NM1 - __66___

PART 36 PERMIT APPLICATION

Volume 2

2 of 3

REVISED APPLICATION

June 26, 2019

Permit Application For Surface Waste Management Facility

North Ranch Surface Waste Management Facility
Lea County, New Mexico

April 19, 2019
Project No. 35187378

Prepared for:
NGL Waste Services, LLC
3773 Cherry Creek Dr., Suite 1000
Denver, CO 80209
303-815-1010

Prepared by:
Terracon Consultants, Inc.
25809 Interstate 30 South
Bryant, Arkansas 72022
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Volume 2 of 2

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Hydrogeological Report

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Lea County, New Mexico

April 19, 2019
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1.0 Introduction

This Hydrogeological Report documents investigations conducted for the proposed NGL Waste Services, LLC (NGL) North Ranch Surface Waste Management Facility (Facility) located near Jal, Lea County, New Mexico. Data were compiled by Terracon Consultants, Inc. (Terracon), in accordance with the Energy, Minerals and Natural Resources Department, Oil Conservation Division (NMOCD or Division) requirements and the *New Mexico Administrative Code (NMAC)* Section **19.15**. NGL owns the property proposed for the landfill and associated facilities.

Section 2.0 of this report describes the regional geologic and hydrogeological characterization for the area surrounding the NGL North Ranch facility. Section 3.0 references site-specific information gathered for the generation of this document. Section 4.0 presents a summary of the investigation results and Section 5.0 lists the references used.

1.1 Site Location

The NGL North Ranch SWMF site is located within Section 9 and 10 of, T25S, R34E approximately 16 miles west of the City of Jal in Lea County, New Mexico as seen in **Figure 1**.

1.2 Background

NGL is currently preparing a Permit Application to develop a new Surface Waste Management Facility (SWMF). The location of the site and the proposed development areas are shown on **Figure 1**. This application will establish an oil field solid waste landfill footprint area consisting of approximately 205 acres with a waste capacity of approximately 41,428,629 cubic yards. **Figure 2** illustrates the site layout within the permitted boundary. The NMOCD requires a review and summary of the hydrogeology and geology of the region and facility that illustrates the location of the SWMF facilities.

2.0 Regional Characterization

This section discusses the regional hydrogeologic setting of the area surrounding the SWMF including hydrology, geology, hydrogeology, and groundwater quality. This information was compiled from published sources including sections of the 1961 Geology and Ground-Water Condition in Southern Lea County, New Mexico report by the State Bureau of Mines and Mineral Resources, New Mexico Institute of Mining and Technology and Terracon's January 2019 Geotechnical Engineering Report of the site.

2.1 Regional Hydrology

The SWMF landfill is located within Pecos watershed of the Rio Grande Region. Surface drainage from the landfill property generally flows downward towards the east. No integrated drainage is present in southern Lea County, thus there is no discharge to the Pecos River, which is located southwest of the area. Tributaries of the Pecos River are located approximately 20 miles southwest of the landfill site in southwestern Lea County. The Pecos River flows south and merges with the Rio Grande in southern Texas along the Texas-Mexico border.

2.2 Regional Geology

This section describes the geologic setting of the region, including soils, regional stratigraphy, and regional structural geology and geomorphology. A geologic map of New Mexico is provided in **Figure 3.** A map showing the location of water wells within a one-mile radius of the site is presented in **Figure 4**, and a local depth to groundwater surface map is provided in **Figure 5**.

The New Mexico State Geologic Map (1:500 000) indicates the general surface geology of the landfill site consists of Quaternary eolian and piedmont deposits (Qep) (Holocene to middle Pleistocene). Qep is comprised of interlayered eolian sands and piedmont-slope deposits. The unconsolidated eolian sands consist of sands and loess; the piedmont-slope deposits include deposits of higher gradient tributaries near major stream valleys, alluvial veneers of the piedmont slope, and alluvial fans and may locally include uppermost Pliocene deposits.

2.2.1 Regional Soils

Based on the information provided by the Web Soil Survey (March 26, 2019) and the United States Department of Agriculture Soil Conservation Service, the primary soils at the site are the Ratliff-Wink fine sandy loam in the southern portion (42%), the Wink loamy fine sand (WK) in the middle and southwestern portions (31%), and the Pyote and Maljamar fine sands (PU) in the northern portion (27%).

The Ratliff-Wink is a fine sandy loam from 0 to 4 inches overlying clay loam from 4 to 60 inches. The Wink loamy fine sand is described as a loamy fine sand from 0 to 12 inches and

a sandy loam from 12 to 60 inches. Both the Ratliff-Wink and Wink loamy fine sand are well drained with a high capacity to transmit water (2.0 to 6.0 in/hr). The depth to water is greater than 80 inches.

The Pyote and Maljamar fine sands consist of fine sand from 0 to 24 inches, sandy clay loam from 24 to 50 inches, and cemented material from 50 to 60 inches. The Pyote is well drained with a very low to moderately low capacity to transmit water (0.00 to 0.06 in/hr). The depth to water is reported to be greater than 80 inches.

Based on the January 2019 Geotechnical Engineering report, encountered soils during drilling activities at the site were divided into three stratums: the first strata consisted of silty sand, silty sand with gravel, silty clayey sand, and poorly graded sand with interbedded layers of caliche and ranged in depths from 20 to 27 feet bgs; the second strata consisted of silty sand, poorly graded sand, interbedded caliche layers and ranged in depth from 27 to 65 feet bgs; the third strata ranged in depths between 40 to 65 feet bgs and consisted of fine-grained, poorly to moderately compacted sandstone.

The observed caliche materials are underlain by medium to finely weathered sandstone extending to boring-termination depths to 165 feet below existing grades. Soil porosity and permeability observed during drilling ranged from 0.34 to 0.36 and 1.12×10^{-12} to 6.72×10^{-11} cm^2, respectively, and hydraulic conductivity ranged from 1.09×10^{-07} to 5.56×10^{-06} cm/sec.

2.2.2 Regional Stratigraphy

The surface geology of the landfill site consists of the Quaternary Eolian and Piedmont Deposits (Qep) (Holocene to middle Pleistocene), which is the primary geologic formation at the surface in this area. Small outcrops of Quaternary Piedmont Alluvial Deposits (Qp) (Holocene to lower Pleistocene) are located to the north and east of the site and overlie the Qep deposits. Furthermore, Quaternary Older Alluvial Deposits of Upland Plains and Piedmont Areas (Qoa) (Middle to lower Pleistocene) are west of the site and typically underlie the Qep deposits. The Tertiary Ogallala Formation (To) (lower Pliocene and middle Miocene) underlies the Qoa and is exposed northwest and east of the site. The Ogallala consists of alluvial and eolian deposits and petrocalcic soils of the southern high plains.

Triassic rocks of the Chinle Formation and Santa Rosa Sandstone of the Dockum Group underlie southern Lea County and is exposed southwest of the site. The Chinle Formation is described as a red to green claystone with minor fine-grained sandstone and siltstones. The Chinle is present in all of the eastern part of southern Lea County but thins westward and is absent in extreme western portions. Thickness of the Chinle varies from 0 to 1,270 feet. The Santa Rosa Sandstone is described as a primarily red, fine-to-coarse grained sandstone, is exposed only in minor outcrops, and the thickness ranges from 140 to 300 feet.

Undifferentiated Paleozoic rocks, consisting of siltstone, shale and sandstone, underlie the Dockum Group in southern Lea County. Thickness of these undifferentiated rocks is approximately 90 to 400 feet.

2.2.3 Regional Structural Geology and Geomorphology

The major structure features of southern Lea County are the Permian age Delaware Basin and the Central Basin Platform in the subsurface. Few structural features are present in the area due to the lack of tectonic movement within the basin since the close of the Permian.

The landfill site is located within the Southern High Plains physiographic region of the state. The High Plains covers the eastern quarter of the state and consists of mildly deformed Permian and Triassic sedimentary rocks capped by the late Miocene-Pliocene Ogallala Formation and Quaternary deposits, which are exposed in the southeastern and east-central parts of the state. Furthermore, the northwest part of the oil and gas-rich Permian Basin underlies southeastern New Mexico. No major surface faults or structural features are located in the vicinity of the landfill site.

Geomorphic features consist of windblown eolian and loess deposits in generally flat terrain that lacks integrated drainage systems.

2.3 Regional Hydrogeology

Potable groundwater in southern Lea County comes from three principal geologic units: the Dockum Group, Tertiary Ogallala Formation, and Quaternary Alluvium. The Triassic Santa Rosa sandstone, or the basal unit of the Dockum Group, is the principal aquifer in the western third of southern Lea County, which includes the landfill area. The Ogallala Formation and Quaternary Alluvium aquifers are the principal aquifers in the eastern portion of Lea County and are considered unsaturated in the western portion.

According to published data, the Santa Rosa Sandstone yields an average of about 47 gallons per minute (gpm); however, some wells are reported to yield as much as 100 gpm in some areas. The Sandstone is recharged by precipitation on sand dunes, by precipitation and runoff on outcrops, and groundwater flow from the overlying Ogallala Formation and Quaternary Alluvium. Porosity of the Santa Rosa Sandstone is reported at around 13 percent with very low permeability, and incomplete well-test data indicate a specific capacity of less than 0.2 gpm per foot of drawdown.

Depth to water reported for water wells within the Township and Range of the landfill vary from approximately 165 feet in the southern portion to 230 feet in the northern portion.

2.4 Regional Groundwater Quality

The Dockum Group is the principal potable aquifer in the landfill area. Several domestic and municipal wells penetrate this aquifer in the western portion of the region.

Groundwater from the Triassic rocks of the Dockum Group are typically low in silica, vary in range in calcium and magnesium, high in sodium, moderately high in sulfate, and moderately low in chloride. The dissolved solid concentrations are typically higher than water derived from the Ogallala Formation.

3.0 Site Hydrogeologic Investigation

The material presented in this section describes site-specific information gathered for the generation of this document.

3.1 Geotechnical Engineering Report

A Geotechnical Engineering Report was prepared by Terracon to present subsurface exploration, geologic, hydrogeologic and geotechnical engineering findings. A number of recommendations related to subsurface soil/rock conditions, groundwater conditions, seismic site classification, site preparation and earthwork and site excavation are presented and were generated in conformance with the Siting and Subsurface Investigation Work Plan dated October 17, 2018 submitted to and approved by the NMOCD. A copy of the Geotechnical Engineering Report is attached to this narrative in **Attachment A**.

3.2 Site Geology

The NGL North Ranch SWMF is located within an area of historical oil and gas production, largely in undeveloped ranch areas covered with creosote and mesquite trees. The area is underlain by interlayered eolian sands and piedmont-slope deposits which are underlain by the Dockum Group. Subsurface soil and rock are illustrated on geological cross-section figures attached to this report. **Figure 6** shows the alignments of the cross-sections on a Facility map. **Figure 7a** through **Figure 7c** show geologic cross-sections based on the boring data collected in the Geotechnical Engineering Report in **Attachment A**.

3.3 Site Hydrogeology

Groundwater was not encountered at the site during the boring program which advanced seven borings to a depth of approximately 165 feet below ground surface. The uppermost aquifer is estimated to be encountered at depths of around 175 to 200 feet below ground surface. **Figure 5** shows the approximate depth to groundwater in the Facility area.

4.0 References

New Mexico Bureau of Geology and Mineral Resources, Scholle, Peter A., State Geologist, Geologic Map of New Mexico (1:500 000), 2003.

New Mexico Bureau of Geology and Mineral Resources. Provinces of New Mexico – Geologic Tour of the High Plains, https://geoinfo.nmt.edu/tour/provinces/high_plains/home.html, accessed March 2019.

New Mexico Department of Agriculture. Watersheds in New Mexico - http://www.nmda.nmsu.edu/wp-content/uploads/2012/07/Watershed-info-and-NM-watersheds-7-9-2012-phd.pdf, accessed March 2019.

New Mexico Institute of Mining and Technology, State Bureau of Mines and Mineral Resources Division and the New Mexico State Engineer. Geology and Ground-Water Conditions in Southern Lea County, New Mexico – 1961

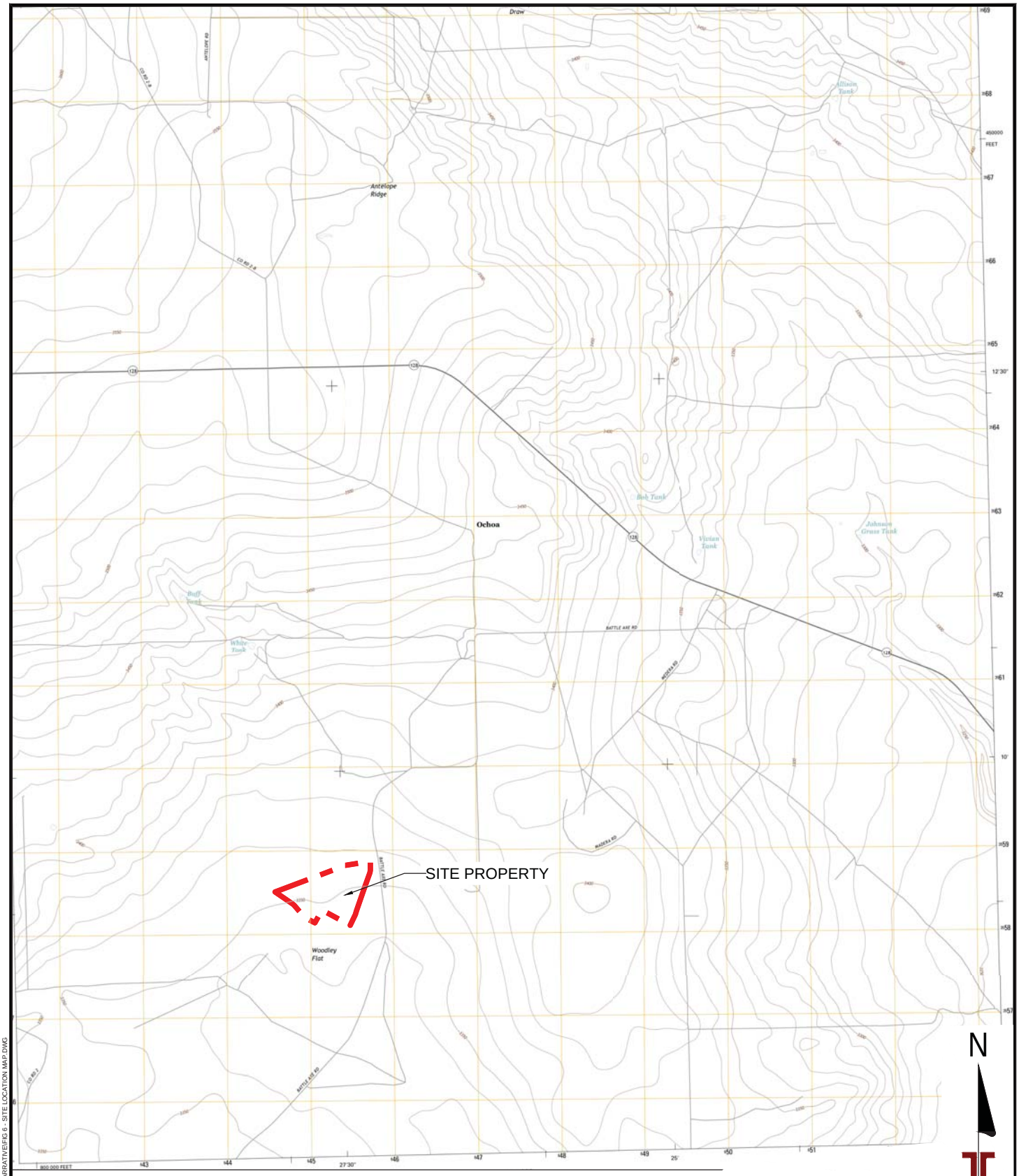
New Mexico Office of the State Engineer, New Mexico Water Rights Reporting System, http://nmwrrs.ose.state.nm.us/nmwrrs/meterReport.html, accessed March 2019.

Terracon, Geotechnical Engineering Report, McCloy Ranch Landfill – January 2019.

United State Department of Agriculture (USDA) Soil Conservation Service. Soil Survey of Lea County, New Mexico – March 2019.

Web Soil Survey, McCloy Ranch Landfill – March 2019.

Figures



MAP REFERENCE

UNITED STATES GEOLOGICAL SURVEY
NORTH AMERICAN DATUM OF 1988 (NAD88)
WORLD GEODETIC SYSTEM OF 1984 (WGS84)

(EDITED BY TERRACON CONSULTANTS)

Project Mngr:	MPB
Drawn By:	DEW
Checked By:	MPB
Approved By:	FOC
Project No.	35187378
Scale:	AS SHOWN
File No.	572-002
Date:	APRIL 2019

Terracon
Consulting Engineers and Scientists
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SITE LOCATION MAP

PERMIT APPLICATION FIGURE

NGL WASTE SERVICES, LLC

NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY

LEA COUNTY NEW MEXICO

FIG. No. 1

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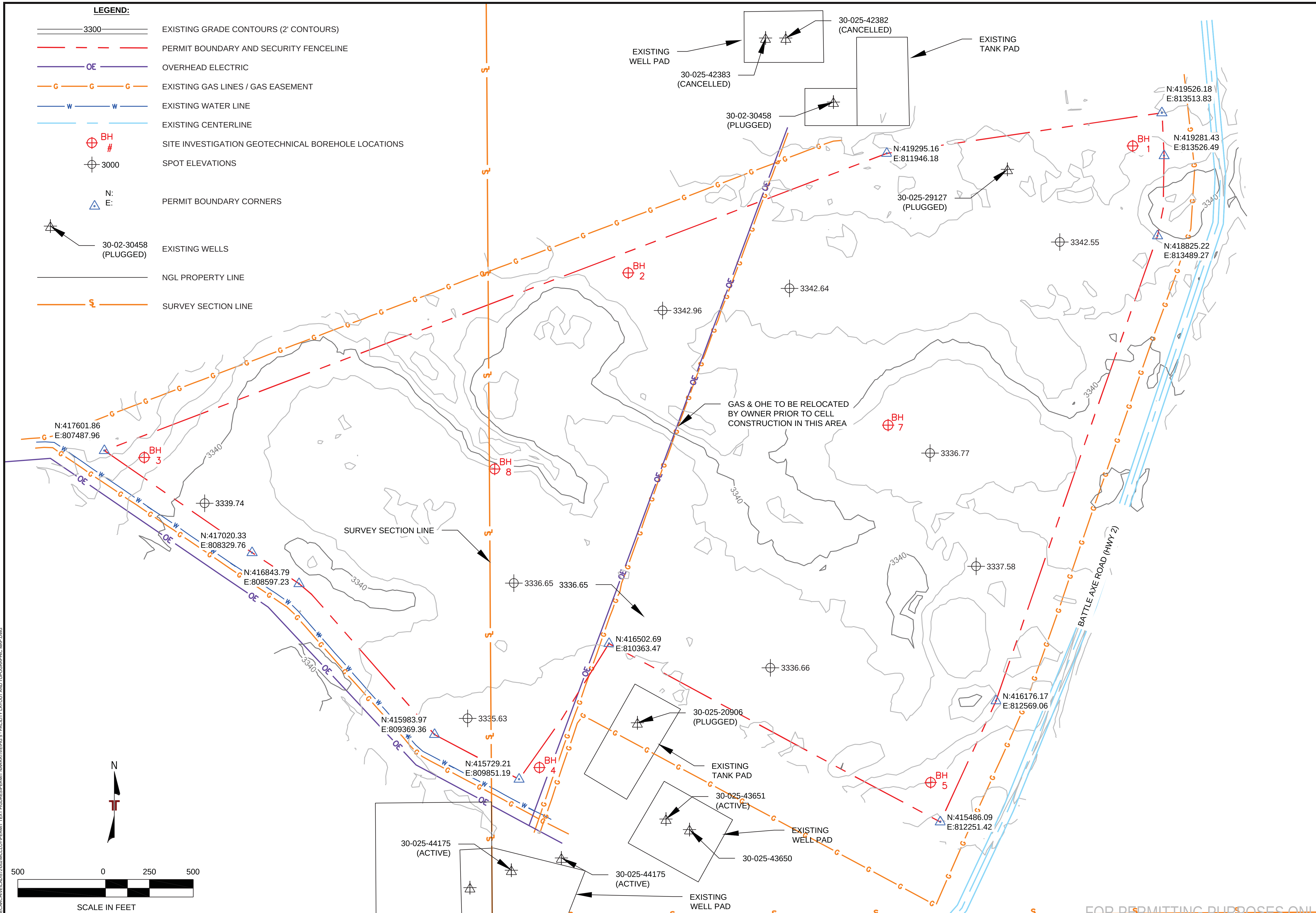
LEGEND:
3300
EXISTING GRADE CONTOURS (2' CONTOURS)
PERMIT BOUNDARY AND SECURITY FENCELINE
OVERHEAD ELECTRIC
EXISTING GAS LINES / GAS EASEMENT
EXISTING WATER LINE
EXISTING CENTERLINE
BH #
SITE INVESTIGATION GEOTECHNICAL BOREHOLE LOCATIONS
3000
SPOT ELEVATIONS
N:
E:
PERMIT BOUNDARY CORNERS
30-02-30458 (PLUGGED)
EXISTING WELLS
NGL PROPERTY LINE
SURVEY SECTION LINE
EXISTING WELL PAD
30-025-42382 (CANCELLED)
30-025-42383 (CANCELLED)
EXISTING TANK PAD
30-02-30458 (PLUGGED)
N:419526.18 E:813513.83
N:419295.16 E:811946.18
BH 1
N:419281.43 E:813526.49
30-025-29127 (PLUGGED)
3342.55
N:418825.22 E:813489.27
BH 2
3342.64
3342.96
GAS & OHE TO BE RELOCATED BY OWNER PRIOR TO CELL CONSTRUCTION IN THIS AREA
BH 7
3336.77
N:417601.86 E:807487.96
BH 3
BH 8
3339.74
3340
N:417020.33 E:808329.76
SURVEY SECTION LINE
N:416843.79 E:808597.23
3336.65
3336.65
3337.58
BATTLE AXE ROAD (HWY 2)
N:416502.69 E:810363.47
3336.66
N:416176.17 E:812569.06
3335.63
N:415983.97 E:809369.36
30-025-20906 (PLUGGED)
N:415729.21 E:809851.19
BH 4
EXISTING TANK PAD
BH 5
30-025-43651 (ACTIVE)
N:415486.09 E:812251.42
EXISTING WELL PAD
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30-025-44175 (ACTIVE)
30-025-44175 (ACTIVE)
EXISTING WELL PAD
N
500 0 250 500
SCALE IN FEET
FOR PERMITTING PURPOSES ONLY

REV | DATE | BY | DESCRIPTION

FACILITY LAYOUT AND TOPOGRAPHIC MAP

NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY

NGL WASTE SERVICES, LLC

PERMIT APPLICATION DRAWING

LEA COUNTY NEW MEXICO

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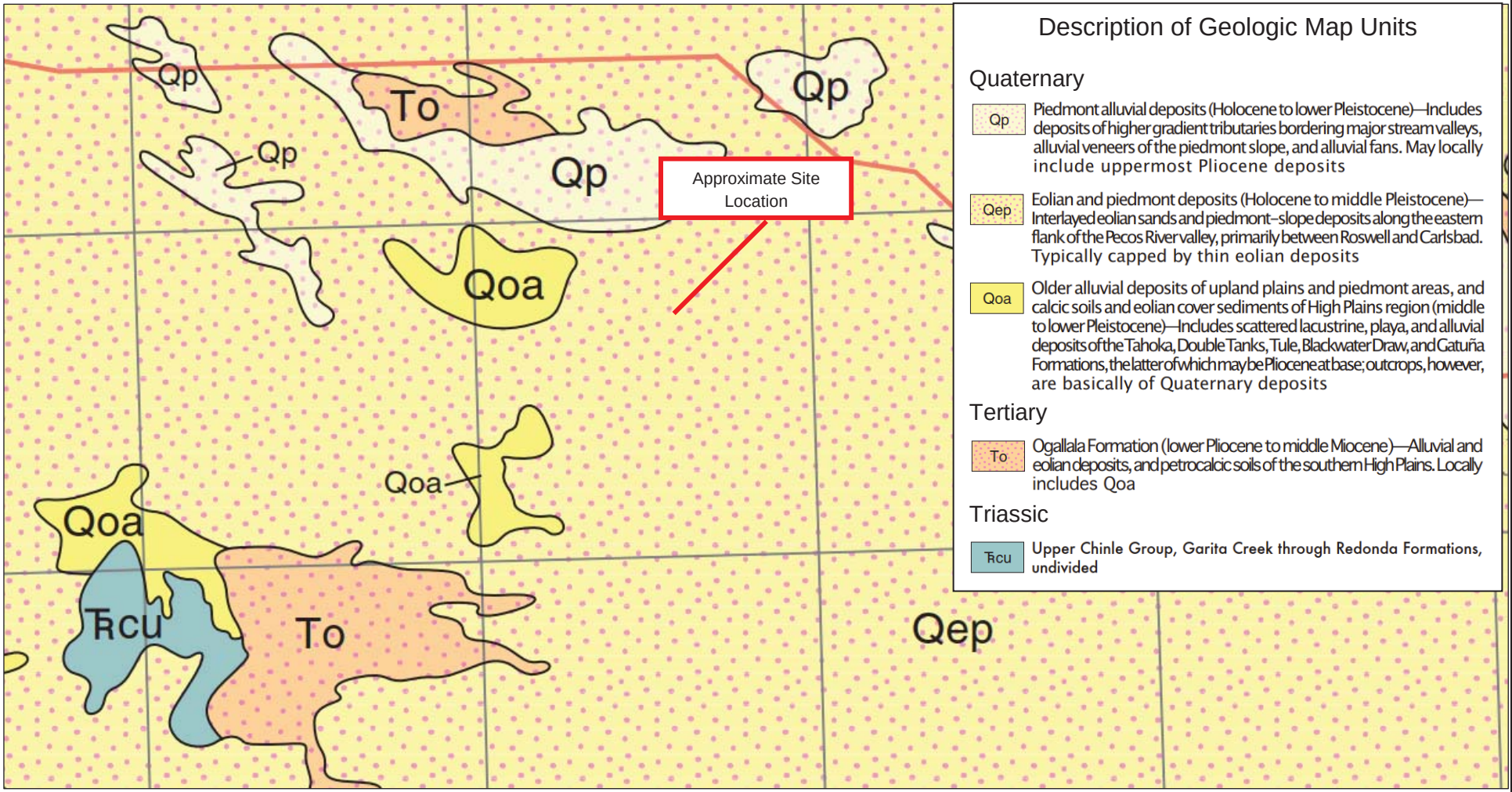
FIG 2

DESIGNED BY:	MPB
DRAWN BY:	DEW
APPVD. BY:	MPB
SCALE:	SEE SCALEBAR
DATE:	APRIL 2019
JOB NO.	35187378
ACAD NO.	572-002
SHEET NO.:	OF



Description of Geologic Map Units

Quaternary

Qp — Piedmont alluvial deposits (Holocene to lower Pleistocene)—Includes deposits of higher gradient tributaries bordering major stream valleys, alluvial veneers of the piedmont slope, and alluvial fans. May locally include uppermost Pliocene deposits

Qep — Eolian and piedmont deposits (Holocene to middle Pleistocene)—Interlayed eolian sands and piedmont-slope deposits along the eastern flank of the Pecos River valley, primarily between Roswell and Carlsbad. Typically capped by thin eolian deposits

Qoa — Older alluvial deposits of upland plains and piedmont areas, and calcic soils and eolian cover sediments of High Plains region (middle to lower Pleistocene)—Includes scattered lacustrine, playa, and alluvial deposits of the Tahoka, Double Tanks, Tule, Blackwater Draw, and Gatuña Formations, the latter of which may be Pliocene at base; outcrops, however, are basically of Quaternary deposits

Tertiary

To — Ogallala Formation (lower Pliocene to middle Miocene)—Alluvial and eolian deposits, and petrocalcic soils of the southern High Plains. Locally includes Qoa

Triassic

TRcu — Upper Chinle Group, Garita Creek through Redonda Formations, undivided

SOURCE: SCHOLLE, PETER A. "GEOLOGIC MAP OF NEW MEXICO", NEW MEXICO BUREAU OF GEOLOGY AND MINERAL RESOURCES, 2003.

Project Mgr	MB
Drawn by	LT

Project No	35187378
Scale	unknown
Date	March 28, 2019
File No.	

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SITE GEOLOGIC MAP
North Ranch Surface Waste Management Facility
NGL WASTE SERVICES, LLC
Lea County, New Mexico

FIGURE
3

N

1-MILE OFFSET OF FACILITY PERIMETER

WATER WELLS:
CO2314 AND CO2315
DEPTH=175 FEET

NOTE:
1. A REVIEW OF NRCS, USGS, AND FEMA FIRM MAPS DOES NOT INDICATE THE PRESENCE OF ANY JURISDICTIONAL STREAMS, SPRINGS, OR OTHER WATERWAYS WITHIN 1-MILE OF THE FACILITY.

2. SHOWN TOWNSHIP 25S RANGE 34 E, SECTIONS AS LABELED

Project Mngr:	MPB
Drawn By:	JBM
Checked By:	MPB
Approved By:	MPB
Project No.	35187378
Scale:	1"=2000'
File No.	572-002
Date:	APRIL 2019

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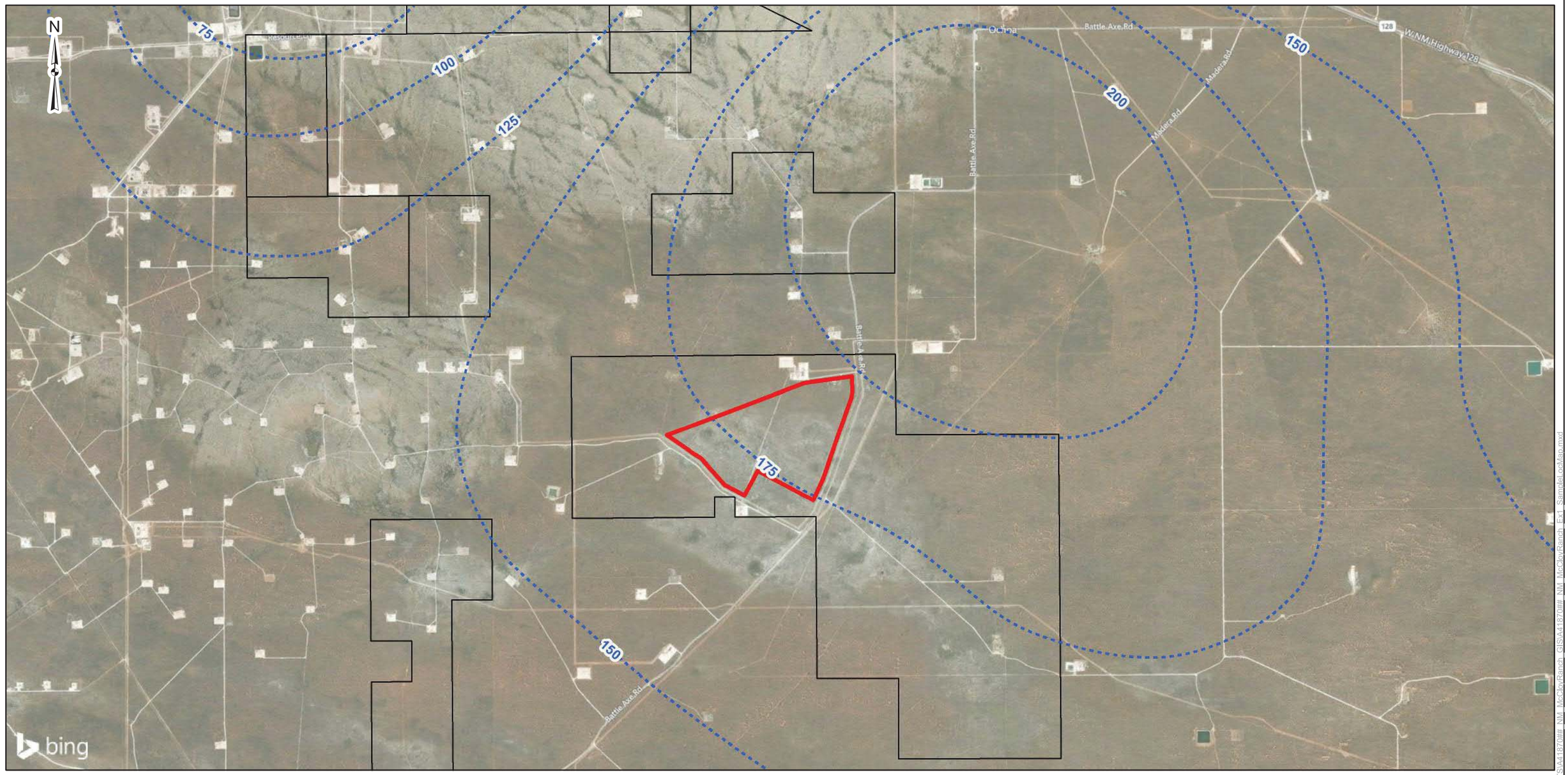
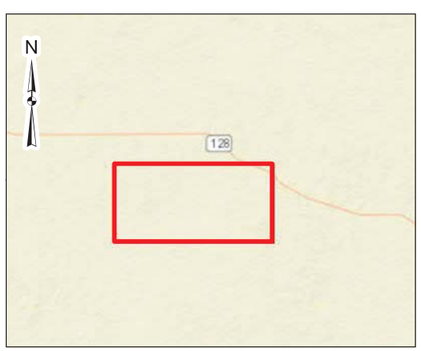
WATER WELL LOCATION MAP
PERMIT DRAWING
NGL WASTE SERVICES , LLC
NORTH RANCH SURFACE WASTE FACILITY
LEA COUNTY NEW MEXICO

FIG. No. 4

N:\DESIGN\PROJECTS\2019\35187378\DWG\PERMIT DRAWINGS, FIGURES.RVG # MCCLOY WATER WELL MAP.DWG





Proposed Landfill

- Proposed Landfill
- Inferred Depth to Water Contour (ft. bgs)
- McCloy Ranch Boundaries

Notes:
-Figure is for general location only. It is not intended for construction purposes and should not be used separately from original report.
-Revised from Terracon's Geotechnical Engineering Report, McCloy Ranch Landfill, Jal, Lea County, New Mexico, January 2019.

0 0.5 1 2 Miles

Fractional Scale: 1:37,883

DATA SOURCES:
Bing Maps - Aerial Imagery, World Street Map

Project No.:	35187378
Date:	March 2019
Drawn By:	SW
Reviewed By:	MB

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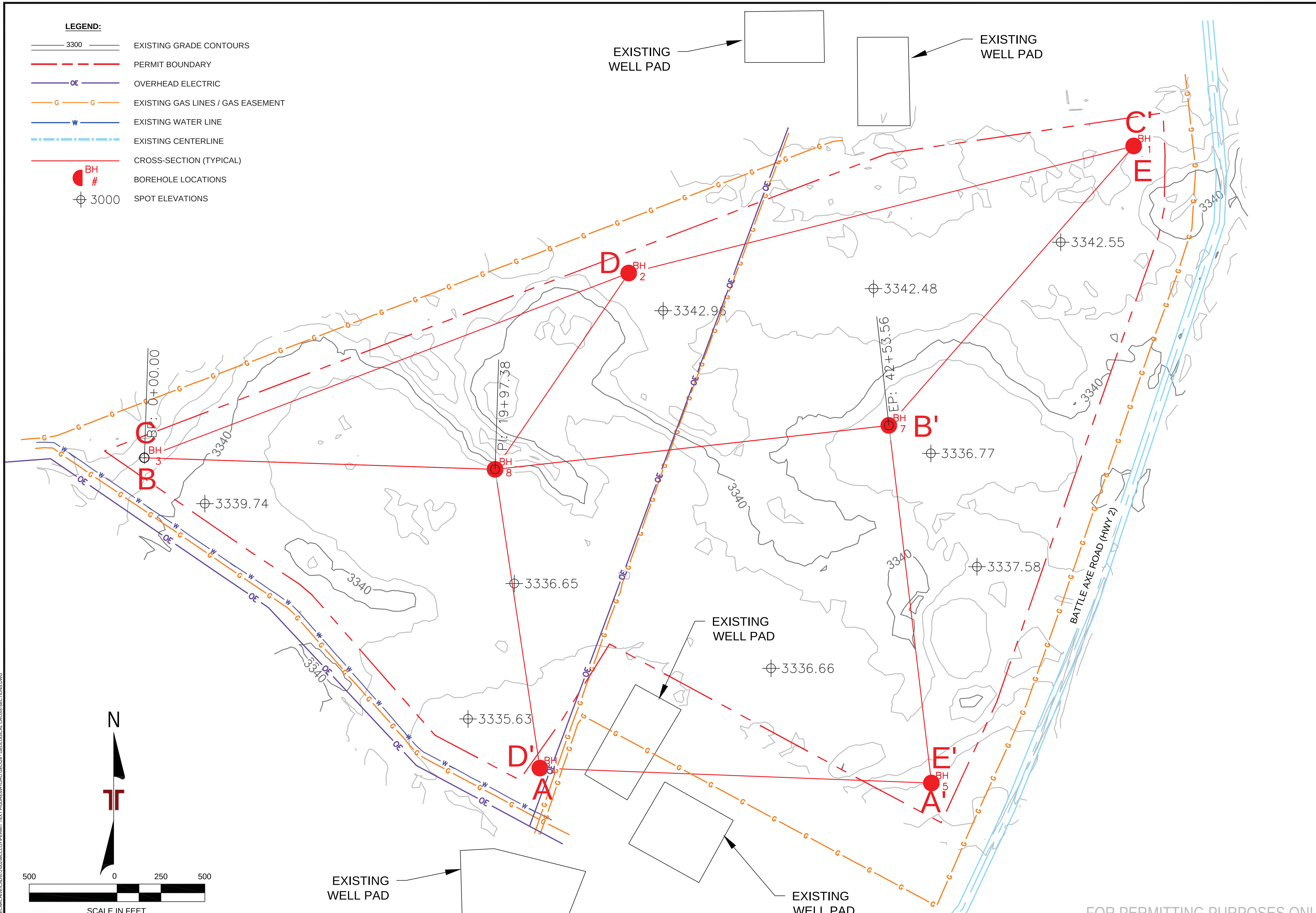
Local Groundwater Potentiometric Surface Map

NGL North Ranch
Surface Waste Management Facility
Lea County, New Mexico

Figure
5

C:\Users\swagner\Desktop\GIS_Midland_SI GIS PROJECTS\44187## - NM_McCloyRanch_GIS\44187## - NM_McCloyRanch_Ex1_SampleLocMap.mxd



REV	DATE	BY	DESCRIPTION

GEOLOGICAL CROSS-SECTIONS
NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY
NGL WASTE SERVICES, LLC
PERMIT APPLICATION DRAWING
LEA COUNTY
NEW MEXICO

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FIGURE 6

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DRAWN BY:	DEW
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SCALE:	SEE SCALEBAR
DATE:	APRIL 2019
JOB NO.	35187378
ACAD NO.	572-002
SHEET NO.:	OF

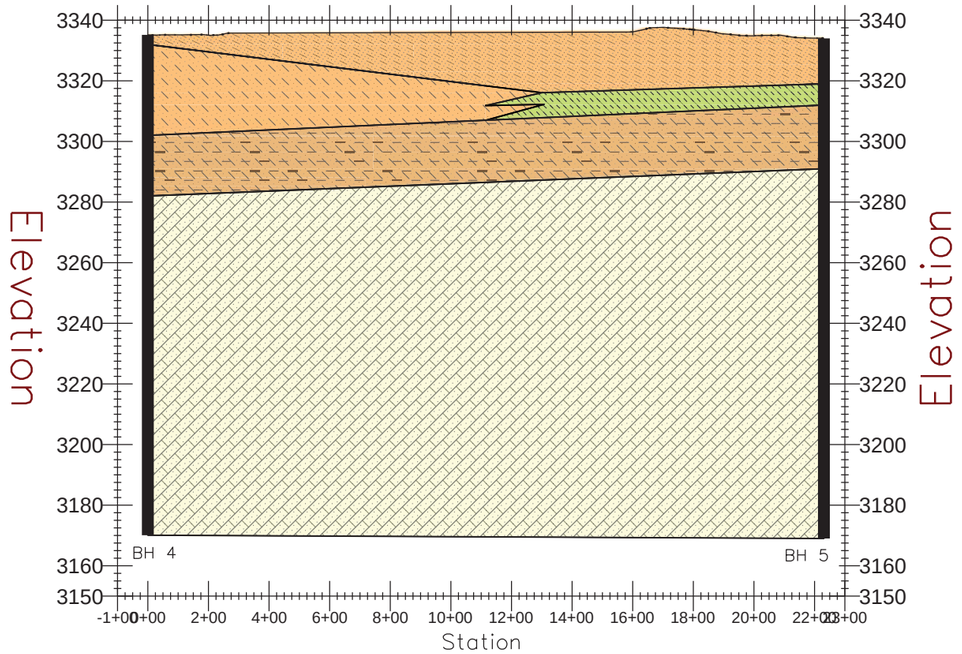
General Notes:

1. Lithologic information provided is based on field site investigation information collected by Terracon. Interpretations may change as additional information is gathered.
2. No groundwater was encountered during drilling.
3. Existing topography was performed November 30, 2018 and vertical elevations are based on the NAVD 88 NM_E.

Note:

Information depicted in this lithology shown was derived from "Geotechnical Engineering Report - McCloy Ranch Landfill" dated January 18, 2019, and was prepared by Terracon Consultants, Inc.

A TO A'

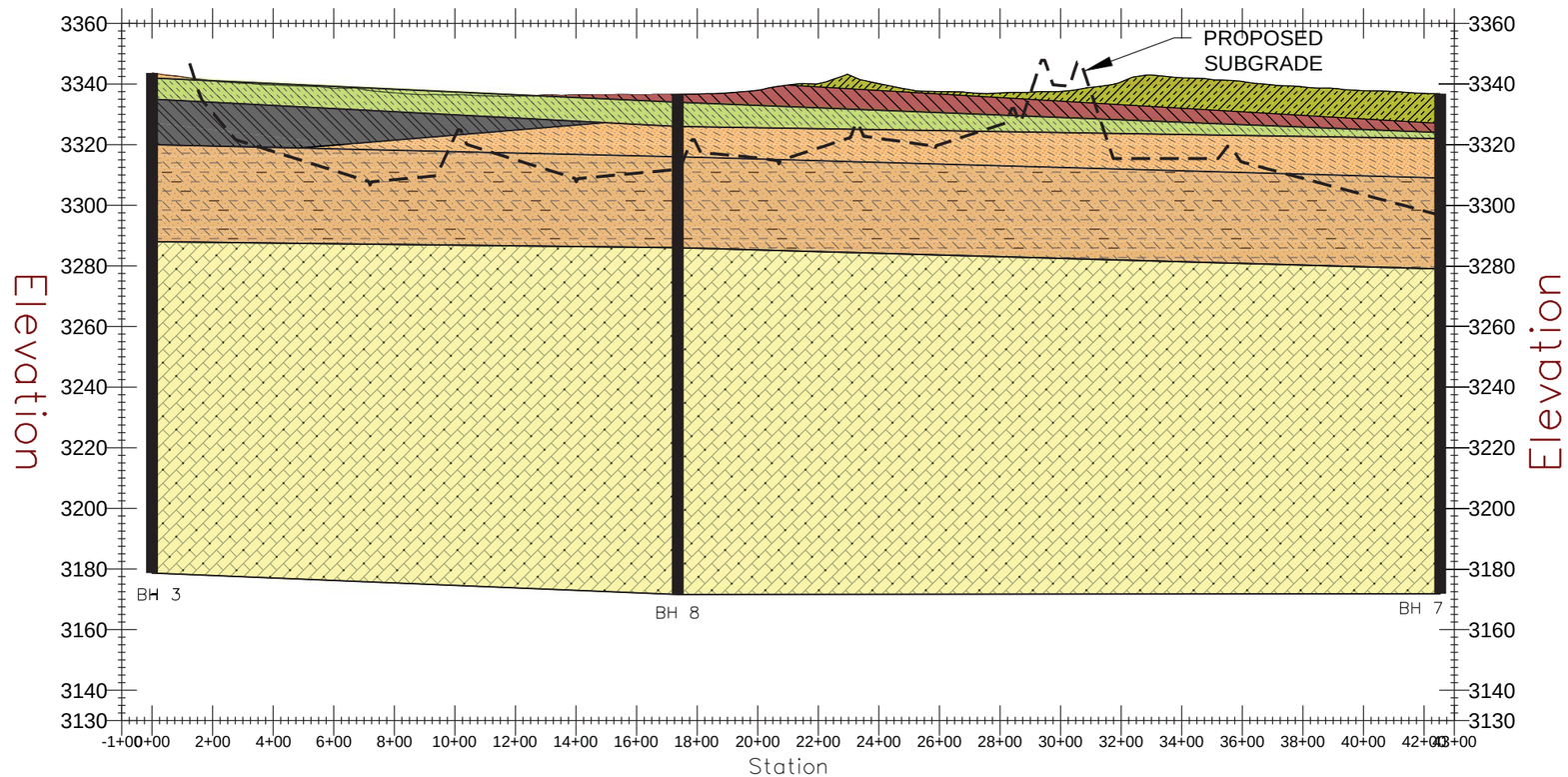


LEGEND:

- Poorly Graded Sand with Silt
- Clayey Sand with Interbedded Caliche
- Caliche
- Silty Sand
- Sandstone
- Poorly Graded Sand
- Poorly Graded Sand with Interbedded Caliche
- Silty Sand with Interbedded Caliche
- Bore Hole (BH 8)

Horizontal Scale: 1" = 500'
Vertical Scale: 1" = 50'

PROF-(1)



FOR PERMITTING PURPOSES ONLY

REV.	DATE	BY	DESCRIPTION

GEOLOGICAL CROSS-SECTION A - A' & B - B'
NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY
NGL WASTE SERVICES, LLC
PERMIT APPLICATION DRAWING
LEA COUNTY
NEW MEXICO

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FIGURE 7A

DESIGNED BY:	MPB
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SCALE:	SEE SCALEBAR
DATE:	APRIL 2019
JOB NO.	35187378
ACAD NO.	572-002
SHEET NO.:	OF

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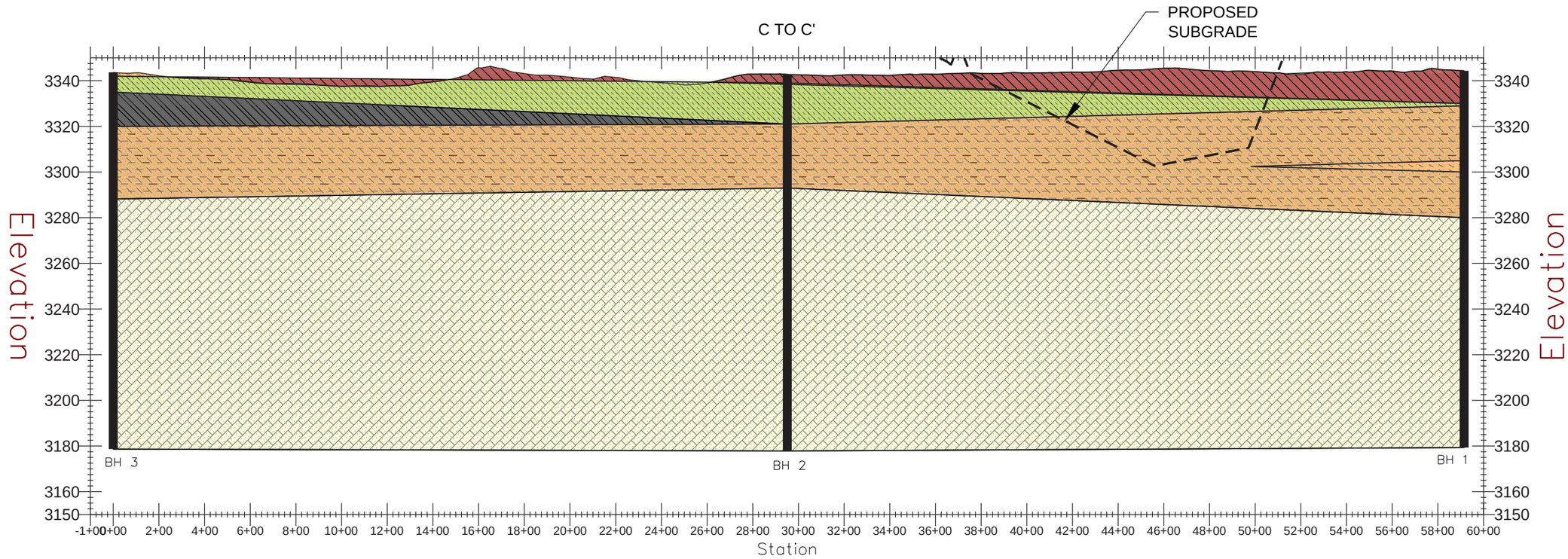
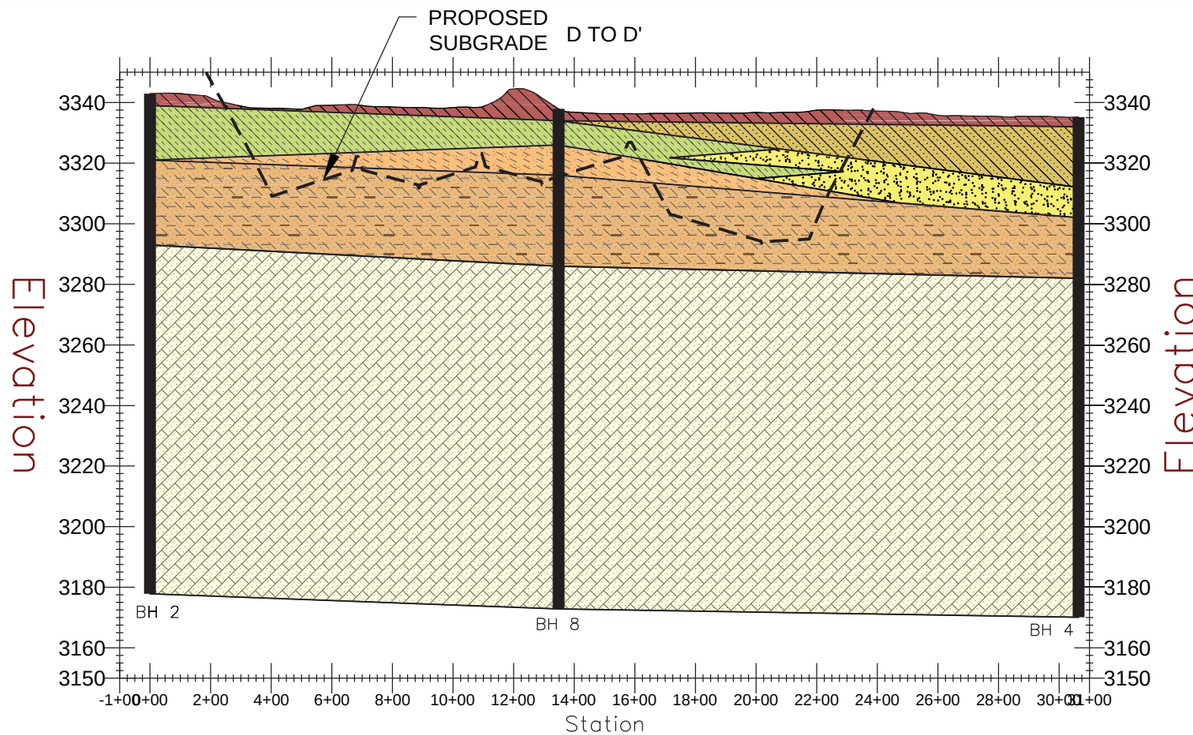


LEGEND:

- Poorly Graded Sand with Silt
- Clayey Sand with Interbedded Caliche
- Caliche
- Silty Sand
- Sandstone
- Poorly Graded Sand
- Poorly Graded Sand with Interbedded Caliche
- Silty Clayey Sand with Interbedded Caliche
- Silty Sand with Interbedded Caliche
- Bore Hole (BH 8)

Horizontal Scale: 1" = 500'
Vertical Scale: 1" = 50'



General Notes:

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2. No groundwater was encountered during drilling.
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Note:

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FOR PERMITTING PURPOSES ONLY

REV.	DATE	BY	DESCRIPTION

GEOLOGICAL CROSS-SECTION C - C' & D - D'
NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY
NGL WASTE SERVICES, LLC
PERMIT APPLICATION DRAWING
LEA COUNTY
NEW MEXICO

Terracon
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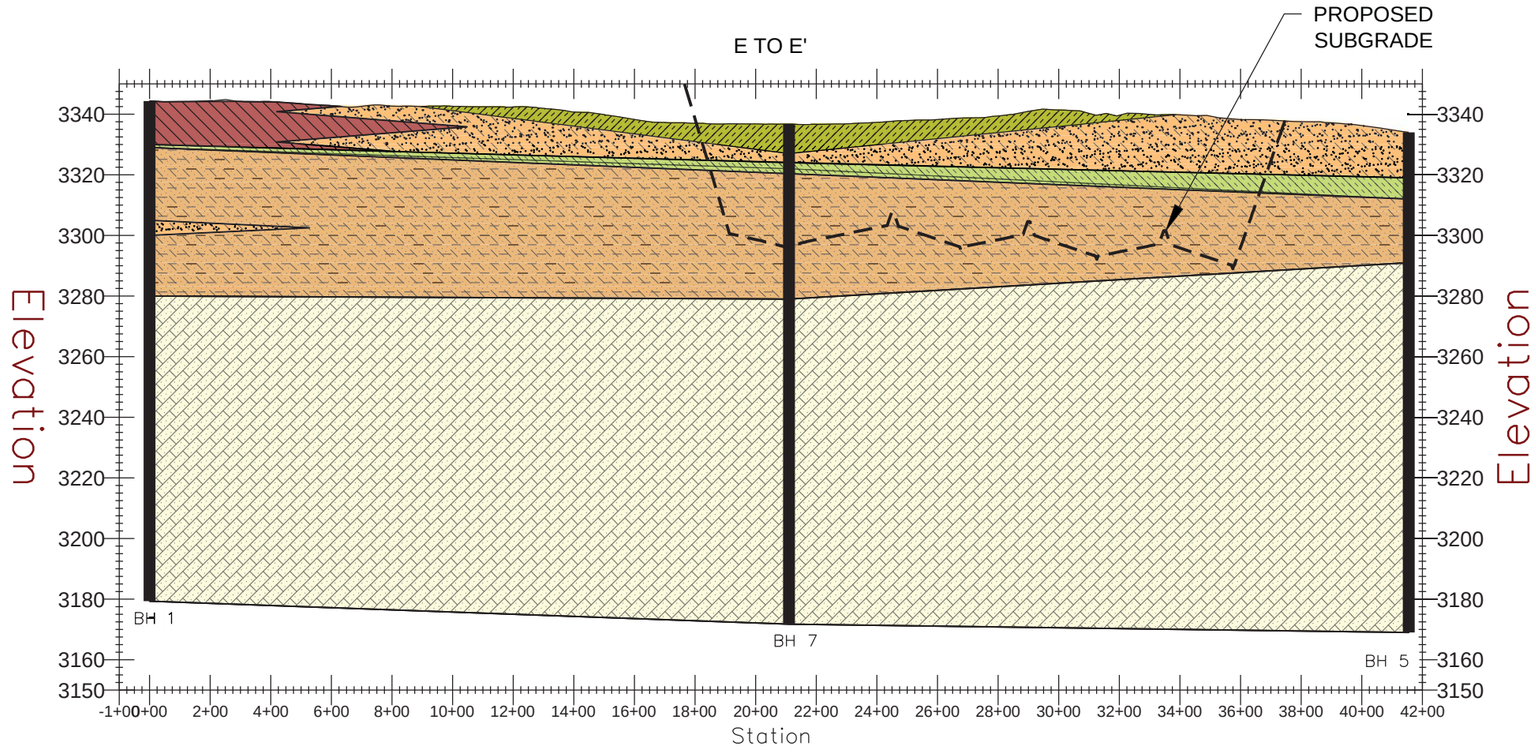
FIGURE 7B

DESIGNED BY:	MPB
DRAWN BY:	DEW
APPVD. BY:	MPB
SCALE:	SEE SCALEBAR
DATE:	APRIL 2019
JOB NO.	35187378
ACAD NO.	572-002
SHEET NO.:	OF

N:\GEOARCHIVE\CAD\572-002\MCCLOY\PERMIT TEXT FIGURES\HYDRO GEO\28 - GEOLOGICAL CROSS-SECTIONS.DWG

General Notes:

1. Lithologic information provided is based on field site investigation information collected by Terracon. Interpretations may change as additional information is gathered.
2. No groundwater was encountered during drilling.
3. Existing topography was performed November 30, 2018 and vertical elevations are based on the NAVD 88 NM_E.



LEGEND:

- Poorly Graded Sand with Silt
- Clayey Sand with Interbedded Caliche
- Caliche
- Silty Sand
- Sandstone
- Poorly Graded Sand
- Poorly Graded Sand with Interbedded Caliche
- Silty Sand with Interbedded Caliche
- Bore Hole — BH 8

Horizontal Scale: 1" = 500'
Vertical Scale: 1" = 50'

Note:

Information depicted in this lithology shown was derived from "Geotechnical Engineering Report - McCloy Ranch Landfill" dated January 18, 2019, and was prepared by Terracon Consultants, Inc.

FOR PERMITTING PURPOSES ONLY

REV.	DATE	BY	DESCRIPTION

GEOLOGICAL CROSS-SECTION E - E'
NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY
NGL WASTE SERVICES, LLC
PERMIT APPLICATION DRAWING
LEA COUNTY NEW MEXICO

Terracon
Consulting Engineers and Scientists
25809 I-30 SOUTH BRYANT, AR 72022
PH. (501) 847-9292 FAX. (501) 847-9210

FIGURE 7C

DESIGNED BY:	MPB
DRAWN BY:	DEW
APPVD. BY:	MPB
SCALE:	SEE SCALEBAR
DATE:	APRIL 2019
JOB NO.	35187378
ACAD NO.	572-002
SHEET NO.:	OF

N:\GEOARCHIVE\CAD\57200\MCCLOY\PERMIT TEXT FIGURES\HYDRO GEO\28 - GEOLOGICAL CROSS-SECTIONS.DWG

Attachment A

Geotechnical Engineering Report (Terracon, January 2019)

Terracon GeoReport

Geotechnical Engineering Report

McCloy Ranch Landfill

Jal, Lea County, New Mexico

January 25, 2019

Terracon Project No. A4187129

Prepared for:

Trammco Environmental Solutions, LLC

Fernandina Beach, FL

Prepared by:

Terracon Consultants, Inc.

Midland, Texas

January 25, 2019

Terracon GeoReport

Trammco Environmental Solutions, LLC
P.O. Box 2283
Fernandina Beach, FL 79760

Attn: Mr. Matthew Trammell
E: matt@trammco.com

Re: Geotechnical Engineering Report
McCloy Ranch Landfill
Lea County, New Mexico
Terracon Project No. A4187129

Dear Mr. Trammell:

We have completed the Hydrogeological/Geotechnical investigations for the above referenced project. This study was performed in general accordance with Terracon Proposal No. P35187312 dated October 17, 2018. This report presents the findings of the subsurface exploration and provides hydrological/geotechnical recommendations for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Naga Velpuri
Staff Geotechnical Engineer

JAMES D. COSPER, II NEW MEXICO 14477 1-25-19 REGISTERED PROFESSIONAL ENGINEER

J. Dan Cosper, P.E.
Senior Associate/Office Manager

Copy: file

REPORT TOPICS

Note: This report was originally delivered in a web-based format. **Orange Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the Terracon GeoReport logo will bring you back to this page. For more interactive features, please view your project online at client.terracon.com.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES
SITE LOCATION AND EXPLORATION PLANS
SUBSURFACE PROFILE (5 profiles)
EXPLORATION RESULTS (Boring Logs and Laboratory Data)
SUPPORTING INFORMATION (General Notes and Unified Soil Classification System and Description of Rock Properties)

REPORT SUMMARY

Topic [1]	Overview Statement [2]
Project Description	Landfill facility will be constructed on a 306-acre surface waste disposal facility within Section 9 and 10 of, T25S, R34E approximately 16 miles west of the City of Jal in Lea County, New Mexico.
Geotechnical Characterization	▪ Based on the field exploration, we classified the soils we encountered into three soil stratums, first strata with depths ranging between 20 feet to 27 feet below grade surface (bgs) consisting of silty sand, silty sand with gravel, silty clayey sand, poorly graded sand with interbedded layers of caliche. The second strata was penetrated at depths ranging between 20 feet to 27 feet bgs consisting of silty sand, poorly graded sand, interbedded caliche layers classified as, silty sand, poorly graded sand. The third strata was penetrated at depths ranging between 40 feet to 65 feet bgs and consisted of fine-grain, poorly to moderately compacted sandstone. ▪ Very dense/hard calcareous materials with varying degrees of cementation, or locally called “caliche” materials, which are typically classified as silty sand, poorly graded sand, were encountered in all the borings ranging from the upper approximately 2 to 65 feet of existing grades. Caliche interval thicknesses ranged from 1 inch to over 10 feet. The caliche materials are underlain by medium to finely weathered sandstone extending to boring-termination depths of 165 feet below existing grades. On-site subsurface soils are not expected to experience substantial volumetric changes (shrink/swell) with fluctuations in moisture content. Potential vertical rise (PVR) of on-site soils is estimated to be less than 1 inch. On-site soils are generally suitable for use as structural fill. ▪ Caliche bears a strong resemblance to rock and is therefore difficult to excavate. Based on the conditions encountered, we believe landfill excavations in the upper 2 to 65 feet of existing grades will require a hoe ram, a heavy dozer equipped with a ripper, a rock saw or a jack hammer. Bedrock was encountered beneath caliche materials, thus rock excavation by means of ripping and blasting is expected. Recommendations regarding excavation conditions of on-site subsurface materials and definitions of rock in various conditions are included in section Excavations Conditions of this report. ▪ The 2012 International Building Code (Section 1613.3.2) seismic site classification for this site is estimated to be C. ▪ No groundwater was encountered in the borings within the drilling depths of 165 feet below existing grades at the time of drilling. Based on these data, we do not expect groundwater would impact the landfill development. ▪ Laboratory permeability were measured on samples. Results of laboratory permeability measurements on samples collected from BH-1, and BH-4 were in a range of $1.09x10^{-6}$ to $6.5x10^{-5}$ cm/sec. Detailed permeability measurement results are presented in Geotechnical Characterization section of this report. ▪ Bedrocks (sandstone) were encountered at depths of 30 to 165 feet below existing grades. Please refer to boring logs and subsurface profiles provided in the Appendices.

Topic [1]	Overview Statement [2]
Below Grade Structures	The landfill development itself is considered a below grade structure.
General Comments	This section contains important information about the limitations of this geotechnical engineering report.

1. If the reader is reviewing this report as a pdf, the topics above can be used to access the appropriate section of the report by simply clicking on the topic itself.
2. This summary is for convenience only. It should be used in conjunction with the entire report for design purposes.

Geotechnical Engineering Report

McCloy Ranch Landfill

IH-20 and FM-866

Jal, Lea County, New Mexico

Terracon Project No. A4187129

January 25, 2019

INTRODUCTION

This report presents the results of Terracon's subsurface exploration and geotechnical engineering services performed for the proposed Landfill to be located within Section 9 and 10 of, T25S, R34E approximately 16 miles west of the City of Jal in Lea County, New Mexico. The purpose of these services is to provide geologic and hydrogeologic findings and geotechnical engineering recommendations relative to:

- Subsurface soil (and rock) conditions
- Groundwater conditions
- Seismic site classification per IBC
- Site preparation and earthwork
- Excavation considerations

The geotechnical engineering scope of services for this project included the advancement of seven test borings (BH-1 to BH-5, BH-7 and BH-8) to depths approximately 165 feet below existing site grades. **Please note that boring BH-6 was mislabeled as BH-8.** Although the original scope of services consisted of a total of 14 geotechnical soil testing samples. Due to the homogeneity of soils and based on the project coordination with the client during the site exploration, a total of three samples were collected for lab testing.

