

GEOTECHNICAL INVESTIGATION REPORT

Sportsplex Dam Outfall Slope Stabilization

June 24, 2026

Prepared For:

SOUTHERN SANDOVAL COUNTY ARROYO FLOOD CONTROL AUTHORITY

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1.0 INTRODUCTION

This report presents the results of the geotechnical engineering investigation to support the design of the Sportsplex Dam Outfall improvements within projected Section 13 Township 12N, Range 3E in the City of Alameda Grant Rio Rancho, Sandoval County, New Mexico. The approximate location of the project site is presented in **Figure 1, Site Vicinity**. The purpose of this study was to evaluate the subsurface conditions at the site and to provide recommendations for project earthwork, bank stabilization measures, design parameters for foundation of minor structures and for other channel improvement features to prevent slope degradation and protect existing structures.

The report summarizes the data collected and presents NV5's findings, conclusions, and recommendations, and has been prepared for the exclusive use of the client and their consultants in the design of the proposed development and appurtenant improvements. It should be noted that this report has not been prepared from the perspective of a construction bid preparation instrument and should be considered by prospective construction bidders only as a source of general information subject to interpretation and refinement by their own expertise and experience, particularly regarding construction feasibility. Contract requirements as set forth by the project plans and specifications will supersede any general observations and specific recommendations presented in this report.

2.0 SCOPE OF SERVICES

NV5's scope of services for the project was completed in general accordance with our proposal dated December 19, 2025, and included the following tasks:

- Review of geotechnical maps and literature pertaining to the site vicinity.
- A site reconnaissance to observe the general surficial site conditions and to select exploration location.
- Coordinate with entities having an interest in the field exploration activities including the client for site access, the exploration subcontractor, and NM811 (formerly NM One Call) for location of various utilities, if necessary.
- Conduct a subsurface investigation, which included performing six (6) Dynamic Cone Penetration (DCP) Tests.
- Conduct laboratory testing on selected representative bulk-disturbed soil samples obtained during the field exploration program to evaluate their pertinent geotechnical engineering properties.
- Perform an assessment of general seismic conditions and geologic hazards affecting the site area and their possible impact on the subject project.
- Engineering evaluation and analysis of the geotechnical data collected to develop geotechnical recommendations for the design and construction of the proposed development. Specifically, the following items were addressed:
 - o Evaluation of general subsurface conditions and description of types, distribution, and engineering characteristics of subsurface materials.

- o General recommendations for earthwork, including site preparation, excavation, site drainage, and the placement of compacted fill.
- o Evaluation of project feasibility and suitability of on-site materials for foundation support of the proposed development.
- o Recommendations for designing suitable foundation systems including vertical bearing, lateral resistance, and settlement estimates.
- o Recommendations for earthwork and subgrade preparation at the project site.
- Preparation of this report, including reference maps and graphics, summarizing the data collected and presenting NV5's findings, conclusions, and geotechnical recommendations for the design and construction of the proposed development.

3.0 SITE AND PROJECT DESCRIPTION

The project site is located slightly northwest of the Sports Complex in the City of Rio Rancho, New Mexico. The Sportsplex dam outfall structure is a drainage point at the upstream of the Sportsplex dam that directs controlled stormwater flow back to the de los Montoyas Arroyo. The existing outfall structure consists of concrete headwalls, wingwalls, and silt-covered concrete apron with grade control structure to smoothly transition water out of double box 10 feet by 10 feet culverts. Two distinct sharp surface features on the north bank of the arroyo exhibit evidence of active erosion that has cut the channel walls vertically downward with varying gradients causing soil to collapse into the channel bed. Sparse vegetation consisting primarily of dry shrubs, grasses, and small trees are distributed throughout the site. Overall, the site exhibits characteristics consistent with an arid environment with active erosional processes. According to the U.S. Geological Survey topographic map for Loma Machete quadrangle (7.5-minute series), the site has elevation ranges approximately from 5,300 feet above mean sea level at the upstream in Loma Vista Blvd NE to 5,257 feet above mean sea level at the de los Montoyas Arroyo in the downstream.

The primary goal of the improvements proposed for the project is to prevent erosion and stabilize the downstream banks of the existing outfall structure along the channel. The stabilization technique is expected to reconstruct the gradients of the existing slopes to improve bank stability with respect to mass failure and utilize hybrid solution consisting of a concrete liner on the face of the slope and gabion mattress at the channel base for bottom protection. Other improvement at the project site includes the construction of arroyo access ramps and drainage devices to collect and direct drainage to arroyo.

4.0 FIELD EXPLORATION PROGRAM

Before starting the field exploration program, a field reconnaissance was conducted to observe site conditions and identify the locations for the planned subsurface explorations.

4.1 Exploratory Borings

In June 2026, NV5 performed two (2) hand auger borings (HA-1 and HA-2) at the channel bed to collect disturbed bulk samples for laboratory tests. At each boring location, the upper few inches of the scour layer at the channel bed were removed prior to using the hand auger. The approximate locations of the hand auger borings are presented in **Figure 2, Site Layout and Exploration Locations**. Description of the soil encountered in the boreholes are presented in **Appendix A, Site Exploration Logs**.

4.1 Dynamic Cone Penetration Test

In June 2026, NV5 performed six (6) dynamic cone penetration (DCP) tests (D-1 through D-6) at the channel bed to evaluate the strength of the soil by measuring the penetration rate of a cone from a known force. The approximate locations of the DCP are presented in **Figure 2, Site Layout and Exploration Locations**. The DCP used has a cone angle of 30 degrees with a 0.79 inches diameter rod and a force from 17.6 pounds mass dropped from a height of 22.6 inches. At the location of each DCP test, the cone tip penetration and the corresponding number of blows are recorded. This measurement is commonly referred to as the penetration index (DPI) which is typically used to estimate California Bearing Ratio (CBR) and the Standard Penetration Test (SPT) blow counts. The measured DPIs are presented in **Appendix B, Dynamic Cone Penetration Tests**.

5.0 LABORATORY TESTING

Laboratory testing was performed on selected representative disturbed soil samples of the materials recovered from the exploratory borings to aid in the material classifications and to evaluate engineering properties of the materials encountered. The following tests were performed:

- Particle-size distribution of soils (ASTM D6913).

Testing was performed in general accordance with applicable ASTM standards, as indicated above. A summary of the test results is presented in ***Appendix C, Laboratory Testing***.

6.0 GEOLOGIC AND SUBSURFACE PROFILE INFORMATION

6.1 Geologic Setting

The site lies within the Loma Machete quadrangle located in the central New Mexico in the Basin and Range province on the eastern edge of Rio Grande rift. The region is characterized by alternating north-trending mountain ranges and broad flat basins form by crustal extension. The Basin and Range province is in the southwestern United States and is bordered in New Mexico by the Colorado Plateau to the northwest and the Rio Grande Rift to the east which heavily contributed to the volcanic activity and the formation of the mountains in the region with rugged mountains dominating the landscape east of the quadrangle. Remnant of the oldest geomorphic surface in the quadrangle area, the Llano de Albuquerque dominates the landscape in the southwestern part in which both erosional and depositional processes have played a part in the origin of this surface. In this region, the Llano de Albuquerque calcic soils are formed either in windblown sand and gravelly alluvium or directly in the upper Santa Fe Group sedimentary rocks. The Santa Fe group sedimentary rocks are prevalent in the northeastern margin and the north end of the quadrangle and have restricted bedrock exposures to isolated outcrop in active arroyo channels outside of these two areas. Bedrock outcrops in the southern part of the quadrangle are restricted to deposits of upper Santa Fe Group conglomerate, sandstone and mudstone (Personius et al, 2000).

Locally, the Arroyo alluvium (Qal) units of the Holocene to mid Pleistocene are mapped at the surface of the project site. These geologic units are generally described as massive to well bedded with occasional cross bedding structure and generally consists of light yellowish-brown to brown, fine- to coarse-grained sand and pebbly sand with some thin beds of sandy pebble gravel. Coarse gravel- and cobble-sized clasts were locally present within the arroyo bed. The thickness of the arroyo alluvium units in the Loma Machete quadrangle ranges between 1 and 100 feet (Personius et al, 2000). **Figure 3, Geologic Map** presents the approximate distribution of the subsurface materials within the project vicinity, and the interpreted geologic cross-section at the site is shown on **Figure 4, Cross-Section A-A'**.

6.2 Faulting

The project site is located within a region of noted low to moderate seismic activity and active tectonics. Seismic history and geologic evidence in the region indicate that many of the faults associated with the Rio Grande Rift Zone are active in the Holocene or the Quaternary.

Several north and northwest striking normal faults exist within a radius of 100 kilometers away from the project site (USGS, 1998), the closest includes the County Dump fault (#2038), East Paradise fault zone (#2040), Unnamed faults near Albuquerque Volcanoes fault (#2049), and Jemez-San Ysidro fault (#2029). **Figure 5, Faults Map** presents the faults near the project site.

6.3 Groundwater

Review of the water surface level measured in selected monitoring wells in the site vicinity indicates the historic high static water level at the site in the last 20 years was at a depth greater than 100 feet bgs (NMOSE, 2024). It is anticipated that groundwater will not be a constraint during construction. However, experience indicates that near-surface localized seepage zones can develop in areas where previously groundwater conditions did not exist. Local seepage can manifest in areas where a

substantial increase in surface water infiltration results from landscape irrigation, artificial recharge, storage facility leaks, or unusually heavy precipitation.

