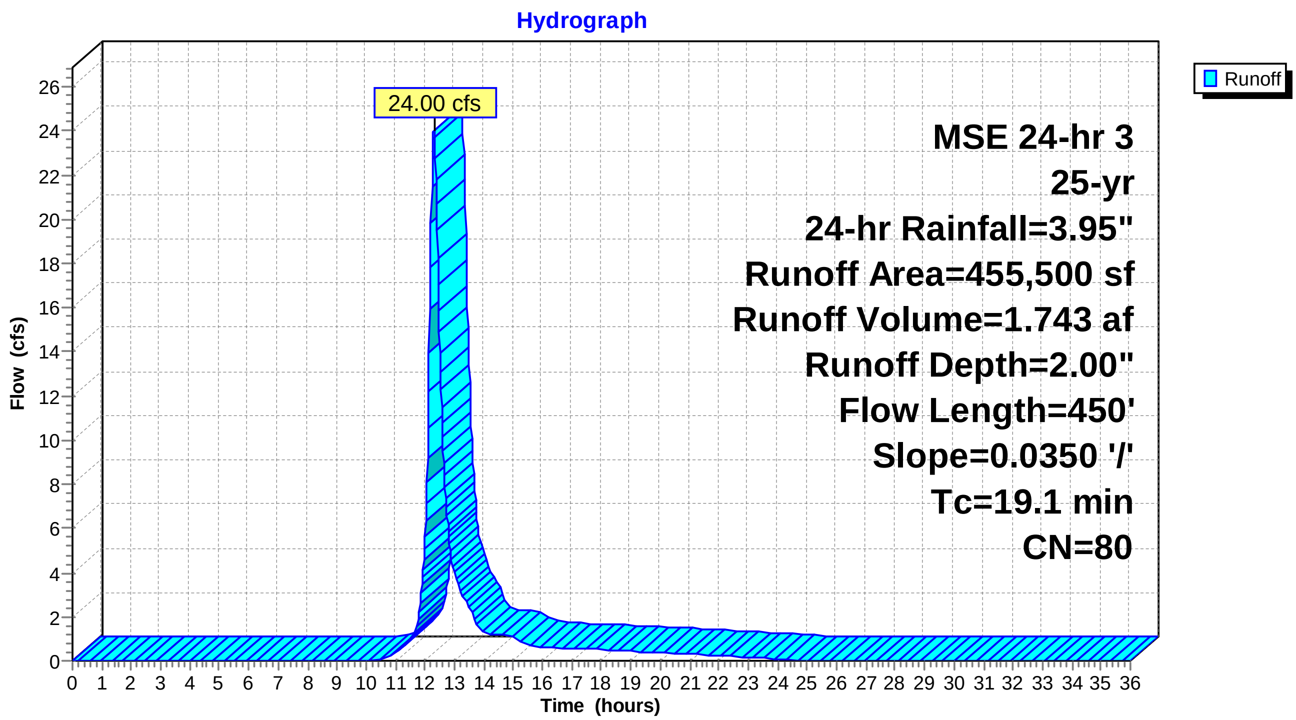
Runoff = 24.00 cfs @ 12.29 hrs, Volume= 1.743 af, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
455,500	80	>75% Grass cover, Good, HSG D
455,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.9	200	0.0350	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
3.2	250	0.0350	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	450	Total			

Subcatchment 70S: DB-46 Drainage



Summary for Subcatchment 72S: E-MCI Drainage

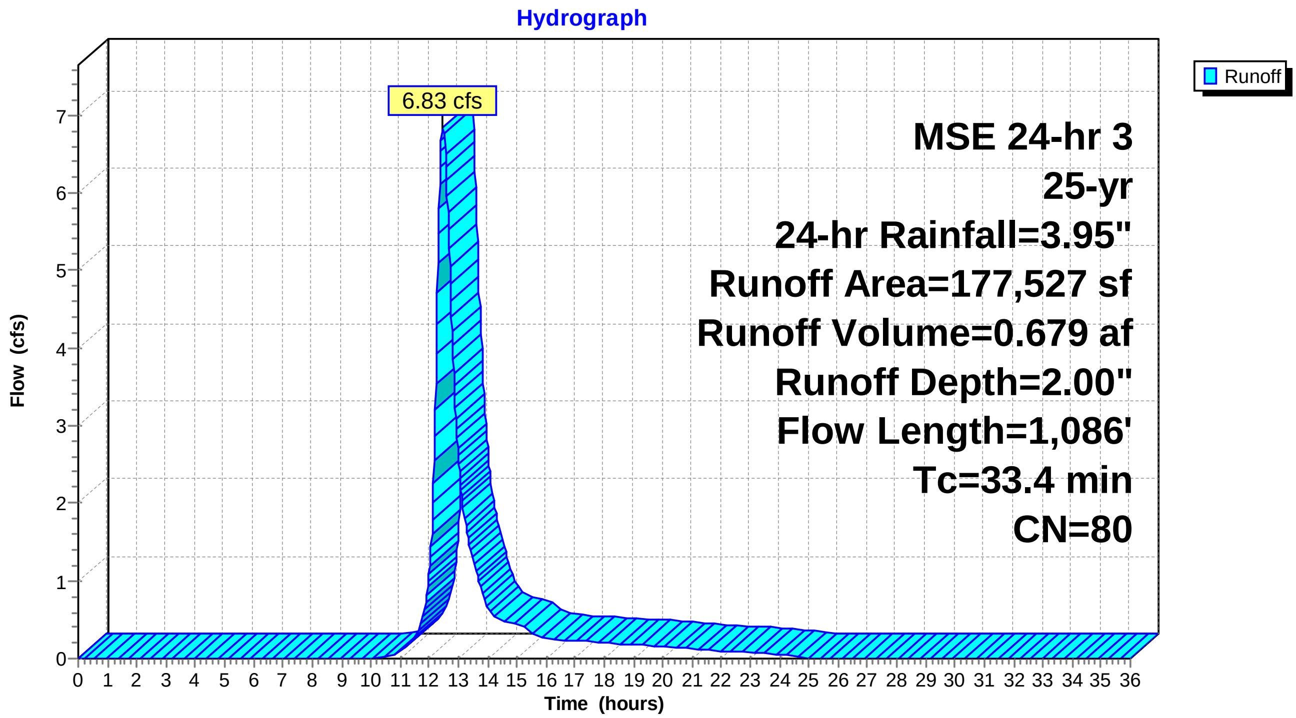
Runoff = 6.83 cfs @ 12.48 hrs, Volume= 0.679 af, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
177,527	80	>75% Grass cover, Good, HSG D
177,527		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	200	0.0200	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
10.8	640	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.7	246	0.0488	1.55		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.4	1,086	Total			

Subcatchment 72S: E-MCI Drainage



Summary for Subcatchment 73S: DB-35 Drainage

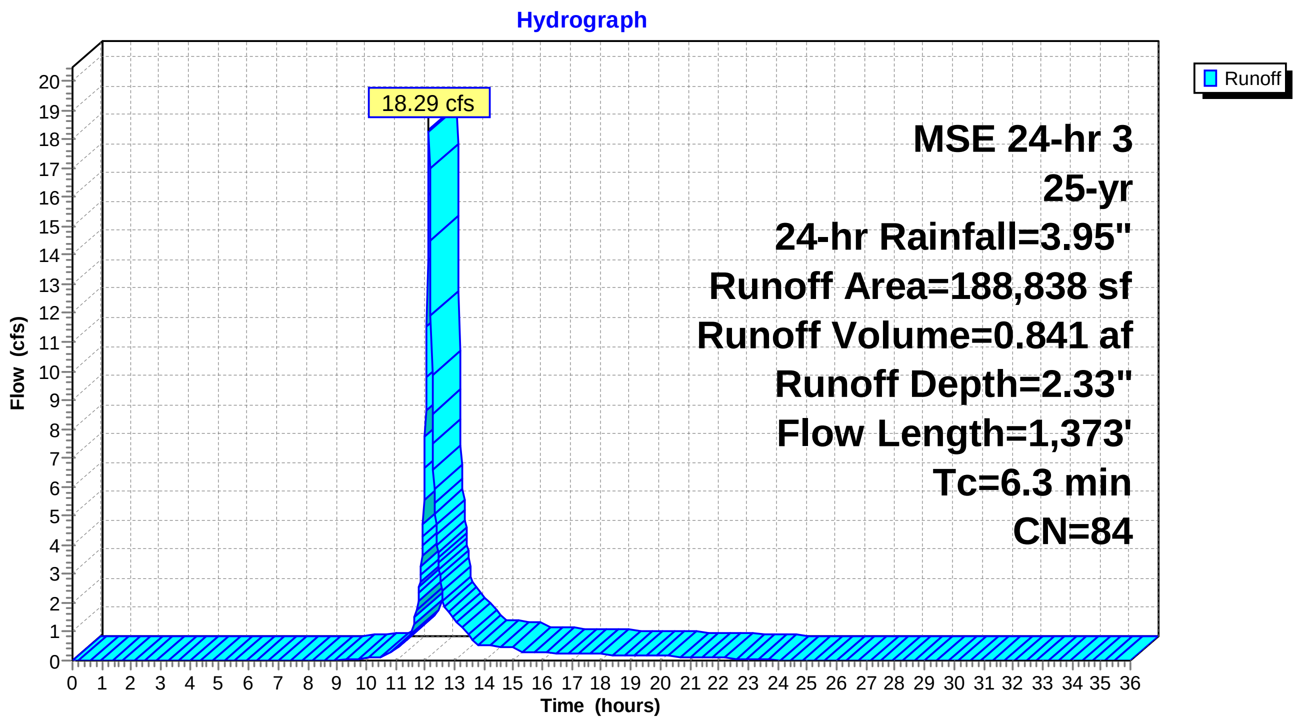
Runoff = 18.29 cfs @ 12.14 hrs, Volume= 0.841 af, Depth= 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 25-yr, 24-hr Rainfall=3.95"

Area (sf)	CN	Description
188,838	84	50-75% Grass cover, Fair, HSG D
188,838		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	86	0.2500	0.39		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
2.6	1,287	0.0200	8.41	100.87	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, clean & winding
6.3	1,373	Total			

Subcatchment 73S: DB-35 Drainage



Summary for Reach 14R: DS-4

Inflow Area = 39.430 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 109.24 cfs @ 12.26 hrs, Volume= 7.646 af
Outflow = 108.99 cfs @ 12.26 hrs, Volume= 7.646 af, Atten= 0%, Lag= 0.4 min

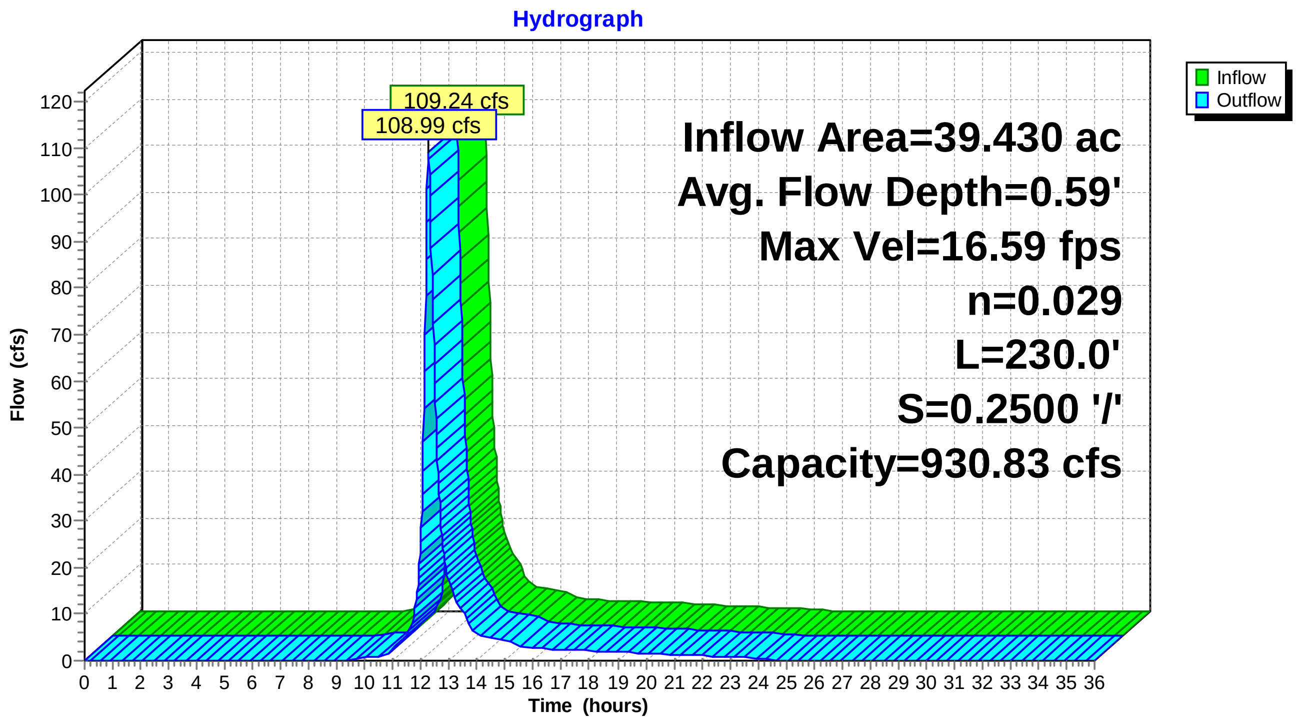
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 16.59 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.55 fps, Avg. Travel Time= 1.1 min

Peak Storage= 1,514 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.59' , Surface Width= 12.36'
Bank-Full Depth= 2.00' Flow Area= 28.0 sf, Capacity= 930.83 cfs

10.00' x 2.00' deep channel, n= 0.029
Side Slope Z-value= 2.0 '/' Top Width= 18.00'
Length= 230.0' Slope= 0.2500 '/'
Inlet Invert= 763.50', Outlet Invert= 706.00'

‡

Reach 14R: DS-4



Summary for Reach 35R: MCVI/XI Ditch

Inflow Area = 54.333 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 151.77 cfs @ 12.26 hrs, Volume= 10.536 af
Outflow = 150.84 cfs @ 12.28 hrs, Volume= 10.536 af, Atten= 1%, Lag= 1.4 min

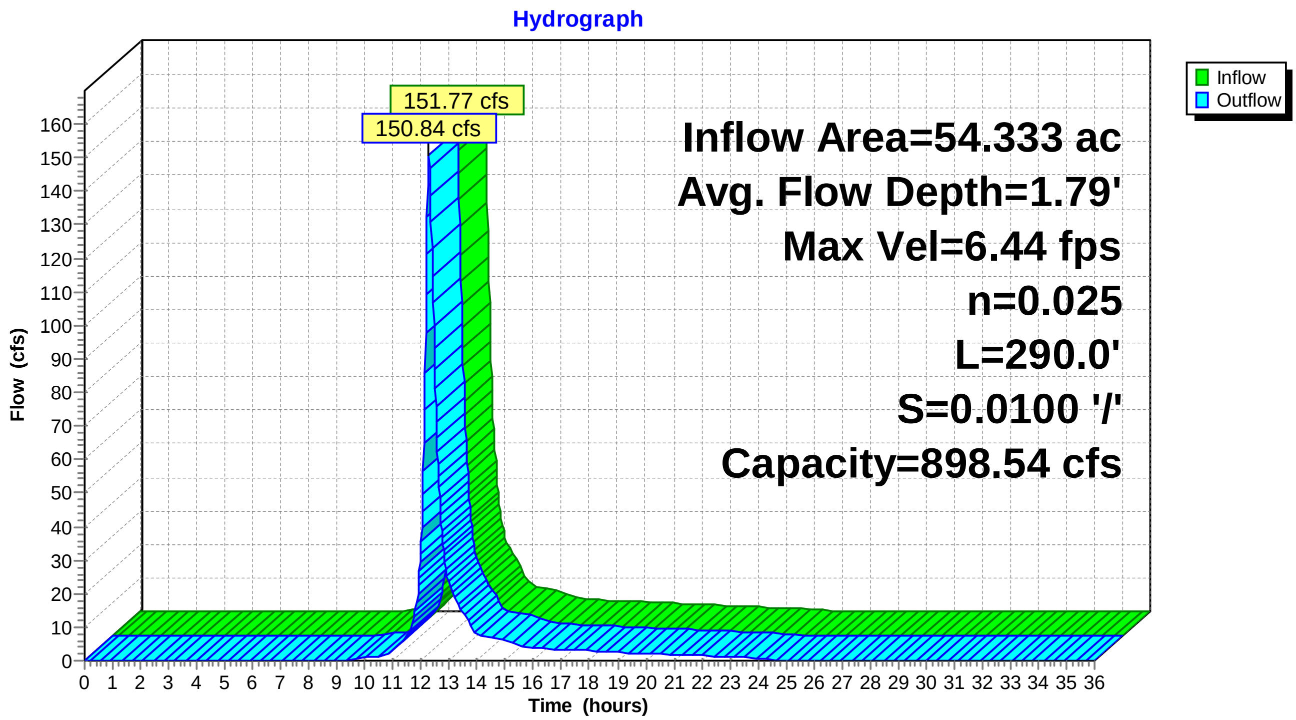
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 6.44 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.57 fps, Avg. Travel Time= 3.1 min

Peak Storage= 6,807 cf @ 12.27 hrs
Average Depth at Peak Storage= 1.79' , Surface Width= 20.29'
Bank-Full Depth= 4.00' Flow Area= 88.0 sf, Capacity= 898.54 cfs

6.00' x 4.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 4.0 '/' Top Width= 38.00'
Length= 290.0' Slope= 0.0100 '/'
Inlet Invert= 700.15', Outlet Invert= 697.26'

‡

Reach 35R: MCVI/XI Ditch



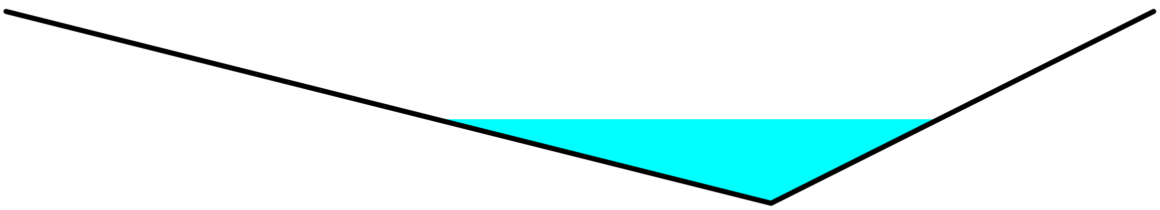
Summary for Reach 36R: DB-43

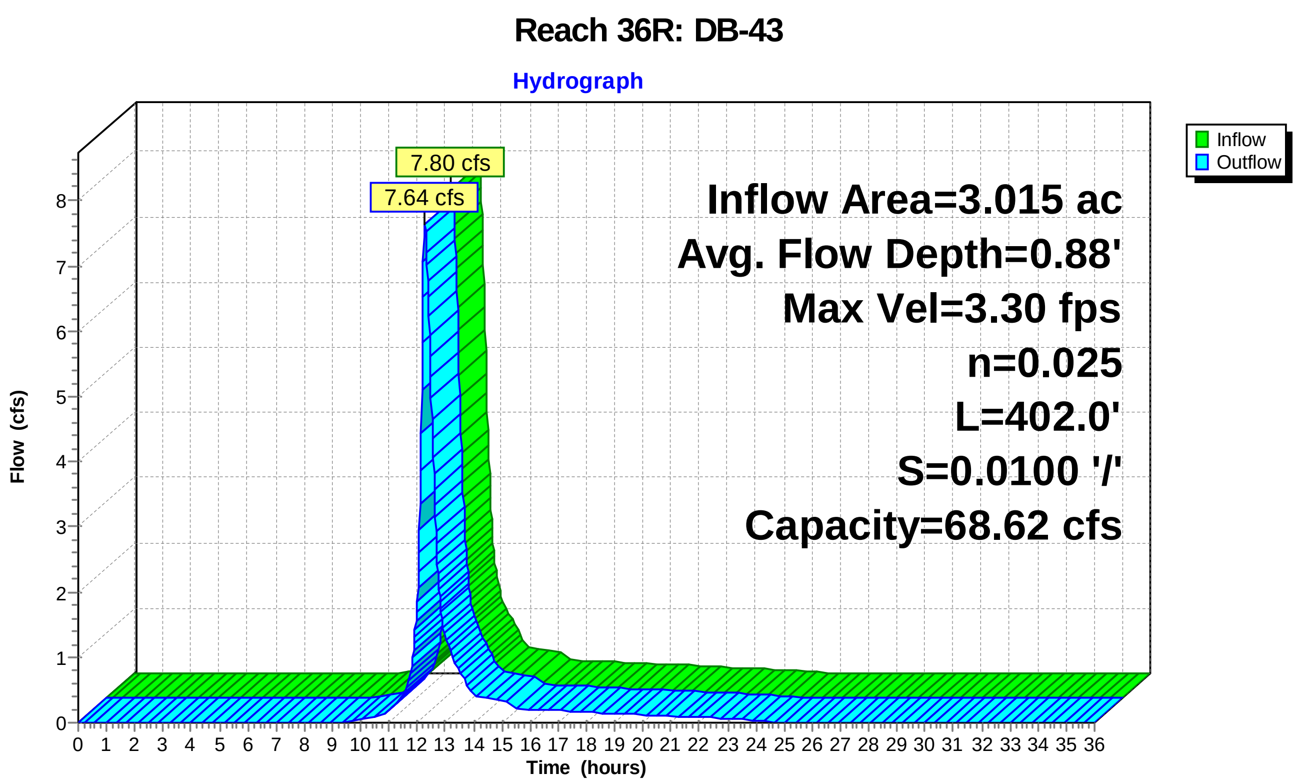
Inflow Area = 3.015 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 7.80 cfs @ 12.21 hrs, Volume= 0.585 af
Outflow = 7.64 cfs @ 12.27 hrs, Volume= 0.585 af, Atten= 2%, Lag= 4.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.30 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.19 fps, Avg. Travel Time= 5.6 min

Peak Storage= 931 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.88' , Surface Width= 5.27'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 68.62 cfs

0.00' x 2.00' deep channel, n= 0.025 Stream, clean & straight
Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'
Length= 402.0' Slope= 0.0100 '/'
Inlet Invert= 712.02', Outlet Invert= 708.00'





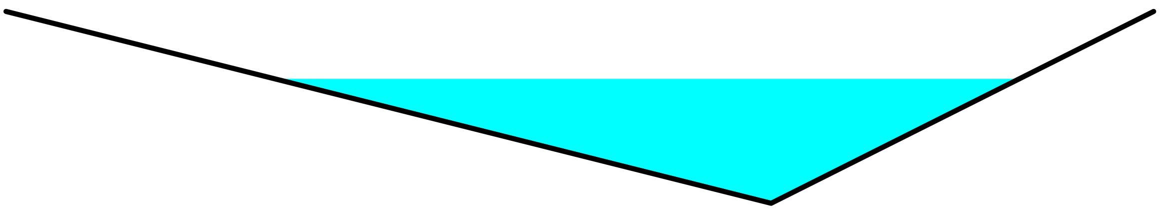
Summary for Reach 38R: DB-34 -1%

Inflow Area = 7.357 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 32.56 cfs @ 12.12 hrs, Volume= 1.427 af
Outflow = 21.45 cfs @ 12.34 hrs, Volume= 1.427 af, Atten= 34%, Lag= 12.8 min

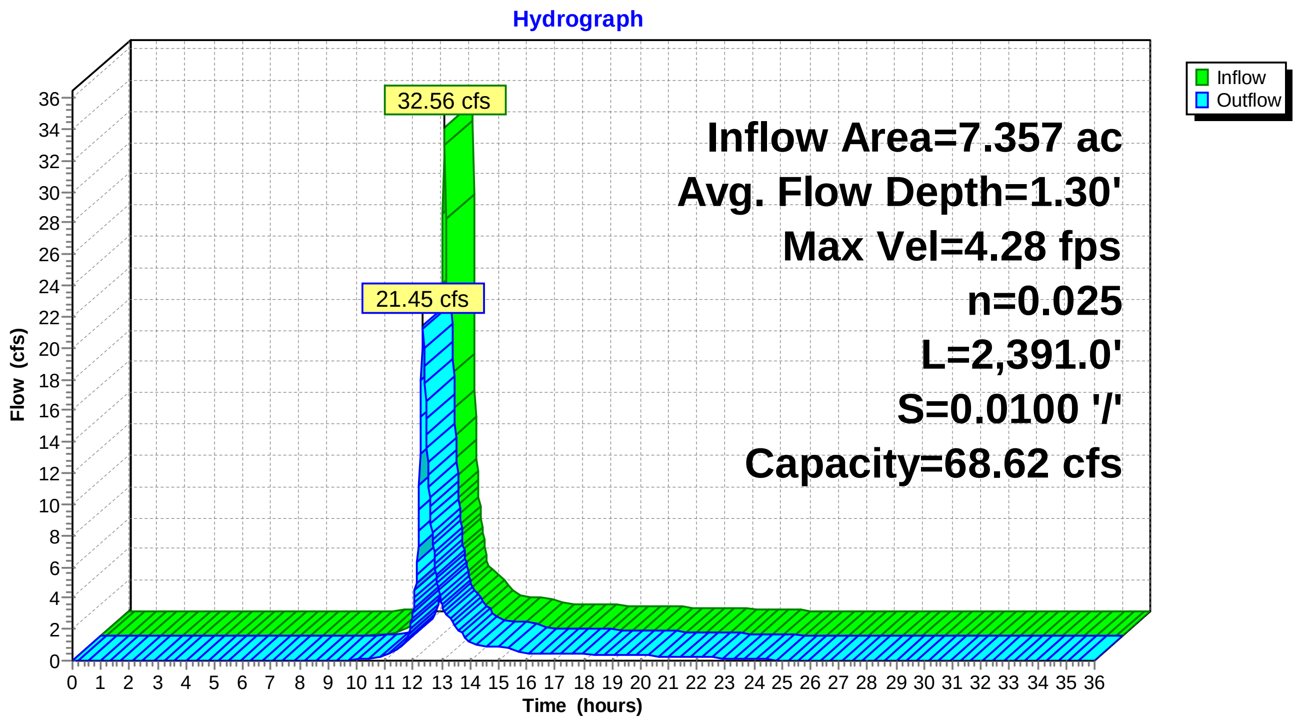
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.28 fps, Min. Travel Time= 9.3 min
Avg. Velocity = 1.10 fps, Avg. Travel Time= 36.2 min

Peak Storage= 12,033 cf @ 12.18 hrs
Average Depth at Peak Storage= 1.30' , Surface Width= 7.77'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 68.62 cfs

0.00' x 2.00' deep channel, n= 0.025 Stream, clean & straight
Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'
Length= 2,391.0' Slope= 0.0100 '/'
Inlet Invert= 745.91', Outlet Invert= 722.00'



Reach 38R: DB-34 -1%



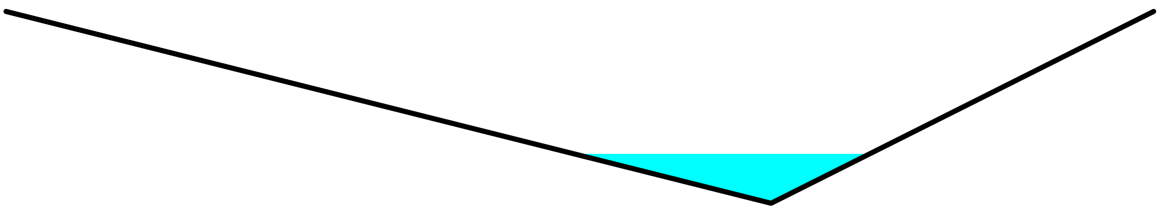
Summary for Reach 40R: DB-44

Inflow Area = 1.558 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 4.28 cfs @ 12.27 hrs, Volume= 0.302 af
Outflow = 4.21 cfs @ 12.33 hrs, Volume= 0.302 af, Atten= 2%, Lag= 3.4 min

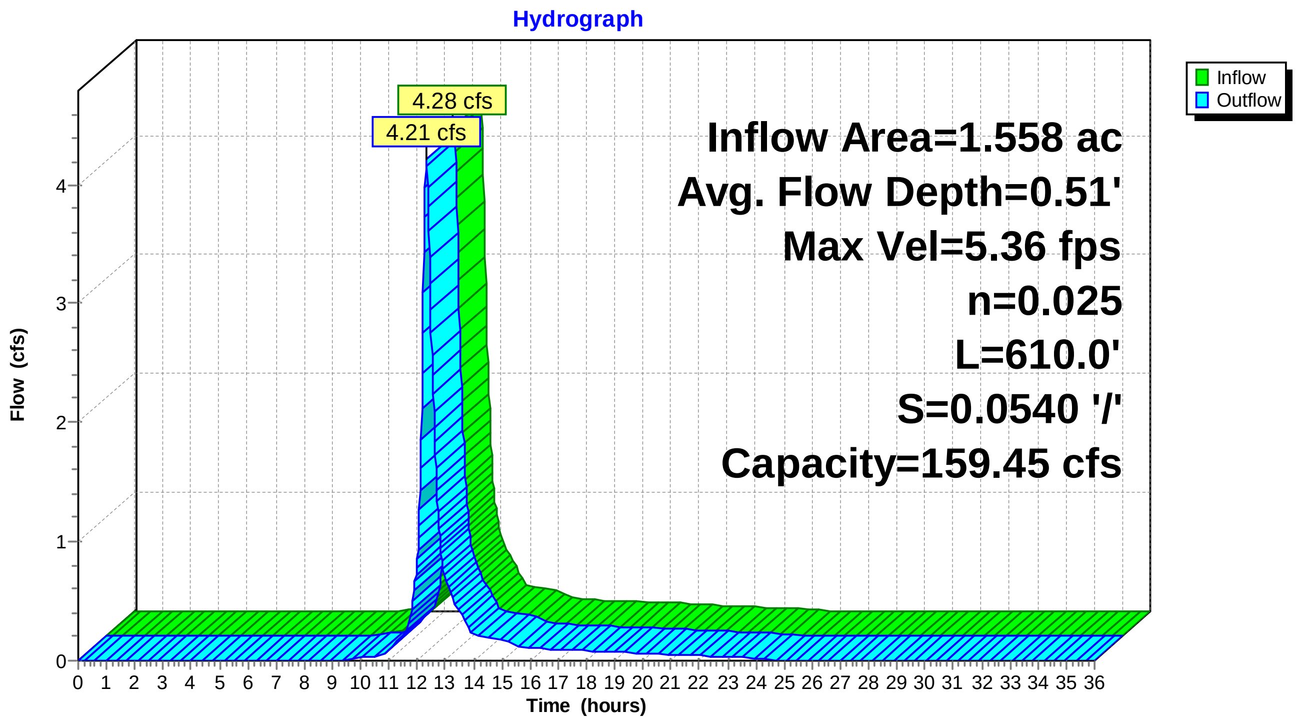
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.36 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 2.02 fps, Avg. Travel Time= 5.0 min

Peak Storage= 480 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.51' , Surface Width= 3.07'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 159.45 cfs

0.00' x 2.00' deep channel, n= 0.025
Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'
Length= 610.0' Slope= 0.0540 '/'
Inlet Invert= 762.04', Outlet Invert= 729.10'



Reach 40R: DB-44



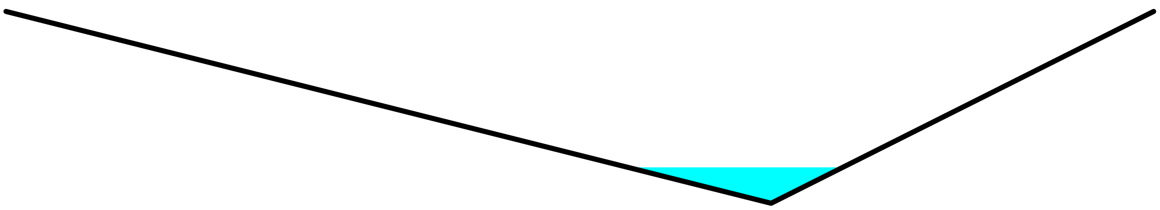
Summary for Reach 41R: DB-45

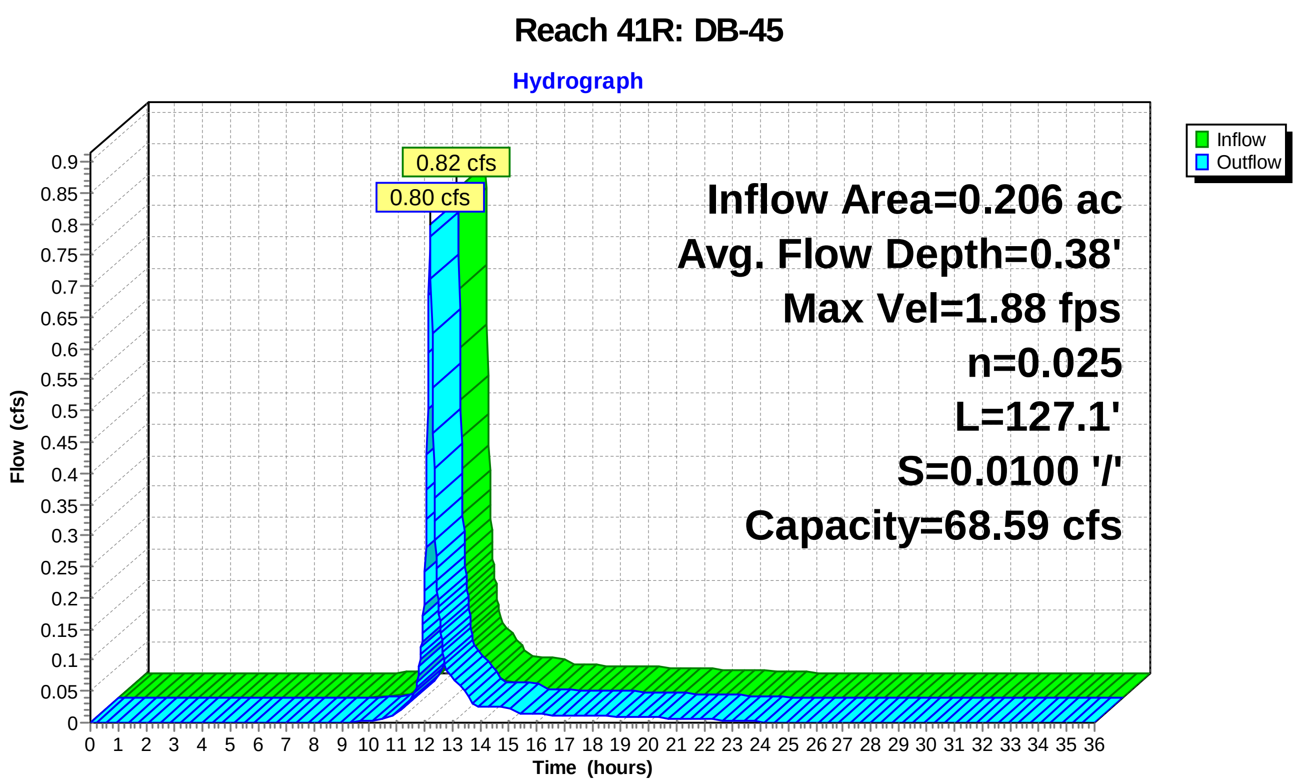
Inflow Area = 0.206 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 0.82 cfs @ 12.15 hrs, Volume= 0.040 af
Outflow = 0.80 cfs @ 12.18 hrs, Volume= 0.040 af, Atten= 2%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.88 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.67 fps, Avg. Travel Time= 3.2 min

Peak Storage= 54 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.38' , Surface Width= 2.26'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 68.59 cfs

0.00' x 2.00' deep channel, n= 0.025
Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'
Length= 127.1' Slope= 0.0100 '/'
Inlet Invert= 707.69', Outlet Invert= 706.42'





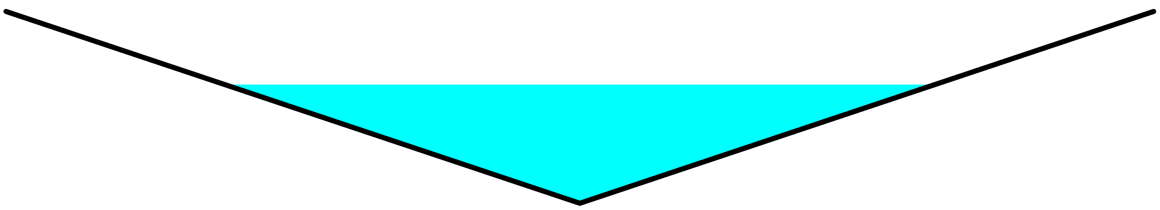
Summary for Reach 44R: E-MCI Ditch

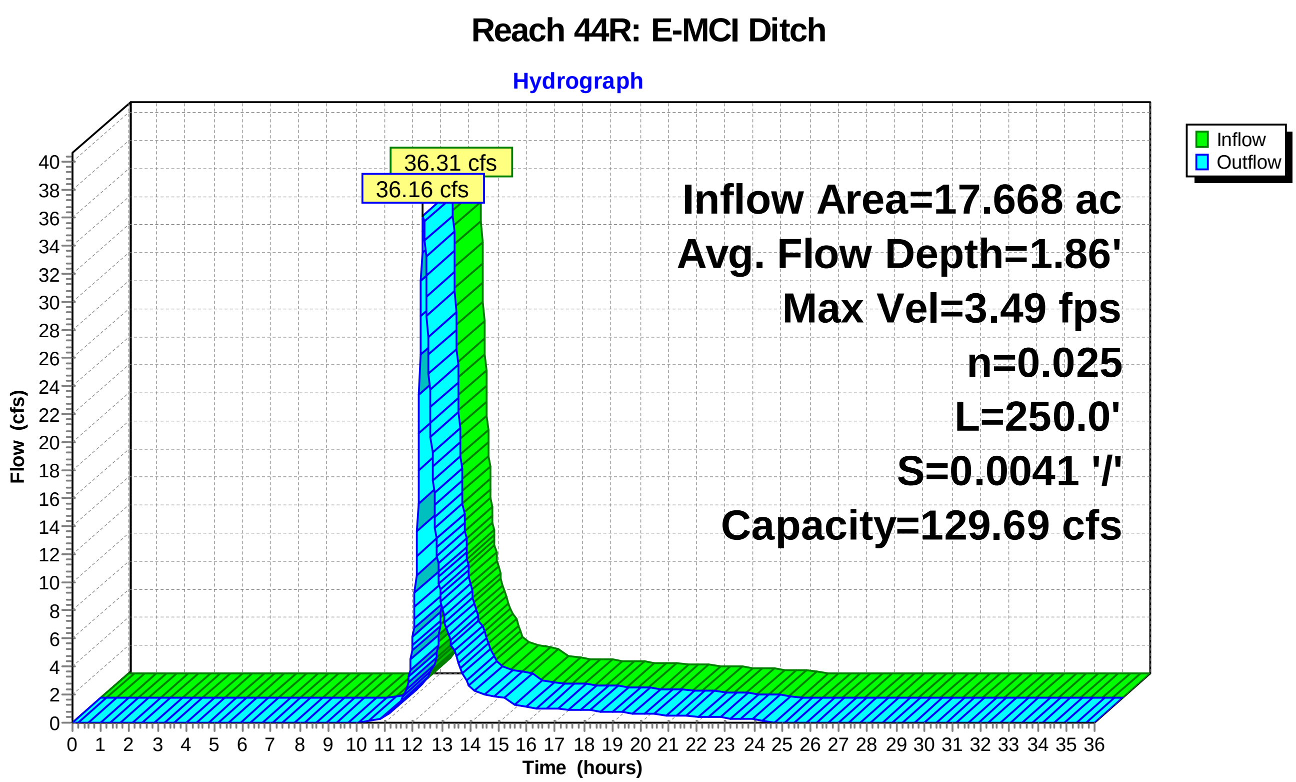
Inflow Area = 17.668 ac, 0.00% Impervious, Inflow Depth = 2.00" for 25-yr, 24-hr event
Inflow = 36.31 cfs @ 12.33 hrs, Volume= 2.945 af
Outflow = 36.16 cfs @ 12.36 hrs, Volume= 2.945 af, Atten= 0%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.49 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 3.2 min

Peak Storage= 2,590 cf @ 12.34 hrs
Average Depth at Peak Storage= 1.86' , Surface Width= 11.15'
Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 129.69 cfs

0.00' x 3.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 250.0' Slope= 0.0041 '/'
Inlet Invert= 702.00', Outlet Invert= 700.98'





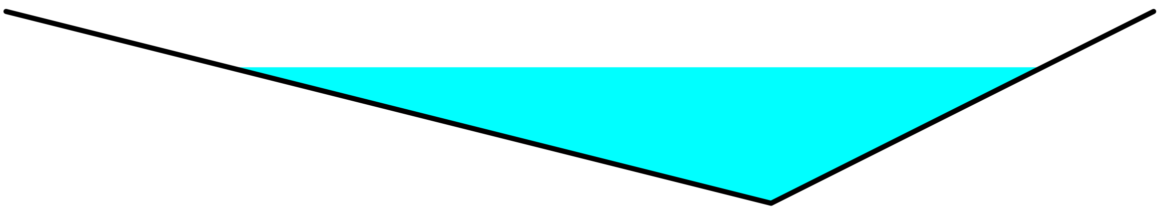
Summary for Reach 49R: DB-36

Inflow Area = 18.696 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 75.20 cfs @ 12.17 hrs, Volume= 3.626 af
Outflow = 69.89 cfs @ 12.24 hrs, Volume= 3.626 af, Atten= 7%, Lag= 4.2 min

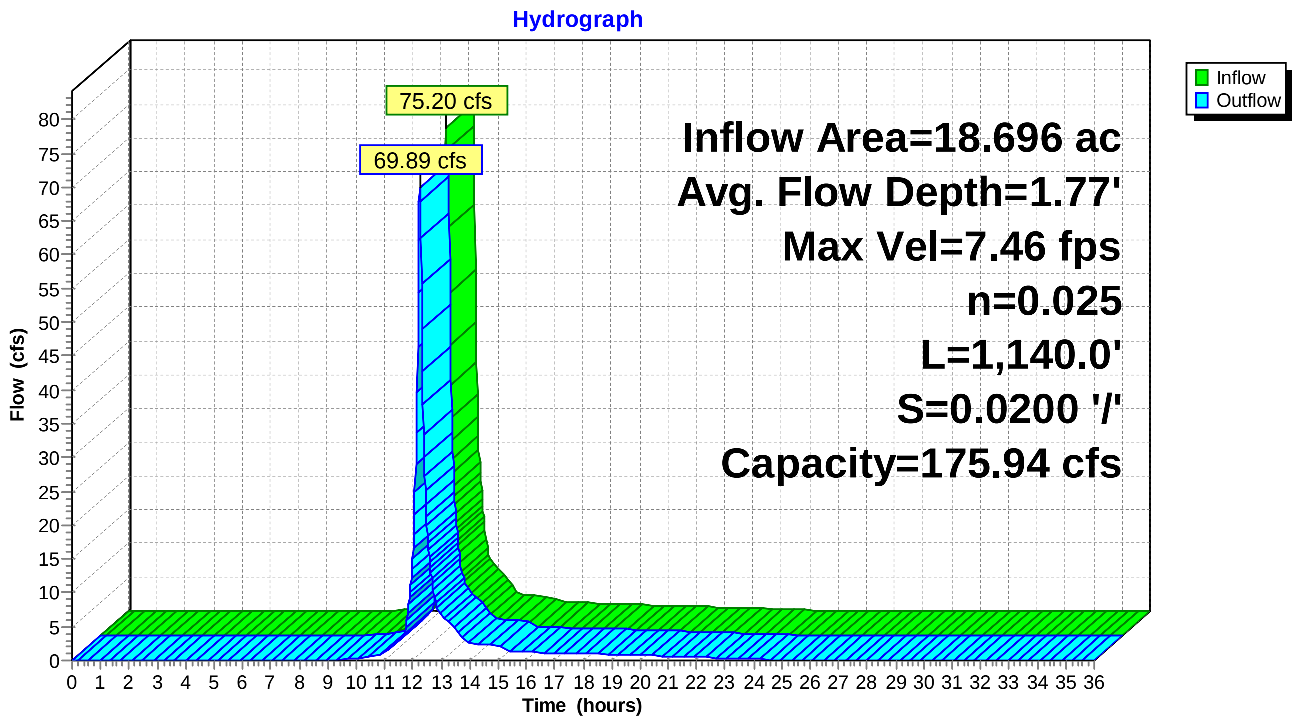
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 7.46 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 2.27 fps, Avg. Travel Time= 8.4 min

Peak Storage= 10,721 cf @ 12.20 hrs
Average Depth at Peak Storage= 1.77' , Surface Width= 10.62'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 175.94 cfs

0.00' x 2.50' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 4.0 2.0 '/' Top Width= 15.00'
Length= 1,140.0' Slope= 0.0200 '/'
Inlet Invert= 780.00', Outlet Invert= 757.20'



Reach 49R: DB-36



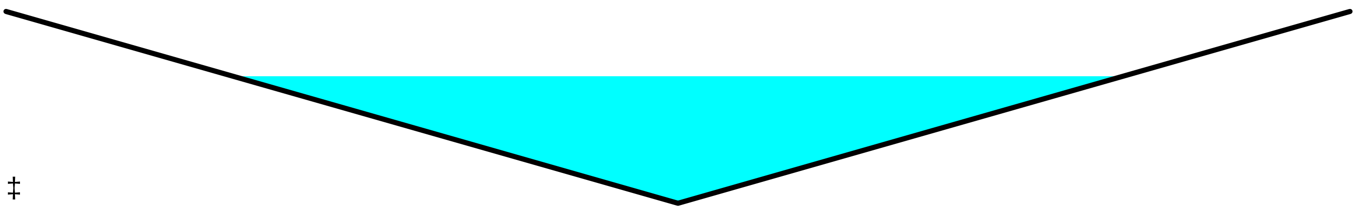
Summary for Reach 54R: MCVI-S Ditch

Inflow Area = 14.538 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 61.13 cfs @ 12.16 hrs, Volume= 2.819 af
Outflow = 59.88 cfs @ 12.18 hrs, Volume= 2.819 af, Atten= 2%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 8.62 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.82 fps, Avg. Travel Time= 2.2 min

Peak Storage= 2,595 cf @ 12.17 hrs
Average Depth at Peak Storage= 1.32' , Surface Width= 10.59'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 181.62 cfs

0.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 4.0 '/' Top Width= 16.00'
Length= 370.0' Slope= 0.0380 '/'
Inlet Invert= 794.05', Outlet Invert= 780.00'



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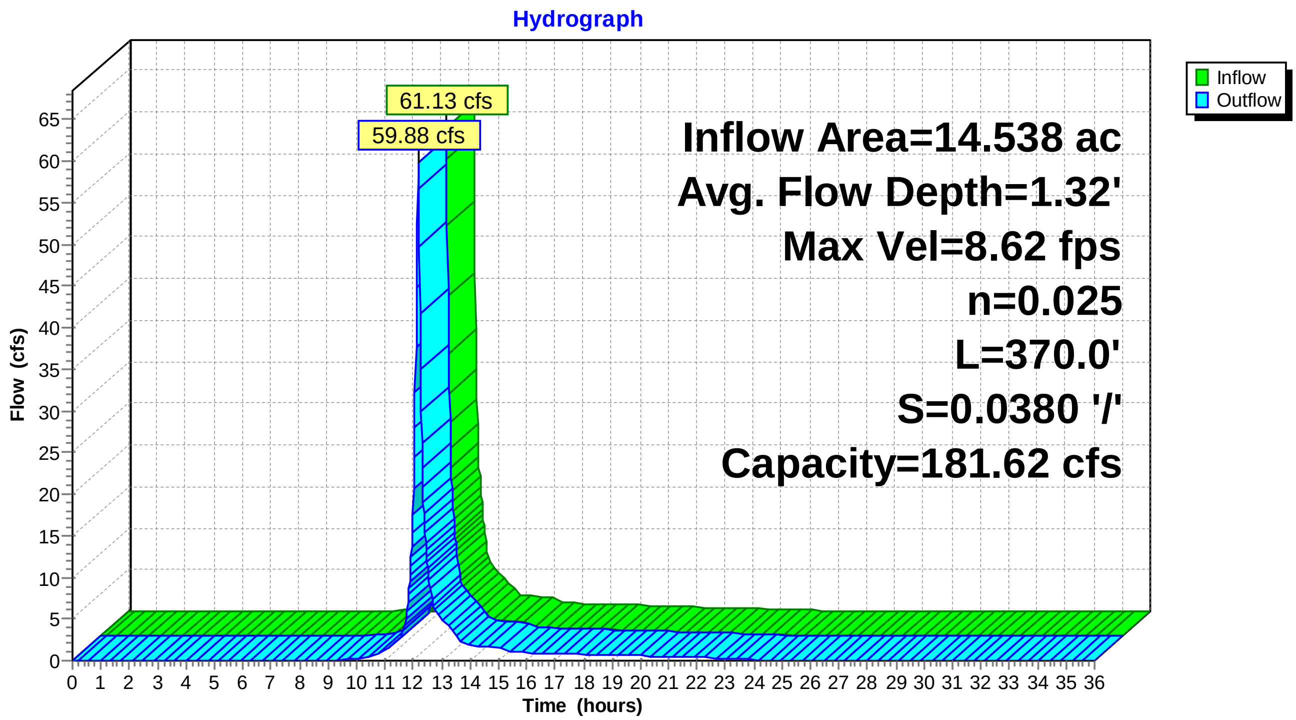
Reach 54R: MCVI-S Ditch