Maps showing the site and boring locations are shown in the **Site Location** and **Exploration Plan** sections, respectively. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included on the boring logs and as separate graphs in the **Exploration Results** section of this report.

SITE CONDITIONS

The following description of site conditions is derived from Terracon's site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	The project site is located within Section 9 and 10 of, T25S, R34E approximately 16 miles west of the City of Jal in Lea County, New Mexico. See **Site Location** for site location information.
Existing Improvements	Undeveloped ranch covered with creosote and mesquite tress.
Current Ground Cover	Site covered with sparse vegetation and mesquite trees
Existing Topography	The site slopes downward towards the east.
Geology	▪ Expected Geologic Conditions: o Pecos alluvium overlying Dockum Group ▪ Geologic Map Details: o Unconsolidated, interlayered eolian sands and piedmont-slope deposits: ▪ Unconsolidated, interlayered eolian sands • Sands, loesse ▪ Piedmont-slope deposits • Includes deposits of higher gradient tributaries bordering major stream valleys, alluvial veneers of the piedmont slope, and alluvial fans. May locally include uppermost Pliocene deposits. ▪ Underlying Upper Chinle Group, Garita Creek through Redonda Formations, undivided (Upper Triassic) ▪ Major mudstone, sandstone and minor conglometrate

PROJECT DESCRIPTION

Terracon's initial understanding of the project was provided in our proposal and was discussed in the project planning stage. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Project Description	One recycling and landfill facility will be constructed on a 306-acre tract of land.
Finished Floor Elevation	Elevation of deepest excavation is expected to be 65 feet below existing grade.
Below Grade Structures	Landfill

DRILLING PROCEDURES

▪ FIELD SUBSURFACE BORING INVESTIGATION WORK PLAN

Seven boring locations were identified for drilling within the property. The boring program was designed to evaluate the lithology and subsurface conditions throughout the property. Terracon mobilized a sonic drilling unit to the site. However, due to drilling requirements, rock coring and/or air rotary drilling was required to advance the borings to final depth.

The drilling at this location was completed by a State of New Mexico licensed well driller. Oversight of the drilling program and the logging of the lithology was conducted by a Terracon field geologist.

▪ Drilling Methodology

Soil borings were performed using sonic drilling methods to the proposed depth in accordance with ASTM D-6914/D6914M-16. The drilling rig was equipped with coring tools capable of providing a minimum borehole diameter of 6 inches with a core barrel 4 inches, 5 or 10 feet in length as drilling depth dictates. Borings BH-1, BH-5, and BH-7 were cored to a total depth of 165 feet bgs. Continuous cores were collected from the remaining borings (BH-2, BH-3, BH-4, and BH-8) to the depth of bedrock (40 to 67 feet below grade) where compressed air-rotary drilling was implemented after approval from the State of New Mexico.

▪ Soil Boring Advancement

Each soil boring was advanced to a depth of 165 feet below grade. This is over 100 feet below the proposed maximum depth of the landfill, if a landfill cell were to be located in the area of the soil boring. If a potential groundwater bearing zone (moist to saturated soils) was visible in any of the core samples, the depth would be noted and the drill casing would be raised to a depth 2 feet above the potential groundwater bearing zone. The boring would be gauged every hour for 3 hours, if no measurable amount of water had accumulated as measured with a water level meter (less than 0.01 feet) drilling would continue past this zone until either another potential groundwater bearing zone was encountered or the total depth of the boring was reached.

GEOTECHNICAL CHARACTERIZATION

Subsurface Profile

Subsurface conditions encountered at the boring locations are indicated on the boring logs **Exploration Results**. Stratification boundaries on the boring logs represent the approximate locations of changes in soil types; in-situ, the transition between materials may be gradual. Details for the boring locations can be found on the boring logs of this report. Based on the results of the borings, subsurface conditions on the project site can be generalized as follows:

As noted in **General Comments**, the stratum characterization is based upon lithologic descriptions by a Terracon field geologist. The widely spaced exploration points across the site may result in lithologic variations.

Stratum	Approximate Depth to Bottom of Stratum (feet)	Material Encountered[1]	Consistency/Density
Stratum I	20 to 27	Silty sand, silty sand with gravel, silty clayey sand, poorly graded sand; brown; with interbedded layers of caliche	Loose to medium
Stratum II	40 to 65	Silty sand, poorly graded sand, interbedded caliche layers classified as, silty sand, poorly graded sand; brown, light brown, reddish brown	Medium dense to very dense
Stratum III	>165	Sandstone, light brown, brown, tannish brown, to tan, dark reddish brown	Fine to medium, poorly to well Cemented

Conditions encountered at each boring location are indicated on the individual boring logs shown in the **Exploration Results** section and are attached to this report. Stratification boundaries on the boring logs represent the approximate location of changes in native soil types; in situ the transition between materials may be gradual.

Groundwater Conditions

Groundwater was not identified during boring advancement. In addition, each boring was allowed to recharge for a period of 24 hours to determine if groundwater was present. Prior to plugging each boring, the boring was gauged with a water level probe to evaluate the boring for the presence of groundwater. No measurable groundwater infiltration (greater than 0.01 feet) was present; therefore, the installation of monitoring wells was not required.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

Laboratory Permeability Tests

Terracon conducted 3 laboratory permeability tests on cored stratum samples, the results are tabulated in the following table:

Test Number	Boring Number	Sample Depth (feet)	Permeability, K (cm/sec)
1	BH-1	0 to 65	$6.56x10^{-6}$
2	BH-4	0 to 20	$1.09x10^{-7}$
3	BH-4	20 to 52	$6.56x10^{-6}$

Laboratory Direct Shear Tests

Terracon conducted three laboratory direct shear tests on the samples and the results are tabulated in the following table:

Test Number	Boring Number	Sample Depth (feet)	Strain rate, (in./min.)
1	BH-1	0 to 65	0.004
2	BH-4	0 to 20	0.005
3	BH-4	20 to 52	0.005

GEOTECHNICAL OVERVIEW

On-site soils generally consist of fine to medium sandy soils and strongly cemented, calcareous interbedded caliche materials in the upper approximately 2 to 65 feet of existing grades, underlain by sandstone extending to boring termination depths of 165 feet bgs. On-site subsurface soils are not expected to experience substantial volumetric changes (shrink/swell) with fluctuations in moisture content. Potential vertical rise (PVR) of on-site soils is estimated to be less than 1 inch. On-site soils are generally suitable for use as structural fill.

The 2012 International Building Code (Section 1613.3.2) seismic site classification for this site is C.

No groundwater was encountered in any of the borings within the drilling depths at the time of drilling. Based on site exploration, we do not expect groundwater would impact the landfill development, provided EDE is kept at 65 feet below existing grades.

The **General Comments** section provides an understanding of the report limitations.

EARTHWORK

Earthwork will include clearing and grubbing, excavations and fill placement. The following sections provide recommendations for use in the preparation of specifications for the work.

Recommendations include critical quality criteria as necessary to render the site in the state considered in our geotechnical engineering evaluation for landfill construction.

Site Preparation

Any topsoil or vegetation within areas to receive new fill or structures foundation footprint should be stripped and grubbed and removed. Subsequently, the exposed subgrade should be proof-rolled prior to the placement of any fill or base materials. The proof-rolling should be performed with a fully loaded, tandem-axle dump truck or other equipment providing an equivalent subgrade loading. A minimum gross weight of 20 tons is recommended for the proof-rolling equipment. The proof-rolling should consist of several overlapping passes in mutually perpendicular directions over a given area. Any soft or pumping areas should be excavated to firm ground. Excavated areas should be backfilled with properly placed and compacted fill as discussed in Section **Fill Compaction Requirements**.

Fill Material Types

The on-site subsurface materials, which are free of vegetation, debris, and rocks greater than 4 inches in maximum dimension, are generally suitable to be used for structural fill. Cemented caliche materials that look like rock are present on the project site. Caliche materials need to be crushed into sizes less than 4 inches in maximum dimension and thoroughly mixed with soils before they can be used for structural fill. Structural fill should be clean soil with a Liquid Limit (LL) of less than 35 and a Plasticity Index (PI) less than 15.

Fill Compaction Requirements

Recommendations for compaction are presented in the following table. Terracon recommends that engineered fill be tested for moisture content and compaction during placement. Should the results of the in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested as required until the specified moisture and compaction requirements are achieved.

Item	Description
General subgrade preparation to receive fill	Surface scarified to a minimum depth of 6 inches, moisture conditioned and compacted
Lift thickness	9 inches or less loose lift thickness
Compaction	At least 95% maximum standard Proctor dry density (ASTM D 698) in the range of ±2 percentage points of optimum moisture

Utilities

Care should be taken that utility trenches are properly backfilled. Backfilling should be accomplished with properly compacted engineered fill with loose lift thickness of generally 9 inches except for the first lift above the utility pipes that can be relaxed to 12 inches. Compaction should be accomplished with a hand-held compaction device inside utility trenches. Engineered fill should be compacted to at least 95% maximum standard Proctor dry density (ASTM D 698) in the range of ±2 percentage points of optimum moisture for the engineered fill.

Excavation Conditions and Construction Slopes

Terracon understands that EDE in the landfill is expected to be 65 feet below ground surface and construction of the proposed waste facility will involve mass excavation of subsurface materials. For this reason, we aim to determine the expected excavation conditions and rippability of the on-site subsurface materials within approximately 25 feet of existing grades. We note that actual rippability will depend heavily on the equipment and tools used as well as the skill and experience of operators, among other factors. There is no method more effective to determine material rippability than a field production test with equipment similar or identical to that planned for use in project construction.

Caliche layers were encountered from existing grade to depths of approximately 2 to 65 feet bgs. Interbedded caliche and sand layers were underlain by sandstone bedrock extending to the borings termination depths of 165 feet bgs in the borings. Caliche bears a strong resemblance to rock and is therefore difficult to excavate. Based on the conditions encountered, we believe excavation of caliche may require a hoe ram, a heavy dozer equipped with a ripper, a rock saw or a jack hammer or with rock-excavation or blasting equipment. Excavation of rock, sandstone, will likely require controlled blasting.

Soils can generally be excavated by conventional scrapers and loaders. Caliche, partially weathered rock (PWR) or heavily fractured rock typically requires loosening by ripping with large dozers pulling single tooth rippers in mass excavation or blasting in confined (trench) excavation. Relatively sound, massive, rock typically requires blasting for removal in mass or trench excavation.

All excavations must comply with the applicable Federal, State, and local safety regulations and codes, and especially with the excavation standards of the Occupational Safety and Health Administration (OSHA). According to the OSHA soil classification, the on-site materials are generally classified as Type B soils. Temporary slopes of 1H:1V and permanent slopes of 3H:1V may be used. Construction site safety, including excavation safety, is the sole responsibility of the Contractor as part of its overall responsibility for the mean, methods, and sequencing of construction operations.

These descriptions are a guide to conditions generally encountered. Excavation techniques will vary based on the weathering of the materials, fracturing and jointing in the rock, and the overall stratigraphy of the feature. Actual field conditions usually display a gradual weathering progression with poorly defined and uneven boundaries between layers of different materials.

Terracon recommends that the following definitions for rock in earthwork excavation construction be included in bid documents:

Mass Excavation: Any material occupying an original volume of more than 1 cubic yard which cannot be excavated with a single-toothed ripper drawn by a crawler tractor having a minimum draw bar pull rating of not less than 80,000 pounds (Caterpillar D-8 or larger).

Trench Excavation: Any material occupying an original volume of more than 1/2 cubic yard which cannot be excavated with a backhoe having a bucket curling rate of not less than 40,000 pounds, using a rock bucket and rock teeth (a John Deere 790 or larger).

In applicable areas, Terracon recommends that soils which can be excavated with conventional equipment be removed first. Then, if necessary, heavy-duty or oversized equipment can be used to excavate cemented caliche by ripping. Blasting should only be conducted where materials cannot be excavated by other trench excavation techniques such as ripping.

Grading and Drainage

All grades must provide effective drainage away from structures during and after construction and should be maintained throughout the life of the structures. Water retained next to structures can result in soil movements greater than those discussed in this report. Greater movements can result in unacceptable differential floor slab and/or foundation movements, cracked slabs and walls, and roof leaks. The roof should have gutters/drains with downspouts that discharge onto splash blocks at a distance of at least 10 feet from structures

Exposed ground should be sloped and maintained at a minimum 5 percent away from structures for at least 10 feet beyond the perimeter of the structures. Locally, flatter grades may be necessary to transition ADA access requirements for flatwork. After construction and landscaping, final grades should be verified to document effective drainage has been achieved. Grades around the structure should also be periodically inspected and adjusted as necessary as part of the structure's maintenance program. Where paving or flatwork abuts the structure a maintenance program should be established to effectively seal and maintain joints and prevent surface water infiltration.

Earthwork Construction Considerations

Shallow excavations, for the landfill structures and buildings, are anticipated to be accomplished with conventional construction equipment. Upon completion of filling and grading, care should be taken to maintain the subgrade water content prior to construction of floor slabs. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over, or adjacent to, construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted, prior to floor slab construction.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, “Excavations” and its appendices, and in accordance with any applicable local, and/or state regulations.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety, or the contractor's activities; such responsibility shall neither be implied nor inferred.

Construction Observation and Testing

The earthwork efforts should be monitored under the direction of the Geotechnical Engineer. Monitoring should include documentation of adequate removal of vegetation and top soil, proof-rolling and mitigation of areas delineated by the proof-roll to require mitigation.

Each lift of compacted fill should be tested, evaluated, and reworked as necessary until approved by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least one test for every 2,500 square feet of compacted fill in the building areas and 5,000 square feet in pavement areas. One density and water content test for every 50 linear feet of compacted utility trench backfill.

In areas of foundation excavations, the bearing subgrade should be evaluated under the direction of the Geotechnical Engineer. In the event that unanticipated conditions are encountered, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer’s evaluation of subsurface conditions, including assessing variations and associated design changes.

SEISMIC CONSIDERATIONS

Description	Value
2012 International Building Code Site Classification	C [1, 2]
Site Latitude	32.139862°
Site Longitude	- 103.465597°
S_{DS} Spectral Acceleration for a Short Period [3]	0.153g
S_{D1} Spectral Acceleration for a 1-Second Period [3]	0.052g

1. Seismic site classification in general accordance with the *2012 International Building Code*, which refers to ASCE 7-10.
2. The 2012 International Building Code (IBC) uses a site profile extending to a depth of 100 feet for seismic site classification. Borings at this site were extended to a maximum depth of 165 feet.
3. These values were obtained using online seismic design maps and tools provided by the USGS (http://earthquake.usgs.gov/hazards/designmaps/).

GENERAL COMMENTS

As the construction project progresses, we address assumptions by incorporating information provided by the design team, if any. Revised project information that reflects actual conditions important to our services is reflected in the final report. The design team should collaborate with Terracon to confirm these assumptions and to prepare the final design plans and specifications. This facilitates the incorporation of our opinions related to implementation of our geotechnical recommendations. Any information conveyed prior to the final report is for informational purposes only and should not be considered or used for decision-making purposes.

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in the final report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our scope of services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and

are accomplished in accordance with generally accepted geotechnical engineering practices with no third party beneficiaries intended. Any third party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client, and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES

Borings

As client requested, Terracon conducted a total of Seven (7) soil-testing borings as tabulated in the following table:

Boring Location	Number of Borings	Boring Depth (feet)[1]	Drilling Footage (feet)[1]
McCloy Ranch Landfill	7	165	1,155

[1] The borings at the proposed center were extended to auger refusal/rock depths, and then rock coring was conducted.

Boring Layout and Elevations: Location of soil borings are provided on our **Site Location and Exploration Plans**. Location is established in the field by Terracon's exploration team using a measuring wheel/tape and/or a hand-held GPS unit to establish boring location with reference to known points. The accuracy of the exploration points is usually within 10 feet of the noted location.

Subsurface Exploration Procedures: All borings will be performed using sonic drilling methods to the minimum depth of 50 feet bgs in accordance with ASTM D-6914/D6914M-16. The sonic drilling rig was equipped with coring tools capable of providing a minimum borehole diameter of 6 inches with a core barrel was be advanced into the subsurface and tocollect an undisturbed soil core. Prior to placing an additional core casing section onto the drill stem, the soil core was removed from the core barrel and the undisturbed soil core was extracted, characterized for geological lithology, and logged. The empty coring barrel was replaced inside the drill casing, and the drilling continued. This process was continued until either a boring depth of 165 feet bgs was achieved or until groundwater was encountered. Compressed air-rotary drilling and plain water was utilized to remove the cores and/or cuttings and speed up the operation further, depending on subsurface conditions.

The sampling depths, penetration distances, and other sampling information were recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a geotechnical engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs include visual classifications of the materials encountered during drilling and our interpretation of the subsurface conditions between samples. Final boring logs are prepared from the field logs. The final boring logs represent the geotechnical engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Laboratory Testing

The project engineer reviews the field data and assigns various laboratory tests to better understand the engineering properties of the various soil and rock strata as necessary for this project. Procedural standards noted below are for reference to methodology in general. In some

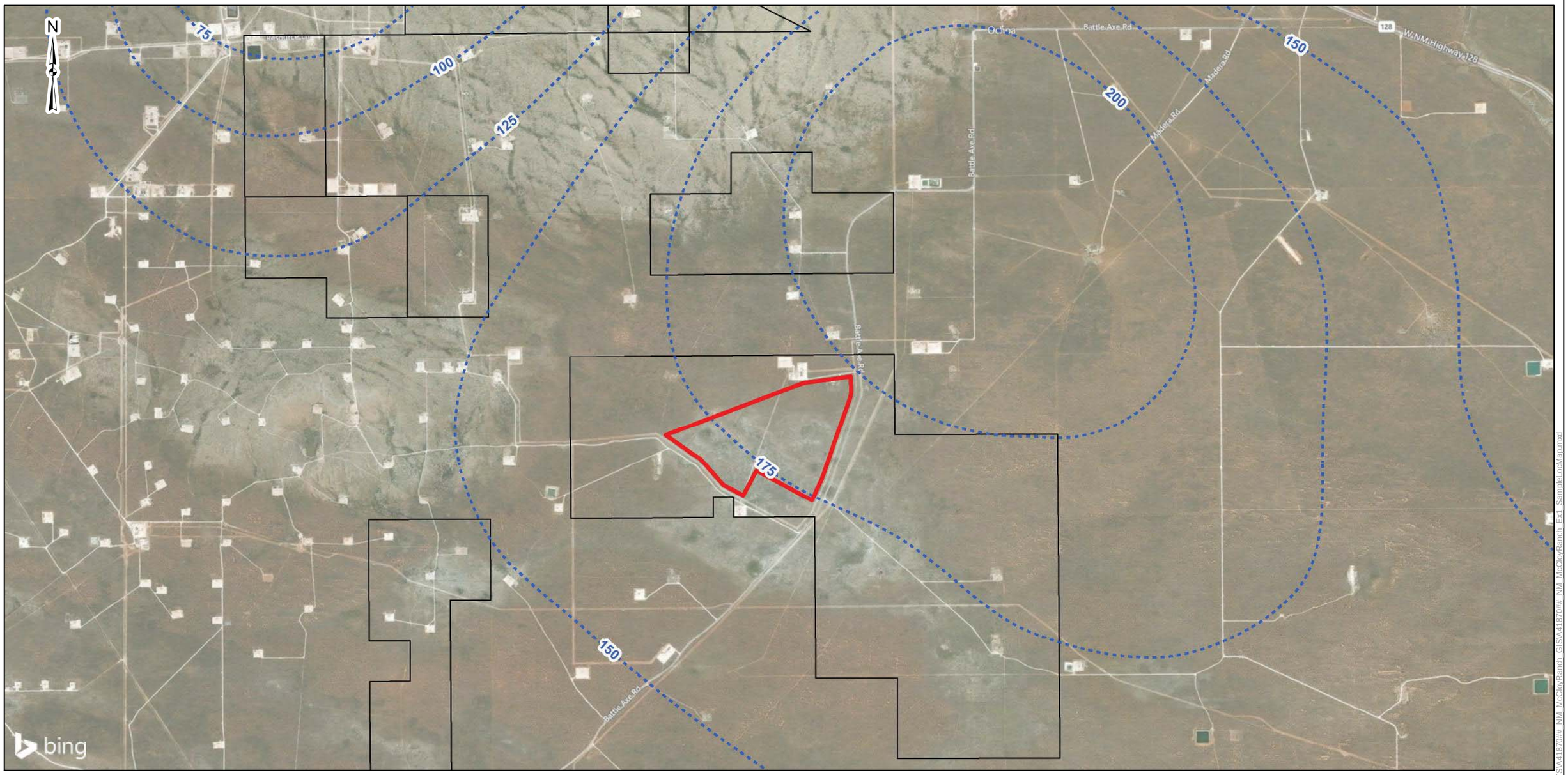
cases, variations to methods are applied because of local practice or professional judgment. Standards noted below include reference to other, related standards. Such references are not necessarily applicable to describe the specific test performed.

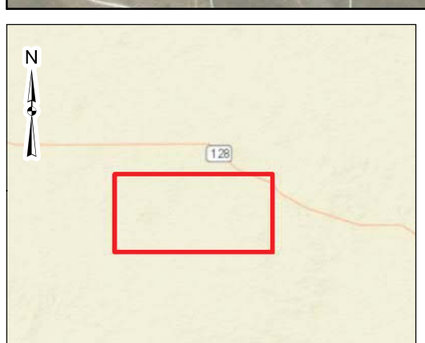
- Moisture Content (ASTM D854)
- Particle Size (ASTM D1140, D422)
- Atterburg Limits (ASTM D4318)
- Laboratory Compaction (ASTM D698)
- ASTM D5084 Standard Test Method for Permeability Tests
- Direct Shear of Soil (ASTM D3080)

The laboratory testing program often includes examination of soil samples by an engineer. Based on the material's texture and plasticity, we describe and classify the soil samples in accordance with the Unified Soil Classification System.

Rock classification is conducted using locally accepted practices for engineering purposes; petrographic analysis may reveal other rock types. Rock core samples typically provide an improved specimen for this classification. Boring log rock classification is determined using the Description of Rock Properties.

SITE LOCATION AND EXPLORATION PLANS





Proposed Landfill

- Proposed Landfill
- Inferred Depth to Water Contour (ft. bgs)
- McCloy Ranch Boundaries

Notes:
-Exhibit is for general location only, is not indended for construction purposes, and should not be used seperatedly from original report.

0 0.5 1 2 Miles

Fractional Scale: 1:37,883

DATA SOURCES:
Bing Maps - Aerial Imagery, World Street Map

Project No.:	35187312
Date:	Sep 2018
Drawn By:	SW
Reviewed By:	MB

Terracon
10400 Highway 191 Midland, TX 79707
PH. (432) 684-9600 terracon.com

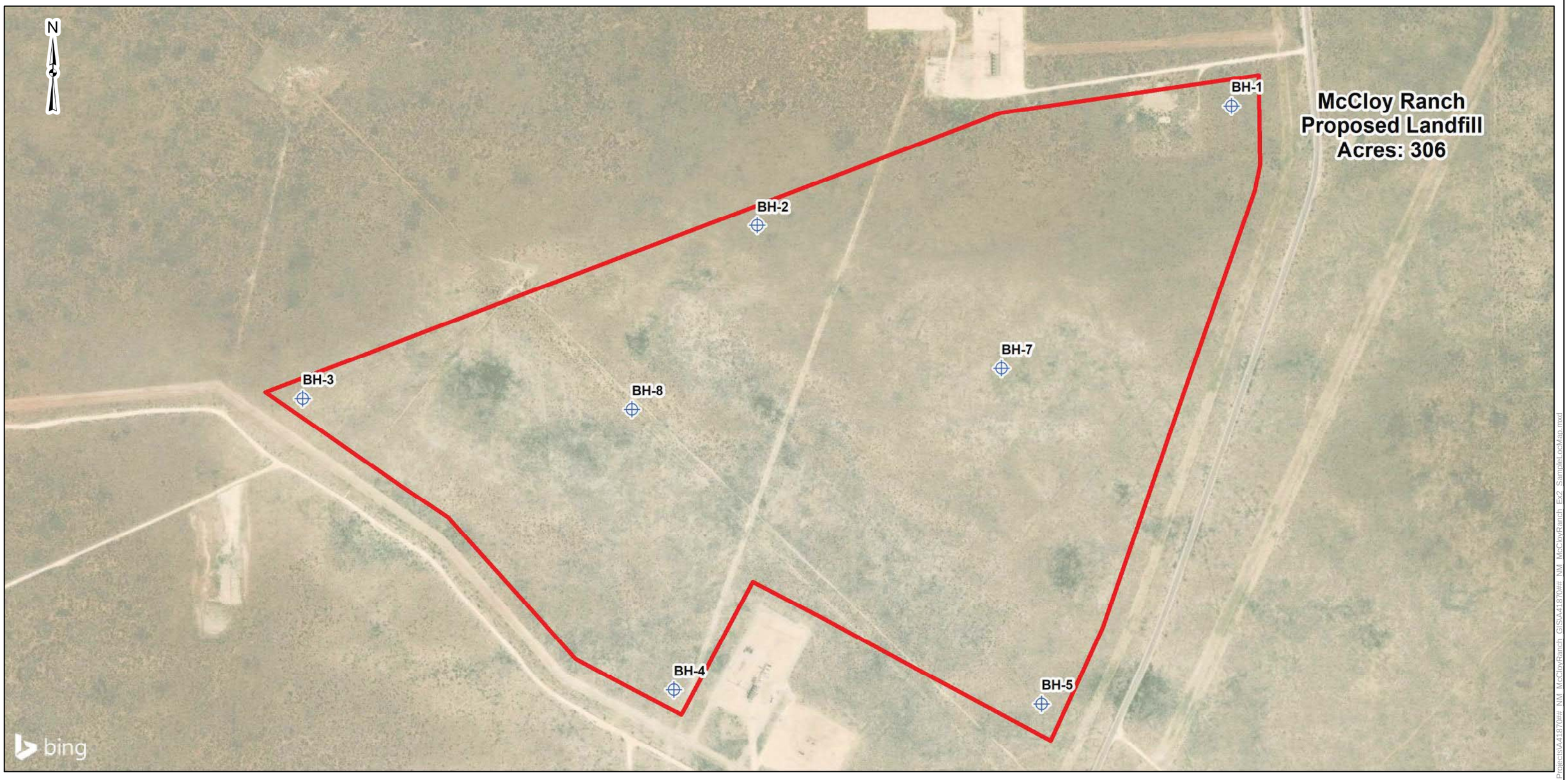
Proposed Landfill Map

Project Name
Client Name
Project Address
Project City, State
GPS: 32.143736°, -103.461678°

Exhibit

1

C:\Users\swarner\Desktop\GIS Midland_SI GIS PROJECTS\44870## NM McCloyRanch GIS\44870## NM McCloyRanch Ext Sample\Exhibit.mxd



Proposed Landfill

Soil Boring (BH)

Proposed Landfill

Notes:
-Exhibit is for general location only, is not indended for construction purposes, and should not be used seperatedly from original report.

0 500 1,000 2,000 Feet

Fractional Scale: 1:7,055

DATA SOURCES:
Bing Maps - Aerial Imagery, World Street Map

Project No.:	A4187129
Date:	Jan 2019
Drawn By:	SW
Reviewed By:	DC

Terracon
10400 Highway 191 Midland, TX 79707
PH. (432) 684-9600 terracon.com

Proposed Landfill Sample Location Map

Trammco Environmental Solutions
McCloy Ranch - Proposed Landfill
Lea County, New Mexico
GPS: 32.143736°, -103.461678°

Exhibit

2

C:\Users\swarner\Desktop\GIS Midland Projects\SI GIS Projects\A4187077 NM McCloyRanch GISA4187077 NM McCloyRanch Ex2 SampleLocMap.mxd

EXPLORATION RESULTS

BORING LOG NO. BH-1

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.15° Longitude: -103.4539°

Approximate Surface Elev.: 3345 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Material Description
1.0	3344+/-	**POORLY GRADED SAND (SP)**, brown, dry, -Loose to very dense
		SILTY SAND (SM), brown to dark reddish brown, dry, -Medium dense to very dense
5.0	3340+/-	
		POORLY GRADED SAND (SP), brown, dry, -Medium dense to very dense
10.0	3335+/-	
		SILTY SAND (SM), light brown to gray, dry, -Medium dense to very dense
15.0	3330+/-	
16.0	3329+/-	**CALICHE**, white, dry
18.0	3327+/-	**POORLY GRADED SAND (SP)**, brown, dry, -Medium dense to very dense
		POORLY GRADED SAND (SP), brown to light brown, dry, -Medium dense to very dense
40.0	3305+/-	
		SILTY SAND (SM), brown to light brown, dry, -Medium dense to very dense
45.0	3300+/-	
		POORLY GRADED SAND WITH SILT (SP-SM), reddish brown to light brown, dry, -Medium dense to very dense

DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
30			7	20-17-3	23

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-02-2018 | Boring Completed: 11-06-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-1

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.15° Longitude: -103.4539°

Approximate Surface Elev.: 3345 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	POORLY GRADED SAND WITH SILT (SP-SM), reddish brown to light brown, dry, -Medium dense to very dense *(continued)*							
	65.0	3280+/-	65					
	SANDSTONE, brown to dark reddish brown, dry, -Moderately to highly weathered		70					
			75					
			80					
			85					
			90					
			95					
			100					
			105					
			110					
			115					
			120					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-02-2018 | Boring Completed: 11-06-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-1

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.15° Longitude: -103.4539°

Approximate Surface Elev.: 3345 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		SANDSTONE, brown to dark reddish brown, dry, -Moderately to highly weathered *(continued)*	125 130 135 140 145 150 155 160					
	165.0	3180+/-	165					
		Boring Terminated at 165 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-02-2018 | Boring Completed: 11-06-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-2

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.1481° Longitude: -103.4638°

Approximate Surface Elev.: 3343 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	
		POORLY GRADED SAND (SP), light brownish gray to reddish brown, dry, -Loose to very dense
4.0	3339+/-	
		CALICHE, white to light brown, dry, -Loose to moderately compacted
22.0	3321+/-	
		POORLY GRADED SAND WITH SILT (SP-SM), reddish brown to light brown, dry, -Medium dense to very dense
50.0	3293+/-	
		SANDSTONE, light brown to dark reddish brown, dry, -Moderately to highly weathered

GRAPHIC LOG | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-26-2018 | Boring Completed: 11-28-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-2

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.1481° Longitude: -103.4638°

Approximate Surface Elev.: 3343 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	SANDSTONE, light brown to dark reddish brown, dry, -Moderately to highly weathered *(continued)*		65 70 75 80 85 90 95 100 105 110 115 120					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-26-2018 | Boring Completed: 11-28-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-2

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.1481° Longitude: -103.4638°

Approximate Surface Elev.: 3343 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		SANDSTONE, light brown to dark reddish brown, dry, -Moderately to highly weathered *(continued)*	125					
			130					
			135					
			140					
			145					
			150					
			155					
			160					
	165.0	3178+/-	165					
		Boring Terminated at 165 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-26-2018 | Boring Completed: 11-28-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-3

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.1451° Longitude: -103.4733°

Approximate Surface Elev.: 3345 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	
0.0	3342+/-	**SILTY SAND (SM)**, reddish brown, dry, -Loose to very dense
3.0	3335+/-	**CALICHE**, white, dry
10.0	3320+/-	**SILTY SAND, with interbedded CALICHE (SM)**, light brownish gray to reddish brown, dry, -Medium dense to very dense
25.0	3288+/-	**POORLY GRADED SAND WITH SILT (SP-SM)**, brown to light brown, dry, -Medium dense to very dense
57.0		**SANDSTONE**, light brown to dark reddish brown, dry, -Moderately to highly weathered

GRAPHIC LOG | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-26-2018 | Boring Completed: 11-28-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-3

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.1451° Longitude: -103.4733°

Approximate Surface Elev.: 3345 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	SANDSTONE, light brown to dark reddish brown, dry, -Moderately to highly weathered *(continued)*		65 70 75 80 85 90 95 100 105 110 115 120					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-26-2018 | Boring Completed: 11-28-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-3

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.1451° Longitude: -103.4733°

Approximate Surface Elev.: 3345 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		SANDSTONE, light brown to dark reddish brown, dry, -Moderately to highly weathered *(continued)*	125					
			130					
			135					
			140					
			145					
			150					
			155					
			160					
	165.0	3180+/-	165					
		Boring Terminated at 165 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-26-2018 | Boring Completed: 11-28-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-4

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.1399° Longitude: -103.4656°

Approximate Surface Elev.: 3332 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0.0	3332+/-	**CLAYEY SAND with interbedded CALICHE (SC)**, light brownish gray to reddish brown, dry, -Loose to very dense
20.0	3312+/-	**SILTY CLAYEY SAND, with interbedded CALICHE (SC-SM)**, reddish brown to light brown, dry, -Medium dense to very dense
30.0	3302+/-	**POORLY GRADED SAND (SP)**, brown, dry, -Dense
50.0	3282+/-	**SANDSTONE**, brown to dark reddish brown, dry, -Moderately to highly weathered, well cemented

DEPTH (Ft.)	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
10		5	23-14-9	39
35		8	25-18-7	26

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-15-2018 | Boring Completed: 11-18-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-4

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.1399° Longitude: -103.4656°

Approximate Surface Elev.: 3332 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	SANDSTONE, brown to dark reddish brown, dry, -Moderately to highly weathered, well cemented *(continued)*		65 70 75 80 85 90 95 100 105 110 115 120					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-15-2018 | Boring Completed: 11-18-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-4

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.1399° Longitude: -103.4656°

Approximate Surface Elev.: 3332 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		SANDSTONE, brown to dark reddish brown, dry, -Moderately to highly weathered, well cemented *(continued)*	125 130 135 140 145 150 155 160					
	165.0	3167+/-	165					
		Boring Terminated at 165 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-15-2018 | Boring Completed: 11-18-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-5

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.1394° Longitude: -103.4584°

Approximate Surface Elev.: 3331 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	
2.0	3329+/-	**POORLY GRADED SAND (SP)**, light brownish gray to reddish brown, dry, -Loose to very dense
		SILTY SAND (SM), reddish brown to light brown, dry, -Loose to very dense
12.0	3319+/-	
		CALICHE, white, dry
19.0	3312+/-	
		POORLY GRADED SAND WITH SILT (SP-SM), brown to light brown, dry, -Medium dense to very dense
40.0	3291+/-	
		SANDSTONE, brown to dark reddish brown, dry, -Medium dense to very dense

GRAPHIC LOG | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-09-2018 | Boring Completed: 11-14-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-5

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.1394° Longitude: -103.4584°

Approximate Surface Elev.: 3331 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	SANDSTONE, brown to dark reddish brown, dry, -Medium dense to very dense *(continued)*		65 70 75 80 85 90 95 100 105 110 115 120					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-09-2018 | Boring Completed: 11-14-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-5

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.1394° Longitude: -103.4584°

Approximate Surface Elev.: 3331 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		SANDSTONE, brown to dark reddish brown, dry, -Medium dense to very dense *(continued)*	125 130 135 140 145 150 155 160					
	165.0	3166+/-	165					
		Boring Terminated at 165 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-09-2018 | Boring Completed: 11-14-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-7

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.1454° Longitude: -103.4585°

Approximate Surface Elev.: 3334 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	
0.0	3334+/-	**POORLY GRADED SAND, with interbedded CALICHE (SP)**, light brownish gray to gray, dry, -Loose to very dense
7.0	3327+/-	**SILTY SAND (SM)**, light brown to gray, dry, -Loose to very dense
10.0	3324+/-	**CALICHE**, white, dry
12.0	3322+/-	**SILTY SAND (SM)**, light brown to gray, dry, -Medium dense to very dense
25.0	3309+/-	**POORLY GRADED SAND WITH SILT (SP-SM)**, reddish brown, dry, -Medium dense to very dense
55.0	3279+/-	**SANDSTONE**, brown to dark reddish brown, dry, -Moderately to highly weathered

GRAPHIC LOG | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-06-2018 | Boring Completed: 11-08-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-7

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.1454° Longitude: -103.4585°

Approximate Surface Elev.: 3334 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	SANDSTONE, brown to dark reddish brown, dry, -Moderately to highly weathered *(continued)*		65 70 75 80 85 90 95 100 105 110 115 120					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-06-2018 | Boring Completed: 11-08-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-7

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.1454° Longitude: -103.4585°

Approximate Surface Elev.: 3334 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		SANDSTONE, brown to dark reddish brown, dry, -Moderately to highly weathered *(continued)*	125					
			130					
			135					
			140					
			145					
			150					
			155					
			160					
	165.0	3169+/-	165					
		Boring Terminated at 165 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-06-2018 | Boring Completed: 11-08-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-8

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.1448° Longitude: -103.4665°

Approximate Surface Elev.: 3336 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	
2.0	3334+/-	**POORLY GRADED SAND (SP)**, light brownish gray to reddish brown, -Loose to very dense, dry
		CALICHE, white
10.0	3326+/-	
		SILTY SAND (SM), brown to light brown, -Medium dense to very dense, dry
20.0	3316+/-	
		POORLY GRADED SAND WITH SILT (SP-SM), brown to dark reddish brown, -Medium dense to very dense, dry
50.0	3286+/-	
		SANDSTONE, brown to dark reddish brown, -Moderately to highly weathered, dry

GRAPHIC LOG | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | WATER CONTENT (%) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-16-2018 | Boring Completed: 11-16-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-8

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.1448° Longitude: -103.4665°

Approximate Surface Elev.: 3336 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		SANDSTONE, brown to dark reddish brown, -Moderately to highly weathered, dry *(continued)*	65					
			70					
			75					
			80					
			85					
			90					
			95					
			100					
			105					
			110					
			115					
			120					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

Boring Started: 11-16-2018 | Boring Completed: 11-16-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

BORING LOG NO. BH-8

PROJECT: McCloy Ranch Landfill

CLIENT: Trammco Environmental Solutions, LLC
Fermandina Beach, Florida

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

LOCATION See Exploration Plan

Latitude: 32.1448° Longitude: -103.4665°

Approximate Surface Elev.: 3336 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		SANDSTONE, brown to dark reddish brown, -Moderately to highly weathered, dry *(continued)*	125					
			130					
			135					
			140					
			145					
			150					
			155					
			160					
	165.0	3171+/-	165					
		Boring Terminated at 165 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Sonic/Coring

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered during drilling

Dry after 24 hours of drilling

Terracon
10400 State Highway 191
Midland, TX

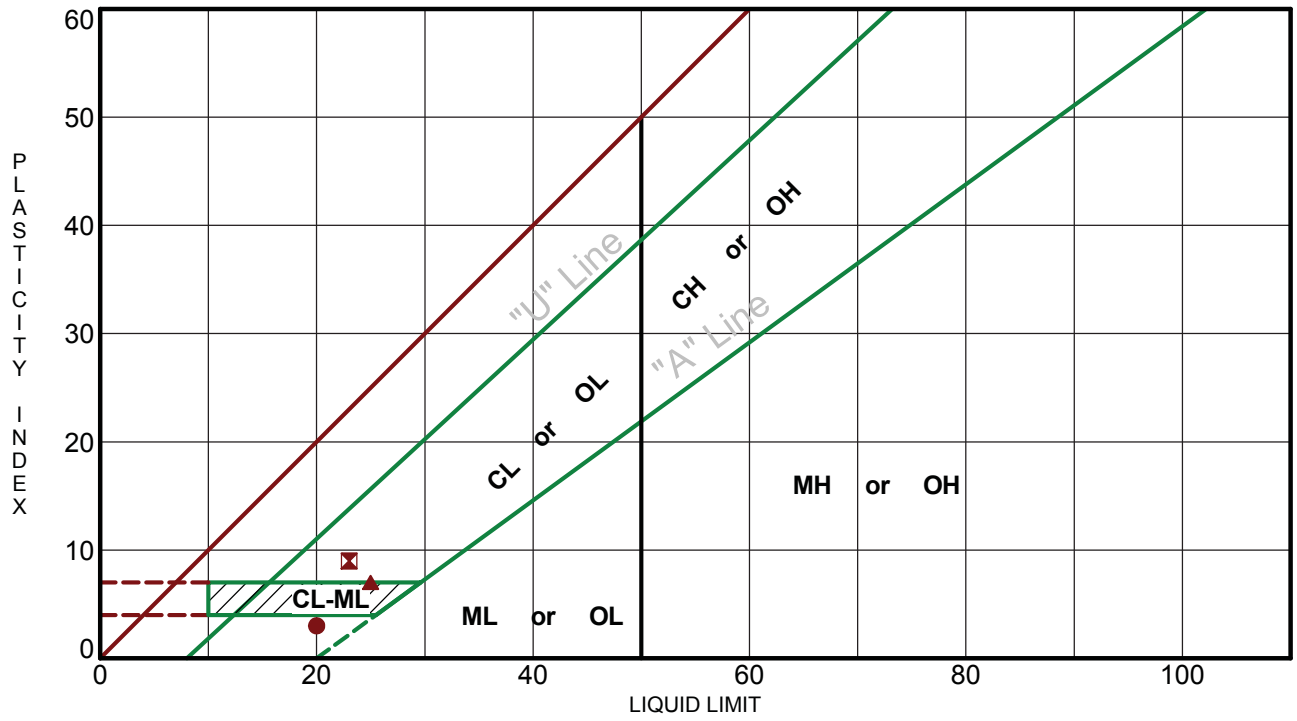
Boring Started: 11-16-2018 | Boring Completed: 11-16-2018

Drill Rig: CME 75 | Driller: Alec

Project No.: A4187129

ATTERBERG LIMITS RESULTS

ASTM D4318



Boring ID		Depth	LL	PL	PI	Fines	USCS	Description
●	BH-1	0 - 65	20	17	3	23	SM	SILTY SAND with GRAVEL
⊠	BH-4	0 - 20	23	14	9	39	SC	CLAYEY SAND
▲	BH-4	20 - 52	25	18	7	26	SC-SM	SILTY, CLAYEY SAND

PROJECT: McCloy Ranch Landfill

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

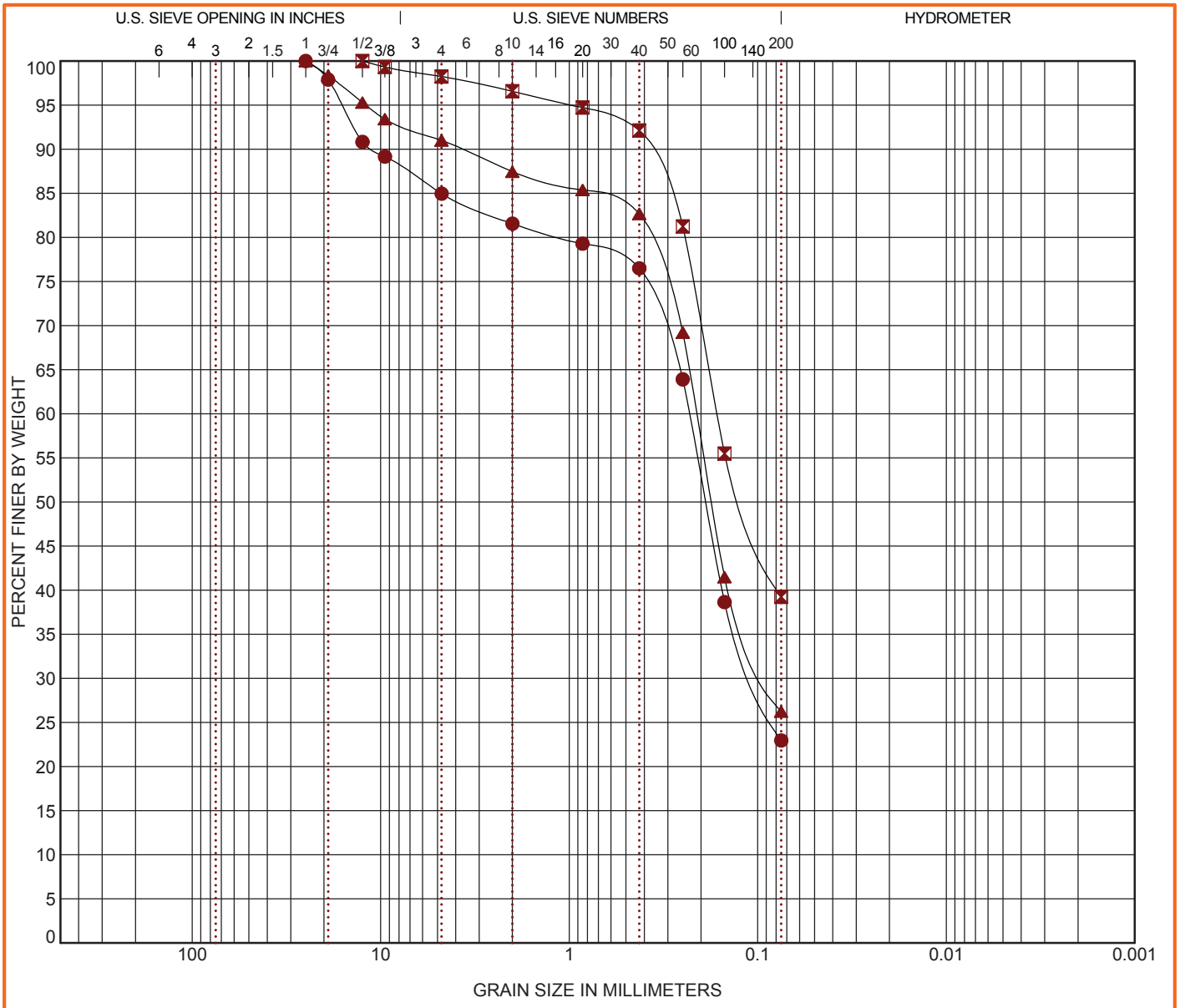
Terracon
10400 State Highway 191
Midland, TX

PROJECT NUMBER: A4187129

CLIENT: Trammco environmental Solutions, LLC
Fermandina Beach, Florida

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification	WC (%)	LL	PL	PI	Cc	Cu
●	BH-1	0 - 65	SILTY SAND with GRAVEL (SM)	7	20	17	3		
⊠	BH-4	0 - 20	CLAYEY SAND (SC)	5	23	14	9		
▲	BH-4	20 - 52	SILTY, CLAYEY SAND (SC-SM)	8	25	18	7		

Boring ID		Depth	D_{100}	D_{60}	D_{30}	D_{10}	%Gravel	%Sand	%Silt	%Fines	%Clay
●	BH-1	0 - 65	25	0.231	0.102		15.0	62.0		23.0	
⊠	BH-4	0 - 20	12.5	0.164			1.8	59.0		39.2	
▲	BH-4	20 - 52	25	0.211	0.089		9.0	64.8		26.2	

PROJECT: McCloy Ranch Landfill

SITE: Section 9 and 10 of, T25S, R34E
Jal, Lea County, New Mexico

Terracon
10400 State Highway 191
Midland, TX

PROJECT NUMBER: A4187129

CLIENT: Trammco environmental Solutions, LLC
Fermandina Beach, Florida

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 A4187129 - MCCLOY SITE.GPJ TERRACON_DATATEMPLATE.GDT 1/15/19

Terracon

HYDRAULIC CONDUCTIVITY DETERMINATION
FLEXIBLE WALL PERMEAMETER - CONSTANT VOLUME
(Mercury Permometer Test)

Project :	Beckham and McCloy Landfill							
Date:	12/21/2018	Panel Number : P-1						
Project No. :	A4187129	Permometer Data						
Boring No.:	BH-4	a_p =	0.031416	cm^2	Set Mercury to Pipet Rp at beginning	Equilibrium	1.6	cm^3
Sample:	composite 1	a_a =	0.767120	cm^2		Pipet **Rp**	**16.8**	cm^3
Depth (ft):	0-20	M_1 =	0.030180	C = 0.0004288		Annulus **Ra**	1.0	cm^3
Other Location:	McCloy Site	M_2 =	1.040953	T = 0.0658646				

Material Description : light brown clayey sand

SAMPLE DATA

					Before Test		After Test	
Wet Wt. sample + ring or tare :			575.30	g				
Tare or ring Wt. :			0.0	g				
Wet Wt: of Sample :			575.30	g	Tare No.:	102	Tare No.:	N/A
Diameter :	2.80	in	7.11	cm^2	Wet Wt.+tare:	115.70	Wet Wt.+tare:	578.70
Length :	2.80	in	7.11	cm	Dry Wt.+tare:	100.00	Dry Wt.+tare:	484.11
Area:	6.16	in^2	39.73	cm^2	Tare Wt:	0.00	Tare Wt:	0.00
Volume :	17.24	in^3	282.53	cm^3	Dry Wt.:	100	Dry Wt.:	484.11
Unit Wt.(wet):	**127.06**	pcf	**2.04**	g/cm^3	Water Wt.:	15.7	Water Wt.:	94.59
Unit Wt.(dry):	**109.82**	pcf	**1.76**	g/cm^3	% moist.:	**15.7**	% moist.:	**19.5**

Assumed Specific Gravity:	**2.70**	Max Dry Density(pcf) =	115.6	OMC =	13.7
		% of max =	95.0	+/- OMC =	2.00
Calculated % saturation:	98.63	Void ratio (e) =	**0.53**	Porosity (n)=	**0.35**

Test Pressures During Hydraulic Conductivity Test

Cell Pressure (psi) = 55.00 Back Pressure (psi) = 50.00 Confining Pressure = 5.00 psi

Note: The above value is Effective Confining Pressure

TEST READINGS

Z_1(Mercury Height Difference @ t_1): 15.8 cm Hydraulic Gradient = 28.00

Date	elapsed t (seconds)	Z (pipet @ t)	ΔZp (cm)	temp (deg C)	α (temp corr)	k (cm/sec)	k (ft./day)	Reset = *
12/20/2018	300	15.7	1.082666	21	0.977	1.03E-07	2.93E-04	
12/20/2018	600	14.6	2.182666	21	0.977	1.08E-07	3.07E-04	
12/20/2018	900	13.5	3.282666	21	0.977	1.13E-07	3.21E-04	
12/20/2018	1200	12.6	4.182666	21	0.977	1.12E-07	3.19E-04	

SUMMARY

k_a =	1.09E-07	cm/sec		Acceptance criteria =	50 %
ki			Vm		
k1 =	1.03E-07	cm/sec	5.6	%	Vm = $\frac{\lvert k_a - k_i \rvert}{k_a} \times 100$
k2 =	1.08E-07	cm/sec	0.9	%	
k3 =	1.13E-07	cm/sec	3.7	%	
k4 =	1.12E-07	cm/sec	2.8	%	

Hydraulic conductivity	k =	**1.09E-07**	cm/sec	**3.10E-04**	ft/day
Void Ratio	e =	**0.53**			
Porosity	n =	**0.35**			
Bulk Density	γ =	**2.04**	g/cm^3	**127.1**	pcf
Water Content	W =	**0.28**	cm^3/cm^3	(at 20 deg C)	
Intrinsic Permeability	k_{int} =	**1.12E-12**	cm^2	(at 20 deg C)	

Terracon

HYDRAULIC CONDUCTIVITY DETERMINATION
FLEXIBLE WALL PERMEAMETER - CONSTANT VOLUME
(Mercury Permometer Test)

Project :	Beckham and McCloy Landfill							
Date:	12/21/2018	Panel Number : P-1						
Project No. :	A4187129	Permometer Data						
Boring No.:	BH-4	a_p =	0.031416	cm^2	Set Mercury to Pipet Rp at beginning	Equilibrium	1.6	cm^3
Sample:	composite 2	a_a =	0.767120	cm^2		Pipet **Rp**	**16.8**	cm^3
Depth (ft):	20.0-52.0	M_1 =	0.030180	C = 0.0004288		Annulus **Ra**	1.0	cm^3
Other Location:	McCloy Site	M_2 =	1.040953	T = 0.0658646				

Material Description : light brown silty, clayey sand

SAMPLE DATA

					Before Test		After Test	
Wet Wt. sample + ring or tare :			566.34	g	Tare No.:	103	Tare No.:	N/A
Tare or ring Wt. :			0.0	g	Wet Wt.+tare:	115.70	Wet Wt.+tare:	579.47
Wet Wt: of Sample :			566.34	g	Dry Wt.+tare:	100.00	Dry Wt.+tare:	481.39
Diameter :	2.80	in	7.11	cm^2	Tare Wt:	0.00	Tare Wt:	0.00
Length :	2.80	in	7.11	cm	Dry Wt.:	100	Dry Wt.:	481.39
Area:	6.16	in^2	39.73	cm^2	Water Wt.:	15.7	Water Wt.:	98.08
Volume :	17.24	in^3	282.53	cm^3	% moist.:	**15.7**	% moist.:	**20.4**
Unit Wt.(wet):	**125.08**	pcf	**2.00**	g/cm^3				
Unit Wt.(dry):	**108.11**	pcf	**1.73**	g/cm^3				

Assumed Specific Gravity:	**2.70**	Max Dry Density(pcf) =	113.8	OMC =	13.7
		% of max =	95.0	+/- OMC =	2.00
Calculated % saturation:	98.38	Void ratio (e) =	**0.56**	Porosity (n)=	**0.36**

Test Pressures During Hydraulic Conductivity Test

Cell Pressure (psi) = 55.00 Back Pressure (psi) = 50.00 Confining Pressure = 5.00 psi

Note: The above value is Effective Confining Pressure

TEST READINGS

Z_1(Mercury Height Difference @ t_1): 15.8 cm Hydraulic Gradient = 28.00

Date	elapsed t (seconds)	Z (pipet @ t)	ΔZp (cm)	temp (deg C)	α (temp corr)	k (cm/sec)	k (ft./day)	Reset = *
12/20/2018	5	15.7	1.082666	21	0.977	6.20E-06	1.76E-02	
12/20/2018	10	14.6	2.182666	21	0.977	6.50E-06	1.84E-02	
12/20/2018	15	13.5	3.282666	21	0.977	6.80E-06	1.93E-02	
12/20/2018	20	12.6	4.182666	21	0.977	6.75E-06	1.91E-02	

SUMMARY

	k_a =	6.56E-06 cm/sec		Acceptance criteria =	50 %
	ki		Vm		
	k1 =	6.20E-06 cm/sec	5.6	%	Vm = $\frac{\lvert k_a - k_i \rvert}{k_a} \times 100$
	k2 =	6.50E-06 cm/sec	0.9	%	
	k3 =	6.80E-06 cm/sec	3.7	%	
	k4 =	6.75E-06 cm/sec	2.8	%	

Hydraulic conductivity	k =	**6.56E-06**	cm/sec	**1.86E-02**	ft/day
Void Ratio	e =	**0.56**			
Porosity	n =	**0.36**			
Bulk Density	γ =	**2.00**	g/cm^3	**125.1**	pcf
Water Content	W =	**0.27**	cm^3/cm^3	(at 20 deg C)	
Intrinsic Permeability	k_{int} =	**6.72E-11**	cm^2	(at 20 deg C)	

Terracon

HYDRAULIC CONDUCTIVITY DETERMINATION
FLEXIBLE WALL PERMEAMETER - CONSTANT VOLUME
(Mercury Permometer Test)

Project :	Beckham and McCloy Landfill							
Date:	12/21/2018	Panel Number : P-1						
Project No. :	A4187129	Permometer Data						
Boring No.:	BH-1	a_p =	0.031416	cm^2	Set Mercury to Pipet Rp at beginning	Equilibrium	1.6	cm^3
Sample:	composite	a_a =	0.767120	cm^2		Pipet **Rp**	**16.8**	cm^3
Depth (ft):	0-65	M_1 =	0.030180	C = 0.0004288		Annulus **Ra**	1.0	cm^3
Other Location:	McCloy Site	M_2 =	1.040953	T = 0.0658646				
Material Description :	light brown silty sand with gravel							

SAMPLE DATA

					Before Test		After Test	
Wet Wt. sample + ring or tare :			575.26	g				
Tare or ring Wt. :			0.0	g				
Wet Wt: of Sample :			575.26	g	Tare No.:	101	Tare No.:	N/A
Diameter :	2.80	in	7.11	cm^2	Wet Wt.+tare:	114.70	Wet Wt.+tare:	586.52
Length :	2.80	in	7.11	cm	Dry Wt.+tare:	100.00	Dry Wt.+tare:	492.33
Area:	6.16	in^2	39.73	cm^2	Tare Wt:	0.00	Tare Wt:	0.00
Volume :	17.24	in^3	282.53	cm^3	Dry Wt.:	100	Dry Wt.:	492.33
Unit Wt.(wet):	**127.05**	pcf	**2.04**	g/cm^3	Water Wt.:	14.7	Water Wt.:	94.19
Unit Wt.(dry):	**110.77**	pcf	**1.78**	g/cm^3	% moist.:	**14.7**	% moist.:	**19.1**

Assumed Specific Gravity:	**2.70**	Max Dry Density(pcf) =	116.6	OMC =	12.7
		% of max =	95.0	+/- OMC =	2.00
Calculated % saturation:	99.01	Void ratio (e) =	**0.52**	Porosity (n)=	**0.34**

Test Pressures During Hydraulic Conductivity Test

Cell Pressure (psi) = 55.00 Back Pressure (psi) = 50.00 Confining Pressure = 5.00 psi

Note: The above value is Effective Confining Pressure

TEST READINGS

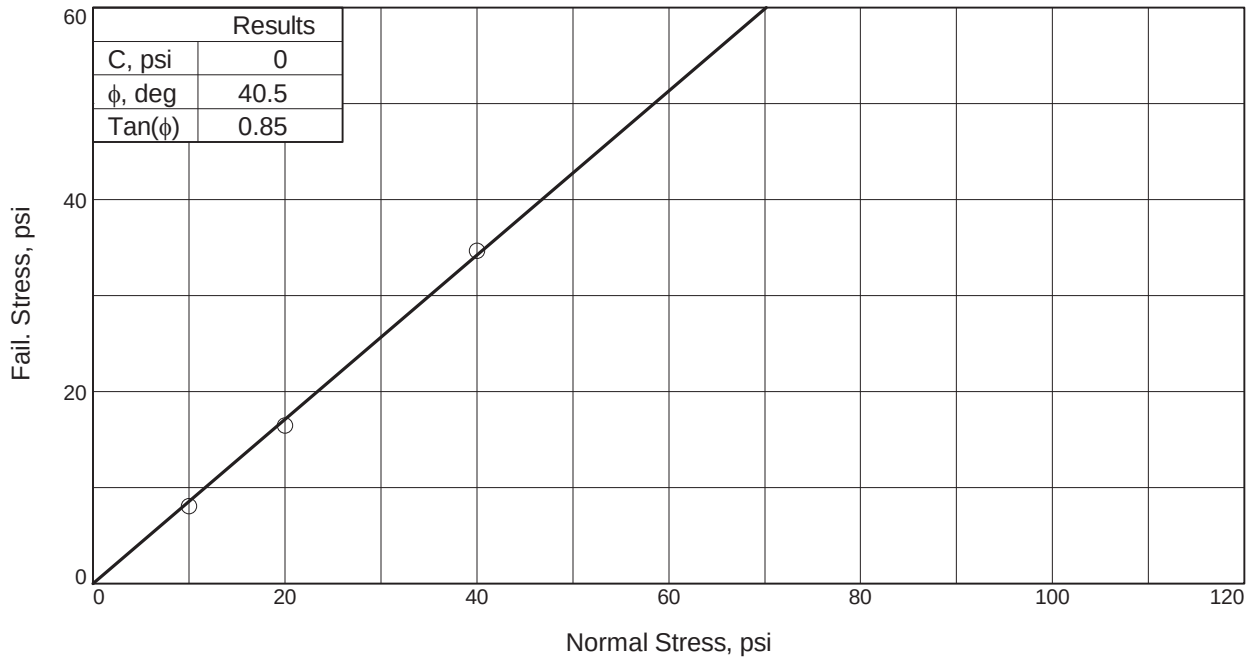
Z_1(Mercury Height Difference @ t_1): 15.8 cm Hydraulic Gradient = 28.00

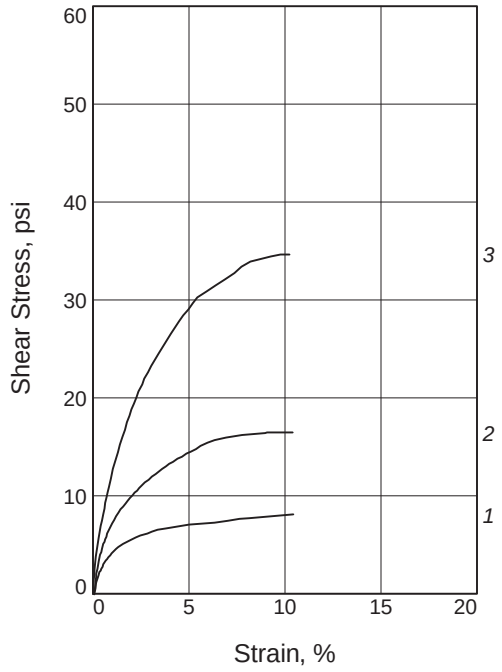
Date	elapsed t (seconds)	Z (pipet @ t)	ΔZp (cm)	temp (deg C)	α (temp corr)	k (cm/sec)	k (ft./day)	Reset = *
12/20/2018	5	15.7	1.082666	21	0.977	6.20E-06	1.76E-02	
12/20/2018	10	14.6	2.182666	21	0.977	6.50E-06	1.84E-02	
12/20/2018	15	13.5	3.282666	21	0.977	6.80E-06	1.93E-02	
12/20/2018	20	12.6	4.182666	21	0.977	6.75E-06	1.91E-02	

SUMMARY

	k_a =	6.56E-06 cm/sec		Acceptance criteria =	50 %
	ki		Vm		
	k1 =	6.20E-06 cm/sec	5.6 %	Vm =	$\frac{\lvert ka-ki \rvert}{ka} \times 100$
	k2 =	6.50E-06 cm/sec	0.9 %		
	k3 =	6.80E-06 cm/sec	3.7 %		
	k4 =	6.75E-06 cm/sec	2.8 %		

Hydraulic conductivity	k =	**6.56E-06**	cm/sec	**1.86E-02**	ft/day
Void Ratio	e =	**0.52**			
Porosity	n =	**0.34**			
Bulk Density	γ =	**2.04**	g/cm^3	**127.1**	pcf
Water Content	W =	**0.26**	cm^3/cm^3	(at 20 deg C)	
Intrinsic Permeability	k_{int} =	**6.72E-11**	cm^2	(at 20 deg C)	





Sample No.		1	2	3
Initial	Water Content, %	14.7	14.7	14.7
	Dry Density, pcf	110.8	110.8	110.8
	Saturation, %	76.1	76.1	76.1
	Void Ratio	0.5218	0.5218	0.5218
	Diameter, in.	2.500	2.500	2.500
	Height, in.	1.000	1.000	1.000
At Test	Water Content, %	17.5	15.9	15.1
	Dry Density, pcf	114.3	117.8	119.5
	Saturation, %	99.7	99.5	99.2
	Void Ratio	0.4744	0.4312	0.4107
	Diameter, in.	2.500	2.500	2.500
	Height, in.	0.969	0.941	0.927
Normal Stress, psi		10.00	20.00	40.00
Fail. Stress, psi		8.08	16.43	34.65
Strain, %		10.4	9.1	10.2
Ult. Stress, psi				
Strain, %				
Strain rate, in./min.		0.004	0.004	0.004

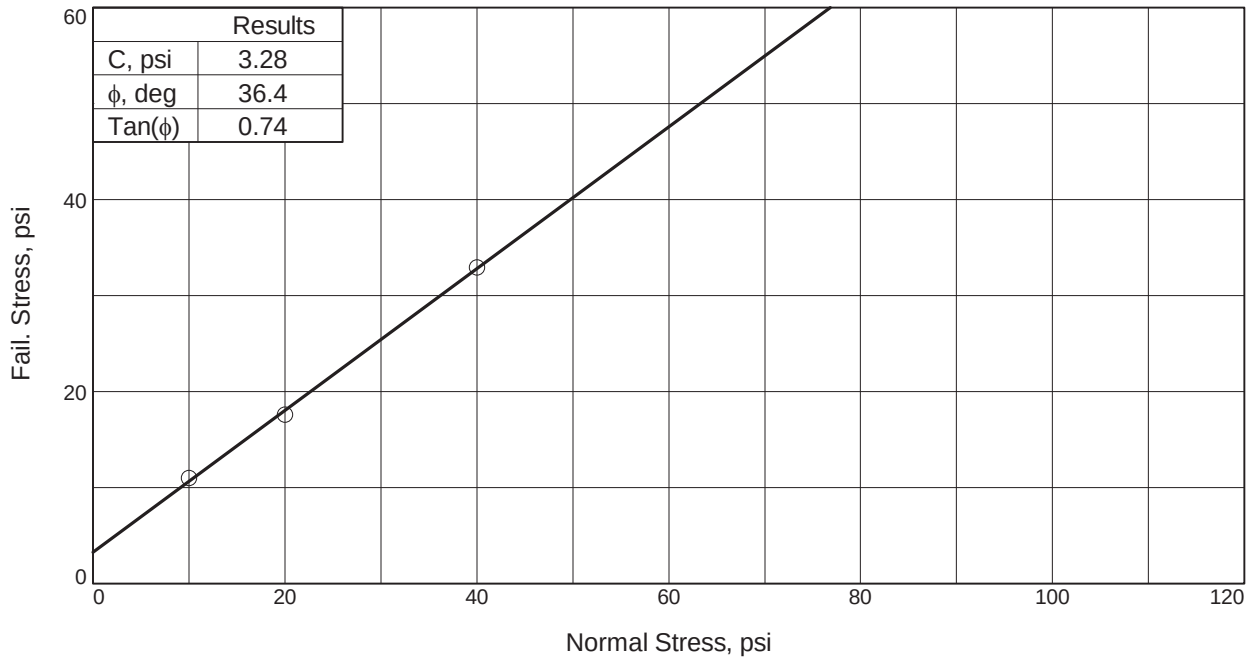
Sample Type: Remolded
Description: light brown silty sand with gravel (SM)
LL= 20 **PL=** 17 **PI=** 3
Assumed Specific Gravity= 2.7
Remarks: Compaction based on D698 efforts. Specimens remolded to 95% of maximum dry density and +2% of optimum moisture.