6.4 General Subsurface Profile Encountered at Project Site

Geologic materials encountered during the subsurface explorations of the project site predominantly comprise of Young Arroyo alluvium (Qaly) and Old Arroyo alluvium (Qalo) units. According to the National Resources Conservation Services (NRCS) Web Soil Survey, the map unit description at the site is Sheppard loamy fine sand. A generalized description of the soil properties based on the DCP tests and the soil samples recovered from the boreholes is presented as follows:

- Findings from visual observation suggests that existing subgrade conditions exhibit a generally “dry” to “moist” moisture content. However, experience indicates that near-surface groundwater conditions or localized seepage zones can develop in areas where no such groundwater conditions previously existed, especially in areas where a substantial increase in surface water infiltration results from landscape irrigation, artificial recharge, storage facility leaks, or unusually heavy precipitation.
- The particle-size analysis indicates the material encountered at the site are generally coarse-grained particles with non-plastic fines content.
- The estimated effective friction angle has an average of 32 degrees. The height of steep slopes observed in the field suggest natural soils are weakly to moderately cemented.
- The NRCS Web Soil Survey shows the Sheppard loamy fine sand in the upper 5 feet has a range between 12 and 40 feet per day (fpd).

7.0 SEISMIC AND GEOTECHNICAL HAZARDS

7.1 Fault Rupture

Based on the available geologic data, known active or potentially active faults with the potential for surface fault rupture do not exist in the immediate vicinity of the site. Accordingly, the potential for surface rupture at the site due to faulting is considered low. Although the site could be subjected to strong ground shaking in the event of an earthquake, satisfactory performance can be achieved if structure is designed and constructed in conformance with current building codes and engineering practices.

7.2 Seismic Shaking

Generally, ground shaking in New Mexico has an overall low hazard rating.

7.3 Liquefaction And Seismically Induced Settlement

Liquefaction of soils can be caused by ground shaking during earthquakes. Research and historical data indicate that loose, relatively clean granular soils are susceptible to liquefaction and dynamic settlement, whereas the stability of the majority of clayey silts, silty clays and clays are not adversely affected by ground shaking. Liquefaction is generally known to occur in saturated cohesionless soils

at depths shallower than approximately 50 to 75 feet. Dynamic settlement due to earthquake shaking can occur in both dry and saturated sands.

Based on the estimated depth of groundwater at the site, it is our professional opinion that the project site is located in an area defined as having a very low susceptibility to liquefaction. Dry seismic settlement is often caused when loose to medium-dense granular soils are densified during ground shaking. The on-site granular soils are generally not considered to be susceptible to seismic settlement.

7.4 Landslides And Slope Stability

There are no known landslides on or near the project site, and the site is not located in the path of any known landslides. It is NV5's opinion that the potential damage to the proposed project due to landslide is considered low.

A series of slope stability analyses were conducted to evaluate the geotechnical stability of the channel bank near Station 102+20 using the interpreted shear strength of the bank material. The slope stability analyses were conducted by utilizing the 2-dimensional limit equilibrium method in the SLIDE2 software (Rocscience, 2025) to search for the lowest factor of safety for both circular and noncircular sliding surfaces using Spencer's method. The results of the analysis indicate the existing slopes of the northern bank are marginally stable in a state of critical equilibrium, and mitigation measures are needed to stabilize the slopes. The results of the slope stability analyses are presented in **Appendix D, Engineering Analysis**.

7.5 Subsidence

The site is not located in an area of known ground subsidence due to the withdrawal of subsurface fluids. Accordingly, the potential for subsidence occurring at the site due to the withdrawal of oil, gas, or water is considered low.

7.6 Inundation Seiche, And Flooding

The area of proposed development at the site is located at an elevation of 5,257 feet above MSL. The site is not located downslope of any large body of water that could affect the site in the event of an earthquake-induced failure or seiche (oscillation in a body of water due to earthquake shaking). Based on the map review, the potential for significant flooding of the site is considered to be low. Site drainage should be addressed by the project civil engineer.

7.7 Expansive Soils

The onsite near surface have small amount of non-plastic fines and are expected to have low potential for expansion as a result of the volume change associated with the increase of moisture.

8.0 CONCLUSIONS AND DESIGN RECOMMENDATIONS

8.1 General

The most significant geotechnical concern for the project site is the presence of the incised channels with near vertical cuts on the northern bank of the arroyo which may require flowable fill placement, in accordance to NMDOT Standard Specifications, Section 516 (NMDOT, 2019), for backfilling if not reconstructed during site grading and earthwork. Specifications referenced in the recommendations are in general accordance with the New Mexico APWA Standard Specifications for public works construction (APWA, 2006).

8.2 Grading And Earthwork

Site grading should be performed in accordance with the following recommendations:

- Clearing and Grubbing – Prior to grading, the project area should be cleared of any significant vegetation, rubble, trash, pavement, debris, etc. Any buried natural or man-made objects, organic debris, or other unsuitable materials encountered during subsequent excavation and grading work should also be removed. Clearing and grubbing shall be in compliance with New Mexico APWA Standard Specifications, Section 201. Removed material and debris should be properly disposed of offsite. Holes resulting from removal of buried obstruction which extend below finished site grades should be filled with properly compacted soils.
- Excavatability – Based on the subsurface exploration, it is anticipated that the on-site materials can be excavated by modern conventional heavy-duty excavating equipment in good operating condition. Oversized materials should not be used in structural fill. They should be screened or otherwise removed from the site or disposed of in non-structural areas. Oversized materials are classified as cobbles.
- Reuse of Onsite Material as Fill – Onsite materials excavated for the reconstruction of bank slopes are considered suitable for reuse as compacted engineered fill provided it meet the gradation requirement of soil Class I or II per New Mexico APWA Standard Specifications, Section 501.
- Import Soils – Import soils for engineered fill should conform with the gradation requirement of soil Class I or II per New Mexico APWA Standard Specifications, Section 501. Soils that exhibit a known risk to human health, the environment, or both, should not be imported to the site.
- Removals Beneath shallow foundations – The onsite soils underlying shallow foundations should be excavated down to a depth of at least 2-foot below bottom of foundation depth. The excavation should extend laterally a distance of at least 5-foot beyond the perimeter of new foundation unless otherwise directed by the geotechnical engineer. Unless otherwise directed by the geotechnical engineer, subgrade exposed at the bottom of the excavation should be verified to be undisturbed competent foundation material prior to the placement of the compacted fills. Placement and compaction of engineered fill within the excavation should be observed and tested by the geotechnical consultant.

- **Fill Placement, Thickness and Testing** – The optimum lift thickness to produce a uniformly compacted fill will depend on the size and type of construction equipment used. In general, fill should be placed in uniform lifts not exceeding 8 inches in loose thickness. Unless otherwise directed by the geotechnical consultant of record, fill should be moisture conditioned within a range between the optimum moisture content to approximately 2 percent over optimum moisture content and uniformly compacted to at least 95 percent of the laboratory maximum dry density (based on ASTM D1557). Placement, moisture conditioning, and compaction of fill should be continuously observed and tested by the geotechnical consultant of record. Fill should be tested for relative compaction and moisture content at a minimum of every 1-foot in vertical height.

8.3 Slope Stabilization Criteria

The existing over steepened slopes at the project site can be reconstructed either by cut or fill to meet the following minimum requirements:

1. The maximum slope gradient should not exceed 1.5:1 (horizontal to vertical) to increase the factor of safety. Slopes with heights up to 15 feet can achieve a minimum factor of safety of 1.5 for the static loading conditions.
2. The slopes should be protected from erosion using bank protection structures. The flexible structures type, such as wire enclosed ripraps and gabion mattresses, can be used as an erosion resistant facing on the channel banks and the channel bottom near the toe of the slope.
3. The construction requirements of fill slopes should conform with Section 204 of New Mexico APWA Standard Specifications with fill placement, thickness, and testing as noted in **Section 8.2 Grading and Earthwork**.

8.4 Infiltration Rate

Based on direct correlation between the particle diameter equivalent to the 10 percent finer (D_{10}) and the coefficient of permeability of 3 samples recovered from the soil borings, the hydraulic conductivity of the soil is estimated to have an average of 29 fpd, standard deviation of 2.5 fpd, maximum of 31 fpd, and minimum of 27 fpd. These results compare favorably with the values reported by the NRCS Web Soil Survey.

8.5 Minor Permanent Construction

Design Recommendations

Minor permanent construction of structures such as box culverts, drop inlets, and headwalls can be supported by shallow foundation. The geotechnical design recommendations for the foundation of minor structures bearing on compacted structural fill as noted in **Section 8.2 Grading and Earthwork**, above are provided as follows:

Table 1 – Geotechnical Design Parameters for Foundation of Minor Structures

Nominal Bearing Resistance	4,000 psf
Resistance Factor	0.5
Lateral Bearing Pressure (below supporting subgrade)	200 psf/ft
Coefficient of Friction for Lateral Sliding Resistance	0.35
Effective Foundation Width (B)	2 to 5 feet
Modulus of Subgrade Reaction for Service load at 1-inch Settlement	60 pci
Minimum Embedment Depth (below supporting subgrade)	2 feet
Reinforcement	Reinforce in accordance with requirements as provided by the project Structural Engineer.