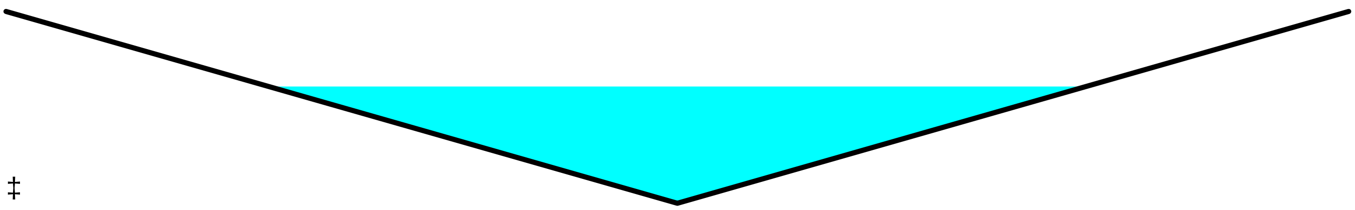
Summary for Reach 55R: MCVI-N Ditch

Inflow Area = 14.538 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 62.51 cfs @ 12.13 hrs, Volume= 2.819 af
Outflow = 61.13 cfs @ 12.16 hrs, Volume= 2.819 af, Atten= 2%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.42 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.45 fps, Avg. Travel Time= 3.0 min

Peak Storage= 3,685 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.61' , Surface Width= 45.61'
Bank-Full Depth= 1.00' Flow Area= 37.4 sf, Capacity= 230.14 cfs

0.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 37.4 '/' Top Width= 74.80'
Length= 265.0' Slope= 0.0270 '/'
Inlet Invert= 801.21', Outlet Invert= 794.05'



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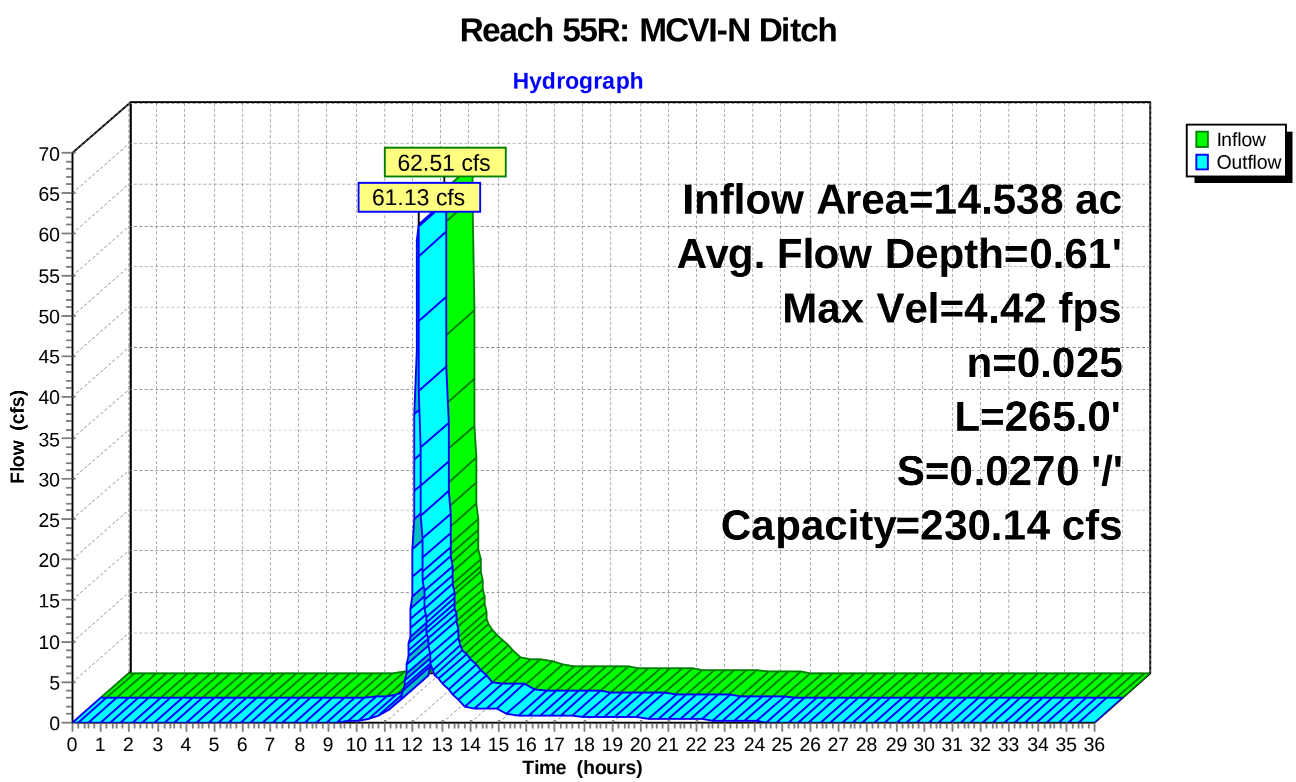


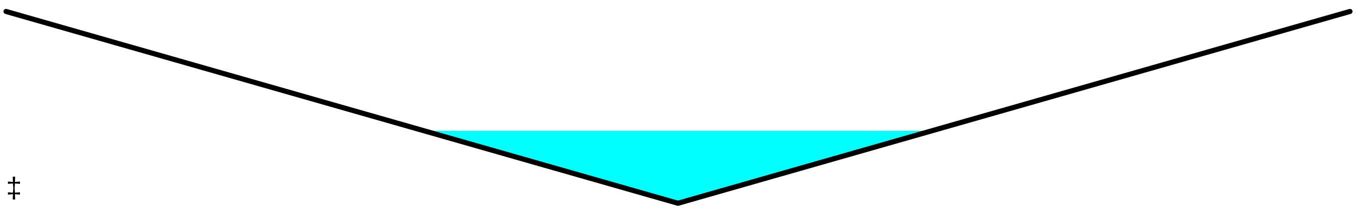
Summary for Reach 57R: DS-5

Inflow Area = 7.709 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 36.23 cfs @ 12.11 hrs, Volume= 1.495 af
Outflow = 35.30 cfs @ 12.12 hrs, Volume= 1.495 af, Atten= 3%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 10.94 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 3.70 fps, Avg. Travel Time= 1.4 min

Peak Storage= 996 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.76' , Surface Width= 8.64'
Bank-Full Depth= 2.00' Flow Area= 22.8 sf, Capacity= 476.49 cfs

0.00' x 2.00' deep channel, n= 0.029
Side Slope Z-value= 5.7 '/' Top Width= 22.80'
Length= 304.0' Slope= 0.1697 '/'
Inlet Invert= 854.00', Outlet Invert= 802.40'



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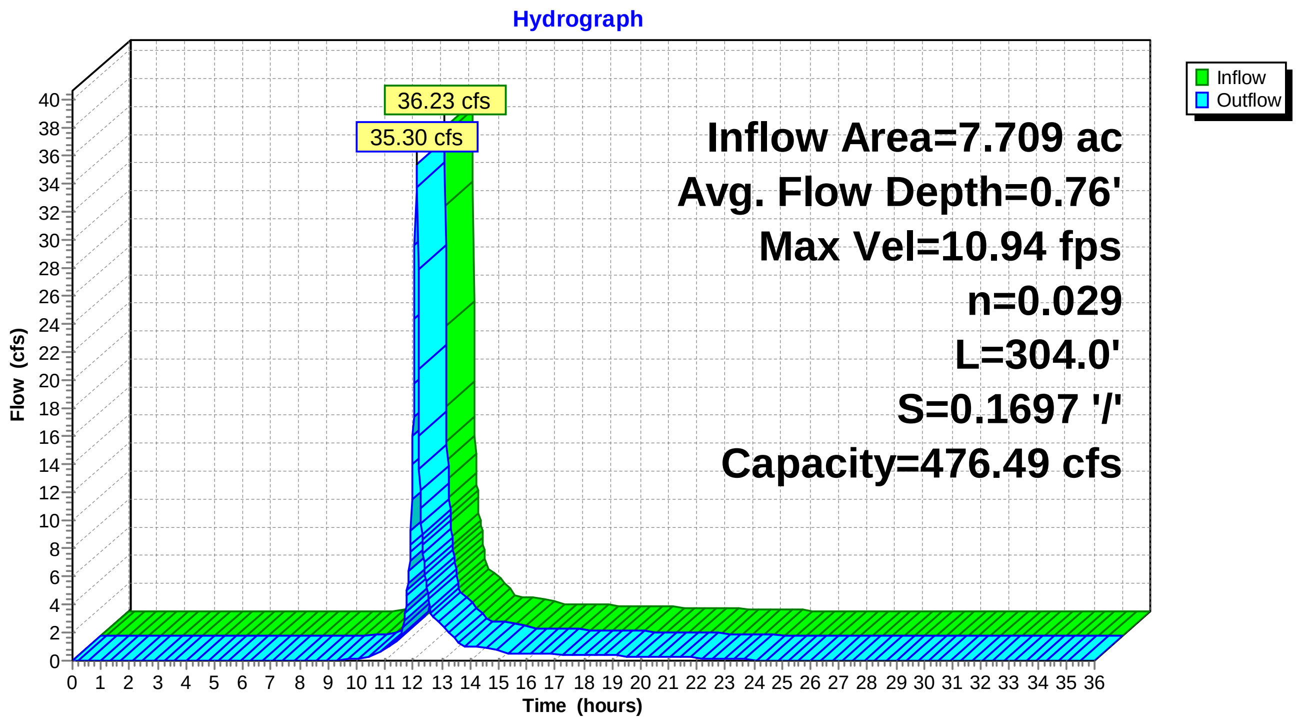
Reach 57R: DS-5



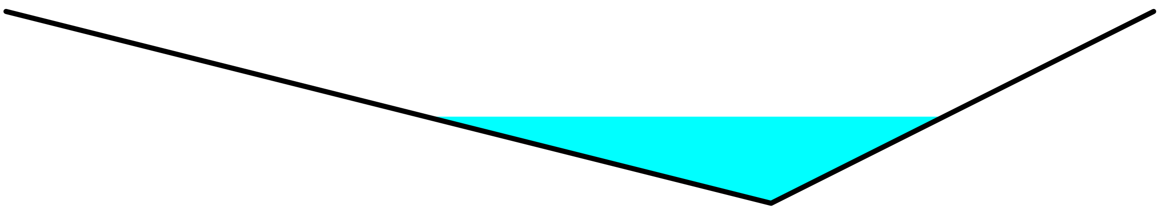
Summary for Reach 59R: DB-42

Inflow Area = 1.986 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 9.22 cfs @ 12.11 hrs, Volume= 0.385 af
Outflow = 8.15 cfs @ 12.18 hrs, Volume= 0.385 af, Atten= 12%, Lag= 4.2 min

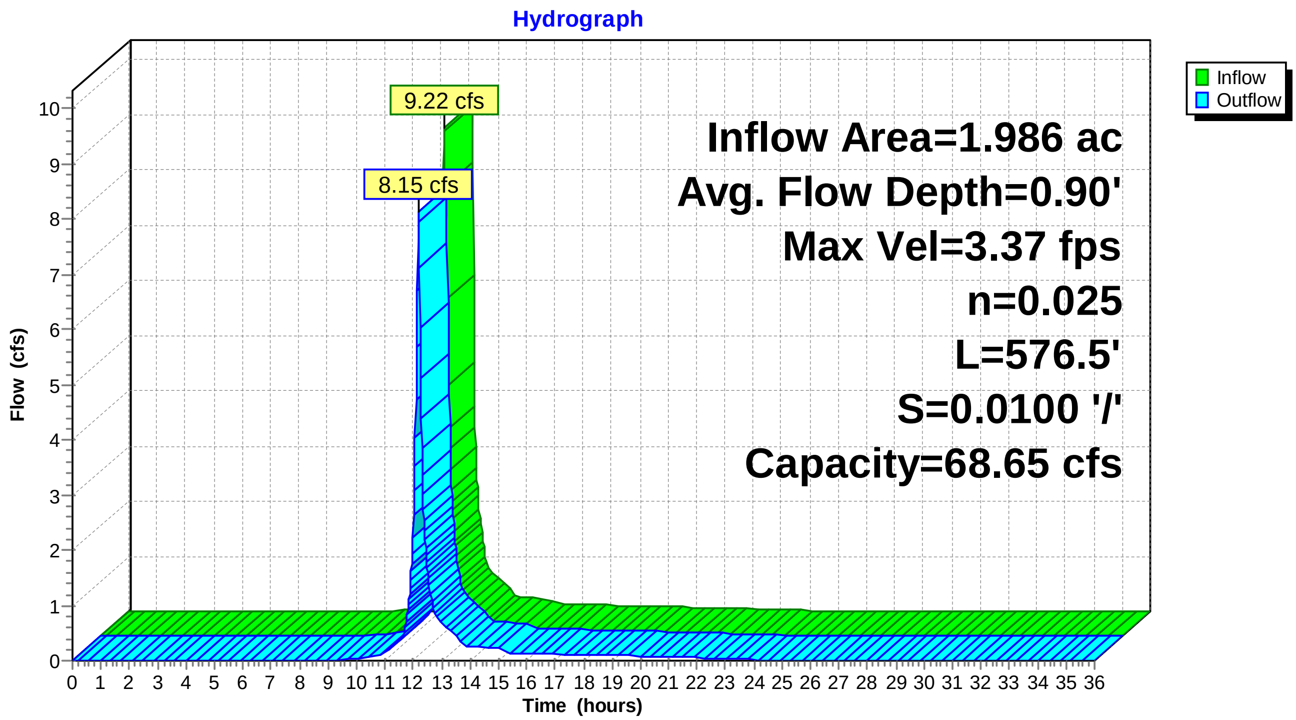
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.37 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 1.07 fps, Avg. Travel Time= 9.0 min

Peak Storage= 1,412 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.90' , Surface Width= 5.42'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 68.65 cfs

0.00' x 2.00' deep channel, n= 0.025
Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'
Length= 576.5' Slope= 0.0100 '/'
Inlet Invert= 718.00', Outlet Invert= 712.23'



Reach 59R: DB-42



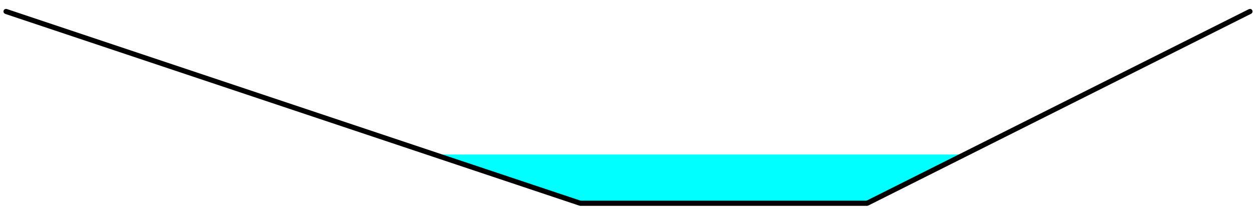
Summary for Reach 60R: W-MC X Ditch

Inflow Area = 13.776 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 22.31 cfs @ 12.28 hrs, Volume= 2.672 af
Outflow = 21.03 cfs @ 12.42 hrs, Volume= 2.672 af, Atten= 6%, Lag= 8.5 min

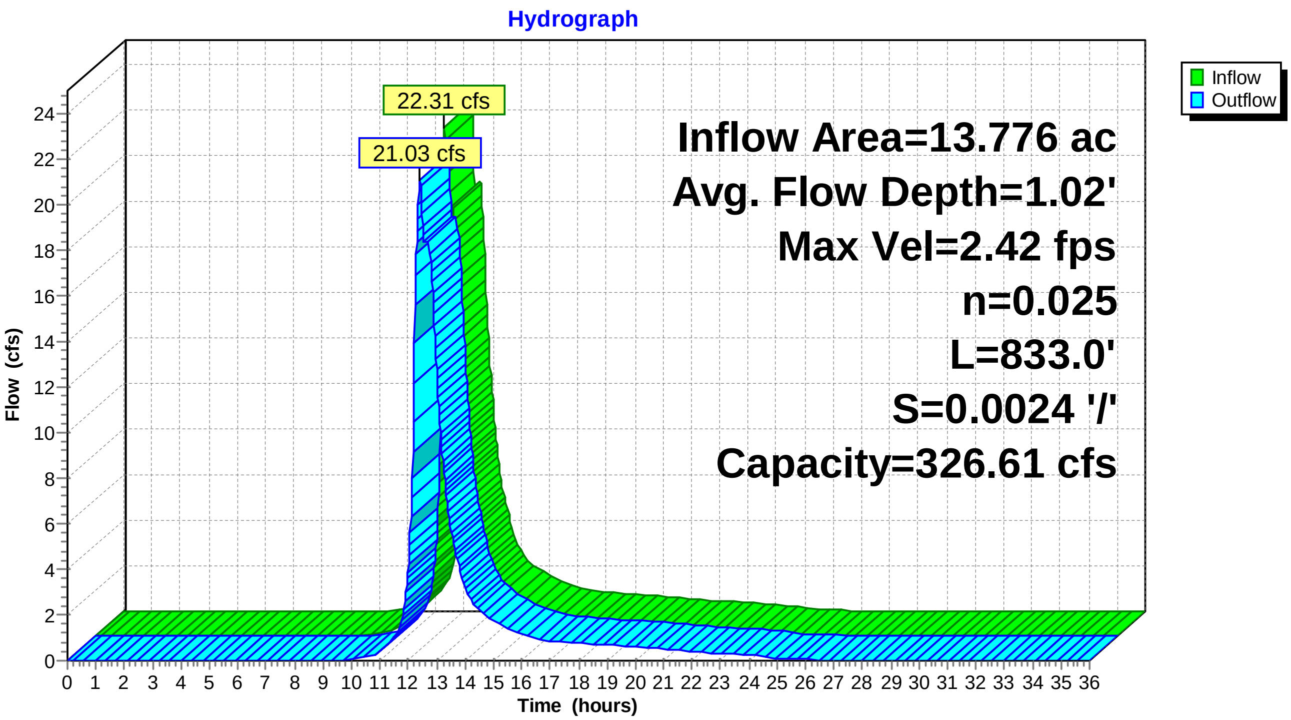
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.42 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 0.65 fps, Avg. Travel Time= 21.5 min

Peak Storage= 7,250 cf @ 12.32 hrs
Average Depth at Peak Storage= 1.02' , Surface Width= 11.09'
Bank-Full Depth= 4.00' Flow Area= 64.0 sf, Capacity= 326.61 cfs

6.00' x 4.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 2.0 '/' Top Width= 26.00'
Length= 833.0' Slope= 0.0024 '/'
Inlet Invert= 691.00', Outlet Invert= 689.00'



Reach 60R: W-MC X Ditch



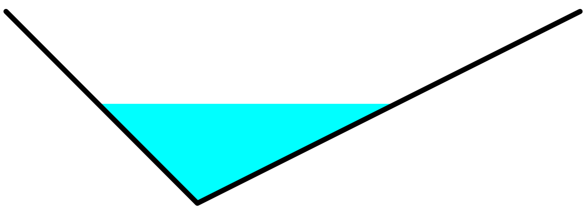
Summary for Reach 64R: S MC X Ditch

Inflow Area = 10.530 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 23.26 cfs @ 12.13 hrs, Volume= 2.042 af
Outflow = 17.73 cfs @ 12.29 hrs, Volume= 2.042 af, Atten= 24%, Lag= 9.8 min

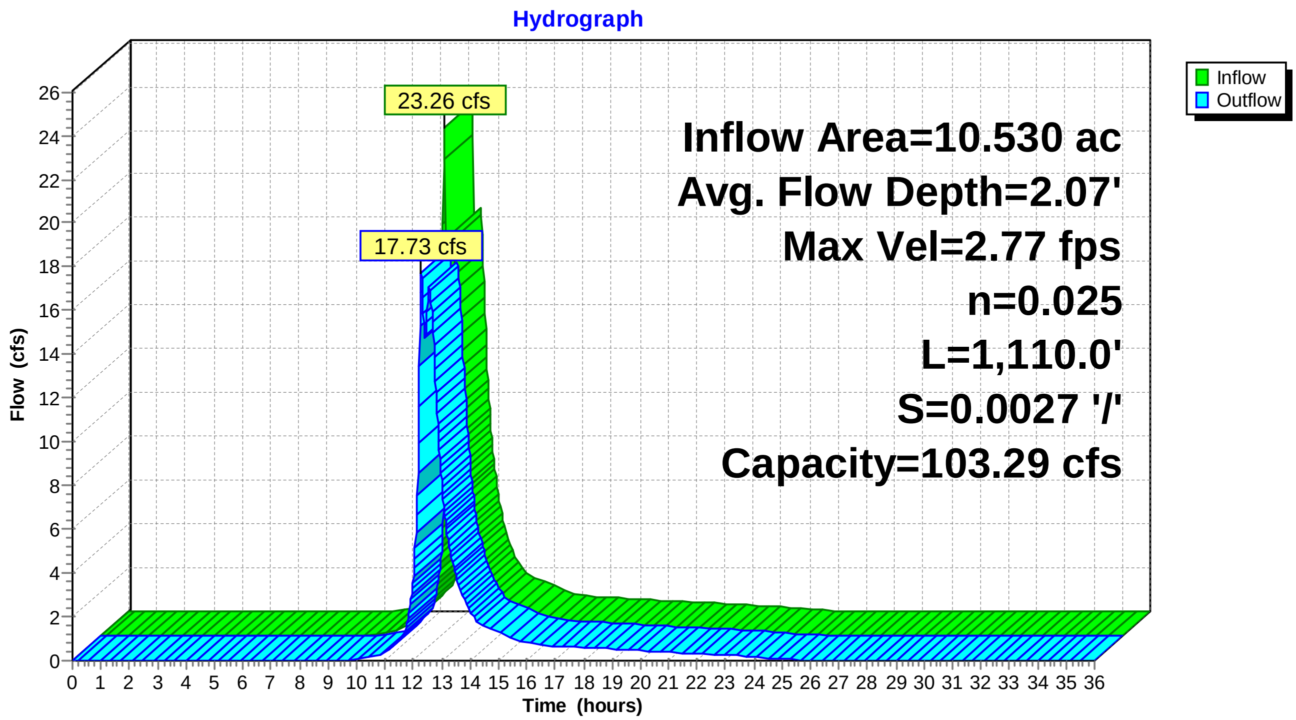
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.77 fps, Min. Travel Time= 6.7 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 22.1 min

Peak Storage= 7,133 cf @ 12.18 hrs
Average Depth at Peak Storage= 2.07' , Surface Width= 6.21'
Bank-Full Depth= 4.00' Flow Area= 24.0 sf, Capacity= 103.29 cfs

0.00' x 4.00' deep channel, n= 0.025
Side Slope Z-value= 1.0 2.0 '/' Top Width= 12.00'
Length= 1,110.0' Slope= 0.0027 '/'
Inlet Invert= 694.00', Outlet Invert= 691.00'



Reach 64R: S MC X Ditch



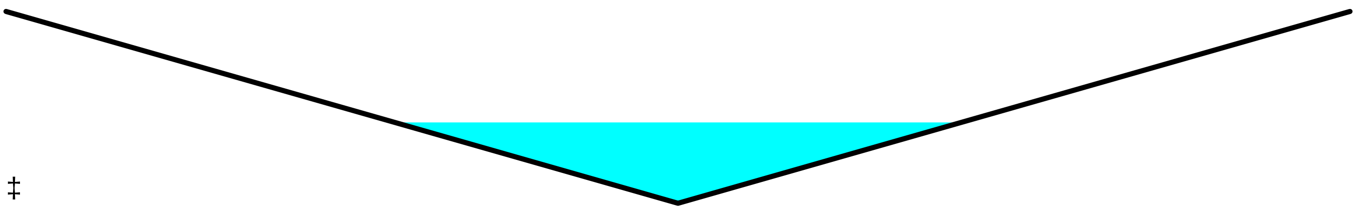
Summary for Reach 66R: E-MC X Ditch

Inflow Area = 5.820 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 26.56 cfs @ 12.12 hrs, Volume= 1.129 af
Outflow = 14.40 cfs @ 12.41 hrs, Volume= 1.129 af, Atten= 46%, Lag= 17.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.81 fps, Min. Travel Time= 13.8 min
Avg. Velocity = 0.50 fps, Avg. Travel Time= 50.2 min

Peak Storage= 11,979 cf @ 12.18 hrs
Average Depth at Peak Storage= 1.26' , Surface Width= 12.64'
Bank-Full Depth= 3.00' Flow Area= 45.0 sf, Capacity= 145.10 cfs

0.00' x 3.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 5.0 '/' Top Width= 30.00'
Length= 1,500.0' Slope= 0.0025 '/'
Inlet Invert= 697.80', Outlet Invert= 694.00'



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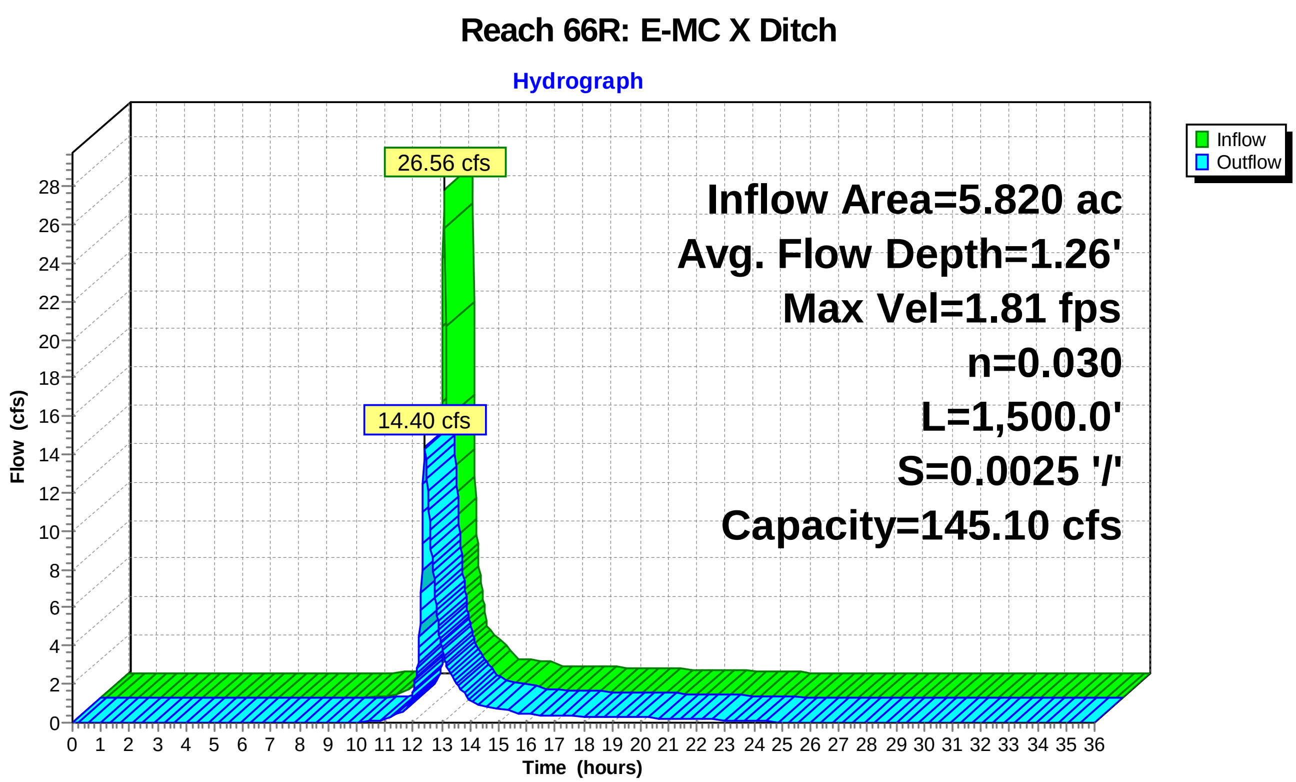


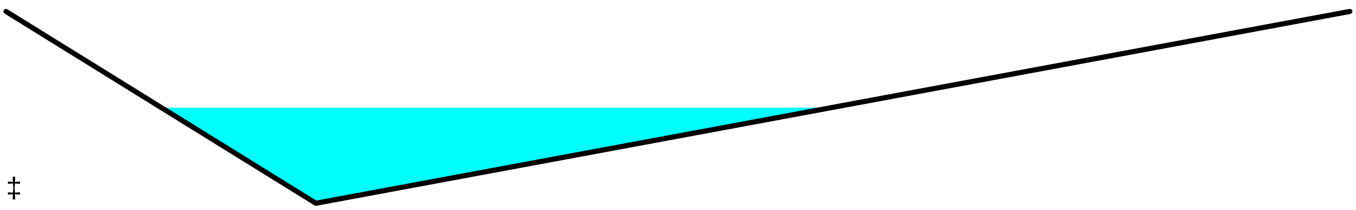
Summary for Reach 71R: DB-46

Inflow Area = 10.457 ac, 0.00% Impervious, Inflow Depth = 2.00" for 25-yr, 24-hr event
Inflow = 24.00 cfs @ 12.29 hrs, Volume= 1.743 af
Outflow = 23.88 cfs @ 12.31 hrs, Volume= 1.743 af, Atten= 0%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.70 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.40 fps, Avg. Travel Time= 2.4 min

Peak Storage= 1,294 cf @ 12.30 hrs
Average Depth at Peak Storage= 1.00' , Surface Width= 12.97'
Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 152.89 cfs

0.00' x 2.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'
Length= 200.0' Slope= 0.0100 '/'
Inlet Invert= 703.00', Outlet Invert= 701.00'



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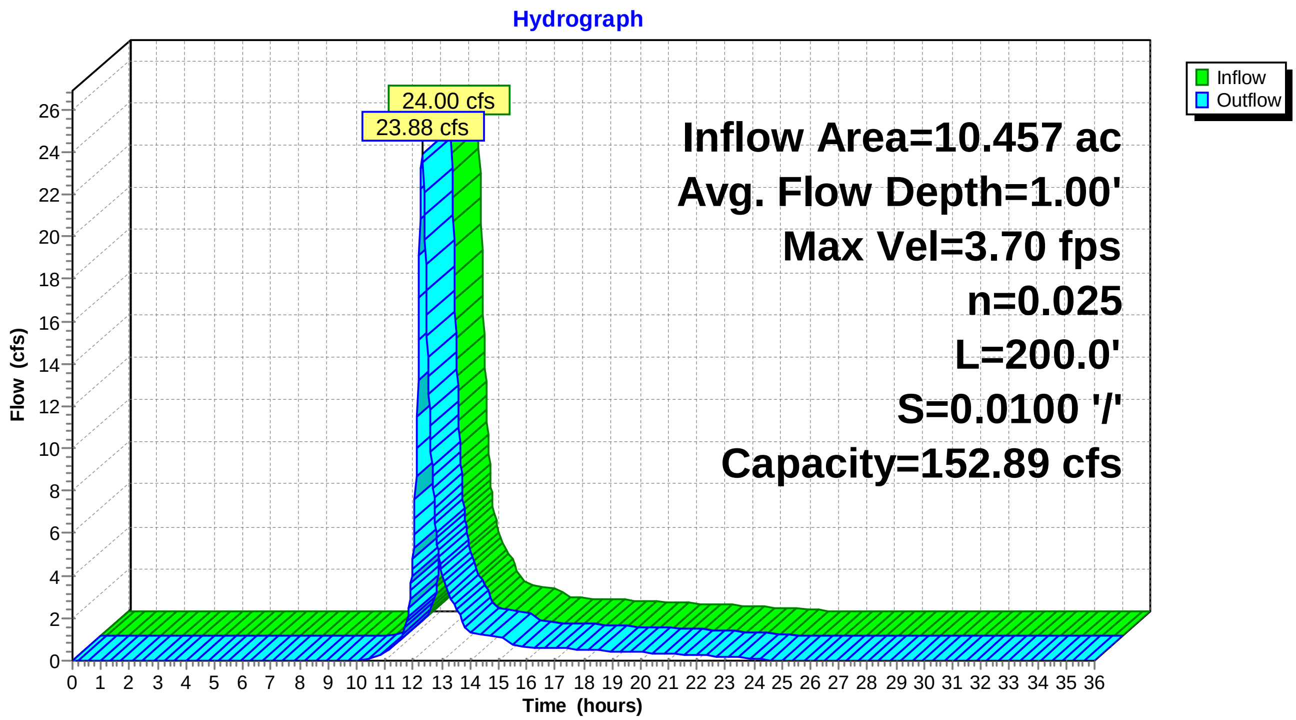
Reach 71R: DB-46



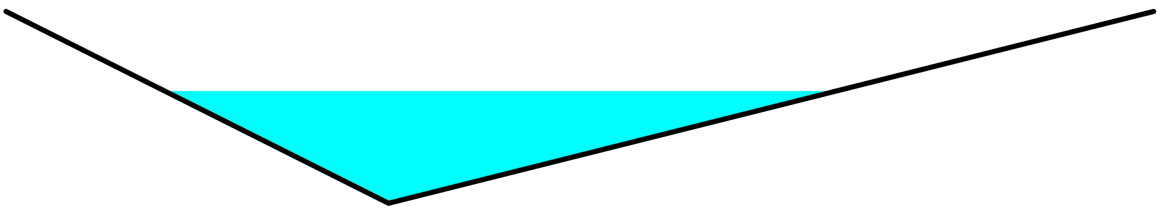
Summary for Reach 72R: DB-37

Inflow Area = 9.042 ac, 0.00% Impervious, Inflow Depth = 2.33" for 25-yr, 24-hr event
Inflow = 23.75 cfs @ 12.29 hrs, Volume= 1.753 af
Outflow = 23.29 cfs @ 12.36 hrs, Volume= 1.753 af, Atten= 2%, Lag= 4.2 min

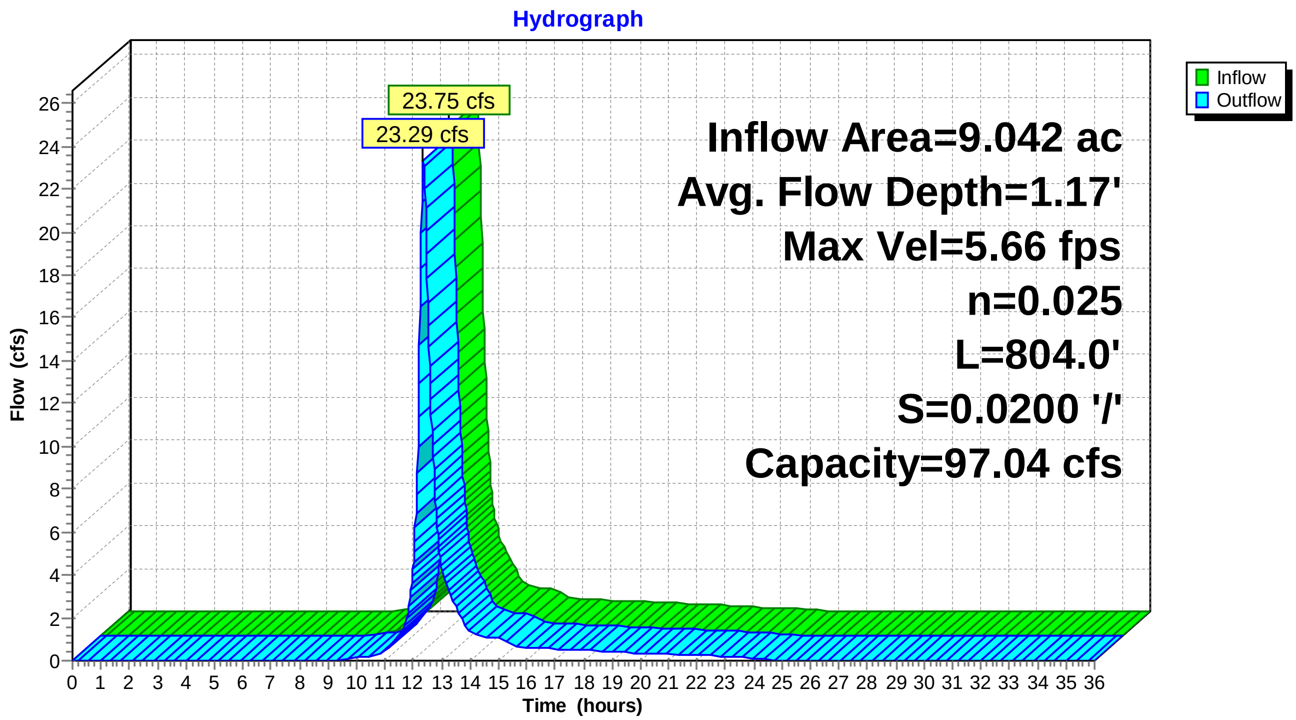
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.66 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 1.98 fps, Avg. Travel Time= 6.8 min

Peak Storage= 3,309 cf @ 12.32 hrs
Average Depth at Peak Storage= 1.17' , Surface Width= 7.03'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 97.04 cfs

0.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 4.0 '/' Top Width= 12.00'
Length= 804.0' Slope= 0.0200 '/'
Inlet Invert= 776.08', Outlet Invert= 760.00'



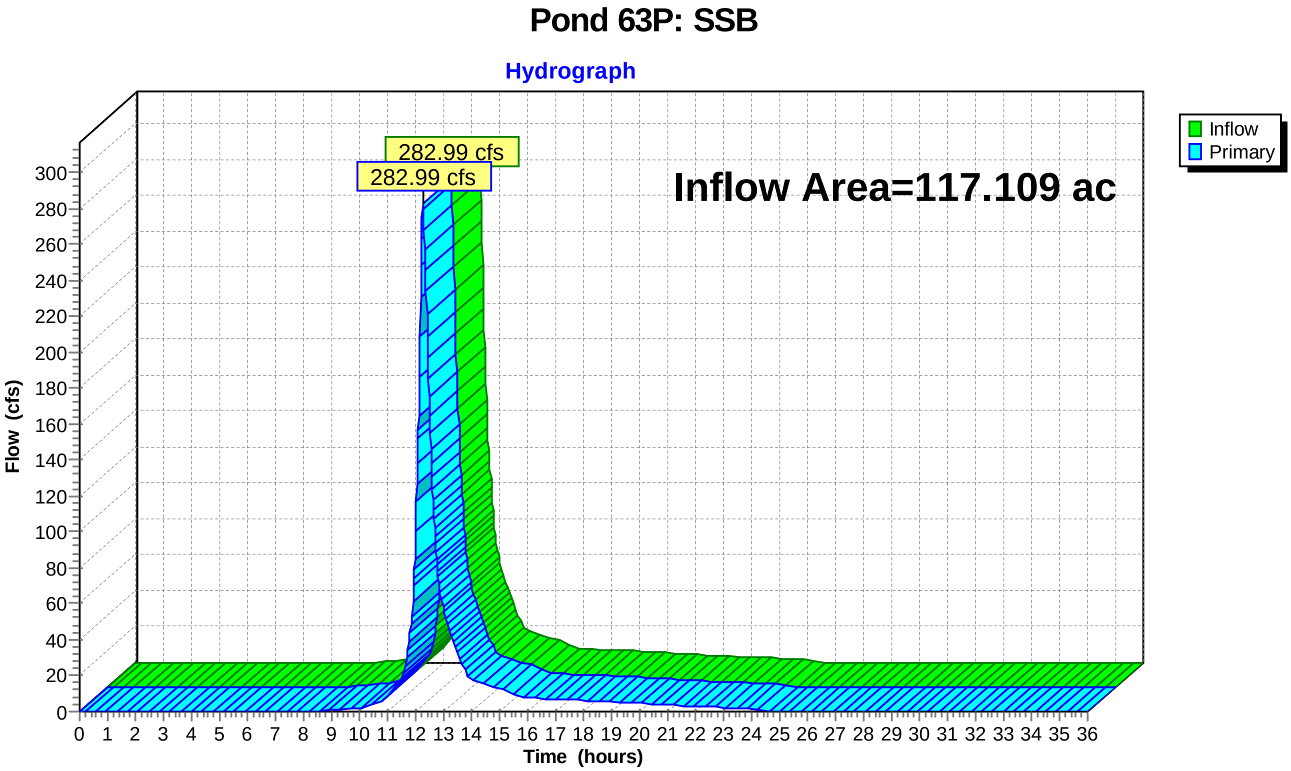
Reach 72R: DB-37



Summary for Pond 63P: SSB

Inflow Area = 117.109 ac, 8.73% Impervious, Inflow Depth = 2.39" for 25-yr, 24-hr event
Inflow = 282.99 cfs @ 12.27 hrs, Volume= 23.314 af
Primary = 282.99 cfs @ 12.27 hrs, Volume= 23.314 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

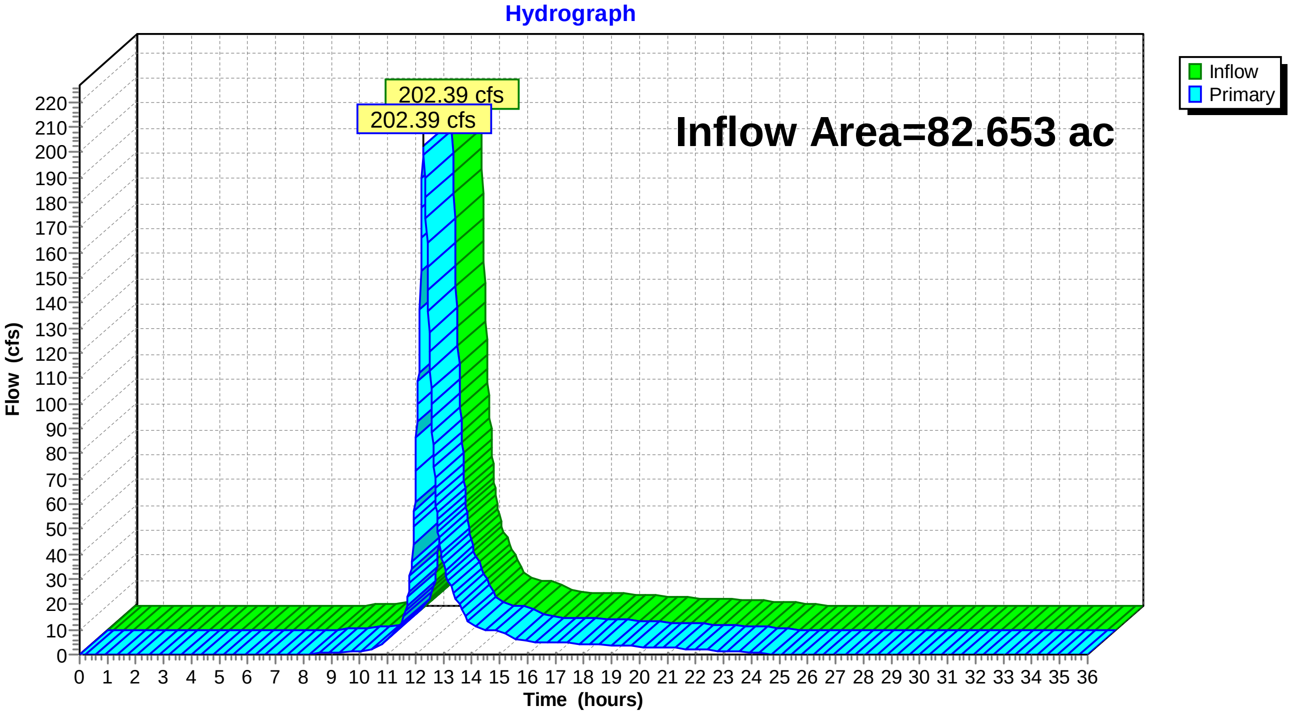


Summary for Pond 69P: Storm Sewer - See SWMM Model

Inflow Area = 82.653 ac, 6.59% Impervious, Inflow Depth = 2.35" for 25-yr, 24-hr event
Inflow = 202.39 cfs @ 12.29 hrs, Volume= 16.177 af
Primary = 202.39 cfs @ 12.29 hrs, Volume= 16.177 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Pond 69P: Storm Sewer - See SWMM Model



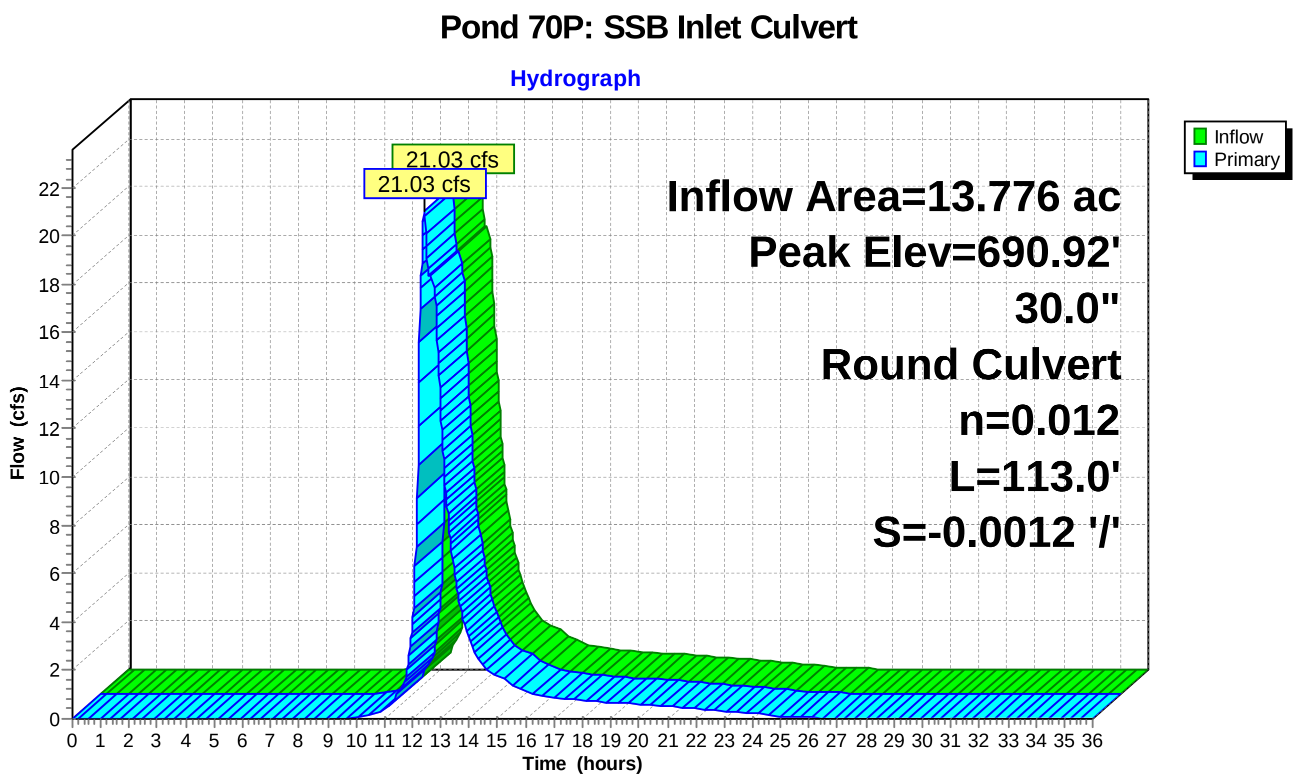
Summary for Pond 70P: SSB Inlet Culvert

Inflow Area =	13.776 ac,	0.00% Impervious, Inflow Depth = 2.33"	for 25-yr, 24-hr event	
Inflow =	21.03 cfs @	12.42 hrs, Volume=	2.672 af	
Outflow =	21.03 cfs @	12.42 hrs, Volume=	2.672 af,	Atten= 0%, Lag= 0.0 min
Primary =	21.03 cfs @	12.42 hrs, Volume=	2.672 af	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 690.92' @ 12.42 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	688.14'	**30.0" Round Culvert** L= 113.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 688.01' / 688.14' S= -0.0012 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf

Primary OutFlow Max=21.03 cfs @ 12.42 hrs HW=690.92' (Free Discharge)
└─**1=Culvert** (Barrel Controls 21.03 cfs @ 4.62 fps)



Summary for Pond 71P: E-MCI Culvert

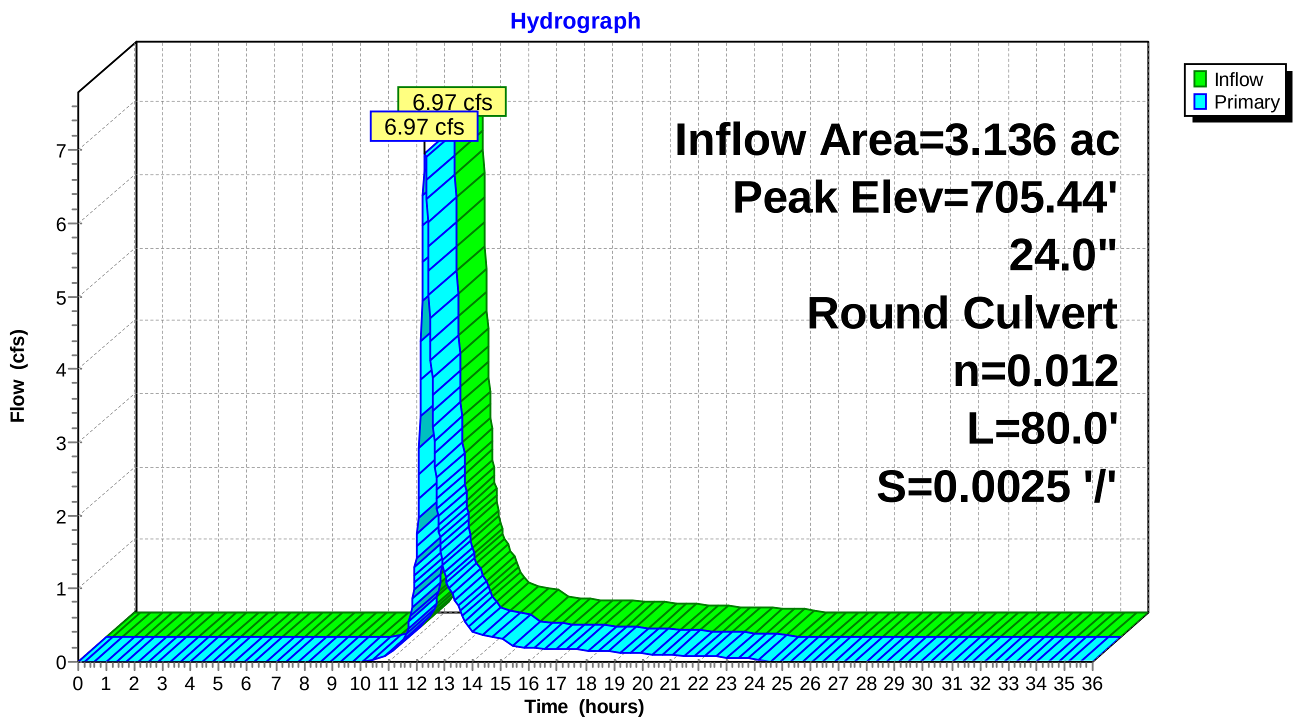
Inflow Area =	3.136 ac,	0.00% Impervious, Inflow Depth = 2.00"	for 25-yr, 24-hr event	
Inflow =	6.97 cfs @	12.30 hrs, Volume=	0.523 af	
Outflow =	6.97 cfs @	12.30 hrs, Volume=	0.523 af,	Atten= 0%, Lag= 0.0 min
Primary =	6.97 cfs @	12.30 hrs, Volume=	0.523 af	