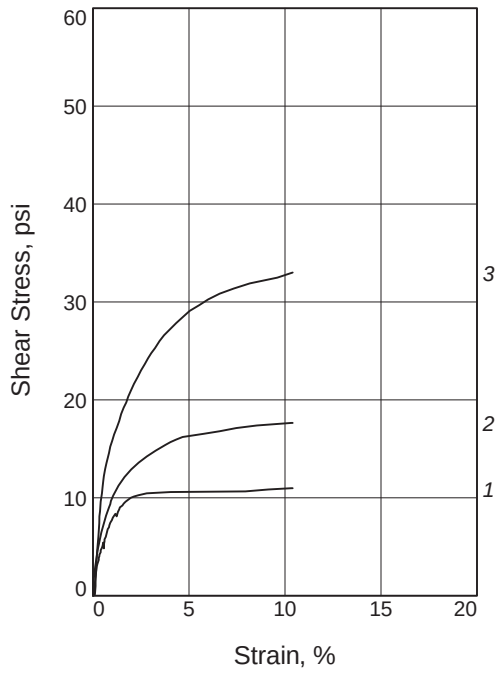
Client: Trammco Environmental Solutions LLC

Project: McCloy and Beckham Landfill

Source of Sample: BH-1 **Depth:** 0.0-65.0 ft
Sample Number: Composite
Proj. No.: A4187129 **Date Sampled:** N/A

DIRECT SHEAR TEST REPORT
Terracon Consultants, Inc.
Chattanooga, TN





Sample No.		1	2	3
Initial	Water Content, %	15.7	15.7	15.7
	Dry Density, pcf	109.8	109.8	109.8
	Saturation, %	79.2	79.2	79.2
	Void Ratio	0.5350	0.5350	0.5350
	Diameter, in.	2.500	2.500	2.500
	Height, in.	1.000	1.000	1.000
At Test	Water Content, %	18.2	17.9	15.8
	Dry Density, pcf	112.4	113.6	117.5
	Saturation, %	98.2	100.0	98.1
	Void Ratio	0.4994	0.4833	0.4346
	Diameter, in.	2.500	2.500	2.500
	Height, in.	0.977	0.966	0.935
Normal Stress, psi		10.00	20.00	40.00
Fail. Stress, psi		10.96	17.61	32.97
Strain, %		10.4	10.3	10.4
Ult. Stress, psi				
Strain, %				
Strain rate, in./min.		0.005	0.005	0.005

Sample Type: Remolded
Description: light brown clayey sand (SC)

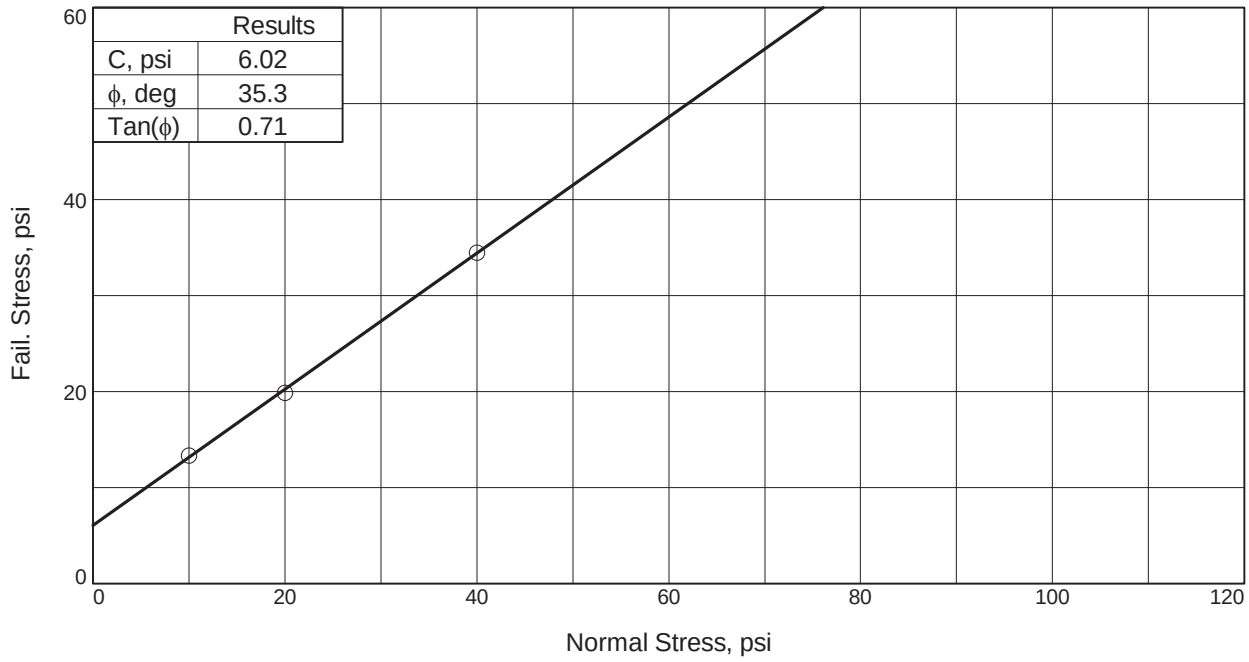
LL= 23 **PL=** 14 **PI=** 9
Assumed Specific Gravity= 2.7
Remarks: Compaction based on D698 efforts. Specimens remolded to 95% of maximum dry density and +2% of optimum moisture content.

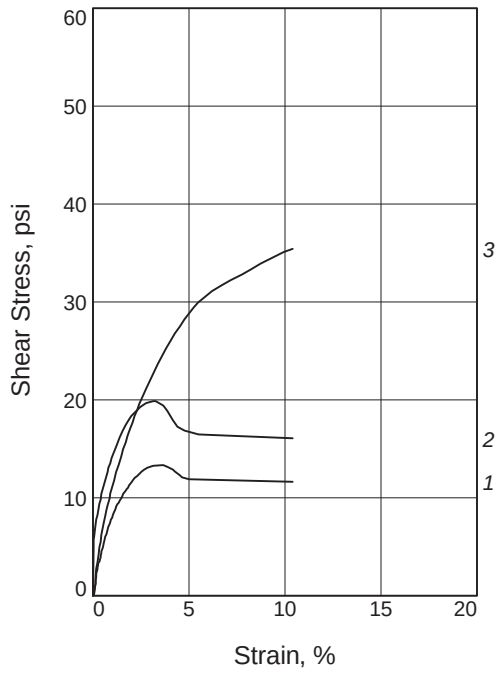
Client: Trammco Environmental Solutions LLC

Project: McCloy and Beckham Landfill

Source of Sample: BH-4 **Depth:** 0.0-20.0 ft
Sample Number: Composite 1
Proj. No.: A4187129 **Date Sampled:** N/A

DIRECT SHEAR TEST REPORT
Terracon Consultants, Inc.
Chattanooga, TN





Sample No.		1	2	3
Initial	Water Content, %	15.7	15.7	15.7
	Dry Density, pcf	108.1	108.1	108.1
	Saturation, %	75.7	75.7	75.7
	Void Ratio	0.5598	0.5598	0.5598
	Diameter, in.	2.500	2.500	2.500
	Height, in.	1.000	1.000	1.000
At Test	Water Content, %	19.8	18.8	16.0
	Dry Density, pcf	109.4	111.4	117.4
	Saturation, %	98.6	98.7	99.1
	Void Ratio	0.5409	0.5135	0.4355
	Diameter, in.	2.500	2.500	2.500
	Height, in.	0.988	0.970	0.920
Normal Stress, psi		10.00	20.00	40.00
Fail. Stress, psi		13.35	19.85	34.50
Strain, %		3.6	3.1	9.3
Ult. Stress, psi				
Strain, %				
Strain rate, in./min.		0.005	0.005	0.005

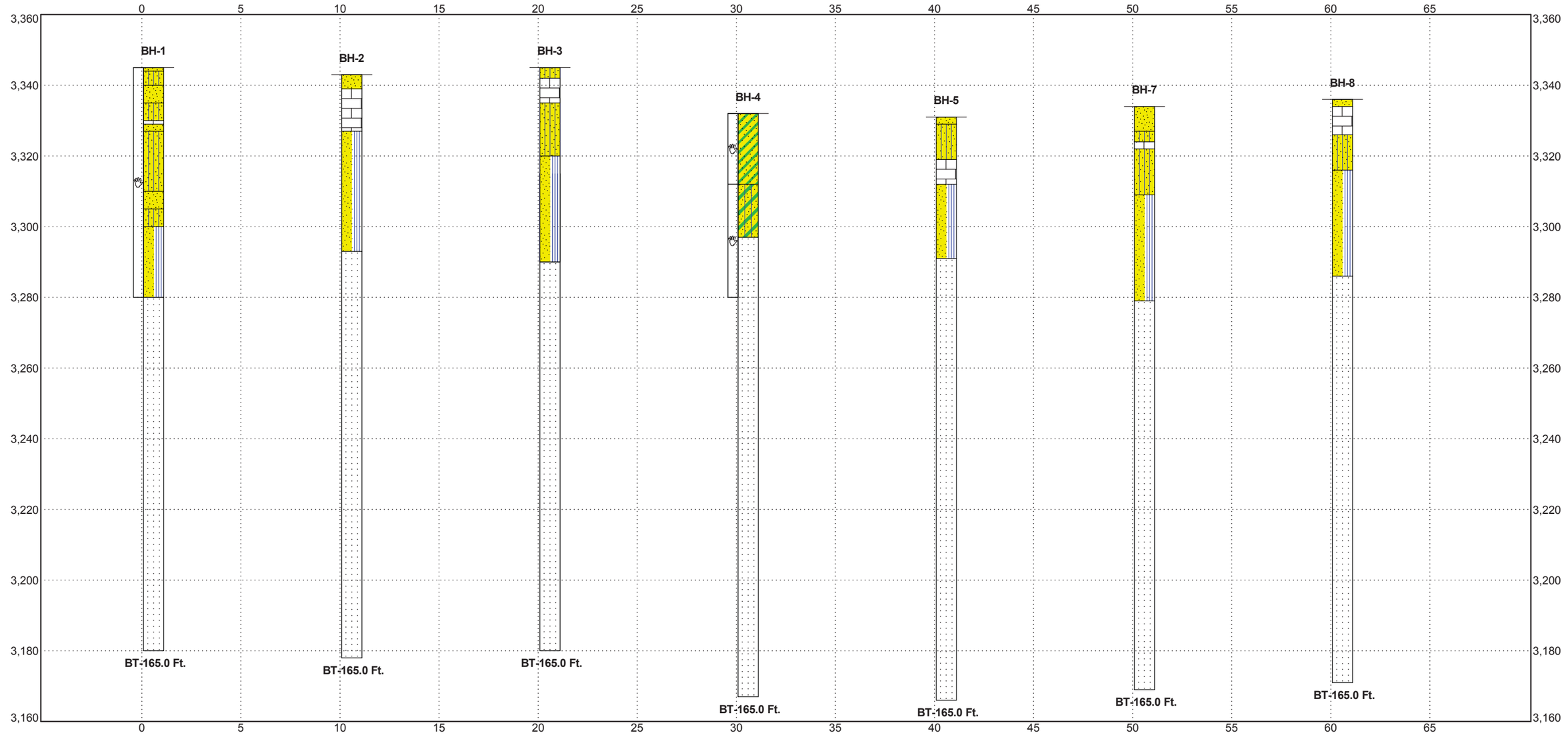
Sample Type: Remolded
Description: light brown silty, clayey sand (SC-SM)
LL= 25 **PL=** 18 **PI=** 7
Assumed Specific Gravity= 2.7
Remarks: Compaction based on D698 efforts. Specimens remolded to 95% maximum dry density and +2% of optimum moisture content.

Client: Trammco Environmental Solutions LLC

Project: McCloy and Beckham Landfill

Source of Sample: BH-4 **Depth:** 20.0-52.0 ft
Sample Number: Composite 2
Proj. No.: A4187129 **Date Sampled:** N/A

DIRECT SHEAR TEST REPORT
Terracon Consultants, Inc.
Chattanooga, TN



Explanation

BH-1 — Borehole Number
Moisture Content — %w
LL PL — Liquid and Plastic Limits
Sampling (See General Notes)
Borehole Lithology
AR
BT — Borehole Termination Type

Water Level Reading at time of drilling.

Water Level Reading after drilling.

Poorly-graded Sand
Silty Sand
CALICHE - USGS Standard
Poorly-graded Sand with Silt
Sandstone
Clayey Sand
Silty Clayey Sand

NOTES:

See Exploration Plan for orientation of soil profile.
See General Notes in Supporting Information for symbols and soil classifications.
Soils profile provided for illustration purposes only.
Soils between borings may differ
AR - Auger Refusal
BT - Boring Termination

Project No.: A4187129	Terracon 10400 State Highway 191 Midland, TX	**SUBSURFACE PROFILE**
Date: 1/15/2019		MCCLOY RANCH LANDFILL SECTION 9 AND 10 OF, T25S, R34E JAL, LEA COUNTY, NEW MEXICO
Scale: N.T.S		

SUPPORTING INFORMATION

UNIFIED SOIL CLASSIFICATION SYSTEM

McCloy Ranch Landfill ■ Jal, Lea County, New Mexico

January 25, 2019 ■ Terracon Project No. A4187129

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu ≥ 4 and 1 ≤ Cc ≤ 3 [E]		GW	Well-graded gravel [F]
			Cu < 4 and/or 1 > Cc > 3 [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu ≥ 6 and 1 ≤ Cc ≤ 3 [E]		SW	Well-graded sand [I]
			Cu < 6 and/or 1 > Cc > 3 [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A"		CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K, L, M, N]
			Liquid limit - not dried			Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K, L, M]
			PI plots below "A" line		MH	Elastic Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K, L, M, P]
			Liquid limit - not dried			Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

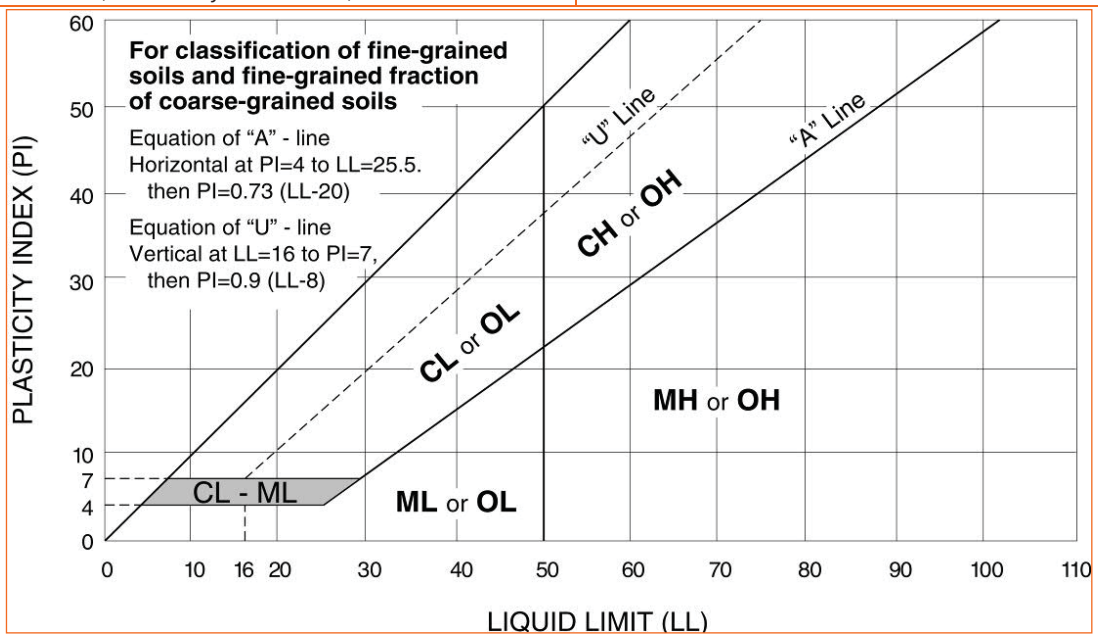
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



DESCRIPTION OF ROCK PROPERTIES

McCloy Ranch Landfill ■ Jal, Lea County, New Mexico

January 25, 2019 ■ Terracon Project No. A4187129

WEATHERING	
Term	**Description**
Unweathered	No visible sign of rock material weathering, perhaps slight discoloration on major discontinuity surfaces.
Slightly weathered	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering and may be somewhat weaker externally than in its fresh condition.
Moderately weathered	Less than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a continuous framework or as corestones.
Highly weathered	More than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a discontinuous framework or as corestones.
Completely weathered	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact.
Residual soil	All rock material is converted to soil. The mass structure and material fabric are destroyed. There is a large change in volume, but the soil has not been significantly transported.

STRENGTH OR HARDNESS		
Description	**Field Identification**	**Uniaxial Compressive Strength, psi (MPa)**
Extremely weak	Indented by thumbnail	40-150 (0.3-1)
Very weak	Crumbles under firm blows with point of geological hammer, can be peeled by a pocket knife	150-700 (1-5)
Weak rock	Can be peeled by a pocket knife with difficulty, shallow indentations made by firm blow with point of geological hammer	700-4,000 (5-30)
Medium strong	Cannot be scraped or peeled with a pocket knife, specimen can be fractured with single firm blow of geological hammer	4,000-7,000 (30-50)
Strong rock	Specimen requires more than one blow of geological hammer to fracture it	7,000-15,000 (50-100)
Very strong	Specimen requires many blows of geological hammer to fracture it	15,000-36,000 (100-250)
Extremely strong	Specimen can only be chipped with geological hammer	>36,000 (>250)

DISCONTINUITY DESCRIPTION			
Fracture Spacing (Joints, Faults, Other Fractures)		**Bedding Spacing (May Include Foliation or Banding)**	
Description	**Spacing**	**Description**	**Spacing**
Extremely close	< ¾ in (<19 mm)	**Laminated**	< ½ in (<12 mm)
Very close	¾ in – 2-1/2 in (19 - 60 mm)	**Very thin**	½ in – 2 in (12 – 50 mm)
Close	2-1/2 in – 8 in (60 – 200 mm)	**Thin**	2 in – 1 ft. (50 – 300 mm)
Moderate	8 in – 2 ft. (200 – 600 mm)	**Medium**	1 ft. – 3 ft. (300 – 900 mm)
Wide	2 ft. – 6 ft. (600 mm – 2.0 m)	**Thick**	3 ft. – 10 ft. (900 mm – 3 m)
Very Wide	6 ft. – 20 ft. (2.0 – 6 m)	**Massive**	> 10 ft. (3 m)

Discontinuity Orientation (Angle): Measure the angle of discontinuity relative to a plane perpendicular to the longitudinal axis of the core. (For most cases, the core axis is vertical; therefore, the plane perpendicular to the core axis is horizontal.) For example, a horizontal bedding plane would have a 0-degree angle.

ROCK QUALITY DESIGNATION (RQD) [1]	
Description	**RQD Value (%)**
Very Poor	0 - 25
Poor	25 – 50
Fair	50 – 75
Good	75 – 90
Excellent	90 - 100

1. The combined length of all sound and intact core segments equal to or greater than 4 inches in length, expressed as a percentage of the total core run length.

Reference: U.S. Department of Transportation, Federal Highway Administration, Publication No FHWA-NHI-10-034, December 2009 Technical Manual for Design and Construction of Road Tunnels – Civil Elements

DESCRIPTION OF ROCK PROPERTIES

McCloy Ranch Landfill ■ Jal, Lea County, New Mexico

January 25, 2019 ■ Terracon Project No. A4187129

WEATHERING	
Fresh	Rock fresh, crystals bright, few joints may show slight staining. Rock rings under hammer if crystalline.
Very slight	Rock generally fresh, joints stained, some joints may show thin clay coatings, crystals in broken face show bright. Rock rings under hammer if crystalline.
Slight	Rock generally fresh, joints stained, and discoloration extends into rock up to 1 in. Joints may contain clay. In granitoid rocks some occasional feldspar crystals are dull and discolored. Crystalline rocks ring under hammer.
Moderate	Significant portions of rock show discoloration and weathering effects. In granitoid rocks, most feldspars are dull and discolored; some show clayey. Rock has dull sound under hammer and shows significant loss of strength as compared with fresh rock.
Moderately severe	All rock except quartz discolored or stained. In granitoid rocks, all feldspars dull and discolored and majority show kaolinization. Rock shows severe loss of strength and can be excavated with geologist's pick.
Severe	All rock except quartz discolored or stained. Rock "fabric" clear and evident, but reduced in strength to strong soil. In granitoid rocks, all feldspars kaolinized to some extent. Some fragments of strong rock usually left.
Very severe	All rock except quartz discolored or stained. Rock "fabric" discernible, but mass effectively reduced to "soil" with only fragments of strong rock remaining.
Complete	Rock reduced to "soil". Rock "fabric" no discernible or discernible only in small, scattered locations. Quartz may be present as dikes or stringers.

HARDNESS (for engineering description of rock – not to be confused with Moh's scale for minerals)	
Very hard	Cannot be scratched with knife or sharp pick. Breaking of hand specimens requires several hard blows of geologist's pick.
Hard	Can be scratched with knife or pick only with difficulty. Hard blow of hammer required to detach hand specimen.
Moderately hard	Can be scratched with knife or pick. Gouges or grooves to ¼ in. deep can be excavated by hard blow of point of a geologist's pick. Hand specimens can be detached by moderate blow.
Medium	Can be grooved or gouged 1/16 in. deep by firm pressure on knife or pick point. Can be excavated in small chips to pieces about 1-in. maximum size by hard blows of the point of a geologist's pick.
Soft	Can be gouged or grooved readily with knife or pick point. Can be excavated in chips to pieces several inches in size by moderate blows of a pick point. Small thin pieces can be broken by finger pressure.
Very soft	Can be carved with knife. Can be excavated readily with point of pick. Pieces 1-in. or more in thickness can be broken with finger pressure. Can be scratched readily by fingernail.

Joint, Bedding, and Foliation Spacing in Rock [1]		
Spacing	**Joints**	**Bedding/Foliation**
Less than 2 in.	Very close	Very thin
2 in. – 1 ft.	Close	Thin
1 ft. – 3 ft.	Moderately close	Medium
3 ft. – 10 ft.	Wide	Thick
More than 10 ft.	Very wide	Very thick

1. Spacing refers to the distance normal to the planes, of the described feature, which are parallel to each other or nearly so.

Rock Quality Designator (RQD) [1]	
RQD, as a percentage	**Diagnostic description**
Exceeding 90	Excellent
90 – 75	Good
75 – 50	Fair
50 – 25	Poor
Less than 25	Very poor

1. RQD (given as a percentage) = length of core in pieces 4 inches and longer / length of run

Joint Openness Descriptors	
Openness	**Descriptor**
No Visible Separation	Tight
Less than 1/32 in.	Slightly Open
1/32 to 1/8 in.	Moderately Open
1/8 to 3/8 in.	Open
3/8 in. to 0.1 ft.	Moderately Wide
Greater than 0.1 ft.	Wide

References: American Society of Civil Engineers. Manuals and Reports on Engineering Practice - No. 56. Subsurface Investigation for Design and Construction of Foundations of Buildings. New York: American Society of Civil Engineers, 1976. U.S. Department of the Interior, Bureau of Reclamation, Engineering Geology Field Manual.

Appendix J
Design and Construction Plan

Engineering Design Report

North Ranch Surface Waste Management Facility
Lea County, New Mexico

April 19, 2019
Project No. 35187378

Prepared for:
NGL Waste Services, LLC
3773 Cherry Creek Dr., Suite 1000
Denver, CO 80209
303-815-1010

Prepared by:
Terracon Consultants, Inc.
25809 Interstate 30 South
Bryant, Arkansas 72022
(501) 847-9292

Table of Contents

Tables

Attachments

1.0 INTRODUCTION

This engineering design report (EDR) was prepared by Terracon Consultants, Inc. (Terracon) for NGL Waste Services, LLC (NGL) to support the Permit Application for the proposed North Ranch Surface Waste Management Facility (Facility) located near Jal, Lea County, New Mexico. The following sections and appendices provide backup engineering calculations and documentation for the proposed landfill configuration as presented on the permit drawings in **Appendix K** of the Permit Application (PA).

1.1 Regulatory Oversight

Due to its function the Facility will be regulated by New Mexico Administrative Code, Title 19 – Natural Resources and Wildlife, Chapter 15 – Oil and Gas, Part 36 – Surface Waste Management Facilities, or 19.15.36. The Facility is defined as a commercial landfill facility by **19.15.36.7.A(2)** and **(4)** accepting exempt upstream oil and gas exploration and production waste (E&PW) from nearby oil field development customers. In general, this EDR will focus on providing the engineering calculations and documentation to satisfy design requirements specified in **19.15.36.14.C** – **19.15.36.14.F**. In addition, NGL proposes to manage and dispose of the Facility's leachate with an evaporation pond. Therefore, this EDR will also provide engineering calculations for the proposed evaporation pond in compliance with **19.15.36.17.A** and **19.15.36.17.B**.

1.2 General Facility Description

The Facility consists of approximately (~) 303 acres of which ~205 acres will be dedicated for lined landfill disposal cells. The remaining ~98 acres consists of a ~26-acre entrance and waste acceptance area including an ~2.2-acre leachate evaporation pond; ~12.5 acres making up three stormwater retention ponds; and ~57.3 acres of ancillary space for perimeter roadways, drainage channels and landfill structural berms.

The landfill area will be subdivided in to three phases. Phase 1 will have six disposal cells ranging in size from 9.6 acres to 28.2 acres for a total disposal area of ~111 acres. Phase 2 will have five disposal cells ranging in size from 11.8 acres, to 24.7 acres for a total disposal area ~88.5 acres. Phase 1 and 2 have maximum depths below existing grade of ~50-feet. Phase 1 and 2 are separated by ~100 feet. During operation of the Phase 1 and 2 this area will be used for roadways and drainage channels. However, upon completion of Phase 1 and 2 this separation area and the valley between the Phase 1 and 2 waste slopes will be developed into Phase 3. Phase 3 will fill the valley between Phases 1 and 2 and ultimately reach the proposed final elevations.

Each of the Phase 1 and 2 disposal cells will be separated by a 4-foot tall soil divider berm. All disposal areas will be lined with a multilayered geosynthetic liner system with both leachate collection and recovery and leak detection systems. Final waste surfaces will be covered with a geosynthetic and soil based final cover system. Full descriptions of the liner and cover systems

are provided in this EDR. Ultimately the proposed configuration of the landfill area will result in a total design operational capacity (waste and routine soil) of ~41,428,629 Cubic Yards (CY).

Detailed design of the Facility is presented within this EDR and attached including supporting calculations and analyses.

2.0 PROPOSED FACILITY DESIGN

2.1 Landfill Geometry

In general compliance with **19.15.36.C** and **19.15.36.D**, all landfill cells have been designed with 3H:1V side slopes. Each cell floor will be graded at a minimum of 3% laterally to a center leachate collection pipeline which is sloped at 1.5% towards a central leachate collection sump. The liner system and leachate collection lines will be protected with 2-feet of protective soil, see Section 2.7 for greater details regarding the liner system design. Cell depths ranging from eight (8) at the high end of the cell to 71 feet at the leachate collection sump, the maximum excavation depth below existing grade is ~48 feet. The intermediate, final waste and final cover slopes will be nominally 4H:1V and the top deck will have a minimum grade of 4%. The final cover system will include 2.5 feet of soil over the liner system. The landfill will have a maximum final waste grade of 3,541.0 feet above mean sea level (AMSL), and maximum final cover grade will be 3,543.5 feet AMSL. See **Permit Drawings** in **Appendix K** of the PA for visual representation of the proposed geometry.

2.2 Landfill Design Capacity

The following Table 2.1 provides the design operational capacity (waste and routine and intermediate soil cover), routine and intermediate soil cover volume assuming 15% soil to waste ratio, and waste capacity of each disposal cell, phase and overall landfill. Per-cell capacities assume an intermediate waste fill slope of 4V:1H and that fill sequencing occurs as shown on **Drawing 24** of **Appendix K** of the PA. Operational capacities were calculated using AutoDesk© Civil3D® 2019 (Civil 3D) software.

Table 2.1 Design Capacity Summary

Cell	Operational Capacity (CY)	Routine and Intermediate Soil Cover [15% of Operational Waste Capacity] (CY)	Waste Capacity [85% of Operational Capacity] (CY)
PHASE 1			
E-1	602,251	90,338	511,913
E-2	1,732,712	259,907	1,472,805

E-3	3,893,891	584,084	3,309,807
E-4	3,541,265	531,190	3,010,075
E-5	3,977,084	596,563	3,380,521
E-6	5,465,389	819,808	4,645,581
PHASE 1	**19,212,592**	**2,881,890**	**16,330,702**
		PHASE 2	
W-1	1,183,613	177,542	1,006,071
W-2	1,381,332	207,200	1,174,132
W-3	2,151,044	322,657	1,828,387
W-4	4,016,305	602,446	3,413,859
W-5	4,825,696	723,854	4,101,842
PHASE 2	**13,557,990**	**2,033,704**	**11,524,296**
PHASE 3	**8,658,047**	**1,298,707**	**7,359,340**
TOTAL	**41,428,629**	**6,214,294**	**35,214,335**

2.3 Site Soil Balance

Landfill cell construction, routine operations, and closure will require large quantities of soil over the life of the landfill. The proposed Facility-wide grading plan shown in the **Permit Drawings** in **Appendix K** of the PA, which includes all grading activities for landfill cells, roads, stormwater infrastructure (channels and ponds), and the leachate evaporation pond, will generate soils for these activities. Table 2.2 below summarizes the soil balance for known operational and construction activities through buildout of the Facility. All cut and fill volumes provided in Table 2.2 are calculated using Civil 3D.

Table 2.2 Soil Balance Summary

Area	Cut (CY)	Fill (CY)
Facility Wide Grading	8,848,943	513,081
Phase 1 Base Liner Protective Cover	0	361,766
Phase 2 Base Liner Protective Cover	0	289,379
Phase 3 Base Liner Protective Cover	0	19,522
Operational Cover	0	6,214,294

(Routine and Intermediate, From Table 2.1)		
Final Cover System	0	1,034,673
TOTALS	**8,848,943**	**8,432,715**
FACILITY SOIL BALANCE = +416,228 EXCESS SOIL		

2.4 Stormwater Management System

The proposed surface-water management system for both run-on and run-off for the Facility is shown on the **Permit Drawings** in **Appendix K** of the PA. The proposed configuration of the run-off management system was modeled in AutoDesk© Storm and Sanitary Analysis® 2019 (SSA) software. The run-on management system has been sized using the USDA, NRCS, Technical Release 55 (TR-55) method. Both the SAA and TR-55 simulated the 25-year, 24-hour storm (design storm) event for the Lea County, New Mexico area.

Facility Storm Run-off Management System Design
All proposed stormwater run-off conveyance structures (channels, berms, letdowns, culverts) have been designed to handle the peak flow from the design storm. The three stormwater ponds have been designed to retain at least the total run-off volume from the design storm. The Facility also has a 2-foot earth berm at the permit boundary to retain onsite any potential storm pond over flow during greater storm events. In short, the Facility has been designed to be a non-discharging facility.

Facility Run-on Management System Design
The run-on drainage area is potentially a 5,555-acre area northwest of the Facility. It is likely that only a small portion of the potential run-on area impacts the Facility perimeter. However, to be conservative, a run-on diversion channel along the northwest permit boundary line has been designed to collect the peak flow from the design storm event for the entire potential run-off area.

Attachment A provides a detailed report of the SSA and TR-55 analysis, including figures and modeling results.

2.5 Erosion Loss (RUSLE)

The purpose of the erosion calculation is to determine potential soil losses due to rainfall erosion under closure conditions. Using the Revised Universal Soil Loss Equation (RUSLE), projected soil loss from rainfall is approximately 4.96 tons/acre/year (t/a/y), which is below the NRCS established criterion of 5.0 t/a/y. Detailed RUSLE calculations are provided in **Attachment B**.

2.6 Leachate Evaporation Pond Geometry and Sizing

Geometry

A proposed leachate evaporation pond (LEP) is to be located near the site entrance in the northeast portion of the Facility. In general, the LEP geometry is in compliance with **19.15.36.17.A** and **19.15.36.17.B** having 3H:1V side slopes and a floor sloped laterally at 2% towards a central leak detection sump. In addition, the LEP has a 2-3-foot-high perimeter berm to prevent external surface water intrusion. The LEP plan footprint is approximately 2.25 acres with depths varying from 3.25 feet – 13.3 feet, with a 2-foot deep leak detection sump at the lowest point.

The LEP was sized assuming a worst-case condition defined as follows:

- Assumes the Facility will only construct and operate one disposal cell at a time. In this case:
- The largest Cell (E-3, 28.2 acres) has been constructed and hasn't received waste.
- Run-off from the intermediate 4H:1V waste slope from the previous Cell (E-2) is draining into the new cell (E-3) leachate collection system.
- Little to no waste has been placed over the new cell's liner system.

Under this condition leachate generation is governed by incidental precipitation, thus two calculation methods to determine the require storage in the LEP are considered:

- 25-year, 24-hour precipitation volume incidental to the open area defined above, which totals to 37.3 acres.
- Leachate generation from the open cell (28.2 acres).

To be conservative, the LEP is sized to fully contain the greater of the volumes generated from the two sources. **Attachment C** provides a TR-55 run-off volume calculation from the 37.3 acre area indicating that 8.5 acre-feet of storage is required to contain incidental precipitation volume. A Hydraulic Evaluation of Landfill Performance (HELP) analysis was performed to determine the leachate generation rate from the open cell. The HELP analysis indicated that ~0.5 acre-feet of storage is required to contain the leachate generation volume. A HELP analysis summary memo and results are provided in **Attachment D**. In either case, the LEP must also provide storage for incidental precipitation over the 2-acre pond footprint, requiring an additional 0.77 acre-feet.

Therefore, the LEP has a design storage capacity of 9.3 acre-feet. The LEP will also have three feet of freeboard above the design waterline which is not included in the design capacity. This complies with **19.15.36.17.B(12)** requiring three feet of freeboard and **19.15.36.17.B(12)** limiting the maximum size of evaporation ponds to 10 acre-feet.

2.7 Base Liner System

The Facility is proposing two base liner systems one for the landfill cells and one for the leachate evaporation pond. Details showing the bottom liner systems can be found in the **Permit Drawings** in **Appendix K** of the PA.

The typical landfill liner system will consist of (from bottom to top):

- A prepared subgrade layer on the cell floor and on the side slopes to provide a smooth surface for geosynthetic deployment;
- Low Permeability Clay Base Layer. The field geologic/hydrogeological investigation (See **Appendix I** of the PA) generally characterized the potential excavated soil as sandy with permeabilities ranging from $1.09x10^{-6}$ cm/sec to $6.5x10^{-5}$ cm/s. Thus, this soil is not favorable for a compacted clay liner. In addition, groundwater was not encountered within 100 feet of the lowest proposed landfill cell elevation. Therefore, NGL proposes to install a geosynthetic clay liner (GCL) in lieu of the prescriptive base layer (**19.15.36.14.C(1)**) two-feet of compacted clay with hydraulic conductivity of $1x10^{-7}$ cm/s or less. GCLs are commonly installed in landfill liner systems as an alternative to compacted clay in similar conditions, and have hydraulic conductivities as low as $1x10^{-8}$ – $1x10^{-10}$ cm/s (Daniel 1993)
- A secondary 60-mil thick textured high-density polyethylene (HDPE) geomembrane liner, in compliance with **19.15.36.14.C(2)**;
- Leak detection drainage layer. For ease of construction and to maximize potential landfill airspace, NGL proposes using a 200-mil HDPE bi-planar geonet composite (Geocomposite) leak detection drainage layer in lieu of the prescriptive (**19.15.36.14.C(3)**) two feet of compacted soil with a hydraulic conductivity of $1x10^{-5}$ cm/s or greater. Drainage geocomposites consist of a biplanar geonet with geotextile filters heat bonded to both sides and are commonly installed in landfill liner leak detection systems as an alternative to a soil drainage layer due to their superior hydraulic performance obtaining hydraulic conductivities of up to 10 cm/s. The geocomposite, in conjunction with the textured geomembrane, also provides additional friction for greater slope stability;
- A primary 60-mil thick textured HDPE geomembrane liner in compliance with **19.15.36.14.C(4)**);
- Leachate collection and removal system. For ease of construction and to maximize potential landfill airspace, NGL proposes 200-mil HDPE bi-planar geocomposite leachate drainage layer in lieu of the prescriptive (**19.15.36.14.C(5)**) two-feet of compacted soil with a hydraulic conductivity of $1x10^{-2}$ cm/s or greater. This concept provides a high transmissivity (K up to 10 cm/s) blanket over the entire cell rather than intermittent collection laterals, giving greater leachate collection coverage;
- 2-feet of highly permeable protective cover soil, $1x10^{-2}$ cm/s or greater, in compliance with (**19.15.36.14.C(6)**).

The typical leachate evaporation pond liner system will consist of (from bottom to top):

- A prepared subgrade layer on the cell floor and on the side slopes to provide a smooth surface for geosynthetic deployment;
- Secondary 60-mil thick HDPE geomembrane liner, in compliance with **19.15.36.17.B(8)**.

- Leak detection drainage layer. For ease of construction, NGL proposes a 200-mil Geocomposite leak detection drainage layer in lieu of the prescriptive (**19.15.36.17.B(9)**) two-feet of compacted soil with a hydraulic conductivity of $1x10^{-5}$ cm/s or greater. Geocomposites are commonly installed in leak detection systems as an alternative to soil drainage layers due to their superior hydraulic performance obtaining hydraulic conductivities of up to 1-5 cm/s;
- Primary 60-mil thick textured HDPE geomembrane liner in compliance with **19.15.36.17.B(7)**).

See **Attachment E** for liner design calculations of the following:

- E1 - Foundation and Waste Settlement and resulting tensile stresses on the base liner and final cover systems
- E2 - Tensile Stress due to equipment loading
- E3 - Anchor trench pullout
- E4 - Geocomposite performance under overburden compression

2.8 Leachate and Leak Detection Collection and Recovery System

Landfill

The leachate and leak detection collection and recovery systems follow identical flow paths. Leachate generated from each landfill cell and leaks (if any) through the primary liner will flow through the associated lateral geocomposite drainage layer sloped at a minimum of 3% and directed towards a leachate and leak detection collection sump. The leachate collection system incorporates a perforated six-inch HDPE SDR-11 collection pipe embedded in a gravel trench one foot deep, generally along the cell centerline, with flow towards and terminating in the leachate collection sump.

The leachate collection sumps have a top dimension of 35 feet by 35 feet and are two feet deep with 3H:1V side slopes. The leak detection sumps sit directly below the leachate collection sumps and are a continuation of the leachate sump geometry another two feet deeper. The leachate sump and leak detection sump are separated by the 60-mil HDPE primary geomembrane. Each sump is equipped with an 18-inch HDPE SDR-17 leachate pump side-slope riser pipe, a 6-inch HDPE SDR-11 collection line cleanout riser, and a 12-inch HDPE SDR-17 leak detection witness riser. The riser pipes will be embedded into a side-slope trench for protection of the pipes and the liner system. The risers will daylight at the top of landfill cell slope and be protected by a concrete headwall and capped with blind flanges. The 18-inch riser will be equipped with a submersible pump that will transfer the liquids collected in the sump via a flexible hose to a force main/carrier pipe. The force main/carrier pipe will transfer the liquids to the on-site leachate evaporation pond.

Leachate Evaporation Pond

The leak detection collection and recovery system for the leachate evaporation pond will collect leaks (if any) through the primary liner. Liquids collected will flow through the associated lateral geocomposite drainage layer sloped at a minimum of 2% and directly towards a leachate and leak detection collection sump.

The leak detection collection sump has a top dimension of 20-feet by 20-feet and is 2-feet deep with 3H:1V side slopes. The sump is equipped with a 12-inch HDPE SDR-17 leak detection witness riser.

Details I-O of the Permit Drawings in **Appendix K** of the PA depict the general configuration of the leachate and leak detection systems for both the landfill cells and the leachate evaporation pond.

See **Attachment E** for pipe design calculations of the following:

- Leachate Pipe Size and Perforation Design, HELP Model Result (**Attachment D)**
- Drainage Rock sizing and Bedding Strain
- Pipe Ring Deflection
- HDPE pipe wall buckling under waste compression
- HDPE pipe wall crushing under waste compression

2.9 Final Cover System

Final waste slopes will be no steeper than 4H:1V. A final cover system will be installed over the final waste surface which will include surface-water control berms that will be constructed on the final cover system with approximately 25 ft. of vertical spacing between benches. While the interior of the berms will be 4H:1V, the exterior bench slope will be 3H:1V. The berms will be directed to rip-rap lined let-down structures built into the final cover system. The typical final cover system for the landfill will consist of (from top to bottom):

- 1-ft thick erosion layer consisting of fertile top soil, in compliance with **19.15.36.14.C(8)**;
- 18-inch thick protective soil layer, in compliance with **19.15.36.14.C(8)**;
- Drainage Layer. For ease of construction, NGL proposes a 200-mil geocomposite drainage layer in lieu of the prescriptive (**19.15.36.14.C(8)**) 12 inches of sand or gravel with hydraulic conductivity of $1x10^{-2}$ cm/s or greater. Geocomposites are commonly installed in landfill final cover systems as an alternative to soil drainage layer due to their superior hydraulic performance obtaining hydraulic conductivities of up to 1-5 cm/s.
- Hydraulic barrier layer consisting of 60-mil thick HDPE geomembrane liner, in compliance with **19.15.36.14.C(8)**.
- Gas Vent Layer. For ease of construction, NGL proposes a 200-mil Geocomposite drainage layer in lieu of the prescriptive (**19.15.36.14.C(8)**) 12-inches of sand or gravel.

Geocomposites are commonly installed in landfill final cover systems as an alternative to soil vent layers due to their superior hydraulic performance obtaining hydraulic conductivities of up to 1-5 cm/s.

2.10 Slope Stability Analysis

Terracon has performed a comprehensive slope stability analysis of the cell excavation side slopes, base liner configuration, final waste slopes, and final cover system configuration as defined in previous sections. This analysis was performed using Geo-Slope International SLOPE-W® software. In summary, the 3H:1V excavation slope is stable upon placement of the base liner system with a minimum factor of safety of 1.6 in the Phase 2 critical slope. The 4H:1V waste fill slopes and final cover system are stable with a minimum factor of safety of 2.2 on the Phase 2 critical slope. Please see **Attachment G** for a comprehensive slope stability report and summary of modeling results.

3.0 19.15.36 DESIGN COMPLIANCE SUMMARY

The New Mexico design criteria for surface waste management landfills are contained in **19.15.36.14** and the design criteria for leachate evaporation ponds are contained in **19.15.36.17**. The following discussion lists the design criteria contained in these regulations and how the proposed Facility design complies.

Landfill Base Liner Design Requirements:
19.15.36.14.C Landfill Design Specification

As discussed in Sections 2.7 – 2.9, the proposed landfill has been designed with the required components.

19.15.36.14.C(1) Base Layer

As discussed in Section 2.7, due to the absence of suitable clayey materials onsite, and the groundwater setting, NGL proposes an alternative base layer consisting of a reinforced geosynthetic clay liner. Typical GCLs specified for landfill liner systems have hydraulic conductivities less than $1x10^{-9}$ cm/s (EPA 2001).

19.15.36.14.C(2) Lower Geomembrane

As discussed in Section 2.7, the lower membrane shall consist of 60-mil HDPE, in compliance with this regulation.

19.15.36.14.C(3) Leak Detection System

As discussed in Sections 2.6 - 2.8 NGL proposes to install an alternative leak detection system comprised of a 200-mil HDPE geocomposite blanket drainage collection system in lieu of soil and piping as prescribed. HDPE has high chemical resistance to oil field wastes and the leak detection system is sloped at 3% in the lateral direction compliant with this regulation.

19.15.36.14.C(4) Upper Geomembrane

As discussed in Sections 2.7 the upper membrane shall consist of 60-mil HDPE, in compliance with this regulation.

19.15.36.14.C(5) Leachate Collection and Removal System

As discussed in Sections 2.6 - 2.8 NGL proposes to install an alternative leachate collection and removal system comprised of a 200-mil HDPE Geocomposite blanket drainage collection system in lieu of soil and piping as prescribed.

In compliance with this regulation, HDPE is the material proposed for geomembrane and piping, which has high chemical resistance and is proven to withstand attack from oil field wastes. The leachate collection and removal systems are sloped at 3% in the lateral direction. The central collection trench pipe is a perforated 6-inch HDPE pipe, which will be protected by a drainage rock backfill and equipped with a solid cleanout riser embedded into a side slope riser trench. The leachate is collected in a centralized sump and conveyed to a leachate evaporation pond outside of landfill perimeter within a double-walled HDPE force main.

19.15.36.14.C(6) Liner Protection Layer

As discussed Section 2.7 the liner system will be overlain with two-feet of protective soil cover with a saturated hydraulic conductivity of $1x10^{-2}$ cm/s or greater, in compliance with this regulation.

Landfill Final Cover System Design Requirements:

19.15.36.14.C(8) Final Cover System

As discussed in Section 2.6, 2.7, and 2.9, the final waste slopes shall not exceed 4H:1V or be less than 4% in compliance with this regulation. The final cover system shall include the prescribed 12-inch top soil erosion layer, 18-inch soil protection layer, and 60-mil HDPE geomembrane barrier layer in compliance with this regulation. However, NGL proposes the use of 200-mil HDPE geocomposite as an alternate material for both the surface drainage and gas vent/foundation layer in lieu of the prescribed high permeability soils.

19.15.36.14.C(9) Alternative materials

NGL is proposing the use of reinforced GCL as the base foundation layer in place of two feet of compacted clay and 200-mil HDPE geocomposite in place of high permeability soils for drainage. **Attachment E** provides a demonstration of geocomposite hydraulic performance under these conditions.

19.15.36.14.C(10) External Piping

All leachate and leak detection riser piping will be installed along the side slopes of the cells in compliance with this regulation. Liner penetrations are not proposed.

19.15.36.14.D(1) Liner Specifications and Requirements - Geomembranes

(a) In compliance with this regulation, all geomembranes are specified as 60-mil textured HDPE. HDPE geomembranes have published permeabilities as low as $1x10^{-15}$ cm/s (Webber 2005) and have high chemical resistance with proven resistance to hydrocarbons, salts, acidic and alkaline solutions. HDPE also has a high UV resistance when exposed to sunlight.

(b) As provided in **Attachment E,** the membrane is designed to withstand projected stresses and settling from overlying waste and equipment operations.

(c) As designed, the base liner system maintains a minimum 3% lateral slope to promote positive drainage and to facilitate leachate collection and leak detection.

19.15.36.14.D(2) Liner Specifications and Requirements – Additional Geomembrane Requirements

(a) HDPE geomembranes have published and field proven high chemical resistance with resistance to chemical attack from oil field waste and resulting leachate.

(b) The base liner system has a maximum slope of 3H:1V which has been shown to be stable in the slope stability analysis in **Attachment G,** which considers the soil-geosynthetic and geosynthetic-geosynthetic interface friction angles.

(c) In general, all HDPE liner systems will be installed in compliance with this regulation as specified in the Construction Quality Assurance Plan provided in **Attachment H**.

19.15.36.14.E Requirements for Soil Components

(1) The prepared subgrade for the base liner system will be compacted to at least 90% standard Proctor (ASTM D-698), see **Attachment H**.

(2) All soil surfaces to receive geosynthetics will be prepared in compliance with this regulation, See **Attachment H.**

(3) As previously discussed, NGL proposes to replace the compacted clay foundation layer with a reinforced GCL, thus this regulation in not applicable.

19.15.36.14.F Soil Material Requirements for the Leachate Collection and Recovery System and Leak Detection System

(1) As previously discussed, NGL proposes to replace the prescribed soil drainage materials with a 200-mil HDPE geocomposite, thus this regulation in not applicable.

19.15.36.14.G Landfill Gas Control System

NGL is not required to, nor is proposing to install a landfill gas control system for this landfill at this time.

Leachate Evaporation Pond (LEP) Construction Standards:

19.15.36.17.A Engineering Design Plan

This EDR includes design information for the LEP and its liner system, which is certified by Michael Bradford, P.E. The overall PA for the Facility incorporates and integrates the LEP operation and maintenance procedures (**Appendices D** and **E** of the PA), closure planning (**Appendix G** of the PA), and hydrologic information (**Appendix I** of the PA). Thus, the overall PA demonstrates compliance with this regulation.

19.15.36.17.B Construction Standards

(1) The LEP has been designed as prescribed in the Regulations, thus protective of fresh water, public health, and the environment.

(2) The proposed LEP is designed with a primary and secondary 60-mil HDPE geomembrane with a leak detection layer between them.

(3) In compliance with this regulation, the primary and secondary liners are specified as 60-mil textured HDPE. HDPE geomembranes have published permeabilities as low as $1x10^{-13}$ cm/s (Webber 2005) and have high chemical resistance with proven resistance to hydrocarbons, salts, acidic and alkaline solutions. HDPE with carbon black also has a high UV resistance when exposed to sunlight.

(4) NGL is proposing to use 200-mil HDPE geocomposite in place of high permeability soils for drainage. **Attachment E** provides a demonstration of geocomposite hydraulic performance under these conditions.

(5) As discussed in Section 2.6 and **Attachment H,** the pond has been designed and will be constructed in compliance with this regulation.

(6) The discharge point of the leachate force main into the pond will be reinforced to protect the liner system from excessive hydrostatic force. No liner penetrations are proposed.

(7) As discussed in Section 2.7 the primary liner shall consist of 60-mil HDPE, in compliance with this regulation.

(8) As discussed in Section 2.7 the secondary liner shall consist of 60-mil HDPE, in compliance with this regulation.

(9) As discussed in Sections 2.6 - 2.8 NGL proposes to install an alternative leak detection system comprised of a 200-mil HDPE geocomposite blanket drainage collection system in lieu of soil and piping as prescribed. HDPE has high chemical resistance to oil field wastes and the leak detection system is sloped at 2% in the lateral direction, compliant with this regulation. Discharge from this pond is not proposed.

(10) Not applicable

(11) The LEP has been designed with 3-feet of freeboard under the worst-case leachate generation condition, See **Attachment C.**

(12) The LEP has a leachate storage capacity of approximately 9.3 acre-feet, in compliance with this regulation which limits the capacity of evaporation ponds to 10 acre-feet.

4.0 REFERENCES

Daniel, D.E. and Estornell P. (1991) “Hydraulic Conductivity of Three Geosynthetic Clay Liners” *Journal of Civil Engineering* 118(10) 2605.

U.S. EPA. 2001. **Geosynthetic Clay Liners Used in Municipal Solid Waste Landfills**. EPA530-F-97-002. Solid Waste and Emergency Response. December.

Weber, C.T., and Zornberg, J.G. (2005). Leakage through Liners under High Hydraulic Heads." Geosynthetics Research and Development in Progress, Eighteenth Geosynthetic Research Institute Conference (GRI-18), Austin, Texas, January 26

Attachment A
Run-on and Run-off Surface Water Management Report

CALCULATIONS BY: Michael P. Bradford, P.E. – Senior Project Manager
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I. RUN-OFF SURFACE WATER MODELING

MODELING METHOD

Autodesk Storm and Sanitary Analysis 2019 (SSA)

ANALYSIS

A detailed engineering analysis was performed on the components that comprise the stormwater management system for surface water run-off within the facility boundaries. The components analyzed for this permit modification include:

1. Stormwater Let-down Structures
2. Slope Integrated diversion channels
3. Perimeter Ditches
4. Stormwater Ponds

As required by ***NMAC 19.15.36***, the hydrologic analysis was performed utilizing a 25-year, 24-hour rainfall event. SSA was utilized to perform the engineering analysis to assure compliance with the above regulations. The analysis was performed for the post development conditions of the Facility. This is considered to be a conservative approach for the design capacity of the stormwater pond and other conveyance features.

SSA was utilized to illustrate the capacity of the stormwater let-down structures, slope integrated berms, and perimeter ditches. These results were generated to assure that the conveyance parameters of stormwater design elements are adequate.

PARAMETERS USED IN THE ANALYSES

The following are the lists of parameters that were considered for stormwater management:

Based on ***NMAC 19.15.36,*** a 25-year, 24-hour rainfall event was considered for design of the proposed landfill permit area. The proposed disposal area was first segregated into 69 sub-basins, 99 nodes, and 102 links, then the areas were determined. It was concluded that the Landfill would fall into the Type II rainfall distribution as published by the Nation Resource Conservation Service (NRCS). The 25-year, 24-hour rainfall data for Lea

County was available within the SSA. The EPA SWMM hydrology method was used due to its flexibility, such as allowances for existing soil moisture and evaporation.

For each element in the design, the following parameters, if applicable, were input or calculated using the SSA software and dialogue box selections, typical values or site design information:

- Run-off Curve Number
  - Data gathered from NRCS Web Soil Survey and TR-55 Tables
    - Ratliff-Wink Fine Sandy Loams and Kermit-Palomas Fine Sands.
      - Hydraulic Soil Group B.
    - CN = 86 from Table 2-2a of the TR-55 Manual for “Newly Graded, Pervious Areas, No Vegetation”
- Area (Ac);
  - Automatically calculated based on site design
- Impervious Area (%);
  - 0% assumed globally this site is not expected to have significant areas of pavement
- Drying Time (days);
  - 2 days assumed globally
- Average Slope (%);
  - 1% for side slope berms
  - 1.5% min for perimeter channels
  - 4 horizontal to 1 vertical for waste side slopes
  - 4% waste top deck
  - 0.5% for entrance/admin/staging area
- Equivalent Width (ft)
  - Critical flow path as determined by site design
- Pervious Area Manning’s Roughness, taken from SSA databases;
  - 0.22 for Landfill – “poor grass cover, moderately rough surface”
  - 0.15 for Entrance/Admin/Staging area – “Gravel”
  - 0.35 for Let-down Structures, “rip-rap”
- Link Invert Information (elevation)
  - Taken from site design
- Link Cross Section
  - V-ditch for all side slope diversion channels
  - Trapezoidal ditch for all let-down structures and perimeter ditches
  - Circular for all culverts

SUMMARY OF RESULTS

Stormwater Let-down Structures

Four (4) stormwater let-down structures are planned for the final landfill configuration, beginning with let-down structure 1 in the northeast landfill face of the finished landfill and distributed clockwise around the landfill to let-down structure 4 on the northwest face of the landfill. Each of these let-down structures has been designed with a 10-foot bottom width, 2' depth, 3:1 side slopes, and 25% flowline slope. The flow capacity of these let-down structures is approximately 850 cubic feet per second (cfs). The SSA calculated maximum peak flow values from a 25-year, 24-hour rainfall event for lower most design segments of the let-down structures range from 150 CFS to 280 cfs. The SSA generated output tables for the stormwater analysis can be found in **Exhibit A.1, also see Figures depicting links, junctions, basins, and storage nodes for visual reference** .

Slope Integrated Berms

The landfill slope integrated berms were designed assuming that the berms would collect and transfer the entire area of each let-down sub-basin run-off volume. With this assumption, the maximum flow to be carried in a slope integrated berm is ~24 cubic feet per second (cfs). Each let-down has at least seven slope integrated berms with contributing drainage areas varying in size. The slope integrated berms will be sloped at 1 percent and have a depth of 1.5-feet, providing a maximum flow capacity of approximately ~42 cfs. The side slopes of the berms will be 4:1 (using the 4:1 final cover system of the landfill for the interior side) and 3H:1V on the exterior slope.

Perimeter Ditches

The perimeter channels along the west, south, and north sides have been designed with a 10-foot bottom width, 3-foot depth, 4:1 side slopes, and a flowline slope of 1.5% minimum. The perimeter channel along the east side has been designed with a 6-foot bottom width, 3-foot depth and 4:1 side slopes.

- West Ditch (Link 9 and Link 28)
  - Design Capacity ~415 cfs
  - Peak Flow during design storm ~304 cfs
- South Ditch – 1 (Link 48)
  - Design Capacity ~585 cfs
  - Peak Flow during design storm ~14 cfs
- South Ditch – 2 (Link 51)
  - Design Capacity ~400 cfs
  - Peak Flow during design storm ~34 cfs
- East Ditch (Link 18 and Link 50)
  - Design Capacity ~310 cfs
  - Peak Flow during design storm ~297 cfs
- Northeast Ditch (Link 26 and Link 49)

- Design Capacity ~395 cfs
- Peak Flow during design storm ~196 cfs

- Northwest Ditch (Link 27)
  - Design Capacity ~714 cfs
  - Peak Flow during design storm ~553 cfs

See **Exhibit A.1** for results

Culverts

Each of the perimeter ditches must transition through a culvert below the main access/haul roads prior to entering one of the three retention ponds. The following is a summary of the culverts proposed:

- Northeast Culvert (Link 99)
  - 3 barrel, 36-inch concrete pipe
  - Design Flow = 223 cfs
  - Peak Flow during design storm = 164 cfs
- Northwest Culvert (Link 100)
  - 3 barrel, 36-inch concrete pipe
  - Design Flow = 222 cfs
  - Peak Flow during design storm = 195 cfs
- East Culvert (Link 40)
  - 2 barrel, 48-inch concrete pipe
  - Design Flow = 375 cfs
  - Peak Flow during design storm = 297 cfs
- Southeast Culvert (Link 39)
  - 2 barrel, 20-inch concrete pipe
  - Design Flow = 43 cfs
  - Peak Flow during design storm = 34 cfs
- Southwest Culvert (Link 99)
  - 2 barrel, 20-inch concrete pipe
  - Design Flow = 34 cfs
  - Peak Flow during design storm = 13 cfs
- West Culvert (Link 99)
  - 2 barrel, 48-inch concrete pipe
  - Design Flow = 350 cfs
  - Peak Flow during design storm = 304 cfs

Stormwater culvert sizing is presented in **Exhibit A.1, also see Figures depicting links, junctions, basins, and storage nodes for visual reference**.

Stormwater/Sedimentation Ponds

The facility will be required to hold the run-off from a 25-year, 24-hour storm. As shown in **Exhibit A.1,** the three proposed ponds will provide sufficient capacity to retain the entire run-off volume from their associated contributing basins from the 25-year, 24-hour storm event. Each pond has been size to be 10-feet deep with 3:1 side slopes in order to maximize borrow soil generation. These ponds will each have a minimum of 3' freeboard, and some additional capacity in the case that the pond is retaining some liquids already at the time of the design storm event.

II. RUN-ON SURFACE WATER MODELING

MODELING METHOD

USDA, NRCS, Technical Release 55 (TR-55) via Microsoft Excel Spreadsheet

ANALYSIS

A detailed engineering analysis was performed on the stormwater run-on management system. The run-on area is assumed to flow perpendicularly to the Northwest permit boundary. Thus a stormwater run-on diversion channel is proposed along the north boundary that will intercept run-on flow and divert it around the north east and southwest permit boundary corners. Once the flow has passed these corners, the diversion channel will daylight and allow the collected stormwater run-on to dissipate to native ground. The components analyzed for this permit modification include:

1. Run-on Control Diversion Ditch

As required by ***NMAC 19.15.36***, the hydrologic analysis was performed utilizing a 25-year, 24-hour rainfall event. TR-55 manual was utilized to perform the engineering analysis to assure compliance with the above regulations. The analysis was performed for the undeveloped current conditions of the assumed run-on area. This is considered to be a conservative approach for the design capacity of the stormwater pond and other conveyance features.

TR-55 modeled through Microsoft Excel spreadsheet was utilized to illustrate the capacity of the run-on control ditch. These results were generated to assure that the conveyance parameters of stormwater design elements are adequate.

PARAMETERS USED IN THE ANALYSIS

Stormwater Run-on Drainage Basin

The assumed stormwater run-on contributing drainage basin is bound by the Northwest permit boundary and the Highway 128 North of the site. The stormwater run-on contributing drainage basin is approximately 5,555 acres in size.

Overland Gradient

It is determined based on USGS Quadrangle Maps and site-specific topographic survey of this facility that the natural surface water gradient is Northwest to Southeast at 0.9%.