Settlement

Estimated settlements will depend on the foundation size and depth, the loads imposed, and the allowable bearing values used for design. For design purposes, shallow foundations bearing on structural fill as noted in **Section 8.2 Grading and Earthwork**, and designed in accordance with the recommendations above, total settlement is estimated to be less than 1-inch and differential settlement less than ½-inch. The static vertical settlement of the fence foundations is expected to be negligible.

Construction Considerations

The proper concrete mix design for the foundation of minor permanent construction varies with the design stress intensity, the anticipated concrete placement procedures, and the spacing of the reinforcement. The project specifications should provide provisions such as concrete slump, temperature, air content, homogeneity, job-site conditions, and method of placement.

To check the presence of satisfactory materials at design elevations, foundation excavations should be observed to be clean of loosened soil and debris before placing steel or concrete and probed for soft areas. If soft or loose soils or unsatisfactory materials are encountered, these materials should be removed and may be replaced with a controlled low-strength material (CLSM) consisting of two-sack, sand-cement slurry or structural concrete. CLSM materials should display a minimum 28-day compressive strength of 200 psi. Footing excavations should be deepened as necessary to extend into satisfactory bearing materials; however, NV5 should be notified to evaluate the proposed change.

Concrete construction should be in accordance with Section 101 of New Mexico APWA Standard Specifications.

8.6 Flexible Structures

Design Recommendations

Flexible structure such as wire-enclosed riprap and gabions can be used for bank protection against erosion. Gabions are defined as galvanized steel wire mesh box-shaped baskets or mattresses of various sizes filled with rocks or clean-hard stone. Gabions baskets are typically used to maintain streambank stability whereas gabion mattresses are used to protect the bed or the banks of stream against erosion. For the project site, the primary geotechnical design consideration for wire-enclosed riprap and gabion mattresses is foundation stability. These flexible structures should be placed such that the scour zone does not compromise bank stability or bed protection against erosion. Gabion mattresses should use rock filling Type VL that meet the requirements of Section 109 Riprap Stone of New Mexico APWA Standard Specifications. To prevent movement of the supporting soils into the void space of the gabions rock filling, it is recommended to place Class 1 non-woven geotextile filter fabric, such as Mirafi 180N or equivalent, between the gabion and the supporting soil.

Construction Considerations

The construction requirements of wire enclosed riprap should conform with Section 603, Riprap Surface Treatment of New Mexico APWA Standard Specifications, and of gabions should conform with Section 610.6. The installation of the geotextile filter fabric for gabions should be in accordance with Section 604 Flexible Soil Matting.

8.7 Concrete Slabs-On-Grade

Exterior concrete slabs-on-grade may be supported at grade on compacted structural fill as noted in **Section 8.2 Grading and Earthwork**, unless otherwise directed by the geotechnical engineer. Exterior concrete slabs should have a minimum concrete thickness of 4 inches. Concrete slabs should be supported on at least 4 inches of aggregate base compacted to at least 95 percent of the maximum dry density. The upper 12 inches of subgrade soil located below the aggregate base should be moisture conditioned and compacted in accordance with the recommendations in this report.

In some cases, isolated “edge” cracking or heaving forms along the outside portions of exterior concrete slabs because of seasonal or man-made wetting and drying of the subgrade soil. This potential can be reduced by placing lateral cutoffs, i.e., inverted curbs, heavy plastic membranes, or manufactured composite drains, along the outside edges of the flatwork. The lateral cutoffs typically extend vertically 12 to 18 inches into the subgrade soils.

For exterior concrete construction, it is recommended that narrow strip concrete slabs, such as sidewalks, be reinforced with at least No. 3 reinforcing bars placed longitudinally at 18 inches on-center. Wide exterior slabs should be reinforced with at least No. 3 reinforcing bars placed 18 inches on-center, each way. The reinforcement should be extended through the control joints to reduce the potential for differential movement. Appropriate control and expansion joints should be constructed in accordance with recommendations from the structural engineer or architect.

8.8 Utility Trench Backfill

All subsurface utility trench backfills, including water, storm drain, sewer, irrigation, telecommunication, and electrical lines should be mechanically compacted. Water jetting should not be used for compaction. The material within the pipe zone (i.e. 6 inches below or 12 inches above the pipe) should consist of free-draining sand or small gravel with a minimum sand equivalent of 40, and conform with the New Mexico APWA Standard Specifications, Section 701. There should be sufficient clearance along the side of the utility pipe or line to allow for compaction equipment. As a guide, the minimum clearance along the sides should not be less than the diameter of the pipe for pipes with diameter less than 2 feet, and not less than 2 feet for pipes with diameters between 2 and 12 feet. The pipe bedding should be compacted under the haunches and alongside the pipe.

8.9 Corrosion Potential

Concrete structures should be designed assuming corrosive environment to provide protection of the reinforcing steel against corrosion throughout the life of the structures.

8.10 Drainage Control

Although not all the recommendations may be applicable to this project, the intent of this section is to provide general information regarding the control of surface water. Control of surface water is essential to the satisfactory performance of the proposed site improvements. Surface water should be controlled so that conditions of uniform moisture are maintained beneath structures, even during periods of heavy rainfall. The following recommendations are considered minimal.

- Berms, drainage swales, catch basins, and storm water drainage pipes should be installed along all existing top-of-slope areas within the project limits, as a minimum erosion control measure.
- Ponding and areas of low flow gradients should be avoided.
- If bare soil within 5 feet of the structure is not avoidable, then a gradient of 5 percent or more sloping away from the improvement should be provided. Corresponding paved surfaces should be provided with a gradient of at least 1 percent.
- The remainder of the unpaved areas should be provided with a drainage gradient of at least 2 percent.
- Positive drainage devices, such as graded swales, paved ditches, and/or catch basins should be employed to accumulate and to convey water to appropriate discharge points.
- Concrete walks and flatwork should not obstruct the free flow of surface water.
- Brick flatwork should be sealed by mortar or be placed over an impermeable membrane.
- Gutter and downspout systems should be provided to capture discharge from roof areas. The accumulated roof water should be conveyed to off-site disposal areas by a pipe or concrete swale system.

9.0 DESIGN REVIEW AND CONSTRUCTION MONITORING

Geotechnical review of plans and specifications is of paramount importance in engineering practice. The poor performance of many structures has been attributed to inadequate geotechnical review of construction documents. Additionally, observation and testing of the subgrade will be important to the performance of the proposed improvements. The following sections present recommendations related to the review of construction documents and the monitoring of construction activities.

9.1 Plans And Specifications

The design plans and specifications should be reviewed and approved by NV5 prior to bidding and construction, as the geotechnical recommendations may need to be reevaluated in consideration of the actual design configuration. This review is necessary to evaluate whether the recommendations contained in this report and future reports have been properly incorporated into the project plans and specifications.

9.2 Construction Monitoring

Site preparation, removal of unsuitable soils, assessment of imported fill materials, fill placement, and other earthwork operations should be observed and tested. The substrata exposed during the construction may differ from that encountered in the test borings. Periodic or continuous observation by a representative of NV5 during construction allows for evaluation of the soil/rock conditions as they are encountered and allows the opportunity to recommend appropriate revisions where necessary.

10.0 LIMITATIONS

The recommendations and opinions expressed in this report are based on NV5's review of background documents and on information obtained from field explorations. It should be noted that this study did not evaluate the possible presence of hazardous materials on any portion of the site.

Due to the limited nature of field explorations, conditions not observed and described in this report may be present on the site. Uncertainties related to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation and laboratory testing can be performed upon request. Conditions different from those anticipated in this report may be encountered during grading operations, e.g., the extent of removal of unsuitable soil, and that additional effort may be required to mitigate them.

Site conditions, including ground-water level, can change with time because of natural processes or the activities of man at the subject site or at nearby sites. Changes to the applicable laws, regulations, codes, and standards of practice may occur because of government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which NV5 has no control.

NV5's recommendations for this site are, to a high degree, dependent upon appropriate quality control of subgrade preparation, fill placement, and foundation construction. Accordingly, the recommendations are made contingent upon the opportunity for NV5 to observe grading operations and foundation excavations for the proposed construction. If parties other than NV5 are engaged to

provide such services, such parties must be notified that they will be required to assume complete responsibility as the geotechnical engineer of record for the geotechnical phase of the project by concurring with the recommendations in this report and/or by providing alternative recommendations.