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 705.44' @ 12.30 hrs

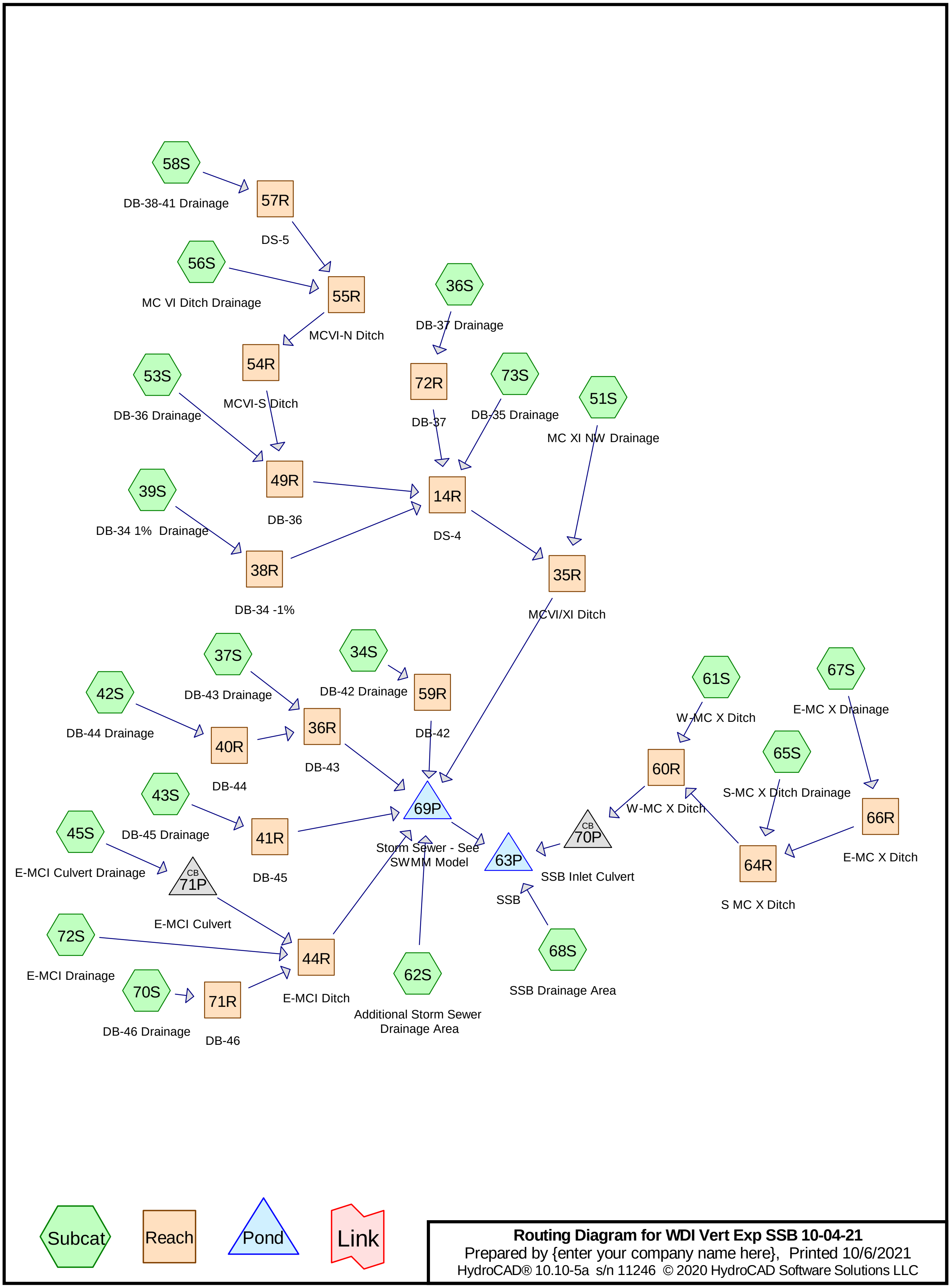
Device	Routing	Invert	Outlet Devices
#1	Primary	703.00'	**24.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 703.00' / 702.80' S= 0.0025 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=6.96 cfs @ 12.30 hrs HW=705.44' TW=705.10' (Fixed TW Elev= 705.10')
1=Culvert (Inlet Controls 6.96 cfs @ 2.22 fps)

Pond 71P: E-MCI Culvert



South Sedimentation Basin (SSB) HYDROCAD OUTPUT – 100-yr, 24-hr



Routing Diagram for WDI Vert Exp SSB 10-04-21

Prepared by {enter your company name here}, Printed 10/6/2021

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Time span=0.00-36.00 hrs, dt=0.02 hrs, 1801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 34S: DB-42 Drainage Runoff Area=86,500 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=476' Tc=4.1 min CN=84 Runoff=13.15 cfs 0.559 af

Subcatchment 36S: DB-37 Drainage Runoff Area=393,872 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=691' Tc=19.8 min CN=84 Runoff=34.24 cfs 2.547 af

Subcatchment 37S: DB-43 Drainage Runoff Area=63,437 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=280' Tc=10.1 min CN=84 Runoff=7.51 cfs 0.410 af

Subcatchment 39S: DB-34 1% Drainage Runoff Area=320,470 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=130' Slope=0.2500 '/' Tc=5.1 min CN=84 Runoff=46.50 cfs 2.072 af

Subcatchment 42S: DB-44 Drainage Runoff Area=67,882 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=291' Tc=18.1 min CN=84 Runoff=6.16 cfs 0.439 af

Subcatchment 43S: DB-45 Drainage Runoff Area=8,958 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=77' Tc=7.7 min CN=84 Runoff=1.17 cfs 0.058 af

Subcatchment 45S: E-MCI Culvert Drainage Runoff Area=136,608 sf 0.00% Impervious Runoff Depth=3.00"
Flow Length=667' Tc=20.2 min CN=80 Runoff=10.44 cfs 0.783 af

Subcatchment 51S: MC XI NW Drainage Runoff Area=649,178 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=480' Slope=0.0520 '/' Tc=16.5 min CN=84 Runoff=61.87 cfs 4.198 af

Subcatchment 53S: DB-36 Drainage Runoff Area=181,100 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=495' Tc=7.0 min CN=84 Runoff=24.34 cfs 1.171 af

Subcatchment 56S: MC VI Ditch Drainage Runoff Area=297,466 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=367' Tc=6.9 min CN=84 Runoff=40.19 cfs 1.924 af

Subcatchment 58S: DB-38-41 Drainage Runoff Area=335,816 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=933' Tc=3.8 min CN=84 Runoff=51.61 cfs 2.172 af

Subcatchment 61S: W-MC X Ditch Runoff Area=141,400 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=150' Slope=0.2500 '/' Tc=5.8 min CN=84 Runoff=19.95 cfs 0.914 af

Subcatchment 62S: Additional Storm Sewer Runoff Area=237,200 sf 100.00% Impervious Runoff Depth=4.88"
Tc=0.0 min CN=98 Runoff=46.10 cfs 2.216 af

Subcatchment 65S: S-MC X Ditch Drainage Runoff Area=205,200 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=160' Slope=0.3300 '/' Tc=5.4 min CN=84 Runoff=29.42 cfs 1.327 af

Subcatchment 67S: E-MC X Drainage Runoff Area=253,500 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=110' Slope=0.2500 '/' Tc=4.5 min CN=84 Runoff=37.89 cfs 1.639 af

Subcatchment 68S: SSB Drainage Area Runoff Area=900,800 sf 23.12% Impervious Runoff Depth=3.68"
Flow Length=400' Slope=0.0730 '/' Tc=13.7 min CN=87 Runoff=100.19 cfs 6.342 af

Subcatchment 70S: DB-46 Drainage Runoff Area=455,500 sf 0.00% Impervious Runoff Depth=3.00"
Flow Length=450' Slope=0.0350 '/' Tc=19.1 min CN=80 Runoff=35.98 cfs 2.612 af

Subcatchment 72S: E-MCI Drainage Runoff Area=177,527 sf 0.00% Impervious Runoff Depth=3.00"
Flow Length=1,086' Tc=33.4 min CN=80 Runoff=10.27 cfs 1.018 af

Subcatchment 73S: DB-35 Drainage Runoff Area=188,838 sf 0.00% Impervious Runoff Depth=3.38"
Flow Length=1,373' Tc=6.3 min CN=84 Runoff=26.16 cfs 1.221 af

Reach 14R: DS-4 Avg. Flow Depth=0.74' Max Vel=18.98 fps Inflow=161.36 cfs 11.107 af
n=0.029 L=230.0' S=0.2500 '/' Capacity=930.83 cfs Outflow=160.94 cfs 11.107 af

Reach 35R: MCVI/XI Ditch Avg. Flow Depth=2.14' Max Vel=7.13 fps Inflow=222.80 cfs 15.305 af
n=0.025 L=290.0' S=0.0100 '/' Capacity=898.54 cfs Outflow=221.46 cfs 15.305 af

Reach 36R: DB-43 Avg. Flow Depth=1.01' Max Vel=3.64 fps Inflow=11.41 cfs 0.849 af
n=0.025 L=402.0' S=0.0100 '/' Capacity=68.62 cfs Outflow=11.21 cfs 0.849 af

Reach 38R: DB-34 -1% Avg. Flow Depth=1.51' Max Vel=4.74 fps Inflow=46.50 cfs 2.072 af
n=0.025 L=2,391.0' S=0.0100 '/' Capacity=68.62 cfs Outflow=32.32 cfs 2.072 af

Reach 40R: DB-44 Avg. Flow Depth=0.59' Max Vel=5.87 fps Inflow=6.16 cfs 0.439 af
n=0.025 L=610.0' S=0.0540 '/' Capacity=159.45 cfs Outflow=6.08 cfs 0.439 af

Reach 41R: DB-45 Avg. Flow Depth=0.43' Max Vel=2.06 fps Inflow=1.17 cfs 0.058 af
n=0.025 L=127.1' S=0.0100 '/' Capacity=68.59 cfs Outflow=1.15 cfs 0.058 af

Reach 44R: E-MCI Ditch Avg. Flow Depth=2.16' Max Vel=3.86 fps Inflow=54.49 cfs 4.414 af
n=0.025 L=250.0' S=0.0041 '/' Capacity=129.69 cfs Outflow=54.27 cfs 4.414 af

Reach 49R: DB-36 Avg. Flow Depth=2.04' Max Vel=8.17 fps Inflow=108.34 cfs 5.267 af
n=0.025 L=1,140.0' S=0.0200 '/' Capacity=175.94 cfs Outflow=101.78 cfs 5.267 af

Reach 54R: MCVI-S Ditch Avg. Flow Depth=1.52' Max Vel=9.43 fps Inflow=87.40 cfs 4.095 af
n=0.025 L=370.0' S=0.0380 '/' Capacity=181.62 cfs Outflow=85.74 cfs 4.095 af

Reach 55R: MCVI-N Ditch Avg. Flow Depth=0.70' Max Vel=4.84 fps Inflow=89.31 cfs 4.095 af
n=0.025 L=265.0' S=0.0270 '/' Capacity=230.14 cfs Outflow=87.40 cfs 4.095 af

Reach 57R: DS-5 Avg. Flow Depth=0.87' Max Vel=11.95 fps Inflow=51.61 cfs 2.172 af
n=0.029 L=304.0' S=0.1697 '/' Capacity=476.49 cfs Outflow=50.45 cfs 2.172 af

Reach 59R: DB-42 Avg. Flow Depth=1.04' Max Vel=3.69 fps Inflow=13.15 cfs 0.559 af
n=0.025 L=576.5' S=0.0100 '/' Capacity=68.65 cfs Outflow=11.88 cfs 0.559 af

Reach 60R: W-MC X Ditch Avg. Flow Depth=1.29' Max Vel=2.75 fps Inflow=34.54 cfs 3.881 af
n=0.025 L=833.0' S=0.0024 '/' Capacity=326.61 cfs Outflow=32.84 cfs 3.881 af

Reach 64R: S MC X Ditch Avg. Flow Depth=2.44' Max Vel=3.09 fps Inflow=34.39 cfs 2.966 af
n=0.025 L=1,110.0' S=0.0027 '/' Capacity=103.29 cfs Outflow=27.51 cfs 2.966 af

Reach 66R: E-MC X Ditch Avg. Flow Depth=1.48' Max Vel=2.01 fps Inflow=37.89 cfs 1.639 af
n=0.030 L=1,500.0' S=0.0025 '/' Capacity=145.10 cfs Outflow=22.01 cfs 1.639 af

Reach 71R: DB-46 Avg. Flow Depth=1.16' Max Vel=4.09 fps Inflow=35.98 cfs 2.612 af
n=0.025 L=200.0' S=0.0100 '/' Capacity=152.89 cfs Outflow=35.82 cfs 2.612 af

Reach 72R: DB-37 Avg. Flow Depth=1.35' Max Vel=6.21 fps Inflow=34.24 cfs 2.547 af
n=0.025 L=804.0' S=0.0200 '/' Capacity=97.04 cfs Outflow=33.66 cfs 2.547 af

Pond 63P: SSB Inflow=416.34 cfs 33.625 af
Primary=416.34 cfs 33.625 af

Pond 69P: Storm Sewer - See SWMM Model Inflow=296.87 cfs 23.402 af
Primary=296.87 cfs 23.402 af

Pond 70P: SSB Inlet Culvert Peak Elev=692.17' Inflow=32.84 cfs 3.881 af
30.0" Round Culvert n=0.012 L=113.0' S=-0.0012 '/' Outflow=32.84 cfs 3.881 af

Pond 71P: E-MCI Culvert Peak Elev=705.87' Inflow=10.44 cfs 0.783 af
24.0" Round Culvert n=0.012 L=80.0' S=0.0025 '/' Outflow=10.44 cfs 0.783 af

Total Runoff Area = 117.109 ac Runoff Volume = 33.625 af Average Runoff Depth = 3.45"
91.27% Pervious = 106.881 ac 8.73% Impervious = 10.227 ac

Summary for Subcatchment 34S: DB-42 Drainage

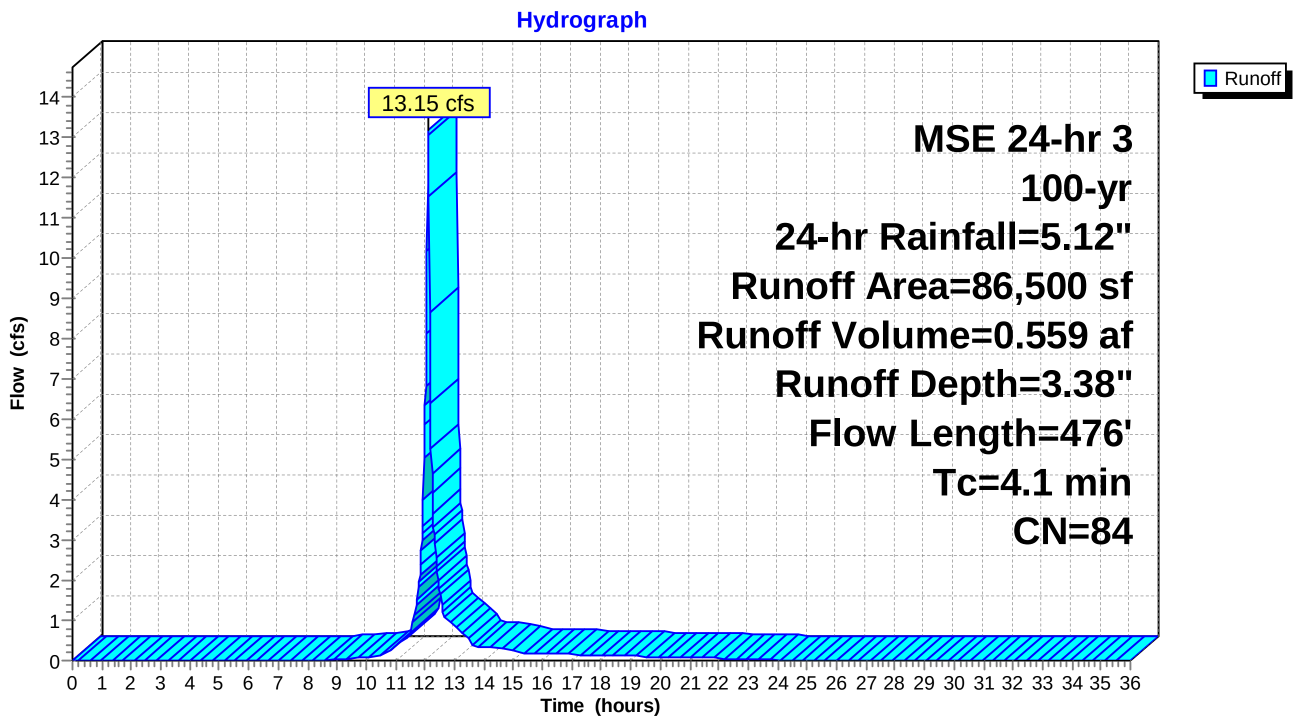
Runoff = 13.15 cfs @ 12.11 hrs, Volume= 0.559 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
86,500	84	50-75% Grass cover, Fair, HSG D
86,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	66	0.2500	0.37		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
1.1	410	0.0100	5.94	71.33	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, clean & winding
4.1	476	Total			

Subcatchment 34S: DB-42 Drainage



Summary for Subcatchment 36S: DB-37 Drainage

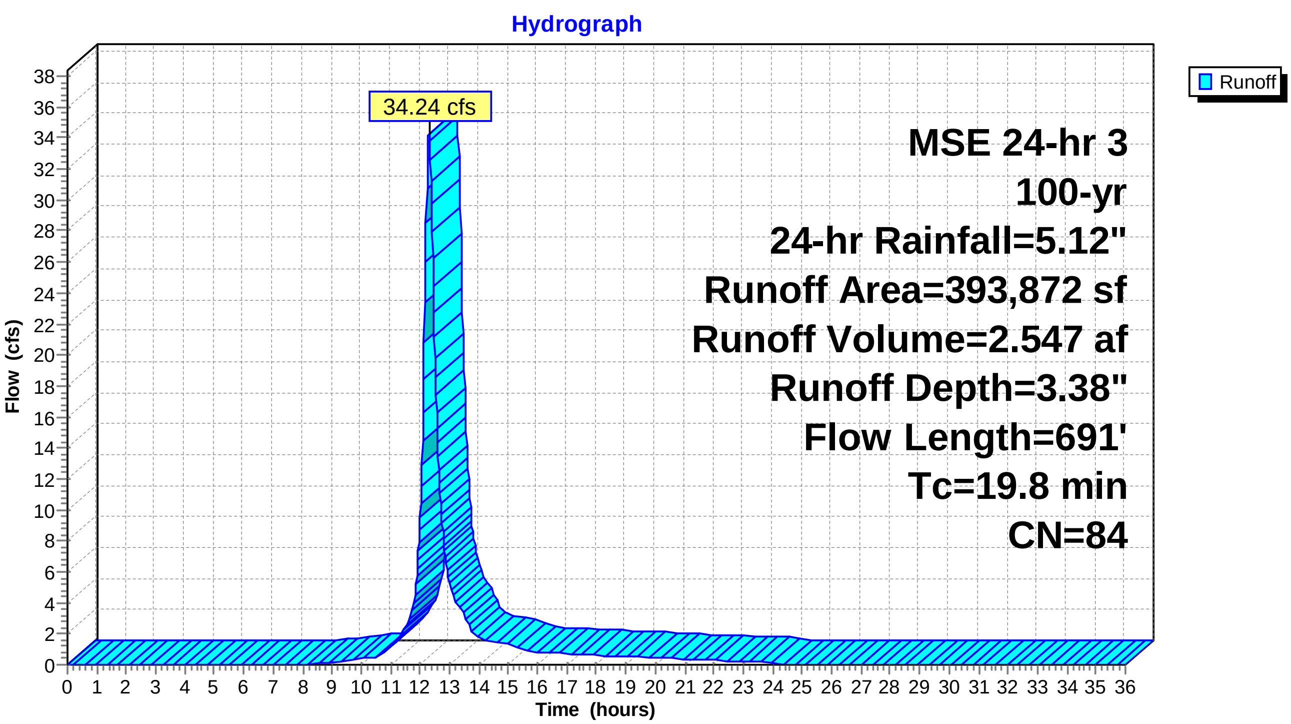
Runoff = 34.24 cfs @ 12.29 hrs, Volume= 2.547 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
393,872	84	50-75% Grass cover, Fair, HSG D
393,872		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	59	0.2500	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
11.4	141	0.0400	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
5.6	474	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	17	0.2500	3.50		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.8	691	Total			

Subcatchment 36S: DB-37 Drainage



Summary for Subcatchment 37S: DB-43 Drainage

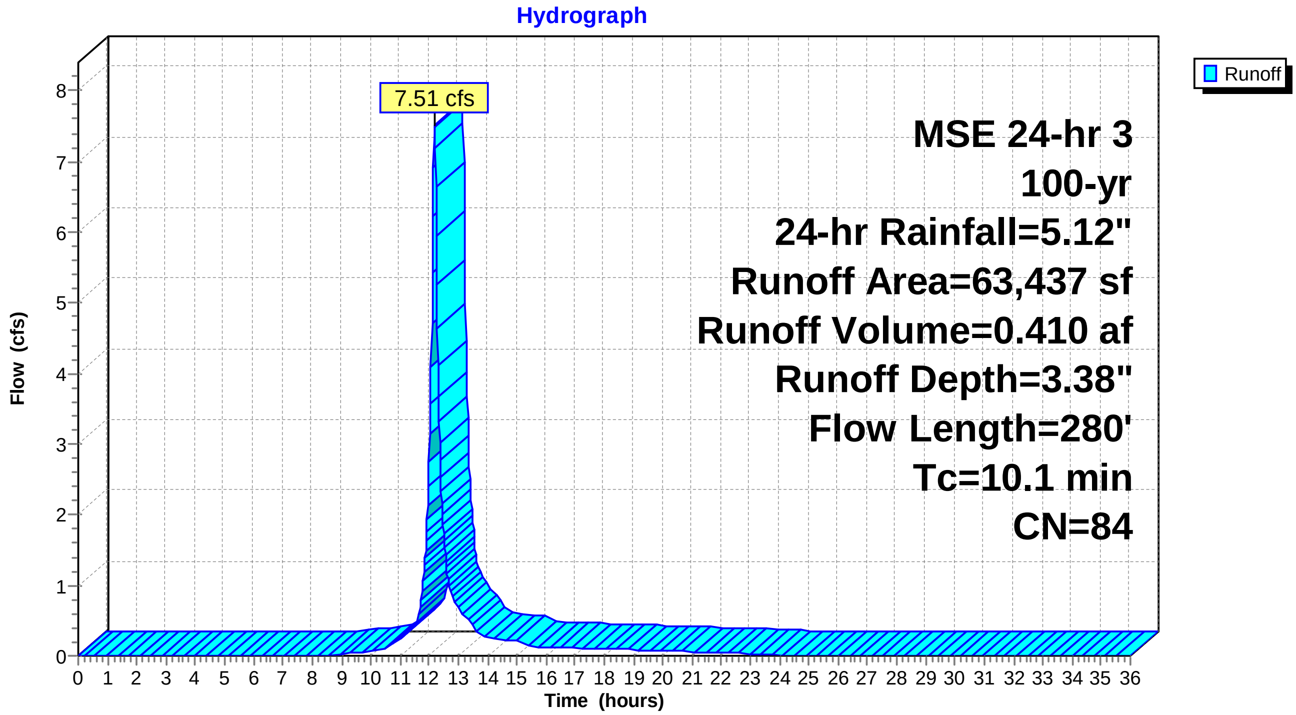
Runoff = 7.51 cfs @ 12.18 hrs, Volume= 0.410 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
63,437	84	50-75% Grass cover, Fair, HSG D
63,437		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	65	0.2500	0.37		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
7.2	215	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.1	280	Total			

Subcatchment 37S: DB-43 Drainage



Summary for Subcatchment 39S: DB-34 1% Drainage

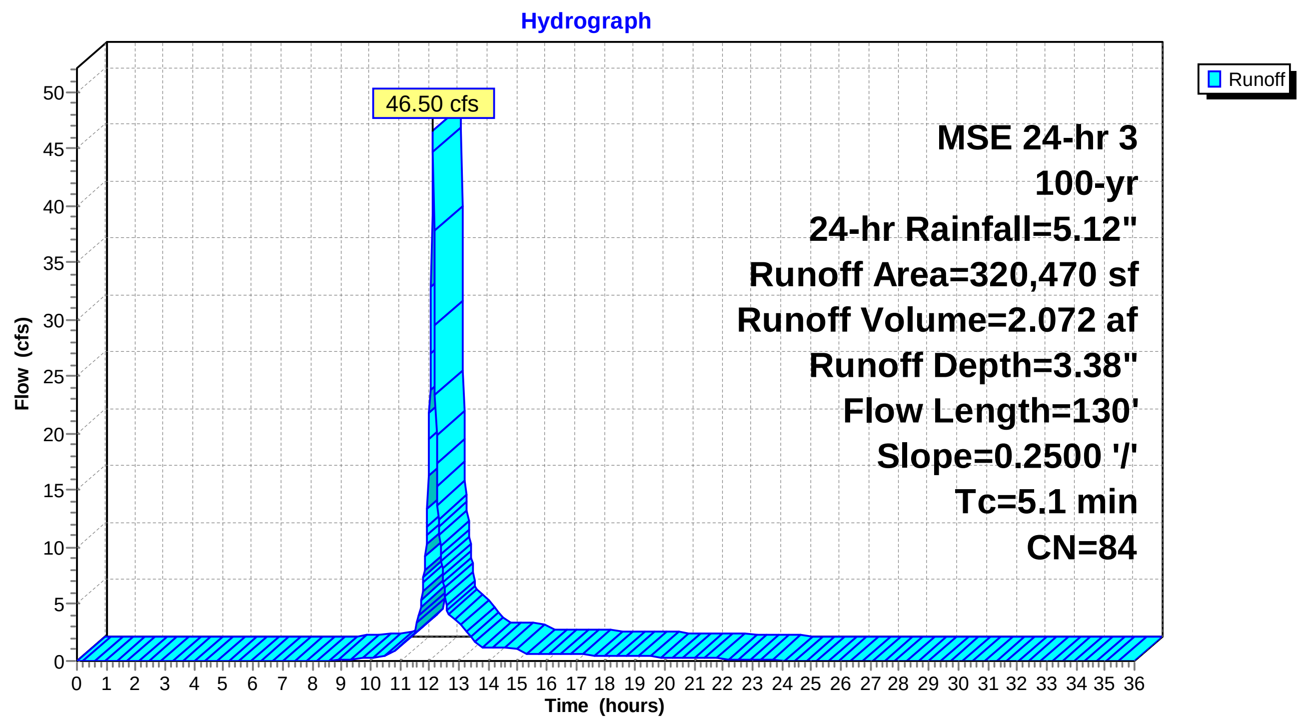
Runoff = 46.50 cfs @ 12.12 hrs, Volume= 2.072 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
320,470	84	50-75% Grass cover, Fair, HSG D
320,470		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	130	0.2500	0.42		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"

Subcatchment 39S: DB-34 1% Drainage



Summary for Subcatchment 42S: DB-44 Drainage

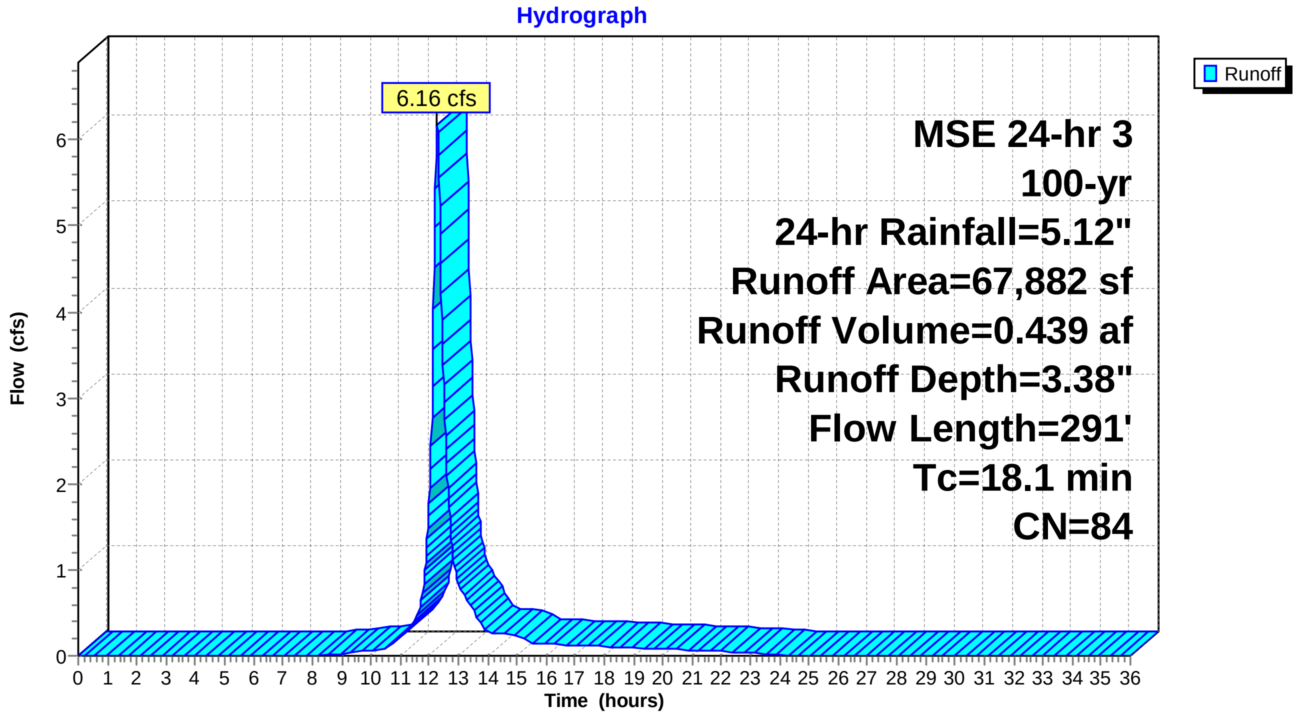
Runoff = 6.16 cfs @ 12.27 hrs, Volume= 0.439 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
67,882	84	50-75% Grass cover, Fair, HSG D
67,882		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.9	199	0.0260	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
0.2	92	0.2500	7.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
18.1	291	Total			

Subcatchment 42S: DB-44 Drainage



Summary for Subcatchment 43S: DB-45 Drainage

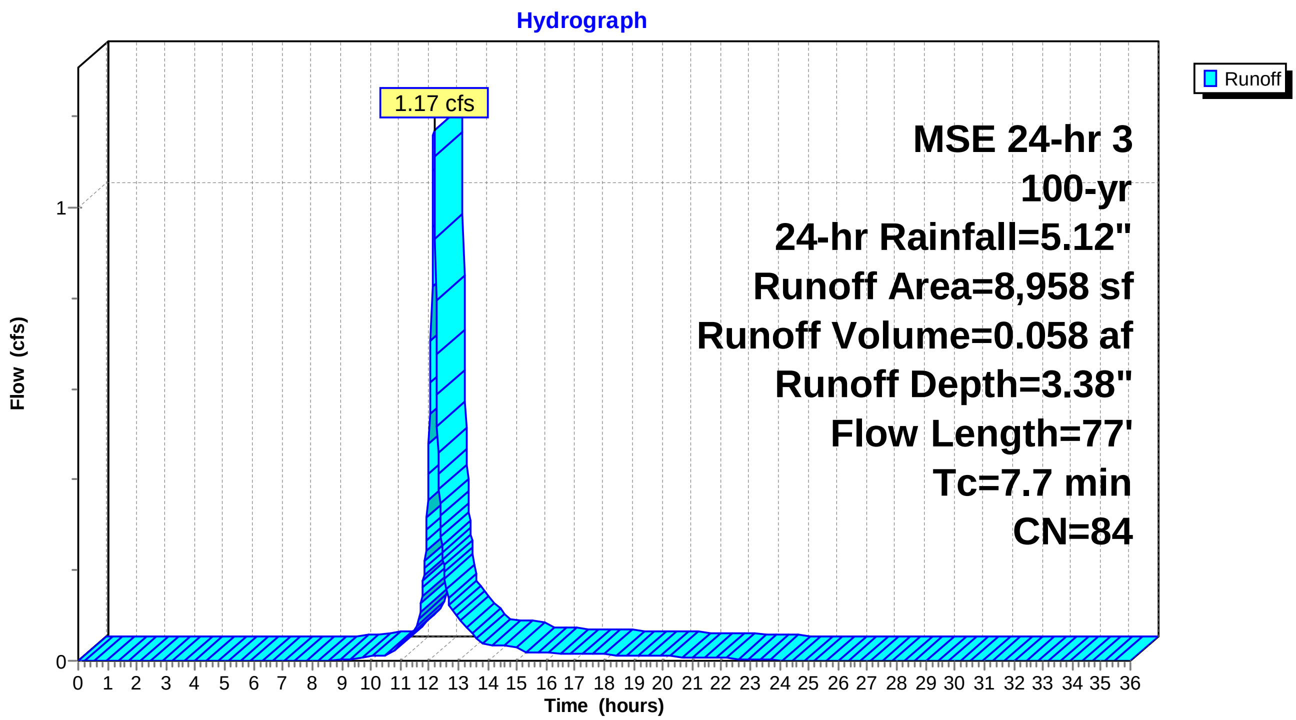
Runoff = 1.17 cfs @ 12.15 hrs, Volume= 0.058 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
8,958	84	50-75% Grass cover, Fair, HSG D
8,958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	29	0.0100	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
2.1	48	0.3300	0.39		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
7.7	77	Total			

Subcatchment 43S: DB-45 Drainage



Summary for Subcatchment 45S: E-MCI Culvert Drainage

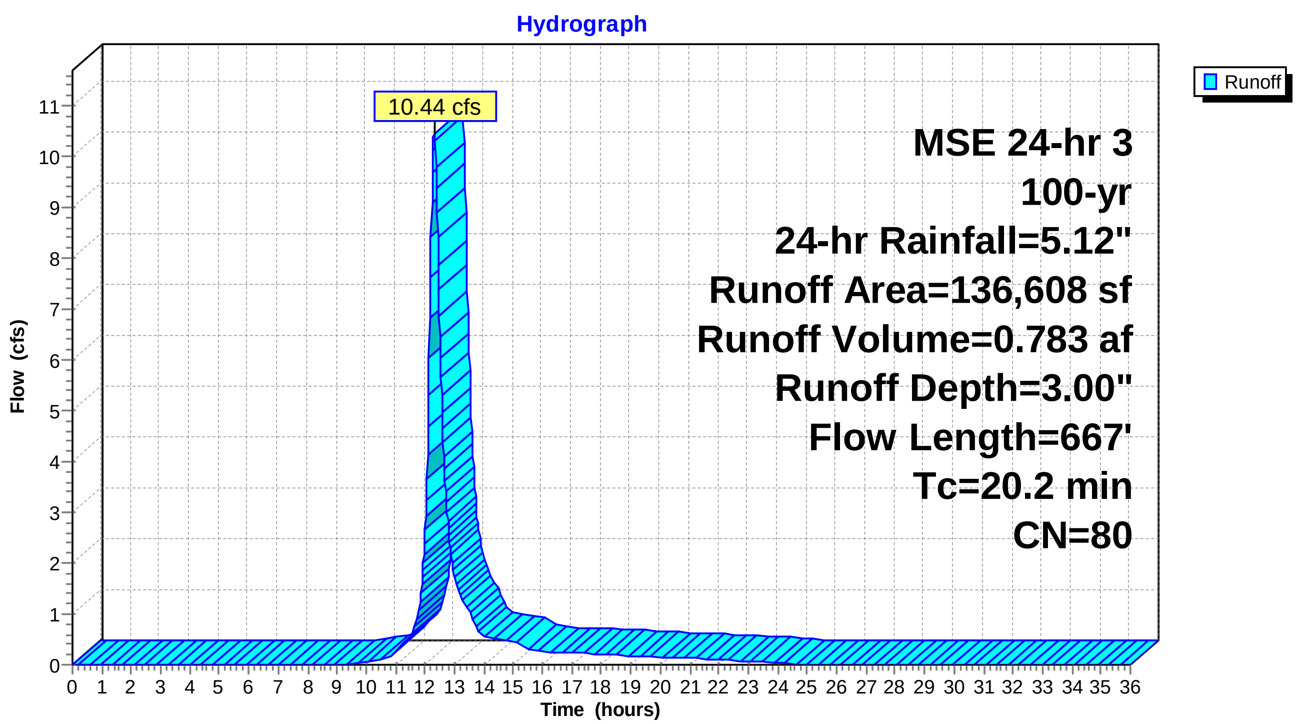
Runoff = 10.44 cfs @ 12.30 hrs, Volume= 0.783 af, Depth= 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
136,608	80	>75% Grass cover, Good, HSG D
136,608		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	32	0.0100	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
1.6	35	0.3300	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
8.2	133	0.0800	0.27		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
4.3	467	0.0670	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.2	667	Total			

Subcatchment 45S: E-MCI Culvert Drainage



Summary for Subcatchment 51S: MC XI NW Drainage

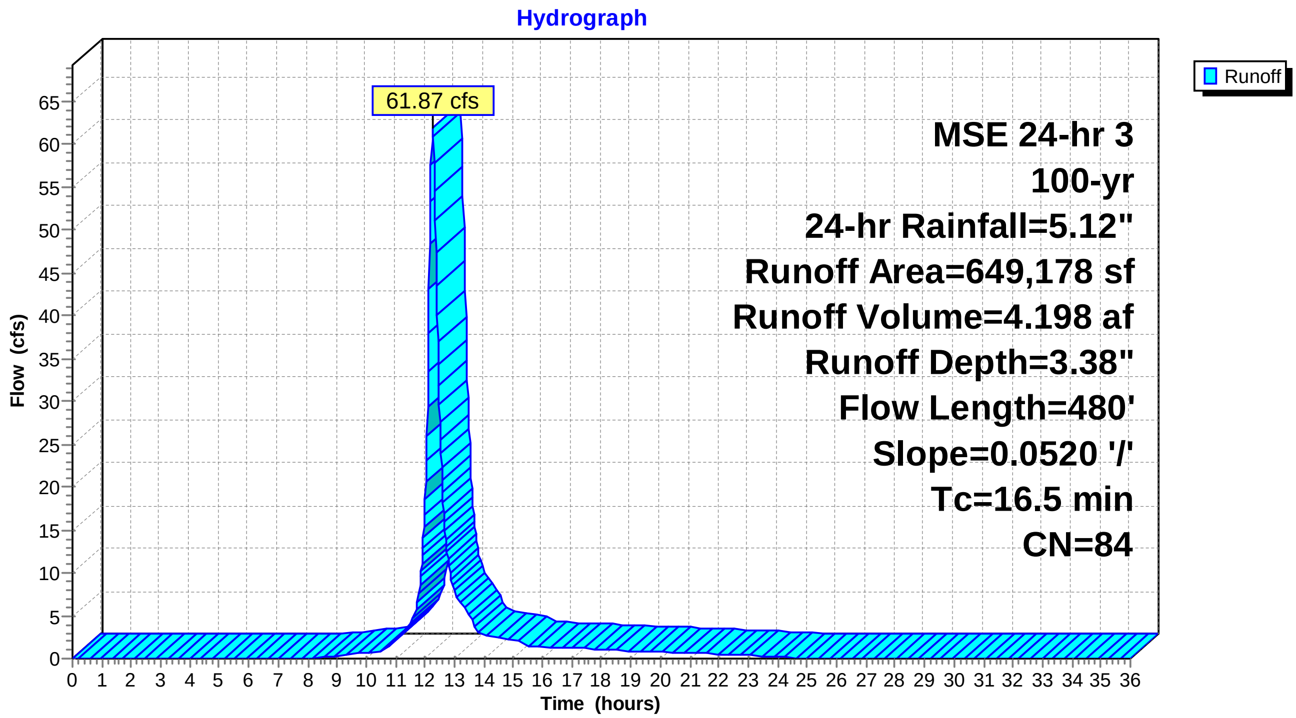
Runoff = 61.87 cfs @ 12.25 hrs, Volume= 4.198 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
475,309	84	50-75% Grass cover, Fair, HSG D
173,869	84	50-75% Grass cover, Fair, HSG D
649,178	84	Weighted Average
649,178		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	200	0.0520	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
2.9	280	0.0520	1.60		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
16.5	480	Total			

Subcatchment 51S: MC XI NW Drainage



Summary for Subcatchment 53S: DB-36 Drainage

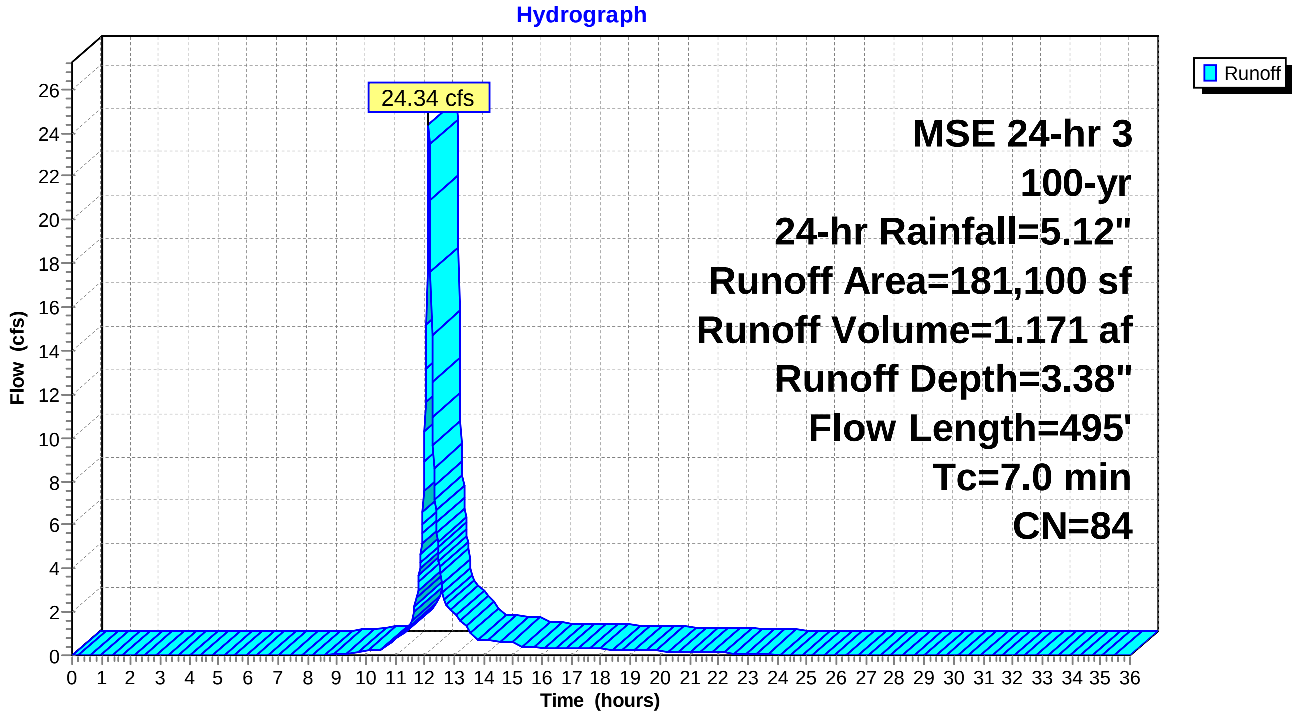
Runoff = 24.34 cfs @ 12.14 hrs, Volume= 1.171 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
181,100	84	50-75% Grass cover, Fair, HSG D
181,100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	170	0.2500	0.45		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
0.6	325	0.0200	8.41	100.87	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, clean & winding
7.0	495	Total			

Subcatchment 53S: DB-36 Drainage



Summary for Subcatchment 56S: MC VI Ditch Drainage

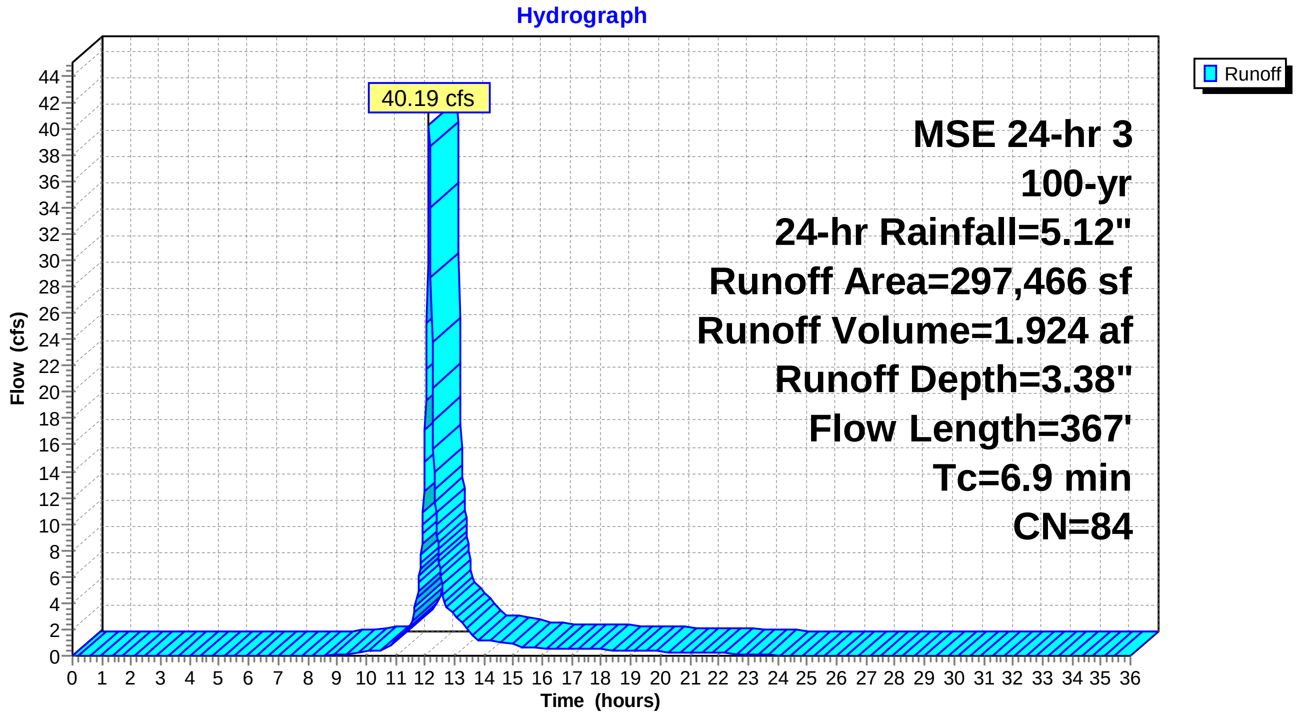
Runoff = 40.19 cfs @ 12.14 hrs, Volume= 1.924 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
297,466	84	50-75% Grass cover, Fair, HSG D
297,466		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	59	0.2500	0.36		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
4.2	308	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.9	367	Total			

Subcatchment 56S: MC VI Ditch Drainage



Summary for Subcatchment 58S: DB-38-41 Drainage

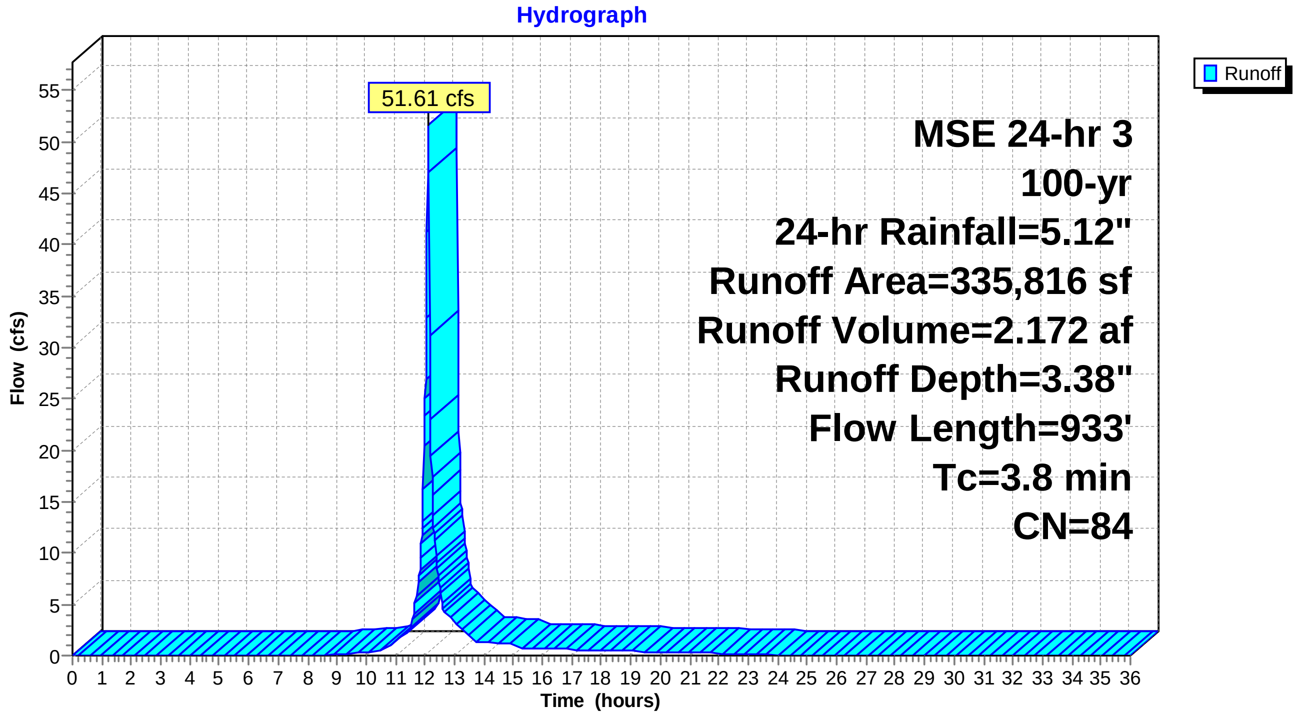
Runoff = 51.61 cfs @ 12.11 hrs, Volume= 2.172 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
335,816	84	50-75% Grass cover, Fair, HSG D
335,816		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	39	0.2500	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
1.8	894	0.0200	8.41	100.87	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, clean & winding
3.8	933	Total			