Run-off Curve Number

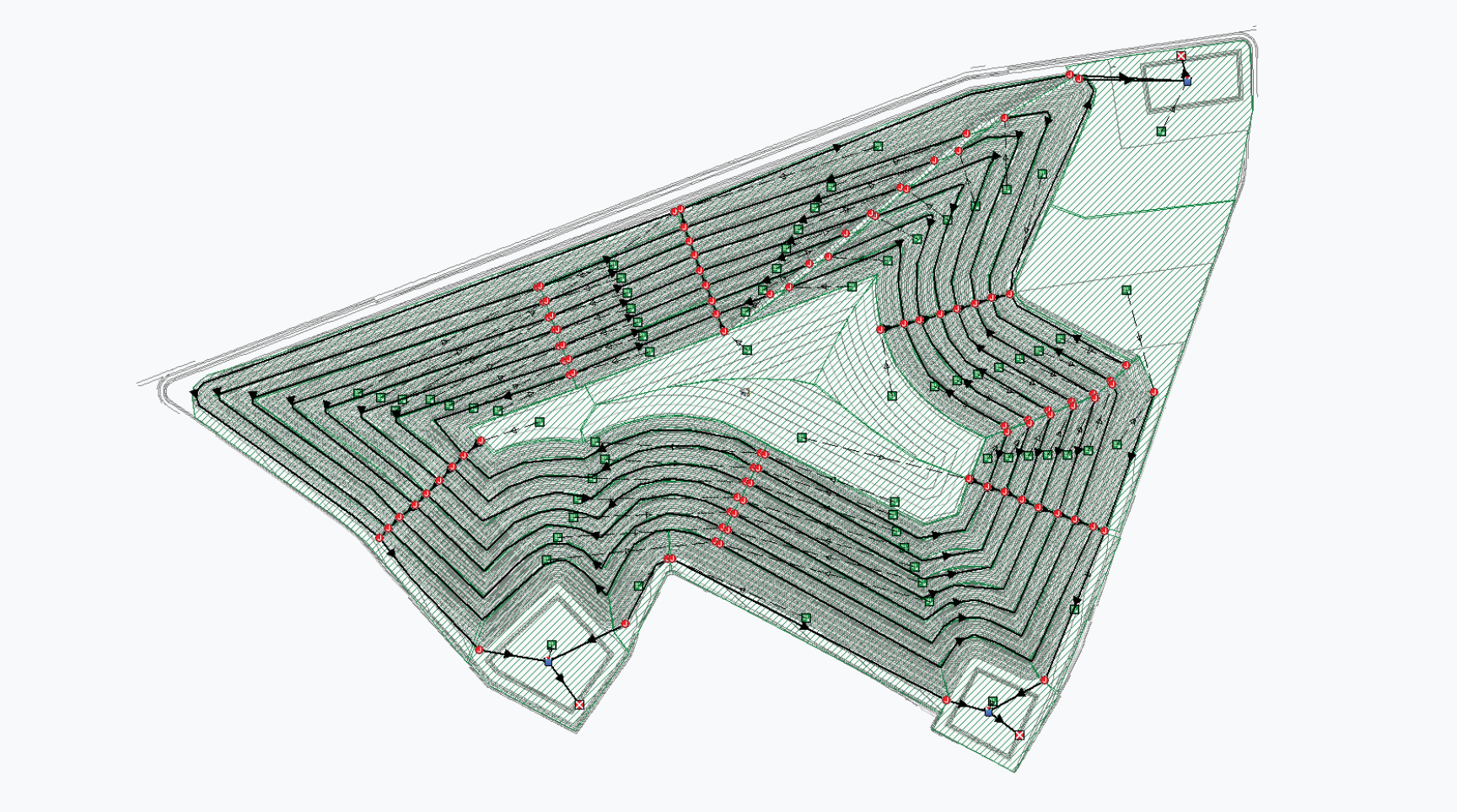
A composite curve number (CN) was generated using the approximate assumed run-on drainage area, and hydraulic soil group, CN information, and approximate areas as calculated using the NRCS web soil survey. Using this information, a composite CN of 42 was calculated for the assumed run-on control area.

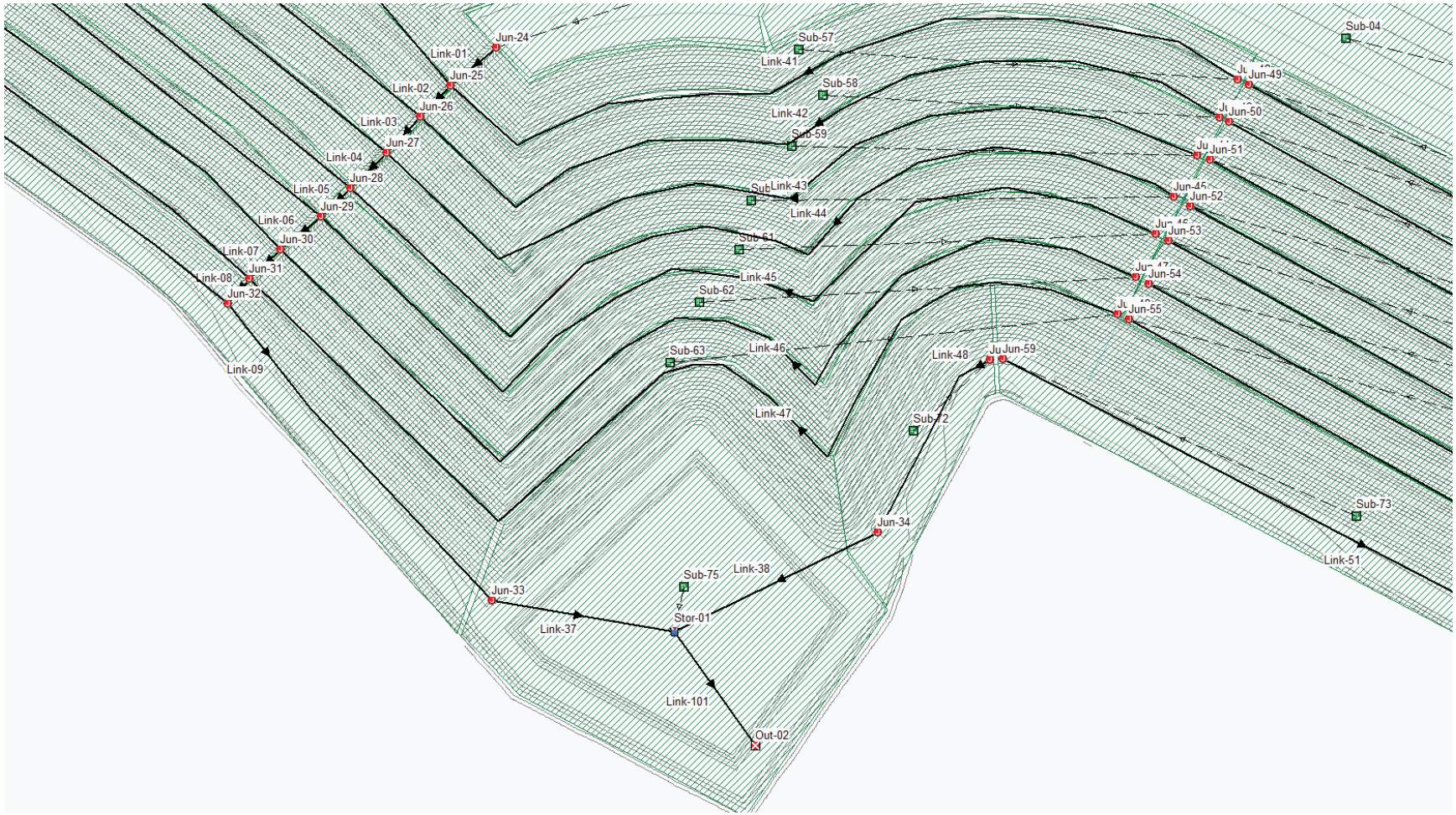
SUMMARY OF RESULTS

The TR-55 calculation summarized in **Exhibit A.2** demonstrates that a run-on diversion channel with a 7-foot bottom width, 2 feet deep, with 3:1 side slopes will control the peak discharge from a 25-year, 24-hour storm event from the run-on drainage basin.

In general, a channel with these dimensions, with a traverse slope of 0.1% will have a design capacity of 67cfs. The peak flow from the run-on drainage basin is 132 cfs. However, this flow is split and diverted north and south, thus each channel must have a design capacity of 66 cfs. The proposed run-on diversion ditch will also provide an additional 0.3-feet of freeboard.

Exhibit A.1
Run-off Design Results
Storm and Sanitary Analysis Results

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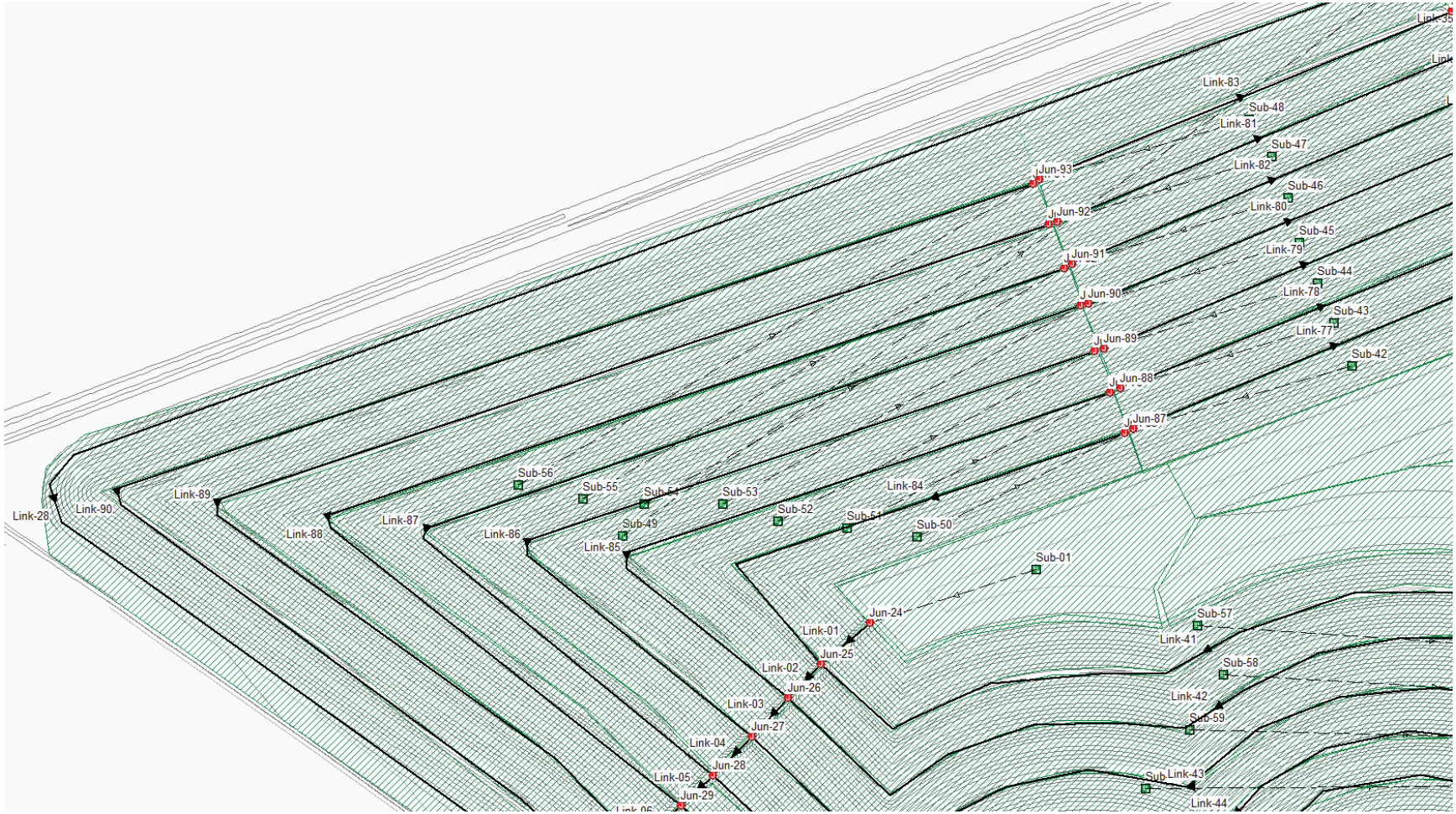
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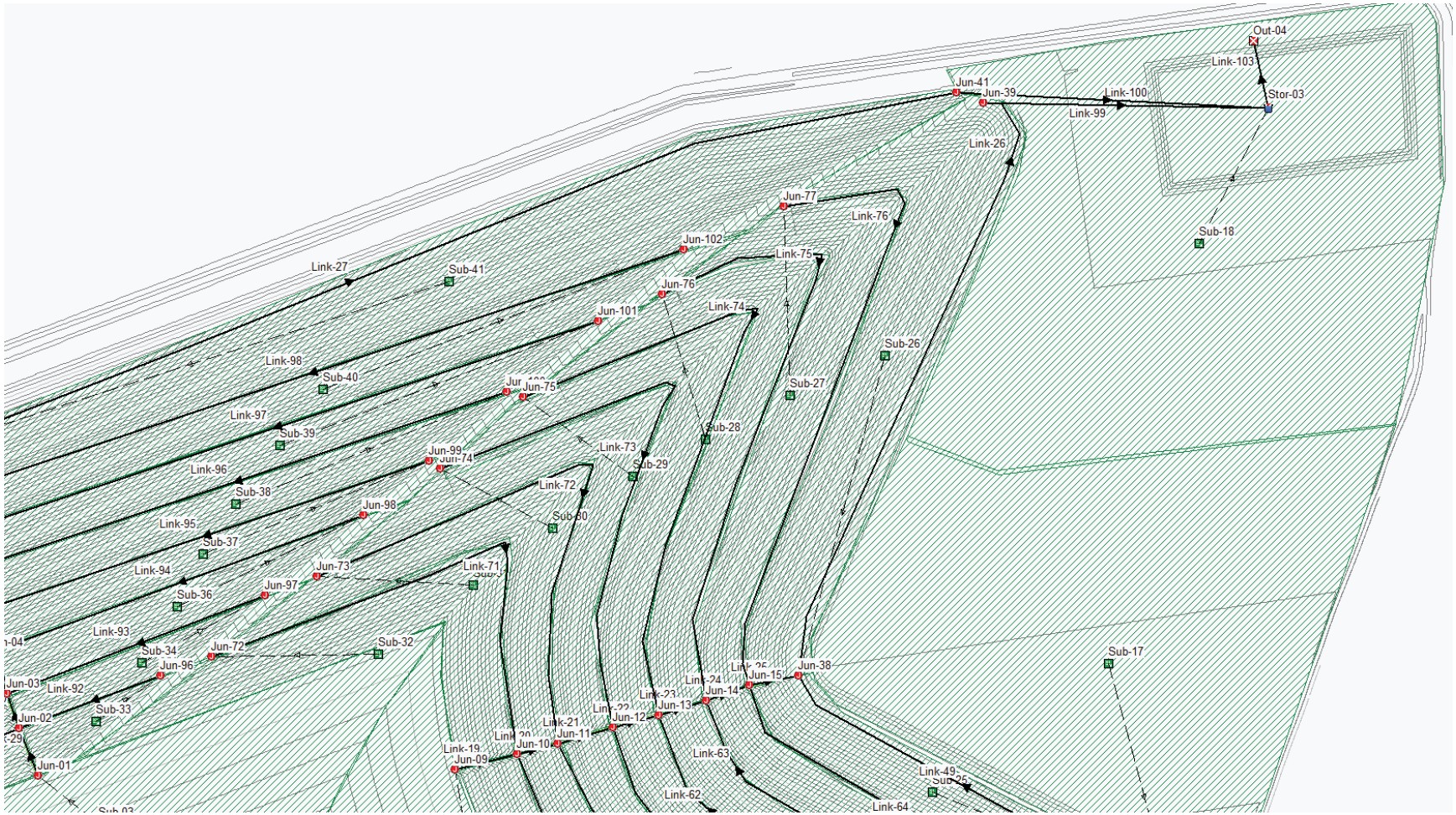
Link-44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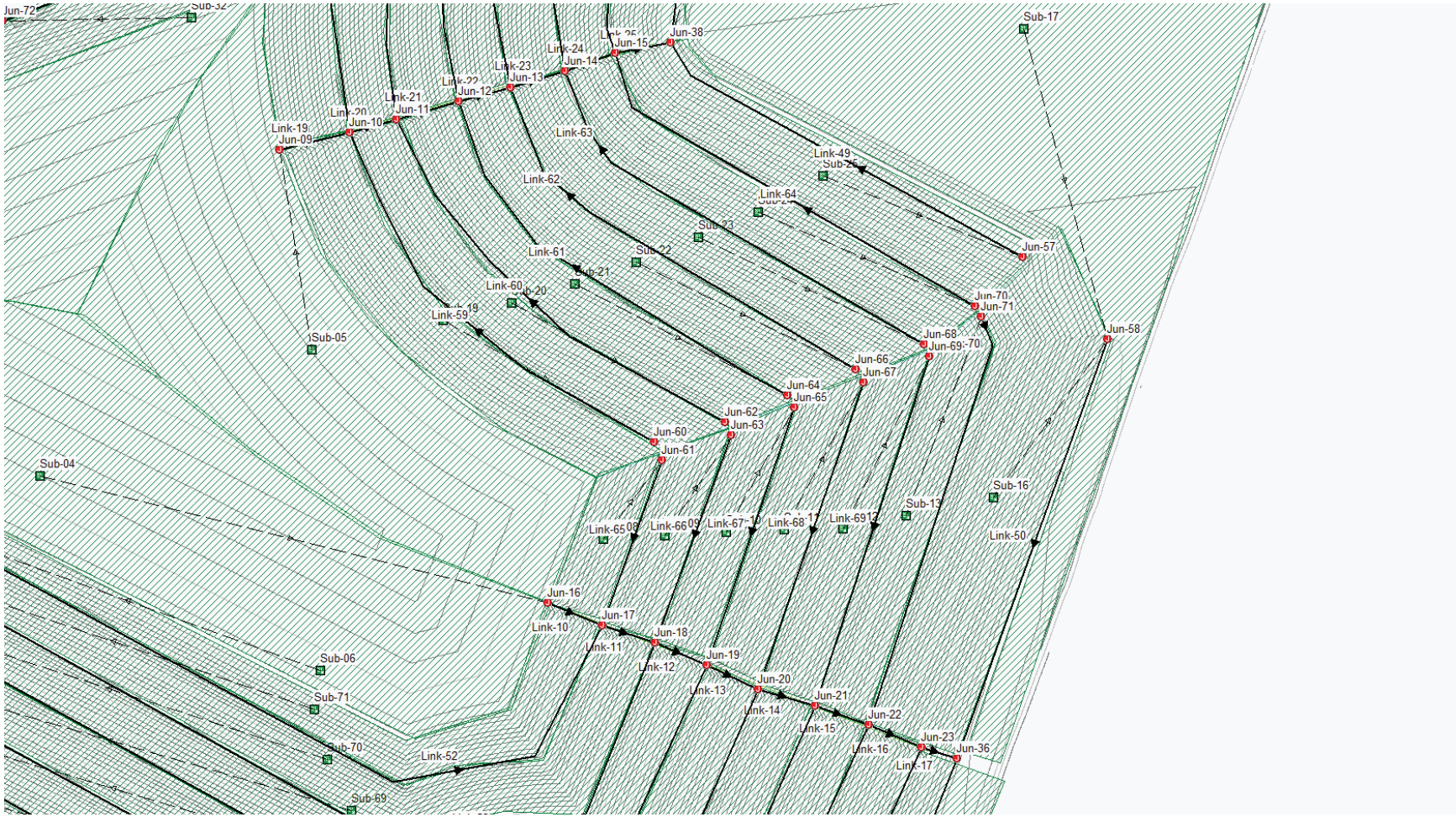
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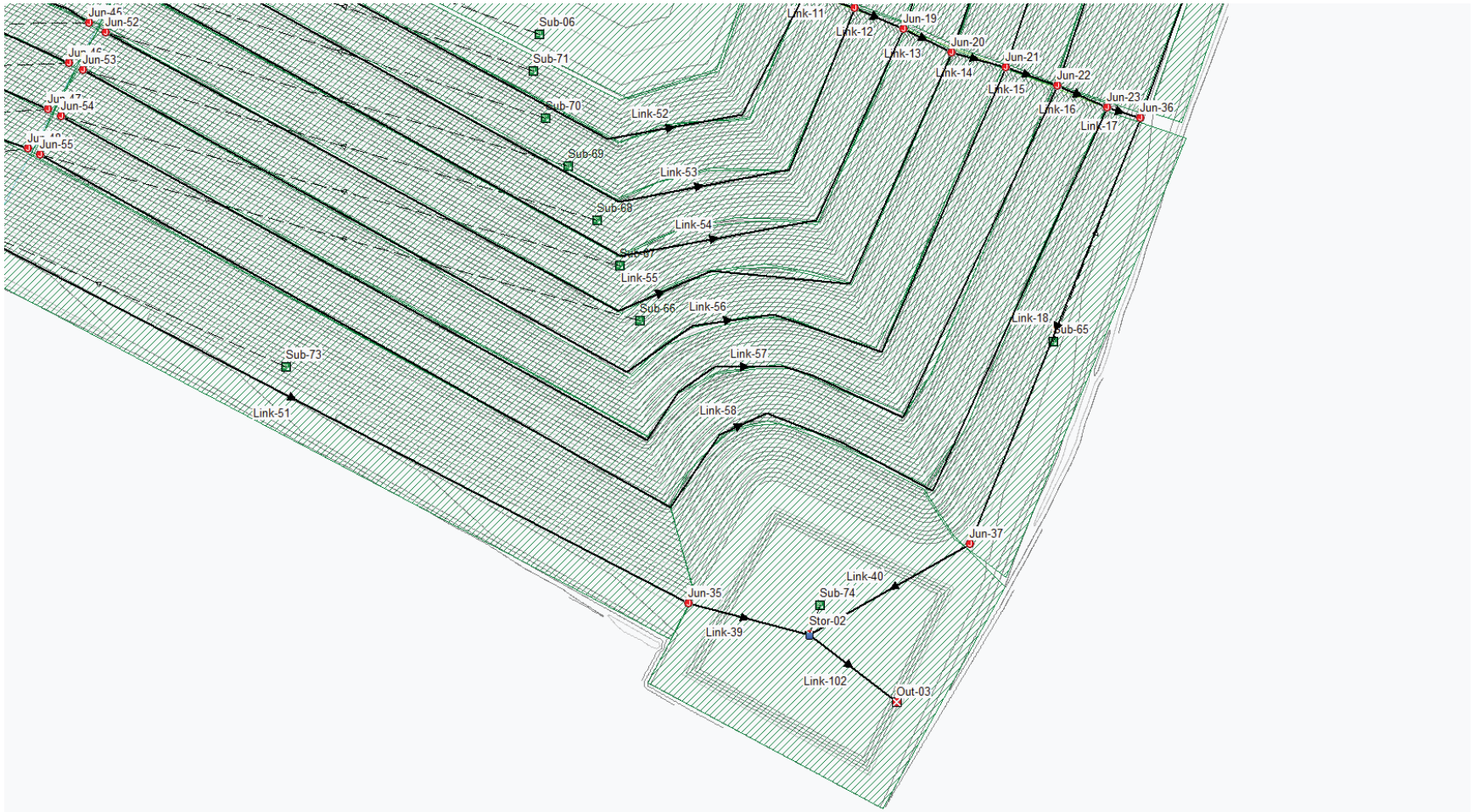
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Stor-02
Link-39
Link-102
Out-03

North Ranch Surface Waste Management Facility

SSA RESULTS

SN	Element ID	Description	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Inlet Invert Offset	Outlet Invert Elevation	Outlet Invert Offset	Total Drop	Average Slope	Pipe Shape	Pipe Diameter or Height	Pipe Width	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow	Flap Gate	Lengthening Factor	Peak Flow	Time of Peak Flow Occurrence	Max Flow Velocity	Travel Time	Design Flow Capacity	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Total Time Surcharged	Max Flow Depth	Reported Condition
					(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(%)		(inches)	(inches)					(cfs)			(cfs)	(days hh:mm)	(ft/sec)	(min)	(cfs)			(min)	(ft)	
1	Link-100 r		64	Stor-03	576.94	3342.70	0.00	3333.20	0.00	9.50	1.6500	CIRCULAR	36.000	36.00	0.0150	0.5000	0.5000	0.0000	0.00	NO	1.00	194.92	0 12:09	11.90	0.81	222.53	0.88	0.73	0.00	2.14	Calculated
2	Link-37		64	Stor-01	375.70	3330.40	0.00	3323.00	0.00	7.40	1.9700	CIRCULAR	48.000	48.00	0.0150	0.5000	0.5000	0.0000	0.00	NO	1.00	303.60	0 12:11	15.68	0.40	349.43	0.87	0.72	0.00	2.85	Calculated
3	Link-38		64	Stor-01	459.60	3332.00	0.00	3323.00	0.00	9.00	1.9600	CIRCULAR	20.040	20.04	0.0150	0.5000	0.5000	0.0000	0.00	NO	1.00	13.25	0 12:02	7.30	1.05	33.74	0.39	0.44	0.00	0.70	Calculated
4	Link-39		64	Stor-02	233.95	3328.30	0.00	3321.00	0.00	7.30	3.1200	CIRCULAR	20.040	20.04	0.0150	0.5000	0.5000	0.0000	0.00	NO	1.00	33.74	0 12:09	10.84	0.36	42.60	0.79	0.67	0.00	1.12	Calculated
5	Link-40		64	Stor-02	348.09	3328.90	0.50	3321.00	0.00	7.90	2.2700	CIRCULAR	48.000	48.00	0.0150	0.5000	0.5000	0.0000	0.00	NO	1.00	297.37	0 12:08	16.57	0.35	375.09	0.79	0.67	0.00	2.63	Calculated
6	Link-99		64	Stor-03	632.04	3343.60	0.00	3333.20	0.00	10.40	1.6500	CIRCULAR	36.000	36.00	0.0150	0.5000	0.5000	0.0000	0.00	NO	1.00	163.61	0 12:11	11.54	0.91	222.45	0.74	0.64	0.00	1.90	Calculated

SN	Element ID	Description	From (Inlet) Node	To (Outlet) Node	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Channel Type	Channel Height (ft)	Channel Width (ft)	Left Overbank Manning's Roughness	Channel Manning's Roughness	Right Overbank Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow (cfs)	Flap Gate	Lengthening Factor	Peak Flow (cfs)	Time of Peak Flow Occurrence (days hh:mm)	Max Flow Velocity (ft/sec)	Travel Time (min)	Design Flow Capacity (cfs)	Max Flow / Design Flow Ratio	Max Flow Depth / Total Depth Ratio	Total Time Surcharged (min)	Max Flow Depth (ft)	Reported Condition
1	Link-01		64	64	120.88	3527.50	0.00	3495.50	0.00	32.00	26.4700	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	12.86	0 12:00	6.75	0.30	880.17	0.01	0.09	0.00	0.18	Calculated
2	Link-02		64	64	88.42	3495.50	0.00	3471.70	0.00	23.80	26.9200	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	34.62	0 12:05	9.75	0.15	887.52	0.04	0.16	0.00	0.32	Calculated
3	Link-03		64	64	99.97	3471.70	0.00	3447.80	0.00	23.90	23.9100	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	69.88	0 12:07	12.02	0.14	836.43	0.08	0.25	0.00	0.50	Calculated
4	Link-04		64	64	102.50	3447.80	0.00	3423.90	0.00	23.90	23.3200	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	101.11	0 12:07	13.52	0.13	826.04	0.12	0.31	0.00	0.62	Calculated
5	Link-05		64	64	83.29	3423.90	0.00	3401.60	0.00	22.30	26.7700	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	134.26	0 12:07	15.55	0.09	885.16	0.15	0.36	0.00	0.69	Calculated
6	Link-06		64	64	106.97	3401.60	0.00	3375.90	0.00	25.70	24.0300	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	167.57	0 12:08	16.11	0.11	838.50	0.20	0.42	0.00	0.81	Calculated
7	Link-07		64	64	87.17	3375.90	0.00	3353.30	0.00	22.60	25.9300	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	238.39	0 12:08	18.50	0.08	871.04	0.27	0.50	0.00	0.98	Calculated
8	Link-08		64	64	65.76	3353.30	0.00	3334.90	0.00	18.40	27.9800	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	279.75	0 12:09	19.96	0.05	904.89	0.31	0.53	0.00	1.06	Calculated
9	Link-09		64	64	808.14	3334.90	0.00	3330.40	0.00	4.50	0.5600	Trapezoidal	3.000	34.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	303.85	0 12:11	5.94	2.27	415.80	0.73	0.86	0.00	2.57	Calculated
10	Link-10		64	64	105.66	3527.50	0.00	3498.00	0.00	29.50	27.9200	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	69.95	0 12:00	12.64	0.14	903.90	0.08	0.24	0.00	0.48	Calculated
11	Link-101		Stor-01	Out-02	40.00	3333.00	10.00	3330.00	0.00	3.00	7.5000	Trapezoidal	3.000	58.00	0.0000	0.0320	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	0.00	0 00:00	0.00		3436.82	0.00	0.00	0.00	0.00	Calculated
12	Link-102		Stor-02	Out-03	207.25	3331.00	10.00	3328.00	0.00	3.00	1.4500	Trapezoidal	3.000	58.00	0.0000	0.0320	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	0.00	0 00:00	0.00		1509.87	0.00	0.00	0.00	0.00	Calculated
13	Link-103		Stor-03	Out-04	139.10	3343.20	10.00	3340.20	0.00	3.00	2.1600	Trapezoidal	4.000	72.00	0.0000	0.0320	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	0.00	0 00:00	0.00		3226.20	0.00	0.00	0.00	0.00	Calculated
14	Link-11		64	64	97.41	3498.00	0.00	3473.00	0.00	25.00	25.6600	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	80.38	0 12:00	12.91	0.13	866.63	0.09	0.27	0.00	0.53	Calculated
15	Link-12		64	64	100.65	3473.00	0.00	3448.00	0.00	25.00	24.8400	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	94.85	0 12:01	13.51	0.12	852.57	0.11	0.30	0.00	0.59	Calculated
16	Link-13		64	64	100.50	3448.00	0.00	3423.00	0.00	25.00	24.8800	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	112.58	0 12:02	14.31	0.12	853.21	0.13	0.33	0.00	0.64	Calculated
17	Link-14		64	64	105.53	3423.00	0.00	3398.00	0.00	25.00	23.6900	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	133.13	0 12:03	14.88	0.12	832.62	0.16	0.37	0.00	0.73	Calculated
18	Link-15		64	64	102.02	3398.00	0.00	3373.00	0.00	25.00	24.5000	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	155.39	0 12:04	15.83	0.11	846.83	0.18	0.40	0.00	0.79	Calculated
19	Link-16		64	64	102.31	3373.00	0.00	3348.00	0.00	25.00	24.4400	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	179.79	0 12:07	16.58	0.10	845.62	0.21	0.43	0.00	0.86	Calculated
20	Link-17		64	64	65.85	3348.00	0.00	3333.30	0.50	14.70	22.3200	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	200.85	0 12:07	16.65	0.07	808.25	0.25	0.47	0.00	0.93	Calculated
21	Link-18		64	64	864.47	3332.80	0.00	3328.40	0.00	4.40	0.5100	Trapezoidal	3.000	30.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	297.54	0 12:08	5.83	2.47	308.70	0.96	0.98	0.00	2.92	Calculated
22	Link-19		64	64	128.77	3527.50	0.00	3492.95	0.00	34.55	26.8300	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	38.96	0 12:00	10.19	0.21	886.10	0.04	0.17	0.00	0.35	Calculated
23	Link-20		64	64	86.14	3492.95	0.00	3468.80	0.00	24.15	28.0400	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	60.14	0 12:02	12.02	0.12	905.78	0.07	0.22	0.00	0.43	Calculated
24	Link-21		64	64	115.25	3468.80	0.00	3444.60	0.00	24.20	21.0000	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	79.62	0 12:02	12.04	0.16	783.89	0.10	0.28	0.00	0.56	Calculated
25	Link-22		64	64	95.83	3444.60	0.00	3420.40	0.00	24.20	25.2500	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	100.53	0 12:03	13.85	0.12	859.65	0.12	0.31	0.00	0.61	Calculated
26	Link-23		64	64	100.32	3420.40	0.00	3396.20	0.00	24.20	24.1200	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	122.61	0 12:03	14.57	0.11	840.20	0.15	0.35	0.00	0.69	Calculated
27	Link-24		64	64	94.59	3396.20	0.00	3372.70	0.00	23.50	24.8400	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	144.28	0 12:03	15.52	0.10	852.76	0.17	0.38	0.00	0.75	Calculated
28	Link-25		64	64	101.09	3372.70	0.00	3349.20	0.00	23.50	23.2500	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	167.57	0 12:04	15.94	0.11	824.80	0.20	0.42	0.00	0.84	Calculated
29	Link-26		64	64	1297.91	3349.20	0.00	3342.70	0.00	6.50	0.5000	Trapezoidal	3.000	34.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	195.17	0 12:08	5.36	4.04	394.32	0.49	0.71	0.00	2.11	Calculated
30	Link-27		64	64	2239.31	3354.40	0.00	3343.60	0.00	10.80	0.4800	Trapezoidal	4.000	42.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	163.94	0 12:10	5.37	6.95	716.40	0.23	0.48	0.00	1.90	Calculated
31	Link-28		64	64	4070.59	3354.40	0.00	3334.90	0.00	19.50	0.4800	Trapezoidal	3.000	34.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	34.06	0 12:17	3.39	20.01	385.66	0.09	0.28	0.00	0.83	Calculated
32	Link-29		64	64	104.08	3527.50	0.00	3497.50	0.00	30.00	28.8200	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	28.28	0 12:06	9.26	0.19	918.42	0.03	0.14	0.00	0.28	Calculated
33	Link-30		64	64	73.45	3497.50	0.00	3476.90	0.00	20.60	28.0500	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	38.91	0 12:06	10.30	0.12	905.95	0.04	0.17	0.00	0.34	Calculated
34	Link-31		64	64	90.85	3476.90	0.00	3456.30	0.00	20.60	22.6700	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	51.28	0 12:04	10.61	0.14	814.59	0.06	0.21	0.00	0.43	Calculated
35	Link-32		64	64	86.06	3456.30	0.00	3435.70	0.00	20.60	23.9400	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	67.05	0 12:04	11.86	0.12	836.95	0.08	0.25	0.00	0.49	Calculated
36	Link-33		64	64	86.06	3435.70	0.00	3416.40	0.00	19.30	22.4300	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	83.47	0 12:03	12.51	0.11	810.11	0.10	0.28	0.00	0.57	Calculated
37	Link-34		64	64	78.65	3416.40	0.00	3394.00	0.00	22.40	28.4800	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	101.47	0 12:04	14.46	0.09	912.94	0.11	0.30	0.00	0.59	Calculated
38	Link-35		64	64	81.77	3394.00	0.00	3374.60	0.00	19.40	23.7300	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	121.43	0 12:04	14.45	0.09	833.24	0.15	0.35	0.00	0.69	Calculated
39	Link-41		64	64	1723.57	3514.90	0.00	3495.50	0.00	19.40	1.1300	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	14.28	0 12:08	4.59	6.26	42.51	0.34	0.65	0.00	0.97	Calculated
40	Link-42		64	64	1797.17	3492.00	0.00	3471.70	0.00	20.30	1.1300	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	15.92	0 12:08	4.67	6.41	42.59	0.37	0.68	0.00	1.01	Calculated
41	Link-43		64	64	1836.80	3468.70	0.00	3447.80	0.00	20.90	1.1400	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	17.50	0 12:08	4.73	6.47	42.74	0.41	0.70	0.00	1.05	Calculated
42	Link-44		64	64	1967.89	3446.00	0.00	3423.90	0.00	22.10	1.1200	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	17.77	0 12:08	4.75	6.90	42.46	0.42	0.71	0.00	1.06	Calculated
43	Link-45		64	64	2033.88	3424.30	0.00	3401.60	0.00	22.70	1.1200	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	16.40	0 12:08	4.72	7.18	42.33	0.39	0.68	0.00	1.02	Calculated
44	Link-46		64	64	2205.75	3400.20	0.00	3375.90	0.00	24.30	1.1000	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	20.60	0 12:09	4.83	7.61	42.06	0.49	0.75	0.00	1.12	Calculated
45	Link-47		64	64	2345.80	3379.00	0.00	3353.30	0.00	25.70	1.1000	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	19.44	0 12:09	4.81	8.13	41.94	0.46	0.73	0.00	1.09	Calculated
46	Link-48		64	64	429.05	3336.70	0.00	3332.00	0.00	4.70	1.1000	Trapezoidal	3.000	34.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	13.36	0 12:01	2.89	2.47	583.20	0.02	0.13	0.00	0.40	Calculated
47	Link-49		64	64	741.37	3352.90	0.00	3349.20	0.00	3.70	0.5000	Trapezoidal	3.000	34.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	10.92	0 12:04	2.37	5.21	393.64	0.03	0.15	0.00	0.44	Calculated
48	Link-50		64	64	792.86	3336.75	0.00	3332.80	0.00	3.95	0.5000	Trapezoidal	3.000	30.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	84.55	0 12:07	4.26	3.10	305.41	0.28	0.55	0.00	1.64	Calculated
49	Link-51		64	64	1661.72	3336.70	0.00	3328.30	0.00	8.40	0.5100	Trapezoidal	3.000	34.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	33.76	0 12:09	3.37	8.22	396.17	0.09	0.27	0.00	0.81	Calculated
50	Link-52		64	64	1455.37	3514.90	0.00	3498.00	0.00	16.90	1.1600	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	10.62	0 12:07	4.39	5.53	43.18	0.25	0.58	0.00	0.87	Calculated
51	Link-53		64	64	1667.38	3492.00	0.00	3473.00	0.00	19.00	1.1400	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	15.17	0 12:08	4.61	6.03	42.77	0.35	0.66	0.00	1.00	Calculated
52	Link-54		64	64	1830.27	3468.70	0.00	3448.00	0.00	20.70	1.1300	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	16.97	0 12:08	4.71	6.48	42.61	0.40	0.69	0.00	1.04	Calculated
53	Link-55		64	64	2025.36	3446.00	0.00	3423.00	0.00	23.00	1.1400	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	18.10	0 12:08	4.79	7.05	42.70	0.42	0.71	0.00	1.06	Calculated
54	Link-56		64	64	2275.01	3424.30	0.00	3398.00	0.00	26.30	1.1600	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	19.33	0 12:09	4.89	7.75	43.08	0.45	0.72	0.00	1.08	Calculated
55	Link-57		64	64	2512.72	3400.20	0.00	3373.00	0.00	27.20	1.0800	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	20.76	0 12:09	4.82	8.69	41.69	0.50	0.75	0.00	1.11	Calculated
56	Link-58		64	64	2758.84	3379.00	0.00	3348.00	0.00	31.00	1.1200	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	23.37	0 12:10	4.96	9.27	42.48	0.55	0.78	0.00	1.15	Calculated
57	Link-59		64	64	801.43	3503.10	0.00	3492.95	0.00	10.15	1.2700	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	10.35	0 12:03	3.95	3.38	45.10	0.23	0.57	0.00	0.85	Calculated
58	Link-60		64	64	813.64	3479.00	0.00	3468.80	0.00	10.20	1.2500	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	9.00	0 12:03	3.88	3.50	44.87	0.20	0.55	0.00	0.81	Calculated
59	Link-61		64	64	812.50	3454.90	0.00	3444.60	0.00	10.30	1.2700	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	9.37	0 12:03	3.91	3.46	45.12	0.21	0.55	0.00	0.82	Calculated
60	Link-62		64	64	820.78	3430.70	0.00	3420.40	0.00	10.30	1.2500	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	9.48	0 12:03	3.91	3.50	44.89	0.21	0.56	0.00	0.82	Calculated
61	Link-63		64	64	827.27	3406.60	0.00	3396.20	0.00	10.40	1.2600	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	9.28	0 12:03	3.91	3.53	44.93	0.21	0.55	0.00	0.81	Calculated
62	Link-64		64	64	807.16	3382.90	0.00	3372.70	0.00	10.20	1.2600	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	9.29	0 12:03	3.90	3.45	45.05	0.21	0.55	0.00	0.81	Calculated
63	Link-65		64	64	312.43	3503.10	0.00	3498.00	0.00	5.10	1.6300	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	3.39	0 12:01	2.94	1.77	51.20	0.07	0.36	0.00	0.54	Calculated
64	Link-66		64	64	393.21	3479.00	0.00	3473.00	0.00	6.00	1.5300	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	4.51	0 12:01	3.12	2.10	49.50	0.09	0.41	0.00	0.61	Calculated
65	Link-67		64	64	484.40	3454.90	0.00	3448.00	0.00	6.90	1.4200	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	5.31	0 12:01	3.30	2.45	47.82	0.11	0.44	0.00	0.65	Calculated
66	Link-68		64	64	577.71	3430.70	0.00	3423.00	0.00	7.70	1.3300	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	6.66	0 12:02	3.49	2.76	46.26	0.14	0.48	0.00	0.72	Calculated
67	Link-69		64	64	653.38	3406.60	0.00	3398.00	0.00	8.60	1.3200	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	7.30	0 12:02	3.63	3.00	45.97	0.16	0.50	0.00	0.74	Calculated
68	Link-70		64	64	765.64	3382.90	0.00	3373.00	0.00	9.90	1.2900	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	8.47	0 12:02	3.83	3.33	45.57	0.19	0.53	0.00	0.78	Calculated
69	Link-71		64	64	1072.75	3505.80	0.00	3492.95	0.00	12.85	1.2000	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	13.05	0 12:04	4.27	4.19	43.86	0.30	0.63	0.00	0.94	Calculated
70	Link-72		64	64	1185.76	3482.30	0.00	3468.80	0.00	13.50	1.1400	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	11.08	0 12:04	4.21	4.69	42.76	0.26	0.60	0.00	0.89	Calculated
71	Link-73		64	64	1233.29	3458.90	0.00	3444.60	0.00	14.30	1.1600	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	11.89	0 12:07	4.30	4.78	43.15	0.28	0.61	0.00	0.91	Calculated
72	Link-74		64	64	1380.13	3435.40	0.00	3420.40	0.00	15.00	1.0900	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	13.40	0 12:07	4.36	5.28	41.77	0.32	0.64	0.00	0.96	Calculated
73	Link-75		64	64	1293.75	3411.10	0.00	3396.20	0.00	14.90	1.1500	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	12.82	0 12:07	4.37	4.93	43.00	0.30	0.63	0.00	0.94	Calculated
74	Link-76		64	64	1303.59	3387.60	0.00	3372.70	0.00	14.90	1.1400	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	14.58	0 12:07	4.42	4.92	42.84	0.34	0.66	0.00	0.99	Calculated
75	Link-77		64	64	836.21	3508.00	0.00	3497.50	0.00	10.50	1.2600	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	8.85	0 12:03	3.90	3.57	44.90	0.20	0.54	0.00	0.80	Calculated
76	Link-78		64	64	834.19	3487.40	0.00	3476.90	0.00	10.50	1.2600	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	8.42	0 12:03	3.88	3.58	44.96	0.19	0.53	0.00	0.78	Calculated
77	Link-79		64	64	835.49	3466.70	0.00	3456.30	0.00	10.40	1.2400	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	8.01	0 12:03	3.84	3.63	44.71	0.18	0.52	0.00	0.77	Calculated
78	Link-80		64	64	831.84	3446.10	0.00	3435.70	0.00	10.40	1.2500	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	8.54	0 12:03	3.87	3.58	44.80	0.19	0.53	0.00	0.79	Calculated
79	Link-81		64	64	835.12	3404.50	0.00	3394.00	0.00	10.50	1.2600	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	8.26	0 12:03	3.87	3.60	44.93	0.18	0.53	0.00	0.78	Calculated
80	Link-82		64	64	833.23	3426.80	0.00	3416.40	0.00	10.40	1.2500	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	8.09	0 12:03	3.85	3.61	44.77	0.18	0.52	0.00	0.77	Calculated
81	Link-83		64	64	837.57	3385.00	0.00	3374.60	0.00	10.40	1.2400	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	7.43	0 12:03	3.81	3.66	44.65	0.17	0.51	0.00	0.75	Calculated
82	Link-84		64	64	1019.14	3508.00	0.00	3495.50	0.00	12.50	1.2300	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	9.17	0 12:03	4.08	4.16	44.38	0.21	0.55	0.00	0.81	Calculated

83	Link-85	64	64	1376.77	3487.40	0.00	3471.70	0.00	15.70	1.1400	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	19.97	0	12:07	4.62	4.97	42.79	0.47	0.74	0.00	1.11	Calculated
84	Link-86	64	64	1693.36	3466.70	0.00	3447.80	0.00	18.90	1.1200	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	14.07	0	12:08	4.56	6.19	42.33	0.33	0.65	0.00	0.97	Calculated
85	Link-87	64	64	2022.22	3446.10	0.00	3423.90	0.00	22.20	1.1000	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	15.83	0	12:08	4.68	7.20	41.98	0.38	0.68	0.00	1.01	Calculated
86	Link-88	64	64	2326.22	3426.80	0.00	3401.60	0.00	25.20	1.0800	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	17.31	0	12:09	4.74	8.18	41.71	0.42	0.70	0.00	1.04	Calculated
87	Link-89	64	64	2678.46	3404.50	0.00	3375.90	0.00	28.60	1.0700	Triangular	2.000	16.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	52.54	0	12:10	5.29	8.44	89.17	0.59	0.81	0.00	1.60	Calculated
88	Link-90	64	64	2987.76	3385.00	0.00	3353.30	0.00	31.70	1.0600	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	22.85	0	12:11	4.84	10.29	41.27	0.55	0.77	0.00	1.15	Calculated
89	Link-91	64	64	99.73	3374.60	0.00	3354.40	0.00	20.20	20.2500	Trapezoidal	2.000	22.00	0.0000	0.0350	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	141.21	0	12:04	14.39	0.12	769.89	0.18	0.40	0.00	0.79	Calculated
90	Link-92	64	64	305.54	3501.20	0.00	3497.50	0.00	3.70	1.2100	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	3.21	0	12:01	2.61	1.95	44.10	0.07	0.37	0.00	0.56	Calculated
91	Link-93	64	64	559.36	3482.80	0.00	3476.90	0.00	5.90	1.0500	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	4.66	0	12:02	3.11	3.00	41.15	0.11	0.44	0.00	0.65	Calculated
92	Link-94	64	64	810.33	3464.35	0.00	3456.30	0.00	8.05	0.9900	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	7.92	0	12:03	3.58	3.77	39.94	0.20	0.54	0.00	0.80	Calculated
93	Link-95	64	64	970.22	3445.90	0.00	3435.70	0.00	10.20	1.0500	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	7.94	0	12:03	3.80	4.26	41.09	0.19	0.54	0.00	0.79	Calculated
94	Link-96	Jun-100	64	1169.17	3428.70	0.00	3416.40	0.00	12.30	1.0500	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	10.03	0	12:04	4.06	4.80	41.10	0.24	0.59	0.00	0.87	Calculated
95	Link-97	Jun-101	64	1387.08	3408.80	0.00	3394.00	0.00	14.80	1.0700	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	12.25	0	12:07	4.30	5.38	41.39	0.30	0.62	0.00	0.93	Calculated
96	Link-98	Jun-102	64	1602.60	3391.40	0.00	3374.60	0.00	16.80	1.0500	Triangular	1.500	12.00	0.0000	0.0270	0.0000	0.5000	0.5000	0.0000	0.00	NO	1.00	13.50	0	12:08	4.41	6.06	41.03	0.33	0.65	0.00	0.97	Calculated

North Ranch Surface Waste Management Facility

3/19/2019

SSA RESULTS

SN	Element ID	X Coordinate	Y Coordinate	Description	Invert Elevation (ft)	Boundary Type	Flap Gate	Fixed Water Elevation (ft)	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Maximum HGL Depth Attained (ft)	Maximum HGL Elevation Attained (ft)
1	Out-02	809866.45	415888.87		3330.00	NORMAL	NO		0.00	0.00	0.00	3330.00
2	Out-03	812235.52	415724.82		3328.00	NORMAL	NO		0.00	0.00	0.00	3328.00
3	Out-04	813106.52	419384.56		3340.20	NORMAL	NO		0.00	0.00	0.00	3340.20

North Ranch Surface Waste Management Facility 3/19/2019

SSA RESULTS

SN	Element ID	X Coordinate	Y Coordinate	Description	Invert Elevation (ft)	Max (Rim) Elevation (ft)	Max (Rim) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Ponded Area (ft^2)	Evaporation Loss	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Peak Outflow (cfs)	Peak Exfiltration Flow Rate (cfm)	Maximum HGL Elevation Attained (ft)	Maximum HGL Depth Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Maximum HGL Occurrence (days hh:mm)	Total Exfiltration Volume ($1000\text{-}ft^3$)	Total Flooded Volume (ac-inches)	Total Time Flooded (minutes)	Total Retention Time (seconds)
1	Stor-01	809701.38	416120.10		3323.00	3333.00	10.00	0.00	-3323.00	0.00	0.00	336.93	32.25	0.00	0.00	3326.59	3.59	3324.58	1.58	1 00:00	0.00	0.00	0.00	0.00
2	Stor-02	812070.74	415850.52		3321.00	3331.00	10.00	0.00	-3321.00	0.00	0.00	351.60	24.20	0.00	0.00	3326.36	5.36	3323.37	2.37	1 00:00	0.00	0.00	0.00	0.00
3	Stor-03	813137.03	419248.84		3333.20	3343.20	10.00	0.00	-3333.20	0.00	0.00	405.50	65.95	0.00	0.00	3339.65	6.45	3336.06	2.86	1 00:00	0.00	0.00	0.00	0.00

North Ranch Surface Waste Management Facility

SSA RESULTS

3/19/2019

SN	Element ID	X Coordinate	Y Coordinate	Description	Invert Elevation	Ground/Rim (Max) Elevation	Ground/Rim (Max) Offset	Initial Water Elevation	Initial Water Depth	Surcharge Elevation	Surcharge Depth	Ponded Area	Minimum Pipe Cover	Peak Inflow	Peak Lateral Inflow	Maximum HGL Elevation Attained	Maximum HGL Depth Attained	Maximum Surcharge Depth Attained	Minimum Freeboard Attained	Average HGL Elevation Attained	Average HGL Depth Attained	Time of Maximum HGL Occurrence	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
					(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft^2)	(inches)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(days hh:mm)	(days hh:mm)	(ac-inches)	(minutes)
1	64	810645.90	417896.29		3527.50	3529.50	2.00	0.00	-3527.50	0.00	-3529.50	0.00	0.00	28.35	28.35	3527.78	0.28	0.00	1.72	3527.53	0.03	0 12:06	0 00:00	0.00	0.00
2	64	810607.24	417992.93		3497.50	3499.50	2.00	0.00	-3497.50	0.00	-3499.50	0.00	0.00	38.92	0.00	3498.32	0.82	0.00	1.18	3497.63	0.13	0 12:03	0 00:00	0.00	0.00
3	64	810583.39	418062.39		3476.90	3478.90	2.00	0.00	-3476.90	0.00	-3478.90	0.00	0.00	51.27	0.00	3477.70	0.80	0.00	1.20	3477.03	0.13	0 12:03	0 00:00	0.00	0.00
4	64	810549.41	418146.65		3456.30	3458.30	2.00	0.00	-3456.30	0.00	-3458.30	0.00	0.00	67.05	0.00	3457.12	0.82	0.00	1.18	3456.43	0.13	0 12:03	0 00:00	0.00	0.00
5	64	810518.16	418226.83		3435.70	3437.70	2.00	0.00	-3435.70	0.00	-3437.70	0.00	0.00	83.49	0.00	3436.51	0.81	0.00	1.19	3435.83	0.13	0 12:03	0 00:00	0.00	0.00
6	64	810486.90	418307.02		3416.40	3418.40	2.00	0.00	-3416.40	0.00	-3418.40	0.00	0.00	101.46	0.00	3417.28	0.88	0.00	1.12	3416.55	0.15	0 12:04	0 00:00	0.00	0.00
7	64	810462.44	418381.76		3394.00	3396.00	2.00	0.00	-3394.00	0.00	-3396.00	0.00	0.00	121.43	0.00	3394.95	0.95	0.00	1.05	3394.16	0.16	0 12:07	0 00:00	0.00	0.00
8	64	810432.54	418457.87		3374.60	3376.60	2.00	0.00	-3374.60	0.00	-3376.60	0.00	0.00	141.24	0.00	3375.59	0.99	0.00	1.01	3374.76	0.16	0 12:08	0 00:00	0.00	0.00
9	64	811490.32	417908.37		3527.50	3529.50	2.00	0.00	-3527.50	0.00	-3529.50	0.00	0.00	39.17	39.17	3527.85	0.35	0.00	1.65	3527.53	0.03	0 12:00	0 00:00	0.00	0.00
10	64	811615.35	417939.17		3492.95	3494.95	2.00	0.00	-3492.95	0.00	-3494.95	0.00	0.00	60.12	0.00	3493.90	0.95	0.00	1.05	3493.11	0.16	0 12:04	0 00:00	0.00	0.00
11	Jun-100	811594.50	418673.95		3428.70	3429.70	1.00	0.00	-3428.70	0.00	-3429.70	0.00	0.00	11.20	11.20	3429.62	0.92	0.00	0.58	3428.85	0.15	0 12:00	0 00:00	0.00	0.00
12	Jun-101	811779.40	418817.18		3408.80	3409.80	1.00	0.00	-3408.80	0.00	-3409.80	0.00	0.00	13.55	13.55	3409.79	0.99	0.00	0.51	3408.96	0.16	0 12:00	0 00:00	0.00	0.00
13	Jun-102	811953.88	418961.71		3391.40	3392.40	1.00	0.00	-3391.40	0.00	-3392.40	0.00	0.00	14.87	14.87	3392.43	1.03	0.00	0.47	3391.57	0.17	0 12:00	0 00:00	0.00	0.00
14	64	811698.70	417960.92		3468.80	3470.80	2.00	0.00	-3468.80	0.00	-3470.80	0.00	0.00	79.64	0.00	3469.70	0.90	0.00	1.10	3468.95	0.15	0 12:04	0 00:00	0.00	0.00
15	64	811809.23	417993.53		3444.60	3446.60	2.00	0.00	-3444.60	0.00	-3446.60	0.00	0.00	100.55	0.00	3445.53	0.93	0.00	1.07	3444.75	0.15	0 12:07	0 00:00	0.00	0.00
16	64	811901.65	418018.90		3420.40	3422.40	2.00	0.00	-3420.40	0.00	-3422.40	0.00	0.00	122.61	0.00	3421.38	0.98	0.00	1.02	3420.56	0.16	0 12:07	0 00:00	0.00	0.00
17	64	811997.69	418047.89		3396.20	3399.20	3.00	0.00	-3396.20	0.00	-3399.20	0.00	12.00	144.31	0.00	3397.15	0.95	0.00	2.05	3396.36	0.16	0 12:07	0 00:00	0.00	0.00
18	64	812086.48	418080.51		3372.70	3374.70	2.00	0.00	-3372.70	0.00	-3374.70	0.00	0.00	167.57	0.00	3373.70	1.00	0.00	1.00	3372.87	0.17	0 12:07	0 00:00	0.00	0.00
19	64	811966.88	417102.01		3527.50	3529.50	2.00	0.00	-3527.50	0.00	-3529.50	0.00	0.00	70.26	70.26	3527.98	0.48	0.00	1.52	3527.54	0.04	0 12:00	0 00:00	0.00	0.00
20	64	812064.73	417062.14		3498.00	3500.00	2.00	0.00	-3498.00	0.00	-3500.00	0.00	0.00	80.32	0.00	3498.89	0.89	0.00	1.11	3498.15	0.15	0 12:07	0 00:00	0.00	0.00
21	64	812157.15	417031.34		3473.00	3475.00	2.00	0.00	-3473.00	0.00	-3475.00	0.00	0.00	94.75	0.00	3474.02	1.02	0.00	0.98	3473.17	0.17	0 12:08	0 00:00	0.00	0.00
22	64	812249.56	416991.48		3448.00	3450.00	2.00	0.00	-3448.00	0.00	-3450.00	0.00	0.00	112.57	0.00	3449.06	1.06	0.00	0.94	3448.18	0.18	0 12:08	0 00:00	0.00	0.00
23	64	812340.16	416947.99		3423.00	3425.00	2.00	0.00	-3423.00	0.00	-3425.00	0.00	0.00	133.16	0.00	3424.09	1.09	0.00	0.91	3423.18	0.18	0 12:08	0 00:00	0.00	0.00
24	64	812441.64	416918.99		3398.00	3400.00	2.00	0.00	-3398.00	0.00	-3400.00	0.00	0.00	155.38	0.00	3399.11	1.11	0.00	0.89	3398.19	0.19	0 12:09	0 00:00	0.00	0.00
25	64	812537.67	416884.56		3373.00	3375.00	2.00	0.00	-3373.00	0.00	-3375.00	0.00	0.00	179.68	0.00	3374.15	1.15	0.00	0.85	3373.20	0.20	0 12:09	0 00:00	0.00	0.00
26	64	812631.90	416844.70		3348.00	3351.00	3.00	0.00	-3348.00	0.00	-3351.00	0.00	12.00	200.90	0.00	3349.20	1.20	0.00	1.80	3348.21	0.21	0 12:10	0 00:00	0.00	0.00
27	64	809339.43	417308.58		3527.50	3529.50	2.00	0.00	-3527.50	0.00	-3529.50	0.00	0.00	12.87	12.87	3527.68	0.18	0.00	1.82	3527.52	0.02	0 12:00	0 00:00	0.00	0.00
28	64	809247.01	417230.66		3495.50	3497.50	2.00	0.00	-3495.50	0.00	-3497.50	0.00	0.00	34.63	0.00	3496.50	1.00	0.00	1.00	3495.67	0.17	0 12:08	0 00:00	0.00	0.00
29	64	809185.40	417167.24		3471.70	3473.70	2.00	0.00	-3471.70	0.00	-3473.70	0.00	0.00	69.86	0.00	3472.83	1.13	0.00	0.87	3471.89	0.19	0 12:07	0 00:00	0.00	0.00
30	64	809116.54	417094.76		3447.80	3449.80	2.00	0.00	-3447.80	0.00	-3449.80	0.00	0.00	101.07	0.00	3448.87	1.07	0.00	0.93	3447.98	0.18	0 12:08	0 00:00	0.00	0.00
31	64	809044.06	417022.28		3423.90	3425.90	2.00	0.00	-3423.90	0.00	-3425.90	0.00	0.00	134.30	0.00	3424.98	1.08	0.00	0.92	3424.08	0.18	0 12:08	0 00:00	0.00	0.00
32	64	808984.27	416964.29		3401.60	3403.60	2.00	0.00	-3401.60	0.00	-3403.60	0.00	0.00	167.59	0.00	3402.68	1.08	0.00	0.92	3401.78	0.18	0 12:09	0 00:00	0.00	0.00
33	64	808900.91	416897.25		3375.90	3377.90	2.00	0.00	-3375.90	0.00	-3377.90	0.00	0.00	238.43	0.00	3377.54	1.64	0.00	0.36	3376.22	0.32	0 12:10	0 00:00	0.00	0.00
34	64	808837.49	416837.45		3353.30	3355.30	2.00	0.00	-3353.30	0.00	-3355.30	0.00	0.00	279.72	0.00	3354.50	1.20	0.00	0.80	3353.51	0.21	0 12:11	0 00:00	0.00	0.00
35	64	808795.12	416787.17		3334.90	3337.90	3.00	0.00	-3334.90	0.00	-3337.90	0.00	0.00	305.84	0.00	3337.49	2.59	0.00	0.41	3335.20	0.30	0 12:09	0 00:00	0.00	0.00
36	64	809331.04	416183.29		3330.40	3333.40	3.00	0.00	-3330.40	0.00	-3333.40	0.00	0.00	303.85	0.00	3333.29	2.89	0.00	1.11	3330.73	0.33	0 12:11	0 00:00	0.00	0.00
37	64	810113.85	416322.82		3332.00	3334.50	2.50	0.00	-3332.00	0.00	-3334.50	0.00	0.00	13.36	0.00	3332.73	0.73	0.00	2.27	3332.08	0.08	0 12:01	0 00:00	0.00	0.00
38	64	811844.39	415909.67		3328.30	3330.80	2.50	0.00	-3328.30	0.00	-3330.80	0.00	0.00	33.76	0.00	3329.42	1.12	0.00	1.88	3328.43	0.13	0 12:09	0 00:00	0.00	0.00
39	64	812694.57	416824.47		3332.80	3335.80	3.00	0.00	-3332.80	0.00	-3335.80	0.00	0.00	298.48	16.89	3335.76	2.96	0.00	0.04	3333.43	0.63	0 12:07	0 00:00	0.00	0.00
40	64	812373.83	416021.70		3328.40	3331.40	3.00	0.00	-3328.40	0.00	-3331.40	0.00	0.00	297.54	0.00	3331.59	3.19	0.00	1.31	3329.20	0.80	0 12:08	0 00:00	0.00	0.00
41	64	812185.97	418098.40		3349.20	3352.20	3.00	0.00	-3349.20	0.00	-3352.20	0.00	0.00	199.97	22.60	3351.36	2.16	0.00	0.84	3349.41	0.21	0 12:03	0 00:00	0.00	0.00
42	64	812560.18	419259.53		3342.70	3345.70	3.00	0.00	-3342.70	0.00	-3345.70	0.00	0.00	195.17	0.00	3344.88	2.18	0.00	0.82	3342.92	0.22	0 12:08	0 00:00	0.00	0.00
43	64	810383.10	418542.24		3354.40	3356.40	2.00	0.00	-3354.40	0.00	-3356.40	0.00	0.00	47.25	47.25	3355.43	1.03	0.00	1.97	3354.51	0.11	0 12:06	0 00:00	0.00	0.00
44	64	812505.82	419281.27		3343.60	3346.60	3.00	0.00	-3343.60	0.00	-3346.60	0.00	0.00	163.94	0.00	3345.57	1.97	0.00	2.03	3343.82	0.22	0 12:10	0 00:00	0.00	0.00
45	64	810845.21	417243.24		3514.90	3516.40	1.50	0.00	-3514.90	0.00	-3516.40	0.00	0.00	15.68	15.68	3515.93	1.03	0.00	0.47	3515.07	0.17	0 12:00	0 00:00	0.00	0.00
46	64	810808.77	417166.45		3492.00	3493.00	1.00	0.00	-3492.00	0.00	-3493.00	0.00	0.00	17.32	17.32	3493.07	1.07	0.00	0.43	3492.18	0.18	0 12:00	0 00:00	0.00	0.00
47	64	810763.22	417088.36		3468.70	3481.70	13.00	0.00	-3468.70	0.00	-3481.70	0.00	138.00	18.87	18.87	3469.80	1.10	0.00	11.90	3468.88	0.18	0 12:00	0 00:00	0.00	0.00
48	64	810716.36	417003.76		3446.00	3447.00	1.00	0.00	-3446.00	0.00	-3447.00	0.00	0.00	19.22	19.22	3447.11	1.11	0.00	0.39	3446.18	0.18	0 12:00	0 00:00	0.00	0.00
49	64	810678.62	416928.28		3424.30	3425.30	1.00	0.00	-3424.30	0.00	-3425.30	0.00	0.00	17.96	17.96	3425.39	1.09	0.00	0.41	3424.48	0.18	0 12:00	0 00:00	0.00	0.00
50	64	810639.57	416841.08		3400.20	3401.20	1.00	0.00	-3400.20	0.00	-3401.20	0.00	0.00	22.12	22.12	3401.38	1.18	0.00	0.32	3400.40	0.20	0 12:00	0 00:00	0.00	0.00
51	64	810601.40	416766.88		3379.00	3380.00	1.00	0.00	-3379.00	0.00	-3380.00	0.00	0.00	21.18	21.18	3380.16	1.16	0.00	0.34	3379.19	0.19	0 12:00	0 00:00	0.00	0.00
52	64	810868.64	417232.83		3514.90	3515.90	1.00	0.00	-3514.90	0.00	-3515.90	0.00	0.00	11.88	11.88	3515.82	0.92	0.00	0.58	3515.05	0.15	0 12:00	0 00:00	0.00	0.00
53	64	810828.29	417157.34		3492.00	3493.00	1.00	0.00	-3492.00	0.00	-3493.00	0.00	0.00	16.53	16.53	3493.05	1.05	0.00	0.45	3492.17	0.17	0 12:00	0 00:00	0.00	0.00
54	64	810789.25	417079.25		3468.70	3469.70	1.00	0.00	-3468.70	0.00	-3469.70	0.00	0.00	18.36	18.36	3469.79	1.09	0.00	0.41	3468.88	0.18	0 12:00	0 00:00	0.00	0.00
55	64	810748.90	416985.54		3446.00	3447.00	1.00	0.00	-3446.00	0.00	-3447.00	0.00	0.00	19.58	19.58	3447.12	1.12	0.00	0.38	3446.19	0.19	0 12:00	0 00:00	0.00	0.00
56	64	810705.95	416915.26		3424.30	3425.30	1.00	0.00	-3424.30	0.00	-3425.30	0.00	0.00	20.95	20.95	3425.44	1.14	0.00	0.36	3424.49	0.19	0 12:00	0 00:00	0.00	0.00
57	64	810664.30	416826.76		3400.20	3401.20	1.00	0.00	-3400.20	0.00	-3401.20	0.00	0.00	22.61	22.61	3401.39	1.19	0.00	0.31	3400.40	0.20	0 12:00	0 00:00	0.00	0.00
58	64	810624.83	416755.17		3379.00	3380.00	1.00	0.00	-3379.00	0.00	-3380.00	0.00	0.00	25.29	25.29	3380.23	1.23	0.00	0.27	3379.21	0.21	0 12:00	0 00:00	0.00	0.00
59	64	810342.27	416673.93		3336.70	3339.20	2.50	0.00	-3336.70	0.00	-3339.20	0.00	0.00	13.82	13.82	3337.11	0.41	0.00	2.59	3336.73	0.03	0 12:00	0 00:00	0.00	0.00
60	64	812811.29	417716.54		3352.90	3355.90	3.00	0.00	-3352.90	0.00	-3355.90	0.00	0.00	12.03	12.03	3353.37	0.47	0.00	2.53	3352.94	0.04	0 12:00	0 00:00	0.00	0.00
61	64	812962.28	417570.76		3336.75	3339.75	3.00	0.00	-3336.75	0.00	-3339.75	0.00	0.00	83.59	83.59	3338.40	1.65	0.00	1.35	3336.93	0.18	0 12:06	0 00:00	0.00	0.00
62	64	810369.35	416674.89		3336.70	3339.20	2.50	0.00	-3336.70	0.00	-3339.20	0.00	0.00	35.39	35.39	3337.57	0.87	0.00	2.13	3336.78	0.08	0 12:06	0 00:00	0.00	0.00
63	64	812156.81	417387.65		3503.10	3504.10	1.00	0.00	-3503.10	0.00	-3504.10	0.00	0.00	11.06	11.06	3503.99	0.89	0.00	0.61	3503.24	0.14	0 12:00	0 00:00	0.00	0.00
64	64	812170.02	417356.30		3503.10	3504.10	1.00	0.00	-3503.10	0.00	-3504.10	0.00	0.00	3.46	3.46	3503.65	0.55	0.00	0.95	3503.19	0.09	0 12:00	0 00:00	0.00	0.00
65	64	812281.98	417422.69		3479.00	3480.00	1.00	0.00	-3479.00	0.00	-3480.00	0.00	0.00	9.66	9.66	3479.84	0.84	0.00	0.66	3479.13	0.13	0 12:00	0 00:00	0.00	0.00
66	64	812292.39	417400.56		3479.00	3480.00	1.00	0.00	-3479.00	0.00	-3480.00	0.00	0.00	4.65	4.65	3479.62	0.62	0.00	0.88	3479.10	0.10	0 12:00	0 00:00	0.00	0.00
67	64	812392.64	417470.86		3454.90	3455.90	1.00	0.00	-3454.90	0.00	-3455.90	0.00	0.00	10.05	10.05	3455.75	0.85	0.00	0.65	3455.04	0.14	0 12:00	0 00:00	0.00	0.00
68	64	812405.66	417450.03		3454.90	3455.90	1.00	0.00	-3454.90	0.00	-3455.90	0.00	0.00	5.52	5.52	3455.57	0.67	0.00	0.83	3455.00	0.10	0 12:00	0 00:00	0.00	0.00