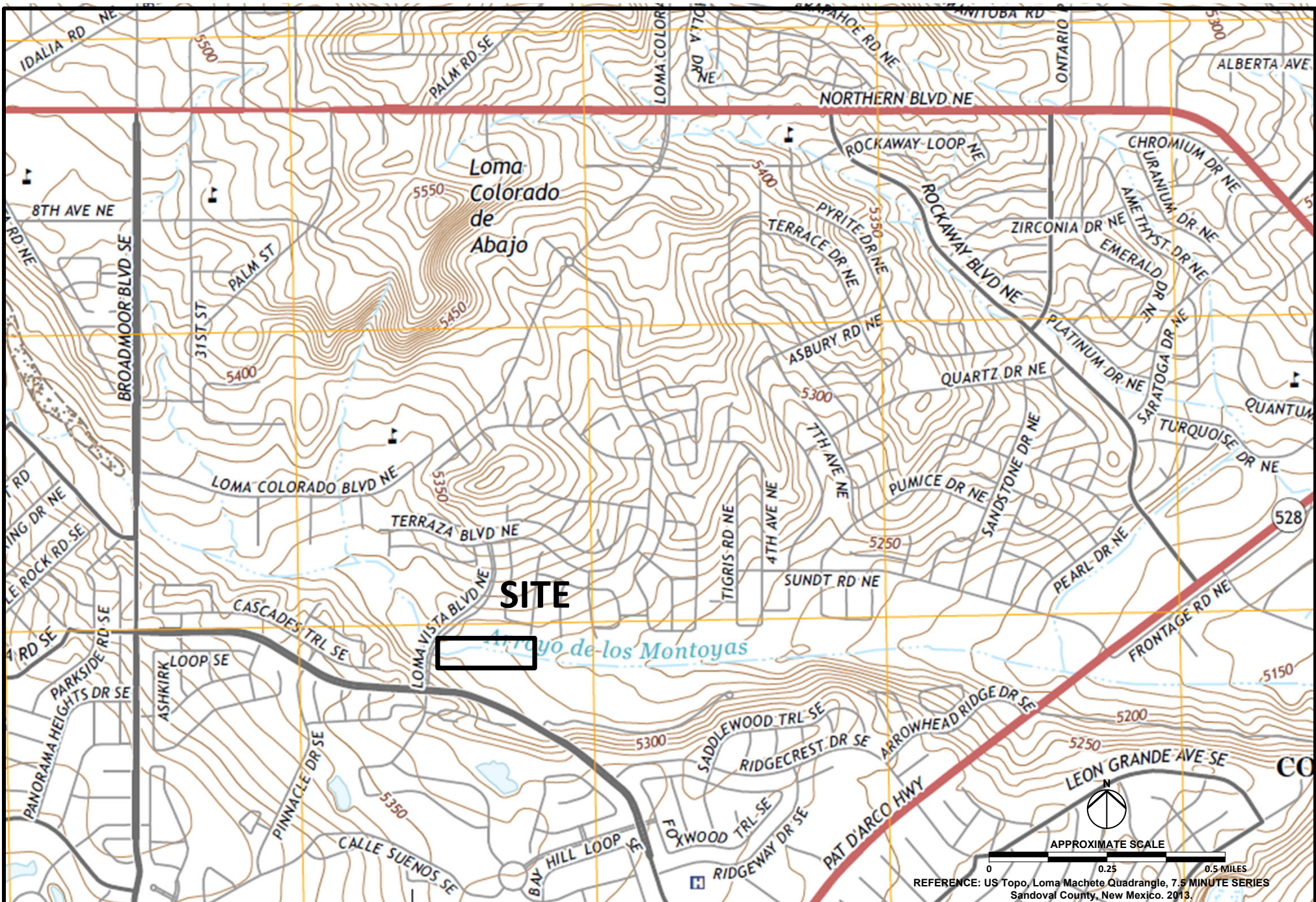
This document is intended to be used only in its entirety. No portion of the document itself is designed to completely represent any aspect of the project described herein. NV5 should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

NV5 has endeavored to perform its evaluation using the degree of care and skill ordinarily exercised under similar circumstances by reputable geotechnical professionals with experience in this area in similar soil conditions. No other warranty, either expressed or implied, is made as to the conclusions and recommendations contained in this report.

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FIGURES

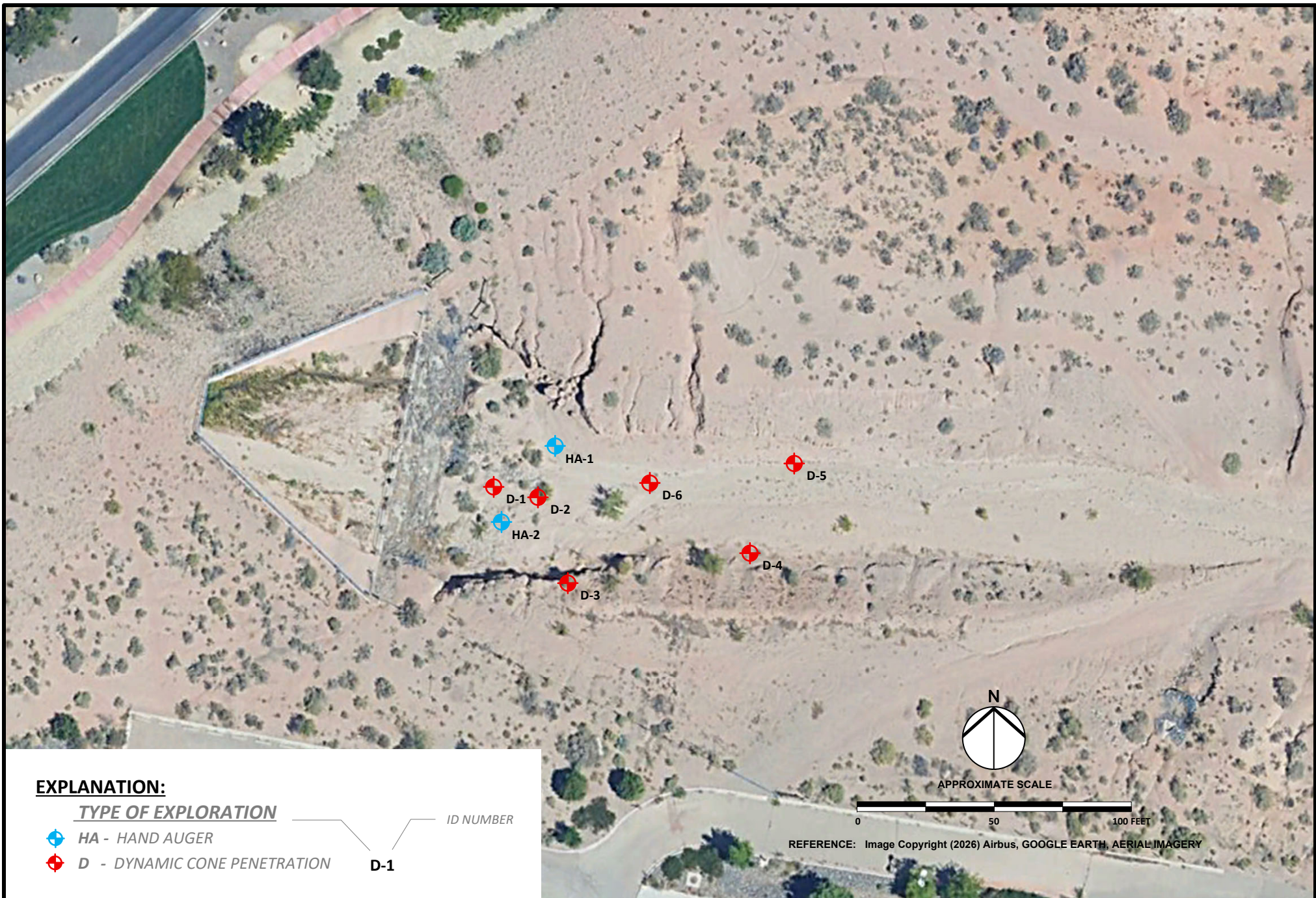


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Phone: 505-344-7373

Project No.: 4430425-1720000.00
Date: June 24, 2026

SITE VICINITY
Sportsplex Dam Outfall Slope Stabilization
Loma Vista Blvd NE
RIO RANCHO, NEW MEXICO