Subcatchment 58S: DB-38-41 Drainage



Summary for Subcatchment 61S: W-MC X Ditch

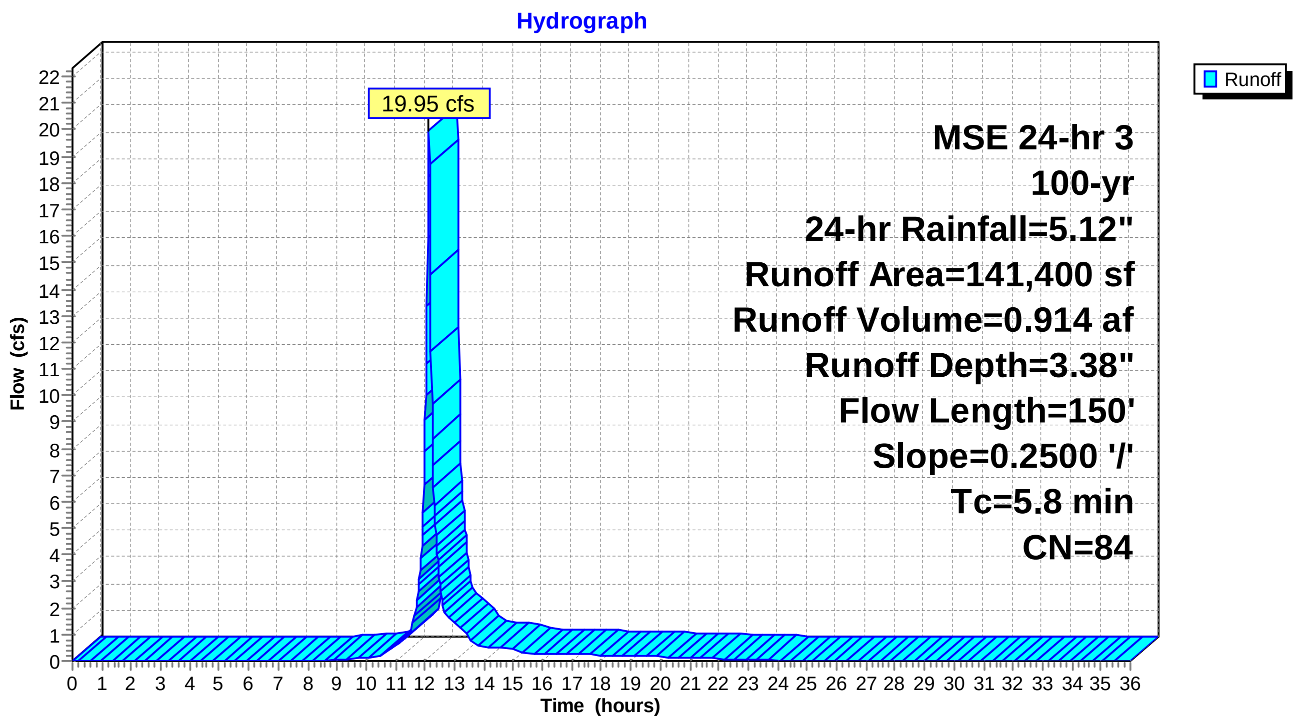
Runoff = 19.95 cfs @ 12.13 hrs, Volume= 0.914 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
141,400	84	50-75% Grass cover, Fair, HSG D
141,400		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	150	0.2500	0.43		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"

Subcatchment 61S: W-MC X Ditch



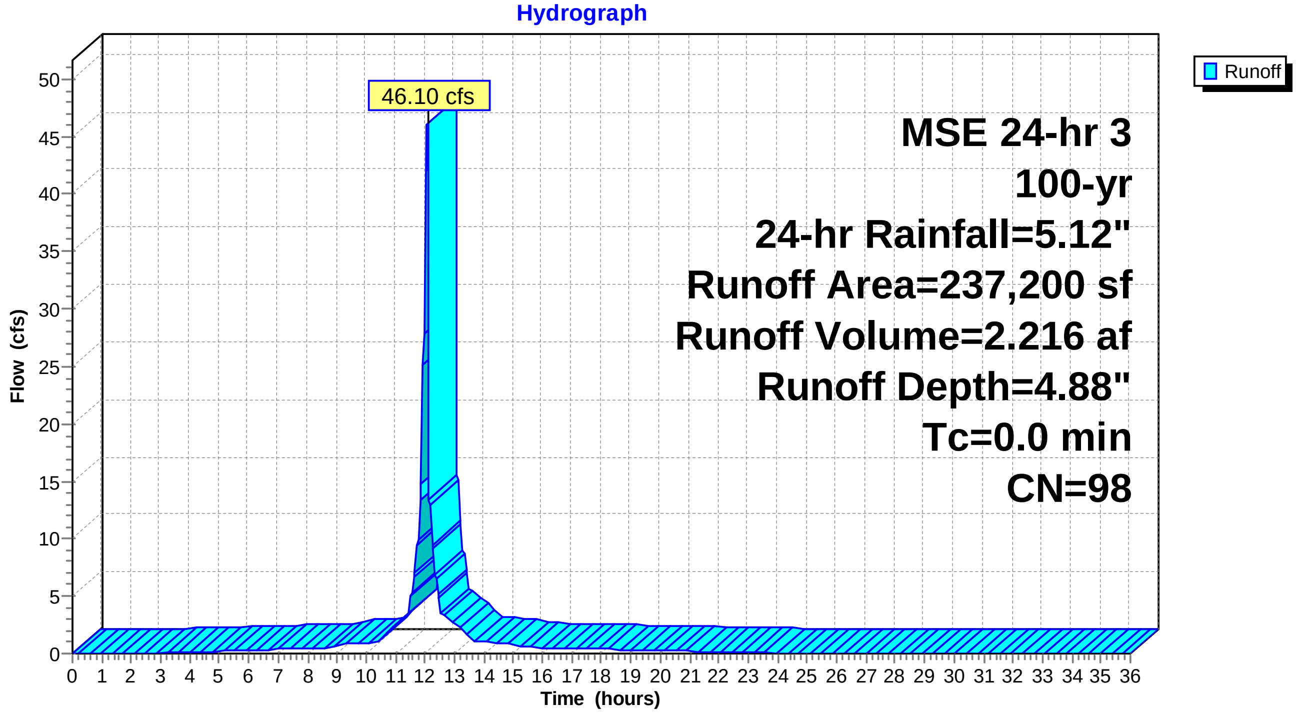
Summary for Subcatchment 62S: Additional Storm Sewer Drainage Area

Runoff = 46.10 cfs @ 12.08 hrs, Volume= 2.216 af, Depth= 4.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
237,200	98	Paved parking, HSG D
237,200		100.00% Impervious Area

Subcatchment 62S: Additional Storm Sewer Drainage Area



Summary for Subcatchment 65S: S-MC X Ditch Drainage

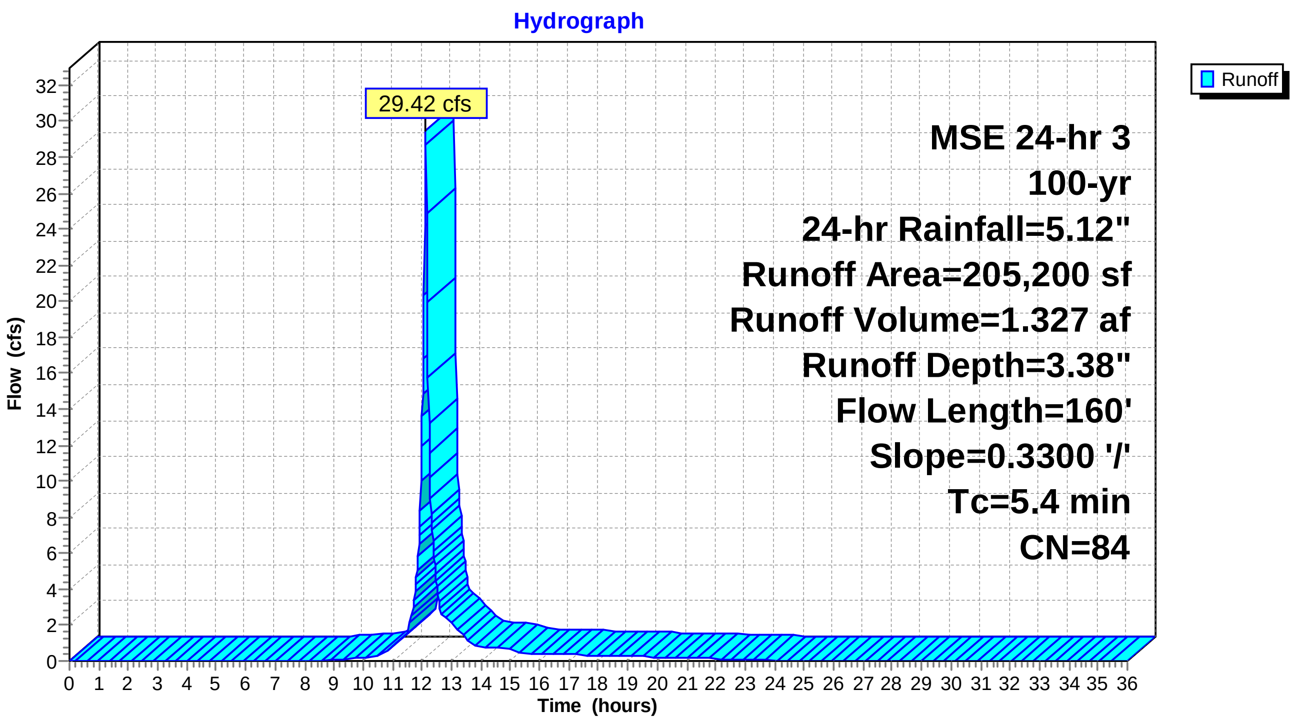
Runoff = 29.42 cfs @ 12.12 hrs, Volume= 1.327 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
205,200	84	50-75% Grass cover, Fair, HSG D
205,200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	160	0.3300	0.49		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"

Subcatchment 65S: S-MC X Ditch Drainage



Summary for Subcatchment 67S: E-MC X Drainage

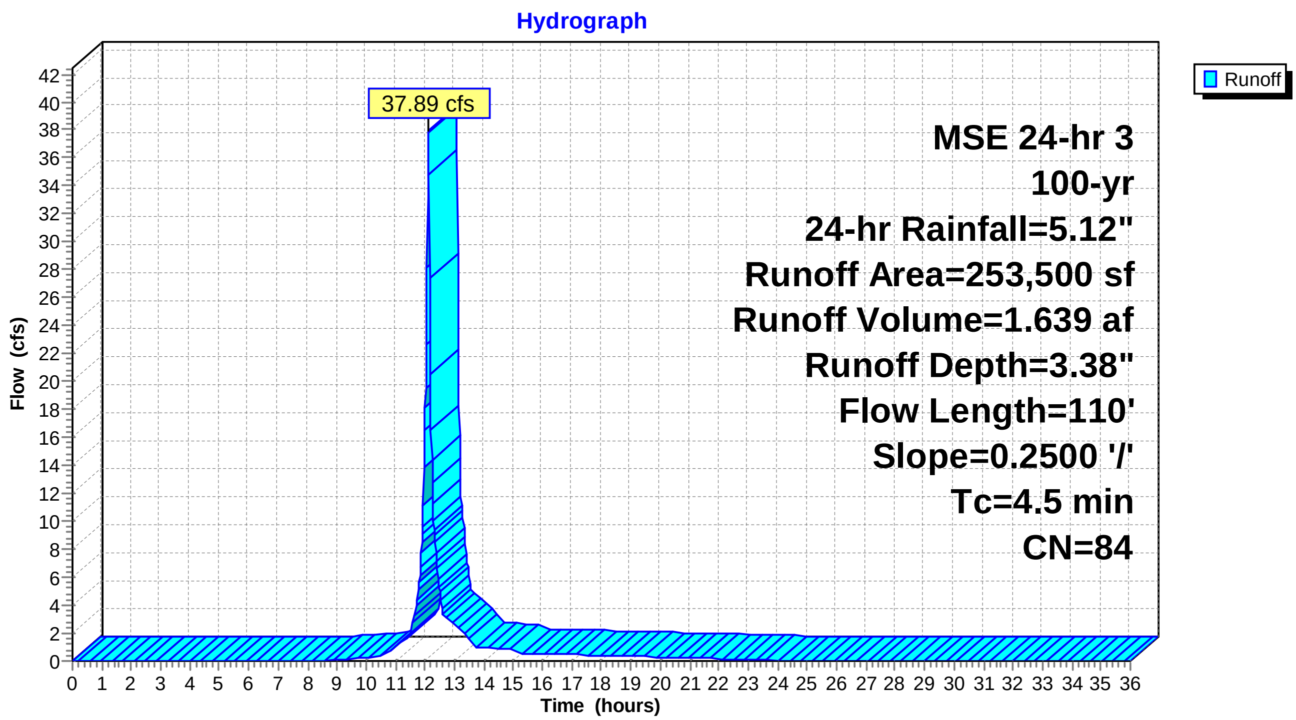
Runoff = 37.89 cfs @ 12.12 hrs, Volume= 1.639 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
253,500	84	50-75% Grass cover, Fair, HSG D
253,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	110	0.2500	0.41		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"

Subcatchment 67S: E-MC X Drainage



Summary for Subcatchment 68S: SSB Drainage Area

Total area is 900,800 sf
Pond area is 208,300 sf
Therefore, surrounding area is 692,500 sf (900,800 - 208,300)

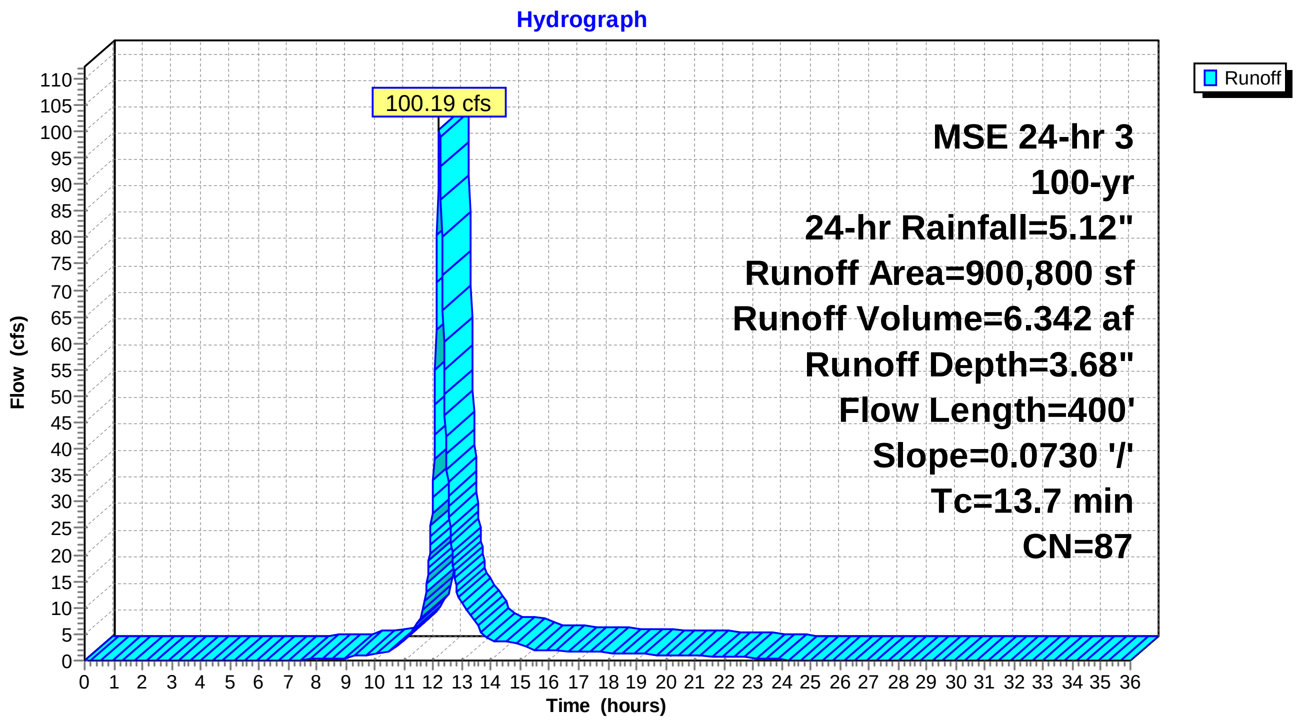
Runoff = 100.19 cfs @ 12.22 hrs, Volume= 6.342 af, Depth= 3.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
692,500	84	50-75% Grass cover, Fair, HSG D
208,300	98	Water Surface, HSG D
900,800	87	Weighted Average
692,500		76.88% Pervious Area
208,300		23.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	200	0.0730	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
1.8	200	0.0730	1.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.7	400	Total			

Subcatchment 68S: SSB Drainage Area



Summary for Subcatchment 70S: DB-46 Drainage

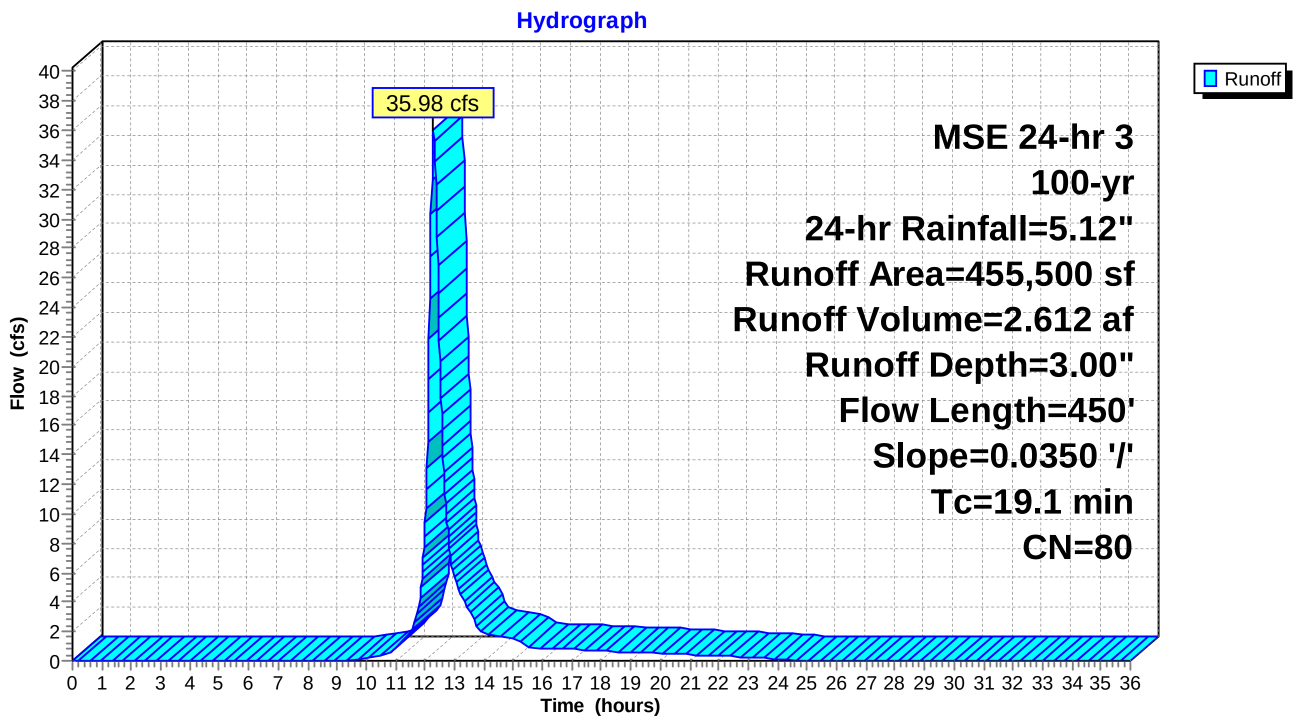
Runoff = 35.98 cfs @ 12.28 hrs, Volume= 2.612 af, Depth= 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
455,500	80	>75% Grass cover, Good, HSG D
455,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.9	200	0.0350	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
3.2	250	0.0350	1.31		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.1	450	Total			

Subcatchment 70S: DB-46 Drainage



Summary for Subcatchment 72S: E-MCI Drainage

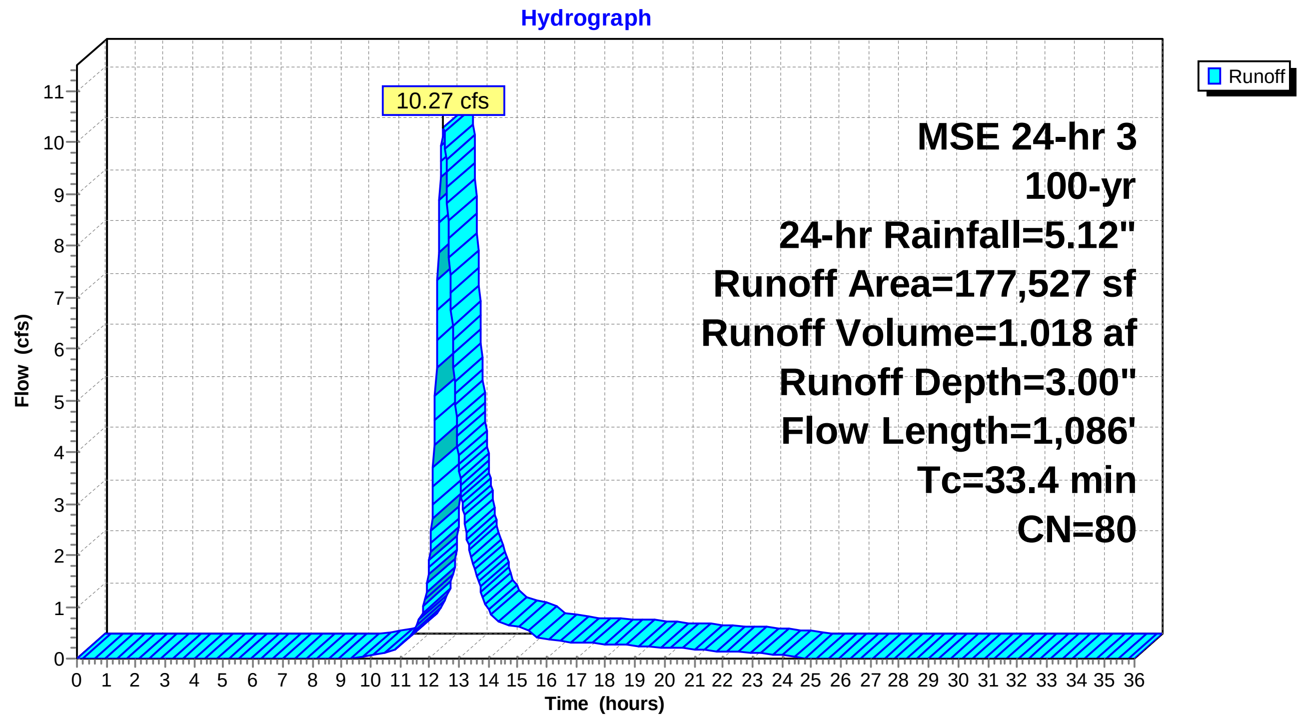
Runoff = 10.27 cfs @ 12.46 hrs, Volume= 1.018 af, Depth= 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
177,527	80	>75% Grass cover, Good, HSG D
177,527		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.9	200	0.0200	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
10.8	640	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.7	246	0.0488	1.55		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
33.4	1,086	Total			

Subcatchment 72S: E-MCI Drainage



Summary for Subcatchment 73S: DB-35 Drainage

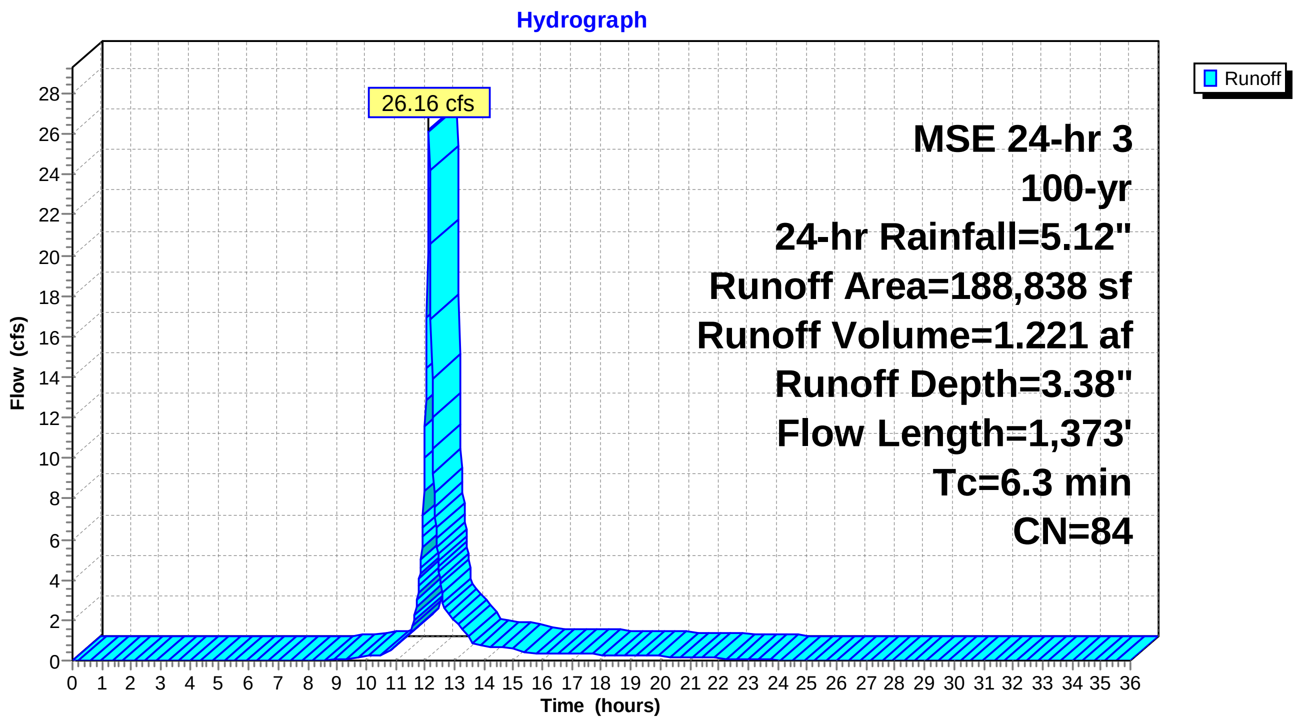
Runoff = 26.16 cfs @ 12.13 hrs, Volume= 1.221 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-yr, 24-hr Rainfall=5.12"

Area (sf)	CN	Description
188,838	84	50-75% Grass cover, Fair, HSG D
188,838		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	86	0.2500	0.39		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.35"
2.6	1,287	0.0200	8.41	100.87	**Channel Flow,** Area= 12.0 sf Perim= 12.0' r= 1.00' n= 0.025 Earth, clean & winding
6.3	1,373	Total			

Subcatchment 73S: DB-35 Drainage



Summary for Reach 14R: DS-4

Inflow Area = 39.430 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 161.36 cfs @ 12.24 hrs, Volume= 11.107 af
Outflow = 160.94 cfs @ 12.25 hrs, Volume= 11.107 af, Atten= 0%, Lag= 0.3 min

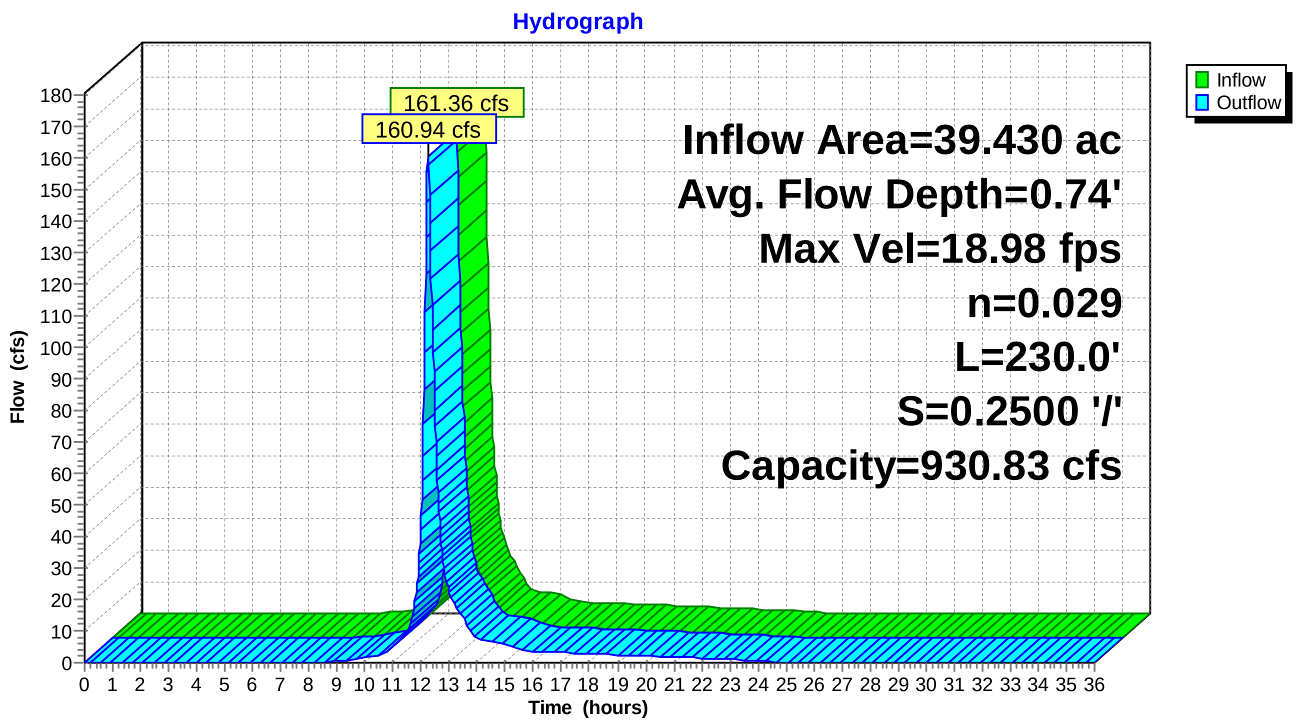
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 18.98 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.89 fps, Avg. Travel Time= 1.0 min

Peak Storage= 1,954 cf @ 12.25 hrs
Average Depth at Peak Storage= 0.74' , Surface Width= 12.96'
Bank-Full Depth= 2.00' Flow Area= 28.0 sf, Capacity= 930.83 cfs

10.00' x 2.00' deep channel, n= 0.029
Side Slope Z-value= 2.0 '/' Top Width= 18.00'
Length= 230.0' Slope= 0.2500 '/'
Inlet Invert= 763.50', Outlet Invert= 706.00'

‡

Reach 14R: DS-4



Summary for Reach 35R: MCVI/XI Ditch

Inflow Area = 54.333 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 222.80 cfs @ 12.25 hrs, Volume= 15.305 af
Outflow = 221.46 cfs @ 12.27 hrs, Volume= 15.305 af, Atten= 1%, Lag= 1.2 min

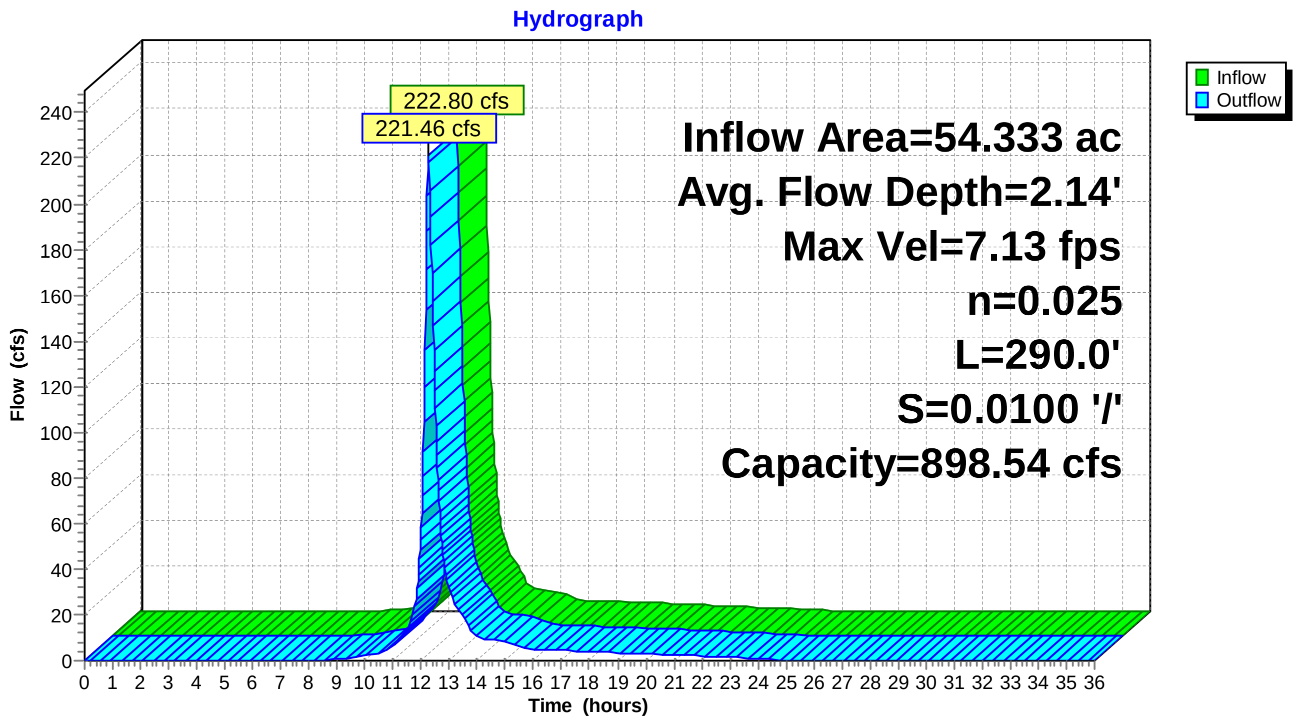
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 7.13 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.71 fps, Avg. Travel Time= 2.8 min

Peak Storage= 9,036 cf @ 12.26 hrs
Average Depth at Peak Storage= 2.14' , Surface Width= 23.12'
Bank-Full Depth= 4.00' Flow Area= 88.0 sf, Capacity= 898.54 cfs

6.00' x 4.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 4.0 '/' Top Width= 38.00'
Length= 290.0' Slope= 0.0100 '/'
Inlet Invert= 700.15', Outlet Invert= 697.26'

‡

Reach 35R: MCVI/XI Ditch



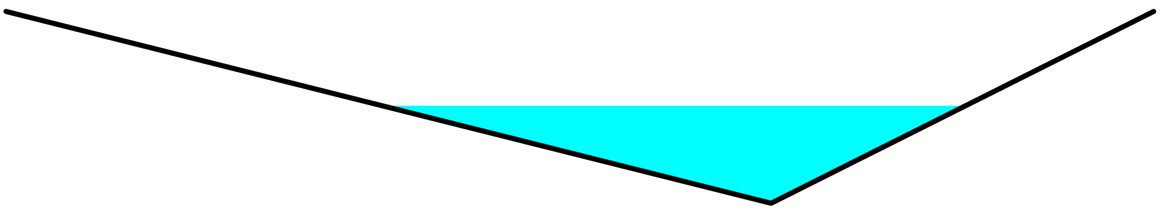
Summary for Reach 36R: DB-43

Inflow Area = 3.015 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 11.41 cfs @ 12.20 hrs, Volume= 0.849 af
Outflow = 11.21 cfs @ 12.26 hrs, Volume= 0.849 af, Atten= 2%, Lag= 3.6 min

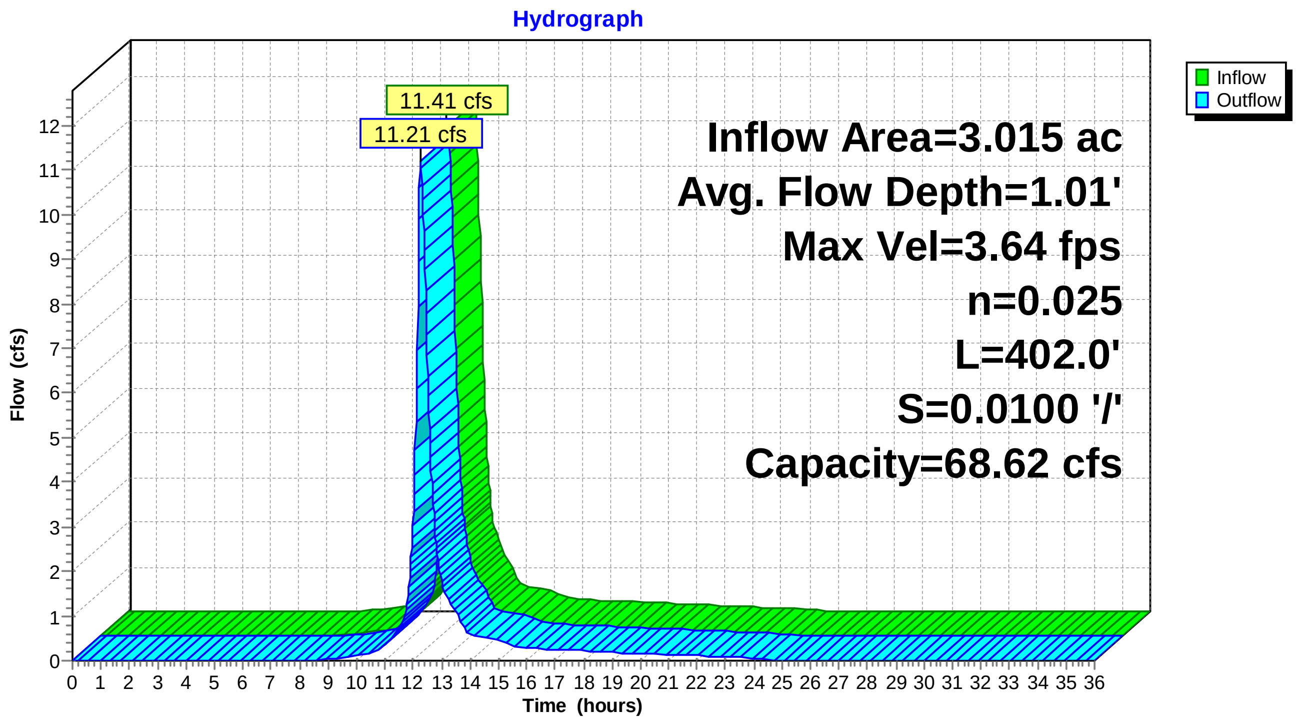
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.64 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 1.27 fps, Avg. Travel Time= 5.3 min

Peak Storage= 1,241 cf @ 12.23 hrs
Average Depth at Peak Storage= 1.01' , Surface Width= 6.09'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 68.62 cfs

0.00' x 2.00' deep channel, n= 0.025 Stream, clean & straight
Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'
Length= 402.0' Slope= 0.0100 '/'
Inlet Invert= 712.02', Outlet Invert= 708.00'



Reach 36R: DB-43



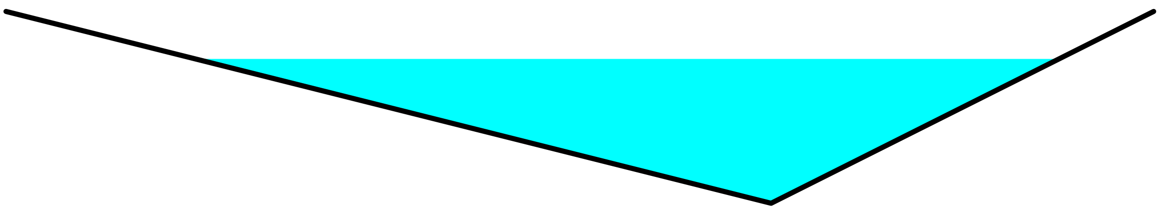
Summary for Reach 38R: DB-34 -1%

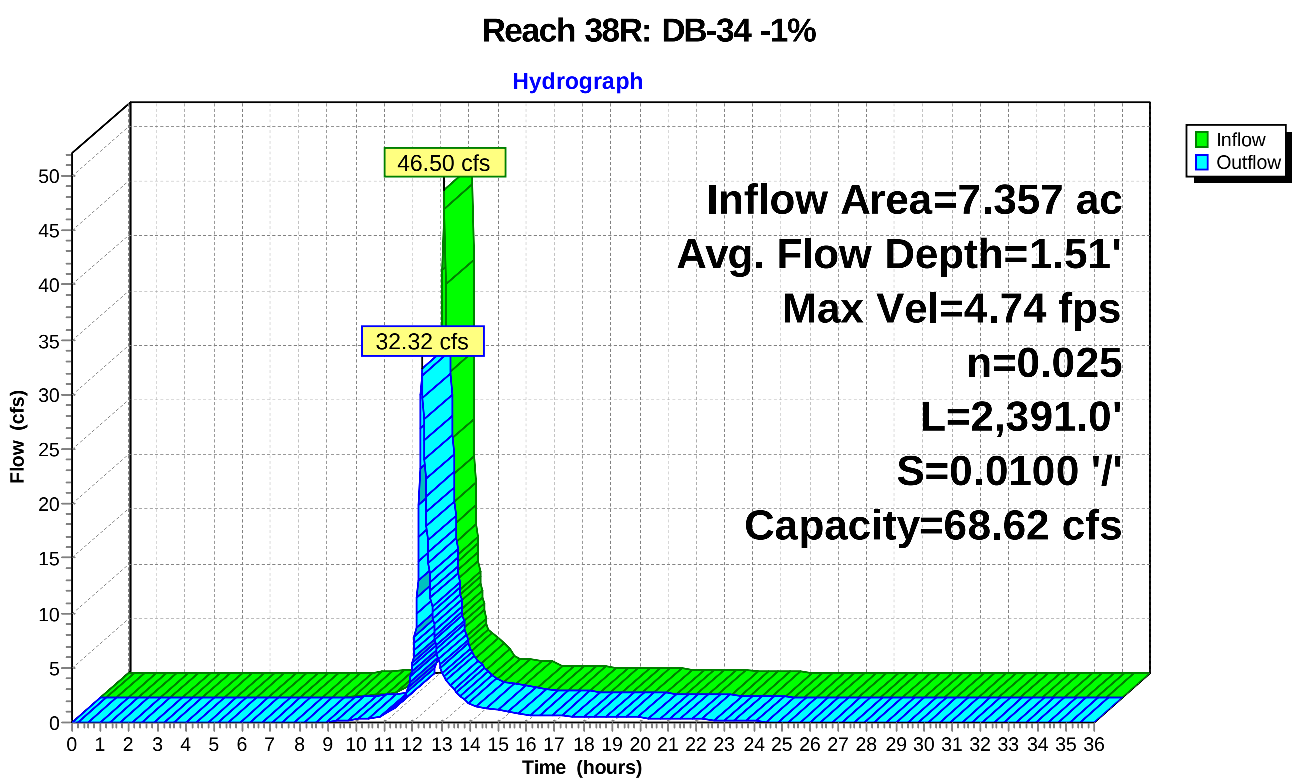
Inflow Area = 7.357 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 46.50 cfs @ 12.12 hrs, Volume= 2.072 af
Outflow = 32.32 cfs @ 12.31 hrs, Volume= 2.072 af, Atten= 31%, Lag= 11.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.74 fps, Min. Travel Time= 8.4 min
Avg. Velocity = 1.18 fps, Avg. Travel Time= 33.7 min

Peak Storage= 16,315 cf @ 12.17 hrs
Average Depth at Peak Storage= 1.51' , Surface Width= 9.05'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 68.62 cfs

0.00' x 2.00' deep channel, n= 0.025 Stream, clean & straight
Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'
Length= 2,391.0' Slope= 0.0100 '/'
Inlet Invert= 745.91', Outlet Invert= 722.00'





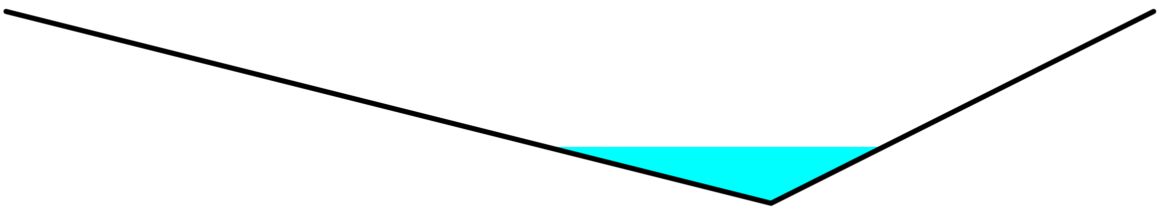
Summary for Reach 40R: DB-44

Inflow Area = 1.558 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 6.16 cfs @ 12.27 hrs, Volume= 0.439 af
Outflow = 6.08 cfs @ 12.32 hrs, Volume= 0.439 af, Atten= 1%, Lag= 3.1 min

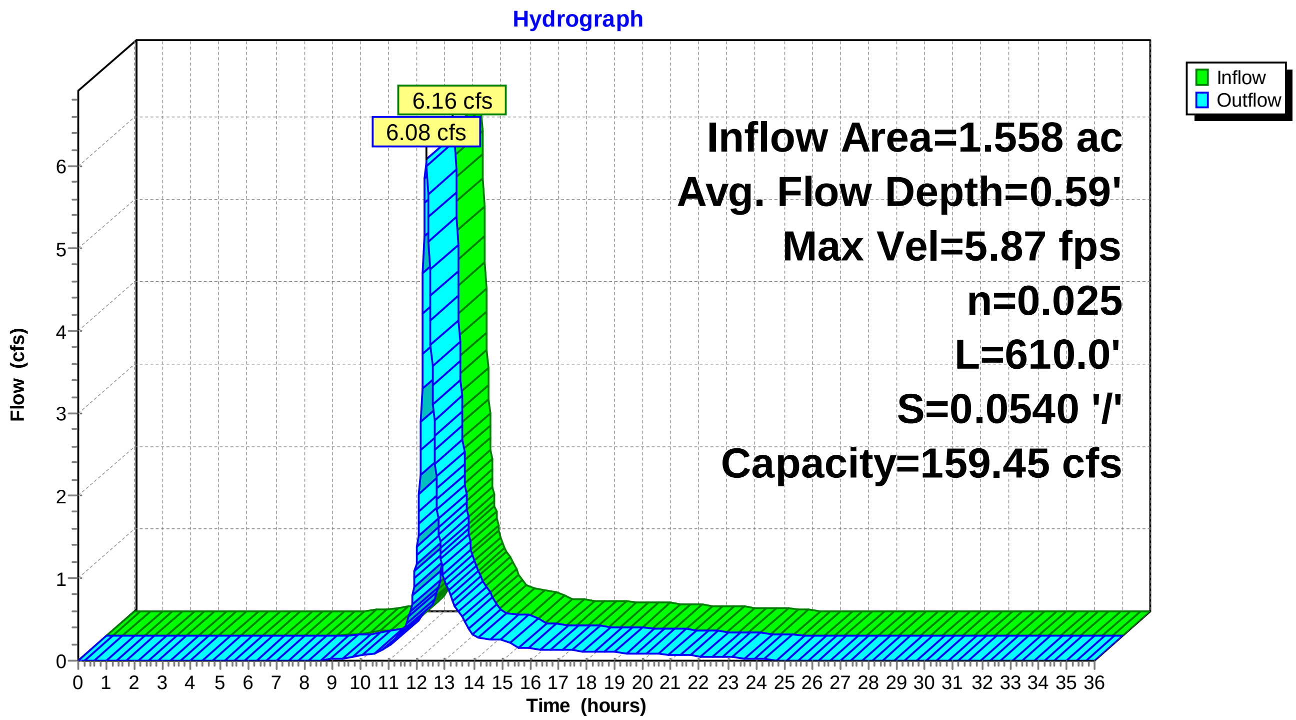
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.87 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 2.15 fps, Avg. Travel Time= 4.7 min

Peak Storage= 632 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.59' , Surface Width= 3.53'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 159.45 cfs

0.00' x 2.00' deep channel, n= 0.025
Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'
Length= 610.0' Slope= 0.0540 '/'
Inlet Invert= 762.04', Outlet Invert= 729.10'