69	64	812515.01	417517.73	3430.70	3431.70	1.00	0.00	-3430.70	0.00	-3431.70	0.00	0.00	10.17	10.17	3431.56	0.86	0.00	0.64	3430.84	0.14	0	12:00	0	00:00	0.00	0.00
70	64	812528.03	417494.29	3430.70	3431.70	1.00	0.00	-3430.70	0.00	-3431.70	0.00	0.00	7.00	7.00	3431.44	0.74	0.00	0.76	3430.82	0.12	0	12:00	0	00:00	0.00	0.00
71	64	812636.08	417561.99	3406.60	3407.60	1.00	0.00	-3406.60	0.00	-3407.60	0.00	0.00	9.97	9.97	3407.45	0.85	0.00	0.65	3406.74	0.14	0	12:00	0	00:00	0.00	0.00
72	64	812645.19	417539.86	3406.60	3407.60	1.00	0.00	-3406.60	0.00	-3407.60	0.00	0.00	7.74	7.74	3407.37	0.77	0.00	0.73	3406.72	0.12	0	12:00	0	00:00	0.00	0.00
73	64	812727.21	417629.68	3382.90	3383.90	1.00	0.00	-3382.90	0.00	-3383.90	0.00	0.00	9.96	9.96	3383.75	0.85	0.00	0.65	3383.04	0.14	0	12:00	0	00:00	0.00	0.00
74	64	812737.62	417611.46	3382.90	3383.90	1.00	0.00	-3382.90	0.00	-3383.90	0.00	0.00	9.05	9.05	3383.72	0.82	0.00	0.68	3383.03	0.13	0	12:00	0	00:00	0.00	0.00
75	64	810997.81	418136.69	3505.80	3506.80	1.00	0.00	-3505.80	0.00	-3506.80	0.00	0.00	14.21	14.21	3506.78	0.98	0.00	0.52	3505.96	0.16	0	12:00	0	00:00	0.00	0.00
76	64	811209.58	418299.86	3482.30	3483.30	1.00	0.00	-3482.30	0.00	-3483.30	0.00	0.00	12.30	12.30	3483.24	0.94	0.00	0.56	3482.45	0.15	0	12:00	0	00:00	0.00	0.00
77	64	811459.54	418518.58	3458.90	3459.90	1.00	0.00	-3458.90	0.00	-3459.90	0.00	0.00	13.18	13.18	3459.86	0.96	0.00	0.54	3459.05	0.15	0	12:00	0	00:00	0.00	0.00
78	64	811627.92	418664.39	3435.40	3436.40	1.00	0.00	-3435.40	0.00	-3436.40	0.00	0.00	14.70	14.70	3436.41	1.01	0.00	0.49	3435.56	0.16	0	12:00	0	00:00	0.00	0.00
79	64	811909.13	418870.95	3411.10	3412.10	1.00	0.00	-3411.10	0.00	-3412.10	0.00	0.00	14.11	14.11	3412.09	0.99	0.00	0.51	3411.26	0.16	0	12:00	0	00:00	0.00	0.00
80	64	812155.61	419049.74	3387.60	3388.60	1.00	0.00	-3387.60	0.00	-3388.60	0.00	0.00	15.86	15.86	3388.63	1.03	0.00	0.47	3387.77	0.17	0	12:00	0	00:00	0.00	0.00
81	64	809790.19	417741.30	3487.40	3488.40	1.00	0.00	-3487.40	0.00	-3488.40	0.00	0.00	20.95	20.95	3488.55	1.15	0.00	0.35	3487.59	0.19	0	12:00	0	00:00	0.00	0.00
82	64	809760.89	417818.93	3466.70	3467.70	1.00	0.00	-3466.70	0.00	-3467.70	0.00	0.00	15.45	15.45	3467.73	1.03	0.00	0.47	3466.87	0.17	0	12:00	0	00:00	0.00	0.00
83	64	809734.67	417906.40	3446.10	3447.10	1.00	0.00	-3446.10	0.00	-3447.10	0.00	0.00	17.39	17.39	3447.18	1.08	0.00	0.42	3446.28	0.18	0	12:00	0	00:00	0.00	0.00
84	64	809704.50	417974.92	3426.80	3427.80	1.00	0.00	-3426.80	0.00	-3427.80	0.00	0.00	19.11	19.11	3427.92	1.12	0.00	0.38	3426.99	0.19	0	12:00	0	00:00	0.00	0.00
85	64	809675.21	418057.68	3404.50	3405.50	1.00	0.00	-3404.50	0.00	-3405.50	0.00	0.00	57.89	57.89	3406.20	1.70	0.00	0.30	3404.82	0.32	0	12:06	0	00:00	0.00	0.00
86	64	809645.18	418134.57	3385.00	3386.00	1.00	0.00	-3385.00	0.00	-3386.00	0.00	0.00	25.15	25.15	3386.25	1.25	0.00	0.25	3385.21	0.21	0	12:00	0	00:00	0.00	0.00
87	64	809817.99	417665.11	3508.00	3509.00	1.00	0.00	-3508.00	0.00	-3509.00	0.00	0.00	10.06	10.06	3508.86	0.86	0.00	0.64	3508.14	0.14	0	12:00	0	00:00	0.00	0.00
88	64	809834.37	417673.68	3508.00	3509.00	1.00	0.00	-3508.00	0.00	-3509.00	0.00	0.00	9.53	9.53	3508.84	0.84	0.00	0.66	3508.13	0.13	0	12:00	0	00:00	0.00	0.00
89	64	809809.96	417749.85	3487.40	3488.40	1.00	0.00	-3487.40	0.00	-3488.40	0.00	0.00	9.08	9.08	3488.22	0.82	0.00	0.68	3487.53	0.13	0	12:00	0	00:00	0.00	0.00
90	64	809778.72	417824.06	3466.70	3467.70	1.00	0.00	-3466.70	0.00	-3467.70	0.00	0.00	8.64	8.64	3467.51	0.81	0.00	0.69	3466.83	0.13	0	12:00	0	00:00	0.00	0.00
91	64	809749.42	417909.01	3446.10	3447.10	1.00	0.00	-3446.10	0.00	-3447.10	0.00	0.00	9.20	9.20	3446.93	0.83	0.00	0.67	3446.23	0.13	0	12:00	0	00:00	0.00	0.00
92	64	809719.15	417983.22	3426.80	3427.80	1.00	0.00	-3426.80	0.00	-3427.80	0.00	0.00	8.73	8.73	3427.61	0.81	0.00	0.69	3426.93	0.13	0	12:00	0	00:00	0.00	0.00
93	64	809690.83	418062.31	3404.50	3405.50	1.00	0.00	-3404.50	0.00	-3405.50	0.00	0.00	8.91	8.91	3405.32	0.82	0.00	0.68	3404.63	0.13	0	12:00	0	00:00	0.00	0.00
94	64	809656.66	418142.38	3385.00	3386.00	1.00	0.00	-3385.00	0.00	-3386.00	0.00	0.00	8.04	8.04	3385.79	0.79	0.00	0.71	3385.12	0.12	0	12:00	0	00:00	0.00	0.00
95	64	810415.50	418556.13	3354.40	3357.40	3.00	0.00	-3354.40	0.00	-3357.40	0.00	0.00	172.72	31.69	3356.42	2.02	0.00	1.98	3354.60	0.20	0	12:04	0	00:00	0.00	0.00
96	64	810893.99	418098.44	3501.20	3502.20	1.00	0.00	-3501.20	0.00	-3502.20	0.00	0.00	3.29	3.29	3501.77	0.57	0.00	0.93	3501.29	0.09	0	12:00	0	00:00	0.00	0.00
97	64	811106.23	418261.20	3482.80	3483.80	1.00	0.00	-3482.80	0.00	-3483.80	0.00	0.00	4.94	4.94	3483.48	0.68	0.00	0.82	3482.91	0.11	0	12:00	0	00:00	0.00	0.00
98	64	811304.14	418423.96	3464.35	3465.35	1.00	0.00	-3464.35	0.00	-3465.35	0.00	0.00	8.59	8.59	3465.19	0.84	0.00	0.66	3464.48	0.13	0	12:00	0	00:00	0.00	0.00
99	64	811438.25	418534.63	3445.90	3446.90	1.00	0.00	-3445.90	0.00	-3446.90	0.00	0.00	8.76	8.76	3446.74	0.84	0.00	0.66	3446.03	0.13	0	12:00	0	00:00	0.00	0.00

North Ranch Surface Waste Management Facility

3/19/2019

SSA RESULTS

SN	Element ID	Description	Data Source	Data Source ID	Rainfall Type	Rain Units	State	County	Return Period (years)	Rainfall Depth (inches)	Rainfall Distribution
1	Rain Gage-04		Time Series	NEW MEXICO, LEA COUNTY 25Y-24H	Cumulative	inches					User Defined

North Ranch Surface Waste Management Facility

SSA RESULTS

SN	Element ID	Description	Area	Drainage Node ID	Weighted Curve Number	Conductivity	Drying Time	Average Slope	Equivalent Width	Impervious Area	Impervious Area No Depression	Impervious Area Depression Depth	Impervious Area Manning's Roughness	Pervious Area Depression Depth	Pervious Area Manning's Roughness	Curb & Gutter Length	Rain Gage ID	Total Precipitation	Total Runon	Total Evaporation	Total Infiltration	Total Runoff	Peak Runoff	Time of Concentration
			(acres)			(inches/hr)	(days)	(%)	(ft)	(%)	(%)	(inches)		(inches)		(ft)		(inches)	(inches)	(inches)	(inches)	(inches)	(cfs)	(days hh:mm:ss)
1	Sub-01		2.88	64	86.00	0.1500	2.00	4.0000	616.95	0.00	0.00	0.0800	0.0150	0.2000	0.1000	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.43	12.87	0 00:28:26
2	Sub-03		8.47	64	86.00	0.1500	2.00	4.0000	554.59	0.00	0.00	0.0800	0.0150	0.2000	0.1000	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.38	28.35	0 00:57:57
3	Sub-04		13.13	64	86.00	0.1500	2.00	4.0000	1697.95	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	70.26	0 00:15:31
4	Sub-05		7.96	64	86.00	0.1500	2.00	4.0000	571.63	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.44	39.17	0 00:22:07
5	Sub-06		2.26	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	11.88	0 00:17:03
6	Sub-08		0.61	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.46	3.46	0 00:07:45
7	Sub-09		0.82	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.46	4.65	0 00:09:18
8	Sub-10		0.98	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.46	5.52	0 00:10:21
9	Sub-11		1.26	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	7.00	0 00:12:01
10	Sub-12		1.41	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	7.74	0 00:12:49
11	Sub-13		1.67	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	9.05	0 00:14:12
12	Sub-16		3.69	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.44	17.96	0 00:22:54
13	Sub-17		16.94	64	86.00	0.1500	2.00	0.5000	959.36	0.00	0.00	0.0800	0.0150	0.2000	0.0150	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.41	67.80	0 00:37:48
14	Sub-18		18.06	Stor-03	86.00	0.1500	2.00	0.5000	666.62	0.00	0.00	0.0800	0.0150	0.2000	0.0150	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.39	65.95	0 00:48:52
15	Sub-19		2.08	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	11.06	0 00:16:14
16	Sub-20		1.79	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	9.66	0 00:14:50
17	Sub-21		1.87	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	10.05	0 00:15:14
18	Sub-22		1.90	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	10.17	0 00:15:21
19	Sub-23		1.85	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	9.97	0 00:15:09
20	Sub-24		1.85	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	9.96	0 00:15:08
21	Sub-25		2.29	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	12.03	0 00:17:12
22	Sub-26		4.97	64	86.00	0.1500	2.00	25.0000	100.00	0.00	1.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.43	22.60	0 00:27:22
23	Sub-27		3.17	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.44	15.86	0 00:20:53
24	Sub-28		2.76	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.44	14.11	0 00:19:13
25	Sub-29		2.90	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.44	14.70	0 00:19:47
26	Sub-30		2.54	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.44	13.18	0 00:18:19
27	Sub-31		2.35	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.44	12.30	0 00:17:28
28	Sub-32		2.78	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.44	14.21	0 00:19:18
29	Sub-33		0.58	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.46	3.29	0 00:07:31
30	Sub-34		0.88	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.46	4.94	0 00:09:39
31	Sub-36		1.57	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	8.59	0 00:13:44
32	Sub-37		1.61	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	8.76	0 00:13:54
33	Sub-38		2.11	Jun-100	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	11.20	0 00:16:23
34	Sub-39		2.63	Jun-101	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.44	13.55	0 00:18:40
35	Sub-40		2.94	Jun-102	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.44	14.87	0 00:19:57
36	Sub-41		7.82	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.41	31.69	0 00:35:55
37	Sub-42		1.76	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	9.53	0 00:14:42
38	Sub-43		1.67	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	9.08	0 00:14:14
39	Sub-44		1.59	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	8.64	0 00:13:47
40	Sub-45		1.70	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	9.20	0 00:14:21
41	Sub-46		1.60	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	8.73	0 00:13:52
42	Sub-47		1.64	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	8.91	0 00:14:03
43	Sub-48		1.47	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	8.04	0 00:13:09
44	Sub-49		12.89	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.39	47.25	0 00:48:30
45	Sub-50		1.87	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.45	10.06	0 00:15:14
46	Sub-51		4.49	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.43	20.95	0 00:25:46
47	Sub-52		3.07	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.44	15.45	0 00:20:30
48	Sub-53		3.55	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.44	17.39	0 00:22:22
49	Sub-54		3.99	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.43	19.11	0 00:24:00
50	Sub-55		17.26	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.38	57.89	0 00:57:46
51	Sub-56		5.75	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.42	25.15	0 00:29:51
52	Sub-57		3.13	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.44	15.68	0 00:20:43
53	Sub-58		3.53	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.44	17.32	0 00:22:17
54	Sub-59		3.93	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.43	18.87	0 00:23:46
55	Sub-60		4.02	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.43	19.22	0 00:24:06
56	Sub-61		3.69	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.44	17.96	0 00:22:54
57	Sub-62		4.83	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.43	22.12	0 00:26:54
58	Sub-63		4.56	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.43	21.18	0 00:25:59
59	Sub-65		3.42	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.44	16.89	0 00:21:53
60	Sub-66		5.79	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.42	25.29	0 00:30:00
61	Sub-67		4.97	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.43	22.61	0 00:27:22
62	Sub-68		4.49	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.43	20.95	0 00:25:46
63	Sub-69		4.12	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.43	19.58	0 00:24:27
64	Sub-70		3.80	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.43	18.36	0 00:23:17
65	Sub-71		3.33	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.44	16.53	0 00:21:32
66	Sub-72		2.69	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.44	13.82	0 00:18:56
67	Sub-73		8.91	64	86.00	0.1500	2.00	25.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.41	35.39	0 00:38:51
68	Sub-74		6.98	Stor-02	86.00	0.1500	2.00	5.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.38	24.20	0 00:54:24
69	Sub-75		11.06	Stor-01	86.00	0.1500	2.00	5.0000	100.00	0.00	0.00	0.0800	0.0150	0.2000	0.0220	0.00	Rain Gage-04	4.88	0.00	0.0000	1.2210	3.35	32.25	0 01:11:42

Exhibit A.2
Run-on Design Results
TR-55 Method Calculations

North Ranch Surface Waste Management Facility

Run-On Diversion Channel Design

Parameter	Symbol	Value	Unit	Source
A. PEAK DISCHARGE (TR-55 Method)				
1. Site Data				

Composite N Based on USGS Web Soil Survey - Approximate Upstream AOI

Soil Type ID[2]	Soil Type Description[2]	Hydraulic Soil Group[2]	CN[1]	Area (Acres)[2]	CN x Area
BE	Berino-Cacique loamy fine sands association	B	35	467.5	16362.5
BF	Berino-Cacique fine sandy loams association	B	35	228.3	7990.5
BH	Berino-Cacique association, hummocky	B	35	306.8	10738
MM	Ratliff loam	B	35	79.2	2772
MN	Ratliff-Wink fine sandy loams	B	35	40.2	1407
MW	Mobeetie-Potter association, 1 to 15 percent slopes	A	30	93.3	2799
PU	Pyote and maljamar fine sands	A	30	1,890.50	56715
SE	Simona fine sandy loam, 0 to 3 percent slopes	D	55	0.9	49.5
SR	Simona-Upton association	D	55	2,422.20	133221
TF	Tonuco loamy fine sand, 0 to 3 percent slopes	D	55	22.4	1232
WK	Wink loamy fine sand	A	30	4.5	135
			Totals	5555.8	233421.5
			Composite CN (Total CN x Area / Total Area)		**42.0**

[1] TR-55 Manual, Table 2-2d for "Sage brush with Grass Understory - Good Conditions"

[2] From USDA Web Soil Survey for Site AOI includes area north of site up to New Mexico State Highway 128.

Hydraulic Soil Group		Variable	Unitless	
Curve Number	CN	42	Unitless	
Drainage Area (Assume Whole Site to One Channel)				
- Site Area	A1	5555.8	Acres	AutoCAD
2 year-24 hour Rainfall Depth	P_2	2.24	Inches	NOAA Atlas 14, Volume 1, Version 5. Jal, New Mexico, USA
25 year-24 hour Rainfall Depth	P_{25}	4.59	Inches	NOAA Atlas 14, Volume 1, Version 5. Jal, New Mexico, USA
25 year-24 hour Rainfall Intensity	I_{25}	0.191	In/hour	NOAA Atlas 14, Volume 1, Version 5. Jal, New Mexico, USA

2. Direct Run-off Calculation

Direct Run-off	Q	0.2	Inches	TR-55 Manual, Figure 2-1 using CN and P above.

3. Time of Concentration

Equations:

$$Sheet\ Flow\ (T_1) = 0.007\left(\frac{(n_1 L_1)^{0.8}}{P_2^{0.5} {s_1}^{0.4}}\right)$$

TR-55 Manual Chapter 3, eq. 3-3

$$Shallow\ Concentrated\ (T_2) = \frac{L_2}{3600 V_{sc}}$$

where: Velocity (V2) is taken from Figure 3-1 of the TR-55 Manual

Sheet Flow Time of Concentration:TOP DECK

Mannings	n_1	0.011	unitless	TR-55 Manual, Table 3-1 for bare soil
Flow Length	L_1	150	Feet	Maximum shallow flow length
2 year-24 hour Rainfall Depth	P_2	2.24	Inches	NOAA Atlas 14, Volume 1, Version 5. Jal, New Mexico, USA
Slope	s_1	0.04	ft/ft	Assumed
Shallow Flow Time of Concentration (TOP DECK):	**T_1**	**0.03637046**	**Hour**	

Shallow Concentrated Time of Concentration: (TOP DECK)_

Flow Length	L_2	23000	Feet	From GoogleEarth, no decernable channelization
Slope	s_1	0.009	ft/ft	USGS Quadrangle Map
Velocity	V_{sc1}	1.5	feet per second	TR-55 Manual, Figure 3-1 for unpaved surface
Shallow Concentrated Time of Concentration (TOP DECK):	**T_2**	**4.259259259**	**Hour**	

TOTAL TIME OF CONCENTRATION	**T_C**	**4.296**	**Hour**

4. Peak Discharge Calculation

Equations:

$Peak\ Discharge\ (q_p) = q_u A_m Q F_p$ — TR-55 Manual Chapter 3, eq. 4-1

where

q_u	=		unit peak discharge (csm/in)
A_m	=		Drainage Area (mi^2)
Q	=		Direct Runoff (in)
F_p	=		pond and swamp adjustment factor

Data:

Total Drainage Area ($A_1 + A_2$)	A_m		8.6809375	mi^2	summed from above converted to square miles
Curve Number	CN		42	unitless	from above
Time of Concentration	T_C		4.30	hour	calculated above
Rainfall Distribution	-	II		unitless	TR-55 Manual Figure B-2
Swamps in Area	-	none		unitless	site data
Initial Abstraction	I_a		2.762	in	TR-55 Manual Table 4-1
Initial Abstraction / Rainfall Depth	I_a / P_{25}		0.50	unitless	calculated
Unit Peak Discharge	q_u		76	csm/in	TR-55 Manual Exhibit 4-II
Direct Runoff	Q		0.2	in	calculated above
Pond and Swamp Adjustment Factor	F_p		1	unitless	TR-55 Manual Figure 4-2

q_p (peak discharge)	**=**	**132.0**	**cubic feet per second (CFS)**
Half Peak Discharge, flow split along Northwest property boundary		**66.0**	**cfs**

B. STORMWATER CONVEYANCE CHANNEL SIZING

Section Data

Mannings Coefficient	n_2	0.022	unitless	https://www.lmnoeng.com/manningn.htm, Excavated Earth Channel - Clean
Channel Slope	s_5	0.001	ft/ft	Design Minimum

Hydraulic Radius — R_n

Flow Depth(d)	*d*	*2.00*	*ft*
Side Slope	*Z*	*3.00*	*H:V*
Bottom Width	*b*	*7.00*	*ft*
Hydraulic Radius	R	1.323	FT
Note: assumed cross section			

Velocity	**V_{oc3}**	**2.58**	**feet per second**

1. Size Channel Check — **Mannings Equation for V-ditch**

Channel Discharge Check	**Q_n**	**67.1**	**Cubic Feet Per Second**	$Q_n = V_n A$

Design Depth	**2.30**	**ft**
Design Freeboard	**0.30**	**Ft**

Attachment B

Revised Universal Soil Loss Equation (RUSLE) Calculation

NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY
REVISED UNIVERSAL SOIL LOSS EVALUATION (RUSLE)

ASSUMPTIONS:
- 2 areas or basin types to consider top deck of landfill and side slope of landfill between collection at diversion berms
- There is 1 top deck area and 38 areas between letdowns subdivided by side slope diversion berms

Basin Type Definition

Basin	Description	Slope (%)	Length (ft)
1	Top Deck	4	400
2	Side Slope Area Between Diversion Berms and Letdowns	25	100

C - Factor Calculation

C	=	$C_{PLU}*C_{CC}*C_{SC}*C_{SR}*C_{SM}$		
C_{PLU}	-	Prior Land Use Subfactor		
	=	1	For Rangeland	
C_{CC}	-	Canopy Cover Subfactor		
	=	1-FC*exp(-0.1*H)		Equation 5-11, NRCS Agricultural Handbook #703
		F_C = Fraction Land Covered by Canopy		
		F_C = 0.5	Conservative Estimate	
		H = Canopy Cover Height		
		H = 1	Conservative Estimate	
	=	0.55		
C_{SC}	-	Surface Cover Subfactor		
	=	$exp[-b*S_P(0.24/R_U)^{.08}]$		Equation 5-12, NRCS Agricultural Handbook #703
		b = 0.39	Simanton et. al (1984)	
		$S_P = [1-exp(-\alpha*B_S)]*100$		Equation 5-13, NRCS Agricultural Handbook #703
		α = 0.00055	Table 5-1, NRCS Agricultural Handbook #703	
		B_S = 5 ton/acre^{-1}		
		S_P = 93.61		
		R_U = 0.8	Short Grass, Desert	Table 5-6, NRCS Agricultural Handbook #703
	=	0.036		
C_{SR}	-	Surface Roughness Subfactor		
	=	$exp[-0.66*(R_U-0.24)]$		Equation 5-23, NRCS Agricultural Handbook #703
	=	0.691		
C_{SM}	-	Soil Moisture Subfactor		
	=	1	Rangeland	
C	=	0.014		

RUSLE Equation Calculation

R	-	Rainfall Value Factor		
	=	45		Fig 2-1 & 2-2, NRCS Agricultural Handbook #703
K	-	Soil Erodibility Factor		
	=	0.13		Soil Type Poorly Graded Silty Sand
LS	-	Slope Length Factor		
	=	Basin	LS	Table 4-3, NRCS Agricultural Handbook #703
		1	1.14	
		2	1.56	
C	-	Covering Management Factor		
	=	0.014		see C factor calculation sheet
P	-	Support Practices Factor		
	=	1		Conservative Estimate
A	-	Calculated Soils Loss in tons/acre-year		
		Basin	A (tons/acrea-year)	
		1	0.093	
		2	0.128	

Total Soil Loss

Basin Type	Calculated Soil Loss A per Basin Type (tons/acre-year)	Number of Basins Types	Total Soil Loss (tons/acre-year)
1	0.093	1	**0.093**
2	0.128	38	**4.864**
Total Side Wide Soil Loss			**4.957**

Attachment C
Leachate Evaporation Pond Sizing – Incidental Precipitation Volume

NORTH RANCH SURFACE WASTE MANAGEMENT FACILITY
LEACHATE EVAPORATION POND SIZING - INCIDENTAL PRECIPITATION VOLUME

ASSUMPTIONS:
- Area Assumes Largest Cell Open, Cell E-3, and Waste Slope in from Cell C-2
- Incidental precipitation from 25-year, 24-hour storm event

HYDROLOGY PARAMETERS SCS METHOD	**VALUE**	**SOURCE**
Precipitation (25-YEAR/24-HOUR EVENT, INCHES)	4.59	NOAA Atlas 14, Volume 1, Version 5. Jal, New Mexico, USA
Curve Number (unitless)	83	TR-55 Manual, Table 2-2a for "Streets/Roads-Dirt" for Hydraulic Soil Group B
Direct Runoff (inches)	2.75	TR-55 Manual, Figure 2-1 using CN and P above.
RUNOFF VOLUME		
Area (acres)	37.3	CALCULATED IN CAD
Runoff Volume (Ac-ft^3)	8.5	calculated
Runoff Volume (CY)	13790.6	calculated
INCIDENTAL RAINFALL OVER POND		
- Area From Site Development Design		
HYDROLOGY PARAMETERS SCS METHOD	VALUE	SOURCE
Precipitation (25-YEAR/24-HOUR EVENT, INCHES)	4.59	NOAA Atlas 14, Volume 1, Version 5. Jal, New Mexico, USA
Curve Number (unitless)	100	Exposed HDPE Impervious Surface
Direct Runoff (inches)	4.59	TR-55 Manual, Figure 2-1 using CN and P above.
RUNOFF VOLUME		
Area (acres)	2	CALCULATED IN CAD
Runoff Volume (Ac-ft^3)	0.765	calculated
Runoff Volume (CY)	1234.2	calculated
TOTAL Runoff Volume (Ac-ft3)	9.3	
TOTAL Runoff Volume (CY)	15024.8	
TOTAL Runoff Volume (CF)	405670.7	

Attachment D
Hydraulic Evaluation of Landfill Performance (HELP) Report

CALCULATIONS BY: Kyle Jackson – Staff Engineer
Michael P. Bradford, P.E. – Senior Project Manager

SOFTWARE: HELP Version 3.95D,
Hydrologic Evaluation of the Landfill Performance - A USACOE model for predicting landfill hydrologic and infiltration processes and testing of effectiveness of landfill designs that was updated by Institute of Soil Science, University of Hamburg, Germany dated August 10, 2012.

INTRODUCTION:

The following document comprises the HELP modeling for the NGL Water Solutions Permian, LLC (NGL) North Ranch Surface Waste Management Facility (Facility). The site is located 16 miles west Jal, New Mexico and is approximately 303 acres in size. The primary waste accepted by the landfill will be upstream oil exploration and production waste.

The applicant proposes to permit, construct and operate the Facility and associated leachate evaporation pond and appurtenances. The facility design is split into Phase 1 and Phase 2, with a centrally located temporary road running between the phases. Each phase is divided into cells ranging from 15 acres to 23 acres in size with a total waste disposal size of 205 acres. The proposed disposal area design is expected to yield approximately 41,428,629 cubic yards of airspace.

ANALYSIS:

The HELP Model version 3.95D was used to calculate approximate leachate flow rates and liquid heads above the liner system under two different conditions. The first condition is for the initial construction of the base grades before waste has been placed in the disposal area. The second condition is for the closed landfill. The parameters and conditions analyzed using the HELP Model are described below in **TABLE D.1** and **TABLE D.2**

Table D.1. Condition 1 - Prescriptive Base Liner System Design

Layer	Description	Thickness	K_{sat} (cm/s)
1	Protective/Drainage Soil	24-in	1×10^{-2}
2	Geocomposite	200-mil	10
3	Geomembrane	60-mil	2×10^{-13}
4	Geocomposite Leak Detection	200-mil	10
5	Geomembrane	60-mil	2×10^{-13}
6	Geosynthetic Clay Liner	240-mil	3×10^{-9}
7	Compacted Subgrade 95% Standard Proctor Dry Density	6-in	1×10^{-2}

Table D.2 Condition 2 - Prescriptive Final Cover System Design

Layer	Description	Thickness	K_{sat} (cm/se)
1	Erosion Layer	12-in	1×10^{-2}
2	Protection Layer	18-in	1×10^{-2}
3	Geocomposite	200-mil	10
4	Geomembrane	60-mil	2×10^{-13}
5	Geosynthetic Clay Liner	240-mil	3×10^{-9}
6	Intermediate Daily Cover	12-in	1×10^{-2}
7	Waste	227-ft	1×10^{-3}
8	Protective/Drainage Soil	24-in	1×10^{-2}
9	Geocomposite*	200-mil	1
10	Geomembrane	60-mil	2×10^{-13}
11	Geocomposite Leak Detection*	200-mil	1
12	Geomembrane	60-mil	2×10^{-13}
13	Geosynthetic Clay Liner	240-mil	3×10^{-9}
14	Compacted Subgrade 95% Standard Proctor Dry Density	6-in	1×10^{-2}

Geocomposite assumed to be under full waste height compression yielding a reduced K_{sat} of 2.38 cm/s as calculated in **Attachment E4 of Appendix J of the Facility Permit Application. HELP Simulation used a conservative 1 cm/s for these layers.*

The HELP 3.95D model results for the two scenarios mentioned above are provided in **Attachment D1**.

Site conditions and the parameters established above were evaluated to determine if the proposed liner system would be adequate for the leachate projected to be generated in the disposal area. The individual HELP Model evaluations of the different conditions can be found in **Exhibit D1**.

The temperature, relative humidity, and solar radiation data for the site were calculated using weather data from the default database provided with the HELP 3.95D Model program. The soil type, thickness, permeability and various other properties were input into the HELP 3.95D model based on the HELP model standard properties or known properties of the soils in the landfill area. The input data also include the geosynthetic materials and their properties.

SUMMARY OF RESULTS:

The HELP Model was simulated for 30-years assuming a 30-year post closure period. Simulation results associated with the data presented in this report can be seen in **Exhibit D1**. Models result in less than the 12-inch maximum allowable head. The maximum head for first condition was found to be 0.077 inches. The maximum head for the second condition was found to be 0.0005 inches. The results for scenario 2, found in **Exhibit D1**, show the total maximum head on the liner as 0.000 because the program does not print the results with enough significant figures to include the last digit of the leachate head.

Exhibit D1
HELP MODEL RESULTS

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 ******************************************************************************
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 **                                                                          **
 **                                                                          **
 **              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
 **                                                                          **
 **              HELP Version 3.95 D          (10 August 2012)              **
 **                              developed at                                **
 **        Institute of Soil Science, University of Hamburg, Germany         **
 **                               based on                                   **
 **              US HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)               **
 **                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
 **                    USAE WATERWAYS EXPERIMENT STATION                     **
 **             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
 **                                                                          **
 **                                                                          **
 ******************************************************************************
 ******************************************************************************


 TIME:  11.10     DATE:  18.04.2019


 PRECIPITATION DATA FILE:       N:\Projects\2018\35187378\Working Files\DRAFTS (Proposal-Reports-
Communications)\McCloy Permit Narrative\Volume 1\App J - Design and Construction Plan\Attachment D
- HELP\Precipitation Data Files.d4
 TEMPERATURE DATA FILE:         N:\Projects\2018\35187378\Working Files\DRAFTS (Proposal-Reports-
Communications)\McCloy Permit Narrative\Volume 1\App J - Design and Construction Plan\Attachment D
- HELP\Temperature Data Files.d7
 SOLAR RADIATION DATA FILE:     N:\Projects\2018\35187378\Working Files\DRAFTS (Proposal-Reports-
Communications)\McCloy Permit Narrative\Volume 1\App J - Design and Construction Plan\Attachment D
- HELP\Solar Radiation Data Files.d13
 EVAPOTRANSPIRATION DATA F. 1: N:\Projects\2018\35187378\Working Files\DRAFTS (Proposal-Reports-
Communications)\McCloy Permit Narrative\Volume 1\App J - Design and Construction Plan\Attachment D
- HELP\Evapotranspiration Parameters Files.d11
 SOIL AND DESIGN DATA FILE  1: N:\Projects\2018\35187378\Working Files\DRAFTS (Proposal-Reports-
Communications)\McCloy Permit Narrative\Volume 1\App J - Design and Construction Plan\Attachment D
- HELP\Base Liner System - Soil and Design Data Files - R2.d10
 OUTPUT DATA FILE:              N:\Projects\2018\35187378\Working Files\DRAFTS (Proposal-Reports-
Communications)\McCloy Permit Narrative\Volume 1\App J - Design and Construction Plan\Attachment D
- HELP\Base Liner System R2 - 30 years.out
 DAILY OUTPUT DATA FILE:        N:\Projects\2018\35187378\Working Files\DRAFTS (Proposal-Reports-
Communications)\McCloy Permit Narrative\Volume 1\App J - Design and Construction Plan\Attachment D
- HELP\Base Liner System R2 - 30 years.DAY
 MONTHLY OUTPUT DATA FILE:      N:\Projects\2018\35187378\Working Files\DRAFTS (Proposal-Reports-
Communications)\McCloy Permit Narrative\Volume 1\App J - Design and Construction Plan\Attachment D
- HELP\Base Liner System R2 - 30 years.MON
 YEARLY OUTPUT DATA FILE:       N:\Projects\2018\35187378\Working Files\DRAFTS (Proposal-Reports-
Communications)\McCloy Permit Narrative\Volume 1\App J - Design and Construction Plan\Attachment D
- HELP\Base Liner System R2 - 30 years.YR

 COLUMNS OF DAILY OUTPUT DATA FILE:

      1    DATE (yyyymmdd, years 2101 to 2200 from weather generator)
      2    AIR TEMPERATURE  (* INDICATES FREEZING TEMPERATURES)
      3    FROZEN SOIL STATE (* INDICATES FROZEN SOIL)
      4    PRECIPITATION (INCH)
      5    RUNOFF (INCH)
      6    POTENTIAL EVAPOTRANSPIRATION (INCH)
      7    ACTUAL EVAPOTRANSPIRATION (INCH)
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     8    WATER CONTENT OF THE EVAPORATIVE ZONE (INCH)
     9    HEAD  #1: AVERAGE HEAD ON TOP OF LAYER  3 (INCH)
    10    DRAIN #1: LATERAL DRAINAGE FROM LAYER  2 (INCH)
    11    LEAK  #1: PERCOLATION/LEAKAGE THROUGH LAYER  3 (INCH)
    12    HEAD  #2: AVERAGE HEAD ON TOP OF LAYER  5 (INCH)
    13    DRAIN #2: LATERAL DRAINAGE FROM LAYER  4 (INCH)
    14    LEAK  #2: PERCOLATION/LEAKAGE THROUGH LAYER  6 (INCH)

COLUMNS OF MONTHLY OUTPUT DATA FILE:

     1    DATE OF ULTIMO (yyyymmdd, years 2101 to 2200 from weather generator)
     2    PRECIPITATION (INCH)
     3    RUNOFF (INCH)
     4    POTENTIAL EVAPOTRANSPIRATION (INCH)
     5    ACTUAL EVAPOTRANSPIRATION (INCH)
     6    HEAD  #1: AVERAGE HEAD ON TOP OF LAYER  3 (INCH)
     7    DRAIN #1: LATERAL DRAINAGE FROM LAYER  2 (INCH)
     8    LEAK  #1: PERCOLATION/LEAKAGE THROUGH LAYER  3 (INCH)
     9    HEAD  #2: AVERAGE HEAD ON TOP OF LAYER  5 (INCH)
    10    DRAIN #2: LATERAL DRAINAGE FROM LAYER  4 (INCH)
    11    LEAK  #2: PERCOLATION/LEAKAGE THROUGH LAYER  6 (INCH)

COLUMNS OF YEARLY OUTPUT DATA FILE:

     1    DATE OF ULTIMO (yyyy1231, years 2101 to 2200 from weather generator)
     2    PRECIPITATION (INCH)
     3    RUNOFF (INCH)
     4    POTENTIAL EVAPOTRANSPIRATION (INCH)
     5    ACTUAL EVAPOTRANSPIRATION (INCH)
     6    DRAIN #1: LATERAL DRAINAGE FROM LAYER  2 (INCH)
     7    LEAK  #1: PERCOLATION/LEAKAGE THROUGH LAYER  3 (INCH)
     8    DRAIN #2: LATERAL DRAINAGE FROM LAYER  4 (INCH)
     9    LEAK  #2: PERCOLATION/LEAKAGE THROUGH LAYER  6 (INCH)
    10    CHANGE IN TOTAL WATER STORAGE (INCH)
    11    CHANGE IN SOIL WATER STORAGE (INCH)
    12    CHANGE IN INTERCEPTION WATER STORAGE (INCH)
    13    CHANGE IN SNOW WATER STORAGE (INCH)
    14    ANNUAL WATER BUDGET BALANCE (INCH)


********************************************************************************

     TITLE:  Prescriptive Liner Help Model Demonstration

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                          WEATHER DATA SOURCES
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         NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
                  COEFFICIENTS FOR    ROSWELL             NEW MEXICO

                    NORMAL MEAN MONTHLY PRECIPITATION (MM)

     JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
     -------     -------     -------     -------     -------     -------
        6.1         7.1         6.9         9.4        19.6        23.1
       35.1        55.1        43.7        25.1         8.4         6.9
```

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES CELSIUS)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
5.2	7.7	11.6	16.6	21.3	26.1
27.4	26.2	22.4	16.5	9.5	5.8

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO
AND STATION LATITUDE = 33.24 DEGREES

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LAYER DATA 1

VALID FOR 30 YEARS

NOTE: INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.

LAYER 1

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 1

THICKNESS	=	24.00	INCHES
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0348	VOL/VOL
EFFECTIVE SAT. HYD. CONDUCT.	=	0.1000E-01	CM/SEC

NOTE: SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY 2.01
FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.

LAYER 2

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 20

THICKNESS	=	0.20	INCHES
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. CONDUCT.	=	10.00	CM/SEC

SLOPE	=	3.00	PERCENT
DRAINAGE LENGTH	=	320.0	FEET

LAYER 3

TYPE 4 - FLEXIBLE MEMBRANE LINER
MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.06	INCHES
EFFECTIVE SAT. HYD. CONDUCT.	=	0.2000E-12	CM/SEC
FML PINHOLE DENSITY	=	4.00	HOLES/ACRE
FML INSTALLATION DEFECTS	=	4.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 4

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 0

THICKNESS	=	0.20	INCHES
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0104	VOL/VOL
EFFECTIVE SAT. HYD. CONDUCT.	=	10.00	CM/SEC
SLOPE	=	3.00	PERCENT
DRAINAGE LENGTH	=	320.0	FEET

LAYER 5

TYPE 4 - FLEXIBLE MEMBRANE LINER
MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.06	INCHES
EFFECTIVE SAT. HYD. CONDUCT.	=	0.2000E-12	CM/SEC
FML PINHOLE DENSITY	=	4.00	HOLES/ACRE
FML INSTALLATION DEFECTS	=	4.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 6

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 17

THICKNESS	=	0.24	INCHES
POROSITY	=	0.7500	VOL/VOL
FIELD CAPACITY	=	0.7470	VOL/VOL
WILTING POINT	=	0.4000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.7500	VOL/VOL
EFFECTIVE SAT. HYD. CONDUCT.	=	0.3000E-08	CM/SEC

****

GENERAL DESIGN AND EVAPORATIVE ZONE DATA 1

VALID FOR 30 YEARS

NOTE: SCS RUNOFF CURVE NUMBER WAS USER-SPECIFIED.

SCS RUNOFF CURVE NUMBER	=	60.00	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	205.000	ACRES
EVAPORATIVE ZONE DEPTH	=	18.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	0.423	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	7.506	INCHES
FIELD CAPACITY OF EVAPORATIVE ZONE	=	0.810	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	0.324	INCHES
SOIL EVAPORATION ZONE DEPTH	=	10.367	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL INTERCEPTION WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	1.019	INCHES
TOTAL INITIAL WATER	=	1.019	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

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EVAPOTRANSPIRATION DATA 1

VALID FOR 30 YEARS

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

STATION LATITUDE	=	33.24	DEGREES
MAXIMUM LEAF AREA INDEX	=	1.20	
START OF GROWING SEASON (JULIAN DATE)	=	76	
END OF GROWING SEASON (JULIAN DATE)	=	310	
EVAPORATIVE ZONE DEPTH	=	18.0	INCHES
AVERAGE ANNUAL WIND SPEED	=	8.70	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.0	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.0	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.0	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.0	%

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MONTHLY TOTALS (IN INCHES) FOR YEAR 1

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
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PRECIPITATION	0.00	0.19	0.02	0.56	0.03	0.00
	1.03	2.56	2.89	0.43	0.88	0.11
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.350	3.824	5.268	7.266	9.414	10.659
	10.220	8.389	6.750	5.349	3.806	2.939
ACTUAL EVAPOTRANSPIRATION	0.007	0.165	0.049	0.404	0.267	0.004
	0.714	2.864	2.453	0.401	0.955	0.140
LATERAL DRAINAGE COLLECTED	0.0045	0.0026	0.0018	0.0014	0.0017	0.0012
FROM LAYER 2	0.0010	0.0008	0.0419	0.0964	0.0101	0.0061
PERCOLATION/LEAKAGE THROUGH	0.0131	0.0090	0.0074	0.0056	0.0069	0.0056
LAYER 3	0.0050	0.0044	0.0310	0.0930	0.0282	0.0159
LATERAL DRAINAGE COLLECTED	0.0131	0.0090	0.0074	0.0056	0.0069	0.0056
FROM LAYER 4	0.0050	0.0044	0.0299	0.0939	0.0283	0.0159
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.001	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.001	0.001	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.001	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 1

	INCHES	CU. FEET	PERCENT
PRECIPITATION	8.71	6480550.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.235	57474084.000	
ACTUAL EVAPOTRANSPIRATION	8.423	6267770.000	96.72

DRAINAGE COLLECTED FROM LAYER 2	0.1696	126214.555	1.95
PERC./LEAKAGE THROUGH LAYER 3	0.225107	167513.328	2.58
AVG. HEAD ON TOP OF LAYER 3	0.0001		
DRAINAGE COLLECTED FROM LAYER 4	0.2251	167520.391	2.58
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.807	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0001		
CHANGE IN WATER STORAGE	-0.109	-80955.133	-1.25
SOIL WATER AT START OF YEAR	1.021	760068.250	
SOIL WATER AT END OF YEAR	0.913	679113.062	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.654	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 2

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.44	0.18	0.44	0.33	1.50	1.82
	1.35	1.69	1.43	0.00	0.33	0.86
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	2.850	3.437	5.244	7.830	8.797	10.157
	10.362	9.115	7.157	5.372	3.544	2.520
ACTUAL EVAPOTRANSPIRATION	0.438	0.117	0.419	0.254	1.522	1.957
	1.346	1.678	0.913	0.530	0.235	0.906
LATERAL DRAINAGE COLLECTED	0.0036	0.0022	0.0018	0.0013	0.0011	0.0008
FROM LAYER 2	0.0007	0.0006	0.0005	0.0005	0.0004	0.0004
PERCOLATION/LEAKAGE THROUGH	0.0113	0.0080	0.0072	0.0059	0.0052	0.0044
LAYER 3	0.0040	0.0036	0.0032	0.0030	0.0027	0.0026
LATERAL DRAINAGE COLLECTED	0.0113	0.0080	0.0072	0.0059	0.0052	0.0044

FROM LAYER 4	0.0040	0.0036	0.0032	0.0030	0.0027	0.0026
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 2

	INCHES	CU. FEET	PERCENT
PRECIPITATION	10.37	7713964.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	76.386	56842628.000	
ACTUAL EVAPOTRANSPIRATION	10.315	7675741.500	99.50
DRAINAGE COLLECTED FROM LAYER 2	0.0138	10262.429	0.13
PERC./LEAKAGE THROUGH LAYER 3	0.061089	45459.246	0.59
AVG. HEAD ON TOP OF LAYER 3	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0611	45498.137	0.59
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.854	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0000		
CHANGE IN WATER STORAGE	-0.024	-17539.439	-0.23
SOIL WATER AT START OF YEAR	0.913	679113.062	
SOIL WATER AT END OF YEAR	0.889	661573.688	

INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.211	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 3

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.30	0.14	0.64	0.13	0.70	0.35
	2.85	0.96	1.48	0.03	2.59	0.16
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.284	3.810	4.902	7.776	9.460	10.418
	10.211	8.859	6.420	5.395	3.401	2.526
ACTUAL EVAPOTRANSPIRATION	0.216	0.236	0.417	0.288	0.809	0.330
	2.875	0.961	1.395	0.105	1.855	0.324
LATERAL DRAINAGE COLLECTED	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002
FROM LAYER 2	0.0002	0.0002	0.0002	0.0001	0.0001	0.0002
PERCOLATION/LEAKAGE THROUGH	0.0024	0.0020	0.0021	0.0019	0.0019	0.0017
LAYER 3	0.0017	0.0016	0.0015	0.0014	0.0013	0.0009
LATERAL DRAINAGE COLLECTED	0.0024	0.0020	0.0021	0.0019	0.0019	0.0017
FROM LAYER 4	0.0017	0.0016	0.0015	0.0014	0.0013	0.0008
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 3

	INCHES	CU. FEET	PERCENT
PRECIPITATION	10.34	7693456.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	76.462	56899552.000	
ACTUAL EVAPOTRANSPIRATION	9.810	7300131.500	94.89
DRAINAGE COLLECTED FROM LAYER 2	0.0025	1828.638	0.02
PERC./LEAKAGE THROUGH LAYER 3	0.020211	15040.203	0.20
AVG. HEAD ON TOP OF LAYER 3	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0202	15004.690	0.20
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.739	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0000		
CHANGE IN WATER STORAGE	0.506	376490.031	4.89
SOIL WATER AT START OF YEAR	0.889	661573.688	
SOIL WATER AT END OF YEAR	1.395	1038063.688	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.470	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 4

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.00	0.11	0.06	0.30	0.11	0.03
	2.06	3.83	0.12	2.00	0.06	0.58
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.065	3.855	4.999	7.463	10.055	10.482
	10.172	8.769	6.878	5.112	3.598	2.608
ACTUAL EVAPOTRANSPIRATION	0.037	0.110	0.022	0.138	0.531	0.028
	2.059	3.835	0.122	0.913	0.149	0.220
LATERAL DRAINAGE COLLECTED	0.0194	0.0158	0.0109	0.0069	0.0080	0.0090
FROM LAYER 2	0.0051	0.0031	0.0021	0.0154	0.2497	0.0344
PERCOLATION/LEAKAGE THROUGH	0.0326	0.0282	0.0229	0.0149	0.0230	0.0221
LAYER 3	0.0142	0.0104	0.0079	0.0128	0.1600	0.0629
LATERAL DRAINAGE COLLECTED	0.0325	0.0282	0.0229	0.0150	0.0228	0.0222
FROM LAYER 4	0.0142	0.0104	0.0079	0.0118	0.1606	0.0631
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.002	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.001	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.001	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 4

	INCHES	CU. FEET	PERCENT
PRECIPITATION	9.27	6896574.500	100.00
RUNOFF	0.000	0.000	0.00

POTENTIAL EVAPOTRANSPIRATION	77.057	57342128.000	
ACTUAL EVAPOTRANSPIRATION	8.164	6075095.500	88.09
DRAINAGE COLLECTED FROM LAYER 2	0.3799	282711.906	4.10
PERC./LEAKAGE THROUGH LAYER 3	0.411870	306493.406	4.44
AVG. HEAD ON TOP OF LAYER 3	0.0002		
DRAINAGE COLLECTED FROM LAYER 4	0.4117	306356.094	4.44
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.812	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0002		
CHANGE IN WATER STORAGE	0.312	232404.234	3.37
SOIL WATER AT START OF YEAR	1.395	1038063.688	
SOIL WATER AT END OF YEAR	1.707	1270467.875	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	5.212	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.13	0.21	0.34	0.00	1.59	0.95
	1.04	0.52	2.30	1.52	0.33	0.77
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.106	3.508	5.293	6.987	9.153	10.302
	10.275	8.926	6.446	5.013	3.816	2.900
ACTUAL EVAPOTRANSPIRATION	0.241	0.210	0.226	0.362	1.854	0.945
	1.034	0.507	1.891	1.381	0.838	0.704
LATERAL DRAINAGE COLLECTED	0.0127	0.0099	0.0075	0.0058	0.0088	0.0062
FROM LAYER 2	0.0037	0.0025	0.0017	0.0014	0.0010	0.0009

PERCOLATION/LEAKAGE THROUGH	0.0377	0.0208	0.0181	0.0152	0.0180	0.0158
LAYER 3	0.0116	0.0089	0.0070	0.0061	0.0050	0.0046
LATERAL DRAINAGE COLLECTED	0.0378	0.0209	0.0181	0.0152	0.0180	0.0159
FROM LAYER 4	0.0116	0.0089	0.0070	0.0061	0.0050	0.0046
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 5

	INCHES	CU. FEET	PERCENT
PRECIPITATION	9.71	7227630.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	75.725	56350532.000	
ACTUAL EVAPOTRANSPIRATION	10.193	7585141.500	104.95
DRAINAGE COLLECTED FROM LAYER 2	0.0621	46175.750	0.64
PERC./LEAKAGE THROUGH LAYER 3	0.168828	125633.430	1.74
AVG. HEAD ON TOP OF LAYER 3	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.1690	125793.758	1.74
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.834	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0001		
CHANGE IN WATER STORAGE	-0.712	-529487.688	-7.33

SOIL WATER AT START OF YEAR	1.707	1270467.875	
SOIL WATER AT END OF YEAR	0.996	740980.250	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	5.323	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 6

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.26	0.65	0.02	0.28	0.94	0.04
	1.14	0.85	0.78	0.32	0.51	0.35
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	2.845	3.739	5.573	7.727	9.854	10.278
	9.784	9.218	6.949	4.806	3.620	2.705
ACTUAL EVAPOTRANSPIRATION	0.371	0.290	0.241	0.444	0.810	0.171
	1.138	0.850	0.776	0.319	0.508	0.350
LATERAL DRAINAGE COLLECTED	0.0007	0.0006	0.0005	0.0004	0.0004	0.0003
FROM LAYER 2	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002
PERCOLATION/LEAKAGE THROUGH	0.0040	0.0033	0.0033	0.0029	0.0028	0.0025
LAYER 3	0.0024	0.0022	0.0020	0.0020	0.0018	0.0018
LATERAL DRAINAGE COLLECTED	0.0040	0.0033	0.0033	0.0029	0.0028	0.0025
FROM LAYER 4	0.0024	0.0022	0.0020	0.0020	0.0018	0.0018
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000

HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 6

	INCHES	CU. FEET	PERCENT
PRECIPITATION	6.13	4561581.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.098	57372588.000	
ACTUAL EVAPOTRANSPIRATION	6.267	4663467.000	102.23
DRAINAGE COLLECTED FROM LAYER 2	0.0045	3356.658	0.07
PERC./LEAKAGE THROUGH LAYER 3	0.030955	23034.924	0.50
AVG. HEAD ON TOP OF LAYER 3	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0310	23042.898	0.51
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.851	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0000		
CHANGE IN WATER STORAGE	-0.172	-128286.664	-2.81
SOIL WATER AT START OF YEAR	0.996	740980.250	
SOIL WATER AT END OF YEAR	0.823	612693.562	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.191	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 7

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.19	0.38	0.13	0.33	0.94	0.83
	1.59	2.01	0.40	3.09	0.93	0.03
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.139	3.381	5.498	7.468	9.419	10.444
	9.889	9.308	6.934	5.006	3.358	2.952
ACTUAL EVAPOTRANSPIRATION	0.184	0.326	0.192	0.328	0.748	0.681
	1.936	1.544	0.847	2.346	0.966	0.106
LATERAL DRAINAGE COLLECTED	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001
FROM LAYER 2	0.0001	0.0001	0.0001	0.0001	0.0084	0.0291
PERCOLATION/LEAKAGE THROUGH	0.0017	0.0014	0.0015	0.0014	0.0014	0.0013
LAYER 3	0.0013	0.0012	0.0011	0.0007	0.0167	0.0575
LATERAL DRAINAGE COLLECTED	0.0017	0.0014	0.0015	0.0014	0.0014	0.0013
FROM LAYER 4	0.0013	0.0012	0.0011	0.0007	0.0163	0.0576
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 7

	INCHES	CU. FEET	PERCENT

PRECIPITATION	10.85	8074321.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	76.795	57147164.000	
ACTUAL EVAPOTRANSPIRATION	10.203	7592584.000	94.03
DRAINAGE COLLECTED FROM LAYER 2	0.0388	28883.305	0.36
PERC./LEAKAGE THROUGH LAYER 3	0.087143	64847.578	0.80
AVG. HEAD ON TOP OF LAYER 3	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0869	64654.641	0.80
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.714	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0000		
CHANGE IN WATER STORAGE	0.522	388194.344	4.81
SOIL WATER AT START OF YEAR	0.823	612693.562	
SOIL WATER AT END OF YEAR	1.345	1000887.938	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	3.083	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 8

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.06	0.53	0.10	1.50	0.19	0.13
	0.40	2.63	0.76	2.67	0.12	0.13
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.497	3.978	5.469	7.746	9.495	10.721
	10.188	8.652	6.742	5.038	3.478	2.493
ACTUAL EVAPOTRANSPIRATION	0.059	0.269	0.193	1.289	0.290	0.017
	0.239	2.607	0.818	1.166	0.870	0.039

LATERAL DRAINAGE COLLECTED	0.0168	0.0108	0.0097	0.1878	0.1246	0.0106
FROM LAYER 2	0.0063	0.0033	0.0612	0.0102	0.1180	0.0772
PERCOLATION/LEAKAGE THROUGH	0.0444	0.0274	0.0213	0.0965	0.1038	0.0295
LAYER 3	0.0162	0.0101	0.0763	0.0278	0.0874	0.0926
LATERAL DRAINAGE COLLECTED	0.0444	0.0274	0.0213	0.0960	0.1041	0.0296
FROM LAYER 4	0.0163	0.0102	0.0761	0.0279	0.0867	0.0931
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.001	0.001	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.001	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.002	0.001	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.001	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.001	0.001	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.001	0.001
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.001	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 8

	INCHES	CU. FEET	PERCENT
PRECIPITATION	9.22	6864342.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.498	57670412.000	
ACTUAL EVAPOTRANSPIRATION	7.858	5847321.500	85.18
DRAINAGE COLLECTED FROM LAYER 2	0.6365	473655.031	6.90
PERC./LEAKAGE THROUGH LAYER 3	0.633207	471200.719	6.86
AVG. HEAD ON TOP OF LAYER 3	0.0003		
DRAINAGE COLLECTED FROM LAYER 4	0.6332	471163.500	6.86
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.839	0.00

AVG. HEAD ON TOP OF LAYER 5	0.0003		
CHANGE IN WATER STORAGE	0.097	72202.070	1.05
SOIL WATER AT START OF YEAR	1.345	1000887.938	
SOIL WATER AT END OF YEAR	1.442	1073090.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-1.020	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 9

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.20	0.50	0.62	0.08	0.00	1.12
	1.22	1.68	2.19	0.02	1.59	0.83
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.185	3.437	5.188	7.675	9.527	10.264
	9.943	8.982	7.100	5.600	3.385	2.488
ACTUAL EVAPOTRANSPIRATION	0.212	0.181	0.596	0.611	0.129	1.118
	1.220	0.822	2.691	0.016	0.871	1.288
LATERAL DRAINAGE COLLECTED	0.0193	0.0102	0.0091	0.0062	0.0122	0.0057
FROM LAYER 2	0.0035	0.0023	0.1023	0.0354	0.0089	0.0053
PERCOLATION/LEAKAGE THROUGH	0.0474	0.0269	0.0205	0.0153	0.0241	0.0149
LAYER 3	0.0111	0.0086	0.0797	0.0612	0.0235	0.0145
LATERAL DRAINAGE COLLECTED	0.0475	0.0270	0.0205	0.0154	0.0240	0.0150
FROM LAYER 4	0.0111	0.0086	0.0791	0.0616	0.0236	0.0145
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.001	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.001	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 9

	INCHES	CU. FEET	PERCENT
PRECIPITATION	10.06	7482516.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	76.773	57130508.000	
ACTUAL EVAPOTRANSPIRATION	9.755	7259139.500	97.01
DRAINAGE COLLECTED FROM LAYER 2	0.2204	164008.531	2.19
PERC./LEAKAGE THROUGH LAYER 3	0.347740	258770.547	3.46
AVG. HEAD ON TOP OF LAYER 3	0.0001		
DRAINAGE COLLECTED FROM LAYER 4	0.3480	258955.125	3.46
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.838	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0002		
CHANGE IN WATER STORAGE	-0.268	-199590.297	-2.67
SOIL WATER AT START OF YEAR	1.442	1073090.000	
SOIL WATER AT END OF YEAR	1.174	873499.688	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	1.907	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 10

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.32	0.11	0.29	0.20	0.00	0.30
	2.16	2.18	0.81	0.01	0.36	0.22
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.302	3.739	5.612	7.421	9.536	11.005
	9.768	8.922	6.960	5.280	3.312	2.552
ACTUAL EVAPOTRANSPIRATION	0.209	0.229	0.198	0.440	0.107	0.299
	1.993	2.313	0.837	0.012	0.236	0.277
LATERAL DRAINAGE COLLECTED	0.0032	0.0020	0.0017	0.0012	0.0010	0.0008
FROM LAYER 2	0.0007	0.0006	0.0005	0.0004	0.0004	0.0003
PERCOLATION/LEAKAGE THROUGH	0.0106	0.0076	0.0069	0.0056	0.0050	0.0043
LAYER 3	0.0039	0.0035	0.0031	0.0029	0.0026	0.0025
LATERAL DRAINAGE COLLECTED	0.0106	0.0076	0.0069	0.0056	0.0050	0.0043
FROM LAYER 4	0.0039	0.0035	0.0031	0.0029	0.0026	0.0025
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 10

	INCHES	CU. FEET	PERCENT
PRECIPITATION	6.95	5170964.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.409	57604004.000	
ACTUAL EVAPOTRANSPIRATION	7.149	5320095.000	102.88
DRAINAGE COLLECTED FROM LAYER 2	0.0129	9569.361	0.19
PERC./LEAKAGE THROUGH LAYER 3	0.058658	43650.598	0.84
AVG. HEAD ON TOP OF LAYER 3	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0587	43685.969	0.84
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.854	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0000		
CHANGE IN WATER STORAGE	-0.272	-202387.297	-3.91
SOIL WATER AT START OF YEAR	1.174	873499.688	
SOIL WATER AT END OF YEAR	0.902	671112.375	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.643	0.00

MONTHLY TOTALS (IN INCHES) FOR YEAR 11

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.31	0.14	0.93	0.00	1.23	0.51
	2.91	2.39	1.45	0.58	0.98	0.18
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.252	3.561	5.820	7.842	9.544	10.434

	9.765	8.985	6.533	5.110	3.700	2.657
ACTUAL EVAPOTRANSPIRATION	0.185	0.161	1.044	0.026	1.087	0.466
	2.944	2.379	1.279	0.407	0.957	0.475
LATERAL DRAINAGE COLLECTED	0.0003	0.0003	0.0003	0.0002	0.0002	0.0006
FROM LAYER 2	0.0049	0.0119	0.0065	0.0038	0.0025	0.0018
PERCOLATION/LEAKAGE THROUGH	0.0023	0.0020	0.0021	0.0019	0.0018	0.0036
LAYER 3	0.0123	0.0329	0.0163	0.0118	0.0088	0.0074
LATERAL DRAINAGE COLLECTED	0.0023	0.0020	0.0021	0.0019	0.0018	0.0036
FROM LAYER 4	0.0121	0.0330	0.0163	0.0119	0.0088	0.0074
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 11

	INCHES	CU. FEET	PERCENT
PRECIPITATION	11.61	8636830.000	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.203	57450352.000	
ACTUAL EVAPOTRANSPIRATION	11.411	8491502.000	98.32
DRAINAGE COLLECTED FROM LAYER 2	0.0333	24793.975	0.29
PERC./LEAKAGE THROUGH LAYER 3	0.103043	76679.086	0.89
AVG. HEAD ON TOP OF LAYER 3	0.0000		

DRAINAGE COLLECTED FROM LAYER 4	0.1030	76661.055	0.89
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.848	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0001		
CHANGE IN WATER STORAGE	0.059	43868.668	0.51
SOIL WATER AT START OF YEAR	0.902	671112.375	
SOIL WATER AT END OF YEAR	0.961	714981.062	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	2.051	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 12

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.00	0.58	0.11	0.07	0.59	1.87
	2.03	0.93	2.03	1.98	0.00	0.37
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	2.823	3.396	5.337	7.732	9.809	10.848
	10.027	8.901	6.765	4.339	3.758	2.829
ACTUAL EVAPOTRANSPIRATION	0.082	0.353	0.184	0.215	0.264	1.689
	2.534	0.934	0.757	1.849	0.206	0.169
LATERAL DRAINAGE COLLECTED	0.0014	0.0010	0.0009	0.0007	0.0006	0.0005
FROM LAYER 2	0.0005	0.0004	0.0003	0.0739	0.3108	0.0390
PERCOLATION/LEAKAGE THROUGH	0.0061	0.0049	0.0046	0.0040	0.0037	0.0032
LAYER 3	0.0030	0.0028	0.0025	0.0606	0.1754	0.0668
LATERAL DRAINAGE COLLECTED	0.0061	0.0049	0.0046	0.0040	0.0037	0.0032
FROM LAYER 4	0.0030	0.0028	0.0025	0.0607	0.1749	0.0670
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.002	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.001	0.001	0.000
AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.001	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 12

	INCHES	CU. FEET	PERCENT
PRECIPITATION	10.56	7860451.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	76.564	56975328.000	
ACTUAL EVAPOTRANSPIRATION	9.236	6873094.500	87.44
DRAINAGE COLLECTED FROM LAYER 2	0.4301	320053.219	4.07
PERC./LEAKAGE THROUGH LAYER 3	0.337628	251245.875	3.20
AVG. HEAD ON TOP OF LAYER 3	0.0002		
DRAINAGE COLLECTED FROM LAYER 4	0.3374	251083.141	3.19
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.820	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0002		
CHANGE IN WATER STORAGE	0.559	416216.781	5.30
SOIL WATER AT START OF YEAR	0.961	714981.062	
SOIL WATER AT END OF YEAR	1.520	1131197.875	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00

ANNUAL WATER BUDGET BALANCE	0.0000	1.175	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 13

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.00	0.13	0.39	0.22	1.67	1.57
	1.05	0.85	3.04	0.70	0.58	0.45
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.131	3.206	5.949	7.657	9.214	10.535
	10.224	8.802	7.176	5.134	3.212	2.850
ACTUAL EVAPOTRANSPIRATION	0.195	0.084	0.164	0.564	1.797	1.571
	0.669	1.229	2.497	0.808	0.589	0.279
LATERAL DRAINAGE COLLECTED	0.0134	0.0099	0.0086	0.0042	0.0161	0.0090
FROM LAYER 2	0.0052	0.0032	0.0287	0.0637	0.0150	0.0081
PERCOLATION/LEAKAGE THROUGH	0.0396	0.0218	0.0197	0.0088	0.0362	0.0228
LAYER 3	0.0144	0.0105	0.0384	0.0814	0.0396	0.0190
LATERAL DRAINAGE COLLECTED	0.0396	0.0218	0.0197	0.0087	0.0362	0.0229
FROM LAYER 4	0.0144	0.0105	0.0384	0.0811	0.0398	0.0191
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 13

	INCHES	CU. FEET	PERCENT
PRECIPITATION	10.67	7936625.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.089	57365924.000	
ACTUAL EVAPOTRANSPIRATION	10.446	7773485.500	97.94
DRAINAGE COLLECTED FROM LAYER 2	0.1851	137709.078	1.74
PERC./LEAKAGE THROUGH LAYER 3	0.352136	262041.750	3.30
AVG. HEAD ON TOP OF LAYER 3	0.0001		
DRAINAGE COLLECTED FROM LAYER 4	0.3523	262168.062	3.30
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.758	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0002		
CHANGE IN WATER STORAGE	-0.318	-236739.812	-2.98
SOIL WATER AT START OF YEAR	1.520	1131197.875	
SOIL WATER AT END OF YEAR	1.202	894458.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.665	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 14

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.07	0.12	0.37	0.20	0.68	1.11
	1.18	2.97	2.22	1.08	0.68	0.35

RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	2.775	3.911	5.570	7.802	9.281	10.031
	9.716	8.742	6.898	5.114	3.151	2.858
ACTUAL EVAPOTRANSPIRATION	0.238	0.007	0.296	0.481	0.482	1.236
	1.243	2.916	1.640	1.004	0.985	0.407
LATERAL DRAINAGE COLLECTED	0.0045	0.0027	0.0017	0.0015	0.0023	0.0016
FROM LAYER 2	0.0013	0.0020	0.0022	0.0018	0.0013	0.0011
PERCOLATION/LEAKAGE THROUGH	0.0131	0.0091	0.0067	0.0052	0.0086	0.0068
LAYER 3	0.0059	0.0076	0.0083	0.0072	0.0059	0.0052
LATERAL DRAINAGE COLLECTED	0.0131	0.0091	0.0068	0.0052	0.0086	0.0068
FROM LAYER 4	0.0059	0.0075	0.0083	0.0072	0.0059	0.0052
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 14

	INCHES	CU. FEET	PERCENT
PRECIPITATION	11.02	8203228.000	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	75.849	56442752.000	
ACTUAL EVAPOTRANSPIRATION	10.935	8136934.500	99.19
DRAINAGE COLLECTED FROM LAYER 2	0.0240	17870.740	0.22

PERC./LEAKAGE THROUGH LAYER 3	0.089501	66602.281	0.81
AVG. HEAD ON TOP OF LAYER 3	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0896	66640.531	0.81
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.817	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0000		
CHANGE IN WATER STORAGE	-0.024	-18224.410	-0.22
SOIL WATER AT START OF YEAR	1.202	894458.000	
SOIL WATER AT END OF YEAR	1.177	876233.562	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	4.352	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 15

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.13	0.20	0.01	0.97	0.00	1.19
	1.55	1.49	1.13	3.70	0.00	0.06
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.010	3.374	5.593	7.722	9.752	10.750
	10.372	8.754	7.126	5.109	3.547	2.878
ACTUAL EVAPOTRANSPIRATION	0.247	0.213	0.185	0.554	0.421	1.189
	1.547	1.492	0.954	2.103	0.367	0.055
LATERAL DRAINAGE COLLECTED	0.0009	0.0007	0.0006	0.0005	0.0005	0.0004
FROM LAYER 2	0.0004	0.0003	0.0003	0.0024	0.5517	0.0477
PERCOLATION/LEAKAGE THROUGH	0.0045	0.0037	0.0036	0.0032	0.0030	0.0027
LAYER 3	0.0026	0.0024	0.0022	0.0029	0.2318	0.0736
LATERAL DRAINAGE COLLECTED	0.0045	0.0037	0.0037	0.0032	0.0030	0.0027
FROM LAYER 4	0.0026	0.0024	0.0022	0.0028	0.2314	0.0739
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.003	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.003	0.000
AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.001	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.001	0.000

ANNUAL TOTALS FOR YEAR 15

	INCHES	CU. FEET	PERCENT
PRECIPITATION	10.42	7752050.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.988	58035008.000	
ACTUAL EVAPOTRANSPIRATION	9.328	6941387.500	89.54
DRAINAGE COLLECTED FROM LAYER 2	0.6063	451148.500	5.82
PERC./LEAKAGE THROUGH LAYER 3	0.336181	250168.891	3.23
AVG. HEAD ON TOP OF LAYER 3	0.0003		
DRAINAGE COLLECTED FROM LAYER 4	0.3359	249985.984	3.22
PERC./LEAKAGE THROUGH LAYER 6	0.000003	1.869	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0002		
CHANGE IN WATER STORAGE	0.147	109526.539	1.41
SOIL WATER AT START OF YEAR	1.177	876233.562	
SOIL WATER AT END OF YEAR	1.325	985760.188	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	

SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.133	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 16

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.93	0.26	0.06	0.17	0.07	0.06
	0.76	2.92	0.56	1.34	0.05	0.17
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.086	3.526	5.674	8.153	9.536	10.614
	9.916	8.274	6.811	5.160	3.449	2.916
ACTUAL EVAPOTRANSPIRATION	0.766	0.272	0.203	0.210	0.239	0.059
	0.756	2.160	1.042	0.849	0.031	0.142
LATERAL DRAINAGE COLLECTED	0.0159	0.0111	0.0087	0.0027	0.0115	0.0072
FROM LAYER 2	0.0041	0.0027	0.0018	0.0948	0.0652	0.0180
PERCOLATION/LEAKAGE THROUGH	0.0412	0.0229	0.0199	0.0073	0.0310	0.0174
LAYER 3	0.0124	0.0094	0.0073	0.0683	0.0840	0.0457
LATERAL DRAINAGE COLLECTED	0.0413	0.0230	0.0198	0.0074	0.0309	0.0174
FROM LAYER 4	0.0124	0.0094	0.0073	0.0676	0.0844	0.0458
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.001	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.001	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.001	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 16

	INCHES	CU. FEET	PERCENT
PRECIPITATION	7.33	5458077.000	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.114	57384132.000	
ACTUAL EVAPOTRANSPIRATION	6.729	5007095.500	91.74
DRAINAGE COLLECTED FROM LAYER 2	0.2437	181369.922	3.32
PERC./LEAKAGE THROUGH LAYER 3	0.366849	272990.594	5.00
AVG. HEAD ON TOP OF LAYER 3	0.0001		
DRAINAGE COLLECTED FROM LAYER 4	0.3669	273048.781	5.00
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.789	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0002		
CHANGE IN WATER STORAGE	-0.005	-3440.158	-0.06
SOIL WATER AT START OF YEAR	1.325	985760.188	
SOIL WATER AT END OF YEAR	1.320	982320.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.798	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 17

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC

PRECIPITATION	0.28	0.72	0.03	0.33	0.02	0.50
	0.50	0.62	2.25	1.27	0.15	0.00
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	2.981	3.489	6.036	7.510	9.624	10.385
	10.264	9.165	6.853	5.708	3.198	2.823
ACTUAL EVAPOTRANSPIRATION	0.297	0.243	0.306	0.625	0.169	0.511
	0.504	0.622	1.936	0.990	0.122	0.032
LATERAL DRAINAGE COLLECTED	0.0112	0.0077	0.0061	0.0045	0.0094	0.0049
FROM LAYER 2	0.0031	0.0022	0.0015	0.0092	0.0442	0.0160
PERCOLATION/LEAKAGE THROUGH	0.0278	0.0177	0.0160	0.0122	0.0204	0.0137
LAYER 3	0.0104	0.0082	0.0065	0.0163	0.0704	0.0432
LATERAL DRAINAGE COLLECTED	0.0279	0.0177	0.0160	0.0122	0.0204	0.0137
FROM LAYER 4	0.0105	0.0082	0.0065	0.0159	0.0706	0.0433
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 17

	INCHES	CU. FEET	PERCENT
PRECIPITATION	6.69	4977602.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	78.036	58070204.000	

ACTUAL EVAPOTRANSPIRATION	6.356	4729979.500	95.03
DRAINAGE COLLECTED FROM LAYER 2	0.1201	89398.852	1.80
PERC./LEAKAGE THROUGH LAYER 3	0.262852	195601.078	3.93
AVG. HEAD ON TOP OF LAYER 3	0.0001		
DRAINAGE COLLECTED FROM LAYER 4	0.2629	195605.578	3.93
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.796	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0001		
CHANGE IN WATER STORAGE	-0.050	-37383.996	-0.75
SOIL WATER AT START OF YEAR	1.320	982320.000	
SOIL WATER AT END OF YEAR	1.270	944936.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	1.020	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 18

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.54	0.19	0.11	0.00	1.59	0.71
	1.60	0.45	0.07	2.09	0.04	0.40
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.229	2.998	5.659	7.096	9.354	10.467
	9.920	9.310	7.394	5.249	3.790	2.679
ACTUAL EVAPOTRANSPIRATION	0.223	0.249	0.183	0.391	1.343	0.967
	1.567	0.484	0.075	1.200	0.036	0.081
LATERAL DRAINAGE COLLECTED	0.0109	0.0073	0.0059	0.0049	0.0097	0.0048
FROM LAYER 2	0.0031	0.0021	0.0015	0.1147	0.1140	0.0233
PERCOLATION/LEAKAGE THROUGH	0.0261	0.0172	0.0155	0.0120	0.0212	0.0135
LAYER 3	0.0103	0.0081	0.0065	0.0658	0.1089	0.0520

LATERAL DRAINAGE COLLECTED	0.0262	0.0172	0.0155	0.0119	0.0213	0.0135
FROM LAYER 4	0.0103	0.0081	0.0065	0.0647	0.1096	0.0521
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.001	0.001	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.001	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.001	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.001	0.000	0.000

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ANNUAL TOTALS FOR YEAR 18

	INCHES	CU. FEET	PERCENT
PRECIPITATION	7.80	5800855.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.146	57408256.000	
ACTUAL EVAPOTRANSPIRATION	6.799	5059654.000	87.22
DRAINAGE COLLECTED FROM LAYER 2	0.3023	224919.391	3.88
PERC./LEAKAGE THROUGH LAYER 3	0.356968	265638.094	4.58
AVG. HEAD ON TOP OF LAYER 3	0.0002		
DRAINAGE COLLECTED FROM LAYER 4	0.3569	265614.625	4.58
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.818	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0002		
CHANGE IN WATER STORAGE	0.337	250665.188	4.32
SOIL WATER AT START OF YEAR	1.270	944936.000	
SOIL WATER AT END OF YEAR	1.607	1195601.125	

INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.266	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 19

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.35	0.29	0.05	0.11	0.02	0.36
	0.55	1.24	2.19	0.24	0.24	0.56
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.179	3.412	5.437	7.604	9.065	10.298
	9.631	9.011	6.831	4.927	3.419	2.687
ACTUAL EVAPOTRANSPIRATION	0.290	0.188	0.181	0.547	0.144	0.358
	0.551	0.874	1.767	0.307	0.254	0.257
LATERAL DRAINAGE COLLECTED	0.0115	0.0086	0.0067	0.0045	0.0106	0.0053
FROM LAYER 2	0.0033	0.0022	0.0015	0.0878	0.0291	0.0116
PERCOLATION/LEAKAGE THROUGH	0.0321	0.0190	0.0168	0.0120	0.0220	0.0143
LAYER 3	0.0108	0.0084	0.0063	0.0889	0.0567	0.0321
LATERAL DRAINAGE COLLECTED	0.0321	0.0190	0.0168	0.0121	0.0219	0.0143
FROM LAYER 4	0.0108	0.0084	0.0063	0.0885	0.0569	0.0322
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.001	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000

TOP OF LAYER 5	0.000	0.000	0.000	0.001	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 19

	INCHES	CU. FEET	PERCENT
PRECIPITATION	6.19	4608457.000	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	75.499	56182908.000	
ACTUAL EVAPOTRANSPIRATION	5.717	4254258.000	92.31
DRAINAGE COLLECTED FROM LAYER 2	0.1827	135960.234	2.95
PERC./LEAKAGE THROUGH LAYER 3	0.319427	237701.828	5.16
AVG. HEAD ON TOP OF LAYER 3	0.0001		
DRAINAGE COLLECTED FROM LAYER 4	0.3195	237767.141	5.16
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.810	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0002		
CHANGE IN WATER STORAGE	-0.026	-19529.328	-0.42
SOIL WATER AT START OF YEAR	1.607	1195601.125	
SOIL WATER AT END OF YEAR	1.580	1176071.875	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.909	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 20

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.04	0.24	0.24	0.23	0.00	1.07
	1.33	0.82	0.67	2.02	0.00	0.41
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.132	3.646	5.188	7.862	9.704	10.502
	9.952	9.511	7.470	5.380	3.314	3.053
ACTUAL EVAPOTRANSPIRATION	0.193	0.169	0.168	0.688	0.113	1.075
	1.335	0.823	0.648	1.439	0.011	0.116
LATERAL DRAINAGE COLLECTED	0.0085	0.0052	0.0044	0.0024	0.0069	0.0040
FROM LAYER 2	0.0027	0.0019	0.0014	0.0008	0.0405	0.0221
PERCOLATION/LEAKAGE THROUGH	0.0196	0.0141	0.0128	0.0071	0.0169	0.0119
LAYER 3	0.0094	0.0075	0.0061	0.0037	0.0636	0.0507
LATERAL DRAINAGE COLLECTED	0.0196	0.0141	0.0128	0.0071	0.0168	0.0119
FROM LAYER 4	0.0094	0.0075	0.0061	0.0037	0.0632	0.0508
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

ANNUAL TOTALS FOR YEAR 20

	INCHES	CU. FEET	PERCENT
PRECIPITATION	7.11	5288153.500	100.00

RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	78.713	58574608.000	
ACTUAL EVAPOTRANSPIRATION	6.776	5042350.500	95.35
DRAINAGE COLLECTED FROM LAYER 2	0.1007	74923.477	1.42
PERC./LEAKAGE THROUGH LAYER 3	0.223237	166122.078	3.14
AVG. HEAD ON TOP OF LAYER 3	0.0001		
DRAINAGE COLLECTED FROM LAYER 4	0.2231	166054.609	3.14
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.742	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0001		
CHANGE IN WATER STORAGE	0.006	4823.229	0.09
SOIL WATER AT START OF YEAR	1.580	1176071.875	
SOIL WATER AT END OF YEAR	1.587	1180895.125	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.144	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 21

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.68	0.07	0.08	0.11	0.54	0.32
	0.75	5.60	1.91	0.47	0.13	0.28
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.207	3.478	5.736	7.177	9.382	10.367
	10.259	9.152	7.187	5.422	3.621	2.788
ACTUAL EVAPOTRANSPIRATION	0.899	0.100	0.105	0.079	0.737	0.374
	0.748	4.185	1.941	0.326	0.246	0.161
LATERAL DRAINAGE COLLECTED	0.0118	0.0082	0.0056	0.0059	0.0010	0.0119
FROM LAYER 2	0.0067	1.0076	0.0232	0.0089	0.0047	0.0031

PERCOLATION/LEAKAGE THROUGH	0.0320	0.0182	0.0150	0.0152	0.0025	0.0309
LAYER 3	0.0168	0.2650	0.0497	0.0217	0.0134	0.0102
LATERAL DRAINAGE COLLECTED	0.0321	0.0183	0.0150	0.0152	0.0025	0.0309
FROM LAYER 4	0.0168	0.2646	0.0500	0.0217	0.0134	0.0102
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.006	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.008	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.002	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.001	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 21

	INCHES	CU. FEET	PERCENT
PRECIPITATION	10.94	8144633.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.774	57875776.000	
ACTUAL EVAPOTRANSPIRATION	9.901	7367708.500	90.46
DRAINAGE COLLECTED FROM LAYER 2	1.0986	817517.000	10.04
PERC./LEAKAGE THROUGH LAYER 3	0.490592	365073.969	4.48
AVG. HEAD ON TOP OF LAYER 3	0.0006		
DRAINAGE COLLECTED FROM LAYER 4	0.4907	365190.969	4.48
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.796	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0003		
CHANGE IN WATER STORAGE	-0.545	-405784.125	-4.98

SOIL WATER AT START OF YEAR	1.587	1180895.125	
SOIL WATER AT END OF YEAR	1.042	775111.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-0.621	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 22

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.54	0.33	0.18	0.13	0.00	1.46
	1.07	1.29	1.17	0.34	0.33	0.31
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.194	3.486	5.532	7.448	9.273	10.243
	9.828	9.093	7.080	5.343	3.521	2.576
ACTUAL EVAPOTRANSPIRATION	0.526	0.419	0.124	0.245	0.025	0.628
	1.859	0.782	1.036	0.981	0.078	0.317
LATERAL DRAINAGE COLLECTED	0.0021	0.0014	0.0012	0.0010	0.0008	0.0007
FROM LAYER 2	0.0013	0.0015	0.0012	0.0010	0.0008	0.0007
PERCOLATION/LEAKAGE THROUGH	0.0081	0.0060	0.0057	0.0048	0.0043	0.0038
LAYER 3	0.0057	0.0066	0.0054	0.0049	0.0042	0.0038
LATERAL DRAINAGE COLLECTED	0.0081	0.0060	0.0057	0.0048	0.0043	0.0038
FROM LAYER 4	0.0057	0.0066	0.0054	0.0049	0.0042	0.0038
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000

STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 22

	INCHES	CU. FEET	PERCENT
PRECIPITATION	7.16	5329169.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	76.616	57013956.000	
ACTUAL EVAPOTRANSPIRATION	7.020	5223738.000	98.02
DRAINAGE COLLECTED FROM LAYER 2	0.0136	10091.296	0.19
PERC./LEAKAGE THROUGH LAYER 3	0.063257	47072.598	0.88
AVG. HEAD ON TOP OF LAYER 3	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0633	47091.203	0.88
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.855	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0000		
CHANGE IN WATER STORAGE	0.065	48246.129	0.91
SOIL WATER AT START OF YEAR	1.042	775111.000	
SOIL WATER AT END OF YEAR	1.106	823357.062	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.870	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 23

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.14	0.00	0.15	0.24	1.56	0.36
	0.56	0.46	1.53	0.00	0.33	1.17
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.136	3.918	5.735	6.957	9.410	10.325
	9.350	9.020	7.209	5.482	3.608	2.987
ACTUAL EVAPOTRANSPIRATION	0.232	0.145	0.108	0.257	1.599	0.358
	0.503	0.251	1.798	0.000	0.253	0.927
LATERAL DRAINAGE COLLECTED	0.0006	0.0004	0.0004	0.0004	0.0003	0.0003
FROM LAYER 2	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002
PERCOLATION/LEAKAGE THROUGH	0.0034	0.0028	0.0029	0.0026	0.0025	0.0022
LAYER 3	0.0022	0.0020	0.0018	0.0018	0.0016	0.0016
LATERAL DRAINAGE COLLECTED	0.0035	0.0028	0.0029	0.0026	0.0025	0.0022
FROM LAYER 4	0.0022	0.0020	0.0018	0.0018	0.0016	0.0016
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 23

	INCHES	CU. FEET	PERCENT
PRECIPITATION	6.50	4839904.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.137	57401324.000	
ACTUAL EVAPOTRANSPIRATION	6.431	4785786.000	98.88
DRAINAGE COLLECTED FROM LAYER 2	0.0038	2793.930	0.06
PERC./LEAKAGE THROUGH LAYER 3	0.027560	20508.723	0.42
AVG. HEAD ON TOP OF LAYER 3	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0276	20514.670	0.42
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.851	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0000		
CHANGE IN WATER STORAGE	0.041	30809.818	0.64
SOIL WATER AT START OF YEAR	1.106	823357.062	
SOIL WATER AT END OF YEAR	1.148	854166.938	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-1.385	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 24

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.00	0.39	0.24	0.85	0.76	0.93
	1.11	3.80	0.94	0.99	0.37	0.74
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	2.955	3.567	5.517	7.143	9.421	11.174
	10.143	9.043	7.073	4.921	3.249	2.747
ACTUAL EVAPOTRANSPIRATION	0.006	0.116	0.246	1.161	0.767	0.841

	1.193	3.378	1.276	0.968	0.307	0.437
LATERAL DRAINAGE COLLECTED	0.0001	0.0000	0.0000	0.0002	0.0084	0.0048
FROM LAYER 2	0.0031	0.0021	0.0625	0.0108	0.0060	0.0037
PERCOLATION/LEAKAGE THROUGH	0.0011	0.0000	0.0000	0.0011	0.0187	0.0135
LAYER 3	0.0103	0.0080	0.0740	0.0300	0.0156	0.0115
LATERAL DRAINAGE COLLECTED	0.0011	0.0000	0.0000	0.0011	0.0186	0.0135
FROM LAYER 4	0.0103	0.0080	0.0738	0.0301	0.0156	0.0115
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 24

	INCHES	CU. FEET	PERCENT
PRECIPITATION	11.11	8270610.000	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	76.954	57264956.000	
ACTUAL EVAPOTRANSPIRATION	10.697	7960221.500	96.25
DRAINAGE COLLECTED FROM LAYER 2	0.1019	75816.578	0.92
PERC./LEAKAGE THROUGH LAYER 3	0.183835	136800.750	1.65
AVG. HEAD ON TOP OF LAYER 3	0.0001		
DRAINAGE COLLECTED FROM LAYER 4	0.1838	136767.531	1.65
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.393	0.00

AVG. HEAD ON TOP OF LAYER 5	0.0001		
CHANGE IN WATER STORAGE	0.131	97803.477	1.18
SOIL WATER AT START OF YEAR	1.148	854166.938	
SOIL WATER AT END OF YEAR	1.279	951970.438	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.200	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 25

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.60	0.00	0.00	1.64	3.26	0.38
	1.46	2.61	0.48	0.62	0.41	0.65
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.186	3.603	5.480	7.477	8.819	10.754
	9.834	8.952	6.741	4.931	3.497	2.553
ACTUAL EVAPOTRANSPIRATION	0.933	0.018	0.000	0.870	2.563	0.638
	1.214	2.856	0.431	0.683	0.188	0.481
LATERAL DRAINAGE COLLECTED	0.0024	0.0016	0.0014	0.0010	0.5407	0.3089
FROM LAYER 2	0.0119	0.0068	0.0037	0.0025	0.0018	0.0014
PERCOLATION/LEAKAGE THROUGH	0.0088	0.0065	0.0061	0.0051	0.1147	0.1457
LAYER 3	0.0336	0.0169	0.0115	0.0091	0.0071	0.0062
LATERAL DRAINAGE COLLECTED	0.0088	0.0065	0.0061	0.0051	0.1122	0.1479
FROM LAYER 4	0.0338	0.0169	0.0115	0.0091	0.0071	0.0062
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.003	0.002
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.007	0.003
	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.001	0.001
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.001	0.001
	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 25

	INCHES	CU. FEET	PERCENT
PRECIPITATION	12.11	9011833.000	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	75.826	56425856.000	
ACTUAL EVAPOTRANSPIRATION	10.877	8094068.500	89.82
DRAINAGE COLLECTED FROM LAYER 2	0.8841	657930.125	7.30
PERC./LEAKAGE THROUGH LAYER 3	0.371318	276316.094	3.07
AVG. HEAD ON TOP OF LAYER 3	0.0005		
DRAINAGE COLLECTED FROM LAYER 4	0.3713	276330.406	3.07
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.847	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0002		
CHANGE IN WATER STORAGE	-0.022	-16500.162	-0.18
SOIL WATER AT START OF YEAR	1.279	951970.438	
SOIL WATER AT END OF YEAR	1.257	935470.250	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	1.663	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 26

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.24	0.34	0.32	0.74	1.60	0.63
	0.04	3.93	1.62	1.98	0.20	0.06
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	2.843	3.907	5.512	7.847	9.266	10.908
	10.143	8.720	7.001	5.202	3.651	2.840
ACTUAL EVAPOTRANSPIRATION	0.622	0.132	0.273	0.996	1.602	0.626
	0.035	3.628	1.668	1.495	0.634	0.084
LATERAL DRAINAGE COLLECTED	0.0011	0.0008	0.0007	0.0006	0.0005	0.0005
FROM LAYER 2	0.0004	0.0022	0.0470	0.0098	0.0055	0.0034
PERCOLATION/LEAKAGE THROUGH	0.0053	0.0042	0.0041	0.0036	0.0033	0.0029
LAYER 3	0.0028	0.0036	0.0683	0.0263	0.0146	0.0109
LATERAL DRAINAGE COLLECTED	0.0053	0.0042	0.0041	0.0036	0.0033	0.0029
FROM LAYER 4	0.0028	0.0034	0.0683	0.0264	0.0146	0.0110
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 26

	INCHES	CU. FEET	PERCENT
PRECIPITATION	11.67	8686634.000	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.839	57924068.000	
ACTUAL EVAPOTRANSPIRATION	11.798	8779387.000	101.07
DRAINAGE COLLECTED FROM LAYER 2	0.0724	53879.363	0.62
PERC./LEAKAGE THROUGH LAYER 3	0.149960	111592.773	1.28
AVG. HEAD ON TOP OF LAYER 3	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.1499	111576.188	1.28
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.852	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0001		
CHANGE IN WATER STORAGE	-0.347	-258213.047	-2.97
SOIL WATER AT START OF YEAR	1.257	935470.250	
SOIL WATER AT END OF YEAR	0.910	677257.188	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	1.608	0.00

MONTHLY TOTALS (IN INCHES) FOR YEAR 27

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.00	0.37	0.40	0.13	0.08	2.21
	2.04	5.62	3.65	0.00	0.35	0.00
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000

POTENTIAL EVAPOTRANSPIRATION	3.564	3.355	5.126	7.983	9.217	10.455
	9.895	8.764	6.872	5.262	3.593	3.391
ACTUAL EVAPOTRANSPIRATION	0.000	0.177	0.209	0.511	0.079	2.091
	2.165	5.114	1.972	0.463	0.096	0.220
LATERAL DRAINAGE COLLECTED	0.0023	0.0015	0.0013	0.0010	0.0008	0.0009
FROM LAYER 2	0.0008	0.0074	0.2943	0.5486	0.0463	0.0133
PERCOLATION/LEAKAGE THROUGH	0.0085	0.0063	0.0059	0.0049	0.0045	0.0044
LAYER 3	0.0045	0.0158	0.0856	0.2350	0.0712	0.0383
LATERAL DRAINAGE COLLECTED	0.0085	0.0063	0.0059	0.0049	0.0045	0.0044
FROM LAYER 4	0.0045	0.0155	0.0831	0.2372	0.0715	0.0384
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.002	0.003	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.006	0.003	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.001	0.001	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.001	0.001	0.000	0.000

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ANNUAL TOTALS FOR YEAR 27

	INCHES	CU. FEET	PERCENT
PRECIPITATION	14.84	11042129.000	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.476	57653748.000	
ACTUAL EVAPOTRANSPIRATION	13.098	9747153.000	88.27
DRAINAGE COLLECTED FROM LAYER 2	0.9185	683492.188	6.19
PERC./LEAKAGE THROUGH LAYER 3	0.484872	360817.781	3.27
AVG. HEAD ON TOP OF LAYER 3	0.0005		

DRAINAGE COLLECTED FROM LAYER 4	0.4848	360755.719	3.27
PERC./LEAKAGE THROUGH LAYER 6	0.000003	1.876	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0002		
CHANGE IN WATER STORAGE	0.337	250726.391	2.27
SOIL WATER AT START OF YEAR	0.910	677257.188	
SOIL WATER AT END OF YEAR	1.247	927983.562	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	0.843	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 28

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.25	0.67	0.20	0.41	0.65	1.56
	1.65	5.77	1.71	0.31	0.18	0.15
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.094	3.814	4.753	7.165	8.992	10.264
	10.115	8.397	6.804	4.836	3.252	2.597
ACTUAL EVAPOTRANSPIRATION	0.114	0.817	0.193	0.301	0.990	1.494
	1.714	4.204	2.656	0.224	0.272	0.235
LATERAL DRAINAGE COLLECTED	0.0096	0.0057	0.0045	0.0017	0.0062	0.0048
FROM LAYER 2	0.0031	0.0021	0.2203	0.0171	0.0080	0.0044
PERCOLATION/LEAKAGE THROUGH	0.0212	0.0148	0.0132	0.0053	0.0143	0.0135
LAYER 3	0.0103	0.0081	0.1223	0.0429	0.0185	0.0130
LATERAL DRAINAGE COLLECTED	0.0212	0.0149	0.0132	0.0054	0.0142	0.0135
FROM LAYER 4	0.0103	0.0081	0.1220	0.0432	0.0186	0.0130
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 3	0.000	0.000	0.001	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 3	0.000	0.000	0.002	0.000	0.000	0.000
AVERAGE DAILY HEAD ON TOP OF LAYER 5	0.000	0.000	0.001	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 5	0.000	0.000	0.001	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 28

	INCHES	CU. FEET	PERCENT
PRECIPITATION	13.53	10066535.000	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	74.082	55128480.000	
ACTUAL EVAPOTRANSPIRATION	13.215	9833825.000	97.69
DRAINAGE COLLECTED FROM LAYER 2	0.2875	213976.828	2.13
PERC./LEAKAGE THROUGH LAYER 3	0.297491	221377.609	2.20
AVG. HEAD ON TOP OF LAYER 3	0.0002		
DRAINAGE COLLECTED FROM LAYER 4	0.2976	221430.312	2.20
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.827	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0002		
CHANGE IN WATER STORAGE	-0.272	-202698.312	-2.01
SOIL WATER AT START OF YEAR	1.247	927983.562	
SOIL WATER AT END OF YEAR	0.975	725285.250	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00

SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-1.264	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 29

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.00	0.11	0.30	0.59	1.24	0.04
	2.54	0.20	0.97	1.69	0.60	0.35
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	2.999	3.567	5.781	6.985	9.458	10.916
	9.716	9.234	7.341	4.927	3.097	2.702
ACTUAL EVAPOTRANSPIRATION	0.004	0.108	0.040	0.696	1.282	0.226
	2.478	0.258	0.972	1.361	0.360	0.321
LATERAL DRAINAGE COLLECTED	0.0028	0.0018	0.0015	0.0011	0.0009	0.0008
FROM LAYER 2	0.0007	0.0006	0.0005	0.0004	0.0004	0.0003
PERCOLATION/LEAKAGE THROUGH	0.0097	0.0071	0.0065	0.0054	0.0048	0.0041
LAYER 3	0.0038	0.0034	0.0030	0.0029	0.0026	0.0024
LATERAL DRAINAGE COLLECTED	0.0097	0.0071	0.0065	0.0054	0.0048	0.0041
FROM LAYER 4	0.0038	0.0034	0.0030	0.0029	0.0026	0.0024
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 29

	INCHES	CU. FEET	PERCENT
PRECIPITATION	8.63	6424886.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	76.722	57092436.000	
ACTUAL EVAPOTRANSPIRATION	8.107	6032746.500	93.90
DRAINAGE COLLECTED FROM LAYER 2	0.0118	8763.749	0.14
PERC./LEAKAGE THROUGH LAYER 3	0.055713	41458.586	0.65
AVG. HEAD ON TOP OF LAYER 3	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0558	41489.934	0.65
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.854	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0000		
CHANGE IN WATER STORAGE	0.459	341883.594	5.32
SOIL WATER AT START OF YEAR	0.975	725285.250	
SOIL WATER AT END OF YEAR	1.434	1067168.875	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	1.281	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 30

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.56	0.24	0.09	0.51	0.25	1.33
	0.77	2.95	0.54	1.60	0.00	0.00

RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.023	3.409	5.750	7.794	9.296	10.082
	9.647	8.555	6.884	5.170	3.340	3.080
ACTUAL EVAPOTRANSPIRATION	0.856	0.189	0.152	0.105	0.865	1.327
	0.773	2.918	0.571	1.598	0.000	0.004
LATERAL DRAINAGE COLLECTED	0.0003	0.0002	0.0001	0.0001	0.0009	0.0024
FROM LAYER 2	0.0018	0.0013	0.0010	0.0009	0.0007	0.0006
PERCOLATION/LEAKAGE THROUGH	0.0023	0.0019	0.0012	0.0005	0.0029	0.0087
LAYER 3	0.0073	0.0061	0.0050	0.0046	0.0039	0.0036
LATERAL DRAINAGE COLLECTED	0.0023	0.0019	0.0012	0.0005	0.0028	0.0087
FROM LAYER 4	0.0073	0.0061	0.0050	0.0046	0.0039	0.0036
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 3	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 5	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 30

	INCHES	CU. FEET	PERCENT
PRECIPITATION	8.83	6571371.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	76.031	56578652.000	
ACTUAL EVAPOTRANSPIRATION	9.357	6962775.500	105.96
DRAINAGE COLLECTED FROM LAYER 2	0.0103	7692.512	0.12

PERC./LEAKAGE THROUGH LAYER 3	0.047829	35591.785	0.54
AVG. HEAD ON TOP OF LAYER 3	0.0000		
DRAINAGE COLLECTED FROM LAYER 4	0.0478	35586.055	0.54
PERC./LEAKAGE THROUGH LAYER 6	0.000002	1.584	0.00
AVG. HEAD ON TOP OF LAYER 5	0.0000		
CHANGE IN WATER STORAGE	-0.584	-434681.344	-6.61
SOIL WATER AT START OF YEAR	1.434	1067168.875	
SOIL WATER AT END OF YEAR	0.850	632487.500	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-2.570	0.00

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FINAL WATER STORAGE AT END OF YEAR 30

LAYER	(INCHES)	(VOL/VOL)
1	0.6639	0.0277
2	0.0020	0.0100
3	0.0000	0.0000
4	0.0020	0.0101
5	0.0000	0.0000
6	0.1800	0.7500

TOTAL WATER IN LAYERS	0.848
SNOW WATER	0.000
INTERCEPTION WATER	0.000
TOTAL FINAL WATER	0.848

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 30

	(INCHES)	(CU. FT.)
PRECIPITATION	2.28	1693380.625
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 2	0.20725	154223.70312
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.028545	21242.11133
AVERAGE HEAD ON TOP OF LAYER 3	0.039	
MAXIMUM HEAD ON TOP OF LAYER 3	0.077	
LOCATION OF MAXIMUM HEAD IN LAYER 2 (DISTANCE FROM DRAIN)	5.5 FEET	
DRAINAGE COLLECTED FROM LAYER 4	0.02598	19334.21289
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.000000	0.00677
AVERAGE HEAD ON TOP OF LAYER 5	0.005	
MAXIMUM HEAD ON TOP OF LAYER 5	0.020	
LOCATION OF MAXIMUM HEAD IN LAYER 4 (DISTANCE FROM DRAIN)	0.0 FEET	
SNOW WATER	0.61	457515.1562
MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.1499	
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.0180	

*** Maximum heads are computed using McEnroe's equations. ***

Reference: Maximum Saturated Depth over Landfill Liner
by Bruce M. McEnroe, University of Kansas
ASCE Journal of Environmental Engineering
Vol. 119, No. 2, March 1993, pp. 262-270.

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 30

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC

PRECIPITATION						
TOTALS	0.25	0.28	0.23	0.38	0.73	0.79
	1.34	2.19	1.44	1.10	0.44	0.36
STD. DEVIATIONS	0.24	0.20	0.22	0.41	0.78	0.63
	0.71	1.59	0.89	1.01	0.54	0.30
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION						
TOTALS	3.114	3.578	5.474	7.544	9.404	10.503
	9.984	8.917	6.946	5.157	3.476	2.772
STD. DEVIATIONS	0.188	0.232	0.300	0.322	0.283	0.281
	0.252	0.288	0.254	0.270	0.202	0.208
ACTUAL EVAPOTRANSPIRATION						
TOTALS	0.296	0.210	0.231	0.469	0.788	0.776
	1.363	1.982	1.322	0.875	0.449	0.319
STD. DEVIATIONS	0.270	0.147	0.196	0.307	0.656	0.592
	0.768	1.362	0.724	0.631	0.424	0.296
LATERAL DRAINAGE COLLECTED FROM LAYER 2						
TOTALS	0.0064	0.0044	0.0035	0.0084	0.0262	0.0136
	0.0027	0.0358	0.0304	0.0404	0.0549	0.0125
STD. DEVIATIONS	0.0063	0.0044	0.0035	0.0340	0.0997	0.0559
	0.0026	0.1836	0.0672	0.1022	0.1191	0.0179
PERCOLATION/LEAKAGE THROUGH LAYER 3						
TOTALS	0.0173	0.0112	0.0097	0.0096	0.0176	0.0147
	0.0087	0.0163	0.0247	0.0332	0.0442	0.0251
STD. DEVIATIONS	0.0148	0.0088	0.0072	0.0170	0.0268	0.0261
	0.0066	0.0474	0.0333	0.0481	0.0586	0.0263
LATERAL DRAINAGE COLLECTED FROM LAYER 4						
TOTALS	0.0173	0.0112	0.0097	0.0096	0.0175	0.0148
	0.0087	0.0162	0.0245	0.0332	0.0443	0.0252
STD. DEVIATIONS	0.0149	0.0088	0.0072	0.0169	0.0265	0.0265
	0.0067	0.0473	0.0331	0.0485	0.0586	0.0264
PERCOLATION/LEAKAGE THROUGH LAYER 6						
TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 3

AVERAGES	0.0000	0.0000	0.0000	0.0001	0.0002	0.0001
	0.0000	0.0002	0.0002	0.0003	0.0003	0.0001
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0002	0.0006	0.0003
	0.0000	0.0011	0.0004	0.0006	0.0007	0.0001

DAILY AVERAGE HEAD ON TOP OF LAYER 5

AVERAGES	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
	0.0001	0.0001	0.0002	0.0002	0.0003	0.0002
STD. DEVIATIONS	0.0001	0.0001	0.0000	0.0001	0.0002	0.0002
	0.0000	0.0003	0.0002	0.0003	0.0004	0.0002

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 30

	INCHES		CU. FEET	PERCENT
PRECIPITATION	9.54	(2.205)	7102531.5	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
POTENTIAL EVAPOTRANSPIRATION	76.870	(0.9065)	57202740.00	
ACTUAL EVAPOTRANSPIRATION	9.079	(2.0715)	6756122.00	95.123
LATERAL DRAINAGE COLLECTED FROM LAYER 2	0.23905	(0.30208)	177892.234	2.50463
PERCOLATION/LEAKAGE THROUGH LAYER 3	0.23217	(0.16515)	172768.219	2.43249
AVERAGE HEAD ON TOP OF LAYER 3	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 4	0.23217	(0.16515)	172767.922	2.43248
PERCOLATION/LEAKAGE THROUGH LAYER 6	0.00000	(0.00000)	1.798	0.00003
AVERAGE HEAD ON TOP	0.000	(0.000)		

OF LAYER 5

CHANGE IN WATER STORAGE -0.006 (0.3252) -4252.69 -0.060

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 **                                                                          **
 **                                                                          **
 **              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
 **                                                                          **
 **              HELP Version 3.95 D          (10 August 2012)              **
 **                             developed at                                 **
 **        Institute of Soil Science, University of Hamburg, Germany         **
 **                                based on                                  **
 **              US HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)               **
 **                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
 **                    USAE WATERWAYS EXPERIMENT STATION                     **
 **                FOR USEPA RISK REDUCTION ENGINEERING LABORATORY           **
 **                                                                          **
 **                                                                          **
 ******************************************************************************
 ******************************************************************************


 TIME:  11.14     DATE:  18.04.2019


 PRECIPITATION DATA FILE:       N:\Projects\2018\35187378\Working Files\DRAFTS (Proposal-Reports-
Communications)\McCloy Permit Narrative\Volume 1\App J - Design and Construction Plan\Attachment D
- HELP\Precipitation Data Files.d4
 TEMPERATURE DATA FILE:         N:\Projects\2018\35187378\Working Files\DRAFTS (Proposal-Reports-
Communications)\McCloy Permit Narrative\Volume 1\App J - Design and Construction Plan\Attachment D
- HELP\Temperature Data Files.d7
 SOLAR RADIATION DATA FILE:     N:\Projects\2018\35187378\Working Files\DRAFTS (Proposal-Reports-
Communications)\McCloy Permit Narrative\Volume 1\App J - Design and Construction Plan\Attachment D
- HELP\Solar Radiation Data Files.d13
 EVAPOTRANSPIRATION DATA F. 1: N:\Projects\2018\35187378\Working Files\DRAFTS (Proposal-Reports-
Communications)\McCloy Permit Narrative\Volume 1\App J - Design and Construction Plan\Attachment D
- HELP\Evapotranspiration Parameters Files.d11
 SOIL AND DESIGN DATA FILE  1: N:\Projects\2018\35187378\Working Files\DRAFTS (Proposal-Reports-
Communications)\McCloy Permit Narrative\Volume 1\App J - Design and Construction Plan\Attachment D
- HELP\Final Cover System - Soil and Design Data Files R3.d10
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Communications)\McCloy Permit Narrative\Volume 1\App J - Design and Construction Plan\Attachment D
- HELP\Final Cover System R3 - 30 years.out
 DAILY OUTPUT DATA FILE:        N:\Projects\2018\35187378\Working Files\DRAFTS (Proposal-Reports-
Communications)\McCloy Permit Narrative\Volume 1\App J - Design and Construction Plan\Attachment D
- HELP\Final Cover System R3 - 30 years.DAY
 MONTHLY OUTPUT DATA FILE:      N:\Projects\2018\35187378\Working Files\DRAFTS (Proposal-Reports-
Communications)\McCloy Permit Narrative\Volume 1\App J - Design and Construction Plan\Attachment D
- HELP\Final Cover System R3 - 30 years.MON
 YEARLY OUTPUT DATA FILE:       N:\Projects\2018\35187378\Working Files\DRAFTS (Proposal-Reports-
Communications)\McCloy Permit Narrative\Volume 1\App J - Design and Construction Plan\Attachment D
- HELP\Final Cover System R3 - 30 years.YR

 COLUMNS OF DAILY OUTPUT DATA FILE:

      1    DATE (yyyymmdd, years 2101 to 2200 from weather generator)
      2    AIR TEMPERATURE  (* INDICATES FREEZING TEMPERATURES)
      3    FROZEN SOIL STATE (* INDICATES FROZEN SOIL)
      4    PRECIPITATION (INCH)
      5    RUNOFF (INCH)
      6    POTENTIAL EVAPOTRANSPIRATION (INCH)
      7    ACTUAL EVAPOTRANSPIRATION (INCH)
      8    WATER CONTENT OF THE EVAPORATIVE ZONE (INCH)
      9    HEAD  #1: AVERAGE HEAD ON TOP OF LAYER  4 (INCH)
     10    DRAIN #1: LATERAL DRAINAGE FROM LAYER  3 (INCH)
     11    LEAK  #1: PERCOLATION/LEAKAGE THROUGH LAYER  5 (INCH)
     12    HEAD  #2: AVERAGE HEAD ON TOP OF LAYER 10 (INCH)
     13    DRAIN #2: LATERAL DRAINAGE FROM LAYER  9 (INCH)
     14    LEAK  #2: PERCOLATION/LEAKAGE THROUGH LAYER 10 (INCH)
     15    HEAD  #3: AVERAGE HEAD ON TOP OF LAYER 12 (INCH)
     16    DRAIN #3: LATERAL DRAINAGE FROM LAYER 11 (INCH)
     17    LEAK  #3: PERCOLATION/LEAKAGE THROUGH LAYER 13 (INCH)
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COLUMNS OF MONTHLY OUTPUT DATA FILE:

1 DATE OF ULTIMO (yyyymmdd, years 2101 to 2200 from weather generator)
2 PRECIPITATION (INCH)
3 RUNOFF (INCH)
4 POTENTIAL EVAPOTRANSPIRATION (INCH)
5 ACTUAL EVAPOTRANSPIRATION (INCH)
6 HEAD #1: AVERAGE HEAD ON TOP OF LAYER 4 (INCH)
7 DRAIN #1: LATERAL DRAINAGE FROM LAYER 3 (INCH)
8 LEAK #1: PERCOLATION/LEAKAGE THROUGH LAYER 5 (INCH)
9 HEAD #2: AVERAGE HEAD ON TOP OF LAYER 10 (INCH)
10 DRAIN #2: LATERAL DRAINAGE FROM LAYER 9 (INCH)
11 LEAK #2: PERCOLATION/LEAKAGE THROUGH LAYER 10 (INCH)
12 HEAD #3: AVERAGE HEAD ON TOP OF LAYER 12 (INCH)
13 DRAIN #3: LATERAL DRAINAGE FROM LAYER 11 (INCH)
14 LEAK #3: PERCOLATION/LEAKAGE THROUGH LAYER 13 (INCH)

COLUMNS OF YEARLY OUTPUT DATA FILE:

1 DATE OF ULTIMO (yyyy1231, years 2101 to 2200 from weather generator)
2 PRECIPITATION (INCH)
3 RUNOFF (INCH)
4 POTENTIAL EVAPOTRANSPIRATION (INCH)
5 ACTUAL EVAPOTRANSPIRATION (INCH)
6 DRAIN #1: LATERAL DRAINAGE FROM LAYER 3 (INCH)
7 LEAK #1: PERCOLATION/LEAKAGE THROUGH LAYER 5 (INCH)
8 DRAIN #2: LATERAL DRAINAGE FROM LAYER 9 (INCH)
9 LEAK #2: PERCOLATION/LEAKAGE THROUGH LAYER 10 (INCH)
10 DRAIN #3: LATERAL DRAINAGE FROM LAYER 11 (INCH)
11 LEAK #3: PERCOLATION/LEAKAGE THROUGH LAYER 13 (INCH)
12 CHANGE IN TOTAL WATER STORAGE (INCH)
13 CHANGE IN SOIL WATER STORAGE (INCH)
14 CHANGE IN INTERCEPTION WATER STORAGE (INCH)
15 CHANGE IN SNOW WATER STORAGE (INCH)
16 ANNUAL WATER BUDGET BALANCE (INCH)

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TITLE: Final Cover System

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WEATHER DATA SOURCES

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY PRECIPITATION (MM)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
6.1	7.1	6.9	9.4	19.6	23.1
35.1	55.1	43.7	25.1	8.4	6.9

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES CELSIUS)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
5.2	7.7	11.6	16.6	21.3	26.1
27.4	26.2	22.4	16.5	9.5	5.8

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR ROSWELL NEW MEXICO
AND STATION LATITUDE = 33.24 DEGREES

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LAYER DATA 1

VALID FOR 30 YEARS

NOTE: INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.

LAYER 1

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 1