FIGURE
1

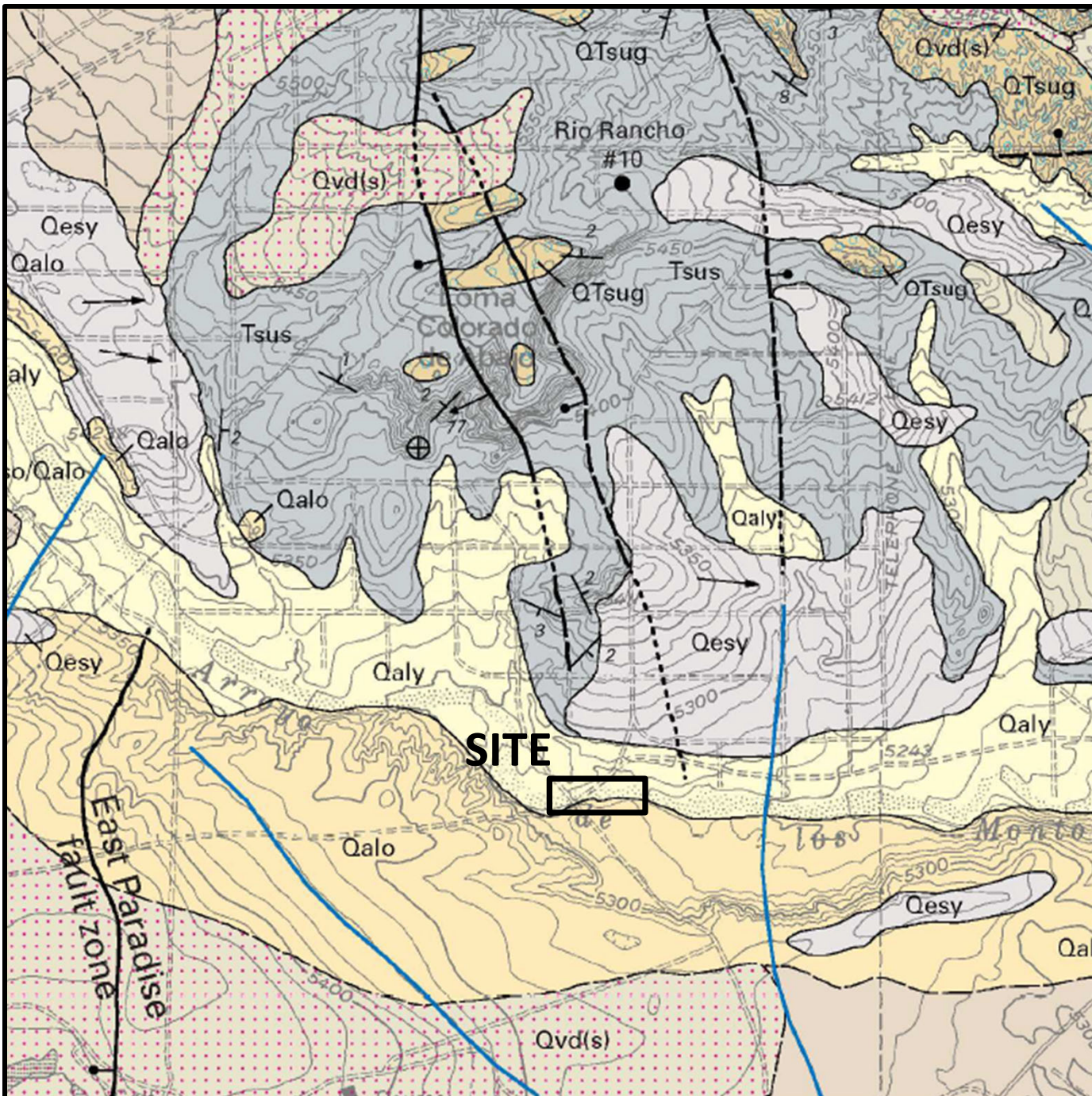


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SITE LAYOUT AND BORING LOCATIONS
Sportsplex Dam Outfall Slope Stabilization
Loma Vista Blvd NE
RIO RANCHO, NEW MEXICO

FIGURE
2



UNIT DESCRIPTIONS

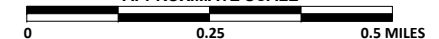
- Qesy** **Young Eolian Sand (Holocene)** — Light-yellowish-brown, fine to coarse sand; moderately to well sorted massive to crossbedded. Thickness 1 - 30 feet.
- Qeso** **Older Eolian Sand (Holocene to upper Pleistocene)** — Light-brown, fine to coarse sand; moderately to well sorted; massive to crossbedded. Thickness 1 - 30 feet.
- Qaly** **Young Arroyo Alluvium (Holocene)** — Light-yellowish-brown, fine to coarse sand and pebbly sand with some thin beds of sandy pebble gravel; moderately sorted; massive to well bedded with occasional cross bedding. Thickness 1 - 15 feet.
- Qalo** **Older Arroyo Alluvium (Holocene to middle Pleistocene)** — Light-brown, fine to coarse sand and pebbly sand with some thin beds of sandy pebble gravel; moderately sorted; massive to well bedded, with occasional cross bedding. Thickness 10 - 100 feet.
- Qvd** **Valley Floor Sand and Gravel (upper and middle Pleistocene)** — Reddish-yellow-brown sand and sandy pebble and cobble gravel; poorly to moderately sorted; massive to poorly bedded. Thickness 1 - 50 feet.
- Qvd(s)** **Broad Fan Surfaces** — Formed by unit Qvd
- Qat** **Tercero Alto Sand (middle Pleistocene)** — Light-brown sand and pebbly sand; moderately to well sorted, well bedded. Thickness poorly known probably 30 - 60 feet.
- Qag** **Tercero Alto Gravel (middle Pleistocene)** — Sandy pebble and cobble gravel; moderately to well sorted; poorly bedded. Thickness less than 15 feet.
- QTsug** **Upper Sandstone and Conglomerate (lower Pleistocene ? to Pliocene)** — Sandstone and sandy pebble, cobble, and boulder conglomerate; poorly indurated; poorly to moderately well sorted. Massive to moderately bedded. Thickness 1 - 30 feet.
- Tsus** **Upper Sandstone and Siltstone (Pliocene to upper Miocene)** — Predominantly light-gray to pale-brown, fine- to medium-grained sandstone, with less common pebbly sandstone, sandy pebble conglomerate, and very pale brown to red sandstone, siltstone, and claystone, poorly indurated. Moderately to well sorted within beds; well bedded. Thickness 200 - 250 feet.

EXPLANATION OF MAP SYMBOLS

- Contact**—Dashed where approximately located
- Fault**—Bar and ball on downthrown side. Arrow indicates amount and direction of dip. Dashed where approximately located; dotted where concealed
- Aeromagnetic anomaly**—Analysis by authors of high-resolution aeromagnetic data from U.S. Geological Survey and SIAL Geosciences, Inc. (1997)
- Strike and dip of beds**
- Inclined**
- Horizontal**
- Selected well locations**—Showing well name
- Tephra outcrop**—Numbered where sample location discussed in text
- Paleowind direction**—Geomorphic wind indicators in units Qesy and Qeso
- Thin surficial deposit (upper symbol) covering older unit**



APPROXIMATE SCALE



REFERENCE: Preliminary Geologic Map of The Loma Machete Quadrangle, Sandoval County, New Mexico, 2000.



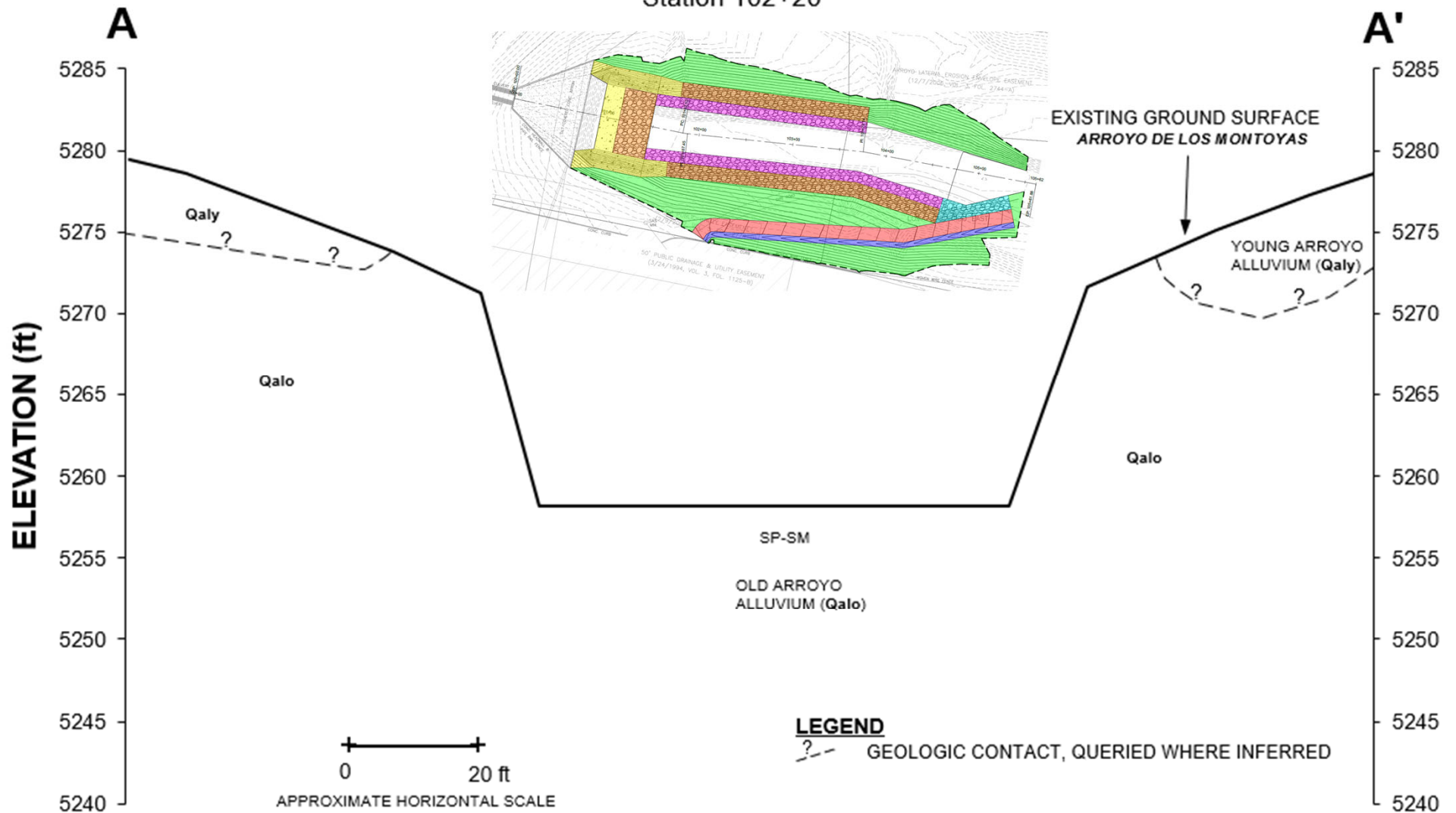
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Project No.: 4430425-1720000.00
Date: June 24, 2026