Reach 40R: DB-44



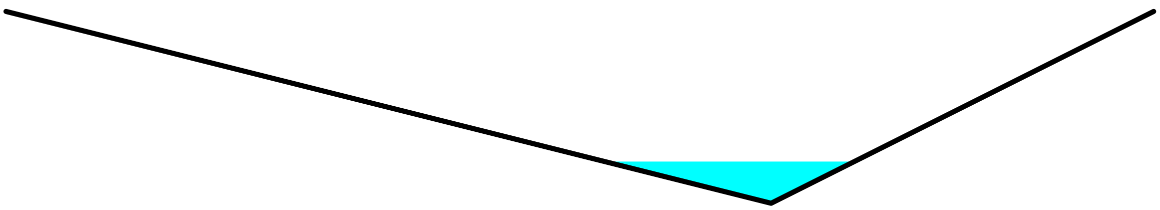
Summary for Reach 41R: DB-45

Inflow Area = 0.206 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 1.17 cfs @ 12.15 hrs, Volume= 0.058 af
Outflow = 1.15 cfs @ 12.18 hrs, Volume= 0.058 af, Atten= 2%, Lag= 1.8 min

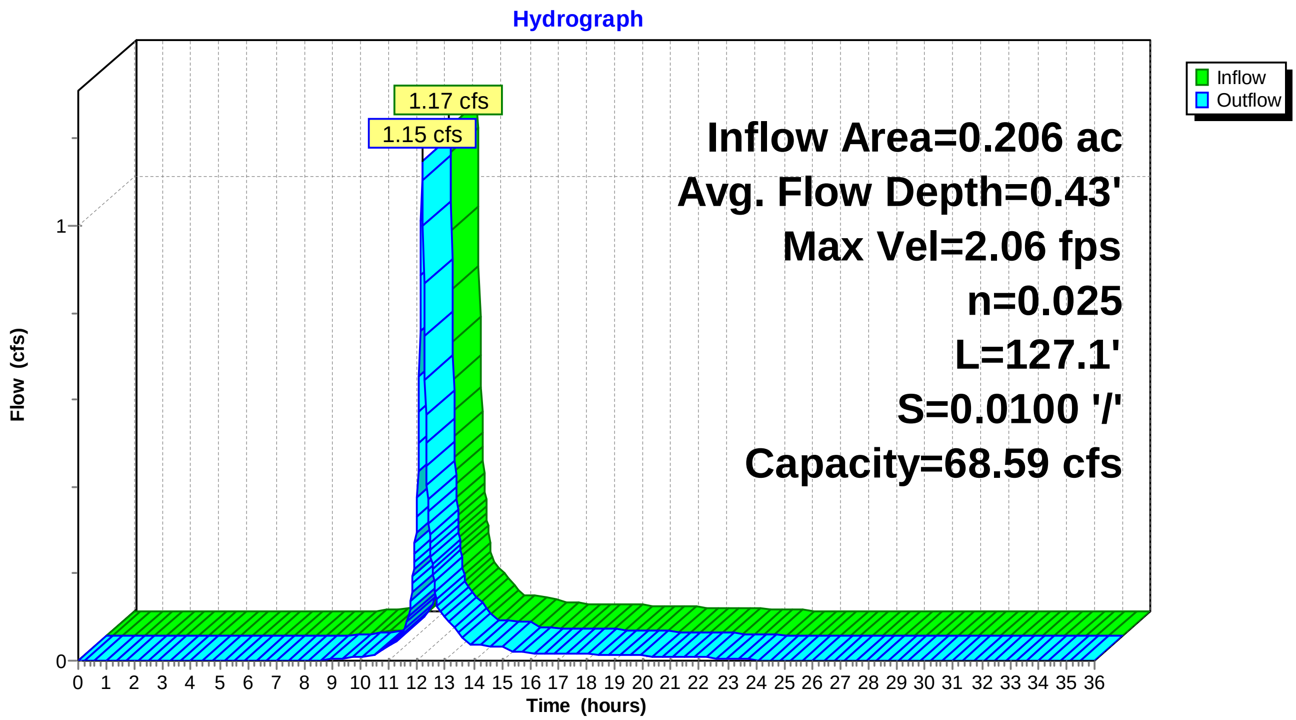
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.06 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.71 fps, Avg. Travel Time= 3.0 min

Peak Storage= 71 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.43' , Surface Width= 2.59'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 68.59 cfs

0.00' x 2.00' deep channel, n= 0.025
Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'
Length= 127.1' Slope= 0.0100 '/'
Inlet Invert= 707.69', Outlet Invert= 706.42'



Reach 41R: DB-45



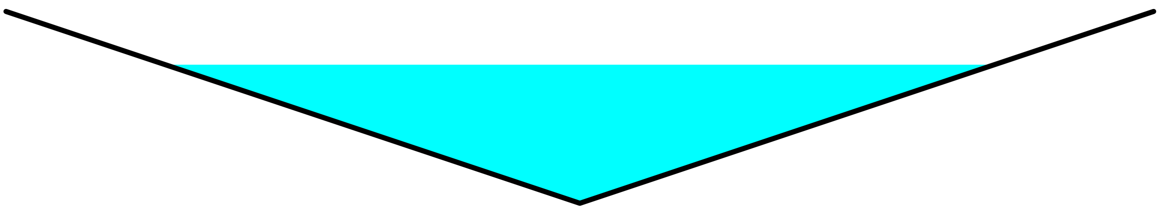
Summary for Reach 44R: E-MCI Ditch

Inflow Area = 17.668 ac, 0.00% Impervious, Inflow Depth = 3.00" for 100-yr, 24-hr event
Inflow = 54.49 cfs @ 12.32 hrs, Volume= 4.414 af
Outflow = 54.27 cfs @ 12.35 hrs, Volume= 4.414 af, Atten= 0%, Lag= 1.9 min

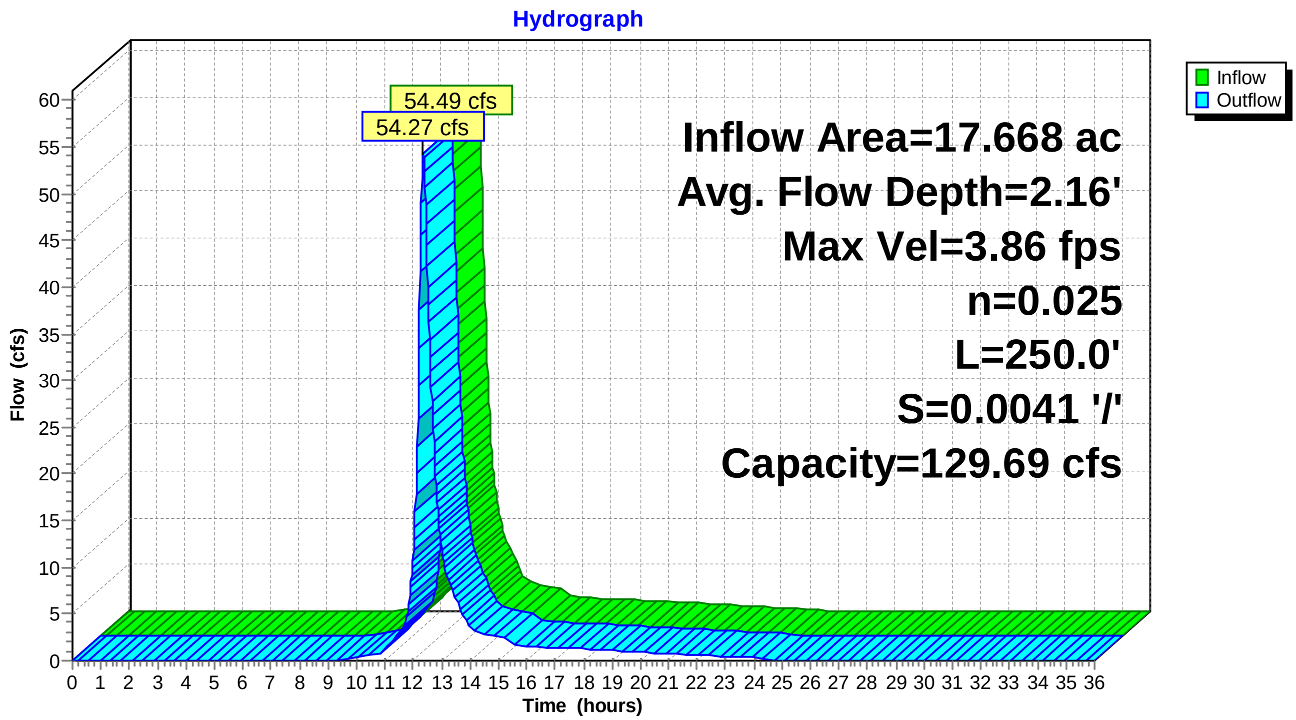
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.86 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.41 fps, Avg. Travel Time= 3.0 min

Peak Storage= 3,513 cf @ 12.33 hrs
Average Depth at Peak Storage= 2.16' , Surface Width= 12.99'
Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 129.69 cfs

0.00' x 3.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 250.0' Slope= 0.0041 '/'
Inlet Invert= 702.00', Outlet Invert= 700.98'



Reach 44R: E-MCI Ditch



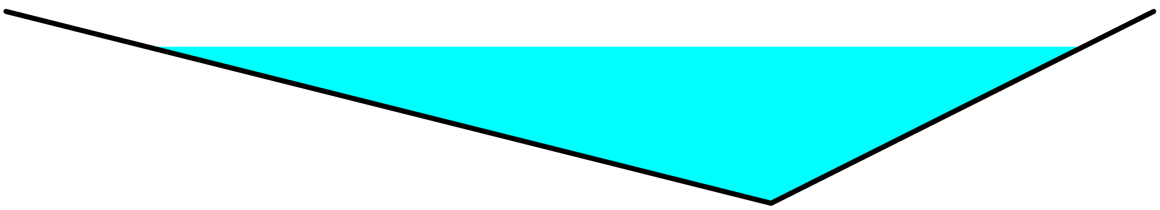
Summary for Reach 49R: DB-36

Inflow Area = 18.696 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 108.34 cfs @ 12.16 hrs, Volume= 5.267 af
Outflow = 101.78 cfs @ 12.23 hrs, Volume= 5.267 af, Atten= 6%, Lag= 3.9 min

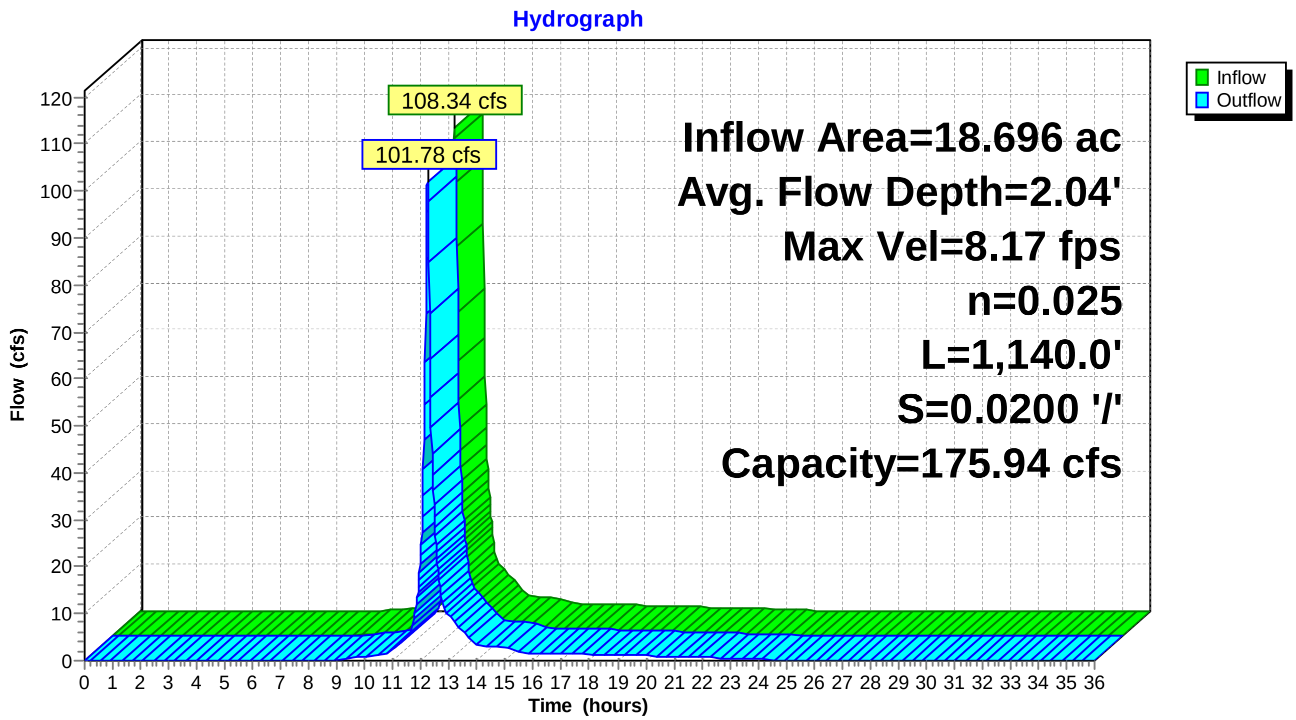
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 8.17 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 2.44 fps, Avg. Travel Time= 7.8 min

Peak Storage= 14,197 cf @ 12.19 hrs
Average Depth at Peak Storage= 2.04' , Surface Width= 12.22'
Bank-Full Depth= 2.50' Flow Area= 18.8 sf, Capacity= 175.94 cfs

0.00' x 2.50' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 4.0 2.0 '/' Top Width= 15.00'
Length= 1,140.0' Slope= 0.0200 '/'
Inlet Invert= 780.00', Outlet Invert= 757.20'



Reach 49R: DB-36



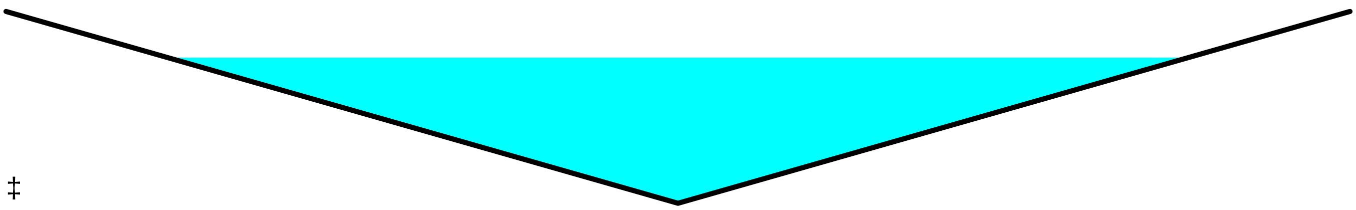
Summary for Reach 54R: MCVI-S Ditch

Inflow Area = 14.538 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 87.40 cfs @ 12.15 hrs, Volume= 4.095 af
Outflow = 85.74 cfs @ 12.17 hrs, Volume= 4.095 af, Atten= 2%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 9.43 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 3.02 fps, Avg. Travel Time= 2.0 min

Peak Storage= 3,399 cf @ 12.16 hrs
Average Depth at Peak Storage= 1.52' , Surface Width= 12.12'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 181.62 cfs

0.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 4.0 '/' Top Width= 16.00'
Length= 370.0' Slope= 0.0380 '/'
Inlet Invert= 794.05', Outlet Invert= 780.00'



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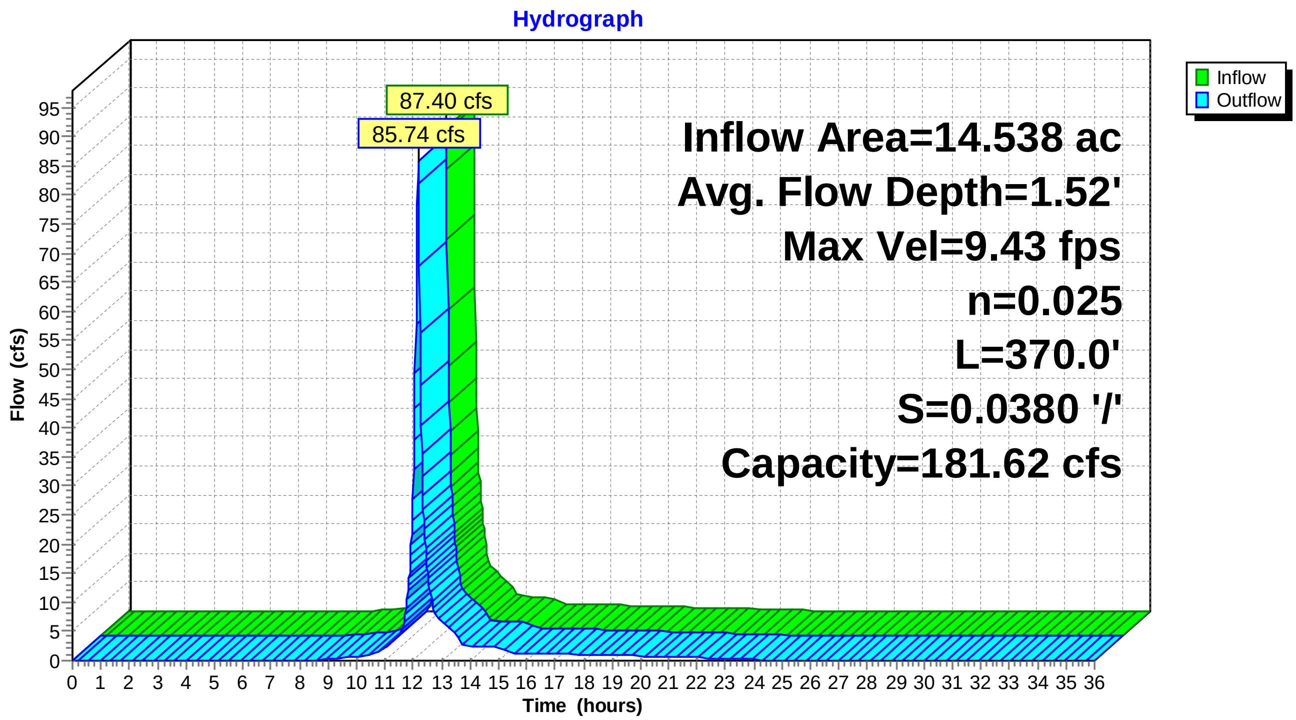
Reach 54R: MCVI-S Ditch



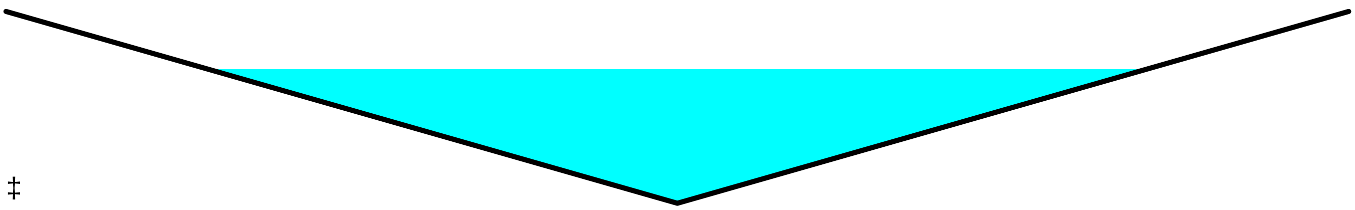
Summary for Reach 55R: MCVI-N Ditch

Inflow Area = 14.538 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 89.31 cfs @ 12.13 hrs, Volume= 4.095 af
Outflow = 87.40 cfs @ 12.15 hrs, Volume= 4.095 af, Atten= 2%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.84 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.55 fps, Avg. Travel Time= 2.9 min

Peak Storage= 4,827 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.70' , Surface Width= 52.20'
Bank-Full Depth= 1.00' Flow Area= 37.4 sf, Capacity= 230.14 cfs

0.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 37.4 '/' Top Width= 74.80'
Length= 265.0' Slope= 0.0270 '/'
Inlet Invert= 801.21', Outlet Invert= 794.05'



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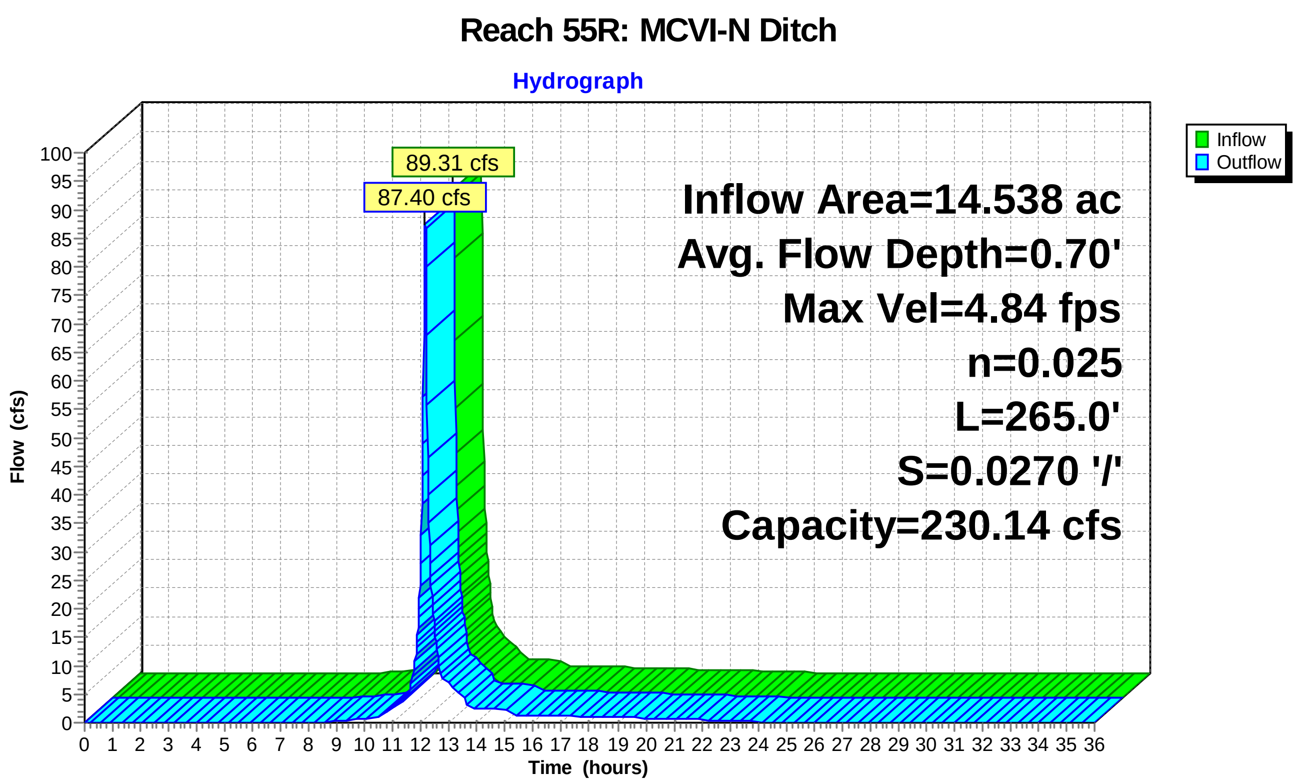


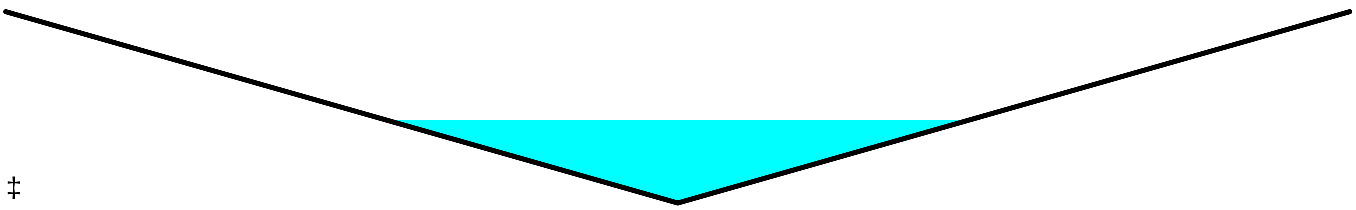
Summary for Reach 57R: DS-5

Inflow Area = 7.709 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 51.61 cfs @ 12.11 hrs, Volume= 2.172 af
Outflow = 50.45 cfs @ 12.12 hrs, Volume= 2.172 af, Atten= 2%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 11.95 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 3.94 fps, Avg. Travel Time= 1.3 min

Peak Storage= 1,300 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.87' , Surface Width= 9.88'
Bank-Full Depth= 2.00' Flow Area= 22.8 sf, Capacity= 476.49 cfs

0.00' x 2.00' deep channel, n= 0.029
Side Slope Z-value= 5.7 '/' Top Width= 22.80'
Length= 304.0' Slope= 0.1697 '/'
Inlet Invert= 854.00', Outlet Invert= 802.40'



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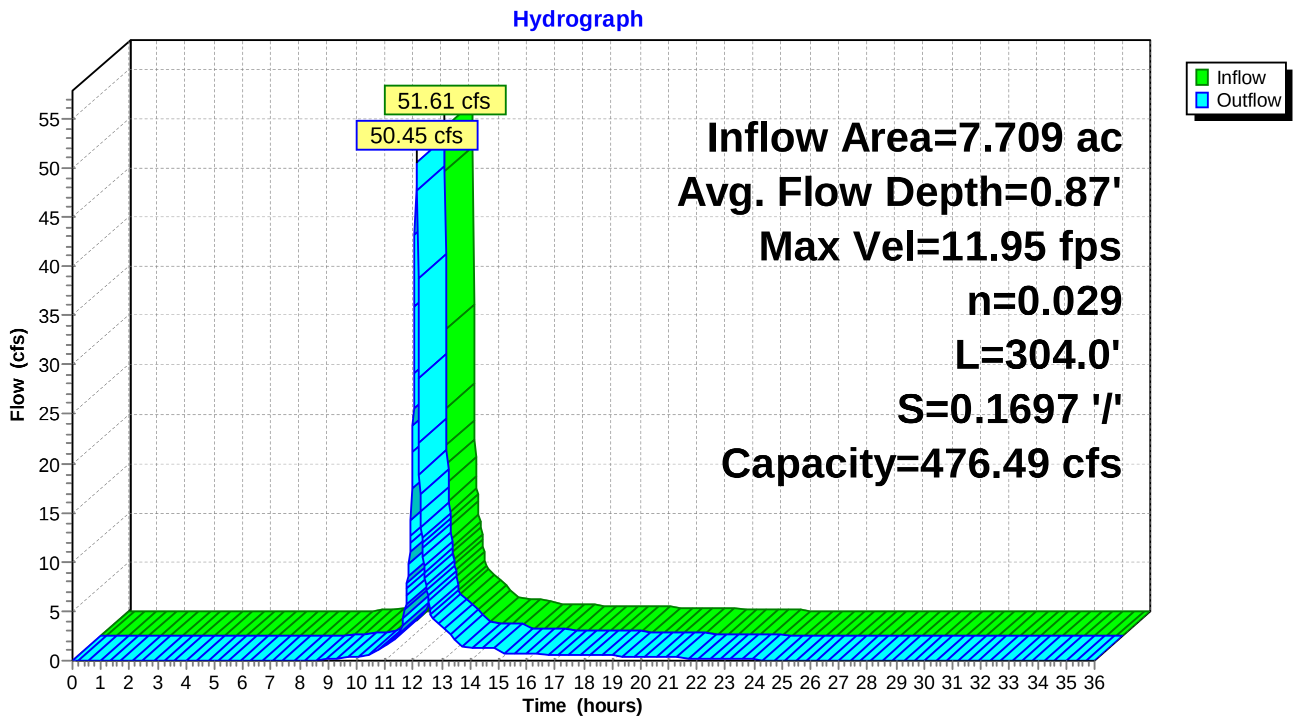
Reach 57R: DS-5



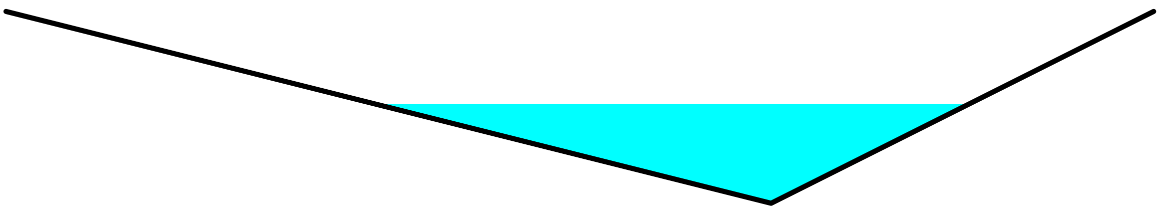
Summary for Reach 59R: DB-42

Inflow Area = 1.986 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 13.15 cfs @ 12.11 hrs, Volume= 0.559 af
Outflow = 11.88 cfs @ 12.18 hrs, Volume= 0.559 af, Atten= 10%, Lag= 3.9 min

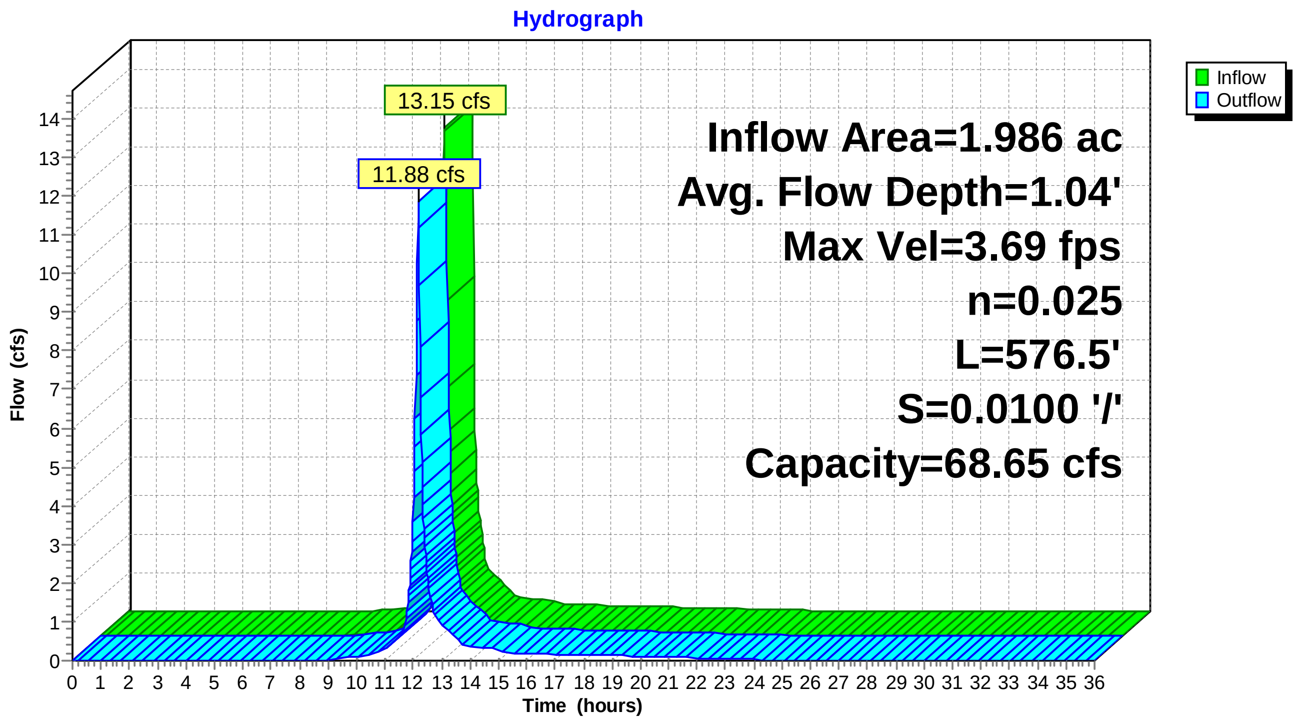
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.69 fps, Min. Travel Time= 2.6 min
Avg. Velocity = 1.14 fps, Avg. Travel Time= 8.4 min

Peak Storage= 1,866 cf @ 12.14 hrs
Average Depth at Peak Storage= 1.04' , Surface Width= 6.23'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 68.65 cfs

0.00' x 2.00' deep channel, n= 0.025
Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'
Length= 576.5' Slope= 0.0100 '/'
Inlet Invert= 718.00', Outlet Invert= 712.23'



Reach 59R: DB-42



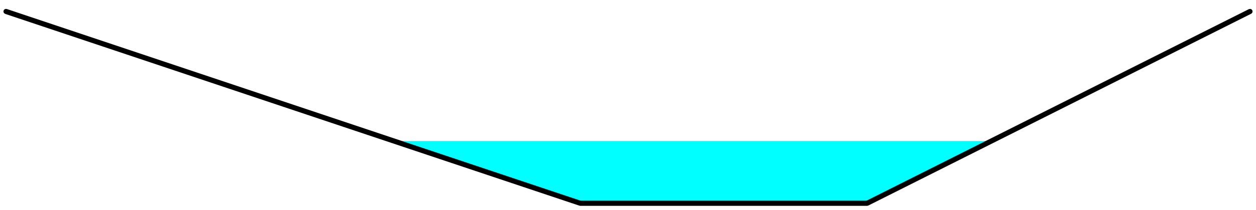
Summary for Reach 60R: W-MC X Ditch

Inflow Area = 13.776 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 34.54 cfs @ 12.26 hrs, Volume= 3.881 af
Outflow = 32.84 cfs @ 12.38 hrs, Volume= 3.881 af, Atten= 5%, Lag= 7.4 min

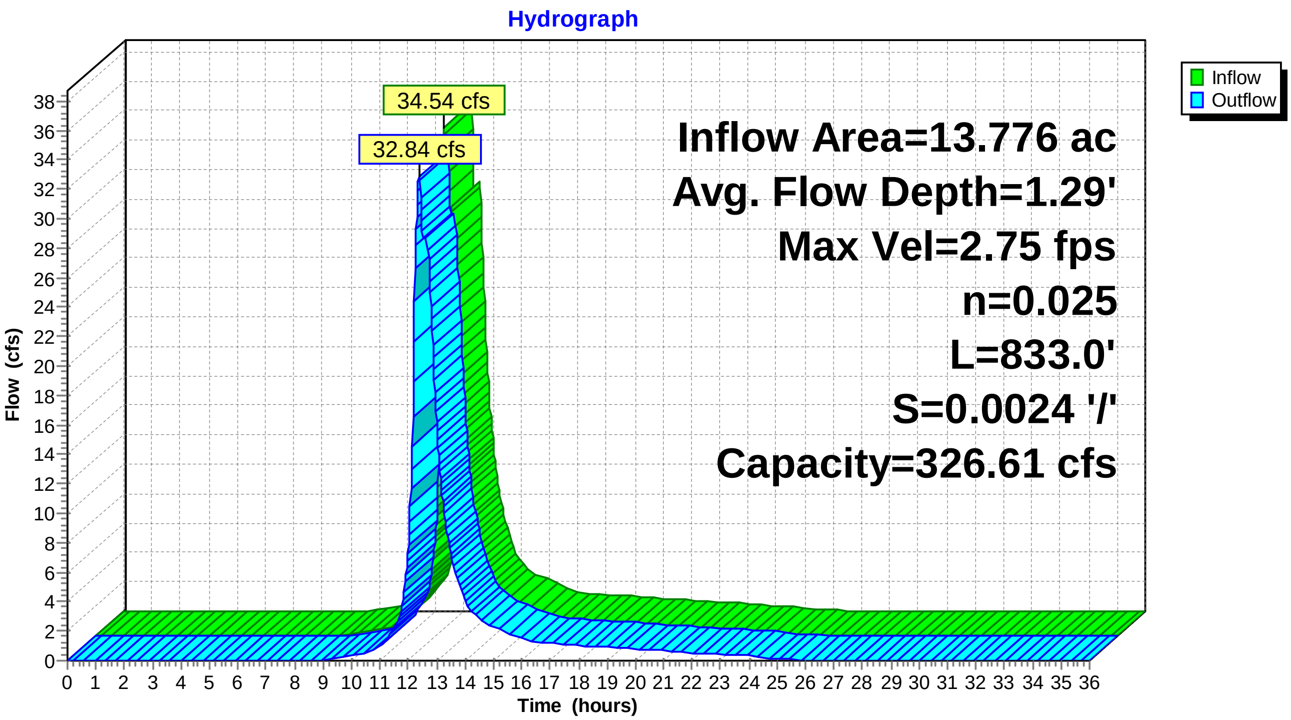
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.75 fps, Min. Travel Time= 5.0 min
Avg. Velocity = 0.70 fps, Avg. Travel Time= 19.8 min

Peak Storage= 9,941 cf @ 12.30 hrs
Average Depth at Peak Storage= 1.29' , Surface Width= 12.46'
Bank-Full Depth= 4.00' Flow Area= 64.0 sf, Capacity= 326.61 cfs

6.00' x 4.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 2.0 '/' Top Width= 26.00'
Length= 833.0' Slope= 0.0024 '/'
Inlet Invert= 691.00', Outlet Invert= 689.00'



Reach 60R: W-MC X Ditch



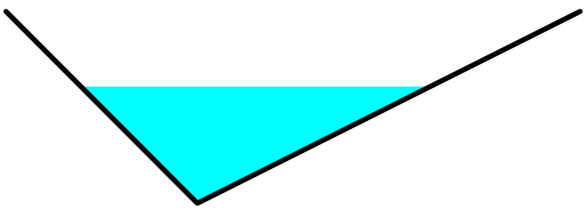
Summary for Reach 64R: S MC X Ditch

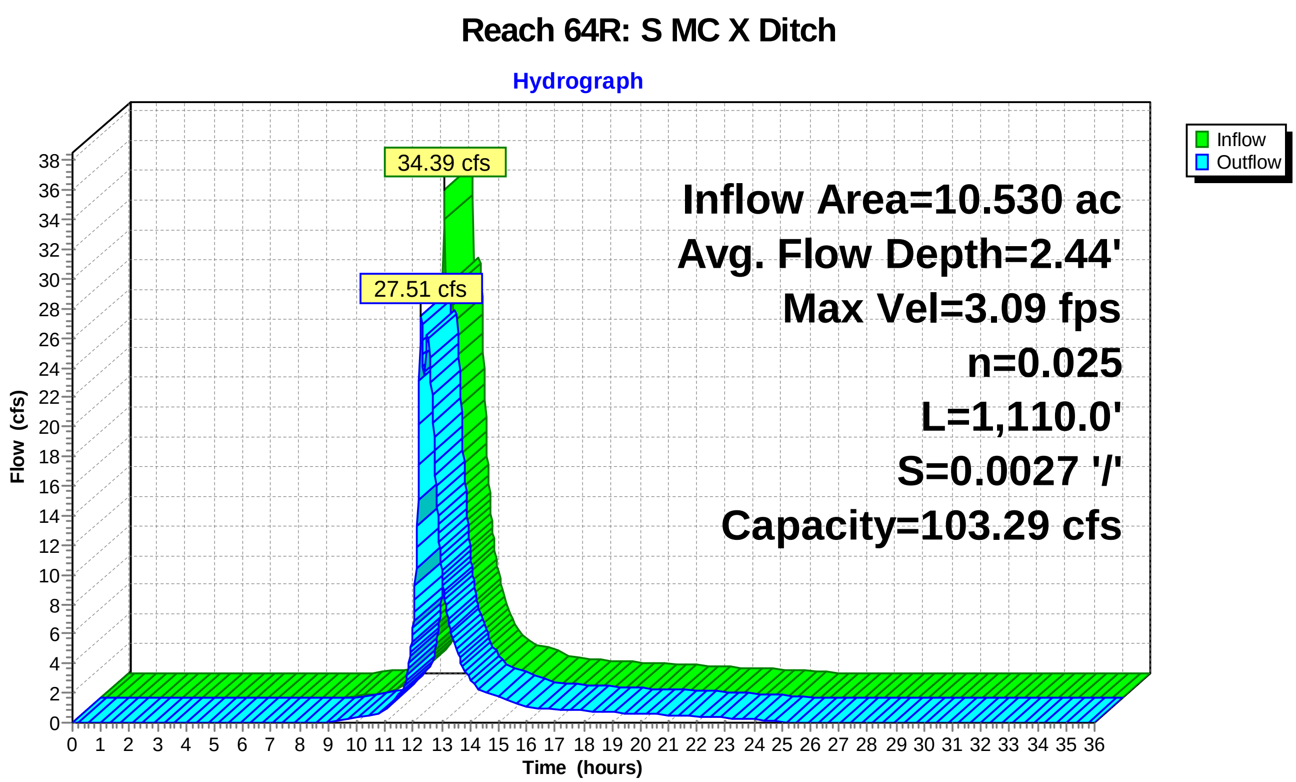
Inflow Area = 10.530 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 34.39 cfs @ 12.13 hrs, Volume= 2.966 af
Outflow = 27.51 cfs @ 12.28 hrs, Volume= 2.966 af, Atten= 20%, Lag= 8.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.09 fps, Min. Travel Time= 6.0 min
Avg. Velocity = 0.90 fps, Avg. Travel Time= 20.5 min

Peak Storage= 9,877 cf @ 12.18 hrs
Average Depth at Peak Storage= 2.44' , Surface Width= 7.31'
Bank-Full Depth= 4.00' Flow Area= 24.0 sf, Capacity= 103.29 cfs

0.00' x 4.00' deep channel, n= 0.025
Side Slope Z-value= 1.0 2.0 '/' Top Width= 12.00'
Length= 1,110.0' Slope= 0.0027 '/'
Inlet Invert= 694.00', Outlet Invert= 691.00'





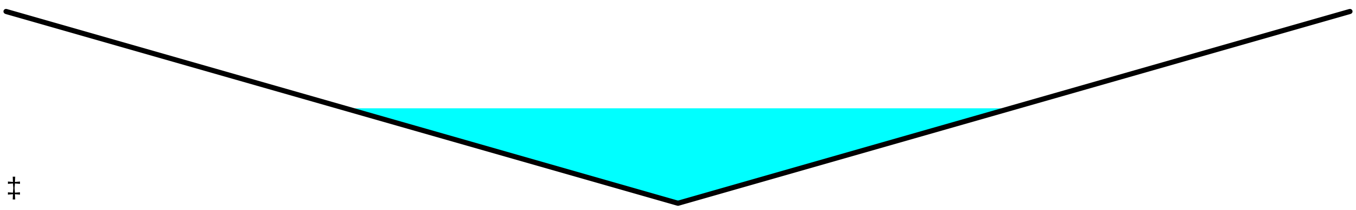
Summary for Reach 66R: E-MC X Ditch

Inflow Area = 5.820 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 37.89 cfs @ 12.12 hrs, Volume= 1.639 af
Outflow = 22.01 cfs @ 12.39 hrs, Volume= 1.639 af, Atten= 42%, Lag= 16.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.01 fps, Min. Travel Time= 12.4 min
Avg. Velocity = 0.54 fps, Avg. Travel Time= 46.6 min

Peak Storage= 16,442 cf @ 12.18 hrs
Average Depth at Peak Storage= 1.48' , Surface Width= 14.81'
Bank-Full Depth= 3.00' Flow Area= 45.0 sf, Capacity= 145.10 cfs

0.00' x 3.00' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 5.0 '/' Top Width= 30.00'
Length= 1,500.0' Slope= 0.0025 '/'
Inlet Invert= 697.80', Outlet Invert= 694.00'



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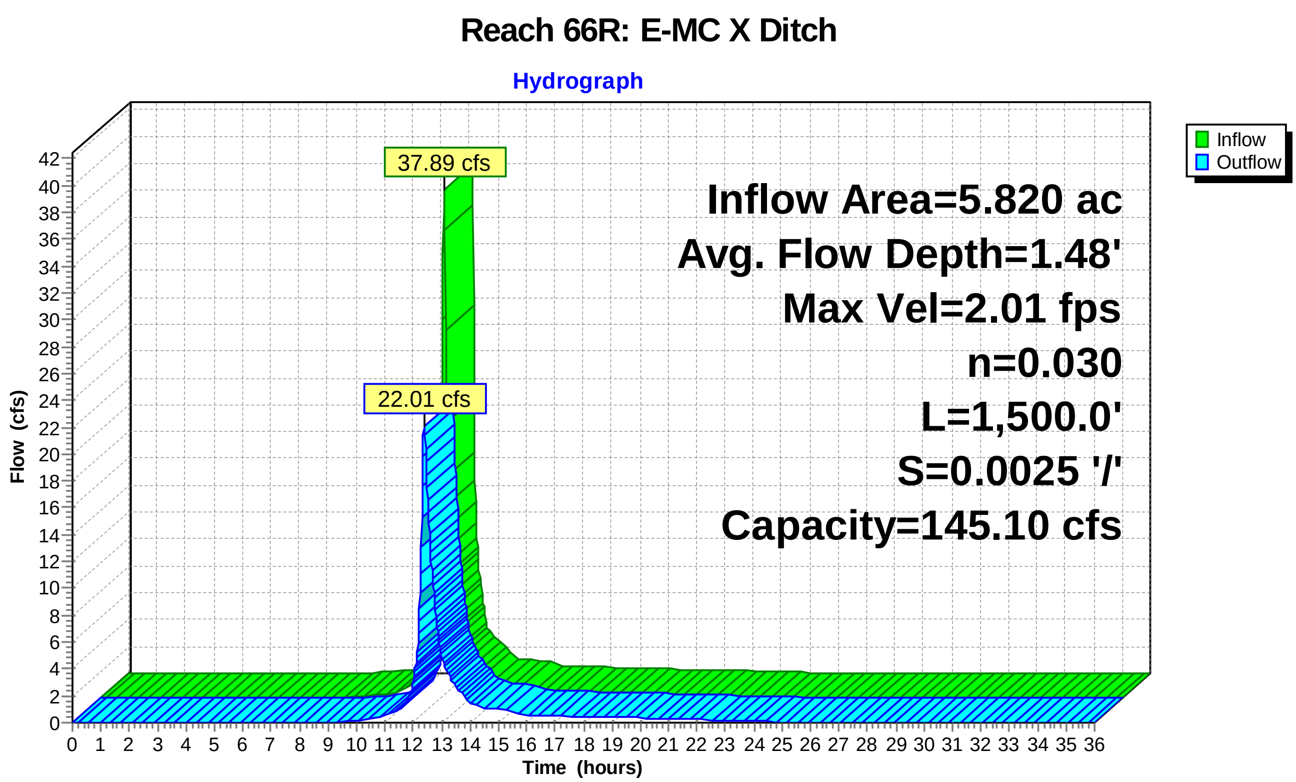


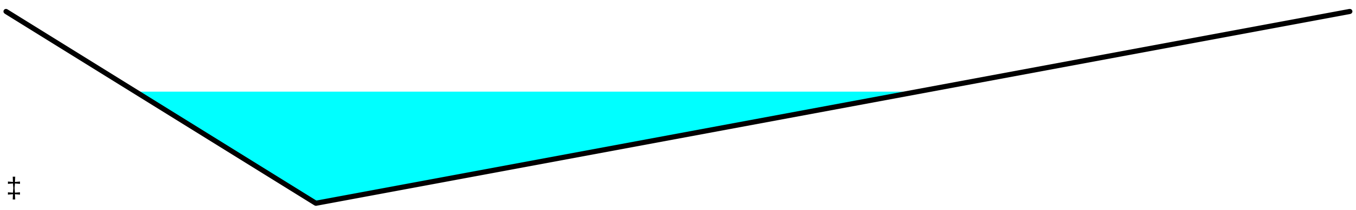
Summary for Reach 71R: DB-46

Inflow Area = 10.457 ac, 0.00% Impervious, Inflow Depth = 3.00" for 100-yr, 24-hr event
Inflow = 35.98 cfs @ 12.28 hrs, Volume= 2.612 af
Outflow = 35.82 cfs @ 12.31 hrs, Volume= 2.612 af, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.09 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.52 fps, Avg. Travel Time= 2.2 min

Peak Storage= 1,753 cf @ 12.29 hrs
Average Depth at Peak Storage= 1.16' , Surface Width= 15.10'
Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 152.89 cfs

0.00' x 2.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'
Length= 200.0' Slope= 0.0100 '/'
Inlet Invert= 703.00', Outlet Invert= 701.00'



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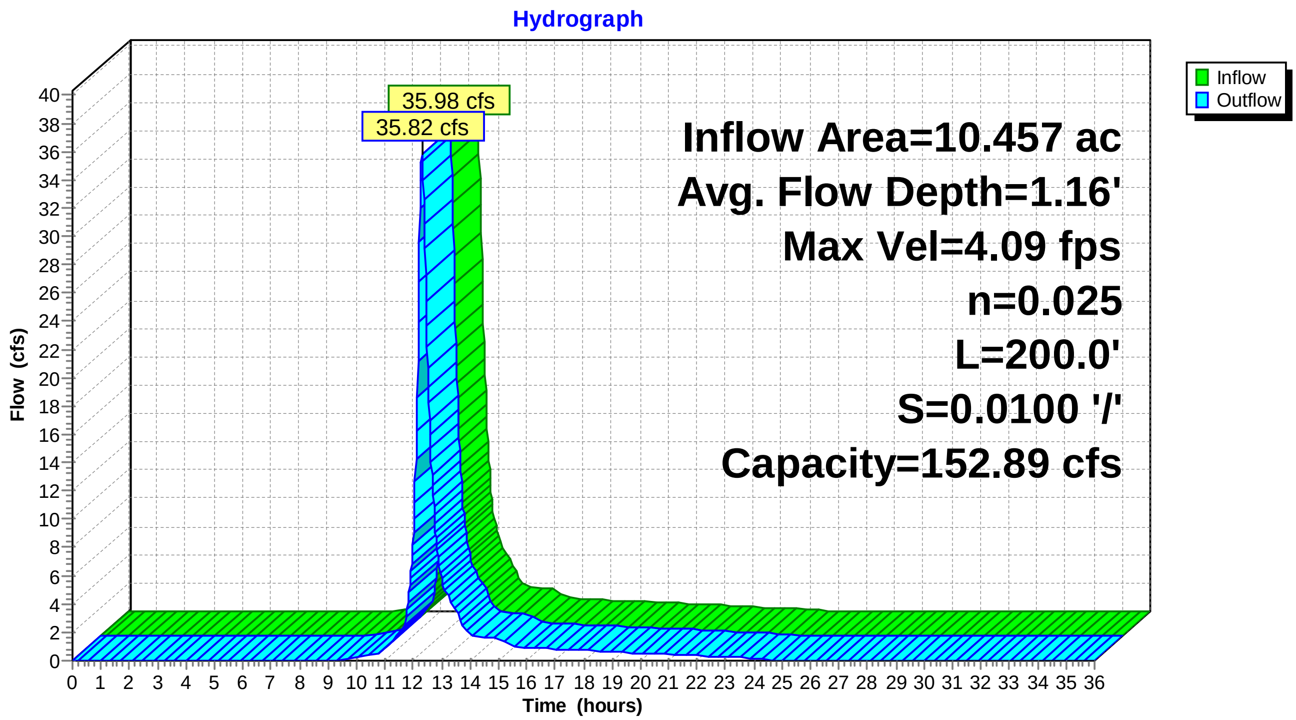
Reach 71R: DB-46