THICKNESS	=	12.00	INCHES
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0185	VOL/VOL
EFFECTIVE SAT. HYD. CONDUCT.	=	0.1000E-01	CM/SEC

NOTE: SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY 2.01
FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.

LAYER 2

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 1

THICKNESS	=	18.00	INCHES
POROSITY	=	0.4170	VOL/VOL
FIELD CAPACITY	=	0.0450	VOL/VOL
WILTING POINT	=	0.0180	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0598	VOL/VOL
EFFECTIVE SAT. HYD. CONDUCT.	=	0.1000E-01	CM/SEC

LAYER 3

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 20

THICKNESS	=	0.20	INCHES
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0109	VOL/VOL
EFFECTIVE SAT. HYD. CONDUCT.	=	10.00	CM/SEC
SLOPE	=	4.00	PERCENT
DRAINAGE LENGTH	=	400.0	FEET

LAYER 4

TYPE 4 - FLEXIBLE MEMBRANE LINER
MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.06 INCHES
EFFECTIVE SAT. HYD. CONDUCT.	=	0.2000E-12 CM/SEC
FML PINHOLE DENSITY	=	4.00 HOLES/ACRE
FML INSTALLATION DEFECTS	=	4.00 HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD

LAYER 5

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 17

THICKNESS	=	0.24 INCHES
POROSITY	=	0.7500 VOL/VOL
FIELD CAPACITY	=	0.7470 VOL/VOL
WILTING POINT	=	0.4000 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.7500 VOL/VOL
EFFECTIVE SAT. HYD. CONDUCT.	=	0.3000E-08 CM/SEC

LAYER 6

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 7

THICKNESS	=	12.00 INCHES
POROSITY	=	0.4730 VOL/VOL
FIELD CAPACITY	=	0.2220 VOL/VOL
WILTING POINT	=	0.1040 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2220 VOL/VOL
EFFECTIVE SAT. HYD. CONDUCT.	=	0.5200E-03 CM/SEC

LAYER 7

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 18

THICKNESS	=	2724.00 INCHES
POROSITY	=	0.6710 VOL/VOL
FIELD CAPACITY	=	0.2920 VOL/VOL
WILTING POINT	=	0.0770 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2920 VOL/VOL
EFFECTIVE SAT. HYD. CONDUCT.	=	0.1000E-02 CM/SEC

LAYER 8

TYPE 1 - VERTICAL PERCOLATION LAYER
MATERIAL TEXTURE NUMBER 7

THICKNESS	=	24.00 INCHES
POROSITY	=	0.4730 VOL/VOL
FIELD CAPACITY	=	0.2220 VOL/VOL
WILTING POINT	=	0.1040 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2220 VOL/VOL
EFFECTIVE SAT. HYD. CONDUCT.	=	0.5200E-03 CM/SEC

LAYER 9

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 0

THICKNESS	=	0.20	INCHES
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. CONDUCT.	=	1.000	CM/SEC
SLOPE	=	3.00	PERCENT
DRAINAGE LENGTH	=	320.0	FEET

LAYER 10

TYPE 4 - FLEXIBLE MEMBRANE LINER
MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.06	INCHES
EFFECTIVE SAT. HYD. CONDUCT.	=	0.2000E-12	CM/SEC
FML PINHOLE DENSITY	=	4.00	HOLES/ACRE
FML INSTALLATION DEFECTS	=	4.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 11

TYPE 2 - LATERAL DRAINAGE LAYER
MATERIAL TEXTURE NUMBER 0

THICKNESS	=	0.20	INCHES
POROSITY	=	0.8500	VOL/VOL
FIELD CAPACITY	=	0.0100	VOL/VOL
WILTING POINT	=	0.0050	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0100	VOL/VOL
EFFECTIVE SAT. HYD. CONDUCT.	=	1.000	CM/SEC
SLOPE	=	3.00	PERCENT
DRAINAGE LENGTH	=	320.0	FEET

LAYER 12

TYPE 4 - FLEXIBLE MEMBRANE LINER
MATERIAL TEXTURE NUMBER 35

THICKNESS	=	0.06	INCHES
EFFECTIVE SAT. HYD. CONDUCT.	=	0.2000E-12	CM/SEC
FML PINHOLE DENSITY	=	4.00	HOLES/ACRE
FML INSTALLATION DEFECTS	=	4.00	HOLES/ACRE
FML PLACEMENT QUALITY	=	3 - GOOD	

LAYER 13

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 17

THICKNESS	=	0.24	INCHES
POROSITY	=	0.7500	VOL/VOL
FIELD CAPACITY	=	0.7470	VOL/VOL
WILTING POINT	=	0.4000	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.7500	VOL/VOL
EFFECTIVE SAT. HYD. CONDUCT.	=	0.3000E-08	CM/SEC

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GENERAL DESIGN AND EVAPORATIVE ZONE DATA 1

VALID FOR 30 YEARS

NOTE: SCS RUNOFF CURVE NUMBER WAS USER-SPECIFIED.

SCS RUNOFF CURVE NUMBER	=	60.00	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	205.000	ACRES
EVAPORATIVE ZONE DEPTH	=	18.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	0.423	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	7.506	INCHES
FIELD CAPACITY OF EVAPORATIVE ZONE	=	0.810	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	0.324	INCHES
SOIL EVAPORATION ZONE DEPTH	=	10.367	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL INTERCEPTION WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	805.065	INCHES
TOTAL INITIAL WATER	=	805.065	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

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EVAPOTRANSPIRATION DATA 1

VALID FOR 30 YEARS

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
ROSWELL NEW MEXICO

STATION LATITUDE	=	33.24 DEGREES
MAXIMUM LEAF AREA INDEX	=	1.20
START OF GROWING SEASON (JULIAN DATE)	=	76
END OF GROWING SEASON (JULIAN DATE)	=	310
EVAPORATIVE ZONE DEPTH	=	18.0 INCHES
AVERAGE ANNUAL WIND SPEED	=	8.70 MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	49.0 %
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	40.0 %
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	53.0 %
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	52.0 %

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MONTHLY TOTALS (IN INCHES) FOR YEAR 1

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.00	0.19	0.02	0.56	0.03	0.00
	1.03	2.56	2.89	0.43	0.88	0.11
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.350	3.824	5.268	7.266	9.414	10.659
	10.220	8.389	6.750	5.349	3.806	2.939
ACTUAL EVAPOTRANSPIRATION	0.007	0.165	0.049	0.404	0.267	0.004
	0.714	2.864	2.453	0.401	0.955	0.140
LATERAL DRAINAGE COLLECTED	0.0309	0.0215	0.0184	0.0139	0.0153	0.0127
FROM LAYER 3	0.0114	0.0101	0.0061	0.1502	0.0628	0.0406

PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.001	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 1

	INCHES	CU. FEET	PERCENT
PRECIPITATION	8.71	6480550.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.235	57474084.000	
ACTUAL EVAPOTRANSPIRATION	8.423	6267770.000	96.72
DRAINAGE COLLECTED FROM LAYER 3	0.3938	293073.406	4.52
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.803	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0002		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.803	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		

DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.041	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.762	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	-0.108	-80301.344	-1.24
SOIL WATER AT START OF YEAR	805.067	599090304.000	
SOIL WATER AT END OF YEAR	804.959	599009984.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	7.100	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 2

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.44	0.18	0.44	0.33	1.50	1.82
	1.35	1.69	1.43	0.00	0.33	0.86
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	2.850	3.437	5.244	7.830	8.797	10.157
	10.362	9.115	7.157	5.372	3.544	2.520
ACTUAL EVAPOTRANSPIRATION	0.438	0.117	0.419	0.254	1.522	1.957
	1.346	1.678	0.913	0.530	0.235	0.906
LATERAL DRAINAGE COLLECTED	0.0289	0.0204	0.0184	0.0148	0.0131	0.0111
FROM LAYER 3	0.0101	0.0090	0.0079	0.0074	0.0066	0.0063
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 2

	INCHES	CU. FEET	PERCENT
PRECIPITATION	10.37	7713964.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	76.386	56842628.000	
ACTUAL EVAPOTRANSPIRATION	10.315	7675741.500	99.50
DRAINAGE COLLECTED FROM LAYER 3	0.1541	114701.461	1.49
PERC./LEAKAGE THROUGH LAYER 5	0.000003	1.862	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0001		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000003	1.862	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.022	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.839	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	-0.103	-76486.117	-0.99
SOIL WATER AT START OF YEAR	804.959	599009984.000	
SOIL WATER AT END OF YEAR	804.856	598933504.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00

ANNUAL WATER BUDGET BALANCE	0.0000	5.988	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 3

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.30	0.14	0.64	0.13	0.70	0.35
	2.85	0.96	1.48	0.03	2.59	0.16
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.284	3.810	4.902	7.776	9.460	10.418
	10.211	8.859	6.420	5.395	3.401	2.526
ACTUAL EVAPOTRANSPIRATION	0.216	0.236	0.417	0.288	0.809	0.330
	2.875	0.961	1.395	0.105	1.855	0.324
LATERAL DRAINAGE COLLECTED	0.0058	0.0049	0.0051	0.0046	0.0045	0.0041
FROM LAYER 3	0.0040	0.0038	0.0035	0.0035	0.0032	0.0006
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 3

	INCHES	CU. FEET	PERCENT
PRECIPITATION	10.34	7693456.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	76.462	56899552.000	
ACTUAL EVAPOTRANSPIRATION	9.810	7300131.500	94.89
DRAINAGE COLLECTED FROM LAYER 3	0.0479	35611.625	0.46
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.727	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0000		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.727	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.021	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.707	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	0.481	357767.906	4.65
SOIL WATER AT START OF YEAR	804.856	598933504.000	
SOIL WATER AT END OF YEAR	805.337	599291264.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	-0.0001	-55.690	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 4

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.00	0.11	0.06	0.30	0.11	0.03
	2.06	3.83	0.12	2.00	0.06	0.58
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000

POTENTIAL EVAPOTRANSPIRATION	3.065	3.855	4.999	7.463	10.055	10.482
	10.172	8.769	6.878	5.112	3.598	2.608
ACTUAL EVAPOTRANSPIRATION	0.037	0.110	0.022	0.138	0.531	0.028
	2.059	3.835	0.122	0.913	0.149	0.220
LATERAL DRAINAGE COLLECTED	0.0025	0.0196	0.0270	0.0231	0.0259	0.0349
FROM LAYER 3	0.0266	0.0208	0.0165	0.0105	0.2649	0.1491
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.002	0.001
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.001	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 4

	INCHES	CU. FEET	PERCENT
PRECIPITATION	9.27	6896574.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.057	57342128.000	
ACTUAL EVAPOTRANSPIRATION	8.164	6075095.500	88.09
DRAINAGE COLLECTED FROM LAYER 3	0.6216	462532.125	6.71
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.701	0.00

AVG. HEAD ON TOP OF LAYER 4	0.0003		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.701	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.058	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.643	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	0.482	358903.406	5.20
SOIL WATER AT START OF YEAR	805.337	599291264.000	
SOIL WATER AT END OF YEAR	805.819	599650176.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0001	41.946	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 5

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.13	0.21	0.34	0.00	1.59	0.95
	1.04	0.52	2.30	1.52	0.33	0.77
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.106	3.508	5.293	6.987	9.153	10.302
	10.275	8.926	6.446	5.013	3.816	2.900
ACTUAL EVAPOTRANSPIRATION	0.241	0.210	0.226	0.362	1.854	0.945
	1.034	0.507	1.891	1.381	0.838	0.704
LATERAL DRAINAGE COLLECTED	0.0801	0.0490	0.0408	0.0327	0.0316	0.0306
FROM LAYER 3	0.0240	0.0192	0.0154	0.0136	0.0114	0.0104
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 5

	INCHES	CU. FEET	PERCENT
PRECIPITATION	9.71	7227630.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	75.725	56350532.000	
ACTUAL EVAPOTRANSPIRATION	10.193	7585141.500	104.95
DRAINAGE COLLECTED FROM LAYER 3	0.3586	266878.000	3.69
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.856	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0002		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.856	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.041	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.816	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	-0.839	-624424.688	-8.64
SOIL WATER AT START OF YEAR	805.819	599650176.000	
SOIL WATER AT END OF YEAR	804.980	599025728.000	

INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	33.824	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 6

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.26	0.65	0.02	0.28	0.94	0.04
	1.14	0.85	0.78	0.32	0.51	0.35
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	2.845	3.739	5.573	7.727	9.854	10.278
	9.784	9.218	6.949	4.806	3.620	2.705
ACTUAL EVAPOTRANSPIRATION	0.371	0.290	0.241	0.444	0.810	0.171
	1.138	0.850	0.776	0.319	0.508	0.350
LATERAL DRAINAGE COLLECTED	0.0093	0.0076	0.0076	0.0068	0.0064	0.0058
FROM LAYER 3	0.0056	0.0052	0.0047	0.0046	0.0042	0.0041
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 6

	INCHES	CU. FEET	PERCENT
PRECIPITATION	6.13	4561581.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.098	57372588.000	
ACTUAL EVAPOTRANSPIRATION	6.267	4663467.000	102.23
DRAINAGE COLLECTED FROM LAYER 3	0.0717	53363.488	1.17
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.855	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0000		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.854	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.019	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.834	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	-0.209	-155243.203	-3.40
SOIL WATER AT START OF YEAR	804.980	599025728.000	
SOIL WATER AT END OF YEAR	804.771	598870528.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-7.582	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 7

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC

PRECIPITATION	0.19	0.38	0.13	0.33	0.94	0.83
	1.59	2.01	0.40	3.09	0.93	0.03
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.139	3.381	5.498	7.468	9.419	10.444
	9.889	9.308	6.934	5.006	3.358	2.952
ACTUAL EVAPOTRANSPIRATION	0.184	0.326	0.192	0.328	0.748	0.681
	1.936	1.544	0.847	2.346	0.966	0.106
LATERAL DRAINAGE COLLECTED	0.0039	0.0033	0.0035	0.0033	0.0032	0.0030
FROM LAYER 3	0.0030	0.0028	0.0026	0.0015	0.0000	0.0119
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 7

	INCHES	CU. FEET	PERCENT
PRECIPITATION	10.85	8074321.500	100.00
RUNOFF	0.000	0.000	0.00

POTENTIAL EVAPOTRANSPIRATION	76.795	57147164.000	
ACTUAL EVAPOTRANSPIRATION	10.203	7592584.000	94.03
DRAINAGE COLLECTED FROM LAYER 3	0.0421	31296.709	0.39
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.577	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0000		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.578	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.031	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.547	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	0.605	450468.750	5.58
SOIL WATER AT START OF YEAR	804.771	598870528.000	
SOIL WATER AT END OF YEAR	805.377	599321024.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-29.934	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 8

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.06	0.53	0.10	1.50	0.19	0.13
	0.40	2.63	0.76	2.67	0.12	0.13
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.497	3.978	5.469	7.746	9.495	10.721
	10.188	8.652	6.742	5.038	3.478	2.493
ACTUAL EVAPOTRANSPIRATION	0.059	0.269	0.193	1.289	0.290	0.017
	0.239	2.607	0.818	1.166	0.870	0.039
LATERAL DRAINAGE COLLECTED	0.0418	0.0406	0.0387	0.0994	0.3242	0.0835
FROM LAYER 3	0.0486	0.0292	0.1089	0.0567	0.0840	0.2157
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.001	0.002	0.000
TOP OF LAYER 4	0.000	0.000	0.001	0.000	0.000	0.001
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.001	0.001	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.001	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

ANNUAL TOTALS FOR YEAR 8

	INCHES	CU. FEET	PERCENT
PRECIPITATION	9.22	6864342.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.498	57670412.000	
ACTUAL EVAPOTRANSPIRATION	7.858	5847321.500	85.18
DRAINAGE COLLECTED FROM LAYER 3	1.1713	871637.562	12.70
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.826	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0006		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.826	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.088	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.737	0.00

AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	0.195	145341.797	2.12
SOIL WATER AT START OF YEAR	805.377	599321024.000	
SOIL WATER AT END OF YEAR	805.572	599466304.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0001	40.186	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 9

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.20	0.50	0.62	0.08	0.00	1.12
	1.22	1.68	2.19	0.02	1.59	0.83
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.185	3.437	5.188	7.675	9.527	10.264
	9.943	8.982	7.100	5.600	3.385	2.488
ACTUAL EVAPOTRANSPIRATION	0.212	0.181	0.596	0.611	0.129	1.118
	1.220	0.822	2.691	0.016	0.871	1.288
LATERAL DRAINAGE COLLECTED	0.1026	0.0585	0.0469	0.0336	0.0438	0.0306
FROM LAYER 3	0.0240	0.0192	0.0632	0.1316	0.0590	0.0389
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.001	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.001	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000

HEAD ON TOP OF LAYER 4	0.000	0.000	0.001	0.000	0.000	0.000
AVERAGE DAILY HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 9

	INCHES	CU. FEET	PERCENT
PRECIPITATION	10.06	7482516.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	76.773	57130508.000	
ACTUAL EVAPOTRANSPIRATION	9.755	7259139.500	97.01
DRAINAGE COLLECTED FROM LAYER 3	0.6517	484986.281	6.48
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.836	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0003		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.835	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.056	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.780	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	-0.352	-261615.234	-3.50
SOIL WATER AT START OF YEAR	805.572	599466304.000	
SOIL WATER AT END OF YEAR	805.220	599204672.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	4.247	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 10

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.32	0.11	0.29	0.20	0.00	0.30
	2.16	2.18	0.81	0.01	0.36	0.22
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.302	3.739	5.612	7.421	9.536	11.005
	9.768	8.922	6.960	5.280	3.312	2.552
ACTUAL EVAPOTRANSPIRATION	0.209	0.229	0.198	0.440	0.107	0.299
	1.993	2.313	0.837	0.012	0.236	0.277
LATERAL DRAINAGE COLLECTED	0.0280	0.0198	0.0180	0.0146	0.0129	0.0109
FROM LAYER 3	0.0100	0.0089	0.0078	0.0074	0.0065	0.0062
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 10

	INCHES	CU. FEET	PERCENT
PRECIPITATION	6.95	5170964.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.409	57604004.000	
ACTUAL EVAPOTRANSPIRATION	7.149	5320095.000	102.88
DRAINAGE COLLECTED FROM LAYER 3	0.1512	112534.656	2.18
PERC./LEAKAGE THROUGH LAYER 5	0.000003	1.862	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0001		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000003	1.862	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.020	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.842	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	-0.352	-261660.641	-5.06
SOIL WATER AT START OF YEAR	805.220	599204672.000	
SOIL WATER AT END OF YEAR	804.869	598943040.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-6.629	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 11

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.31	0.14	0.93	0.00	1.23	0.51
	2.91	2.39	1.45	0.58	0.98	0.18
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.252	3.561	5.820	7.842	9.544	10.434
	9.765	8.985	6.533	5.110	3.700	2.657
ACTUAL EVAPOTRANSPIRATION	0.185	0.161	1.044	0.026	1.087	0.466
	2.944	2.379	1.279	0.407	0.957	0.475

LATERAL DRAINAGE COLLECTED	0.0058	0.0049	0.0051	0.0046	0.0044	0.0059
FROM LAYER 3	0.0097	0.0250	0.0192	0.0164	0.0135	0.0121
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 11

	INCHES	CU. FEET	PERCENT
PRECIPITATION	11.61	8636830.000	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.203	57450352.000	
ACTUAL EVAPOTRANSPIRATION	11.411	8491502.000	98.32
DRAINAGE COLLECTED FROM LAYER 3	0.1264	94095.398	1.09
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.850	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0001		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00

PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.849	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.028	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.821	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	0.069	51232.984	0.59
SOIL WATER AT START OF YEAR	804.869	598943040.000	
SOIL WATER AT END OF YEAR	804.938	598994304.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-2.623	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 12

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.00	0.58	0.11	0.07	0.59	1.87
	2.03	0.93	2.03	1.98	0.00	0.37
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	2.823	3.396	5.337	7.732	9.809	10.848
	10.027	8.901	6.765	4.339	3.758	2.829
ACTUAL EVAPOTRANSPIRATION	0.082	0.353	0.184	0.215	0.264	1.689
	2.534	0.934	0.757	1.849	0.206	0.169
LATERAL DRAINAGE COLLECTED	0.0106	0.0088	0.0085	0.0075	0.0071	0.0063
FROM LAYER 3	0.0060	0.0056	0.0051	0.0189	0.3776	0.1659
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.002	0.001
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.001	0.000
AVERAGE DAILY HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 12

	INCHES	CU. FEET	PERCENT
PRECIPITATION	10.56	7860451.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	76.564	56975328.000	
ACTUAL EVAPOTRANSPIRATION	9.236	6873094.500	87.44
DRAINAGE COLLECTED FROM LAYER 3	0.6279	467241.969	5.94
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.781	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0003		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.782	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.064	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.717	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	0.699	520141.969	6.62
SOIL WATER AT START OF YEAR	804.938	598994304.000	
SOIL WATER AT END OF YEAR	805.637	599514432.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00

SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-29.427	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 13

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.00	0.13	0.39	0.22	1.67	1.57
	1.05	0.85	3.04	0.70	0.58	0.45
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.131	3.206	5.949	7.657	9.214	10.535
	10.224	8.802	7.176	5.134	3.212	2.850
ACTUAL EVAPOTRANSPIRATION	0.195	0.084	0.164	0.564	1.797	1.571
	0.669	1.229	2.497	0.808	0.589	0.279
LATERAL DRAINAGE COLLECTED	0.0844	0.0508	0.0442	0.0199	0.0532	0.0402
FROM LAYER 3	0.0296	0.0227	0.0299	0.0936	0.0821	0.0485
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.001	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 13

	INCHES	CU. FEET	PERCENT
PRECIPITATION	10.67	7936625.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.089	57365924.000	
ACTUAL EVAPOTRANSPIRATION	10.446	7773485.500	97.94
DRAINAGE COLLECTED FROM LAYER 3	0.5992	445882.031	5.62
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.806	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0003		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.806	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.055	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.751	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	-0.380	-282735.219	-3.56
SOIL WATER AT START OF YEAR	805.637	599514432.000	
SOIL WATER AT END OF YEAR	805.257	599231680.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-8.882	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 14

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.07	0.12	0.37	0.20	0.68	1.11
	1.18	2.97	2.22	1.08	0.68	0.35

RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	2.775	3.911	5.570	7.802	9.281	10.031
	9.716	8.742	6.898	5.114	3.151	2.858
ACTUAL EVAPOTRANSPIRATION	0.238	0.007	0.296	0.481	0.482	1.236
	1.243	2.916	1.640	1.004	0.985	0.407
LATERAL DRAINAGE COLLECTED	0.0333	0.0230	0.0186	0.0132	0.0180	0.0146
FROM LAYER 3	0.0130	0.0136	0.0138	0.0126	0.0107	0.0098
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 14

	INCHES	CU. FEET	PERCENT
PRECIPITATION	11.02	8203228.000	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	75.849	56442752.000	
ACTUAL EVAPOTRANSPIRATION	10.935	8136934.500	99.19

DRAINAGE COLLECTED FROM LAYER 3	0.1941	144456.094	1.76
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.855	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0001		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.854	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.027	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.827	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	-0.105	-78166.633	-0.95
SOIL WATER AT START OF YEAR	805.257	599231680.000	
SOIL WATER AT END OF YEAR	805.152	599153536.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	1.725	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 15

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.13	0.20	0.01	0.97	0.00	1.19
	1.55	1.49	1.13	3.70	0.00	0.06
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.010	3.374	5.593	7.722	9.752	10.750
	10.372	8.754	7.126	5.109	3.547	2.878
ACTUAL EVAPOTRANSPIRATION	0.247	0.213	0.185	0.554	0.421	1.189
	1.547	1.492	0.954	2.103	0.367	0.055
LATERAL DRAINAGE COLLECTED	0.0088	0.0072	0.0073	0.0065	0.0062	0.0056
FROM LAYER 3	0.0054	0.0050	0.0046	0.0041	0.5420	0.1912
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.003	0.001
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.002	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

ANNUAL TOTALS FOR YEAR 15

	INCHES	CU. FEET	PERCENT
PRECIPITATION	10.42	7752050.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.988	58035008.000	
ACTUAL EVAPOTRANSPIRATION	9.328	6941387.500	89.54
DRAINAGE COLLECTED FROM LAYER 3	0.7938	590685.250	7.62
PERC./LEAKAGE THROUGH LAYER 5	0.000003	1.875	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0004		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000003	1.876	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.074	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.802	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	0.296	219965.734	2.84
SOIL WATER AT START OF YEAR	805.152	599153536.000	

SOIL WATER AT END OF YEAR	805.447	599373504.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	10.216	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 16

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.93	0.26	0.06	0.17	0.07	0.06
	0.76	2.92	0.56	1.34	0.05	0.17
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.086	3.526	5.674	8.153	9.536	10.614
	9.916	8.274	6.811	5.160	3.449	2.916
ACTUAL EVAPOTRANSPIRATION	0.766	0.272	0.203	0.210	0.239	0.059
	0.756	2.160	1.042	0.849	0.031	0.142
LATERAL DRAINAGE COLLECTED	0.0910	0.0551	0.0447	0.0190	0.0458	0.0343
FROM LAYER 3	0.0263	0.0206	0.0164	0.0347	0.1613	0.0942
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.001	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.001	0.001
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000

STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 16

	INCHES	CU. FEET	PERCENT
PRECIPITATION	7.33	5458077.000	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.114	57384132.000	
ACTUAL EVAPOTRANSPIRATION	6.729	5007095.500	91.74
DRAINAGE COLLECTED FROM LAYER 3	0.6434	478816.906	8.77
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.806	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0003		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.806	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.055	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.751	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	-0.037	-27842.039	-0.51
SOIL WATER AT START OF YEAR	805.447	599373504.000	
SOIL WATER AT END OF YEAR	805.410	599345664.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	4.469	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 17

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.28	0.72	0.03	0.33	0.02	0.50
	0.50	0.62	2.25	1.27	0.15	0.00
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	2.981	3.489	6.036	7.510	9.624	10.385
	10.264	9.165	6.853	5.708	3.198	2.823
ACTUAL EVAPOTRANSPIRATION	0.297	0.243	0.306	0.625	0.169	0.511
	0.504	0.622	1.936	0.990	0.122	0.032
LATERAL DRAINAGE COLLECTED	0.0605	0.0400	0.0349	0.0257	0.0354	0.0267
FROM LAYER 3	0.0215	0.0175	0.0142	0.0056	0.0540	0.0661
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 17

	INCHES	CU. FEET	PERCENT

PRECIPITATION	6.69	4977602.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	78.036	58070204.000	
ACTUAL EVAPOTRANSPIRATION	6.356	4729979.500	95.03
DRAINAGE COLLECTED FROM LAYER 3	0.4023	299407.000	6.02
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.760	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0002		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.759	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.037	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.722	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	-0.070	-51778.016	-1.04
SOIL WATER AT START OF YEAR	805.410	599345664.000	
SOIL WATER AT END OF YEAR	805.340	599293888.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-7.511	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 18

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.54	0.19	0.11	0.00	1.59	0.71
	1.60	0.45	0.07	2.09	0.04	0.40
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.229	2.998	5.659	7.096	9.354	10.467
	9.920	9.310	7.394	5.249	3.790	2.679
ACTUAL EVAPOTRANSPIRATION	0.223	0.249	0.183	0.391	1.343	0.967
	1.567	0.484	0.075	1.200	0.036	0.081
LATERAL DRAINAGE COLLECTED	0.0503	0.0355	0.0320	0.0230	0.0363	0.0259
FROM LAYER 3	0.0210	0.0171	0.0140	0.0225	0.2375	0.1149
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.001	0.001
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 18

	INCHES	CU. FEET	PERCENT
PRECIPITATION	7.80	5800855.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.146	57408256.000	
ACTUAL EVAPOTRANSPIRATION	6.799	5059654.000	87.22
DRAINAGE COLLECTED FROM LAYER 3	0.6300	468780.031	8.08
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.827	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0003		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.826	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.059	0.00

PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.768	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	0.366	272379.594	4.70
SOIL WATER AT START OF YEAR	805.340	599293888.000	
SOIL WATER AT END OF YEAR	805.706	599566272.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0001	39.816	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 19

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.35	0.29	0.05	0.11	0.02	0.36
	0.55	1.24	2.19	0.24	0.24	0.56
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.179	3.412	5.437	7.604	9.065	10.298
	9.631	9.011	6.831	4.927	3.419	2.687
ACTUAL EVAPOTRANSPIRATION	0.290	0.188	0.181	0.547	0.144	0.358
	0.551	0.874	1.767	0.307	0.254	0.257
LATERAL DRAINAGE COLLECTED	0.0685	0.0438	0.0374	0.0261	0.0384	0.0280
FROM LAYER 3	0.0224	0.0181	0.0138	0.0627	0.1051	0.0668
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000

TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.001	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 19

	INCHES	CU. FEET	PERCENT
PRECIPITATION	6.19	4608457.000	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	75.499	56182908.000	
ACTUAL EVAPOTRANSPIRATION	5.717	4254258.000	92.31
DRAINAGE COLLECTED FROM LAYER 3	0.5312	395307.469	8.58
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.801	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0003		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.801	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.047	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.754	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	-0.055	-41059.059	-0.89
SOIL WATER AT START OF YEAR	805.706	599566272.000	
SOIL WATER AT END OF YEAR	805.651	599525184.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	-0.0001	-51.277	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 20

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.04	0.24	0.24	0.23	0.00	1.07
	1.33	0.82	0.67	2.02	0.00	0.41
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.132	3.646	5.188	7.862	9.704	10.502
	9.952	9.511	7.470	5.380	3.314	3.053
ACTUAL EVAPOTRANSPIRATION	0.193	0.169	0.168	0.688	0.113	1.075
	1.335	0.823	0.648	1.439	0.011	0.116
LATERAL DRAINAGE COLLECTED	0.0455	0.0321	0.0283	0.0157	0.0293	0.0227
FROM LAYER 3	0.0189	0.0157	0.0129	0.0080	0.0253	0.0673
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 20

	INCHES	CU. FEET	PERCENT
PRECIPITATION	7.11	5288153.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	78.713	58574608.000	
ACTUAL EVAPOTRANSPIRATION	6.776	5042350.500	95.35
DRAINAGE COLLECTED FROM LAYER 3	0.3217	239395.547	4.53
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.739	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0002		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.739	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.037	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.701	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	0.009	6358.704	0.12
SOIL WATER AT START OF YEAR	805.651	599525184.000	
SOIL WATER AT END OF YEAR	805.660	599531584.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0001	46.934	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 21

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.68	0.07	0.08	0.11	0.54	0.32
	0.75	5.60	1.91	0.47	0.13	0.28
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.207	3.478	5.736	7.177	9.382	10.367
	10.259	9.152	7.187	5.422	3.621	2.788

ACTUAL EVAPOTRANSPIRATION	0.899	0.100	0.105	0.079	0.737	0.374
	0.748	4.185	1.941	0.326	0.246	0.161
LATERAL DRAINAGE COLLECTED	0.0552	0.0385	0.0307	0.0296	0.0054	0.0430
FROM LAYER 3	0.0311	1.0957	0.1570	0.0675	0.0402	0.0296
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.006	0.001	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.006	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 21

	INCHES	CU. FEET	PERCENT
PRECIPITATION	10.94	8144633.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.774	57875776.000	
ACTUAL EVAPOTRANSPIRATION	9.901	7367708.500	90.46
DRAINAGE COLLECTED FROM LAYER 3	1.6236	1208167.125	14.83
PERC./LEAKAGE THROUGH LAYER 5	0.000003	1.878	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0008		

DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000003	1.877	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.111	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.767	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	-0.580	-431256.375	-5.29
SOIL WATER AT START OF YEAR	805.660	599531584.000	
SOIL WATER AT END OF YEAR	805.080	599100288.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	12.397	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 22

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.54	0.33	0.18	0.13	0.00	1.46
	1.07	1.29	1.17	0.34	0.33	0.31
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.194	3.486	5.532	7.448	9.273	10.243
	9.828	9.093	7.080	5.343	3.521	2.576
ACTUAL EVAPOTRANSPIRATION	0.526	0.419	0.124	0.245	0.025	0.628
	1.859	0.782	1.036	0.981	0.078	0.317
LATERAL DRAINAGE COLLECTED	0.0227	0.0167	0.0155	0.0128	0.0115	0.0099
FROM LAYER 3	0.0113	0.0120	0.0102	0.0094	0.0082	0.0077
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 22

	INCHES	CU. FEET	PERCENT
PRECIPITATION	7.16	5329169.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	76.616	57013956.000	
ACTUAL EVAPOTRANSPIRATION	7.020	5223738.000	98.02
DRAINAGE COLLECTED FROM LAYER 3	0.1480	110147.852	2.07
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.859	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0001		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.859	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.023	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.835	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	-0.006	-4678.189	-0.09
SOIL WATER AT START OF YEAR	805.080	599100288.000	
SOIL WATER AT END OF YEAR	805.074	599095616.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	

INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	-0.0001	-40.176	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 23

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.14	0.00	0.15	0.24	1.56	0.36
	0.56	0.46	1.53	0.00	0.33	1.17
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.136	3.918	5.735	6.957	9.410	10.325
	9.350	9.020	7.209	5.482	3.608	2.987
ACTUAL EVAPOTRANSPIRATION	0.232	0.145	0.108	0.257	1.599	0.358
	0.503	0.251	1.798	0.000	0.253	0.927
LATERAL DRAINAGE COLLECTED	0.0070	0.0059	0.0060	0.0054	0.0052	0.0048
FROM LAYER 3	0.0046	0.0044	0.0040	0.0039	0.0036	0.0035
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 23

	INCHES	CU. FEET	PERCENT
PRECIPITATION	6.50	4839904.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.137	57401324.000	
ACTUAL EVAPOTRANSPIRATION	6.431	4785786.000	98.88
DRAINAGE COLLECTED FROM LAYER 3	0.0584	43447.051	0.90
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.854	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0000		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.852	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.020	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.833	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	0.014	10628.119	0.22
SOIL WATER AT START OF YEAR	805.074	599095616.000	
SOIL WATER AT END OF YEAR	805.088	599106240.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0001	41.856	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 24

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC

PRECIPITATION	0.00	0.39	0.24	0.85	0.76	0.93
	1.11	3.80	0.94	0.99	0.37	0.74
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	2.955	3.567	5.517	7.143	9.421	11.174
	10.143	9.043	7.073	4.921	3.249	2.747
ACTUAL EVAPOTRANSPIRATION	0.006	0.116	0.246	1.161	0.767	0.841
	1.193	3.378	1.276	0.968	0.307	0.437
LATERAL DRAINAGE COLLECTED	0.0025	0.0000	0.0000	0.0013	0.0140	0.0129
FROM LAYER 3	0.0116	0.0101	0.0622	0.0439	0.0298	0.0236
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 24

	INCHES	CU. FEET	PERCENT
PRECIPITATION	11.11	8270610.000	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	76.954	57264956.000	

ACTUAL EVAPOTRANSPIRATION	10.697	7960221.500	96.25
DRAINAGE COLLECTED FROM LAYER 3	0.2120	157768.562	1.91
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.395	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0001		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.396	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.033	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.363	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	0.205	152654.297	1.85
SOIL WATER AT START OF YEAR	805.088	599106240.000	
SOIL WATER AT END OF YEAR	805.293	599258880.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-35.062	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 25

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.60	0.00	0.00	1.64	3.26	0.38
	1.46	2.61	0.48	0.62	0.41	0.65
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.186	3.603	5.480	7.477	8.819	10.754
	9.834	8.952	6.741	4.931	3.497	2.553
ACTUAL EVAPOTRANSPIRATION	0.933	0.018	0.000	0.870	2.563	0.638
	1.214	2.856	0.431	0.683	0.188	0.481
LATERAL DRAINAGE COLLECTED	0.0189	0.0142	0.0135	0.0114	0.2639	0.6858
FROM LAYER 3	0.1004	0.0525	0.0339	0.0260	0.0199	0.0169
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.002	0.004
TOP OF LAYER 4	0.001	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.004	0.004
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 25

	INCHES	CU. FEET	PERCENT
PRECIPITATION	12.11	9011833.000	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	75.826	56425856.000	
ACTUAL EVAPOTRANSPIRATION	10.877	8094068.500	89.82
DRAINAGE COLLECTED FROM LAYER 3	1.2573	935627.688	10.38
PERC./LEAKAGE THROUGH LAYER 5	0.000003	1.891	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0006		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000003	1.891	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.095	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.795	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		

CHANGE IN WATER STORAGE	-0.024	-17895.209	-0.20
SOIL WATER AT START OF YEAR	805.293	599258880.000	
SOIL WATER AT END OF YEAR	805.269	599241024.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	29.533	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 26

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.24	0.34	0.32	0.74	1.60	0.63
	0.04	3.93	1.62	1.98	0.20	0.06
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	2.843	3.907	5.512	7.847	9.266	10.908
	10.143	8.720	7.001	5.202	3.651	2.840
ACTUAL EVAPOTRANSPIRATION	0.622	0.132	0.273	0.996	1.602	0.626
	0.035	3.628	1.668	1.495	0.634	0.084
LATERAL DRAINAGE COLLECTED	0.0142	0.0111	0.0109	0.0094	0.0087	0.0076
FROM LAYER 3	0.0072	0.0064	0.0598	0.0393	0.0275	0.0220
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000

AVERAGE DAILY HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 26

	INCHES	CU. FEET	PERCENT
PRECIPITATION	11.67	8686634.000	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.839	57924068.000	
ACTUAL EVAPOTRANSPIRATION	11.798	8779387.000	101.07
DRAINAGE COLLECTED FROM LAYER 3	0.2241	166790.391	1.92
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.853	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0001		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.853	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.032	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.821	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	-0.349	-259525.938	-2.99
SOIL WATER AT START OF YEAR	805.269	599241024.000	
SOIL WATER AT END OF YEAR	804.920	598981440.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0000	-20.336	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 27

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.00	0.37	0.40	0.13	0.08	2.21
	2.04	5.62	3.65	0.00	0.35	0.00
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.564	3.355	5.126	7.983	9.217	10.455
	9.895	8.764	6.872	5.262	3.593	3.391
ACTUAL EVAPOTRANSPIRATION	0.000	0.177	0.209	0.511	0.079	2.091
	2.165	5.114	1.972	0.463	0.096	0.220
LATERAL DRAINAGE COLLECTED	0.0178	0.0136	0.0130	0.0110	0.0100	0.0092
FROM LAYER 3	0.0091	0.0141	0.0526	0.9043	0.1860	0.0878
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.005	0.001	0.001
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.001	0.003	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 27

	INCHES	CU. FEET	PERCENT
PRECIPITATION	14.84	11042129.000	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	77.476	57653748.000	
ACTUAL EVAPOTRANSPIRATION	13.098	9747153.000	88.27
DRAINAGE COLLECTED FROM LAYER 3	1.3285	988615.938	8.95
PERC./LEAKAGE THROUGH LAYER 5	0.000003	1.914	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0006		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000003	1.914	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.099	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.814	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	0.412	306307.844	2.77
SOIL WATER AT START OF YEAR	804.920	598981440.000	
SOIL WATER AT END OF YEAR	805.332	599287744.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0001	51.352	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 28

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.25	0.67	0.20	0.41	0.65	1.56
	1.65	5.77	1.71	0.31	0.18	0.15
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.094	3.814	4.753	7.165	8.992	10.264
	10.115	8.397	6.804	4.836	3.252	2.597
ACTUAL EVAPOTRANSPIRATION	0.114	0.817	0.193	0.301	0.990	1.494
	1.714	4.204	2.656	0.224	0.272	0.235
LATERAL DRAINAGE COLLECTED	0.0537	0.0360	0.0306	0.0170	0.0250	0.0248

FROM LAYER 3	0.0203	0.0167	0.2019	0.1086	0.0534	0.0364
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.001	0.001	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.001	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 28

	INCHES	CU. FEET	PERCENT
PRECIPITATION	13.53	10066535.000	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	74.082	55128480.000	
ACTUAL EVAPOTRANSPIRATION	13.215	9833825.000	97.69
DRAINAGE COLLECTED FROM LAYER 3	0.6245	464687.125	4.62
PERC./LEAKAGE THROUGH LAYER 5	0.000003	1.865	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0003		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000003	1.864	0.00

AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.053	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.812	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	-0.312	-231911.000	-2.30
SOIL WATER AT START OF YEAR	805.332	599287744.000	
SOIL WATER AT END OF YEAR	805.020	599055872.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	-0.0001	-68.581	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 29

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.00	0.11	0.30	0.59	1.24	0.04
	2.54	0.20	0.97	1.69	0.60	0.35
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	2.999	3.567	5.781	6.985	9.458	10.916
	9.716	9.234	7.341	4.927	3.097	2.702
ACTUAL EVAPOTRANSPIRATION	0.004	0.108	0.040	0.696	1.282	0.226
	2.478	0.258	0.972	1.361	0.360	0.321
LATERAL DRAINAGE COLLECTED	0.0266	0.0190	0.0174	0.0141	0.0126	0.0107
FROM LAYER 3	0.0098	0.0088	0.0077	0.0073	0.0064	0.0062
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 29

	INCHES	CU. FEET	PERCENT
PRECIPITATION	8.63	6424886.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	76.722	57092436.000	
ACTUAL EVAPOTRANSPIRATION	8.107	6032746.500	93.90
DRAINAGE COLLECTED FROM LAYER 3	0.1465	109038.039	1.70
PERC./LEAKAGE THROUGH LAYER 5	0.000003	1.862	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0001		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.860	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.025	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.834	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	0.380	283098.562	4.41
SOIL WATER AT START OF YEAR	805.020	599055872.000	
SOIL WATER AT END OF YEAR	805.401	599338944.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00

ANNUAL WATER BUDGET BALANCE	0.0000	1.949	0.00

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MONTHLY TOTALS (IN INCHES) FOR YEAR 30

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION	0.56	0.24	0.09	0.51	0.25	1.33
	0.77	2.95	0.54	1.60	0.00	0.00
RUNOFF	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION	3.023	3.409	5.750	7.794	9.296	10.082
	9.647	8.555	6.884	5.170	3.340	3.080
ACTUAL EVAPOTRANSPIRATION	0.856	0.189	0.152	0.105	0.865	1.327
	0.773	2.918	0.571	1.598	0.000	0.004
LATERAL DRAINAGE COLLECTED	0.0057	0.0048	0.0035	0.0011	0.0031	0.0104
FROM LAYER 3	0.0096	0.0086	0.0075	0.0071	0.0063	0.0061
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LATERAL DRAINAGE COLLECTED	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
FROM LAYER 11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
PERCOLATION/LEAKAGE THROUGH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAYER 13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MONTHLY SUMMARIES FOR DAILY HEADS (INCHES)

AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 4	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 10	0.000	0.000	0.000	0.000	0.000	0.000
AVERAGE DAILY HEAD ON	0.000	0.000	0.000	0.000	0.000	0.000
TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATION OF DAILY	0.000	0.000	0.000	0.000	0.000	0.000
HEAD ON TOP OF LAYER 12	0.000	0.000	0.000	0.000	0.000	0.000

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ANNUAL TOTALS FOR YEAR 30

	INCHES	CU. FEET	PERCENT
PRECIPITATION	8.83	6571371.500	100.00
RUNOFF	0.000	0.000	0.00
POTENTIAL EVAPOTRANSPIRATION	76.031	56578652.000	
ACTUAL EVAPOTRANSPIRATION	9.357	6962775.500	105.96
DRAINAGE COLLECTED FROM LAYER 3	0.0740	55071.688	0.84
PERC./LEAKAGE THROUGH LAYER 5	0.000002	1.618	0.00
AVG. HEAD ON TOP OF LAYER 4	0.0000		
DRAINAGE COLLECTED FROM LAYER 9	0.0000	0.000	0.00
PERC./LEAKAGE THROUGH LAYER 10	0.000002	1.618	0.00
AVG. HEAD ON TOP OF LAYER 10	0.0000		
DRAINAGE COLLECTED FROM LAYER 11	0.0000	0.029	0.00
PERC./LEAKAGE THROUGH LAYER 13	0.000002	1.590	0.00
AVG. HEAD ON TOP OF LAYER 12	0.0000		
CHANGE IN WATER STORAGE	-0.600	-446517.250	-6.79
SOIL WATER AT START OF YEAR	805.401	599338944.000	
SOIL WATER AT END OF YEAR	804.801	598892480.000	
INTERCEPTION WATER AT START OF YEAR	0.000	0.000	
INTERCEPTION WATER AT END OF YEAR	0.000	0.000	
SNOW WATER AT START OF YEAR	0.000	0.000	0.00
SNOW WATER AT END OF YEAR	0.000	0.000	0.00
ANNUAL WATER BUDGET BALANCE	0.0001	40.184	0.00

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FINAL WATER STORAGE AT END OF YEAR 30

LAYER	(INCHES)	(VOL/VOL)
1	0.2160	0.0180
2	0.8167	0.0454
3	0.0020	0.0101

4	0.0000	0.0000
5	0.1800	0.7500
6	2.6640	0.2220
7	795.4080	0.2920
8	5.3280	0.2220
9	0.0020	0.0100
10	0.0000	0.0000
11	0.0020	0.0100
12	0.0000	0.0000
13	0.1800	0.7500

TOTAL WATER IN LAYERS	804.799
SNOW WATER	0.000
INTERCEPTION WATER	0.000
TOTAL FINAL WATER	804.799

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 30

	(INCHES)	(CU. FT.)
PRECIPITATION	2.28	1693380.625
RUNOFF	0.000	0.0000
DRAINAGE COLLECTED FROM LAYER 3	0.11382	84698.85156
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.000000	0.01122
AVERAGE HEAD ON TOP OF LAYER 4	0.020	
MAXIMUM HEAD ON TOP OF LAYER 4	0.047	
LOCATION OF MAXIMUM HEAD IN LAYER 3 (DISTANCE FROM DRAIN)	0.0 FEET	
DRAINAGE COLLECTED FROM LAYER 9	0.00000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 10	0.000000	0.01122
AVERAGE HEAD ON TOP OF LAYER 10	0.000	
MAXIMUM HEAD ON TOP OF LAYER 10	0.000	
LOCATION OF MAXIMUM HEAD IN LAYER 9 (DISTANCE FROM DRAIN)	0.0 FEET	
DRAINAGE COLLECTED FROM LAYER 11	0.00000	0.00506
PERCOLATION/LEAKAGE THROUGH LAYER 13	0.000000	0.00506
AVERAGE HEAD ON TOP OF LAYER 12	0.000	

MAXIMUM HEAD ON TOP OF LAYER 12 0.000

LOCATION OF MAXIMUM HEAD IN LAYER 11
(DISTANCE FROM DRAIN) 0.0 FEET

SNOW WATER 0.61 457515.1562

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.1499

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.0180

*** Maximum heads are computed using McEnroe's equations. ***

Reference: Maximum Saturated Depth over Landfill Liner
by Bruce M. McEnroe, University of Kansas
ASCE Journal of Environmental Engineering
Vol. 119, No. 2, March 1993, pp. 262-270.

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 30

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.25	0.28	0.23	0.38	0.73	0.79
	1.34	2.19	1.44	1.10	0.44	0.36
STD. DEVIATIONS	0.24	0.20	0.22	0.41	0.78	0.63
	0.71	1.59	0.89	1.01	0.54	0.30
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
POTENTIAL EVAPOTRANSPIRATION						
TOTALS	3.114	3.578	5.474	7.544	9.404	10.503
	9.984	8.917	6.946	5.157	3.476	2.772
STD. DEVIATIONS	0.188	0.232	0.300	0.322	0.283	0.281
	0.252	0.288	0.254	0.270	0.202	0.208
ACTUAL EVAPOTRANSPIRATION						
TOTALS	0.296	0.210	0.231	0.469	0.788	0.776
	1.363	1.982	1.322	0.875	0.449	0.319
STD. DEVIATIONS	0.270	0.147	0.196	0.307	0.656	0.592
	0.768	1.362	0.724	0.631	0.424	0.296
LATERAL DRAINAGE COLLECTED FROM LAYER 3						
TOTALS	0.0339	0.0235	0.0209	0.0174	0.0372	0.0419
	0.0185	0.0506	0.0326	0.0628	0.0831	0.0520
STD. DEVIATIONS	0.0292	0.0173	0.0143	0.0179	0.0717	0.1228
	0.0186	0.1976	0.0471	0.1639	0.1259	0.0601

PERCOLATION/LEAKAGE THROUGH LAYER 5

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 9

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 10

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

LATERAL DRAINAGE COLLECTED FROM LAYER 11

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

PERCOLATION/LEAKAGE THROUGH LAYER 13

TOTALS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 4

AVERAGES	0.0002	0.0001	0.0001	0.0001	0.0002	0.0002
	0.0001	0.0003	0.0002	0.0004	0.0005	0.0003
STD. DEVIATIONS	0.0002	0.0001	0.0001	0.0001	0.0004	0.0007
	0.0001	0.0011	0.0003	0.0009	0.0007	0.0003

DAILY AVERAGE HEAD ON TOP OF LAYER 10

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

DAILY AVERAGE HEAD ON TOP OF LAYER 12

AVERAGES	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
STD. DEVIATIONS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 30

	INCHES		CU. FEET	PERCENT
PRECIPITATION	9.54	(2.205)	7102531.5	100.00
RUNOFF	0.000	(0.0000)	0.00	0.000
POTENTIAL EVAPOTRANSPIRATION	76.870	(0.9065)	57202740.00	
ACTUAL EVAPOTRANSPIRATION	9.079	(2.0715)	6756122.00	95.123
LATERAL DRAINAGE COLLECTED FROM LAYER 3	0.47437	(0.41880)	353001.469	4.97008
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.00000	(0.00000)	1.800	0.00003
AVERAGE HEAD ON TOP OF LAYER 4	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 9	0.00000	(0.00000)	0.000	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 10	0.00000	(0.00000)	1.799	0.00003
AVERAGE HEAD ON TOP OF LAYER 10	0.000	(0.000)		
LATERAL DRAINAGE COLLECTED FROM LAYER 11	0.00000	(0.00000)	0.047	0.00000
PERCOLATION/LEAKAGE THROUGH LAYER 13	0.00000	(0.00000)	1.753	0.00002
AVERAGE HEAD ON TOP OF LAYER 12	0.000	(0.000)		
CHANGE IN WATER STORAGE	-0.009	(0.3730)	-6594.88	-0.093

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Attachment E

Liner System Design Calculations

Attachment E1

Settlement and Liner Stress Calculations

CALCULATIONS BY: Deep K. Khatri, P.E. (TX) – Senior Staff Geotechnical Engineer
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PURPOSE

This calculation package includes settlement analyses for the proposed landfill to be located within Section 9 and 10 of T25S, R34E approximately 16 miles west of the City of Jal in Lea County, New Mexico. The settlement analyses include both foundation and waste settlements. The settlement analyses were performed to determine the final cover slope, liner, and leachate collection system (after settlement) consistent with the performance specifications of the project. The following calculations show the anticipated strains on the geosynthetic materials are less the allowable strains and the designed grades for final cover and leachate collection system will allow adequate drainage even after settlement.

METHOD OF ANALYSIS

The methodology for estimating settlements involves calculating settlements at multiple points and evaluating the resultant change in the designed grade and its impact on the landfill elements. Points were conservatively selected from a cross-section based on the thickness of waste material. The location of the cross-section is shown on the liner and final cover grading plans (Figures 1 and 2). The cross-section drawing and settlement location points were shown in Figure 3.

Foundation Soil Settlement

On-site (native) soils predominately consist of granular soils, medium to very dense sandy soils and strongly cemented, calcareous interbedded caliche materials in the upper approximately 2 to 65 feet of existing grades, underlain by sandstone extending to boring termination depths of 165 feet below existing grade. For granular soils, settlement is caused by the compression of the soil skeleton as the particle rearrange due to the applied loads. The immediate (elastic) settlement of the foundation soils was calculated using the following equation:

$$S = \Delta\sigma/M_s * H$$

where: S = elastic settlement of soil layer
H = thickness of soil layer
$\Delta\sigma$ = Applied Stress
M_s = constrained modulus of soils

Waste Material Settlements

The compression settlement of municipal solid waste can be analyzed using the one-dimensional consolidation theory, commonly used for cohesive soils. Based on this theory, waste settlement has two components: settlement due to primary consolidation and settlement due to secondary consolidation. The primary settlement component of waste material is related to the increase in effective vertical stresses resulting from the additional waste material and landfill final cover system. The secondary settlement component is related to compression of the waste structure (skeleton) and is time-dependent.

Settlements resulting from primary consolidation of the waste were calculated using the general form of the 1-D consolidation theory settlement equation as given below [Holtz and Kovacs, 1981]:

$$Sp = Cer * H * log(\sigma'p/\sigma'vo) + Cec * H * log(\sigma'f/\sigma'p)$$

where: Sp = primary settlement
C_{ec} = primary compression index ratio
C_{er} = recompression index ratio
H = initial thickness of the waste layer before settlement
σ'_{vo} = initial effective pressure in the waste layer
σ'_{p} = effective pressure in the waste layer
σ'_{p} = pre-consolidation stress
σ'_{f} = final overburden pressure applied at the mid-level of the waste layer

The mechanisms for secondary settlement are mechanical creep, chemical reactions, and biodegradation. This type of compression is dependent on time, not applied loads. Settlements resulting from secondary settlement of the waste were calculated according to the following equation [Qian, Koerner, and Gray, 2002]:

$$\Delta H_{\alpha} = C'_{\alpha} * H_{o} * log\frac{t_2}{t_1}$$

where: ΔH_{α} = long-term secondary settlement
C'_{α} = modified secondary compression index
t_2 = ending time of the time period for which long-term settlement of the layer is desired
t_1 = starting time of the time period for which long-term settlement of the layer is desire
t_1 = 1 year
t_2 = 30 years

From the best available information and discussions with the project team members, it is considered that waste materials for this landfill will be granular soils, contaminated silty sands/sands. Therefore, a secondary settlement of the waste material was neglected in our analyses.

Final Cover Settlement

Since (1) the waste material and foundation soils are permeable and will experience an immediate primary consolidation settlement under applied load, and (2) foundation soil settlement resulting from the final cover will be minimal, the total final cover settlement will be due to the primary compression of the waste material only with the increase in effective vertical stresses resulting from the final cover system. The settlement equation presented above for the waste material settlement calculation was used for the final cover settlement estimates.

Tensile Strains

The effects of waste settlement on the final cover and foundation settlement on the liner system were evaluated as described below.

Tensile strains in the final cover and the liner were estimated by the following general equation:

$$\varepsilon_{tens} = L_o - \frac{L_f}{L_o}$$

where: ε_{tens} = strain in the cover/liner (tension is negative)
L_o = initial length of cover/liner between adjacent points
L_f = length of cover/liner between adjacent points after settlement

MATERIAL PARAMETERS

The waste materials for this landfill will be granular soils, contaminated silty sands/sands. Based on the available typical compression parameters for sandy soils and our experience for similar waste materials and project, a compression index ratio C_{ec} of 0.014, a recompression index ratio Cer of about one-third of Cec, the total unit weight of 120 pcf, and a pre-consolidation pressure σ'_p of 1,000 psf were selected for the presented analyses. Based on the available typical compression parameters for native silty sands/sands and our experience for similar materials, a constrained modulus Ms of about 850 ksf was used for the foundation settlement estimate.

Table 1. Material Properties

Cover System	γ, pcf	120
Waste	γ, pcf	120
	$C_{c\varepsilon}$	0.014
	$C_{r\varepsilon}$	0.004
	σ'_p, psf	1,000
Foundation Soils-Silty Sands/Sands (Medium to Very Dense)	Ms, ksf	850

RESULTS

The final cover, waste material, and foundation soil settlement estimates are presented in Table 2, 3, and 4 respectively. The complete spreadsheets with details settlement estimates of the final cover, waste material, and foundation soil settlement are included in Table 2, 3, and 4, respectively.

SUMMARY AND CONCLUSIONS

Based on our calculations, the foundation soils will settle about 1.8 feet (max.) near area (Station 10+00) where foundation (native) soil is thick (no excavation was planned near this area) and about 1.2 feet (max.) for the remaining area. The estimated settlements resulted the maximum grade change of 0.6% near Station 10+00 and minimal grade change for the remaining area. The propose leachate collection system slope of 3% will not adversely be affected by the foundation settlements and remain in compliance with the minimum slope 0f 2% as required by NMAC 19.15.36.14.C(5) . Additionally, a maximum tensile stress on the liner was estimated to be 0.1%, which was less than allowable strain on the geosynthetic liner system.

The final cover will settle on the order of 1 inch due to compression of waste material, resulting from the increase in effective stress due to the placement of the final cover system. Grade changes induced by differential waste settlement were estimated to be minimal and the final cover system will maintain positive drainage on the side slopes. Additionally, no tensile strains are expected to develop in the final cover system due to waste settlement.

REFERENCES

Holtz, R. D., and Kovacs, W. D. (1981) An Introduction to Geotechnical Engineering, Prentice-Hall Inc., Englewood Cliffs, N.J.

Qian, X., Koerner, R. M., and Gray, D. H. (2002) “Geotechnical Aspects of Landfill Design and Construction” Prentice Hall, Upper Saddle River, NJ

LEGEND:

- 3300 — EXISTING GRADE CONTOURS (11-30-2018, 2' CONTOURS)
- 3300 — SUBGRADE CONTOURS (5' CONTOURS)
- 3300 — PERIMETER INFRASTRUCTURE CONTOURS (5' CONTOURS)
- SITE ROAD
- A8 — SETTLEMENT ANALYSIS POINT

NORTH STORMWATER POND

LEACHATE EVAP POND

CELL E-1 (9.6 AC.)

CELL E-2 (9.6 AC.)

CELL E-3 (28.2 AC.)

CELL E-4 (18.4 AC.)

CELL E-5 (18.6 AC.)

CELL E-6 (21.6 AC.)

CELL W-1 (15.3 AC.)

CELL W-2 (11.8 AC.)

CELL W-3 (15.2 AC.)

CELL W-4 (23.9 AC.)

CELL W-5 (24.7 AC.)

WEST STORMWATER POND

EAST STORMWATER POND

BATTLE AXE ROAD (HWY 2)

A0 0+00 A1 1+00 A2 2+00 A3 3+00 A4 4+00 A5 5+00 A6 6+00 A7 7+00 A8 8+00 A9 9+00 A10 10+00 A11 11+00 A12 12+00 A13 13+00 A14 14+00 A15 15+00 A16 16+00 16+47

N

500 0 250 500

SCALE IN FEET

REV.	DATE	BY	DESCRIPTION

SITE EXCAVATION PLAN

PERMIT DRAWING

SURFACE WASTE MANAGEMENT FACILITY

NORTH RANCH

LEA COUNTY NEW MEXICO

Terracon
Consulting Engineers and Scientists
25809 I-30 SOUTH
PH: (501) 847-9292
BRYANT, AR 72022
FAX: (501) 847-9210

FIGURE 1

DESIGNED BY:	MPB
DRAWN BY:	DEW
APPVD. BY:	MPB
SCALE:	SEE SCALEBAR
DATE:	APRIL 2019
JOB NO.	572-002-35187378
ACAD NO.	
SHEET NO.:	1 OF 3

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LEGEND:

- 3300 — EXISTING GRADE CONTOURS (11/30/18)
- 3300 — PROTECTIVE COVER CONTOURS
- 3300 — PERIMETER INFRASTRUCTURE CONTOURS
- SITE ROAD
- A8 — SETTLEMENT ANALYSIS POINTS

N

500 0 250 500

SCALE IN FEET

REV	DATE	BY	DESCRIPTION

TOP OF WASTE FINAL

PERMIT DRAWING

SURFACE WASTE MANAGEMENT FACILITY

NORTH RANCH

LEA COUNTY NEW MEXICO

Terracon
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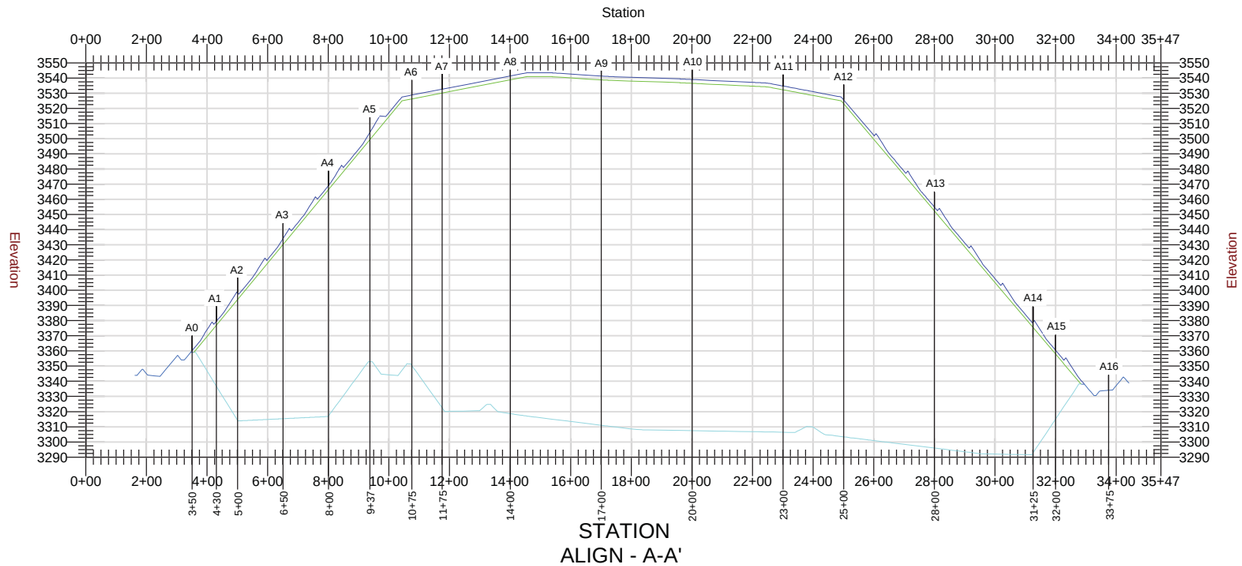
FIGURE 2

DESIGNED BY:	MPB
DRAWN BY:	DEW
APPVD. BY:	MPB
SCALE:	SEE SCALEBAR
DATE:	APRIL 2019
JOB NO.	572-002-35187378
ACAD NO.	
SHEET NO.:	2 OF 3



STATION
ALIGN - A-A'

LEGEND:

- PROPOSED TOP OF FINAL COVER
- PROPOSED TOP OF WASTE
- PROPOSED TOP OF PROTECTIVE COVER
- PROPOSED TOP OF PERIMETER INFRASTRUCTURE
- PROPOSED INTERMEDIATE COVER
- A0 / 3+50 — SETTLEMENT ANALYSIS POINTS

NOTES:

1. OPERATIONAL = WASTE PLUS ROUTINE AND INTERIM SOIL COVER.

SCALES:
1" = 500' (HORIZONTAL)