GEOLOGIC MAP
Sportsplex Dam Outfall Slope Stabilization
Loma Vista Blvd NE
RIO RANCHO, NEW MEXICO

FIGURE
3

GENERALIZED GEOLOGIC PROFILE DOWNSTREAM OF OUTFALL STRUCTURE Station 102+20



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Project No.: 4430425-1720000.00
Date: June 24, 2026

CROSS-SECTION A-A'
Sportsplex Dam Outfall Slope Stabilization
Loma Vista Blvd NE
RIO RANCHO, NEW MEXICO

FIGURE
4

SITE

Bernalillo

Albuquerque

Las Lunas

Belen

Santa Fe

Estancia

MAP EXPLANATION

TIME OF MOST RECENT SURFACE RUPTURE

- Historic (1887, NE Sonora)
- Holocene (<10,000 years) or post last glaciation (<15,000 years)
- Late Quaternary (<130,000; post penultimate glaciation)
- Late and middle Quaternary (<750,000 years)
- Quaternary, undifferentiated (<1,600,000 years)
- Area of no Quaternary faults or area unmapped

SLIP RATE

- 1-0.2mm/year
- <0.2mm/year

QUALITY

- Reliable
- - - - - Poor or discontinuous at map scale
- · - · - Inferred or concealed

STRUCTURE TYPE

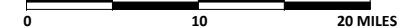
- ▲ Thrust or reverse fault (teeth on upper block)
- ⇌ Right-lateral strike-slip fault
- ⇐ Left-lateral strike-slip fault
- ⊥ Normal fault
- ⌒ Anticline
- ⌒ Syncline
- ⌒ Monocline
- ↙ Plunge direction

OTHER SYMBOLS

- 913-1 Site of trench across fault
- Location of fault section boundary
- 2040 Fault number (See OFR 98-521 for description)



APPROXIMATE SCALE



REFERENCE: Map of Quaternary Faults and Folds in New Mexico and Adjacent Areas. OFR 98-521. Last revision February 2000.

APPENDIX A

SITE EXPLORATION LOGS

SAMPLE/SAMPLER TYPE GRAPHICS

	AUGER SAMPLE
	STANDARD PENETRATION SPLIT SPOON SAMPLER
	BULK / GRAB SAMPLE
	MODIFIED CALIFORNIA SAMPLER
	SHELBY TUBE SAMPLER
	HQ ROCK CORE SAMPLE
	NQ ROCK CORE SAMPLE

GROUNDWATER LEVEL GRAPHICS

	WATER LEVEL (during drilling operations)
	WATER LEVEL (immediately after drilling completion)
	WATER LEVEL (additional levels after drilling completion)
	OBSERVED SEEPAGE

NOTES

- The report and graphics key are an integral part of these logs. All data and interpretations in this log are subject to the explanations and limitations stated in the report.
- Lines separating strata on the logs represent approximate boundaries only. Actual transitions may be gradual or differ from those shown.
- No warranty is provided as to the continuity of soil or rock conditions between individual sample locations.
- Logs represent general soil or rock conditions observed at the point of exploration on the date indicated.
- In general, Unified Soil Classification System (USCS) designations presented on the logs were based on visual classification in the field and were modified where appropriate based on gradation and index property testing.
- Fine grained soils that plot within the hatched area on the Plasticity Chart, and coarse grained soils with between 5 and 12% passing the No. 200 sieve require dual USCS symbols, i.e., GW-GM, GP-GM, GW-GC, GP-GC, GC-GM, SW-SM, SP-SM, SW-SC, SP-SC, SC-SM.
- If sampler is not able to be driven at least 6 inches then Y/X indicates Y number of blows required to drive the identified sampler X inches with a 140 pound hammer falling 30 inches.

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487)

GRAVELS (More than half of coarse fraction is larger than the #4 sieve)	CLEAN GRAVEL WITH <5% FINES	Cu ≥ 4 and 1 ≤ Cc ≤ 3		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		Cu < 4 and/or 1 > Cc > 3		GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
	GRAVELS WITH 5 TO 12% FINES	Cu ≥ 4 and 1 ≤ Cc ≤ 3		GW-GM	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES
		Cu < 4 and/or 1 > Cc > 3		GW-GC	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES
		Cu < 4 and/or 1 > Cc > 3		GP-GM	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES
				GP-GC	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES
	GRAVELS WITH >12% FINES			GM	SILTY GRAVELS, GRAVEL-SILT-SAND MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
				GC-GM	CLAYEY GRAVELS, GRAVEL-SAND-CLAY-SILT MIXTURES
COARSE GRAINED SOILS (More than half of coarse fraction is smaller than the #4 sieve)	CLEAN SANDS WITH <5% FINES	Cu ≥ 6 and 1 ≤ Cc ≤ 3		SW	WELL GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
		Cu < 6 and/or 1 > Cc > 3		SP	POORLY-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
	SAND WITH 5 TO 12% FINES	Cu ≥ 6 and 1 ≤ Cc ≤ 3		SW-SM	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES
				SW-SC	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES
		Cu > 6 and/or 1 < Cc > 3		SP-SM	POORLY GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES
				SP-SC	POORLY-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES
	SANDS WITH >12% FINES			SM	SILTY SANDS, SAND-GRAVEL-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-GRAVEL-CLAY MIXTURES
				SC-SM	CLAYEY SANDS, SAND-SILT-CLAY MIXTURES
FINE GRAINED SOILS (More than half of material is smaller than the #200 sieve)	SILTS AND CLAYS (Liquid Limit less than 50)			ML	INORGANIC SILTS AND VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				CL-ML	INORGANIC CLAYS-SILTS OF LOW PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	SILTS AND CLAYS (Liquid Limit greater than 50)			OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PLASTICITY
				MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILT
				CH	INORGANIC CLAYS OF HIGH PLASTICITY FAT CLAYS
				OH	ORGANIC CLAYS & ORGANIC SILTS OF MEDIUM-TO-HIGH PLASTICITY

NV5

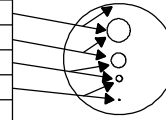
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Albuquerque, NM 87110

GRAPHICS KEY

Sportsplex Dam Outfall Slope Stabilization
Albuquerque, NM

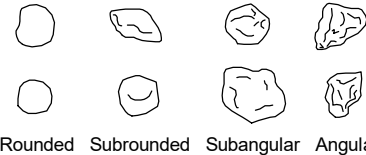
GRAIN SIZE

DESCRIPTION	SIEVE SIZE	GRAIN SIZE	APPROXIMATE SIZE
Boulders	>12 in.	>12 in. (304.8 mm.)	Larger than basketball-sized
Cobbles	3 - 12 in.	3 - 12 in. (76.2 - 304.8 mm.)	Fist-sized to basketball-sized
Gravel	coarse	3/4 - 3 in.	Thumb-sized to fist-sized
	fine	#4 - 3/4 in.	Pea-sized to thumb-sized
Sand	coarse	#10 - #4	Rock salt-sized to pea-sized
	medium	#40 - #10	Sugar-sized to rock salt-sized
	fine	#200 - #40	Four-sized to sugar-sized
Fines	Passing #200	<0.0029 in. (0.074 mm.)	Flour-sized and smaller



ANGULARITY

DESCRIPTION	CRITERIA
Angular	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular	Particles are similar to angular description but have rounded edges
Subrounded	Particles have nearly plane sides but have well-rounded edges
Rounded	Particles have smoothly curved sides and no edges



PLASTICITY

DESCRIPTION	CRITERIA
Non-plastic	A 1/8-in. (3 mm.) thread cannot be rolled at any water content.
Low (L)	The thread can barely be rolled and the lump or thread cannot be formed when drier than the plastic limit.
Medium (M)	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump or thread crumbles when drier than the plastic limit.
High (H)	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump or thread can be formed without crumbling when drier than the plastic limit.