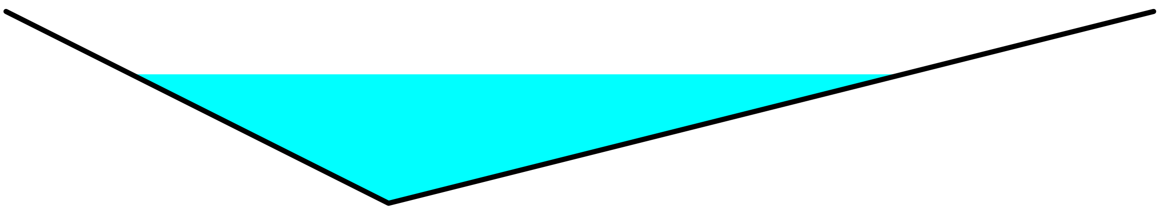
Summary for Reach 72R: DB-37

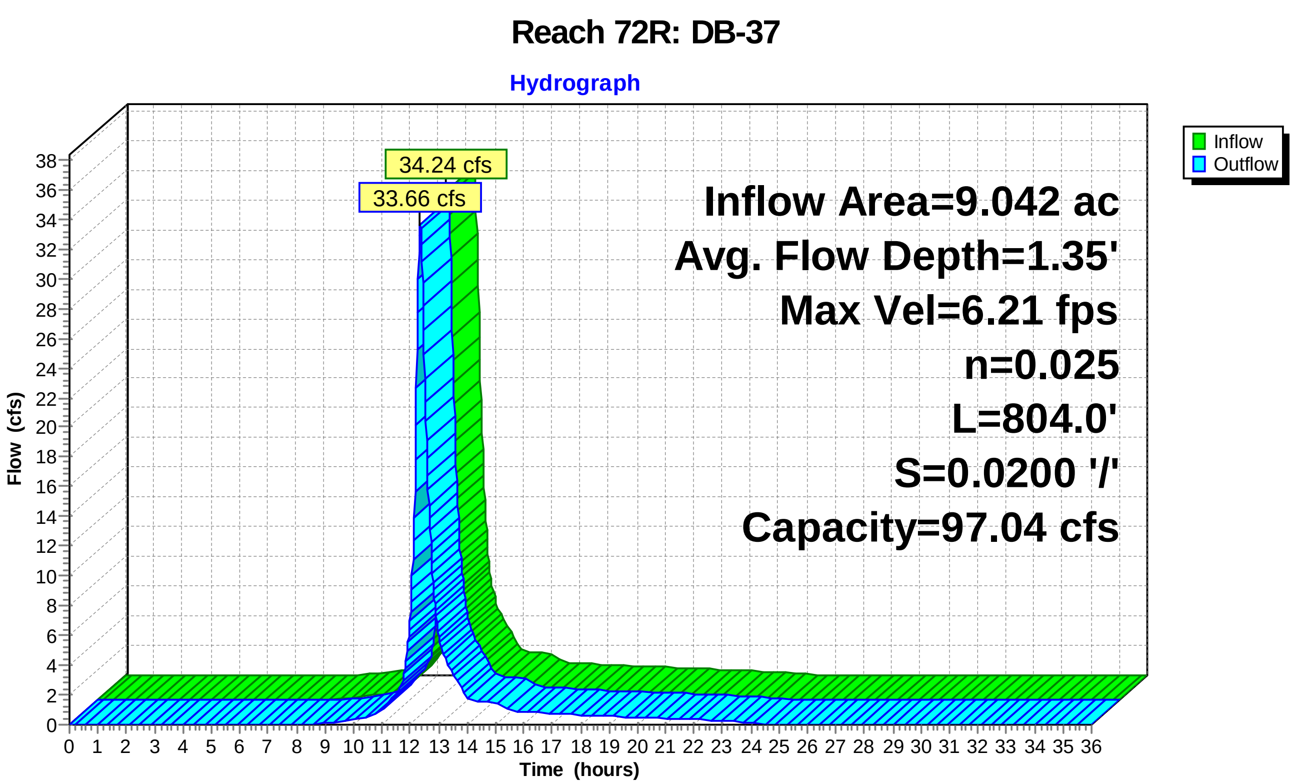
Inflow Area = 9.042 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 34.24 cfs @ 12.29 hrs, Volume= 2.547 af
Outflow = 33.66 cfs @ 12.35 hrs, Volume= 2.547 af, Atten= 2%, Lag= 3.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Max. Velocity= 6.21 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 2.12 fps, Avg. Travel Time= 6.3 min

Peak Storage= 4,365 cf @ 12.32 hrs
Average Depth at Peak Storage= 1.35' , Surface Width= 8.07'
Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 97.04 cfs

0.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 4.0 '/' Top Width= 12.00'
Length= 804.0' Slope= 0.0200 '/'
Inlet Invert= 776.08', Outlet Invert= 760.00'

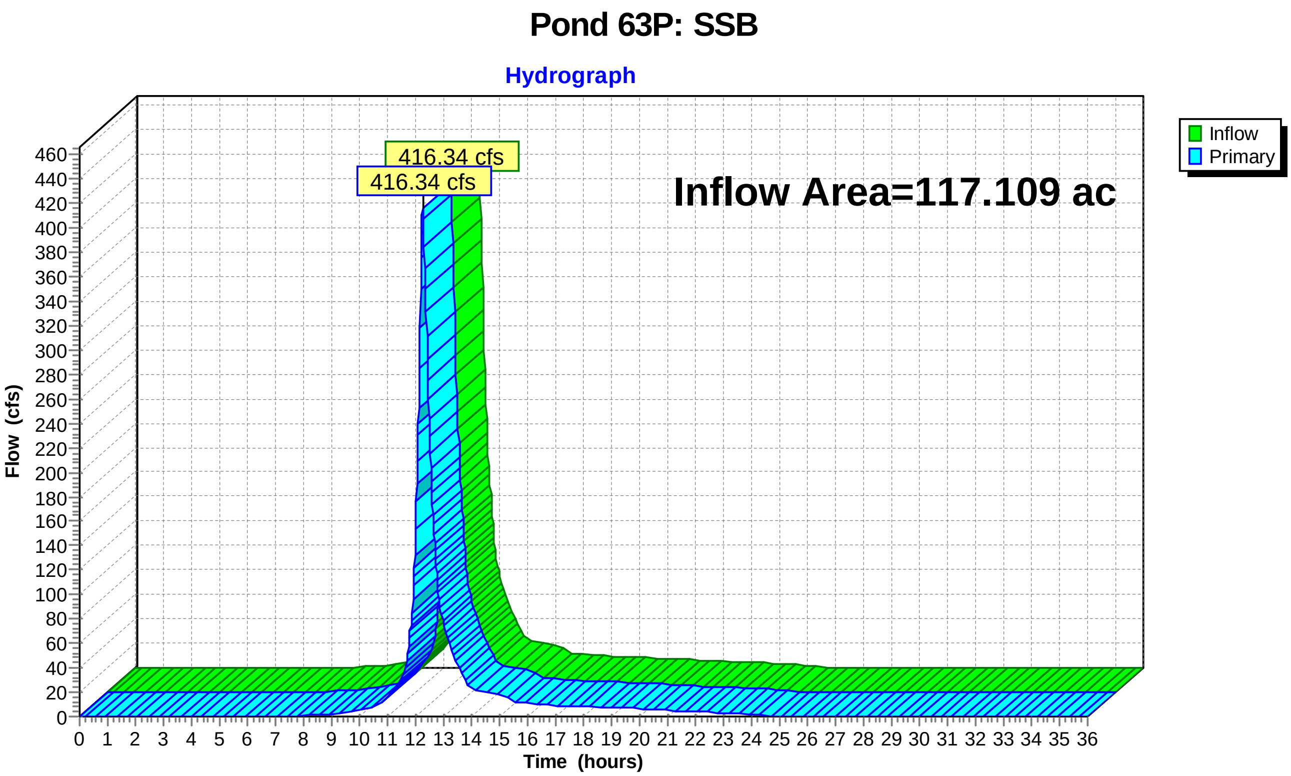




Summary for Pond 63P: SSB

Inflow Area = 117.109 ac, 8.73% Impervious, Inflow Depth = 3.45" for 100-yr, 24-hr event
Inflow = 416.34 cfs @ 12.26 hrs, Volume= 33.625 af
Primary = 416.34 cfs @ 12.26 hrs, Volume= 33.625 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

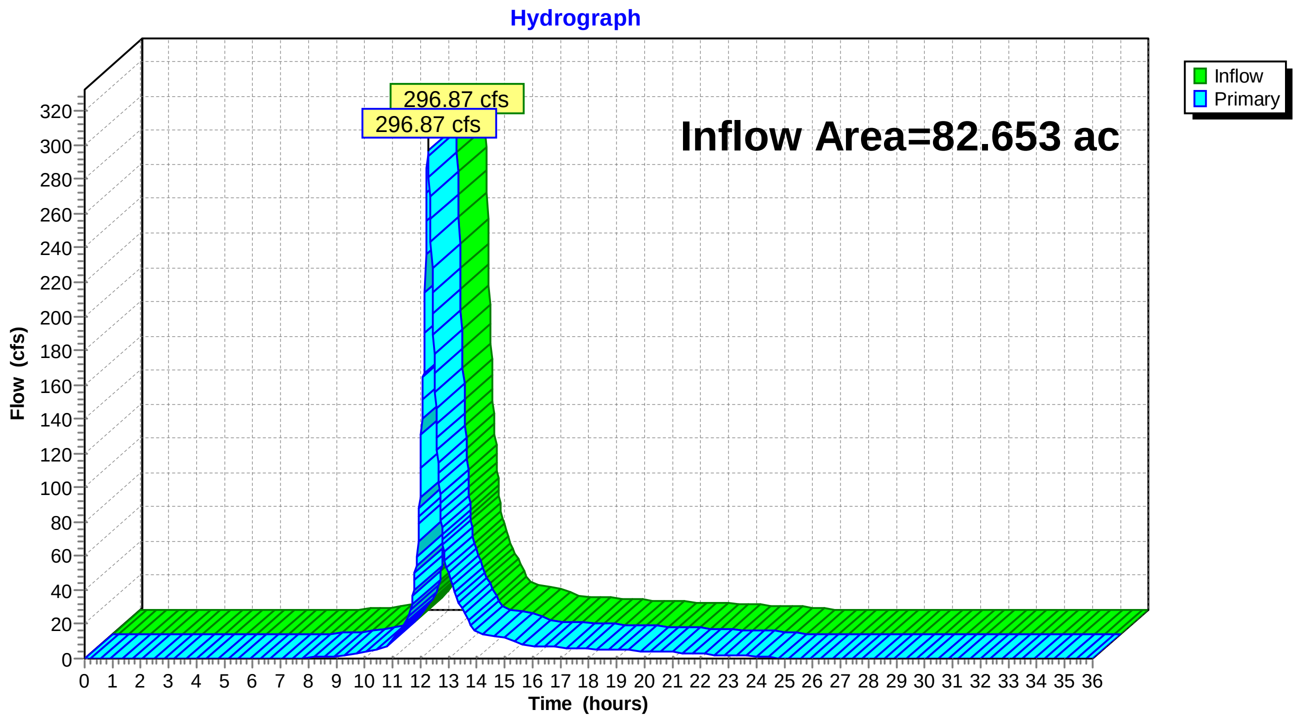


Summary for Pond 69P: Storm Sewer - See SWMM Model

Inflow Area = 82.653 ac, 6.59% Impervious, Inflow Depth = 3.40" for 100-yr, 24-hr event
Inflow = 296.87 cfs @ 12.28 hrs, Volume= 23.402 af
Primary = 296.87 cfs @ 12.28 hrs, Volume= 23.402 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Pond 69P: Storm Sewer - See SWMM Model



Summary for Pond 70P: SSB Inlet Culvert

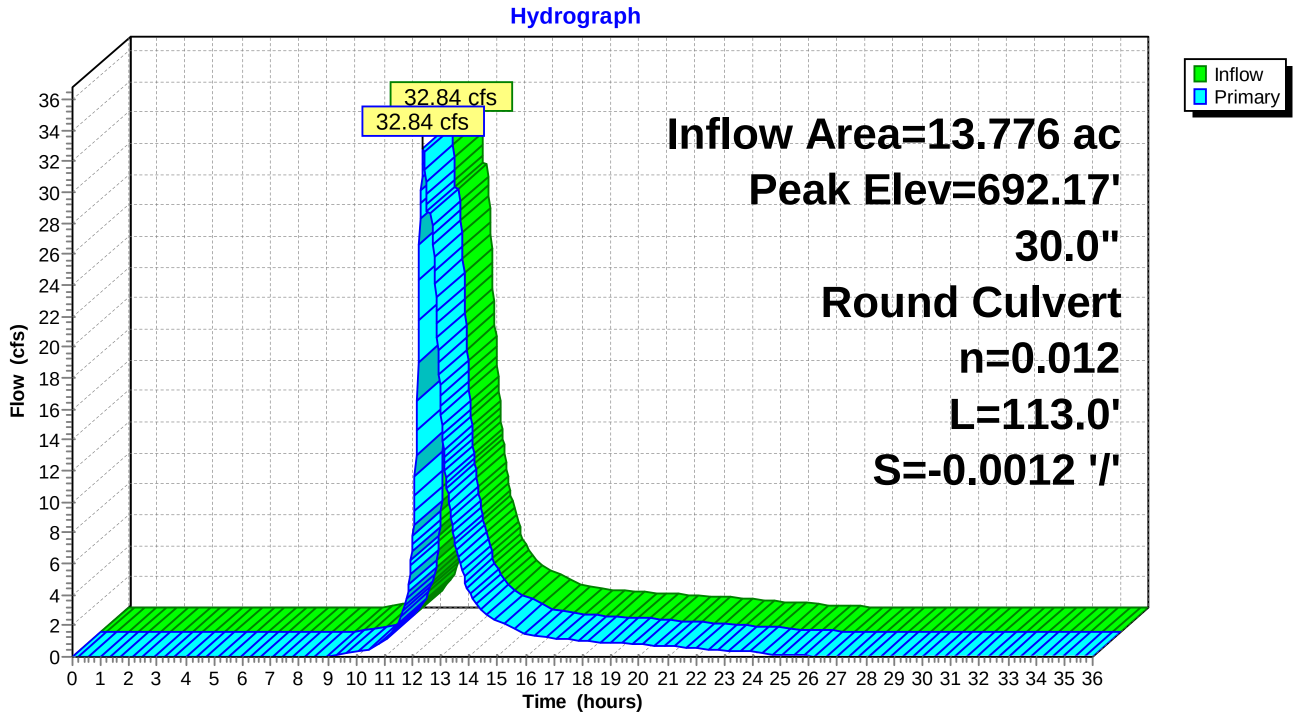
Inflow Area = 13.776 ac, 0.00% Impervious, Inflow Depth = 3.38" for 100-yr, 24-hr event
Inflow = 32.84 cfs @ 12.38 hrs, Volume= 3.881 af
Outflow = 32.84 cfs @ 12.38 hrs, Volume= 3.881 af, Atten= 0%, Lag= 0.0 min
Primary = 32.84 cfs @ 12.38 hrs, Volume= 3.881 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 692.17' @ 12.38 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	688.14'	**30.0" Round Culvert** L= 113.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 688.01' / 688.14' S= -0.0012 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf

Primary OutFlow Max=32.80 cfs @ 12.38 hrs HW=692.17' (Free Discharge)
└─**1=Culvert** (Barrel Controls 32.80 cfs @ 6.68 fps)

Pond 70P: SSB Inlet Culvert



Summary for Pond 71P: E-MCI Culvert

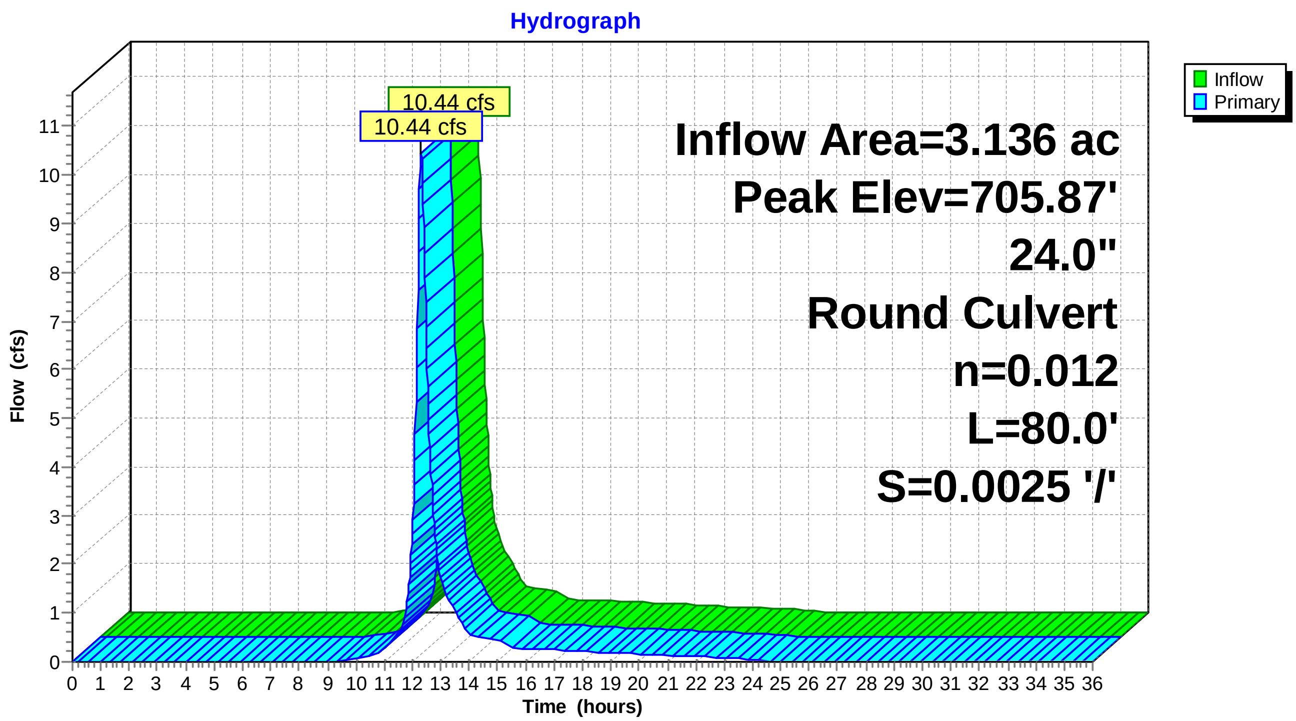
Inflow Area = 3.136 ac, 0.00% Impervious, Inflow Depth = 3.00" for 100-yr, 24-hr event
Inflow = 10.44 cfs @ 12.30 hrs, Volume= 0.783 af
Outflow = 10.44 cfs @ 12.30 hrs, Volume= 0.783 af, Atten= 0%, Lag= 0.0 min
Primary = 10.44 cfs @ 12.30 hrs, Volume= 0.783 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 705.87' @ 12.30 hrs

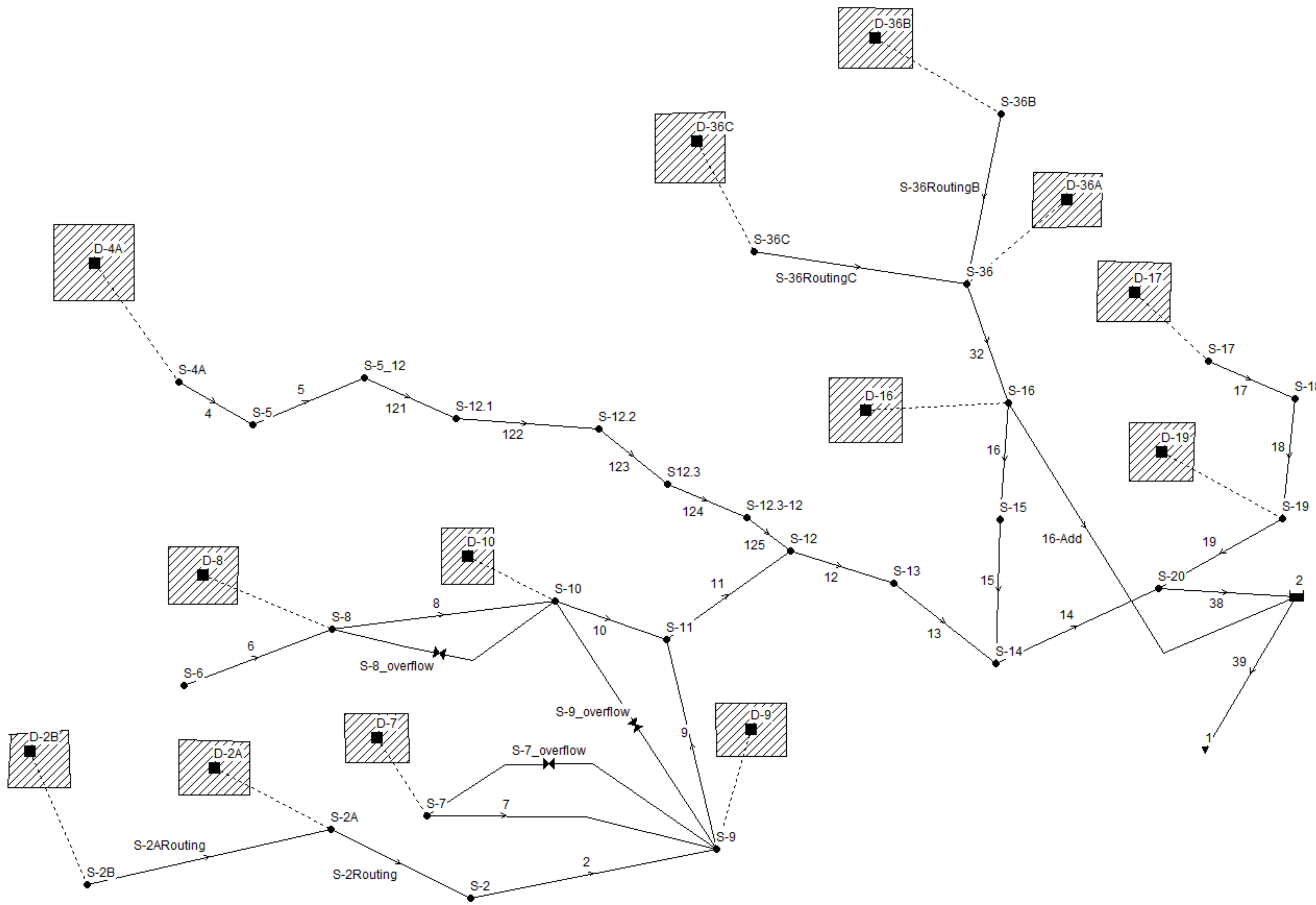
Device	Routing	Invert	Outlet Devices
#1	Primary	703.00'	**24.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 703.00' / 702.80' S= 0.0025 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=10.44 cfs @ 12.30 hrs HW=705.86' TW=705.10' (Fixed TW Elev= 705.10')
1=Culvert (Inlet Controls 10.44 cfs @ 3.32 fps)

Pond 71P: E-MCI Culvert



South Sedimentation Basin (SSB) SWMM OUTPUT – 25-yr, 24-hr


D-36B
S-36B
D-36C
S-36RoutingB
D-36A
S-36C
S-36
S-36RoutingC
D-17
D-4A
32
S-17
S-4A
S-5_12
5
S-16
17
S-18
D-16
4
S-5
121
S-12.1
122
S-12.2
16
D-19
18
123
S12.3
124
S-12.3-12
S-15
S-19
125
S-12
16-Add
19
D-10
D-8
S-13
S-20
2
11
12
15
S-10
8
38
S-8
10
S-11
14
6
13
S-14
39
S-6
S-8_overflow
S-9_overflow
D-9
D-7
9
1
D-2B
D-2A
S-7_overflow
S-7
7
S-2A
S-9
S-2ARouting
S-2B
S-2Routing
2
S-2

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

WARNING 02: maximum depth increased for Node S-7
WARNING 02: maximum depth increased for Node S-8
WARNING 02: maximum depth increased for Node S-9
WARNING 02: maximum depth increased for Node S-36
WARNING 02: maximum depth increased for Node S-5_12
WARNING 02: maximum depth increased for Node S-36B

****
Element Count
****
Number of rain gages 2
Number of subcatchments ... 13
Number of nodes 30
Number of links 33
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
TS1	MSE3-100yr,24hr	INTENSITY	6 min.
MSE3	MSE-25yr,24hr	INTENSITY	6 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
D-16	6.00	670.00	0.00	5.0000	MSE3	S-16
D-10	0.51	17.00	100.00	2.6000	MSE3	S-10
D-17	2.11	1200.00	0.00	5.8100	MSE3	S-17
D-19	0.38	600.00	0.00	1.5000	MSE3	S-19
D-2A	6.80	1050.00	0.00	5.0000	MSE3	S-2A
D-4A	3.20	940.00	0.00	15.0000	MSE3	S-4A
D-7	1.09	40.00	100.00	2.0000	MSE3	S-7
D-8	0.51	115.00	100.00	0.0700	MSE3	S-8
D-9	0.32	13.00	100.00	1.6000	MSE3	S-9

D-36B	24.90	1280.00	0.00	25.0000	MSE3	S-36B
D-36A	10.90	960.00	0.00	5.0000	MSE3	S-36
D-36C	16.30	1150.00	0.00	25.0000	MSE3	S-36C
D-2B	10.90	1340.00	0.00	4.1000	MSE3	S-2B

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
S-2	JUNCTION	686.25	16.20	100.0	
S-4A	JUNCTION	693.34	15.00	0.0	
S-5	JUNCTION	692.01	7.50	0.0	
S-6	JUNCTION	695.71	3.20	0.0	
S-7	JUNCTION	694.09	5.45	0.0	
S-8	JUNCTION	694.73	5.00	0.0	
S-9	JUNCTION	684.57	14.00	660.0	
S-10	JUNCTION	691.90	4.80	2100.0	
S-11	JUNCTION	685.67	15.65	0.0	
S-12	JUNCTION	686.18	16.25	0.0	
S-13	JUNCTION	685.57	15.90	0.0	
S-14	JUNCTION	685.88	16.34	0.0	
S-15	JUNCTION	687.52	14.09	0.0	
S-16	JUNCTION	697.26	10.74	100.0	
S-17	JUNCTION	695.46	4.70	0.0	
S-18	JUNCTION	694.60	5.40	0.0	
S-19	JUNCTION	690.98	9.26	0.0	
S-20	JUNCTION	685.98	10.00	0.0	
S-36	JUNCTION	709.00	22.50	0.0	
S-5_12	JUNCTION	691.07	4.50	0.0	
S-12.1	JUNCTION	688.83	16.84	0.0	
S-12.2	JUNCTION	688.47	17.98	0.0	
S12.3	JUNCTION	688.30	14.93	0.0	
S-12.3-12	JUNCTION	686.56	4.00	0.0	
S-36C	JUNCTION	777.60	2.00	0.0	
S-36B	JUNCTION	755.80	2.50	0.0	
S-2A	JUNCTION	700.20	3.00	0.0	
S-2B	JUNCTION	710.90	2.00	0.0	
1	OUTFALL	690.00	1.00	0.0	
2	STORAGE	671.00	25.00	0.0	

****
Link Summary
****

Name	From Node	To Node	Type	Length	%Slope	Roughness
2	S-2	S-9	CONDUIT	855.0	0.0211	0.0130
4	S-4A	S-5	CONDUIT	100.0	0.1800	0.0130
5	S-5	S-5_12	CONDUIT	147.0	0.6395	0.0130
6	S-6	S-8	CONDUIT	275.0	0.3564	0.0130
7	S-7	S-9	CONDUIT	163.0	2.1600	0.0130
8	S-8	S-10	CONDUIT	205.0	1.3562	0.0130
9	S-9	S-11	CONDUIT	122.0	0.2049	0.0130
10	S-10	S-11	CONDUIT	19.0	0.6842	0.0130
11	S-11	S-12	CONDUIT	107.0	-0.4766	0.0130
12	S-12	S-13	CONDUIT	165.0	0.3697	0.0130
13	S-13	S-14	CONDUIT	226.0	-0.3009	0.0130
14	S-14	S-20	CONDUIT	166.0	0.0602	0.0130
15	S-15	S-14	CONDUIT	35.0	0.7715	0.0130
16	S-16	S-15	CONDUIT	210.0	2.9775	0.0130
17	S-17	S-18	CONDUIT	49.0	0.0204	0.0130
18	S-18	S-19	CONDUIT	14.0	0.3571	0.0130
19	S-19	S-20	CONDUIT	43.0	12.5869	0.0130
32	S-36	S-16	CONDUIT	900.0	0.9712	0.0250
38	S-20	2	CONDUIT	414.0	0.0725	0.0130
39	2	1	CONDUIT	400.0	0.1250	0.0130
121	S-5_12	S-12.1	CONDUIT	350.0	0.6400	0.0130
122	S-12.1	S-12.2	CONDUIT	110.0	0.3273	0.0120
123	S-12.2	S12.3	CONDUIT	100.0	0.1700	0.0120
124	S12.3	S-12.3-12	CONDUIT	120.0	1.4502	0.0120
125	S-12.3-12	S-12	CONDUIT	26.0	1.4617	0.0130
S-36RoutingC	S-36C	S-36	CONDUIT	2430.0	2.0004	0.0250
S-36RoutingB	S-36B	S-36	CONDUIT	1340.0	2.0004	0.0250
S-2Routing	S-2A	S-2	CONDUIT	250.0	0.3000	0.0250
S-2ARouting	S-2B	S-2A	CONDUIT	1340.0	0.7985	0.0250
16-Add	S-16	2	CONDUIT	500.0	0.2520	0.0130
S-9_overflow	S-9	S-10	WEIR			
S-8_overflow	S-8	S-10	WEIR			
S-7_overflow	S-7	S-9	WEIR			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
2	CIRCULAR	3.00	7.07	0.75	3.00	1	9.68
4	CIRCULAR	3.00	7.07	0.75	3.00	1	28.30
5	CIRCULAR	3.50	9.62	0.88	3.50	1	80.45
6	CIRCULAR	1.00	0.79	0.25	1.00	1	2.13
7	CIRCULAR	1.00	0.79	0.25	1.00	1	5.24
8	CIRCULAR	1.00	0.79	0.25	1.00	1	4.15
9	CIRCULAR	3.00	7.07	0.75	3.00	1	30.19
10	CIRCULAR	1.00	0.79	0.25	1.00	1	2.95
11	CIRCULAR	3.00	7.07	0.75	3.00	1	46.05
12	CIRCULAR	3.50	9.62	0.88	3.50	1	61.17
13	CIRCULAR	3.50	9.62	0.88	3.50	1	55.19
14	CIRCULAR	3.50	9.62	0.88	3.50	1	24.69
15	CIRCULAR	2.00	3.14	0.50	2.00	1	19.87
16	CIRCULAR	2.00	3.14	0.50	2.00	1	39.04
17	CIRCULAR	1.50	1.77	0.38	1.50	1	1.50
18	CIRCULAR	1.50	1.77	0.38	1.50	1	6.28
19	CIRCULAR	1.50	1.77	0.38	1.50	1	37.27
32	TRAPEZOIDAL	7.74	334.00	4.08	80.30	1	4993.90
38	CIRCULAR	3.50	9.62	0.88	3.50	1	27.08
39	CIRCULAR	1.00	0.79	0.25	1.00	1	1.26
121	CIRCULAR	4.50	15.90	1.13	4.50	1	157.32
122	CIRCULAR	3.00	7.07	0.75	3.00	1	41.34
123	CIRCULAR	3.00	7.07	0.75	3.00	1	29.79
124	CIRCULAR	4.00	12.57	1.00	4.00	1	187.39
125	CIRCULAR	3.00	7.07	0.75	3.00	1	80.64
S-36RoutingC	TRIANGULAR	2.00	14.00	0.96	14.00	1	114.66
S-36RoutingB	TRIANGULAR	2.50	17.50	1.18	14.00	1	164.02
S-2Routing	TRIANGULAR	3.00	39.00	1.46	26.00	1	163.53
S-2ARouting	TRIANGULAR	2.00	26.00	0.99	26.00	1	137.03
16-Add	CIRCULAR	2.50	4.91	0.63	2.50	1	20.59

****
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
****

```
****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ YES
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 06/14/2019 00:00:00
Ending Date .............. 06/16/2019 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:02:00
Wet Time Step ............ 00:05:00
Dry Time Step ............ 01:00:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.005000 ft

*********************
Control Actions Taken
*********************

**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Total Precipitation ......        27.624         3.950
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         9.146         1.308
Surface Runoff ...........        18.166         2.598
Final Storage ............         0.339         0.048
Continuity Error (%) .....        -0.098
```

```
**************************        Volume         Volume
Flow Routing Continuity         acre-feet       10^6 gal
**************************      ---------      ---------
Dry Weather Inflow .......          0.000          0.000
Wet Weather Inflow .......         18.190          5.928
Groundwater Inflow .......          0.000          0.000
RDII Inflow ..............          0.000          0.000
External Inflow ..........          0.000          0.000
External Outflow .........          0.000          0.000
Flooding Loss ............          0.000          0.000
Evaporation Loss .........          0.000          0.000
Exfiltration Loss ........          0.000          0.000
Initial Stored Volume ....          0.000          0.000
Final Stored Volume ......         18.198          5.930
Continuity Error (%) .....         -0.040

***************************
Time-Step Critical Elements
***************************
None

********************************
Highest Flow Instability Indexes
********************************
Link 125 (1)

*************************
Routing Time Step Summary
*************************
Minimum Time Step           :     0.50 sec
Average Time Step           :     1.00 sec
Maximum Time Step           :     1.00 sec
Percent in Steady State     :     0.21
Average Iterations per Step :     2.01
Percent Not Converging      :     0.11
Time Step Frequencies       :
    1.000 -  0.871 sec      :    99.78 %
    0.871 -  0.758 sec      :     0.16 %
    0.758 -  0.660 sec      :     0.01 %
    0.660 -  0.574 sec      :     0.02 %
    0.574 -  0.500 sec      :     0.03 %
```

****

Subcatchment Runoff Summary

****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
D-16	3.95	0.00	0.00	1.29	0.00	2.61	2.61	0.43	19.55	0.661
D-10	3.95	0.00	0.00	0.00	3.96	0.00	3.96	0.05	2.88	1.003
D-17	3.95	0.00	0.00	1.29	0.00	2.62	2.62	0.15	10.27	0.663
D-19	3.95	0.00	0.00	1.29	0.00	2.62	2.62	0.03	1.90	0.663
D-2A	3.95	0.00	0.00	1.54	0.00	2.36	2.36	0.44	22.06	0.599
D-4A	3.95	0.00	0.00	1.29	0.00	2.62	2.62	0.23	15.24	0.663
D-7	3.95	0.00	0.00	0.00	3.96	0.00	3.96	0.12	6.11	1.002
D-8	3.95	0.00	0.00	0.00	3.96	0.00	3.96	0.05	2.93	1.003
D-9	3.95	0.00	0.00	0.00	3.96	0.00	3.96	0.03	1.79	1.002
D-36B	3.95	0.00	0.00	1.29	0.00	2.61	2.61	1.76	82.07	0.661
D-36A	3.95	0.00	0.00	1.30	0.00	2.61	2.61	0.77	32.19	0.660
D-36C	3.95	0.00	0.00	1.29	0.00	2.61	2.61	1.16	60.11	0.661
D-2B	3.95	0.00	0.00	1.54	0.00	2.36	2.36	0.70	31.20	0.598

****

Node Depth Summary

****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days	hr:min	Reported Max Depth Feet
S-2	JUNCTION	0.50	12.25	698.50	0	12:22	12.25
S-4A	JUNCTION	0.08	1.60	694.94	0	12:23	1.56
S-5	JUNCTION	0.07	2.92	694.93	0	12:22	2.86
S-6	JUNCTION	0.00	0.00	695.71	0	00:00	0.00
S-7	JUNCTION	0.21	3.25	697.34	0	12:13	3.11
S-8	JUNCTION	0.04	0.77	695.50	0	12:23	0.77
S-9	JUNCTION	2.06	11.20	695.77	0	12:22	11.18
S-10	JUNCTION	0.09	3.47	695.37	0	12:22	3.45
S-11	JUNCTION	0.98	9.64	695.31	0	12:23	9.63

S-12	JUNCTION	0.48	8.70	694.88	0	12:23	8.68
S-13	JUNCTION	1.05	8.94	694.51	0	12:23	8.93
S-14	JUNCTION	0.67	8.14	694.02	0	12:23	8.13
S-15	JUNCTION	0.71	8.03	695.55	0	12:23	8.03
S-16	JUNCTION	0.24	7.71	704.97	0	12:29	7.71
S-17	JUNCTION	0.63	2.39	697.85	0	12:12	2.39
S-18	JUNCTION	1.17	2.67	697.27	0	12:12	2.67
S-19	JUNCTION	0.34	1.60	692.58	0	12:22	1.59
S-20	JUNCTION	0.48	6.58	692.56	0	12:22	6.57
S-36	JUNCTION	0.11	1.69	710.69	0	12:15	1.69
S-5_12	JUNCTION	0.08	3.83	694.90	0	12:23	3.81
S-12.1	JUNCTION	0.13	8.65	697.48	0	12:14	6.05
S-12.2	JUNCTION	0.14	7.89	696.36	0	12:14	6.40
S12.3	JUNCTION	0.12	6.72	695.02	0	12:14	6.57
S-12.3-12	JUNCTION	0.29	8.32	694.88	0	12:23	8.31
S-36C	JUNCTION	0.14	1.42	779.02	0	12:15	1.42
S-36B	JUNCTION	0.18	1.85	757.65	0	12:14	1.85
S-2A	JUNCTION	0.22	1.80	702.00	0	12:19	1.80
S-2B	JUNCTION	0.11	1.09	711.99	0	12:15	1.08
1	OUTFALL	0.00	0.00	690.00	0	00:00	0.00
2	STORAGE	8.36	11.52	682.52	2	00:00	11.52

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days	hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
S-2	JUNCTION	0.00	38.98	0	12:19	0	1.14	0.006
S-4A	JUNCTION	15.24	15.24	0	12:12	0.228	0.228	0.190
S-5	JUNCTION	0.00	15.17	0	12:12	0	0.228	-0.231
S-6	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 gal
S-7	JUNCTION	6.11	6.11	0	12:12	0.117	0.117	0.311
S-8	JUNCTION	2.93	2.93	0	12:12	0.0549	0.0549	0.005
S-9	JUNCTION	1.79	41.31	0	12:20	0.0344	1.29	-0.011
S-10	JUNCTION	2.88	5.73	0	12:12	0.0549	0.11	-0.044
S-11	JUNCTION	0.00	42.66	0	12:22	0	1.4	0.040
S-12	JUNCTION	0.00	47.19	0	12:23	0	1.74	-0.019

S-13	JUNCTION	0.00	47.20	0	12:23	0	1.63	0.097
S-14	JUNCTION	0.00	94.43	0	12:24	0	4.29	-0.007
S-15	JUNCTION	0.00	49.72	0	12:38	0	2.66	0.003
S-16	JUNCTION	19.55	161.66	0	12:15	0.426	4.12	-0.178
S-17	JUNCTION	10.27	10.27	0	12:12	0.15	0.15	0.043
S-18	JUNCTION	0.00	10.27	0	12:12	0	0.15	0.085
S-19	JUNCTION	1.90	12.17	0	12:12	0.0271	0.177	0.017
S-20	JUNCTION	0.00	97.71	0	12:23	0	4.46	-0.007
S-36	JUNCTION	32.19	147.02	0	12:14	0.773	3.7	0.198
S-5_12	JUNCTION	0.00	15.64	0	12:12	0	0.228	-0.126
S-12.1	JUNCTION	0.00	12.96	0	12:10	0	0.23	-0.005
S-12.2	JUNCTION	0.00	7.87	0	12:58	0	0.232	-0.035
S12.3	JUNCTION	0.00	9.78	0	12:58	0	0.236	-0.059
S-12.3-12	JUNCTION	0.00	13.11	0	12:03	0	0.348	0.025
S-36C	JUNCTION	60.11	60.11	0	12:12	1.16	1.16	-0.011
S-36B	JUNCTION	82.07	82.07	0	12:12	1.77	1.77	-0.006
S-2A	JUNCTION	22.06	46.25	0	12:13	0.437	1.14	0.219
S-2B	JUNCTION	31.20	31.20	0	12:12	0.7	0.7	-0.355
1	OUTFALL	0.00	0.00	0	00:00	0	0	0.000 gal
2	STORAGE	0.00	145.28	0	12:24	0	5.93	0.001

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Feet	Min. Depth Below Rim Feet
S-11	JUNCTION	0.50	2.543	6.007
S-12	JUNCTION	0.92	5.199	7.551
S-13	JUNCTION	1.04	5.445	6.955
S-14	JUNCTION	0.90	4.267	8.203
S-15	JUNCTION	0.67	2.537	6.063
S-17	JUNCTION	0.07	0.245	2.305
S-20	JUNCTION	0.88	3.076	3.424
S-12.1	JUNCTION	0.38	4.151	8.189
S-12.2	JUNCTION	0.70	4.890	10.090
S12.3	JUNCTION	0.55	2.720	8.210
S-12.3-12	JUNCTION	0.82	4.321	0.000

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
2	562.984	18	0	0	792.267	26	2 00:00	0.00

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
1	0.00	0.00	0.00	0.000
System	0.00	0.00	0.00	0.000

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days	hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
2	CONDUIT	37.89	0	12:21	5.36	3.92	1.00
4	CONDUIT	15.17	0	12:12	5.12	0.54	0.55
5	CONDUIT	15.64	0	12:12	6.73	0.19	0.92
6	CONDUIT	0.00	0	00:00	0.00	0.00	0.39
7	CONDUIT	5.59	0	12:12	7.55	1.07	1.00
8	CONDUIT	2.87	0	12:12	4.23	0.69	0.89
9	CONDUIT	40.67	0	12:22	5.75	1.35	1.00
10	CONDUIT	5.63	0	12:11	7.22	1.91	1.00
11	CONDUIT	42.66	0	12:22	6.03	0.93	1.00
12	CONDUIT	47.20	0	12:23	4.91	0.77	1.00
13	CONDUIT	47.20	0	12:23	4.91	0.86	1.00
14	CONDUIT	94.43	0	12:24	9.82	3.82	1.00
15	CONDUIT	49.72	0	12:38	15.83	2.50	1.00
16	CONDUIT	49.72	0	12:38	15.83	1.27	1.00
17	CONDUIT	10.27	0	12:12	6.08	6.85	0.91
18	CONDUIT	10.27	0	12:12	6.42	1.64	0.85
19	CONDUIT	12.21	0	12:12	8.03	0.33	0.91
32	CONDUIT	145.33	0	12:15	5.41	0.03	0.39
38	CONDUIT	97.71	0	12:23	10.45	3.61	0.93
39	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
121	CONDUIT	12.96	0	12:10	4.05	0.08	0.93
122	CONDUIT	7.87	0	12:58	3.53	0.19	1.00
123	CONDUIT	9.78	0	12:58	4.42	0.33	1.00
124	CONDUIT	10.67	0	12:58	2.06	0.06	1.00
125	CONDUIT	12.95	0	12:03	2.42	0.16	1.00
S-36RoutingC	CONDUIT	45.72	0	12:16	6.51	0.40	0.71
S-36RoutingB	CONDUIT	73.17	0	12:14	7.66	0.45	0.74
S-2Routing	CONDUIT	38.98	0	12:19	3.56	0.24	0.53
S-2ARouting	CONDUIT	26.93	0	12:15	2.14	0.20	0.72
16-Add	CONDUIT	48.35	0	12:29	10.01	2.35	0.95
S-9_overflow	WEIR	0.00	0	00:00			0.00
S-8_overflow	WEIR	0.00	0	00:00			0.00
S-7_overflow	WEIR	0.00	0	00:00			0.00

****
Flow Classification Summary
****

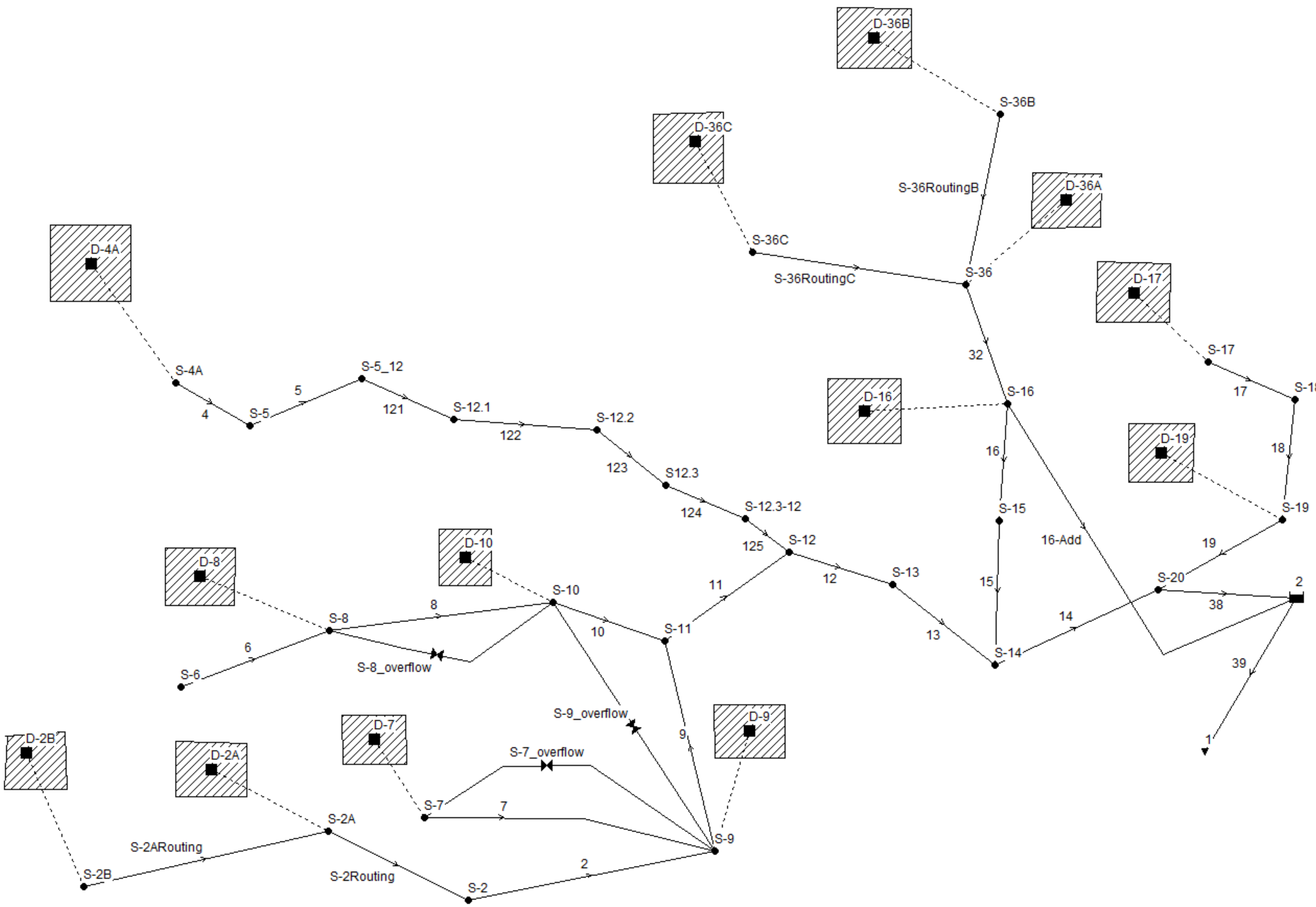
Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
		Fraction of Time in Flow Class								
2	1.00	0.04	0.04	0.00	0.91	0.00	0.00	0.00	0.47	0.00
4	1.00	0.17	0.00	0.00	0.01	0.00	0.00	0.82	0.00	0.00
5	1.00	0.17	0.00	0.00	0.52	0.31	0.00	0.00	0.30	0.00
6	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	1.00	0.01	0.00	0.00	0.02	0.00	0.00	0.97	0.01	0.00
8	1.00	0.00	0.00	0.00	0.02	0.11	0.00	0.87	0.12	0.00
9	1.00	0.01	0.02	0.00	0.97	0.00	0.00	0.00	0.01	0.00
10	1.00	0.00	0.00	0.00	0.01	0.00	0.00	0.98	0.00	0.00
11	1.00	0.01	0.04	0.00	0.96	0.00	0.00	0.00	0.00	0.00
12	1.00	0.04	0.00	0.00	0.96	0.00	0.00	0.00	0.03	0.00
13	1.00	0.04	0.03	0.00	0.38	0.00	0.55	0.00	0.00	0.00
14	1.00	0.07	0.00	0.00	0.93	0.00	0.00	0.00	0.41	0.00
15	1.00	0.18	0.00	0.00	0.02	0.00	0.00	0.80	0.00	0.00
16	1.00	0.17	0.00	0.00	0.01	0.00	0.00	0.82	0.00	0.00
17	1.00	0.18	0.00	0.00	0.00	0.00	0.00	0.82	0.00	0.00
18	1.00	0.18	0.00	0.00	0.00	0.00	0.00	0.82	0.00	0.00
19	1.00	0.07	0.52	0.00	0.40	0.00	0.00	0.00	0.81	0.00
32	1.00	0.17	0.00	0.00	0.02	0.00	0.00	0.81	0.02	0.00
38	1.00	0.07	0.00	0.00	0.00	0.00	0.00	0.93	0.00	0.00
39	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
121	1.00	0.30	0.00	0.00	0.70	0.00	0.00	0.00	0.81	0.00
122	1.00	0.17	0.13	0.00	0.70	0.00	0.00	0.00	0.80	0.00
123	1.00	0.17	0.00	0.00	0.75	0.08	0.00	0.00	0.30	0.00
124	1.00	0.17	0.00	0.00	0.79	0.04	0.00	0.00	0.37	0.00
125	1.00	0.04	0.56	0.00	0.40	0.00	0.00	0.00	0.53	0.00
S-36RoutingC	1.00	0.17	0.00	0.00	0.00	0.00	0.00	0.83	0.00	0.00
S-36RoutingB	1.00	0.17	0.00	0.00	0.00	0.00	0.00	0.83	0.00	0.00
S-2Routing	1.00	0.18	0.00	0.00	0.00	0.00	0.00	0.82	0.00	0.00
S-2ARouting	1.00	0.18	0.00	0.00	0.82	0.00	0.00	0.00	0.81	0.00
16-Add	1.00	0.17	0.00	0.00	0.00	0.00	0.00	0.83	0.00	0.00