1" = 100' (VERTICAL)
VERTICAL EXAGGERATION = x 5

500 0 250 500

SCALE IN FEET

REV.	DATE	BY	DESCRIPTION

FINAL GRADE CROSS-SECTIONS

PERMIT DRAWING

SURFACE WASTE MANAGEMENT FACILITY

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FIGURE 3

DESIGNED BY:	MPB
DRAWN BY:	DEW
APPVD. BY:	MPB
SCALE:	SEE SCALEBAR
DATE:	APRIL 2019
JOB NO.	572-002-35187378
ACAD NO.	
SHEET NO.:	3 OF 3

N:\GEC\ARCH\EGCAD\572\002\MCC\LOYPERMIT DRAWINGS_FIGURES\PERMIT SETTLING FIGURES\S23-FINAL GRADE (FILL).DWG

TABLE 2 FOUNDATION SOIL SETTLEMENT CALCULATIONS

Point	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16
Station	3+50	4+30	5+00	6+50	8+00	9+37	10+75	11+75	14+00	17+00	20+00	23+00	25+00	28+00	31+25	32+00	33+75
Linear Horizontal Distance (ft.)	350	430	500	650	800	937	1075	1175	1400	1700	2000	2300	2500	2800	3125	3200	3375
Final Cover Elevation (ft.)	3360	3380	3395	3430	3465	3500	3530	3530	3540	3540	3540	3533	3530	3450	3380	3360	3340
Final Cover Above Waste (ft.)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Final Waste Elevation (ft.)	3356.5	3376.5	3391.5	3426.5	3461.5	3496.5	3526.5	3526.5	3536.5	3536.5	3536.5	3529.5	3526.5	3446.5	3376.5	3356.5	3336.5
Clay Liner Thickness (ft.)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Top of Clay Liner Elevation (ft.)	3356.5	3334	3312	3312	3314	3350	3350	3320	3318	3308	3305	3302	3300	3295	3290	3315	3336.5
Waste Thickness (ft.)	0.0	42.5	79.5	114.5	147.5	146.5	176.5	206.5	218.5	228.5	231.5	227.5	226.5	151.5	86.5	41.5	0.0
Unit Weight of Final Cover (pcf)	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
Unit Weight of Waste (pcf)	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
Applied Pressure (psf)	540	5640	10080	14280	18240	18120	21720	25320	26760	27960	28320	27840	27720	18720	10920	5520	540
Founfation Bedrock Elevation (ft.)	3279	3279	3279	3279	3279	3279	3279	3279	3279	3279	3279	3279	3279	3279	3279	3279	3279
Foundation-Sand Thickness (ft.)	76.5	54.0	32.0	32.0	34.0	70.0	70.0	40.0	38.0	28.0	25.0	22.0	20.0	15.0	10.0	35.0	56.5
Foundation- Sand Constrained Modulus (ksf)	850.0	850.0	850.0	850.0	850.0	850.0	850.0	850.0	850.0	850.0	850.0	850.0	850.0	850.0	850.0	850.0	850.0
SETTLEMENT																	
Settlement (ft.)	0.0	0.4	0.4	0.5	0.7	1.5	1.8	1.2	1.2	0.9	0.8	0.7	0.7	0.3	0.1	0.2	0.0
Settlement (in.)	0.6	4.3	4.6	6.5	8.8	17.9	21.5	14.3	14.4	11.1	10.0	8.6	7.8	4.0	1.5	2.7	0.4
Differential Settlement (ft.)		0.3	0.0	0.2	0.2	0.8	0.3	-0.6	0.0	-0.3	-0.1	-0.1	-0.1	-0.3	-0.2	0.1	-0.2
GRADES AND STRAINS																	
Bottom of Clay Liner Elevation Prior to Settlement (ft.)	3355.5	3333.0	3311.0	3311.0	3313.0	3349.0	3349.0	3319.0	3317.0	3307.0	3304.0	3301.0	3299.0	3294.0	3289.0	3314.0	3335.5
Bottom of Clay Liner Elevation After settlement (ft.)	3355.5	3332.6	3310.6	3310.5	3312.3	3347.5	3347.2	3317.8	3315.8	3306.1	3303.2	3300.3	3298.3	3293.7	3288.9	3313.8	3335.5
Initial Liner Cover GeoMembrane Segment Length (ft.)		83.1	73.4	150.0	150.0	141.7	138.0	104.4	225.0	300.2	300.0	300.0	200.0	300.0	325.0	79.1	176.3
PostSettlement Final Cover GeoMemberane Segment Length (ft.)		83.2	73.4	150.0	150.0	141.5	138.0	104.2	225.0	300.2	300.0	300.0	200.0	300.0	325.0	79.0	176.3
Strain (+ Compression/- Tension)		-0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
PreSettlement Slope (+ up/- down)		-28.1%	-31.4%	0.0%	1.3%	26.3%	0.0%	-30.0%	-0.9%	-3.3%	-1.0%	-1.0%	-1.0%	-1.7%	-1.5%	33.3%	12.3%
Post Settlement Slope (+ up/- down)		-28.5%	-31.5%	-0.1%	1.2%	25.7%	-0.2%	-29.4%	-0.9%	-3.2%	-1.0%	-1.0%	-1.0%	-1.6%	-1.5%	33.2%	12.4%
Grade Change (+ Steeper/- Milder)		0.4%	0.0%	0.1%	-0.1%	-0.6%	0.2%	-0.6%	0.0%	-0.1%	0.0%	0.0%	0.0%	-0.1%	-0.1%	-0.1%	0.1%

TABLE 3 WASTE SETTLEMENT CALCULATIONS

Point	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	
Station	3+50	4+30	5+00	6+50	8+00	9+37	10+75	11+75	14+00	17+00	20+00	23+00	25+00	28+00	31+25	32+00	33+75	
Linear Horizontal Distance (ft.)	350	430	500	650	800	937	1075	1175	1400	1700	2000	2300	2500	2800	3125	3200	3375	
Final Cover Elevation (ft.)	3360	3380	3395	3430	3465	3500	3530	3530	3540	3540	3540	3533	3530	3450	3380	3360	3340	
Final Cover Above Waste (ft.)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
Final Waste Elevation (ft.)	3356.5	3376.5	3391.5	3426.5	3461.5	3496.5	3526.5	3526.5	3536.5	3536.5	3536.5	3529.5	3526.5	3446.5	3376.5	3356.5	3336.5	
Top of Clay Liner (ft.)	3356.5	3334	3312	3312	3314	3350	3350	3320	3318	3308	3305	3302	3300	3295	3290	3315	3336.5	
Waste Thickness (ft.)	0.0	42.5	79.5	114.5	147.5	146.5	176.5	206.5	218.5	228.5	231.5	227.5	226.5	151.5	86.5	41.5	0.0	
Number of Layers	0	4	8	11	15	15	18	20	20	20	20	20	20	15	9	4	0	
Layer Thickness (ft.)	0	11	10	10	10	10	10	10	11	11	12	11	11	10	10	10	0	
Unit Weight of Final Cover (pcf)	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	
Unit Weight of Waste (pcf)	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	
Pre Consolidation Pressure (psf)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
Modified Primary Compression Index	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	
Modified Recompression Index	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	
Modified Secondary Compression Index	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
SUB LAYER	**1**																	
Top of Layer Elevation (ft.)		3376.5	3391.5	3426.5	3461.5	3496.5	3526.5	3526.5	3536.5	3536.5	3536.5	3529.5	3526.5	3446.5	3376.5	3356.5		
Bottom of Layer Elevation (ft.)		3365.9	3381.6	3416.1	3451.7	3486.7	3516.7	3516.2	3525.6	3525.1	3524.9	3518.1	3515.2	3436.4	3366.9	3346.1		
Layer Midpoint Elevation (ft.)		3371.2	3386.5	3421.3	3456.6	3491.6	3521.6	3521.3	3531.0	3530.8	3530.7	3523.8	3520.8	3441.5	3371.7	3351.3		
Initial Effective Stress (psf)		637.5	596.3	624.5	590.0	586.0	588.3	619.5	655.5	685.5	694.5	682.5	679.5	606.0	576.7	622.5		
Final Effective Stress (psf)		1057.5	1016.3	1044.5	1010.0	1006.0	1008.3	1039.5	1075.5	1105.5	1114.5	1102.5	1099.5	1026.0	996.7	1042.5		
Primary Settlement (ft.)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Primary Settlement (in.)		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1		
SUB LAYER	**2**																	
Top of Layer Elevation (ft.)		3365.9	3381.6	3416.1	3451.7	3486.7	3516.7	3516.2	3525.6	3525.1	3524.9	3518.1	3515.2	3436.4	3366.9	3346.1		
Bottom of Layer Elevation (ft.)		3355.3	3371.6	3405.7	3441.8	3477.0	3506.9	3505.9	3514.7	3513.7	3513.4	3506.8	3503.9	3426.3	3357.3	3335.8		
Layer Midpoint Elevation (ft.)		3360.6	3376.6	3410.9	3446.8	3481.9	3511.8	3511.0	3520.1	3519.4	3519.1	3512.4	3509.5	3431.4	3362.1	3340.9		
Initial Effective Stress (psf)		637.5	596.3	624.5	590.0	586.0	588.3	619.5	655.5	685.5	694.5	682.5	679.5	606.0	576.7	622.5		
Final Effective Stress (psf)		2332.5	2208.8	2293.6	2190.0	2178.0	2185.0	2278.5	2386.5	2476.5	2503.5	2467.5	2458.5	2238.0	2150.0	2287.5		
Primary Settlement (ft.)		0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1		
Primary Settlement (in.)		0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.8	0.7	0.7	0.6	0.6	0.6		
SUB LAYER	**3**																	
Top of Layer Elevation (ft.)		3355.3	3371.6	3405.7	3441.8	3477.0	3506.9	3505.9	3514.7	3513.7	3513.4	3506.8	3503.9	3426.3	3357.3	3335.8		
Bottom of Layer Elevation (ft.)		3344.6	3361.7	3395.3	3432.0	3467.2	3497.1	3495.5	3503.7	3502.2	3501.8	3495.4	3492.5	3416.2	3347.7	3325.4		
Layer Midpoint Elevation (ft.)		3349.9	3366.7	3400.5	3436.9	3472.1	3502.0	3500.7	3509.2	3507.9	3507.6	3501.1	3498.2	3421.3	3352.5	3330.6		
Initial Effective Stress (psf)		637.5	596.3	624.5	590.0	586.0	588.3	619.5	655.5	685.5	694.5	682.5	679.5	606.0	576.7	622.5		
Final Effective Stress (psf)		3607.5	3401.3	3542.7	3370.0	3350.0	3361.7	3517.5	3697.5	3847.5	3892.5	3832.5	3817.5	3450.0	3303.3	3532.5		
Primary Settlement (ft.)		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
Primary Settlement (in.)		1.0	0.9	0.9	0.9	0.8	0.9	0.9	1.0	1.1	1.1	1.0	1.0	0.9	0.8	0.9		
SUB LAYER	**4**																	
Top of Layer Elevation (ft.)		3344.6	3361.7	3395.3	3432.0	3467.2	3497.1	3495.5	3503.7	3502.2	3501.8	3495.4	3492.5	3416.2	3347.7	3325.4		
Bottom of Layer Elevation (ft.)		3334.0	3351.8	3384.9	3422.2	3457.4	3487.3	3485.2	3492.8	3490.8	3490.2	3484.0	3481.2	3406.1	3338.1	3315.0		
Layer Midpoint Elevation (ft.)		3339.3	3356.7	3390.1	3427.1	3462.3	3492.2	3490.4	3498.3	3496.5	3496.0	3489.7	3486.9	3411.2	3342.9	3320.2		
Initial Effective Stress (psf)		637.5	596.3	624.5	590.0	586.0	588.3	619.5	655.5	685.5	694.5	682.5	679.5	606.0	576.7	622.5		
Final Effective Stress (psf)		4882.5	4593.8	4791.8	4550.0	4522.0	4538.3	4756.5	5008.5	5218.5	5281.5	5197.5	5176.5	4662.0	4456.7	4777.5		
Primary Settlement (ft.)		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
Primary Settlement (in.)		1.2	1.1	1.1	1.0	1.0	1.0	1.1	1.2	1.3	1.3	1.3	1.3	1.1	1.0	1.1		

TABLE 3 WASTE SETTLEMENT CALCULATIONS (CONTINUED)

Point	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16
Station	3+50	4+30	5+00	6+50	8+00	9+37	10+75	11+75	14+00	17+00	20+00	23+00	25+00	28+00	31+25	32+00	33+75
SUB LAYER									**5**								
Top of Layer Elevation (ft.)			3351.8	3384.9	3422.2	3457.4	3487.3	3485.2	3492.8	3490.8	3490.2	3484.0	3481.2	3406.1	3338.1		
Bottom of Layer Elevation (ft.)			3341.8	3374.5	3412.3	3447.7	3477.5	3474.9	3481.9	3479.4	3478.6	3472.6	3469.9	3396.0	3328.4		
Layer Midpoint Elevation (ft.)			3346.8	3379.7	3417.3	3452.6	3482.4	3480.0	3487.3	3485.1	3484.4	3478.3	3475.5	3401.1	3333.3		
Initial Effective Stress (psf)			596.3	624.5	590.0	586.0	588.3	619.5	655.5	685.5	694.5	682.5	679.5	606.0	576.7		
Final Effective Stress (psf)			5786.3	6040.9	5730.0	5694.0	5715.0	5995.5	6319.5	6589.5	6670.5	6562.5	6535.5	5874.0	5610.0		
Primary Settlement (ft.)			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
Primary Settlement (in.)			1.2	1.3	1.2	1.2	1.2	1.3	1.4	1.4	1.5	1.4	1.4	1.2	1.1		
SUB LAYER									**6**								
Top of Layer Elevation (ft.)			3341.8	3374.5	3412.3	3447.7	3477.5	3474.9	3481.9	3479.4	3478.6	3472.6	3469.9	3396.0	3328.4		
Bottom of Layer Elevation (ft.)			3331.9	3364.0	3402.5	3437.9	3467.7	3464.6	3471.0	3468.0	3467.1	3461.3	3458.6	3385.9	3318.8		
Layer Midpoint Elevation (ft.)			3336.8	3369.3	3407.4	3442.8	3472.6	3469.7	3476.4	3473.7	3472.8	3466.9	3464.2	3391.0	3323.6		
Initial Effective Stress (psf)			596.3	624.5	590.0	586.0	588.3	619.5	655.5	685.5	694.5	682.5	679.5	606.0	576.7		
Final Effective Stress (psf)			6978.8	7290.0	6910.0	6866.0	6891.7	7234.5	7630.5	7960.5	8059.5	7927.5	7894.5	7086.0	6763.3		
Primary Settlement (ft.)			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
Primary Settlement (in.)			1.3	1.4	1.3	1.3	1.3	1.4	1.5	1.6	1.6	1.6	1.6	1.3	1.3		
SUB LAYER									**7**								
Top of Layer Elevation (ft.)			3331.9	3364.0	3402.5	3437.9	3467.7	3464.6	3471.0	3468.0	3467.1	3461.3	3458.6	3385.9	3318.8		
Bottom of Layer Elevation (ft.)			3321.9	3353.6	3392.7	3428.1	3457.9	3454.2	3460.0	3456.5	3455.5	3449.9	3447.2	3375.8	3309.2		
Layer Midpoint Elevation (ft.)			3326.9	3358.8	3397.6	3433.0	3462.8	3459.4	3465.5	3462.2	3461.3	3455.6	3452.9	3380.9	3314.0		
Initial Effective Stress (psf)			596.3	624.5	590.0	586.0	588.3	619.5	655.5	685.5	694.5	682.5	679.5	606.0	576.7		
Final Effective Stress (psf)			8171.3	8539.1	8090.0	8038.0	8068.3	8473.5	8941.5	9331.5	9448.5	9292.5	9253.5	8298.0	7916.7		
Primary Settlement (ft.)			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
Primary Settlement (in.)			1.4	1.5	1.4	1.4	1.4	1.5	1.6	1.7	1.7	1.7	1.7	1.4	1.4		
SUB LAYER									**8**								
Top of Layer Elevation (ft.)			3321.9	3353.6	3392.7	3428.1	3457.9	3454.2	3460.0	3456.5	3455.5	3449.9	3447.2	3375.8	3309.2		
Bottom of Layer Elevation (ft.)			3312.0	3343.2	3382.8	3418.4	3448.1	3443.9	3449.1	3445.1	3443.9	3438.5	3435.9	3365.7	3299.6		
Layer Midpoint Elevation (ft.)			3317.0	3348.4	3387.8	3423.3	3453.0	3449.1	3454.6	3450.8	3449.7	3444.2	3441.6	3370.8	3304.4		
Initial Effective Stress (psf)			596.3	624.5	590.0	586.0	588.3	619.5	655.5	685.5	694.5	682.5	679.5	606.0	576.7		
Final Effective Stress (psf)			9363.8	9788.2	9270.0	9210.0	9245.0	9712.5	10252.5	10702.5	10837.5	10657.5	10612.5	9510.0	9070.0		
Primary Settlement (ft.)			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1		
Primary Settlement (in.)			1.5	1.6	1.5	1.5	1.5	1.6	1.7	1.8	1.8	1.8	1.8	1.5	1.4		
SUB LAYER									**9**								
Top of Layer Elevation (ft.)				3343.2	3382.8	3418.4	3448.1	3443.9	3449.1	3445.1	3443.9	3438.5	3435.9	3365.7	3299.6		
Bottom of Layer Elevation (ft.)				3332.8	3373.0	3408.6	3438.3	3433.6	3438.2	3433.7	3432.3	3427.1	3424.6	3355.6	3290.0		
Layer Midpoint Elevation (ft.)				3338.0	3377.9	3413.5	3443.2	3438.7	3443.6	3439.4	3438.1	3432.8	3430.2	3360.7	3294.8		
Initial Effective Stress (psf)				624.5	590.0	586.0	588.3	619.5	655.5	685.5	694.5	682.5	679.5	606.0	576.7		
Final Effective Stress (psf)				11037.3	10450.0	10382.0	10421.7	10951.5	11563.5	12073.5	12226.5	12022.5	11971.5	10722.0	10223.3		
Primary Settlement (ft.)				0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1		
Primary Settlement (in.)				1.7	1.6	1.5	1.5	1.6	1.8	1.9	1.9	1.9	1.8	1.6	1.5		
SUB LAYER									**10**								
Top of Layer Elevation (ft.)				3332.8	3373.0	3408.6	3438.3	3433.6	3438.2	3433.7	3432.3	3427.1	3424.6	3355.6			
Bottom of Layer Elevation (ft.)				3322.4	3363.2	3398.8	3428.4	3423.3	3427.3	3422.3	3420.8	3415.8	3413.3	3345.5			
Layer Midpoint Elevation (ft.)				3327.6	3368.1	3403.7	3433.3	3428.4	3432.7	3428.0	3426.5	3421.4	3418.9	3350.6			
Initial Effective Stress (psf)				624.5	590.0	586.0	588.3	619.5	655.5	685.5	694.5	682.5	679.5	606.0			
Final Effective Stress (psf)				12286.4	11630.0	11554.0	11598.3	12190.5	12874.5	13444.5	13615.5	13387.5	13330.5	11934.0			
Primary Settlement (ft.)				0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1			
Primary Settlement (in.)				1.7	1.6	1.6	1.6	1.7	1.8	1.9	2.0	1.9	1.9	1.7			

TABLE 3 WASTE SETTLEMENT CALCULATIONS (CONTINUED)

Point	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16
Station	3+50	4+30	5+00	6+50	8+00	9+37	10+75	11+75	14+00	17+00	20+00	23+00	25+00	28+00	31+25	32+00	33+75
SUB LAYER									**11**								
Top of Layer Elevation (ft.)				3322.4	3363.2	3398.8	3428.4	3423.3	3427.3	3422.3	3420.8	3415.8	3413.3	3345.5			
Bottom of Layer Elevation (ft.)				3312.0	3353.3	3389.1	3418.6	3412.9	3416.3	3410.8	3409.2	3404.4	3401.9	3335.4			
Layer Midpoint Elevation (ft.)				3317.2	3358.3	3394.0	3423.5	3418.1	3421.8	3416.5	3415.0	3410.1	3407.6	3340.5			
Initial Effective Stress (psf)				624.5	590.0	586.0	588.3	619.5	655.5	685.5	694.5	682.5	679.5	606.0			
Final Effective Stress (psf)				13535.5	12810.0	12726.0	12775.0	13429.5	14185.5	14815.5	15004.5	14752.5	14689.5	13146.0			
Primary Settlement (ft.)				0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1			
Primary Settlement (in.)				1.8	1.7	1.7	1.7	1.8	1.9	2.0	2.0	2.0	2.0	1.7			
SUB LAYER									**12**								
Top of Layer Elevation (ft.)					3353.3	3389.1	3418.6	3412.9	3416.3	3410.8	3409.2	3404.4	3401.9	3335.4			
Bottom of Layer Elevation (ft.)					3343.5	3379.3	3408.8	3402.6	3405.4	3399.4	3397.6	3393.0	3390.6	3325.3			
Layer Midpoint Elevation (ft.)					3348.4	3384.2	3413.7	3407.8	3410.9	3405.1	3403.4	3398.7	3396.3	3330.4			
Initial Effective Stress (psf)					590.0	586.0	588.3	619.5	655.5	685.5	694.5	682.5	679.5	606.0			
Final Effective Stress (psf)					13990.0	13898.0	13951.7	14668.5	15496.5	16186.5	16393.5	16117.5	16048.5	14358.0			
Primary Settlement (ft.)					0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1			
Primary Settlement (in.)					1.7	1.7	1.7	1.8	2.0	2.1	2.1	2.1	2.1	1.8			
SUB LAYER									**13**								
Top of Layer Elevation (ft.)					3343.5	3379.3	3408.8	3402.6	3405.4	3399.4	3397.6	3393.0	3390.6	3325.3			
Bottom of Layer Elevation (ft.)					3333.7	3369.5	3399.0	3392.3	3394.5	3388.0	3386.0	3381.6	3379.3	3315.2			
Layer Midpoint Elevation (ft.)					3338.6	3374.4	3403.9	3397.4	3399.9	3393.7	3391.8	3387.3	3384.9	3320.3			
Initial Effective Stress (psf)					590.0	586.0	588.3	619.5	655.5	685.5	694.5	682.5	679.5	606.0			
Final Effective Stress (psf)					15170.0	15070.0	15128.3	15907.5	16807.5	17557.5	17782.5	17482.5	17407.5	15570.0			
Primary Settlement (ft.)					0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2			
Primary Settlement (in.)					1.8	1.8	1.8	1.9	2.0	2.1	2.2	2.1	2.1	1.8			
SUB LAYER									**14**								
Top of Layer Elevation (ft.)					3333.7	3369.5	3399.0	3392.3	3394.5	3388.0	3386.0	3381.6	3379.3	3315.2			
Bottom of Layer Elevation (ft.)					3323.8	3359.8	3389.2	3382.0	3383.6	3376.6	3374.5	3370.3	3368.0	3305.1			
Layer Midpoint Elevation (ft.)					3328.8	3364.7	3394.1	3387.1	3389.0	3382.3	3380.2	3375.9	3373.6	3310.2			
Initial Effective Stress (psf)					590.0	586.0	588.3	619.5	655.5	685.5	694.5	682.5	679.5	606.0			
Final Effective Stress (psf)					16350.0	16242.0	16305.0	17146.5	18118.5	18928.5	19171.5	18847.5	18766.5	16782.0			
Primary Settlement (ft.)					0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2			
Primary Settlement (in.)					1.8	1.8	1.8	1.9	2.1	2.2	2.2	2.2	2.2	1.9			
SUB LAYER									**15**								
Top of Layer Elevation (ft.)					3323.8	3359.8	3389.2	3382.0	3383.6	3376.6	3374.5	3370.3	3368.0	3305.1			
Bottom of Layer Elevation (ft.)					3314.0	3350.0	3379.4	3371.6	3372.6	3365.1	3362.9	3358.9	3356.6	3295.0			
Layer Midpoint Elevation (ft.)					3318.9	3354.9	3384.3	3376.8	3378.1	3370.8	3368.7	3364.6	3362.3	3300.1			
Initial Effective Stress (psf)					590.0	586.0	588.3	619.5	655.5	685.5	694.5	682.5	679.5	606.0			
Final Effective Stress (psf)					17530.0	17414.0	17481.7	18385.5	19429.5	20299.5	20560.5	20212.5	20125.5	17994.0			
Primary Settlement (ft.)					0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2			
Primary Settlement (in.)					1.9	1.9	1.9	2.0	2.1	2.2	2.3	2.2	2.2	1.9			
SUB LAYER									**16**								
Top of Layer Elevation (ft.)							3379.4	3371.6	3372.6	3365.1	3362.9	3358.9	3356.6				
Bottom of Layer Elevation (ft.)							3369.6	3361.3	3361.7	3353.7	3351.3	3347.5	3345.3				
Layer Midpoint Elevation (ft.)							3374.5	3366.5	3367.2	3359.4	3357.1	3353.2	3351.0				
Initial Effective Stress (psf)							588.3	619.5	655.5	685.5	694.5	682.5	679.5				
Final Effective Stress (psf)							18658.3	19624.5	20740.5	21670.5	21949.5	21577.5	21484.5				
Primary Settlement (ft.)							0.2	0.2	0.2	0.2	0.2	0.2	0.2				
Primary Settlement (in.)							1.9	2.0	2.2	2.3	2.3	2.3	2.3				

TABLE 3 WASTE SETTLEMENT CALCULATIONS (CONTINUED)

Point	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16
Station	3+50	4+30	5+00	6+50	8+00	9+37	10+75	11+75	14+00	17+00	20+00	23+00	25+00	28+00	31+25	32+00	33+75
SUB LAYER									**17**								
Top of Layer Elevation (ft.)							3369.6	3361.3	3361.7	3353.7	3351.3	3347.5	3345.3				
Bottom of Layer Elevation (ft.)							3359.8	3351.0	3350.8	3342.3	3339.7	3336.1	3334.0				
Layer Midpoint Elevation (ft.)							3364.7	3356.1	3356.2	3348.0	3345.5	3341.8	3339.6				
Initial Effective Stress (psf)							588.3	619.5	655.5	685.5	694.5	682.5	679.5				
Final Effective Stress (psf)							19835.0	20863.5	22051.5	23041.5	23338.5	22942.5	22843.5				
Primary Settlement (ft.)							0.2	0.2	0.2	0.2	0.2	0.2	0.2				
Primary Settlement (in.)							1.9	2.1	2.2	2.3	2.4	2.3	2.3				
SUB LAYER									**18**								
Top of Layer Elevation (ft.)							3359.8	3351.0	3350.8	3342.3	3339.7	3336.1	3334.0				
Bottom of Layer Elevation (ft.)							3350.0	3340.7	3339.9	3330.9	3328.2	3324.8	3322.7				
Layer Midpoint Elevation (ft.)							3354.9	3345.8	3345.3	3336.6	3333.9	3330.4	3328.3				
Initial Effective Stress (psf)							588.3	619.5	655.5	685.5	694.5	682.5	679.5				
Final Effective Stress (psf)							21011.7	22102.5	23362.5	24412.5	24727.5	24307.5	24202.5				
Primary Settlement (ft.)							0.2	0.2	0.2	0.2	0.2	0.2	0.2				
Primary Settlement (in.)							2.0	2.1	2.2	2.4	2.4	2.4	2.3				
SUB LAYER									**19**								
Top of Layer Elevation (ft.)								3340.7	3339.9	3330.9	3328.2	3324.8	3322.7				
Bottom of Layer Elevation (ft.)								3330.3	3328.9	3319.4	3316.6	3313.4	3311.3				
Layer Midpoint Elevation (ft.)								3335.5	3334.4	3325.1	3322.4	3319.1	3317.0				
Initial Effective Stress (psf)								619.5	655.5	685.5	694.5	682.5	679.5				
Final Effective Stress (psf)								23341.5	24673.5	25783.5	26116.5	25672.5	25561.5				
Primary Settlement (ft.)								0.2	0.2	0.2	0.2	0.2	0.2				
Primary Settlement (in.)								2.1	2.3	2.4	2.4	2.4	2.4				
SUB LAYER									**20**								
Top of Layer Elevation (ft.)								3330.3	3328.9	3319.4	3316.6	3313.4	3311.3				
Bottom of Layer Elevation (ft.)								3320.0	3318.0	3308.0	3305.0	3302.0	3300.0				
Layer Midpoint Elevation (ft.)								3325.2	3323.5	3313.7	3310.8	3307.7	3305.7				
Initial Effective Stress (psf)								619.5	655.5	685.5	694.5	682.5	679.5				
Final Effective Stress (psf)								24580.5	25984.5	27154.5	27505.5	27037.5	26920.5				
Primary Settlement (ft.)								0.2	0.2	0.2	0.2	0.2	0.2				
Primary Settlement (in.)								2.2	2.3	2.4	2.5	2.4	2.4				
SETTLEMENT																	
Total Primary Settlement (in.)	0.0	2.9	8.1	13.8	20.0	19.8	25.7	31.8	34.1	36.0	36.6	35.8	35.6	20.7	9.2	2.8	0.0
Total Secondary Settlement (in.)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Settlement (in.)	0.0	2.9	8.1	13.8	20.0	19.8	25.7	31.8	34.1	36.0	36.6	35.8	35.6	20.7	9.2	2.8	0.0
Total Settlement (ft.)	0.0	0.2	0.7	1.1	1.7	1.7	2.1	2.6	2.8	3.0	3.1	3.0	3.0	1.7	0.8	0.2	0.0

TABLE 4 FINAL COVER SETTLEMENT CALCULATIONS

Point	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16
Station	3+50	4+30	5+00	6+50	8+00	9+37	10+75	11+75	14+00	17+00	20+00	23+00	25+00	28+00	31+25	32+00	33+70
Linear Horizontal Distance (ft.)	350	430	500	650	800	937	1075	1175	1400	1700	2000	2300	2500	2800	3125	3200	3370
Final Cover Elevation (ft.)	3360	3380	3395	3430	3465	3500	3530	3530	3540	3540	3540	3533	3530	3450	3380	3363	3330
Final Cover Above Waste (ft.)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Final Waste Elevation (ft.)	3356.5	3376.5	3391.5	3426.5	3461.5	3496.5	3526.5	3526.5	3536.5	3536.5	3536.5	3529.5	3526.5	3446.5	3376.5	3359.5	3326.5
Top of Clay Liner (ft.)	3356.5	3334	3312	3312	3314	3350	3350	3320	3318	3308	3305	3302	3300	3295	3290	3315	3331.5
Waste Thickness (ft.)	0.0	42.5	79.5	114.5	147.5	146.5	176.5	206.5	218.5	228.5	231.5	227.5	226.5	151.5	86.5	44.5	-5.0
Number of Layers	0	4	8	11	15	15	18	20	20	20	20	20	20	15	9	4	0
Layer Thickness (ft.)	0	11	10	10	10	10	10	10	11	11	12	11	11	10	10	11	0
Unit Weight of Final Cover (pcf)	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
Unit Weight of Waste (pcf)	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
Pre Consolidation Pressure (psf)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Modified Primary Compression Index	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012
Modified Recompression Index	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
Modified Secondary Compression Index	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SUB LAYER									1								
Top of Layer Elevation (ft.)		3376.5	3391.5	3426.5	3461.5	3496.5	3526.5	3526.5	3536.5	3536.5	3536.5	3529.5	3526.5	3446.5	3376.5	3359.5	
Bottom of Layer Elevation (ft.)		3365.9	3381.6	3416.1	3451.7	3486.7	3516.7	3516.2	3525.6	3525.1	3524.9	3518.1	3515.2	3436.4	3366.9	3348.4	
Layer Midpoint Elevation (ft.)		3371.2	3386.5	3421.3	3456.6	3491.6	3521.6	3521.3	3531.0	3530.8	3530.7	3523.8	3520.8	3441.5	3371.7	3353.9	
Initial Effective Stress (psf)		637.5	596.3	624.5	590.0	586.0	588.3	619.5	655.5	685.5	694.5	682.5	679.5	606.0	576.7	667.5	
Final Effective Stress (psf)		1057.5	1016.3	1044.5	1010.0	1006.0	1008.3	1039.5	1075.5	1105.5	1114.5	1102.5	1099.5	1026.0	996.7	1087.5	
Primary Settlement (ft.)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Primary Settlement (in.)		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.2	
SUB LAYER									2								
Top of Layer Elevation (ft.)		3365.9	3381.6	3416.1	3451.7	3486.7	3516.7	3516.2	3525.6	3525.1	3524.9	3518.1	3515.2	3436.4	3366.9	3348.4	
Bottom of Layer Elevation (ft.)		3355.3	3371.6	3405.7	3441.8	3477.0	3506.9	3505.9	3514.7	3513.7	3513.4	3506.8	3503.9	3426.3	3357.3	3337.3	
Layer Midpoint Elevation (ft.)		3360.6	3376.6	3410.9	3446.8	3481.9	3511.8	3511.0	3520.1	3519.4	3519.1	3512.4	3509.5	3431.4	3362.1	3342.8	
Initial Effective Stress (psf)		1912.5	1788.8	1873.6	1770.0	1758.0	1765.0	1858.5	1966.5	2056.5	2083.5	2047.5	2038.5	1818.0	1730.0	2002.5	
Final Effective Stress (psf)		2332.5	2208.8	2293.6	2190.0	2178.0	2185.0	2278.5	2386.5	2476.5	2503.5	2467.5	2458.5	2238.0	2150.0	2422.5	
Primary Settlement (ft.)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Primary Settlement (in.)		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
SUB LAYER									3								
Top of Layer Elevation (ft.)		3355.3	3371.6	3405.7	3441.8	3477.0	3506.9	3505.9	3514.7	3513.7	3513.4	3506.8	3503.9	3426.3	3357.3	3337.3	
Bottom of Layer Elevation (ft.)		3344.6	3361.7	3395.3	3432.0	3467.2	3497.1	3495.5	3503.7	3502.2	3501.8	3495.4	3492.5	3416.2	3347.7	3326.1	
Layer Midpoint Elevation (ft.)		3349.9	3366.7	3400.5	3436.9	3472.1	3502.0	3500.7	3509.2	3507.9	3507.6	3501.1	3498.2	3421.3	3352.5	3331.7	
Initial Effective Stress (psf)		3187.5	2981.3	3122.7	2950.0	2930.0	2941.7	3097.5	3277.5	3427.5	3472.5	3412.5	3397.5	3030.0	2883.3	3337.5	
Final Effective Stress (psf)		3607.5	3401.3	3542.7	3370.0	3350.0	3361.7	3517.5	3697.5	3847.5	3892.5	3832.5	3817.5	3450.0	3303.3	3757.5	
Primary Settlement (ft.)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Primary Settlement (in.)		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	

TABLE 4 FINAL COVER SETTLEMENT CALCULATIONS (CONTINUED)

Point	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16
Station	3+50	4+30	5+00	6+50	8+00	9+37	10+75	11+75	14+00	17+00	20+00	23+00	25+00	28+00	31+25	32+00	33+70
SUB LAYER									**4**								
Top of Layer Elevation (ft.)		3344.6	3361.7	3395.3	3432.0	3467.2	3497.1	3495.5	3503.7	3502.2	3501.8	3495.4	3492.5	3416.2	3347.7	3326.1	
Bottom of Layer Elevation (ft.)		3334.0	3351.8	3384.9	3422.2	3457.4	3487.3	3485.2	3492.8	3490.8	3490.2	3484.0	3481.2	3406.1	3338.1	3315.0	
Layer Midpoint Elevation (ft.)		3339.3	3356.7	3390.1	3427.1	3462.3	3492.2	3490.4	3498.3	3496.5	3496.0	3489.7	3486.9	3411.2	3342.9	3320.6	
Initial Effective Stress (psf)		4462.5	4173.8	4371.8	4130.0	4102.0	4118.3	4336.5	4588.5	4798.5	4861.5	4777.5	4756.5	4242.0	4036.7	4672.5	
Final Effective Stress (psf)		4882.5	4593.8	4791.8	4550.0	4522.0	4538.3	4756.5	5008.5	5218.5	5281.5	5197.5	5176.5	4662.0	4456.7	5092.5	
Primary Settlement (ft.)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Primary Settlement (in.)		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
SUB LAYER									**5**								
Top of Layer Elevation (ft.)			3351.8	3384.9	3422.2	3457.4	3487.3	3485.2	3492.8	3490.8	3490.2	3484.0	3481.2	3406.1	3338.1		
Bottom of Layer Elevation (ft.)			3341.8	3374.5	3412.3	3447.7	3477.5	3474.9	3481.9	3479.4	3478.6	3472.6	3469.9	3396.0	3328.4		
Layer Midpoint Elevation (ft.)			3346.8	3379.7	3417.3	3452.6	3482.4	3480.0	3487.3	3485.1	3484.4	3478.3	3475.5	3401.1	3333.3		
Initial Effective Stress (psf)			5366.3	5620.9	5310.0	5274.0	5295.0	5575.5	5899.5	6169.5	6250.5	6142.5	6115.5	5454.0	5190.0		
Final Effective Stress (psf)			5786.3	6040.9	5730.0	5694.0	5715.0	5995.5	6319.5	6589.5	6670.5	6562.5	6535.5	5874.0	5610.0		
Primary Settlement (ft.)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Primary Settlement (in.)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
SUB LAYER									**6**								
Top of Layer Elevation (ft.)			3341.8	3374.5	3412.3	3447.7	3477.5	3474.9	3481.9	3479.4	3478.6	3472.6	3469.9	3396.0	3328.4		
Bottom of Layer Elevation (ft.)			3331.9	3364.0	3402.5	3437.9	3467.7	3464.6	3471.0	3468.0	3467.1	3461.3	3458.6	3385.9	3318.8		
Layer Midpoint Elevation (ft.)			3336.8	3369.3	3407.4	3442.8	3472.6	3469.7	3476.4	3473.7	3472.8	3466.9	3464.2	3391.0	3323.6		
Initial Effective Stress (psf)			6558.8	6870.0	6490.0	6446.0	6471.7	6814.5	7210.5	7540.5	7639.5	7507.5	7474.5	6666.0	6343.3		
Final Effective Stress (psf)			6978.8	7290.0	6910.0	6866.0	6891.7	7234.5	7630.5	7960.5	8059.5	7927.5	7894.5	7086.0	6763.3		
Primary Settlement (ft.)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Primary Settlement (in.)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
SUB LAYER									**7**								
Top of Layer Elevation (ft.)			3331.9	3364.0	3402.5	3437.9	3467.7	3464.6	3471.0	3468.0	3467.1	3461.3	3458.6	3385.9	3318.8		
Bottom of Layer Elevation (ft.)			3321.9	3353.6	3392.7	3428.1	3457.9	3454.2	3460.0	3456.5	3455.5	3449.9	3447.2	3375.8	3309.2		
Layer Midpoint Elevation (ft.)			3326.9	3358.8	3397.6	3433.0	3462.8	3459.4	3465.5	3462.2	3461.3	3455.6	3452.9	3380.9	3314.0		
Initial Effective Stress (psf)			7751.3	8119.1	7670.0	7618.0	7648.3	8053.5	8521.5	8911.5	9028.5	8872.5	8833.5	7878.0	7496.7		
Final Effective Stress (psf)			8171.3	8539.1	8090.0	8038.0	8068.3	8473.5	8941.5	9331.5	9448.5	9292.5	9253.5	8298.0	7916.7		
Primary Settlement (ft.)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Primary Settlement (in.)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
SUB LAYER									**8**								
Top of Layer Elevation (ft.)			3321.9	3353.6	3392.7	3428.1	3457.9	3454.2	3460.0	3456.5	3455.5	3449.9	3447.2	3375.8	3309.2		
Bottom of Layer Elevation (ft.)			3312.0	3343.2	3382.8	3418.4	3448.1	3443.9	3449.1	3445.1	3443.9	3438.5	3435.9	3365.7	3299.6		
Layer Midpoint Elevation (ft.)			3317.0	3348.4	3387.8	3423.3	3453.0	3449.1	3454.6	3450.8	3449.7	3444.2	3441.6	3370.8	3304.4		
Initial Effective Stress (psf)			8943.8	9368.2	8850.0	8790.0	8825.0	9292.5	9832.5	10282.5	10417.5	10237.5	10192.5	9090.0	8650.0		
Final Effective Stress (psf)			9363.8	9788.2	9270.0	9210.0	9245.0	9712.5	10252.5	10702.5	10837.5	10657.5	10612.5	9510.0	9070.0		
Primary Settlement (ft.)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Primary Settlement (in.)			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

TABLE 4 FINAL COVER SETTLEMENT CALCULATIONS (CONTINUED)

Point	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16
Station	3+50	4+30	5+00	6+50	8+00	9+37	10+75	11+75	14+00	17+00	20+00	23+00	25+00	28+00	31+25	32+00	33+70
SUB LAYER									**9**								
Top of Layer Elevation (ft.)				3343.2	3382.8	3418.4	3448.1	3443.9	3449.1	3445.1	3443.9	3438.5	3435.9	3365.7	3299.6		
Bottom of Layer Elevation (ft.)				3332.8	3373.0	3408.6	3438.3	3433.6	3438.2	3433.7	3432.3	3427.1	3424.6	3355.6	3290.0		
Layer Midpoint Elevation (ft.)				3338.0	3377.9	3413.5	3443.2	3438.7	3443.6	3439.4	3438.1	3432.8	3430.2	3360.7	3294.8		
Initial Effective Stress (psf)				10617.3	10030.0	9962.0	10001.7	10531.5	11143.5	11653.5	11806.5	11602.5	11551.5	10302.0	9803.3		
Final Effective Stress (psf)				11037.3	10450.0	10382.0	10421.7	10951.5	11563.5	12073.5	12226.5	12022.5	11971.5	10722.0	10223.3		
Primary Settlement (ft.)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Primary Settlement (in.)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
SUB LAYER									**10**								
Top of Layer Elevation (ft.)				3332.8	3373.0	3408.6	3438.3	3433.6	3438.2	3433.7	3432.3	3427.1	3424.6	3355.6			
Bottom of Layer Elevation (ft.)				3322.4	3363.2	3398.8	3428.4	3423.3	3427.3	3422.3	3420.8	3415.8	3413.3	3345.5			
Layer Midpoint Elevation (ft.)				3327.6	3368.1	3403.7	3433.3	3428.4	3432.7	3428.0	3426.5	3421.4	3418.9	3350.6			
Initial Effective Stress (psf)				11866.4	11210.0	11134.0	11178.3	11770.5	12454.5	13024.5	13195.5	12967.5	12910.5	11514.0			
Final Effective Stress (psf)				12286.4	11630.0	11554.0	11598.3	12190.5	12874.5	13444.5	13615.5	13387.5	13330.5	11934.0			
Primary Settlement (ft.)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Primary Settlement (in.)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
SUB LAYER									**11**								
Top of Layer Elevation (ft.)				3322.4	3363.2	3398.8	3428.4	3423.3	3427.3	3422.3	3420.8	3415.8	3413.3	3345.5			
Bottom of Layer Elevation (ft.)				3312.0	3353.3	3389.1	3418.6	3412.9	3416.3	3410.8	3409.2	3404.4	3401.9	3335.4			
Layer Midpoint Elevation (ft.)				3317.2	3358.3	3394.0	3423.5	3418.1	3421.8	3416.5	3415.0	3410.1	3407.6	3340.5			
Initial Effective Stress (psf)				13115.5	12390.0	12306.0	12355.0	13009.5	13765.5	14395.5	14584.5	14332.5	14269.5	12726.0			
Final Effective Stress (psf)				13535.5	12810.0	12726.0	12775.0	13429.5	14185.5	14815.5	15004.5	14752.5	14689.5	13146.0			
Primary Settlement (ft.)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Primary Settlement (in.)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
SUB LAYER									**12**								
Top of Layer Elevation (ft.)					3353.3	3389.1	3418.6	3412.9	3416.3	3410.8	3409.2	3404.4	3401.9	3335.4			
Bottom of Layer Elevation (ft.)					3343.5	3379.3	3408.8	3402.6	3405.4	3399.4	3397.6	3393.0	3390.6	3325.3			
Layer Midpoint Elevation (ft.)					3348.4	3384.2	3413.7	3407.8	3410.9	3405.1	3403.4	3398.7	3396.3	3330.4			
Initial Effective Stress (psf)					13570.0	13478.0	13531.7	14248.5	15076.5	15766.5	15973.5	15697.5	15628.5	13938.0			
Final Effective Stress (psf)					13990.0	13898.0	13951.7	14668.5	15496.5	16186.5	16393.5	16117.5	16048.5	14358.0			
Primary Settlement (ft.)					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Primary Settlement (in.)					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
SUB LAYER									**13**								
Top of Layer Elevation (ft.)					3343.5	3379.3	3408.8	3402.6	3405.4	3399.4	3397.6	3393.0	3390.6	3325.3			
Bottom of Layer Elevation (ft.)					3333.7	3369.5	3399.0	3392.3	3394.5	3388.0	3386.0	3381.6	3379.3	3315.2			
Layer Midpoint Elevation (ft.)					3338.6	3374.4	3403.9	3397.4	3399.9	3393.7	3391.8	3387.3	3384.9	3320.3			
Initial Effective Stress (psf)					14750.0	14650.0	14708.3	15487.5	16387.5	17137.5	17362.5	17062.5	16987.5	15150.0			
Final Effective Stress (psf)					15170.0	15070.0	15128.3	15907.5	16807.5	17557.5	17782.5	17482.5	17407.5	15570.0			
Primary Settlement (ft.)					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Primary Settlement (in.)					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
SUB LAYER									**14**								
Top of Layer Elevation (ft.)					3333.7	3369.5	3399.0	3392.3	3394.5	3388.0	3386.0	3381.6	3379.3	3315.2			
Bottom of Layer Elevation (ft.)					3323.8	3359.8	3389.2	3382.0	3383.6	3376.6	3374.5	3370.3	3368.0	3305.1			
Layer Midpoint Elevation (ft.)					3328.8	3364.7	3394.1	3387.1	3389.0	3382.3	3380.2	3375.9	3373.6	3310.2			
Initial Effective Stress (psf)					15930.0	15822.0	15885.0	16726.5	17698.5	18508.5	18751.5	18427.5	18346.5	16362.0			
Final Effective Stress (psf)					16350.0	16242.0	16305.0	17146.5	18118.5	18928.5	19171.5	18847.5	18766.5	16782.0			
Primary Settlement (ft.)					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Primary Settlement (in.)					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			

TABLE 4 FINAL COVER SETTLEMENT CALCULATIONS (CONTINUED)

Point	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16
Station	3+50	4+30	5+00	6+50	8+00	9+37	10+75	11+75	14+00	17+00	20+00	23+00	25+00	28+00	31+25	32+00	33+70
SUB LAYER									**15**								
Top of Layer Elevation (ft.)					3323.8	3359.8	3389.2	3382.0	3383.6	3376.6	3374.5	3370.3	3368.0	3305.1			
Bottom of Layer Elevation (ft.)					3314.0	3350.0	3379.4	3371.6	3372.6	3365.1	3362.9	3358.9	3356.6	3295.0			
Layer Midpoint Elevation (ft.)					3318.9	3354.9	3384.3	3376.8	3378.1	3370.8	3368.7	3364.6	3362.3	3300.1			
Initial Effective Stress (psf)					17110.0	16994.0	17061.7	17965.5	19009.5	19879.5	20140.5	19792.5	19705.5	17574.0			
Final Effective Stress (psf)					17530.0	17414.0	17481.7	18385.5	19429.5	20299.5	20560.5	20212.5	20125.5	17994.0			
Primary Settlement (ft.)					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Primary Settlement (in.)					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
SUB LAYER									**16**								
Top of Layer Elevation (ft.)							3379.4	3371.6	3372.6	3365.1	3362.9	3358.9	3356.6				
Bottom of Layer Elevation (ft.)							3369.6	3361.3	3361.7	3353.7	3351.3	3347.5	3345.3				
Layer Midpoint Elevation (ft.)							3374.5	3366.5	3367.2	3359.4	3357.1	3353.2	3351.0				
Initial Effective Stress (psf)							18238.3	19204.5	20320.5	21250.5	21529.5	21157.5	21064.5				
Final Effective Stress (psf)							18658.3	19624.5	20740.5	21670.5	21949.5	21577.5	21484.5				
Primary Settlement (ft.)							0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Primary Settlement (in.)							0.0	0.0	0.0	0.0	0.0	0.0	0.0				
SUB LAYER									**17**								
Top of Layer Elevation (ft.)							3369.6	3361.3	3361.7	3353.7	3351.3	3347.5	3345.3				
Bottom of Layer Elevation (ft.)							3359.8	3351.0	3350.8	3342.3	3339.7	3336.1	3334.0				
Layer Midpoint Elevation (ft.)							3364.7	3356.1	3356.2	3348.0	3345.5	3341.8	3339.6				
Initial Effective Stress (psf)							19415.0	20443.5	21631.5	22621.5	22918.5	22522.5	22423.5				
Final Effective Stress (psf)							19835.0	20863.5	22051.5	23041.5	23338.5	22942.5	22843.5				
Primary Settlement (ft.)							0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Primary Settlement (in.)							0.0	0.0	0.0	0.0	0.0	0.0	0.0				
SUB LAYER									**18**								
Top of Layer Elevation (ft.)							3359.8	3351.0	3350.8	3342.3	3339.7	3336.1	3334.0				
Bottom of Layer Elevation (ft.)							3350.0	3340.7	3339.9	3330.9	3328.2	3324.8	3322.7				
Layer Midpoint Elevation (ft.)							3354.9	3345.8	3345.3	3336.6	3333.9	3330.4	3328.3				
Initial Effective Stress (psf)							20591.7	21682.5	22942.5	23992.5	24307.5	23887.5	23782.5				
Final Effective Stress (psf)							21011.7	22102.5	23362.5	24412.5	24727.5	24307.5	24202.5				
Primary Settlement (ft.)							0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Primary Settlement (in.)							0.0	0.0	0.0	0.0	0.0	0.0	0.0				
SUB LAYER									**19**								
Top of Layer Elevation (ft.)								3340.7	3339.9	3330.9	3328.2	3324.8	3322.7				
Bottom of Layer Elevation (ft.)								3330.3	3328.9	3319.4	3316.6	3313.4	3311.3				
Layer Midpoint Elevation (ft.)								3335.5	3334.4	3325.1	3322.4	3319.1	3317.0				
Initial Effective Stress (psf)								22921.5	24253.5	25363.5	25696.5	25252.5	25141.5				
Final Effective Stress (psf)								23341.5	24673.5	25783.5	26116.5	25672.5	25561.5				
Primary Settlement (ft.)								0.0	0.0	0.0	0.0	0.0	0.0				
Primary Settlement (in.)								0.0	0.0	0.0	0.0	0.0	0.0				

TABLE 4 FINAL COVER SETTLEMENT CALCULATIONS (CONTINUED)

Point	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16
Station	3+50	4+30	5+00	6+50	8+00	9+37	10+75	11+75	14+00	17+00	20+00	23+00	25+00	28+00	31+25	32+00	33+70
SUB LAYER									20								
Top of Layer Elevation (ft.)								3330.3	3328.9	3319.4	3316.6	3313.4	3311.3				
Bottom of Layer Elevation (ft.)								3320.0	3318.0	3308.0	3305.0	3302.0	3300.0				
Layer Midpoint Elevation (ft.)								3325.2	3323.5	3313.7	3310.8	3307.7	3305.7				
Initial Effective Stress (psf)								24160.5	25564.5	26734.5	27085.5	26617.5	26500.5				
Final Effective Stress (psf)								24580.5	25984.5	27154.5	27505.5	27037.5	26920.5				
Primary Settlement (ft.)								0.0	0.0	0.0	0.0	0.0	0.0				
Primary Settlement (in.)								0.0	0.0	0.0	0.0	0.0	0.0				
SETTLEMENT																	
Total Primary Settlement (in.)	0.0	0.4	0.5	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.7	0.6	0.4	0.0
Total Secondary Settlement (in.)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Settlement (in.)	0.0	0.4	0.5	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.7	0.6	0.4	0.0
Total Settlement (ft.)	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Differential Settlement (ft.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRADES AND STRAINS																	
Final Waste Elevation Prior to Settlement (ft.)	3356.5	3376.5	3391.5	3426.5	3461.5	3496.5	3526.5	3526.5	3536.5	3536.5	3536.5	3529.5	3526.5	3446.5	3376.5	3359.5	3326.5
Final Waste Elevation After settlement (ft.)	3356.5	3376.5	3391.5	3426.4	3461.4	3496.4	3526.4	3526.4	3536.4	3536.4	3536.4	3529.4	3526.4	3446.4	3376.5	3359.5	3326.5
Initial Final Cover GeoMembrane Segment Length (ft.)	0.0	82.5	71.6	154.0	154.0	141.4	141.2	100.0	225.2	300.0	300.0	300.1	200.0	310.5	332.5	76.9	173.2
PostSettlement Final Cover GeoMemberane Segment	0.0	82.5	71.6	154.0	154.0	141.4	141.2	100.0	225.2	300.0	300.0	300.1	200.0	310.5	332.5	76.9	173.2
Strain (+ Compression/- Tension)		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
PreSettlement Slope (+ up/- down)		25.0%	21.4%	23.3%	23.3%	25.5%	21.7%	0.0%	4.4%	0.0%	0.0%	-2.3%	-1.5%	-26.7%	-21.5%	-22.7%	-19.4%
Post Settlement Slope (+ up/- down)		25.0%	21.4%	23.3%	23.3%	25.5%	21.7%	0.0%	4.4%	0.0%	0.0%	-2.3%	-1.5%	-26.7%	-21.5%	-22.7%	-19.4%
Grade Change (+ Steeper/- Milder)		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Attachment E2

Line Stress Due to Equipment Loads

PROJECT: North Ranch Surface Waste Management Facility
Tensile Stresses in Geosynthetics due to Equipment Loads

JOB NO.: 35187378 **DATE:** April 2019 **COMP. BY:** MPB

CALCULATIONS BY: Michael Paul Bradford, P.E.
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PURPOSE

In this calculation, tensile stresses exerted onto the base liner system by operational equipment is evaluated. This evaluation consider the worst case tensile stress condition to be exerted onto the uppermost geosynthetic layer, 200-mil geocomposite leachate drainage layer just below the 2-foot protective cover layer. This condition considers the during protective cover placement on the side slope walls. Once waste material begins being filled into a cell the tensile stresses on the geosynthetics becomes less. Stress below the uppermost geosynthetic will be distributed. In this scenario, a Caterpillar D6E dozer or equivalent is used to place protective soil layer up the side slope a sufficient distance to accommodate an approximate 10-foot lift of waste placed on the landfill floor, or an unsupported slope (3:1) length of ~70-feet.

METHOD OF ANALYSIS

Assumptions:

- Unit weight of protective soil = 120 lbs/ft^3 dry density
    - h_{lift} = 2 feet
- Internal friction angle of protective soil = 23°
- Critical liner interface friction angle (Φ):
    - Occurs between the HDPE geocomposite and the double-sided textured HDPE liner = 21°
- Equipment loading assuming a D6N dozer:
    - Weight = 36,943 lbs (published by CAT)
    - Track width = 24 in = 2 feet
    - Pressure distribution,
        - 2H:1V distribution; therefore,
        - Width acting on geomembrane = 20 feet
- Tensile forces acting on geomembrane:
    - Protective soil layer, F_{soil}
    - D6E dozer, F_{dozer}
- Total resisting forces:

- Geonet interface friction, F_{geonet}
- Soil buttress friction at toe of slope, $F_{buttress}$

The minimum interface friction angle for the liner system is 26.3° and occurs between the geocomposite and the double-sided textured geomembrane.

Tensile forces acting on geomembrane:

$F_{soil} = h_{lift}$ (2) x (unit weight of protective soil) x (sin(slope angle))

F_{soil} = (2 ft) x (70 ft) x (120 lbs/ft^3) (sin(18°))

F_{soil} = 5,191 lbs/ft

F_{dozer} = [(dozer weight) / (width acting on geocomposite)] (sin(18°))

F_{dozer} = [0.5(36,943 lbs) / 20 ft] (sin(18°)) *assumes distributed weight divided equally between tracks*

F_{dozer} = 285 lbs/ft

Total tensile force acting on geocomposite due to equipment and soil:

$F_{composite}$= 5,191 lbs/ft + 285 lbs/ft

$F_{composite}$= 5,476 lbs/ft

Total resisting forces acting due to friction from geomembrane:

$F_{geomembrane}$ = (weight of protective soil + weight of dozer) (cos(slope angle)) (tan(interface friction angle))

$F_{geomembrane}$ = [(2 ft)(70 ft)(120 lbs/ft3) + (36,943 lbs / 20 ft)] (cos 18°) (tan 21°)

$F_{geomembrane}$ = 6,810 lbs/ft

$F_{buttress}$ = [[cos(internal friction angle of soil)] / [cos(internal friction angle of soil + slope angle)]] [[(unit weight of soil) * (thickness of soil)^2 / sin 2 (slope angle)] * tan(internal friction angle of soil)]

PROJECT: North Ranch Surface Waste Management Facility
Tensile Stresses in Geosynthetics due to Equipment Loads

JOB NO.: 35187378 **DATE:** April 2019 **COMP. BY:** MPB

$F_{buttress}$ = [[cos(23°) / cos(23° + 18°)] [(120 lbs/ft^3*(2 ft)^2) / sin(2(18°))] * [tan(23°)]

$F_{buttress}$ = 423 lbs/ft

Total resisting force acting on geomembrane = 6,810 lbs/ft + 423 lbs/ft = 7,233 lbs/ft

To summarize, tensile stress in geocomposite = 5,476 lbs/ft – 7,233 lbs/ft = -1,757 lbs/ft.

A negative tensile stress indicates that the friction strength from the geomembrane is sufficient to counter, with some level of safety factor, the stresses exerted onto the geocomposite by a dozer placing protective cover.

Reference:

Sangeeta, Lewis P., and Hari D. Sharma, Waste Containment Systems, Waste Stabilization and Landfills: Design and Evaluation. New York: John Wiley and Sons. 1994. Print.

Gray, Donald, Robert M. Koerner, and Xian Quede, Geotechnical Aspects of Landfill Design and Construction. New York: Prentice Hall, 2002. Print.

Attachment E3

Anchor Trench Pullout

Made By: MPB	Date: 19-Mar	Sheet No.: 1 of 2
Checked By: FOC	Date: 19-Mar	Job No.: 35187378
Calculations for: Anchor Trench Stability Analysis		

Objective:

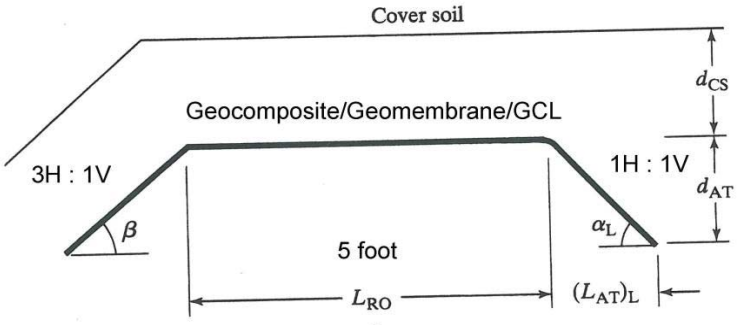
Determine the ability of the anchor trench to resist the weight of the geosynthetic components and to verify that the material will pull out of the anchor trench prior to geomembrane failure.

Assumptions:

- the anchor trench will have a 2 foot runout length
- anchor trench will be 2 foot deep
- the interior slope will be 3H : 1V or flatter
- the exterior slope will be 1H : 1V or flatter
- the deepest slope is approximately 62 foot deep (Phase 1, Cell E3)
- the composite liner system of future cells will consist of in-situ subgrade, a geosynthetic clay liner (GCL), a 60 mil HDPE geomembrane that is textured on both sides, a geocomposite with textile bonded on both sides, 60-mil HDPE geomembrane that is textured on both sides, a geocomposite with textile bonded on both sides, and a 2-foot soil protection layer.

Approach:

Calculations were performed in accordance with the procedures outline in the textbook "Geotechnical Aspects of Landfill Design and Construction" by Xued Qian, Robert Koerner, and Donald Gray, 2002, pp. 104-119.



Equation

$$T = \frac{\gamma_s \cdot d_{CS} \cdot L_{RO} \cdot \tan\delta_C + \gamma_s \cdot (d_{CS} + 0.5 \cdot d_{AT}) \cdot d_{AT} \cdot (\tan\delta_C + \tan\delta_F) \cdot (\cot\alpha_L + \cot\alpha_R)}{\cos\beta - \sin\beta \cdot \tan\delta_C}$$

T = geomembrane tensile force (i.e, anchor trench resistance force)
γ_s = unit weight of the cover and the backfill soil
d_{CS} = depth of cover soil
L_{RO} = runout length
$\tan\delta_C$ = tangent of the friction angle between the geosynthetic layers and the underlying soil
d_{AT} = anchor trench depth
$\tan\delta_F$ = tangent of the friction angle between the geosynthetic layers and the backfill soil
$\cot\alpha_L$ = cotangent of the left bottom angle of V-shaped anchor trench
$\cot\alpha_R$ = cotangent of the right bottom angle of V-shaped anchor trench
$\cos\beta$ = cosine of the sideslope angle
$\sin\beta$ = sine of the sideslope angle
L_t = Liner thickness

γ_s = 120 pcf
d_{CS} = 2 foot
L_{RO} = 2 foot
$\tan\delta_C$ = Tan (18°) = 0.3249
d_{AT} = 2.0 foot
$\tan\delta_F$ = Tan (18°) = 0.3249
$\cot\alpha_L$ = cot (45°) = 1
$\cot\alpha_R$ = Assume 0 to be conservative 0
$\cos\beta$ = cos (18.4°) = 0.9489
$\sin\beta$ = sine (18.4°) = 0.3156
L_t = 0.06 inches

Calculations:

$$T = \frac{\gamma_s \cdot d_{CS} \cdot L_{RO} \cdot \tan\delta_C + \gamma_s \cdot (d_{CS} + 0.5 \cdot d_{AT}) \cdot d_{AT} \cdot (\tan\delta_C + \tan\delta_F) \cdot (\cot\alpha_L + \cot\alpha_R)}{\cos\beta - \sin\beta \cdot \tan\delta_C}$$

T = 737.0 lb./ft.

T = 1023.7 lb./in.^{2}

Ultimate Strength (lb./in.^{2})	>	Anchor Trench Resistance Capacity (lb./in.^{2})	>	Allowable Strength (lb./in.^{2})
2100		1023.7		840

Note:
The ultimate strength is based off of material properties for standard 60 mil HDPE material. The allowable strength was calculated by dividing the ultimate strength by a 2.5 safety factor.

Summary

The results of the calculations indicate that the design anchor resistance capacity between the yield stress and the allowable stress of the geosynthetic layer system. Therefore, the anchor trench dimensions are acceptable. This assumes that the protective cover is being properly placed on the slopes using low groundpressure equipment and the equipment is backfilling up the slope.

Attachment E4

Geocomposite Compression and Hydraulic Performance

PROJECT: North Ranch Surface Waste Management Facility
Geocomposite Performance Under Overburden Compression

JOB NO.: 35187378 **DATE:** April 2019 **COMP. BY:** MPB

CALCULATIONS BY: Michael Paul Bradford, P.E.
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PURPOSE

In this calculation, the compression under the waste overburden and the resulting transmissivity of the geocomposite leachate drainage and leak detection layers are evaluated. A 200-mil geonet composite will be used in the base liner system for both leachate collection and leak detection. The site's leachate collection was modeled using the HELP Model in Attachment D of **Appendix J** of the Facility Permit Application. The HELP Model uses a hydraulic conductivity of 10 cm/sec for the estimated geocomposite flow rate. The geocomposite will compress under the immense weight of the overlying waste.

METHOD OF ANALYSIS

Assumptions:

- 200-mil geonet or 0.2 inches thick
- Unit weight of waste y_w = 74 pcf, assuming a nominal operational density of 2000 lb/cubic yard
- Unit weight of soil y_s = 120 pcf
- Maximum height of waste over geocomposite = 230.5 feet, assume 2' protective cover, and 3.5' final cover soils
- 50% compressibility at 20,000 psf

Thickness (t)

$$t_o = t_i + (t_c - t_i)((P_o-P_i)/(P_t-P_i))$$

Where:

to = thickness after loading
tc = thickness of geonet at 20,000 psf = 0.1 inch
t_i = initial thickness = 0.2 inch
P_O = loading on geocomposite
= (230.5 ft)(74 pcf)+(5.5 ft)(120 pcf) = 17,720 lbs/ft2
P_i = initial loading
P_t = total compressibility

$$t_o = t_i + (t_c - t_i)((P_o-P_i)/(P_t-P_i))$$

$t_o = 0.2 + (0.1 – 0.2)*((17,720 – 0) / (20,000 – 0))$

t_o = 0.11 inch or 0.28 cm

A factor of safety was assumed to be 1.5 to account for geotextile intrusion, creep deformation, chemical clogging, and biological clogging.

Transmissivity (T)

$T_{FS} = T/FS$

Where:

T_{FS} = transmissivity with factor of safety (m^2/s)

T = transmissivity of geocomposite (m^2/s), *$1x10^{-4}$ m^2/s as published by GSE for 200-mil FabriNet*

FS = 1.5

$T_{FS} = (1x10^{-4}\ m^2/s) / (1.5)$

$T_{FS} = 6.67x10^{-5}\ m^2/s$ or .667 $cm^{2/}s$

Applying the estimated compressed thickness from above to the geocomposite's transmissivity, a new hydraulic conductivity value is calculated.

$K = T_{FS} / t$

$K = (.667\ cm^{2/}s) / (0.28\ cm)$

K = 2.38 cm/s

Summary

NMAC **19.15.36.14.C(3)** requires that the leak detection layer have a minimum hydraulic conductivity of $1x10^{-5}$ cm/s and NMAC **19.15.36.14.C(3)** requires that the leachate collection and recovery system have a minimum hydraulic conductivity of $1x10^{-2}$ cm/s. Therefore, even under full height waste compression, the proposed 200-mil geocomposite alternative layers will have hydraulic conductivity of 2.38 cm/s, far exceeding the required minimum performance criteria. To be conservative, the HELP modeling provided in **Attachment D** of **Appendix J** of the Facility Permit Application has assumed a hydraulic conductivity of 1 cm/s for the geocomposite components of the base liner system.

PROJECT: North Ranch Surface Waste Management Facility
Geocomposite Performance Under Overburden Compression

JOB NO.: 35187378 **DATE:** April 2019 **COMP. BY:** MPB

Reference:

Bachus, Robert, Mengjia Li, Dhani Narejo, Richard Thiel, and Te-Yang Soong, GSE Drainage Design Manual. GSE Environmental, June 2007. Web. 3 May 2016.
<https://www.gseworld.com/content/documents/product-sheets/Drainage_Design_Manual.pdf>

Attachment F

Leachate Pipe Design Calculations

TERRACON CONSULTANTS, INC.			
CALCULATIONS BY:	Michael Bradford, P.E.	**DATE:**	4/1/2019
CHECKED BY:	Owen Carpenter, P.G., P.E.	**DATE:**	4/1/2019
FACILITY: North Ranch Surface Waste Management Facility			
PROJECT: 35187378 - Permit Application			
CLIENT: NGL Water Solutions Permian, LLC			

LEACHATE COLLECTION PIPE DESIGN

INTRODUCTION:

The purpose of these calculations is to evaluate the performance of the leachate collection system proposed design at the North Ranch Surface Waste Management Facility in Lea County, New Mexico. The function of the leachate collection system is to convey leachate that is collected in the drainage layer to the leachate collection sump. In order for the system to be effective, it has to convey this liquids and withstand the loads that will be applied from the overlying waste.

PIPE SIZE:

In the design of a leachate collection pipe, the capacity of the proposed pipe should be greater than the flow rate estimated from the HELP Model. The required flow rate used to determine the pipe size can be calculated using the following equation:

$$Q_{reqd} = q_{max} \times A_{cell}$$

Where:

Qreqd = required leachate leachate flow rate (ft^3/sec)
qmax = maximum unit area leachate production, (in/day (from HELP Model))
Acell = cell area served by a leachate collection, (Acres)

Note: In reviewing the HELP Model data corresponding to this Permit Modification Application, the peak daily rate for a 30 year period was obtained.

Cell E-3 is the largest cell at the Landfill. The following calculations use the geometry of this cell.

qmax =	0.208	**in/acre/day**
Acell =	28.2	**acres**
Qreqd =	**0.246**	**ft^3/sec**

Once the required leachate flow rate, pipe slope, and material of the pipe are known, the size of pipe can be determined by a trial-and-error procedure using Manning's equation. To determine the suitable pipe size, a pipe size is assumed first to calculate the flow rate using Manning's equation The calculated flow rate from Manning's equation must be greater than or equal to the required leachate flow rate. Manning's Equation (in U.S. Units) is as follows:

$$\mathbf{Q = (1.486*A*rh^{2/3}*S^{1/2})/n}$$

Where:

Q = flow rate of pipe (ft^3/sec)
n = Manning's roughness coefficient (+/- 0.011 for HDPE pipe)
A = Area in flow (ft^2)
S = slope of the pipe (%)
rh = hydraulic radius (in)

Header Line Pipe Selected :

6" diameter SDR 17 HDPE Pipe

STEP 1: CALCULATE AREA OF PIPE

$$\mathbf{A = \pi*Di^2 / 4}$$

Where:

A = area of flow (in^2)
Di = inside diameter of pipe (in)

$$\underline{Di = Do - 2t}$$

Where:

Do = Outside Diameter of Pipe (in)
t = wall thickness (in)

$$\underline{t = Do/SDR}$$

Where:

SDR = Outside Diameter of Pipe

Do =	6.625	**inches**
SDR =	17	
t =	**0.390**	**inches**
Di =	**5.85**	**inches**
A =	**0.186**	**ft^2**

STEP 2: CALCULATE HYDRAULIC RADIUS

$$\underline{rh = Di / 4}$$

Where:

rh = hydraulic radius of pipe (in)
Di = inside diameter of pipe (in)

Di =	5.85	**inches**
rh =	**1.46**	**inches**

STEP 3: CALCULATE FLOW RATE

$$Q = (1.486*A*rh^{2/3}*S^{1/2})/n$$

A =	0.186	**ft^2**
rh =	1.46	**inches**
S =	0.01	**ft/ft**
n =	0.011	**for Smooth HDPE Pipe**
Q =	**0.62**	**ft^3/sec**
Qreqd =	**0.246**	**ft^3/sec**
FS =	**2.51**	

Because Q is greater than Qreqd,. a 6" diameter SDR 17 HDPE pipe is adequate to convey the expected peak leachate flow conditions.

PIPE PERFORATIONS:

The most important parameter for determining the size and distribution of slots or perforations in the leachate collection pipes is the maximum leachate inflow per unit length of pipe. The maximum leachate inflow per unit length of pipe, which mainly depends on the maximum unit area of leachate production and the maximum servicing unit area per foot of pipe can be calculated from the equation:

$$Qin = qmax \times Aunit$$

Where:

Qin = maximum leachate inflow per unit length of pipe, (ft^3/sec/ft)
qmax = maximum unit area leachate production, (ft^3/sec/ft^2)

STEP 1: CALCULATE MAXIMUM UNIT AREA

$$Aunit = Lhmax \times dw$$

Where:

LHmax = Sum of drainage lengths on both sides of pipe for the largest cell

dw = unit width at the area of the maximum horizontal distance of leachate flow

LHmax =	1652.00	**feet**
dw	1	**feet**
Aunit	**1652.00**	**ft^2**

STEP 2: CALCULATE MAXIMUM LEACHATE INFLOW

$$Qin = qmax \times Aunit$$

Aunit	1652.00	**ft^2**
qmax	5.036E-07	**$ft^3/sec/ft^2$**
Qin	**8.319E-04**	**ft^3/sec**

STEP 3: CACULATE INFLOW CAPACITY OF EACH ORFICE

The inflow capacity per orifice can be calculated from the Bernoulli equation based on the size of the orifice as follows:

$$Qb = C \times Ab \times (2 \times g \times dh)^{0.5}$$

Where:

Qb = inflow capacity per orifice (or slot) (ft^3/sec)
C = discharge coefficient (use 0.62)
Ab = cross-sectional area of a slot or hole on the selected perforated pipe
g = gravitational constant (use 32.2 ft/sec^2)
dh = liquid head (in)

STEP 4: CALCULATE CROSS SECTIONAL AREA OF ORFICE

$$Ab = \pi \times dhole^2 / 4$$

A 3/8 inch orifice was chosen for the perforation size

Where:

Ab = cross sectional area of orifice (in^2)
dhole = perforation size (in)

dhole =	**0.375**	**inches**
Ab =	**7.670E-04**	**ft^2**

STEP 5: CALCULATE INFLOW CAPACITY OF EACH ORFICE

C=	0.62	**ft^2**
Ab=	7.670E-04	**inches**
g =	32.2	**ft/sec^2**
dh =	1	**ft**
Qb =	**3.816E-03**	**$ft^{3/}$sec**

Once the maximum leachate inflow rate per unit length of pipe and the inflow capacity per opening are known, the number of the perforated holes per unit length of pipe can be calculated using the equation:

$$N = Qin/Qb$$

Where:

N = number of perforations per foot of pipe

Qin=	8.32E-04	**$ft^{3/}$sec**
Qb=	3.816E-03	**$ft^{3/}$sec**
N =	**0.218**	**holes per foot of pipe**

STEP 5: SPACING OF HOLE PATTERN ALONG PIPE

Assuming 3 holes at each location spaced around the circumference at 120 degrees would result in a hole spacing of:

SP = 3/N

Where:

SP = number of perforations per X feet of pipe

SP =	**14**

A perforation every 14 feet would be sufficient. A spacing of less than 14 feet is acceptable. Although 3 holes spaced on a 120 degree off-set would allow for one line of perforations every 60 feet, the standard perforation pattern is 3 perforations every foot that is offset by 6 inches (See Permit Drawings for the typical leachate collection piping perforations).

Gravel Bedding Materials Around Perforated Piping:

When perforated pipes are bedded in gravel, no unplugged ends should be used. In addition, the gravel bedding should be coarse enough not to enter the holes (or slots). The USEPA (1983) recommends that the 85% particle size for the gravel be greater then the hole size by a factor F. The F factor varies from 1.2 to 2.0. A factor of 1.5 was chosen for the proposed Landfill. When specifying gravel bedding materials for cell construction, the following gradation criteria should be considered:

dhole=	0.375	**inches**
F=	1.5	
d85 =	**0.563**	**inches**

Therefore the d85 for the gravel bedding should be 0.563 inches or greater.

DEFORMATION AND STABILITY OF LEACHATE COLLECTION PIPE:

All components of the leachate collection and removal system must have sufficient strength to support the weight of the overlying waste, cover system, and post-closure loadings, as well as the stresses from operating equipment. The component that is the most vulnerable to compressive strength failure is the drainage layer piping. Leachate collection and removal system piping can fail by excessive deflection, which may lead to buckling or collapsing.

RING DEFLECTION:

Ring deflection occurs when large vertical pressures are applied to the pipe/gravel bedding

systems. Ring deflection is a horizontal over-deflection that results in a reversal of the curvature of the pipe wall. The following formula, commonly known as the Modified Iowa formula, can be used to estimate ring deflection (Spangler and Handy, 1973; Moser, 1990).

$$DX = (DL*K*Wc*r3) / (E*I+0.061*E'*r3)$$

Where:

DX = horizontal deflection, in
K = bedding constant (assume 0.1) (Qian et al)
DL= deflection lag factor (assume 1) (Qian Et al)
Wc = vertical load per unit length of pipe, lb/in^2
r = mean radius of the pipe (in)
E = elastic modulus of the pipe material (psi)(see attached worksheet)
I = moment of inertia of the pipe wall per unit length in^4/in
t = thickness of pipe, in
E' = soil reaction modulus (psi)

Based on guidance from Chevron (1993), an allowable ring deflection of 7% is acceptable.

STEP 1: STRESS PER UNIT LENGTH OF PIPE

$$\sigma vl = \Sigma\ Dl \times \gamma l$$

σvl =vertical load on pipe (psf)
Dl = depth of layer (ft)
γl = unit weight of layer (pcf)

Layer	γl	Dl	γl x Dl
	(pcf)	(ft)	(psf)
1	120	2	240
2	100	78	7800
3	120	2.5	300
		σvl =	8340

psf

STEP 2: CALCULATE VERTICAL LOAD

$$Wc = \sigma vl * Do$$

σvl =	57.92	**psi**
Do=	6.625	**in**
Wc=	**383.70**	**lb/in**

STEP 3: CALCULATE MEAN RADIUS OF PIPE

$$Rm = (Do-t)/2$$

Where:

Rm = Mean radius of pipe (in)

Do=	6.625	**inches**
t=	0.390	**inches**
Rm =	**3.118**	**inches**

STEP 4: CALCULATE MOMENT OF INERTIA OF PIPE

$$I = t^3/12$$

t=	0.39	**inches**
I =	**0.00493**	**inches**

STEP 5: CALCULATE RING DEFLECTION

$$DX = (DL*K*Wc*r3) / (E*I+0.061*E'*r3)$$

DL=	1.00	
K=	0.10	
Wc=	383.70	**psf**
r=	3.12	**inches**
E=	23,000.00	**psi**
I=	0.00	**in^4/in**
E'	3,000.00	**psi**
Dx =	**0.20547**	**inches**
ΔDx =	**3.10**	Ring deflection is acceptable

WALL BUCKLING:

Wall buckling can occur because of insufficient pipe stiffness. Mosher (1990) noted that as the higher the SDR (more flexible) the more unstable the wall structure will be in resisting buckling. Meyerhof and Baike (1963) develop the following formula for estimating the critical buckling pressure in a circular conduit.

$$Pcr = 2 * [(E'/(1-\mu^2)) * (E*I/r^3)]^{0.5}$$

Where:

Pcr = critical buckling pressure (lb/in)
μ = poissons ratio of pipe material
E'= soil reaction modulus ($lb/in^{2)}$
E = elastic modulus of the pipe material (lb/in^2)
I = moment of inertia of the pipe wall per unit length (in^4/in)
r = mean radius of the pipe (in)

STEP 1: CALCULATE ACTUAL VERTICAL STRESS

$$Ptp = WC/Do$$

Ptp= actual vertical stress on pipe (psf)

STEP 2: STRESS PER UNIT LENGTH OF PIPE

$$Pcr = 2 * [(E'/(1-\mu^2)) * (E*I/r^3)]^{0.5}$$

E'	3,000.00	**psi**
μ=	0.30	
E=	23,000.00	**psi**
r=	3.12	**inches**
I=	0.004932	**inches**
Pcr =	**222.18**	**lb/in^2**
Ptp =	**57.92**	**lb/in^2**
FS =	**4**	Pipe critical buckling has a suitable factor of safety

WALL CRUSHING:

When external pressures exceed the compressive strength of the pipe wall crushing will occur. The factor safety against wall crushing can estimated by the following equation:

$$FSwc = 2 * \sigma y / ((SDR - 1) * \sigma max)$$

Where:

FSwc = Factor of safety against wall crushing
σy = compressive yield strength of pipe (psi)
σmax= maximum stress applied to the pipe (psi)
SDR = standard dimension ratio of the pipe

σy =	230400	**psi**
SDR =	17	
σmax =	8340	

FSwc =	**3.45**	Pipe wall crushing has a suitable factor of safety

EXCESSIVE BENDING STRAIN:

A pipe will deflect under external loading. As a result of this deflection bending strains are induced in the pipe. These strains can be calculated by the following equation (Mosher 1990):

$$\text{ε}b = f\,d * t * \Delta y / Do^2$$

Where:

εb = Bending Strain %
f **d** = deformation shape factor (assume 6)
Δy = vertical deflection (in)
Do = outside diameter of pipe

f **d =**	6
Do =	6.625
t =	0.39
Δy =	0.21
εb **=**	**1.09**

Chevron (1994) recommends a maximum allowable bending strain between 1.5 to 2.25% for fd=6 depending on the quality of bedding around the pipe. This pipe has been designed for the worst case scenerio, therfore a bending strain of 1.09 %, which is less than the maximum allowable, is acceptable.