MOISTURE CONTENT

DESCRIPTION	CRITERIA
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below groundwater table

REACTION WITH HYDROCHLORIC ACID

DESCRIPTION	CRITERIA
None	No visible reaction
Weak	Some reaction, with bubbles forming slowly
Strong	Violet reaction, with bubbles forming immediately

APPARENT/RELATIVE DENSITY - COARSE-GRAINED SOIL

APPARENT DENSITY	SPT-N ₆₀ (#blows/0.3m)	MODIFIED CALIFORNIA SAMPLER (#blows/0.3m)	RELATIVE DENSITY (%)
Very Loose	<4	<8	0 - 15
Loose	4 - 10	8 - 20	15 - 35
Medium Dense	11 - 30	21 - 60	35 - 65
Dense	31 - 50	61 - 100	65 - 85
Very Dense	>50	>100	85 - 100

CONSISTENCY - FINE-GRAINED SOIL

CONSISTENCY	SPT-N ₆₀ (#blows/0.3m)	CRITERIA
Very Soft	<2	Thumb will penetrate soil more than 1 in. (25 mm.)
Soft	2 - 4	Thumb will penetrate soil about 1 in. (25 mm.)
Firm	5 - 15	Thumb will indent soil about 1/4-in. (6 mm.)
Hard	16 - 30	Thumb will not indent soil but readily indented with thumbnail
Very Hard	>30	Thumbnail will not indent soil

STRUCTURE

DESCRIPTION	CRITERIA
Stratified	Alternating layers of varying material or color with layers at least 1/4-in. (6 mm.) thick, note thickness
Laminated	Alternating layers of varying material or color with layers less than 1/4-in. (6 mm.) thick, note thickness
Fissured	Breaks along definite planes of fracture with little resistance to fracturing
Slickensided	Fracture planes appear polished or glossy, sometimes striated
Blocky	Cohesive soil that can be broken down into smaller angular lumps which resist further breakdown
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay; note thickness
Homogeneous	Same color and appearance throughout

CEMENTATION

DESCRIPTION	CRITERIA
Weakly	Crumbles or breaks with handling or slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure

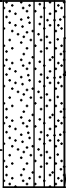
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Albuquerque, New Mexico 87110

SOIL DESCRIPTION KEY

Sportsplex Dam Outfall Slope Stabilization
Albuquerque, NM

Date	Started: 6/12/2026		Project Number 4430425-1720000.00		Project Sports Plex Dam Outfall Slope Stabilization		Auger No. HA-1								
	Completed: 6/12/2026														
	Backfilled: 6/12/2026		Backfilled with: Auger cuttings		Surface Elevation:		Logged By: D.King								
Latitude:			Longitude:			Location: Albuquerque, NM									
Groundwater Depth (ft.) Depth (ft.)	Graphical Log	Sample Taken	Sample Type/ID	Penetration Resistance (Blows per foot)	% Recovery	% RQD	Moisture Content (%)	Liquid Limit	Plasticity Index	Percent Passing No. 200 Sieve	ASTM Symbol	Sample Type G - Grab Sample SPT - 2" O.D. 1.38" I.D. Tube Sample MC - 3" O.D. 2.42" I.D. Ring Sample NR - No Recovery * - Uncorrected Blow Counts	Groundwater		
													Depth (ft)	Hour	Date
Visual Classification															
0													Poorly Graded SAND with Silt; light brown, dry to moist, trace fine to coarse gravel		
1.25' Hand auger terminated due to encountering oversized particles															

Date	Started: 6/12/2026		Project Number 4430425-1720000.00		Project Sports Plex Dam Outfall Slope Stabilization		Auger No. HA-2																																			
	Completed: 6/12/2026																																									
	Backfilled: 6/12/2026		Backfilled with: Auger cutting		Surface Elevation:		Logged By: D. King																																			
Latitude:			Longitude:			Location: Albuquerque, NM																																				
Groundwater Depth (ft.) Depth (ft.)	Graphical Log	Sample Taken	Sample Type/ID	Penetration Resistance (Blows per foot)	% Recovery	% RQD	Moisture Content (%)	Liquid Limit	Plasticity Index	Percent Passing No. 200 Sieve	ASTM Symbol	Sample Type G - Grab Sample SPT - 2" O.D. 1.38" I.D. Tube Sample MC - 3" O.D. 2.42" I.D. Ring Sample NR - No Recovery * - Uncorrected Blow Counts	Groundwater																													
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0  <table border="1"> <thead> <tr> <th>Sample Type/ID</th> <th>Penetration Resistance (Blows per foot)</th> <th>% Recovery</th> <th>% RQD</th> <th>Moisture Content (%)</th> <th>Liquid Limit</th> <th>Plasticity Index</th> <th>Percent Passing No. 200 Sieve</th> <th>ASTM Symbol</th> </tr> </thead> <tbody> <tr> <td>G HA-2-1</td> <td></td> <td></td> <td></td> <td>0.9</td> <td></td> <td></td> <td>7</td> <td></td> </tr> <tr> <td>G HA-2-2</td> <td></td> <td></td> <td></td> <td>1.2</td> <td></td> <td></td> <td>8</td> <td></td> </tr> </tbody> </table>													Sample Type/ID	Penetration Resistance (Blows per foot)	% Recovery	% RQD	Moisture Content (%)	Liquid Limit	Plasticity Index	Percent Passing No. 200 Sieve	ASTM Symbol	G HA-2-1				0.9			7		G HA-2-2				1.2			8		Poorly Graded SAND with Silt; light brown, dry to moist, trace fine to coarse gravel		
Sample Type/ID	Penetration Resistance (Blows per foot)	% Recovery	% RQD	Moisture Content (%)	Liquid Limit	Plasticity Index	Percent Passing No. 200 Sieve	ASTM Symbol																																		
G HA-2-1				0.9			7																																			
G HA-2-2				1.2			8																																			
1.25' Hand auger terminated due to encountering oversized particles																																										

APPENDIX B

DYNAMIC CONE PENETRATION TESTS

PHOTO LOG

Location No.	Description	Notes
Typical Setup		DCP at typical test location to measure Dynamic Cone Index (DCI)

Client : Southern Sandoval County Arroyo Flood Control Authority (SSCAFCA)
Project : Sportsplex Dam Outfall Slope Stabilization

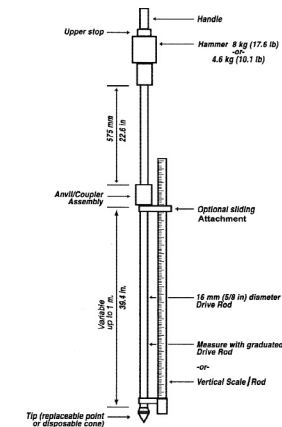


Table A. Summary of Dynamic Cone Penetrometer Tests

DCP Test					Depth ¹ (ft)	USCS	Hammer Factor ² (1/2)	Drive Rod Reading (inch)		DCP Hammer	DCP Index (mm/blow)	CBR ³ (%)	Friction Angle ⁴ (°)	Notes
No.	ID	Date	Latitude (°)	Longitude (°)				Initial	Final	Blows				
1	D-1	6/12/2026	35.25804	-106.66481	0.04167	SP	1	32.375	23.250	20	12	18.8	35	
2	D-2	6/12/2026	35.25803	-106.66477	0.04167	SP	1	32.750	12.625	20	26	7.7	31	
3	D-3	6/12/2026	35.25794	-106.66473	0.04167	SP	1	33.500	17.375	20	20	9.9	32	
4	D-4	6/12/2026	35.25796	-106.66451	0.04167	SP	1	34.250	18.750	20	20	10.4	32	
5	D-5	6/12/2026	35.25806	-106.66445	0.04167	SP	1	32.750	18.250	20	18	11.2	32	
6	D-6	6/12/2026	35.25805	-106.66462	0.04167	SP	1	34.250	21.625	20	16	13.1	33	

- Notes:
- ¹ Cone vertical side depth below ground surface at the initial drive rod reading
 - ² 1=8-kg (17.6-lb) hammer, 2=4.6-gk (10.1-lb) hammer.
 - ³ California Bearing Ratio (CBR) by US Army Corps of Engineers (USCE) correlation referenced in ASTM D6951-03.
 - ⁴ Friction angle correlation referenced in Peck, R. B., Hansen, W. E., and Thornburn, T. H. (1974). Foundation Engineering, 2nd Edition, John Wiley and Sons, Inc., New York (1982).