****
Conduit Surcharge Summary
****

Conduit	Hours Full Both Ends	Hours Full Upstream	Hours Full Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
2	1.04	1.04	1.05	0.99	0.99
5	0.01	0.01	0.16	0.01	0.01
7	0.33	0.33	0.68	0.05	0.04
8	0.01	0.01	0.53	0.01	0.01
9	1.13	1.13	1.27	0.34	0.35
10	0.49	0.54	0.50	0.18	0.08
11	1.02	1.02	1.27	0.01	0.01
12	0.92	0.92	1.04	0.01	0.01
13	0.90	0.90	1.04	0.01	0.01
14	0.88	0.92	0.88	1.49	0.88
15	0.92	0.98	0.92	1.22	0.92
16	0.82	0.82	0.84	0.84	0.82
17	0.01	0.07	0.01	0.71	0.01
18	0.01	0.01	0.01	0.13	0.01
19	0.01	0.01	2.63	0.01	0.01
38	0.01	0.88	0.01	1.42	0.01
121	0.01	0.01	0.38	0.01	0.01
122	0.63	0.63	0.70	0.01	0.01
123	0.70	0.70	0.72	0.01	0.01
124	0.55	0.55	0.82	0.01	0.01
125	0.94	0.94	1.02	0.01	0.01
16-Add	0.01	0.80	0.01	0.82	0.01

Analysis begun on: Wed Oct 6 22:13:47 2021
Analysis ended on: Wed Oct 6 22:13:53 2021
Total elapsed time: 00:00:06

South Sedimentation Basin (SSB) SWMM OUTPUT – 100-yr, 24-hr


D-36B
S-36B
D-36C
S-36RoutingB
D-36A
S-36C
S-36
S-36RoutingC
D-17
D-4A
32
S-17
S-4A
S-5_12
S-16
17
S-18
D-16
5
121
S-12.1
4
S-5
122
S-12.2
16
18
D-19
123
S12.3
124
S-12.3-12
S-15
S-19
D-10
125
S-12
16-Add
19
D-8
S-13
S-20
2
S-10
11
12
15
8
38
S-8
14
10
S-11
13
6
S-14
S-8_overflow
39
S-6
S-9_overflow
D-9
D-7
9
1
D-2B
D-2A
S-7_overflow
S-2A
S-7
7
S-9
S-2ARouting
S-2B
S-2Routing
2
S-2

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

WARNING 02: maximum depth increased for Node S-7
WARNING 02: maximum depth increased for Node S-8
WARNING 02: maximum depth increased for Node S-9
WARNING 02: maximum depth increased for Node S-36
WARNING 02: maximum depth increased for Node S-5_12
WARNING 02: maximum depth increased for Node S-36B

****
Element Count
****
Number of rain gages 2
Number of subcatchments ... 13
Number of nodes 30
Number of links 33
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
TS1	MSE3-100yr,24hr	INTENSITY	6 min.
MSE3	MSE3-100yr,24hr	INTENSITY	6 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
D-16	6.00	670.00	0.00	5.0000	MSE3	S-16
D-10	0.51	17.00	100.00	2.6000	MSE3	S-10
D-17	2.11	1200.00	0.00	5.8100	MSE3	S-17
D-19	0.38	600.00	0.00	1.5000	MSE3	S-19
D-2A	6.80	1050.00	0.00	5.0000	MSE3	S-2A
D-4A	3.20	940.00	0.00	15.0000	MSE3	S-4A
D-7	1.09	40.00	100.00	2.0000	MSE3	S-7
D-8	0.51	115.00	100.00	0.0700	MSE3	S-8
D-9	0.32	13.00	100.00	1.6000	MSE3	S-9

D-36B	24.90	1280.00	0.00	25.0000	MSE3	S-36B
D-36A	10.90	960.00	0.00	5.0000	MSE3	S-36
D-36C	16.30	1150.00	0.00	25.0000	MSE3	S-36C
D-2B	10.90	1340.00	0.00	4.1000	MSE3	S-2B

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
S-2	JUNCTION	686.25	16.20	100.0	
S-4A	JUNCTION	693.34	15.00	0.0	
S-5	JUNCTION	692.01	7.50	0.0	
S-6	JUNCTION	695.71	3.20	0.0	
S-7	JUNCTION	694.09	5.45	0.0	
S-8	JUNCTION	694.73	5.00	0.0	
S-9	JUNCTION	684.57	14.00	660.0	
S-10	JUNCTION	691.90	4.80	2100.0	
S-11	JUNCTION	685.67	15.65	0.0	
S-12	JUNCTION	686.18	16.25	0.0	
S-13	JUNCTION	685.57	15.90	0.0	
S-14	JUNCTION	685.88	16.34	0.0	
S-15	JUNCTION	687.52	14.09	0.0	
S-16	JUNCTION	697.26	10.74	100.0	
S-17	JUNCTION	695.46	4.70	0.0	
S-18	JUNCTION	694.60	5.40	0.0	
S-19	JUNCTION	690.98	9.26	0.0	
S-20	JUNCTION	685.98	10.00	0.0	
S-36	JUNCTION	709.00	22.50	0.0	
S-5_12	JUNCTION	691.07	4.50	0.0	
S-12.1	JUNCTION	688.83	16.84	0.0	
S-12.2	JUNCTION	688.47	17.98	0.0	
S12.3	JUNCTION	688.30	14.93	0.0	
S-12.3-12	JUNCTION	686.56	4.00	0.0	
S-36C	JUNCTION	777.60	2.00	0.0	
S-36B	JUNCTION	755.80	2.50	0.0	
S-2A	JUNCTION	700.20	3.00	0.0	
S-2B	JUNCTION	710.90	2.00	0.0	
1	OUTFALL	690.00	1.00	0.0	
2	STORAGE	671.00	25.00	0.0	

****
Link Summary
****

Name	From Node	To Node	Type	Length	%Slope	Roughness
2	S-2	S-9	CONDUIT	855.0	0.0211	0.0130
4	S-4A	S-5	CONDUIT	100.0	0.1800	0.0130
5	S-5	S-5_12	CONDUIT	147.0	0.6395	0.0130
6	S-6	S-8	CONDUIT	275.0	0.3564	0.0130
7	S-7	S-9	CONDUIT	163.0	2.1600	0.0130
8	S-8	S-10	CONDUIT	205.0	1.3562	0.0130
9	S-9	S-11	CONDUIT	122.0	0.2049	0.0130
10	S-10	S-11	CONDUIT	19.0	0.6842	0.0130
11	S-11	S-12	CONDUIT	107.0	-0.4766	0.0130
12	S-12	S-13	CONDUIT	165.0	0.3697	0.0130
13	S-13	S-14	CONDUIT	226.0	-0.3009	0.0130
14	S-14	S-20	CONDUIT	166.0	0.0602	0.0130
15	S-15	S-14	CONDUIT	35.0	0.7715	0.0130
16	S-16	S-15	CONDUIT	210.0	2.9775	0.0130
17	S-17	S-18	CONDUIT	49.0	0.0204	0.0130
18	S-18	S-19	CONDUIT	14.0	0.3571	0.0130
19	S-19	S-20	CONDUIT	43.0	12.5869	0.0130
32	S-36	S-16	CONDUIT	900.0	0.9712	0.0250
38	S-20	2	CONDUIT	414.0	0.0725	0.0130
39	2	1	CONDUIT	400.0	0.1250	0.0130
121	S-5_12	S-12.1	CONDUIT	350.0	0.6400	0.0130
122	S-12.1	S-12.2	CONDUIT	110.0	0.3273	0.0120
123	S-12.2	S12.3	CONDUIT	100.0	0.1700	0.0120
124	S12.3	S-12.3-12	CONDUIT	120.0	1.4502	0.0120
125	S-12.3-12	S-12	CONDUIT	26.0	1.4617	0.0130
S-36RoutingC	S-36C	S-36	CONDUIT	2430.0	2.0004	0.0250
S-36RoutingB	S-36B	S-36	CONDUIT	1340.0	2.0004	0.0250
S-2Routing	S-2A	S-2	CONDUIT	250.0	0.3000	0.0250
S-2ARouting	S-2B	S-2A	CONDUIT	1340.0	0.7985	0.0250
16-Add	S-16	2	CONDUIT	500.0	0.2520	0.0130
S-9_overflow	S-9	S-10	WEIR			
S-8_overflow	S-8	S-10	WEIR			
S-7_overflow	S-7	S-9	WEIR			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
2	CIRCULAR	3.00	7.07	0.75	3.00	1	9.68
4	CIRCULAR	3.00	7.07	0.75	3.00	1	28.30
5	CIRCULAR	3.50	9.62	0.88	3.50	1	80.45
6	CIRCULAR	1.00	0.79	0.25	1.00	1	2.13
7	CIRCULAR	1.00	0.79	0.25	1.00	1	5.24
8	CIRCULAR	1.00	0.79	0.25	1.00	1	4.15
9	CIRCULAR	3.00	7.07	0.75	3.00	1	30.19
10	CIRCULAR	1.00	0.79	0.25	1.00	1	2.95
11	CIRCULAR	3.00	7.07	0.75	3.00	1	46.05
12	CIRCULAR	3.50	9.62	0.88	3.50	1	61.17
13	CIRCULAR	3.50	9.62	0.88	3.50	1	55.19
14	CIRCULAR	3.50	9.62	0.88	3.50	1	24.69
15	CIRCULAR	2.00	3.14	0.50	2.00	1	19.87
16	CIRCULAR	2.00	3.14	0.50	2.00	1	39.04
17	CIRCULAR	1.50	1.77	0.38	1.50	1	1.50
18	CIRCULAR	1.50	1.77	0.38	1.50	1	6.28
19	CIRCULAR	1.50	1.77	0.38	1.50	1	37.27
32	TRAPEZOIDAL	7.74	334.00	4.08	80.30	1	4993.90
38	CIRCULAR	3.50	9.62	0.88	3.50	1	27.08
39	CIRCULAR	1.00	0.79	0.25	1.00	1	1.26
121	CIRCULAR	4.50	15.90	1.13	4.50	1	157.32
122	CIRCULAR	3.00	7.07	0.75	3.00	1	41.34
123	CIRCULAR	3.00	7.07	0.75	3.00	1	29.79
124	CIRCULAR	4.00	12.57	1.00	4.00	1	187.39
125	CIRCULAR	3.00	7.07	0.75	3.00	1	80.64
S-36RoutingC	TRIANGULAR	2.00	14.00	0.96	14.00	1	114.66
S-36RoutingB	TRIANGULAR	2.50	17.50	1.18	14.00	1	164.02
S-2Routing	TRIANGULAR	3.00	39.00	1.46	26.00	1	163.53
S-2ARouting	TRIANGULAR	2.00	26.00	0.99	26.00	1	137.03
16-Add	CIRCULAR	2.50	4.91	0.63	2.50	1	20.59

****
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
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***************
Analysis Options
***************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ YES
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 06/14/2019 00:00:00
Ending Date .............. 06/16/2019 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:02:00
Wet Time Step ............ 00:05:00
Dry Time Step ............ 01:00:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.005000 ft


********************
Control Actions Taken
********************

**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Total Precipitation ......        35.806         5.120
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         9.913         1.417
Surface Runoff ...........        25.600         3.661
Final Storage ............         0.339         0.049
Continuity Error (%) .....        -0.128
```

```
**************************        Volume         Volume
Flow Routing Continuity        acre-feet       10^6 gal
**************************     ---------      ---------
Dry Weather Inflow .......         0.000          0.000
Wet Weather Inflow .......        25.633          8.353
Groundwater Inflow .......         0.000          0.000
RDII Inflow ..............         0.000          0.000
External Inflow ..........         0.000          0.000
External Outflow .........         0.000          0.000
Flooding Loss ............         0.001          0.000
Evaporation Loss .........         0.000          0.000
Exfiltration Loss ........         0.000          0.000
Initial Stored Volume ....         0.000          0.000
Final Stored Volume ......        25.639          8.355
Continuity Error (%) .....        -0.026

***************************
Time-Step Critical Elements
***************************
None

********************************
Highest Flow Instability Indexes
********************************
Link 125 (2)
Link 11 (1)

*************************
Routing Time Step Summary
*************************
Minimum Time Step           :     0.04 sec
Average Time Step           :     1.00 sec
Maximum Time Step           :     1.00 sec
Percent in Steady State     :     0.21
Average Iterations per Step :     2.02
Percent Not Converging      :     0.18
Time Step Frequencies       :
    1.000 -  0.871 sec      :    99.53 %
    0.871 -  0.758 sec      :     0.13 %
    0.758 -  0.660 sec      :     0.10 %
    0.660 -  0.574 sec      :     0.19 %
    0.574 -  0.500 sec      :     0.05 %
```

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
D-16	5.12	0.00	0.00	1.40	0.00	3.68	3.68	0.60	29.71	0.719
D-10	5.12	0.00	0.00	0.00	5.13	0.00	5.13	0.07	3.84	1.003
D-17	5.12	0.00	0.00	1.39	0.00	3.69	3.69	0.21	14.53	0.721
D-19	5.12	0.00	0.00	1.39	0.00	3.69	3.69	0.04	2.67	0.721
D-2A	5.12	0.00	0.00	1.69	0.00	3.39	3.39	0.63	33.90	0.662
D-4A	5.12	0.00	0.00	1.39	0.00	3.69	3.69	0.32	21.69	0.721
D-7	5.12	0.00	0.00	0.00	5.13	0.00	5.13	0.15	8.16	1.003
D-8	5.12	0.00	0.00	0.00	5.13	0.00	5.13	0.07	3.90	1.003
D-9	5.12	0.00	0.00	0.00	5.13	0.00	5.13	0.04	2.39	1.003
D-36B	5.12	0.00	0.00	1.40	0.00	3.68	3.68	2.49	124.50	0.719
D-36A	5.12	0.00	0.00	1.40	0.00	3.68	3.68	1.09	49.52	0.718
D-36C	5.12	0.00	0.00	1.40	0.00	3.68	3.68	1.63	89.74	0.719
D-2B	5.12	0.00	0.00	1.69	0.00	3.38	3.38	1.00	48.82	0.661

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days	hr:min	Reported Max Depth Feet
S-2	JUNCTION	0.67	16.13	702.38	0	12:23	16.12
S-4A	JUNCTION	0.12	9.59	702.93	0	12:12	3.78
S-5	JUNCTION	0.12	7.50	699.51	0	12:12	5.11
S-6	JUNCTION	0.02	3.20	698.91	0	12:13	2.60
S-7	JUNCTION	0.26	5.09	699.18	0	12:13	5.08
S-8	JUNCTION	0.08	3.58	698.31	0	12:19	3.58
S-9	JUNCTION	2.21	13.80	698.37	0	12:20	13.79
S-10	JUNCTION	0.14	6.08	697.98	0	12:22	6.07
S-11	JUNCTION	1.12	12.07	697.74	0	12:20	12.06
S-12	JUNCTION	0.61	11.08	697.26	0	12:13	10.92

S-13	JUNCTION	1.18	11.03	696.60	0	12:13	10.96
S-14	JUNCTION	0.80	9.88	695.76	0	12:20	9.87
S-15	JUNCTION	0.83	9.88	697.40	0	12:25	9.88
S-16	JUNCTION	0.37	10.70	707.96	0	12:33	10.70
S-17	JUNCTION	0.66	3.03	698.49	0	12:12	3.03
S-18	JUNCTION	1.21	2.97	697.57	0	12:12	2.97
S-19	JUNCTION	0.38	3.86	694.84	0	12:12	3.60
S-20	JUNCTION	0.59	7.99	693.97	0	12:14	7.94
S-36	JUNCTION	0.13	2.06	711.06	0	12:15	2.05
S-5_12	JUNCTION	0.13	10.29	701.36	0	12:12	6.04
S-12.1	JUNCTION	0.21	10.78	699.61	0	12:12	8.28
S-12.2	JUNCTION	0.23	9.56	698.03	0	12:12	8.64
S12.3	JUNCTION	0.20	9.29	697.59	0	12:13	8.80
S-12.3-12	JUNCTION	0.41	10.83	697.39	0	12:13	10.54
S-36C	JUNCTION	0.17	1.66	779.26	0	12:15	1.65
S-36B	JUNCTION	0.21	2.17	757.97	0	12:13	2.17
S-2A	JUNCTION	0.26	2.26	702.46	0	12:22	2.26
S-2B	JUNCTION	0.13	1.29	712.19	0	12:14	1.29
1	OUTFALL	0.00	0.00	690.00	0	00:00	0.00
2	STORAGE	10.30	14.12	685.12	2	00:00	14.12

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
S-2	JUNCTION	0.00	61.76	0 12:14	0	1.62	-0.274
S-4A	JUNCTION	21.69	21.69	0 12:12	0.321	0.321	0.339
S-5	JUNCTION	0.00	21.08	0 12:11	0	0.32	-0.393
S-6	JUNCTION	0.00	1.66	0 12:13	0	0.000872	0.519
S-7	JUNCTION	8.16	8.16	0 12:12	0.152	0.152	0.187
S-8	JUNCTION	3.90	3.90	0 12:12	0.0711	0.072	0.333
S-9	JUNCTION	2.39	51.03	0 12:16	0.0446	1.83	-0.011
S-10	JUNCTION	3.84	10.12	0 12:14	0.0711	0.156	-0.164
S-11	JUNCTION	0.00	52.72	0 12:29	0	1.97	0.024
S-12	JUNCTION	0.00	59.28	0 12:18	0	2.43	-0.018
S-13	JUNCTION	0.00	59.28	0 12:17	0	2.29	0.068

S-14	JUNCTION	0.00	107.61	0	12:26	0	5.84	-0.003
S-15	JUNCTION	0.00	53.90	0	12:52	0	3.55	0.004
S-16	JUNCTION	29.71	246.72	0	12:14	0.6	5.84	0.382
S-17	JUNCTION	14.53	14.53	0	12:12	0.212	0.212	0.031
S-18	JUNCTION	0.00	14.53	0	12:12	0	0.212	0.060
S-19	JUNCTION	2.67	17.20	0	12:12	0.0381	0.25	0.012
S-20	JUNCTION	0.00	113.19	0	12:15	0	6.09	0.003
S-36	JUNCTION	49.52	225.18	0	12:13	1.09	5.21	-0.436
S-5_12	JUNCTION	0.00	21.22	0	12:12	0	0.321	-0.163
S-12.1	JUNCTION	0.00	21.50	0	12:12	0	0.323	-0.049
S-12.2	JUNCTION	0.00	21.50	0	12:12	0	0.325	-0.032
S12.3	JUNCTION	0.00	21.49	0	12:12	0	0.327	-0.058
S-12.3-12	JUNCTION	0.00	21.47	0	12:12	0	0.462	-0.004
S-36C	JUNCTION	89.74	89.74	0	12:12	1.63	1.63	-0.012
S-36B	JUNCTION	124.50	124.50	0	12:12	2.49	2.49	-0.007
S-2A	JUNCTION	33.90	72.73	0	12:12	0.627	1.63	0.570
S-2B	JUNCTION	48.82	48.82	0	12:12	1	1	-0.345
1	OUTFALL	0.00	0.00	0	00:00	0	0	0.000 gal
2	STORAGE	0.00	168.25	0	12:27	0	8.35	0.001

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Feet	Min. Depth Below Rim Feet
S-4A	JUNCTION	0.43	6.594	5.406
S-5	JUNCTION	0.47	3.350	0.000
S-6	JUNCTION	0.50	2.200	0.000
S-11	JUNCTION	0.77	4.966	3.584
S-12	JUNCTION	1.35	7.584	5.166
S-13	JUNCTION	1.46	7.530	4.870
S-14	JUNCTION	1.30	6.006	6.464
S-15	JUNCTION	1.03	4.387	4.213
S-17	JUNCTION	0.15	0.882	1.668
S-20	JUNCTION	1.28	4.492	2.008
S-5_12	JUNCTION	0.51	5.787	0.000
S-12.1	JUNCTION	0.67	6.275	6.065

S-12.2	JUNCTION	1.01	6.564	8.416
S12.3	JUNCTION	0.83	5.293	5.637
S-12.3-12	JUNCTION	1.23	6.825	0.000

****
Node Flooding Summary
****

Flooding refers to all water that overflows a node, whether it ponds or not.

Node	Hours Flooded	Maximum Rate CFS	Time of Max Occurrence days hr:min	Total Flood Volume 10^6 gal	Maximum Ponded Depth Feet
S-5	0.01	6.45	0 12:12	0.000	0.000
S-6	0.01	1.58	0 12:13	0.000	0.000
S-10	0.51	10.12	0 12:14	0.020	1.277

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
2	795.532	26	0	0	1116.438	37	2 00:00	0.00

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
1	0.00	0.00	0.00	0.000
System	0.00	0.00	0.00	0.000

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days	hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
2	CONDUIT	46.03	0	12:27	6.51	4.76	1.00
4	CONDUIT	21.08	0	12:11	5.64	0.74	1.00
5	CONDUIT	21.22	0	12:12	6.38	0.26	1.00
6	CONDUIT	1.66	0	12:13	2.18	0.78	1.00
7	CONDUIT	6.16	0	12:10	7.84	1.18	1.00
8	CONDUIT	2.97	0	12:09	4.34	0.72	1.00
9	CONDUIT	49.61	0	12:16	7.02	1.64	1.00
10	CONDUIT	7.38	0	12:42	9.40	2.51	1.00
11	CONDUIT	52.72	0	12:29	7.46	1.14	1.00
12	CONDUIT	59.28	0	12:17	6.16	0.97	1.00
13	CONDUIT	59.29	0	12:17	6.16	1.07	1.00
14	CONDUIT	107.61	0	12:26	11.18	4.36	1.00
15	CONDUIT	53.90	0	12:52	17.16	2.71	1.00
16	CONDUIT	53.90	0	12:52	17.16	1.38	1.00
17	CONDUIT	14.53	0	12:12	8.24	9.68	0.99
18	CONDUIT	14.53	0	12:12	8.32	2.32	0.96
19	CONDUIT	17.08	0	12:12	9.66	0.46	1.00
32	CONDUIT	221.90	0	12:15	5.34	0.04	0.59
38	CONDUIT	113.19	0	12:15	11.95	4.18	0.96
39	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
121	CONDUIT	21.50	0	12:12	3.70	0.14	1.00
122	CONDUIT	21.50	0	12:12	3.28	0.52	1.00
123	CONDUIT	21.49	0	12:12	4.13	0.72	1.00
124	CONDUIT	21.47	0	12:12	1.90	0.11	1.00
125	CONDUIT	21.69	0	12:12	3.07	0.27	1.00
S-36RoutingC	CONDUIT	69.67	0	12:15	7.23	0.61	0.83
S-36RoutingB	CONDUIT	112.05	0	12:13	8.52	0.68	0.87
S-2Routing	CONDUIT	61.76	0	12:14	3.86	0.38	0.86
S-2ARouting	CONDUIT	42.45	0	12:14	2.42	0.31	0.82
16-Add	CONDUIT	57.72	0	12:33	11.85	2.80	0.97
S-9_overflow	WEIR	1.93	0	12:20			0.60
S-8_overflow	WEIR	0.00	0	00:00			0.00

S-7_overflow WEIR 3.49 0 12:13 0.55

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
		---------- Fraction of Time in Flow Class ----------								
2	1.00	0.03	0.04	0.00	0.93	0.00	0.00	0.00	0.46	0.00
4	1.00	0.15	0.00	0.00	0.01	0.00	0.00	0.84	0.00	0.00
5	1.00	0.15	0.00	0.00	0.52	0.33	0.00	0.00	0.00	0.00
6	1.00	0.00	0.92	0.00	0.07	0.00	0.00	0.00	0.73	0.00
7	1.00	0.01	0.00	0.00	0.02	0.00	0.00	0.96	0.01	0.00
8	1.00	0.00	0.00	0.00	0.03	0.12	0.00	0.85	0.13	0.00
9	1.00	0.00	0.02	0.00	0.98	0.00	0.00	0.00	0.01	0.00
10	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.00	0.00
11	1.00	0.00	0.03	0.00	0.96	0.00	0.00	0.00	0.00	0.00
12	1.00	0.04	0.00	0.00	0.96	0.00	0.00	0.00	0.03	0.00
13	1.00	0.04	0.03	0.00	0.41	0.00	0.53	0.00	0.00	0.00
14	1.00	0.06	0.00	0.00	0.94	0.00	0.00	0.00	0.40	0.00
15	1.00	0.16	0.00	0.00	0.03	0.00	0.00	0.81	0.00	0.00
16	1.00	0.15	0.00	0.00	0.02	0.00	0.00	0.83	0.00	0.00
17	1.00	0.15	0.00	0.00	0.00	0.00	0.00	0.84	0.00	0.00
18	1.00	0.16	0.00	0.00	0.00	0.00	0.00	0.84	0.00	0.00
19	1.00	0.06	0.50	0.00	0.43	0.00	0.00	0.00	0.83	0.00
32	1.00	0.15	0.00	0.00	0.03	0.00	0.00	0.83	0.02	0.00
38	1.00	0.06	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.00
39	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
121	1.00	0.57	0.00	0.00	0.42	0.00	0.00	0.00	0.83	0.00
122	1.00	0.15	0.43	0.00	0.43	0.00	0.00	0.00	0.81	0.00
123	1.00	0.15	0.00	0.00	0.72	0.14	0.00	0.00	0.42	0.00
124	1.00	0.15	0.00	0.00	0.82	0.04	0.00	0.00	0.39	0.00
125	1.00	0.04	0.54	0.00	0.43	0.00	0.00	0.00	0.53	0.00
S-36RoutingC	1.00	0.15	0.00	0.00	0.00	0.00	0.00	0.85	0.00	0.00
S-36RoutingB	1.00	0.15	0.00	0.00	0.00	0.00	0.00	0.85	0.00	0.00
S-2Routing	1.00	0.16	0.00	0.00	0.01	0.00	0.00	0.83	0.00	0.00
S-2ARouting	1.00	0.16	0.00	0.00	0.84	0.00	0.00	0.00	0.83	0.00
16-Add	1.00	0.15	0.00	0.00	0.00	0.00	0.00	0.85	0.00	0.00

****
Conduit Surcharge Summary
****

Conduit	Hours Full: Both Ends	Hours Full: Upstream	Hours Full: Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
2	1.46	1.46	1.47	1.39	1.38
4	0.43	0.43	0.47	0.01	0.01
5	0.52	0.52	0.57	0.01	0.01
6	0.50	0.50	0.57	0.01	0.01
7	0.63	0.63	0.97	0.06	0.06
8	0.57	0.57	0.77	0.01	0.01
9	1.54	1.54	1.69	0.56	0.57
10	0.75	0.78	0.77	0.61	0.48
11	1.44	1.44	1.69	0.44	0.01
12	1.35	1.35	1.46	0.01	0.01
13	1.30	1.30	1.46	0.36	0.01
14	1.28	1.35	1.28	1.91	1.28
15	1.32	1.40	1.32	1.61	1.32
16	1.25	1.25	1.28	1.28	1.25
17	0.01	0.15	0.01	0.90	0.01
18	0.01	0.06	0.01	0.21	0.01
19	0.55	0.55	3.70	0.01	0.01
38	0.01	1.28	0.01	1.84	0.01
121	0.51	0.51	0.67	0.01	0.01
122	0.92	0.92	1.01	0.01	0.01
123	1.01	1.01	1.05	0.01	0.01
124	0.83	0.83	1.23	0.01	0.01
125	1.37	1.37	1.44	0.01	0.01
S-2ARouting	0.01	0.01	0.32	0.01	0.01
16-Add	0.01	1.23	0.01	1.25	0.01

Analysis begun on: Wed Oct 6 22:15:13 2021
Analysis ended on: Wed Oct 6 22:15:18 2021
Total elapsed time: 00:00:05

ATTACHMENT A-6.2

SURFACE WATER DIVERSION BERM ANALYSIS

CALCULATION SHEET
Client: US Ecology - Wayne Disposal
Project: 2021 WDI Permit Modification Application
Calculation: Surface Water Diversion Berm Analysis

Project No.: 1218070017
Calculated By: LEH Date: 10/08/2021
Checked By: TCR Date: 10/08/2021
Approved By: XZ Date: 10/08/2021

Surface Water Diversion Berm Analysis

Objective

Design the diversion berms to collect and route surface water run-off from landfill slopes to downslope channels. Diversion berms are designed to a depth and slope to provide sufficient capacity and to minimize flow velocity.

Design Criteria, Assumptions, and Methodology

1. Diversion berm locations are shown on the Figure provided in Attachment A-6.1.5.
2. Diversion berms will collect and control flow from the 25-yr, 24-hr storm event with a minimum of 0.5 ft of freeboard. The berms will manage flow from the 100-yr, 24-hr storm event with no offsite flooding.
3. Diversion berms will be spaced a maximum of approximately 50 vertical feet.
4. Diversion berm slopes will typically be sloped at 2 percent, but will vary at certain locations due to site conditions.
5. Diversion berm channels will be triangular in shape.
6. Diversion berm channel sideslopes will be a maximum of 4H:1V on the landfill side and 2H:1V on the exterior of the berm. The interior-side channel slope will vary depending on the final cover slope. Conservatively use the typical maximum slope for the diversion berms modeled.
7. Diversion berms will be grass lined. Diversion berm locations where the velocity is calculated to exceed 5.0 feet/second ("ft/sec") will be provided with additional erosion control measures.
8. The design of the diversion berms is based on the berms at each slope with largest drainage area. This will result in a standard berm sized for the maximum design flow for each channel slope. Unique diversion berm locations and configurations are also modeled.

Calculation

The critical diversion berms considered in this analysis are as follows:

- DB-12, Berm at 4.3% slope with the largest immediate drainage area.
- DB-34, Berm at 1% slope with largest immediate drainage area.
- DB-36, Berm at 2% slope with largest flow due to inflow channel.
- DB-37, Berm at 2% slope with largest immediate drainage area.
- DB-42, Berm with unique drainage configuration.
- DB-44, Berm at 5.4% slope with the largest immediate drainage area.
- DB-46, Berm with unique drainage configuration.
- W-MC X DV, existing berm with unique drainage configuration.
- E-MC X DV, existing berm with unique drainage configuration.
- S-MC X DV, existing berm with unique drainage configuration.

Diversion berm designs are based on the HydroCAD model output provided in Attachment A-6.1.5. Diversion berm designs are summarized in Table A-6.2.1 below.

Conclusion

The proposed diversion berms, described above, will safely collect and control the design storm event. Diversion berm locations and cross sections may be modified depending on site conditions at closure, as long as design requirements are met.

CALCULATION SHEET
Client: US Ecology - Wayne Disposal
Project: 2021 WDI Permit Modification Application
Calculation: Surface Water Diversion Berm Analysis

Project No.: 1218070017
Calculated By: LEH Date: 10/08/2021
Checked By: TCR Date: 10/08/2021
Approved By: XZ Date: 10/08/2021

Table A-6.2.1: Diversion Berm Summary

Diversion Berm Modeled	Additional Diversion Berms Represented in Design	Diversion Berm Design					Peak Flow (25-yr, 24-hr Storm)		
		Watershed Drainage Area (ac.)	Design Slope (%)	Channel Sideslopes <Max> (H:V)	Design Depth (ft)	Channel Lining	Flow Rate (cfs)	Flow Depth (ft)	Flow Velocity (ft/sec)
DB-12	DB-2; See note 3.	1.8	4.3%	4:1 / 2:1	2.0	TRM	8.4	0.69	5.80
DB-37	DB-1 thru 33, DB-35, and DB-38 thru 41	9.1	2.0%	4:1 / 2:1	2.0	TRM	23.8	1.17	5.66
DB-34	DB-43, DB-45, DB-12, and DB-2; See Note 3.	7.4	1.0%	4:1 / 2:1	2.0	Grass	32.56	1.30	4.28
DB-36	--	18.7	2.0%	4:1 / 2:1	2.5	TRM	75.2	1.77	7.46
DB-42	--	2.0	1.0%	4:1 / 2:1	2.0	Grass	9.2	0.90	3.37
DB-44	--	1.6	5.4%	4:1 / 2:1	2.0	TRM	4.3	0.51	5.36
DB-46	--	10.5	1.0%	10:1 / 3:1	2.0	Grass (existing)	24.0	1.00	3.70
W-MC X DV	--	13.8	Varies (0.5% min)	3:1 / 8:1	2.0	Grass (existing)	38.3	1.37	3.22
E-MC X DV	--	12.1	1.0%	3:1 / 3:1	2.0	Grass (existing)	35.6	1.49	4.71
S-MC XI DV	--	2.2	1.8%	6:1 / 2:1	1.5	Grass (existing)	6.9	0.66	3.70

Notes:
1. All diversion channels are triangular in shape and formed by the construction of a berm on the final cover grades.
2. Diversion berms that manage flows at a velocity of less than 5 fps will be grass lined. When the flow velocity is greater than 5 fps, permanent turf reinforcement mat (TRM) or other erosion control measures will be implemented.
3. The DB-12 analysis applies to the portions of DB-12 and DB-2 at 4.3% slope. The DB-34 analysis applies to the portions of DB-12 and DB-2 at 1.0% slope.
4. Diversion berm locations, cross section, and slopes may be modified based on site conditions at time of construction, as long as design requirements are met.

ATTACHMENT A-6.3

SURFACE WATER DOWNSLOPE CHANNEL ANALYSIS

CALCULATION SHEET
Client: US Ecology - Wayne Disposal
Project: 2021 WDI Permit Modification Application
Calculation: Surface Water Downslope Channel Analysis

Project No.: 1218070017
Calculated By: LEH Date: 10/08/2021
Checked By: TCR Date: 10/08/2021
Approved By: XZ Date: 10/08/2021

Surface Water Downslope Channel Analysis

Objective

Design downslope channels and related outlet energy dissipators to convey surface water run-off from diversion berms down the steeper landfill sideslopes.

Design Criteria, Assumptions, and Methodology

1. Downslope channel locations are shown on the Figure provided in Attachment A-6.1.4.
2. Downslope channels will collect and control run-off from the 25-yr, 24-hr storm event and manage run-off from the 100-yr, 24-hr storm event with no offsite flooding.
3. Downslope channels will provide erosion protection at peak design flow.
4. Energy dissipators at the outlet of each downslope channel will be designed to safely manage peak design flows without damage to the dissipator or receiving ditch.
5. Except for DS-5, downslope channels will be created by constructing two berms on top of the final cover or other means that preserve the minimum cover thickness and other final cover design requirements in the area of the downslope channels. Downslope channel DS-5 is located in a topographic valley, so no additional berms are needed.
6. Downslope channels DS-1 through DS-4, and DS-6 are assumed to be trapezoidal in shape with 2H:1V sideslopes and a bottom width of 10 ft. Downslope channel DS-5 is a triangular channel with 5.7H:1V sideslopes.
7. Cable concrete will be used for erosion protection in downslope channels DS-1 through DS-5. Erosion protection in downslope channel DS-6 will be riprap with a 12” D50.

Calculation

The downslope channels were evaluated based on the configuration and erosion protection stated above. Key downslope channel parameters are summarized in Table A-6.3.1, below.

CALCULATION SHEET
Client: US Ecology - Wayne Disposal
Project: 2021 WDI Permit Modification Application
Calculation: Surface Water Downslope Channel Analysis

Project No.: 1218070017
Calculated By: LEH Date: 10/08/2021
Checked By: TCR Date: 10/08/2021
Approved By: XZ Date: 10/08/2021

Table A-6.3.1: Downslope Channel and Energy Dissipator Design Summary

Downslope Channel Label	Watershed Area	Design Slope (See Note 1)	25-yr, 24-hr Storm		
			Peak Flow Rate (cfs)	Flow Depth (ft)	Flow Velocity (ft/sec)
DS-1	35.9 ac	25.0% / 33.0%	128.9	0.58	16.60
DS-2	21.2ac	25.0% / 33.0%	80.8	0.49	14.86
DS-3	32.2 ac	25.0%	120.5	0.62	17.09
DS-4	39.4 ac	25.0%	109.2	0.59	16.59
DS-5	7.7 ac	17.0%	36.2	0.76	10.94
DS-6	2.6 ac	33.0%	11.6	0.26	4.26

Notes:

1. Downslope Channels DS-1 and DS-2 transition from a 25% slope to a 33% slope as they cross the final cover bench.

Conclusion

The proposed downslope channels, described above, will safely collect and control the design storm event. Downslope channel locations, cross sections, and lining material may be modified depending on site conditions at closure, as long as design requirements are met.

ATTACHMENT A-6.4

SURFACE WATER DITCH ANALYSIS

CALCULATION SHEET
Client: US Ecology - Wayne Disposal
Project: 2021 WDI Permit Modification Application
Calculation: Surface Water Ditch Analysis
Project No.: 1218070017
Calculated By: LEH Date: 10/08/2021
Checked By: TCR Date: 10/08/2021
Approved By: XZ Date: 10/08/2021

Surface Water Ditch Analysis

Objective

Design ditches to convey surface water run-off at the site.

Design Criteria, Assumptions, and Methodology

1. Ditch locations are shown on the Figure provided in Attachment A-6.1.4.
2. Ditch labels describe the ditch location with respect to the Master Cell (MC) locations.
3. Ditches will collect and control the run-off from the 25-yr, 24-hr storm event and manage run-off from the 100-yr, 24-hr storm event with no offsite flooding.
4. Ditch cross section and slopes will vary depending on the location within the site.
5. Ditches will be vegetated.
6. Erosion protection will be provided, as needed, at:
   a. Energy dissipator outlets,
   b. Locations where the ditch changes directions,
   c. Locations where the maximum flow velocity is greater than 5.0 fps, and
   d. Culvert inlet and outlet locations.
7. Ditch label typically indicates the location, e.g., ditch MC VII/XI is located between MC VII and MC XI.
8. Ditches that are restricted by downstream culverts are modeled as ponds to account for water storage during storm events. This affects the following ditches:
   a. NWD restricted by culvert NWD/MC VII Culvert,
   b. MC VII/XI ditch restricted by culvert MC VII/XI,
   c. MC VII/IX and MC X/XI ditches restricted by culvert MC VII/IX
9. All but two of the ditches are existing on-site ditches. Only ditches S-MC VI and N-MC VI are new proposed ditches. Some ditches include grading modifications in the form of containment berms, as shown in the drawings.

Calculation

Ditch design is based on the HydroCAD model output provided in Attachment A-6.1.5. Ditch designs are summarized in Table A-6.4.1 below. Ditches along the perimeter of the site that need to maintain containment on the outbound edge of the site have a minimum containment berm elevation identified in the table.

Conclusion

The proposed ditches, described above and in the table below, will safely transmit the design storm event. Ditch cross sections and slopes may be modified depending on site conditions at closure as long as design requirements are met.

CALCULATION SHEET
Client: US Ecology - Wayne Disposal
Project: 2021 WDI Permit Modification Application
Calculation: Surface Water Ditch Analysis

Project No.: 1218070017
Calculated By: LEH Date: 10/08/2021
Checked By: TCR Date: 10/08/2021
Approved By: XZ Date: 10/08/2021

Table A-6.4.1: Ditch Design Summary

Drainage Ditch Label	Channel Design							Peak Flow (25-yr, 24-hr)			
	Design Slope (%)	Channel Shape	Channel Sideslopes (H:V)	Req. Berm Elev. (ft)	Channel Bottom Width (ft)	Design Depth <Min.> (ft)	Channel Lining	Flow Rate (cfs)	Flow Depth (ft)	Peak Elev. (ft)	Flow Velocity (ft/sec)
North Sedimentation Basin (NSB) Subwatershed											
NWD (north & west of MC IV and VI) -Modeled as pond	Varies	Trapezoidal	2:1	712.0	Varies	Varies	Grass	366.8	5.9 (max)	710.2	NA
N-MC VII	0.2%	Trapezoidal	2:1	--	24.0	3.0	Grass	62.8	0.97	--	2.42
MC VII/XI -Modeled as pond	Varies	Triangular	2:1	707.0 (spillway)	--	Varies	Grass	60.1	7.1 (max)	707.1	NA
MC X/XI and MC VII/IX Modeled as pond	Varies	Trapezoidal	2:1	706.0	Varies	Varies	Grass	197.2	4.4 (max)	702.4	NA
N-MC IX	0.04%	Trapezoidal	2:1	--	22.0	5.0	Grass	123.1	2.37	--	1.90
NE-MC IX	0.14%	Trapezoidal	2:1	--	33.0	5.6	Grass	125.6	1.36	--	2.55
E-MC IX	0.68%	Trapezoidal	2.6:1 / 20:1	--	3.0	2.5	Grass	53.7	1.04	--	3.40
South Sedimentation Basin (SSB) Subwatershed											
E-MC X	0.25%	Triangular	5:1 / 5:1	--	--	3.0	Grass	26.6	1.26	--	1.81
S-MC X	0.27%	Triangular	1:1 / 2:1	--	--	4.0	Grass	23.3	2.07	--	2.77
W- MC X	0.24%	Trapezoidal	3:1 / 2:1	--	6.0	4.0	Grass	22.3	1.02	--	2.42
E-MC I	0.41%	Triangular	3:1	--	--	3.0	Grass	36.3	1.86	--	3.49
MC VI/XI	1.0%	Trapezoidal	4:1	--	6.0	4.0	TRM	151.8	1.79	--	6.44
S-MC VI	3.8%	Triangular	4:1	--	--	2.0	TRM	61.2	1.32	--	8.62
N-MC VI	2.7%	Triangular	37.4:1	--	--	1.0	TRM	62.5	0.61	--	4.42

Notes:

1. Ditches modeled as ponds do not include flow velocity.
2. Ditch slopes that vary are, at a minimum, sloped to drain.
3. Ditches that manage flows at a velocity of less than 5 fps will be grass lined. When the flow velocity is greater than 5 fps permanent turf reinforcement mat (TRM) or other erosion control measures will be implemented.
4. Ditch configuration may be changed as long as design criteria are met.

ATTACHMENT A-6.5

CULVERT ANALYSIS

CALCULATION SHEET

Client: US Ecology - Wayne Disposal	Project No.: 1218070017	
Project: 2021 WDI Permit Modification Application	Calculated By: LEH	Date: 10/08/2021
Calculation: Culvert Analysis	Checked By: TCR	Date: 10/08/2021
	Approved By: XZ	Date: 10/08/2021

Culvert Analysis

Objective

Analyze existing culverts to remain in place and proposed culverts for final cover conditions to convey surface water through ditches and into sedimentation basins.

Design Criteria, Assumptions, and Methodology

1. This analysis is primarily of existing culvert pipes, changes from existing conditions are noted.
2. Culvert locations are shown on the Figure provided in Attachment A-6.1.4.
3. Culvert labels describe the ditch location with respect to the Master Cell (MC) locations.
4. South Sedimentation Basin storm sewer pipes and inlets are addressed in Appendix A-6.6.
5. Culverts will collect and control flow from the 25-yr, 24-hr storm event and manage run-off from the 100-yr, 24-hr storm event with no offsite flooding.
6. Culverts will consist or Reinforced Concrete Pipe (RCP), Corrugated Metal Pipe (CMP), or Smooth Lined Corrugated HDPE Pipe (CPP). A Manning's No. of 0.012 is used to represent RCP and CPP, while a value of 0.025 is used to represent CMP.
7. The tailwater depth input for each culvert was based on the downstream channel flow depth for the design storm event.
8. Riprap or other materials, such as permanent turf reinforcement mat, will be used at culvert inlets and outlets.
9. Alternate culvert pipe materials, sizes, and configurations that meet design criteria may be used.
10. Culverts NW-MC VII, MC VII/IX, and E-MC VI/XI restrict flow, and are modeled as ponds to account for water storage during storm events.

Calculation

Culvert design is based on the HydroCAD model output provided in Attachment A-6.1.5. Culvert designs are summarized in Table A-6.5.1 below.

Conclusion

The culverts described in the table below, will safely transmit the design storm event. Alternate culvert slopes, materials, and dimensions that meet design requirements may be used.

CALCULATION SHEET
Client: US Ecology - Wayne Disposal
Project: 2021 WDI Permit Modification Application
Calculation: Culvert Analysis

Project No.: 1218070017
Calculated By: LEH Date: 10/08/2021
Checked By: TCR Date: 10/08/2021
Approved By: XZ Date: 10/08/2021

Table A-6.5.2
Culvert Summary

Culvert Label (new/existing)	Number and Type of Culvert	Min. Pipe Dia. (in.)	Design Slope (%)	Approx. Design Length (ft)	Approx. Inlet Invert Elev. (ft)	Total Watershed Area (ac.)	Peak Flow Rate <25-yr, 24-hr> (cfs)	Head-water Elev. (ft)
North Sedimentation Basin (NSB) Watershed								
NWD / MC VII (see note 1)	2/CPP 2/CPP	12” 18”	4.24	125.0	704.3	120.0	44.48	710.23
N-MC VII (existing)	1/RCP 1/RCP	54” 36”	0.38	42	696.8	128.0	60.68	699.89
MC VII/IX (existing)	3/CMP	24”	0.33	30	697.1	94.8	62.08	702.4
MC VII/XI (existing see note 3)	1/RCP	24”	2.25	40	700.3	22.9	30.71	707.14
NSB North Inlet (existing)	1/RCP 3/CMP	54” 30”	4.05 0.0	110.0	695.0	239.4	124.53	698.30
E-MC IX (existing)	1/CPP	36”	3.65	72	701.8	12.1	30.87	704.16
NSB South Inlet (New)	3/CPP	30”	0.91	110	695.0	22.3	52.37	697.13
South Sedimentation Basin (SSB) Watershed								
E-MC I (new, see note 4)	1/CCP	24”	0.25	80	703.0	3.1	6.97	705.44
SSB East Inlet (existing)	1/RCP	30”	0.00	113	688.0	13.8	21.03	690.92

Notes:
1. Culvert MC VII to include existing and proposed pipes. Two existing 12-inch CMP culvert pipes to be removed and replaced with two 18” CCP culvert pipes).
2. Culvert MC X/XI was not modeled due to the location upstream of the restrictive MC VII/IX culvert.
3. Under existing conditions at culvert MC VII/XI, if the upstream ditch overtops containment berm, the flow will route to the same location as the culvert output. This is an acceptable flow path, the model indicates the overflow velocity is less than 2 fps, therefore vegetation will prevent erosion.
4. The existing culvert for the access road to MC I will be replaced with the designed culvert.
5. Alternate culvert pipe materials, sizes, and configurations that meet design criteria may be used.

ATTACHMENT A-6.6

STORM SEWER ANALYSIS

CALCULATION SHEET
Client: US Ecology - Wayne Disposal
Project: 2021 WDI Permit Modification Application
Calculation: Storm Sewer Analysis

Project No.: 1218070017
Calculated By: TCR Date: 10/08/2021
Checked By: WL Date: 10/08/2021
Approved By: XZ Date: 10/08/2021

Storm Sewer Analysis

Objective

Evaluate the capacity of the existing South Sedimentation Basin (SSB) storm sewer to collect and control the design storm event under final closure conditions.

Design Criteria, Assumptions, and Methodology

1. Storm Sewer routes surface water run-off to the SSB. The layout is shown on the Figure provided in Attachment A-6.1.4.
2. The storm sewer will collect and control run-off from the 25-yr, 24-hr storm event and manage the 100-yr, 24-hr storm event with no offsite flooding.
3. The existing storm sewer layout is reflected in the “Storm Water Management System Evaluation Report” prepared by CTI, Revised February 2021. Changes to the existing storm sewer layout are identified below.
4. Grading as shown in the drawings.

Calculation

The existing storm sewer includes revisions to accommodate the surface water flows from the expansion. The changes include the following:

A. S-1 Inlet: Remove the existing inlet
B. S-3 Inlet: Remove the existing inlet
C. S-4A Inlet: Extend the existing S-4 inlet vertically to new design grades.
D. Install a new 30-inch storm sewer pipe from the S-16 inlet location to the SSB. Inlet invert 697.26, slope 0.25% minimum. Alternate configuration, piping, or channels with sufficient flow capacity may be used.

The SWMM model was used to evaluate the revised storm sewer system for final cover conditions. SWMM model inputs and outputs are provided in Attachment A-6.1.5. A summary of flooding output is provided in Table A-6.6.1 below.

Conclusion

The revised storm sewer will safely collect and control the 25-yr, 24-hour storm event with no flooding and will manage the 100-yr, 24-hr storm event with no offsite flooding.

CALCULATION SHEET
Client: US Ecology - Wayne Disposal
Project: 2021 WDI Permit Modification Application
Calculation: Storm Sewer Analysis

Project No.: 1218070017
Calculated By: TCR Date: 10/08/2021
Checked By: WL Date: 10/08/2021
Approved By: XZ Date: 10/08/2021

Table A-6.6.1: Storm Sewer Summary 100-yr, 24-hr Flooding/Overflow

Junction	Description	Drainage Area	Flooding Depth	Comments
S-5, & S-6	Manholes	MC-1 and Expansion	None	Incidental volume, does not exceed manhole.
S-10	Drop Inlet	Site Entrance Area	1.28 ft (20,000 gal)	Flood volume will be contained within S-10 inlet drainage area, See Note 1.

Notes:

1. Flooding at S-10 up to approximately elev. 698.4 (1.7 ft above inlet) will remain on-site within the S-10 drainage area. The flooding depth at S-10 is based on a 2,100 sf area to model increased storage depths in the area of S-10. At elev. 698.4, there is approx. 3,670 cf (27,450 gal) of surface water storage in the area of S-10.

ATTACHMENT A-6.7

SEDIMENTATION BASIN ANALYSIS

CALCULATION SHEET
Client: US Ecology - Wayne Disposal
Project: 2021 WDI Permit Modification Application
Calculation: Sedimentation Basin Analysis

Project No.: 1218070017
Calculated By: LEH Date: 11/04/2021
Checked By: TCR Date: 11/04/2021
Approved By: XZ Date: 11/04/2021

Sedimentation Basin Analysis

Objective

Evaluate the storage capacity of the existing North Sedimentation Basin (NSB) and South Sedimentation Basin (SSB) for final landfill cover conditions.

Design Criteria, Assumptions, and Methodology

1. The site includes three storm water sedimentation basins, NSB, SSB, and the Lined Pond. After a storm event, the NSB storm water is pumped to the SSB. The storm water in SSB and the Lined Pond are treated separately prior to discharge off-site.
2. The subwatershed draining to the existing EGLE approved Lined Pond and related storm sewer system is reduced under final conditions. Therefore, the Lined Pond has sufficient capacity for the design storm event, and revised calculations are not included herein.
3. At WDI the Sedimentation Basins are design to store the entire 100-yr, 24-hr storm event with no discharge off site. From Attachment A-6.1.1 the 100-yr, 24-hr storm rainfall is 5.12 inches.
4. Both NSB and SSB consist of two separate areas connected by a spillway for the NSB and culvert for the SSB. The NSB South area is divided into two parts by a berm within the basin. The spillway between NSB north and NSB south will be made deeper for final conditions, as shown in Attachment A-6.1.4.
5. From the HydroCAD output provided in Attachment A-6.1.5, the total design storm run-off volume is as follows:
    a. 77.97 ac-ft for the NSB, use 78.0 ac-ft
    b. 33.63 ac-ft for the SSB, use 33.6 ac-ft
6. The NSB and SSB locations are shown in Attachment A-6.1.4.

Calculation

Sedimentation basin volumes are estimated using topography and as-built data. Sedimentation Basin design information is summarized in Table A-6.7.1, below.

Conclusion

The North Sedimentation Basin (NSB) and the South Sedimentation Basin (SSB) have sufficient capacity to store the entire 100-yr, 24-hr design storm event with over 1 ft of freeboard.

CALCULATION SHEET

Client: US Ecology - Wayne Disposal
Project: 2021 WDI Permit Modification Application
Calculation: Sedimentation Basin Analysis

Project No.: 1218070017
Calculated By: LEH Date: 11/04/2021
Checked By: TCR Date: 11/04/2021
Approved By: XZ Date: 11/04/2021

Table A-6.7.1: Sedimentation Basin Design Summary
(at assumed final site conditions)

Location	NSB North	NSB South	SSB North	SSB South
Top of Berm (no freeboard) Elev.	695		695	
Basin Bottom Elev.	670	672/668	673	670
Pond Connection / Elev.	Spillway / 693.0		60” Dia. Culvert / 684	
Total Storage Volume Available (with 1-ft freeboard)	115.9 ac-ft		53.8 ac-ft	
100-yr, 24-hr Storm Run-off Vol.	78.0 ac-ft		33.6 ac-ft	

ATTACHMENT A-6.8

FINAL COVER DRAINAGE LAYER FLOW CAPACITY ANALYSIS

CALCULATION SHEET
Client: US Ecology - Wayne Disposal
Project: 2021 WDI Permit Modification Application
Calculation: Final Cover Drainage Layer Capacity Analysis

Project No.: 1218070017
Calculated By: TCR Date: 10/08/2021
Checked By: WL Date: 10/08/2021
Approved By: XZ Date: 10/08/2021

Final Cover Drainage Layer Capacity Analysis

Objective

Estimate the required drainage layer capacity of the geocomposite drainage layer component of the final cover for various slopes and slope lengths to minimize the buildup of pore water pressure within the cover system and maintain stability.

Design Criteria, Assumptions, and Methodology

1. The landfill has varying slopes for the final cover system. Maximum (25%), minimum (4%) and intermediate (7%) slopes are considered in this analysis.
2. The final cover soil, consistent with the HELP model analysis, is assumed to have a hydraulic conductivity of 2×10^{-4} cm/sec.
3. From Attachment A-6.1.1 the 100-yr, 1-hr storm rainfall is 2.66 inches.

Calculation

Using the methodology presented in References 2, 3, and 4:

1. Calculate the percolation rate to the geocomposite.

$$PERC = \mathrm{P}\left(1 - \mathrm{RC}\right)$$

Where:	PERC	=	Percolation rate of the storm event (m/hr)
	P	=	Probable Maximum (hourly) Precipitation
	RC	=	Runoff Coefficient, varies with site conditions, see Attachment A-6.8.1 obtained from Reference 3.

PERC =	$k_{\text{cover soil}}$;	when $P(1 - RC) > k_{\text{cover soil}}$
	$P(1 – RC)$;	when $P(1 – RC) \leq k_{\text{cover soil}}$

2. Calculate the required transmissivity, θ_{reqd}:

$$\theta_{\text{reqd}} = \frac{\text{PERC x (L)}}{(\sin \beta)}$$

Where:	θ_{reqd}	=	required transmissivity (m^2/sec)
	PERC	=	Infiltration or percolation rate (m/sec)
	L	=	Slope length (m)
	β	=	Slope angle

3. Calculate the allowable long term geocomposite transmissivity, θ_{all}, based on the design Factor of Safety, FS, and reduction factors.

$$\theta_{all} = \theta_{reqd} \text{ x } (RF_{CR} \text{ x } RF_{CC} \text{ x } RF_{BC}) \text{ x FS}$$

Where:
- θ_{all} = Allowable long term geocomposite transmissivity (m^2/sec)
- RF_{CR} = reduction factor for creep to account for long-term behavior, 1.1; (varies with stress; 1.1 to 1.2 for low stress (<50 kPa, 1,044 psf), up to 2 for higher pressures (> 700 kPa, 14,619 psf) (Reference 4)
- RF_{CC} = reduction factor for chemical clogging, 1.2; typically 1.0 to 1.2 for landfill covers (Reference 4)
- RF_{BC} = reduction factor for biological clogging, 3.0; typically 1.2 to 3.5 for landfill covers (Reference 4)

A spreadsheet, utilizing the above methodology, is used to solve the calculations for the allowable long term geocomposite transmissivity using assumed cover soil type, slopes, and slope lengths. The spreadsheet calculations are provided in Attachment A-6.8.2.

The allowable long term geocomposite transmissivity for FS = 2 at various slopes and slope lengths are summarized in Table A-6.8.1.

Table A-6.8.1: Geocomposite Drainage Capacity Summary

Slope	Maximum Allowable Slope Length	Min. Allowable Long Term Geocomposite Transmissivity
Slope = 25%	200 ft.	3.98E-03 m^2/sec
Slope = 25%	160 ft.	3.18E-03 m^2/sec
7% =< Slope < 25%	120 ft	8.31E-03 m^2/sec
4% =< Slope < 7%	600 ft	7.25E-02 m^2/sec
4% =< Slope < 7%	300 ft	3.62E-02 m^2/sec
4% =< Slope < 7%	200 ft	2.42E-02 m^2/sec

Notes:
1. Minimum long term geocomposite allowable transmissivity based on a FS = 2 to maintain head build-up on geomembrane less than geocomposite thickness. Long term geocomposite transmissivity testing to be performed at 500 psf (based on 3 ft of soil cover at 166 pcf) with a 100 hour load duration or based on specific site conditions.
2. Alternate soil types, slopes and slope lengths may be analyzed to further refine geocomposite requirements.

Conclusion

The allowable long term geocomposite is dependent on cover soil type, slope, and slope length. The long-term allowable transmissivity for various parameters is provided in Table A-6.8.1, above. The actual geocomposite chosen will be evaluated to determine that design criteria are met.

References

1. Haan, C.T., Barfield, B.J. Hayes, J.C., “Design Hydrology and Sedimentology for Small Catchments”, Academic Press, 1994.

2. Soong, T.Y., Koerner, R.M., “The Design of Drainage Systems over Geosynthetically Lined Slopes,” GRI Report #19, 1997.

3. Giroud, J.P., Zornberg, J.G., and Zhao, A., “Hydraulic Design of Geosynthetic and Granular Liquid Collection Layers”, Geosynthetics International, Special Issue on Liquid Collection Systems, 2000, Vol. 7, Nos. 4-6, pp. 285-380,

4. Narejo, Dhani, “Long-term Performance Considerations for Geonet Drainage Geocomposites”, 57th Canadian Geotechnical Conference, GSE Lining Technology, Inc., October 24-27, 2004.

ATTACHMENT A-6.8.1

RUN-OFF RATE FACTOR

Table 3.24 Runoff Coefficients

Urban areas The use of average coefficients for various surface types, which are assumed not to vary through the duration of the storm, is common. The range of coefficients, classified with respect to the general character of the tributary reported in use is:

Description of area	Runoff coefficients
Business	
Downtown areas	0.70 to 0.95
Neighborhood areas	0.50 to 0.70
Residential	
Single-family areas	0.30 to 0.50
Multiunits, detached	0.40 to 0.60
Multiunits, attached	0.60 to 0.75
Residential (suburban)	0.25 to 0.40
Apartment dwelling areas	0.50 to 0.70
Industrial	
Light areas	0.50 to 0.80
Heavy areas	0.60 to 0.90
Parks, cemeteries	0.10 to 0.25
Playgrounds	0.20 to 0.35
Railroad yard areas	0.20 to 0.35
Unimproved areas	0.10 to 0.30

Note: It is often desirable to develop a composite runoff coefficient based on the percentage of different types of surface in the drainage area. This procedure is often applied to typical 'sample' blocks as a guide to selection of reasonable values of the coefficient for an entire area. Coefficients with respect to surface type currently in use are:

Character of surface	Runoff coefficients
Streets	
Asphaltic and concrete	0.70 to 0.95
Brick	0.70 to 0.85
Roofs	0.75 to 0.95
Lawns; sandy soil	
Flat, 2%	0.05 to 0.10
Average, 2 to 7%	0.10 to 0.15
Steep, 7%	0.15 to 0.20
Lawns, heavy soil	
Flat, 2%	0.13 to 0.17
Average, 2 to 7%	0.18 to 0.22
Steep, 7%	0.25 to 0.35

Note: The coefficients in these two tabulations are applicable for storms of 5-year to 10-year frequencies. Less frequent higher intensity storms will require the use of higher coefficients because infiltration and other losses have a proportionally smaller effect on runoff. The coefficients are based on the assumption that the design storm does not occur when the ground surface is frozen.

Table 3.24—*Continued*

Rural areas

Topography and vegetation	Soil texture: Open sandy loam	Clay and silt loam	Tight clay
Woodland			
Flat 0–5% slope	0.10	0.30	0.40
Rolling 5–10% slope	0.25	0.35	0.50
Hilly 10–30% slope	0.30	0.50	0.60
Pasture			
Flat	0.10	0.30	0.40
Rolling	0.16	0.36	0.55
Hilly	0.22	0.42	0.60
Cultivated			
Flat	0.30	0.50	0.60
Rolling	0.40	0.60	0.70
Hilly	0.52	0.72	0.82

Source:
Haan, C.T., Barfield, B.J., Hayes, J.C., "Design Hydrology and Sedimentology for Small Catchments", Academic Press, 1994

ATTACHMENT A-6.8.2

SPREADSHEET CALCULATIONS

.

Geocomposite Drainage Design transmissivity

25% Slope, 200 ft Slope Length

Slope Information		
Allowable slope length, L	200	ft, maximum
	61.0	m
Slope, V:H	0.250	
Slope angle, β	14.04	degree
Water Infiltration Information		
Hourly precipitation, P	2.66	in./hr
Hourly precipitation, P	0.0676	m/hr
Runoff Coefficient, RC	0.42	Conservatively chosen for hilly pasture with clay and silt loam soil
P(1-RC)	1.1E-05	m/sec
Cover Soil Hydraulic Conductivity, $k_{cover\ soil}$	2.0E-06	m/sec
Rate of percolation of cover soil, PERC	2.0E-06	m/sec, PERC = $k_{cover\ soil}$; when P(1-RC) > $k_{cover\ soil}$ PERC = P(1-RC); when P(1-RC) ≤ $k_{cover\ soil}$
Required Transmissivity, θ_{reqd}	5.03E-04	m^2/sec
Allowable Geocomposite Transmissivity		
Allowable geocomposite transmissivity, θ_{allow}	**3.98E-03**	m^2/sec
Reduction factor for creep deformation, RF_{CR}	1.1	Low stress in final cover situation
Reduction factor for chemical clogging, RF_{CC}	1.2	Conservatively chosen from GRI-GC8 range
Reduction factor for biological clogging, RF_{BC}	3	Conservatively chosen from GRI-GC8 range
Drainage Layer Factor of Safety, FS	2.0	

Geocomposite Drainage Design transmissivity

25% Slope, 160 ft Slope Length

Slope Information		
Allowable slope length, L	160	ft, maximum
	48.8	m
Slope, V:H	0.250	
Slope angle, β	14.04	degree
Water Infiltration Information		
Hourly precipitation, P	2.66	in./hr
Hourly precipitation, P	0.0676	m/hr
Runoff Coefficient, RC	0.42	Conservatively chosen for hilly pasture with clay and silt loam soil
P(1-RC)	1.1E-05	m/sec
Cover Soil Hydraulic Conductivity, $k_{cover\ soil}$	2.0E-06	m/sec
Rate of percolation of cover soil, PERC	2.0E-06	m/sec, PERC = $k_{cover\ soil}$; when P(1-RC) > $k_{cover\ soil}$ PERC = P(1-RC); when P(1-RC) ≤ $k_{cover\ soil}$
Required Transmissivity, θ_{reqd}	4.02E-04	m^2/sec
Allowable Geocomposite Transmissivity		
Allowable geocomposite transmissivity, θ_{allow}	**3.18E-03**	m^2/sec
Reduction factor for creep deformation, RF_{CR}	1.1	Low stress in final cover situation
Reduction factor for chemical clogging, RF_{CC}	1.2	Conservatively chosen from GRI-GC8 range
Reduction factor for biological clogging, RF_{BC}	3	Conservatively chosen from GRI-GC8 range
Drainage Layer Factor of Safety, FS	2.0	

Geocomposite Drainage Design transmissivity

7% =< Slope <25%, 120 ft Slope Length

Slope Information		
Allowable slope length, L	120	ft, maximum
	36.6	m
Slope, V:H	0.070	minimum
Slope angle, β	4.00	degree
Water Infiltration Information		
Hourly precipitation, P	2.66	in./hr
Hourly precipitation, P	0.0676	m/hr
Runoff Coefficient, RC	0.36	Conservatively chosen for rolling pasture with clay and silt loam soil
P(1-RC)	1.2E-05	m/sec
Cover Soil Hydraulic Conductivity, $k_{cover\ soil}$	2.0E-06	m/sec
Rate of percolation of cover soil, PERC	2.0E-06	m/sec, PERC = $k_{cover\ soil}$; when P(1-RC) > $k_{cover\ soil}$ PERC = P(1-RC); when P(1-RC) ≤ $k_{cover\ soil}$
Required Transmissivity, θ_{reqd}	1.05E-03	m^2/sec
Allowable Geocomposite Transmissivity		
Allowable geocomposite transmissivity, θ_{allow}	**8.31E-03**	m^2/sec
Reduction factor for creep deformation, RF_{CR}	1.1	Low stress in final cover situation
Reduction factor for chemical clogging, RF_{CC}	1.2	Conservatively chosen from GRI-GC8 range
Reduction factor for biological clogging, RF_{BC}	3	Conservatively chosen from GRI-GC8 range
Drainage Layer Factor of Safety, FS	2.0	

Geocomposite Drainage Design transmissivity

4% =< Slope < 7%, 600 ft Slope Length

Slope Information		
Allowable slope length, L	600	ft, maximum
	182.9	m
Slope, V:H	0.040	minimum
Slope angle, β	2.29	degree
Water Infiltration Information		
Hourly precipitation, P	2.66	in./hr
Hourly precipitation, P	0.0676	m/hr
Runoff Coefficient, RC	0.30	Conservatively chosen for flat pasture with clay and silt loam soil
P(1-RC)	1.3E-05	m/sec
Cover Soil Hydraulic Conductivity, $k_{cover\ soil}$	2.0E-06	m/sec
Rate of percolation of cover soil, PERC	2.0E-06	m/sec, PERC = $k_{cover\ soil}$; when P(1-RC) > $k_{cover\ soil}$ PERC = P(1-RC); when P(1-RC) ≤ $k_{cover\ soil}$
Required Transmissivity, θ_{reqd}	9.15E-03	m^2/sec
Allowable Geocomposite Transmissivity		
Allowable geocomposite transmissivity, θ_{allow}	**7.25E-02**	m^2/sec
Reduction factor for creep deformation, RF_{CR}	1.1	Low stress in final cover situation
Reduction factor for chemical clogging, RF_{CC}	1.2	Conservatively chosen from GRI-GC8 range
Reduction factor for biological clogging, RF_{BC}	3	Conservatively chosen from GRI-GC8 range
Drainage Layer Factor of Safety, FS	2.0	

Geocomposite Drainage Design transmissivity

4% =< Slope < 7%, 300 ft Slope Length

Slope Information		
Allowable slope length, L	300	ft, maximum
	91.4	m
Slope, V:H	0.040	minimum
Slope angle, β	2.29	degree
Water Infiltration Information		
Hourly precipitation, P	2.66	in./hr
Hourly precipitation, P	0.0676	m/hr
Runoff Coefficient, RC	0.30	Conservatively chosen for flat pasture with clay and silt loam soil
P(1-RC)	1.3E-05	m/sec
Cover Soil Hydraulic Conductivity, $k_{cover\ soil}$	2.0E-06	m/sec
Rate of percolation of cover soil, PERC	2.0E-06	m/sec, PERC = $k_{cover\ soil}$; when P(1-RC) > $k_{cover\ soil}$ PERC = P(1-RC); when P(1-RC) ≤ $k_{cover\ soil}$
Required Transmissivity, θ_{reqd}	4.58E-03	m^2/sec
Allowable Geocomposite Transmissivity		
Allowable geocomposite transmissivity, θ_{allow}	**3.62E-02**	m^2/sec
Reduction factor for creep deformation, RF_{CR}	1.1	Low stress in final cover situation
Reduction factor for chemical clogging, RF_{CC}	1.2	Conservatively chosen from GRI-GC8 range
Reduction factor for biological clogging, RF_{BC}	3	Conservatively chosen from GRI-GC8 range
Drainage Layer Factor of Safety, FS	2.0	

Geocomposite Drainage Design transmissivity

4% =< Slope < 7%, 200 ft Slope Length

Slope Information		
Allowable slope length, L	200	ft, maximum
	61.0	m
Slope, V:H	0.040	minimum
Slope angle, β	2.29	degree
Water Infiltration Information		
Hourly precipitation, P	2.66	in./hr
Hourly precipitation, P	0.0676	m/hr
Runoff Coefficient, RC	0.10	Conservatively chosen for flat pasture with clay and silt loam soil
P(1-RC)	1.7E-05	m/sec
Cover Soil Hydraulic Conductivity, $k_{cover\ soil}$	2.0E-06	m/sec
Rate of percolation of cover soil, PERC	2.0E-06	m/sec, PERC = $k_{cover\ soil}$; when P(1-RC) > $k_{cover\ soil}$ PERC = P(1-RC); when P(1-RC) ≤ $k_{cover\ soil}$
Required Transmissivity, θ_{reqd}	3.05E-03	m^2/sec
Allowable Geocomposite Transmissivity		
Allowable geocomposite transmissivity, θ_{allow}	**2.42E-02**	m^2/sec
Reduction factor for creep deformation, RF_{CR}	1.1	Low stress in final cover situation
Reduction factor for chemical clogging, RF_{CC}	1.2	Conservatively chosen from GRI-GC8 range
Reduction factor for biological clogging, RF_{BC}	3	Conservatively chosen from GRI-GC8 range
Drainage Layer Factor of Safety, FS	2.0	

ATTACHMENT A-6.9

FINAL COVER EROSION POTENTIAL ANALYSIS

CALCULATION SHEET
Client: US Ecology - Wayne Disposal
Project: 2021 WDI Permit Modification Application
Calculation: Final Cover Erosion Potential Analysis
Project No.: 1218070017
Calculated By: TCR Date: 10/08/2021
Checked By: WL Date: 10/08/2021
Approved By: XZ Date: 10/08/2021

Final Cover Erosion Potential Analysis

Objective

Evaluate the potential soil erosion of the final cover to determine if erosion is properly controlled by the diversion berms.

Design Criteria, Assumptions, and Methodology

1. Estimate the erosion potential of the final cover using the Universal Soil Loss Equation and maintain less than 2.0 tons/acre-year of soil loss per R299.9619(6)(iv)(b). The Universal Soil Loss Equation accounts for long term average annual soil loss based on specific land slopes and land management systems.
2. Consider three slopes and slopes lengths to represent the site conditions;
    a. 25%, 200 ft
    b. 4%, 300 ft
    c. 4%, 600 ft

Calculation

Calculate soil loss per unit area.

$$A = R \times C \times LS \times K \times P$$

Where: A = Computed soil loss (tons/acre-year)
R = Rainfall energy factor
C = Crop/vegetation and management factor
LS = Slope length factor
K = Soil erodibility factor
P = Erosion control practice factor

The following values were obtained from the guidance provided in Attachment A-6.9.1.
R = 95, for Wayne County, from Attachment 1 of the guidance.
C = 0.007 to represent grass on entire final cover, from page 3 of the guidance.
LS = Varies depending on slope and length, see Attachment 2 of guidance.
K = 0.25 from Attachment 3 of the guidance, for a mixture of clay, sand, and loam with approximately 2.0% organic content.
P = 1.0 represents areas with no vegetation, conservatively used for landfill design.

Inputs and results are summarized in Table A-6.9.1, below.

CALCULATION SHEET
Client: US Ecology - Wayne Disposal
Project: 2021 WDI Permit Modification Application
Calculation: Final Cover Erosion Potential Analysis
Project No.: 1218070017
Calculated By: TCR Date: 10/08/2021
Checked By: WL Date: 10/08/2021
Approved By: XZ Date: 10/08/2021

Table A-6.9.1: Unified Soil Loss Equation Inputs and Results

Slope/Length	R	C	LS	K	P	A
25% / 200 ft	95	0.007	7.88	0.25	1.0	1.3 tons/acre-year
4% / 300 ft	95	0.007	0.98	0.25	1.0	0.2 tons/acre-year
4% / 600 ft	95	0.007	1.42	0.25	1.0	0.2 tons/acre-year

Conclusion

Soil erosion is estimated to be less than 2 tons/acre-year, therefore, erosion is properly controlled by the proposed diversion berm spacing. An alternate diversion berm layout may be used as long as maximum allowable soil loss criteria is met.

References

1. Michigan Department of Environmental Quality – Waste Management Division, Final Cover Erosion Control Design Guidance, 1995.

ATTACHMENT A-6.9.1

UNIFIED SOIL LOSS EQUATION GUIDANCE

Waste Management Division
Final Cover Erosion Control Design Guidance

The Part 115 rules of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended require the final cover on Type II landfills be designed to control erosion. Rule 425 states that the slopes of the final cover shall not exceed those necessary to prevent erosion and maintain slope stability. Rule 425(8) further states that the final slope shall not be more than 1 vertical to 4 horizontal at any location and if the final slope is more than 15%, the slope shall include either of the following:

(a) A horizontal terrace which is not less than 15 feet wide on the slope and which is spaced and designed as necessary to control erosion and allow vehicle access to the top of the final cover. The gradient of the terrace shall not be more than 6%.

(b) Other controls that the applicant demonstrates are sufficient to maintain slope stability, prevent erosion, and allow access. The controls shall be sufficient to limit erosion to not more than 2 tons per acre per year based on the Universal Soil Loss Equation (USLE) or other method approved by the director.

U.S. Environmental Protection Agency guidance on landfill final cover design recommends breaking the slope every 20 vertical feet and collecting the accumulated stormwater for erosion-proof transport down the remaining slope in order to meet the performance criteria of not more than 2 tons/acre-year of soil erosion as predicted by the USLE. The Waste Management Division (WMD) will accept using horizontal terraces spaced every 20 vertical feet as meeting the soil loss requirement without demonstration provided that appropriate shallow rooted vegetation is selected, established and maintained. An agronomist/soil scientist should be consulted for the selection, establishment, and care of appropriate shallow rooted vegetation. The drainage swales can be horizontal terraces or stormwater diversion berms that have a backslope of greater than 25%. In order to establish appropriate shallow rooted vegetation, the backslope should not be too steep to mow and otherwise maintain. The WMD has agreed to accept stormwater diversion/control berms as providing equivalent protection to horizontal terraces. The stormwater diversion berms shall be sized so that the flow channel has the capacity to handle the stormwater that is expected to be generated by the area it drains.

If a facility elects a design other than horizontal terraces or stormwater diversion berms spaced on a maximum vertical spacing of 20 feet, the facility must demonstrate, using the USLE, that the performance criteria of not more than 2 tons/acre-year of soil erosion is met. If the design meets the soil loss criteria of not more than 2 tons/acre-year of soil erosion the alternate design may be approved pursuant to Rule 425(8)(b). Guidance on using the USLE and some recommendations on the design variables are included below.

Regardless of which option the facility elects, Rule 921(2)(d) requires that observations and tests of the other layers of the final cover to ensure that the design specifications are met shall accompany the construction records and an engineer's certification of a unit, or portion of a unit that has received final cover. Further, these activities shall include inspection of the completed cover slope, vegetation, and drainage conduits to ensure that they are in compliance with the specified design. All of the components of the final cover, except the vegetation, can be verified during or immediately after installation of the final cover. Since the vegetation may take a period of time to become established to the level that was assumed in the design, it will be necessary for the owner to conduct periodic inspections during the post-closure period. If the assumed vegetative cover is not achieved after three full growing seasons, the owner shall institute additional measures to establish the intended vegetative cover. The final closure certification may be submitted prior to establishment of the vegetative cover. The post-closure period shall begin as specified in Rule 448(7).

The Michigan Department of Environmental Quality (DEQ) feels that the most effective ways to establish effective vegetative cover are ensuring that the slopes have the most ideal growing conditions possible and providing extra care for the vegetation until it thrives. This will minimize future maintenance activities and provide the best long-term erosion control for the final cover. The proper establishment of landfill cover vegetation is impacted by site preparation, material selection, planting techniques, and maintenance. Proper seedbed preparation is critical to establishing healthy vigorous vegetation. The growing medium must be high quality with an adequate supply of nutrients and good water holding capacity. The seeds that are sown must be appropriate for the anticipated site conditions. The application rate should be large enough so that the seedlings can become adequately established. Mulch should be used to protect the seedbed from erosion before the vegetation is established. The mulch should be applied at a high enough rate to protect the soil surface from rain splash. The mulch should be anchored in place with crimping, mulch tackifiers, or erosion control netting. Proper nutrient balance is essential to establish vegetation as quickly as possible. Fertilization and soil amendments are two excellent ways to provide essential nutrients to landfill cap vegetation. Mowing is vitally important in establishing grass cover systems. Mowing will reduce the amount of volunteer and woody vegetation in a landfill cap. Mowing will help to self sow seeds of the vegetation that is thriving on a landfill cap. Mowing encourages lateral growth of sod forming grasses that propagate by rhizomes. To prevent stressing the vegetation, care should be taken so that mowing will remove no more than 1/3 of the grass height each time that it is mowed. A higher frequency of mowing in the first few growing seasons is usually very effective in establishing the maximum amount of ground cover in the shortest possible time.

There is a Revised Universal Soil Loss Equation (RUSLE) that the Natural Resources Conservation Service (NRCS) has started working with. It still remains to be demonstrated that this revision will prove more applicable to landfill design than the USLE. The RUSLE uses subfactors to calculate many of the different factors described below. The RUSLE has the same basic limitations as the USLE and predicting erosion potential for long steep slopes begins to stretch the method beyond its usefulness. Pursuant to Rule 425(8)(b) the RUSLE method must be approved by the director before use. This approval has not been made. Until the effectiveness of the USLE vs. RUSLE can be gauged, the factors for the USLE that are described below appear to be the best tool that we have to judge the effectiveness of a final cover system with regard to soil erosion.

Using the USLE to Demonstrate Soil Erosion Control

The USLE, as follows, expresses soil loss rate per unit area :

$$A = (R)\,(C)\,(LS)\,(K)\,(P)$$

Where:

A	=	Computed Soil Loss in tons/acre-year	
R	=	Rainfall Energy factor	**[Picked by Michigan County]**
C	=	Cropping Management factor	**[Picked from Table]**
LS	=	Slope-Length factor	**[Calculated with RUSLE or Equations]**
K	=	Soil Erodibility factor	**[Picked from Table or Nomograph]**
P	=	Erosion Control Practice factor	**[Value of 1.0 is used]**

The Rainfall Energy factor (R) has been calculated for all of the Michigan counties by the NRCS. A map of these factors calculated by county has been included in attachment 1. The R factors are based on recent rainfall data.

The DEQ suggests that a sound approach to estimating the C factor would be to use a value corresponding to 80%, 90%, or 95% - 100% soil surface coverage (depending on seeding rates, mulching rates, fertilization, mowing and topsoil organic content) with an adjustment for the weed component. The corresponding C factor would range from 0.007, at a minimum, to a possible higher number based upon local conditions and vegetative care plans. The table below summarizes recommended care and preparation steps to achieve each C factor and the maximum swale separation to be used for design purposes. The care and preparation steps summarized with each C factor are efforts that the DEQ believes will achieve the corresponding ground cover estimates. There are so many different permutations of site preparation, materials utilized and vegetative care that it is not practical to enumerate all of them. Different combinations may be approved as long as the facility is able to demonstrate equivalent erosion protection and that the design assumptions made are achieved.

DEQ Design Recommendations

Ground Cover Estimate		Suggested C value	Maximum Separation
95% - 100%			
Topsoil :	organic matter ≥ 2.5%		
Seeding :	NRCS Critical Area Planting Guide		
Mulching :	NRCS Critical Area Planting Guide	0.007	60' vertical if $A \leq 2.0$
Fertilization :	NRCS Critical Area Planting Guide		
Mowing :	Minimum of two annually		
90%			
Topsoil :	1.25% ≤ organic matter < 2.5%		
Seeding :	NRCS Critical Area Planting Guide		
Mulching :	NRCS Critical Area Planting Guide	0.014	60' vertical if $A \leq 2.0$
Fertilization :	None Prescribed		
Mowing :	Minimum of one annually		
80% or Less			
Topsoil :	organic matter < 1.25%		
Seeding :	NRCS Critical Area Planting Guide	0.028 or higher depending on local conditions	60' vertical if $A \leq 2.0$
Mulching :	NRCS Critical Area Planting Guide		
Fertilization :	None Prescribed		
Mowing :	None Prescribed		

The actual level of coverage of the vegetation will need to be measured on the final cover to ensure that the design assumptions are being met. It may be advisable to include a provision for repairing the final cover vegetation if the level of growth does not correspond with the design assumptions after a reasonable time period. If the level of coverage is not being achieved, extra care for the vegetation should be considered before the final cover is repaired. The facility should consult with an agronomist/soil scientist to pursue the most appropriate measures to remedy inadequate growth.

The Length/Slope factor (**LS**) is a rough measure of the available potential energy for runoff. The previous method for calculating the **LS** factor has been found through experimental data to over predict erosion on control plots. The new method for calculating the **LS** factor is based on research by D. K. McCool et al. **LS** can be read from the table in attachment 2 for simple slopes. **LS** can also be calculated using the following equations :

$$LF = (0.0138\,\lambda)^m \quad \text{or} \quad (\lambda / 72.6)^m \quad \text{for uniform slopes} \tag{1}$$

$$m = (2(11.16 \sin\theta / 3(\sin\theta)^{0.8} + 0.56)) / (1 + (2(11.16 \sin\theta / 3(\sin\theta)^{0.8} + 0.56))) \tag{2}$$

$$SF = 16.8 \sin\theta - 0.5 \quad \text{for slopes} > 15' \quad \text{or} \quad 3(\sin\theta)0.8 + 0.56 \quad \text{for slopes} < 15' \tag{3}$$

$$LS = (LF)(SF) \quad \text{for uniform slopes} \tag{4}$$

$$LS_i = \frac{SF_i\,(\lambda_i^{m+1} - \lambda_{i-1}^{m+1})}{(\lambda_i - \lambda_{i-1})(72.6)^m} \tag{5}$$

$$LS = \frac{\sum[LS_i\,(\lambda_i - \lambda_{i-1})]}{\lambda_{total}} \tag{6}$$

Where :

λ	=	Horizontal length of slope in feet (e.g. Slope Length·cos (atan (Slope %)))
θ	=	Slope Angle (e.g. atan (Slope %))
LF	=	Length factor
SF	=	Slope factor
λ_{total}	=	Total horizontal length of complex slope
LS_i	=	Effective **LS** factor for each slope segment
λ_i	=	Horizontal length from the top of the slope to the bottom of the segment
λ_{i-1}	=	Horizontal length from the top of the slope to the top of the segment

Note 1: *Equation 1 is valid for slopes greater than 9%. Values for slopes greater than 18% and/or 300 feet in length are extrapolations from experimental data.*

Note 2: lengths *These equations make for easier calculation since precise LS factors can be calculated from design slopes and easily with a spreadsheet or calculator.*

Note 3: *The LS factor for complex slopes can be calculated from design slopes and lengths using equations 2, 3, 5, & 6.*

Note 4: flow. *At slope lengths longer than approx. 200 - 300' the primary erosional process is gully erosion due to channelized The USLE does not account for gully erosion. It is recommended that design slope lengths should be less than 200' - 300' long.*

The Soil Erodibility factor (**K**) is dependent on the soil's properties, both physical and chemical. This factor can be estimated based on the U.S. Department of Agriculture (USDA) Textural Classification or it can be estimated from a soil erodibility nomograph. The **K** factor that is most appropriate for the on-site soils should be obtained from either the approximation of **K** values based on the USDA Textural Classification and the organic content or the **K** factor nomograph. Both of these methods are included in attachment 3. Adequate topsoil testing should be provided to ensure that the **K** value is appropriate for the site.

The Erosion Control Practice factor (***P***) is based on surface preparation on the slopes. This factor is primarily applied to tilling practices on a farm field. ***P*** would be more applicable if the USLE were calculated for a facility using a **C** factor = 1.0 (e.g. no vegetative cover). ***P*** = 1.0 should be used for landfill design.

Waste Management Division
Final Cover Erosion Control Design Guidance
Attachment 1

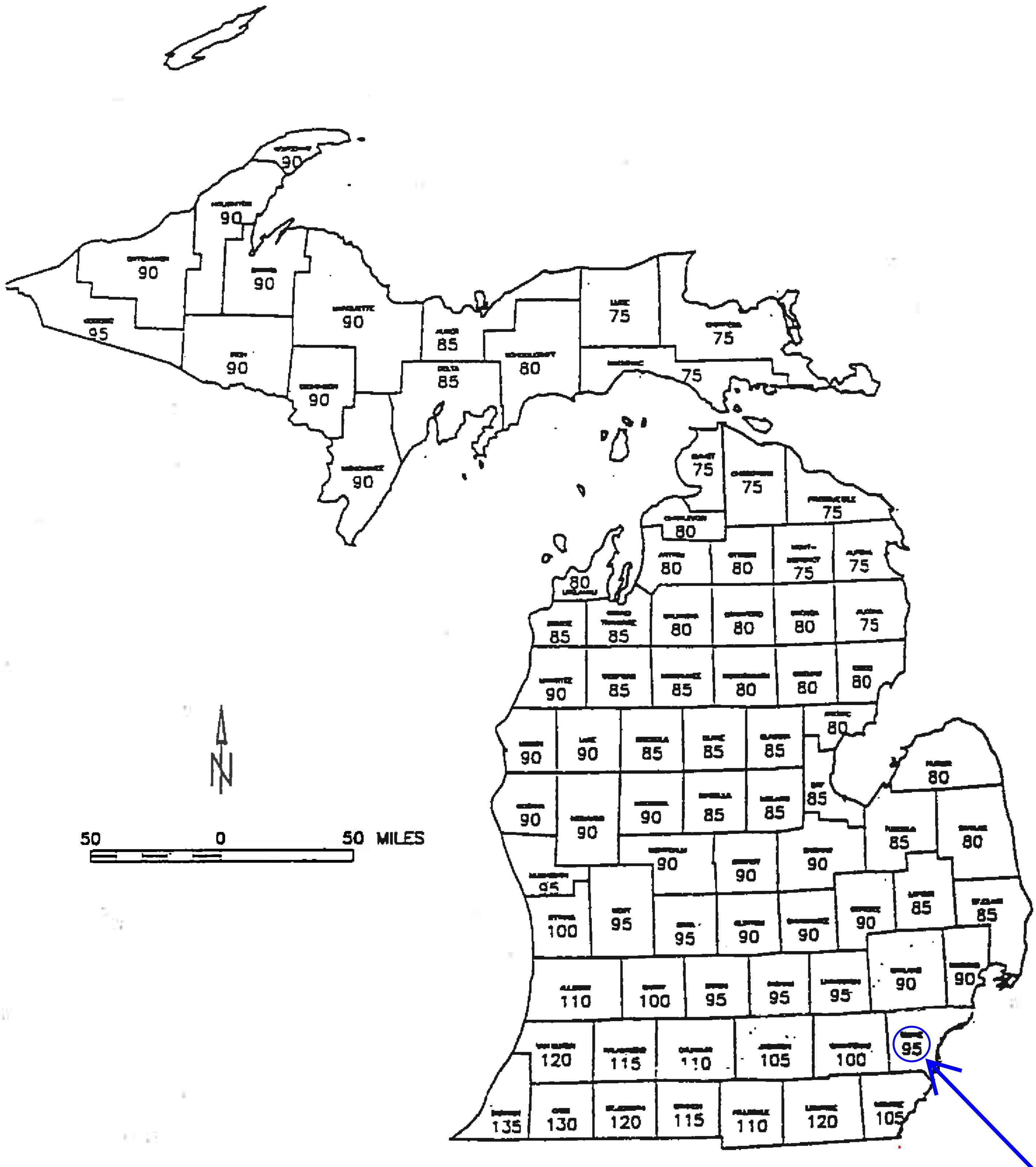


Table 4-3.
Values for topographic factor, LS, for high ratio of rill to interrill erosion.[1]

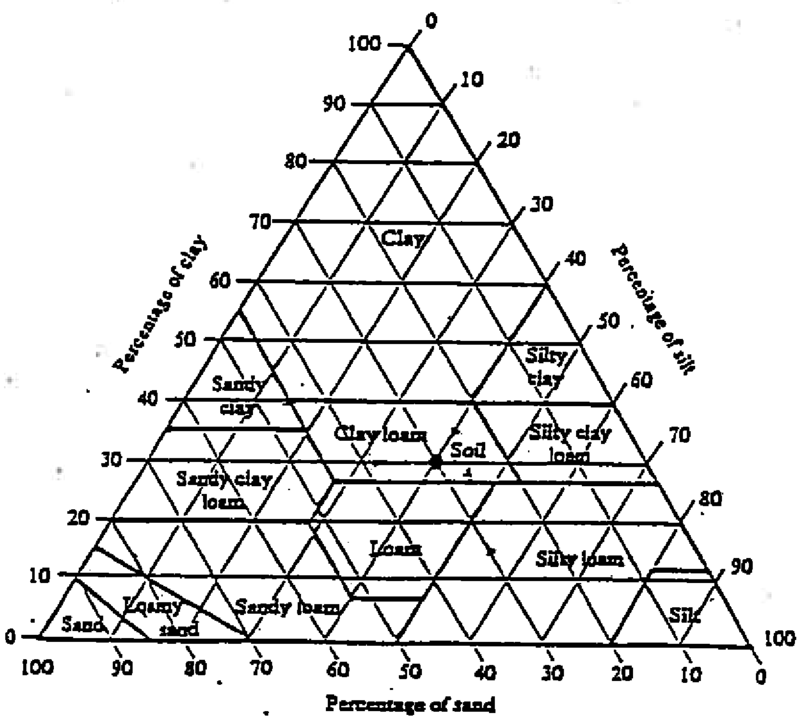
Slope (%)	Horizontal slope length (ft) <3	6	9	12	15	25	50	75	100	150	200	250	300	400	600	800	1000
0.2	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06
0.5	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.09	0.09	0.10	0.10	0.10	0.11	0.12	0.12	0.13
1.0	0.09	0.09	0.09	0.09	0.09	0.10	0.13	0.14	0.15	0.17	0.18	0.19	0.20	0.22	0.24	0.26	0.27
2.0	0.13	0.13	0.13	0.13	0.13	0.16	0.21	0.25	0.28	0.33	0.37	0.40	0.43	0.48	0.56	0.63	0.69
3.0	0.17	0.17	0.17	0.17	0.17	0.21	0.30	0.36	0.41	0.50	0.57	0.64	0.69	0.80	0.96	1.10	1.23
4.0	0.20	0.20	0.20	0.20	0.20	0.26	0.38	0.47	0.55	0.68	0.79	0.89	0.98	1.14	1.42	1.65	1.86
5.0	0.23	0.23	0.23	0.23	0.23	0.31	0.46	0.58	0.68	0.86	1.02	1.16	1.28	1.51	1.91	2.25	2.55
6.0	0.26	0.26	0.26	0.26	0.26	0.36	0.54	0.69	0.82	1.05	1.25	1.43	1.60	1.90	2.43	2.89	3.30
8.0	0.32	0.32	0.32	0.32	0.32	0.45	0.70	0.91	1.10	1.43	1.72	1.99	2.24	2.70	3.52	4.24	4.91
10.0	0.35	0.37	0.38	0.39	0.40	0.57	0.91	1.20	1.46	1.92	2.34	2.72	3.09	3.75	4.95	6.03	7.02
12.0	0.36	0.41	0.45	0.47	0.49	0.71	1.15	1.54	1.88	2.51	3.07	3.60	4.09	5.01	6.67	8.17	9.57
14.0	0.38	0.45	0.51	0.55	0.58	0.85	1.40	1.87	2.31	3.09	3.81	4.48	5.11	6.30	8.45	10.40	12.23
16.0	0.39	0.49	0.56	0.62	0.67	0.98	1.64	2.21	2.73	3.68	4.56	5.37	6.15	7.60	10.26	12.69	14.96
20.0	0.41	0.56	0.67	0.76	0.84	1.24	2.10	2.86	3.57	4.85	6.04	7.16	8.23	10.24	13.94	17.35	20.57
25.0	0.45	0.64	0.80	0.93	1.04	1.56	2.67	3.67	4.59	6.30	7.88	9.38	10.81	13.53	18.57	23.24	27.66
30.0	0.48	0.72	0.91	1.08	1.24	1.86	3.22	4.44	5.58	7.70	9.67	11.55	13.35	16.77	23.14	29.07	34.71
40.0	0.53	0.85	1.13	1.37	1.59	2.41	4.24	5.89	7.44	10.35	13.07	15.67	18.17	22.95	31.89	40.29	48.29
50.0	0.58	0.97	1.31	1.62	1.91	2.91	5.16	7.20	9.13	12.75	16.16	19.42	22.57	28.60	39.95	50.63	60.84
60.0	0.63	1.07	1.47	1.84	2.19	3.36	5.97	8.37	10.63	14.89	18.92	22.78	26.51	33.67	47.18	59.93	72.15

[1]Such as for freshly prepared construction and other highly disturbed soil conditions with little or no cover (not applicable to thawing soil)

APPROXIMATE VALUES OF FACTOR K FOR USDA TEXTURAL CLASSES

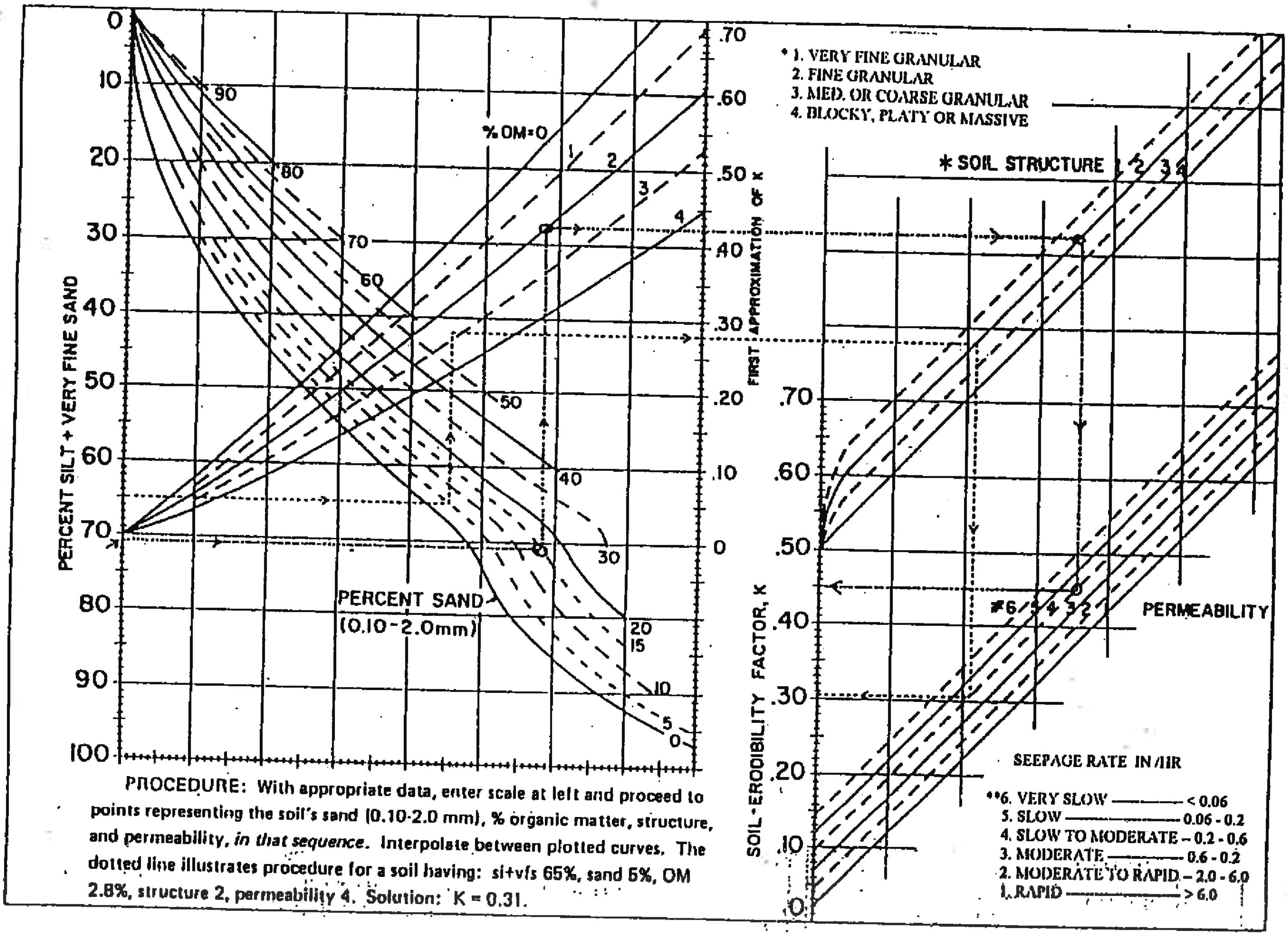
Texture class	Organic matter content <0.5% K	2% K	4% K
Sand	0.05	0.03	0.02
Fine sand	.16	.14	.10
Very fine sand	.42	.36	.28
Loamy sand	.12	.10	.08
Loamy fine sand	.24	.20	.16
Loamy very fine sand	.44	.38	.30
Sandy loam	.27	.24	.19
Fine sandy loam	.35	.30	.24
Very fine sandy loam	.47	.41	.33
Loam	.38	.34	.29
Silt loam	.48	.42	.33
Silt	.60	.52	.42
Sandy clay loam	.27	.25	.21
Clay loam	.28	.25	.21
Silty clay loam	.37	.32	.26
Sandy clay	.14	.13	.12
Silty clay	.25	.23	.19
Clay		0.13-0.29	

The values shown are estimated averages of broad ranges of specific-soil values. When a texture is near the borderline of two texture classes, use the average of the two K values.



U.S. Department of Agriculture textural classification

Figure 1. Soil-erodibility nomograph.



PROCEDURE: With appropriate data, enter scale at left and proceed to points representing the soil's sand (0.10-2.0 mm), % organic matter, structure, and permeability, *in that sequence*. Interpolate between plotted curves. The dotted line illustrates procedure for a soil having: si+vfs 65%, sand 5%, OM 2.8%, structure 2, permeability 4. Solution: K = 0.31.