APPENDIX C

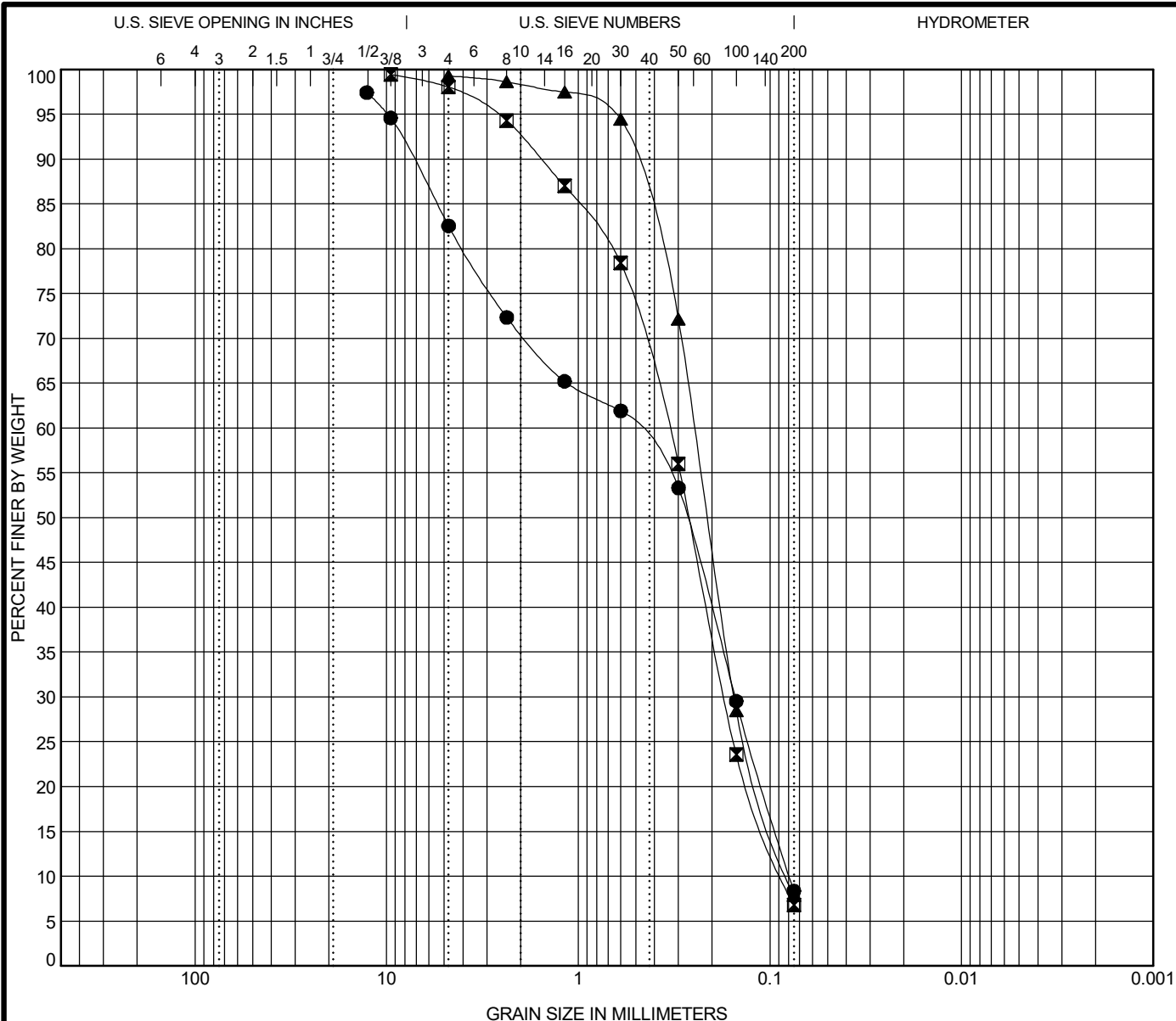
LABORATORY TESTING

SUMMARY OF LABORATORY ANALYSIS

Project: **Sports Plex Dam Outfall Slope Stabilization**
 Project Number: **4430425-1720000.00**

Location: **Albuquerque, NM**

Boring Number	Depth (ft.)	Soil Classification		Atterberg Limits		Sieve Analysis - Accumulative % Passing														Moisture Content (%)	Dry Density (pcf)	Unconfined Comp. Strength (psi)
		USCS	AASHTO	PI	LL	No. 200	No. 100	No. 50	No. 40	No. 30	No. 16	No. 10	No. 8	No. 4	3/8 in	1/2 in	3/4 in	1 in	1 1/2 in			
HA-1	0.3 - 1.3	--	--	--	--	8	30	53	--	62	65	--	72	83	95	97	--	--	--	2.4	--	--
HA-2	0.3 - 0.5	--	--	--	--	7	24	56	--	78	87	--	94	98	99	--	--	--	--	0.9	--	--
HA-2	0.5 - 1.3	--	--	--	--	8	28	72	--	94	97	--	99	99	--	--	--	--	--	1.2	--	--



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Depth (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● HA-1	0.3 - 1.3	12.7	0.514	0.152	0.079	14.9	74.2	8.3	
☒ HA-2	0.3 - 0.5	9.525	0.34	0.172	0.086	1.4	91.3	6.8	
▲ HA-2	0.5 - 1.3	4.75	0.247	0.154	0.081	0.0	91.4	7.9	

ASTM D1140 ASTM C136

NV5

6501 Americas Pkwy NE, Ste 400
Albuquerque, NM 87110

GRAIN SIZE DISTRIBUTION

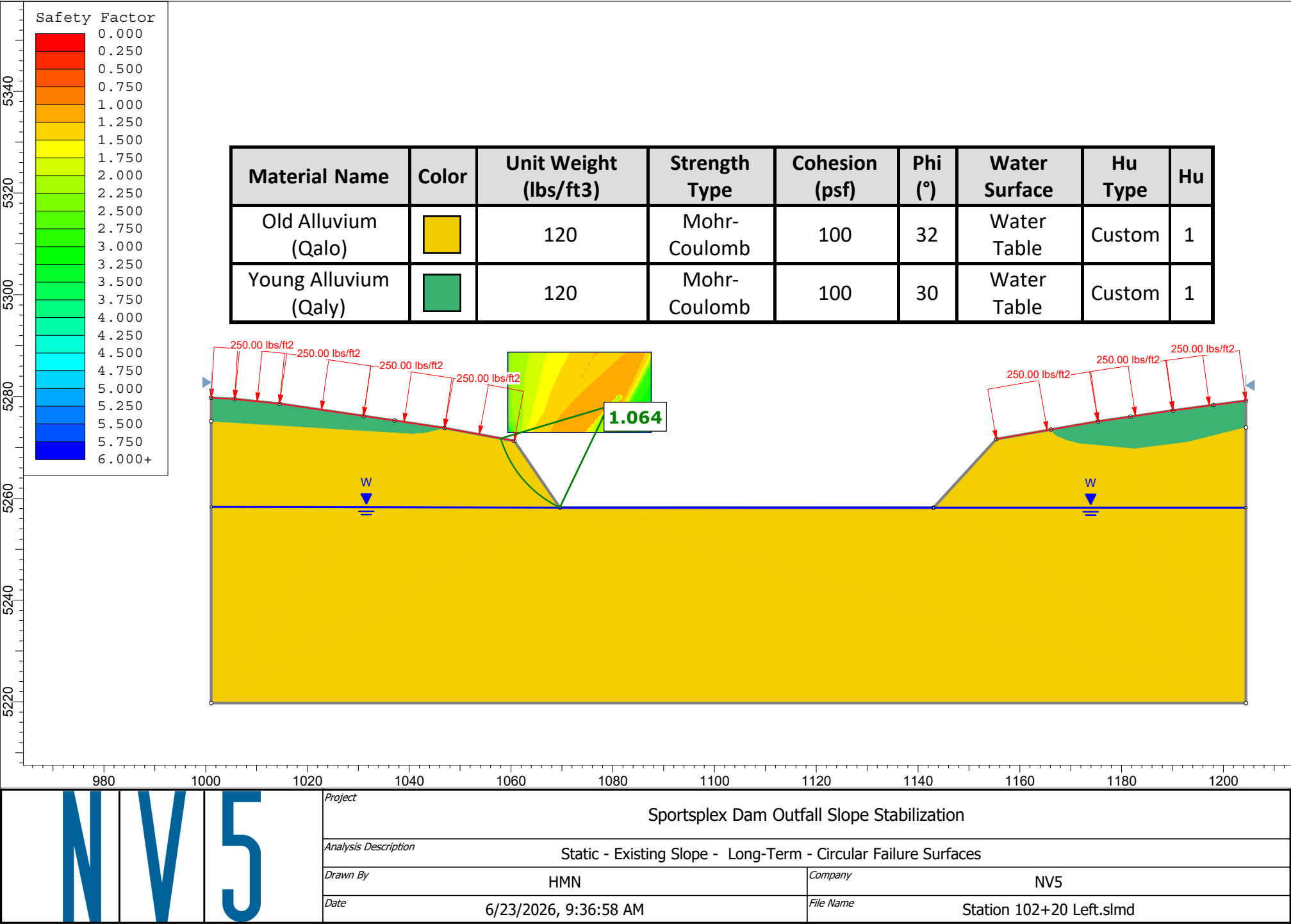
Project: Sports Plex Dam Outfall Slope Stabilization

Location: Albuquerque, NM

Project Number: 4430425-1720000.00

APPENDIX D

ENGINEERING ANALYSIS





Station 102+20 Left
Slide2 - An Interactive Slope Stability Program
Date Created: 6/23/2026, 9:36:58 AM
Software Version: 9.04

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Slide2 Analysis Information

Station 102+20 Left

Project Summary

File Name:	Station 102+20 Left.slmd
Slide2 Modeler Version:	9.04
Compute Time:	00h:00m:00.596s
Project Title:	Slide2 - An Interactive Slope Stability Program
Date Created:	6/23/2026, 9:36:58 AM

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Data Output:	Standard
Failure Direction:	Left to Right

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	Bishop simplified
	Janbu simplified
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:

Pore Fluid Unit Weight [lbs/ft³]:

Advanced Groundwater Method:

Water Surfaces

62.4

None

Random Numbers

Pseudo-random Seed:

10116

Random Number Generation Method:

Park and Miller v.3

Surface Options

Surface Type:	Circular
Search Method:	Grid Search
Radius Increment:	10
Composite Surfaces:	Disabled
Reverse Curvature:	Invalid Surfaces
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Loading

2 Distributed Loads present

Distributed Load 1	
Distribution:	Constant
Magnitude [psf]:	250
Orientation:	Normal to boundary
Distributed Load 2	
Distribution:	Constant
Magnitude [psf]:	250
Orientation:	Normal to boundary

Materials

Old Alluvium (Qalo)

Color	
Strength Type	Mohr-Coulomb
Unit Weight	120 lbs/ft3
Cohesion	100 psf
Phi	32 °
Water Surface	Water Table
Hu Type	Custom
Hu	1
Specify alternate strength type above water surface	No

Young Alluvium (Qaly)

Color	
Strength Type	Mohr-Coulomb
Unit Weight	120 lbs/ft3
Cohesion	100 psf
Phi	30 °
Water Surface	Water Table
Hu Type	Custom
Hu	1
Specify alternate strength type above water surface	No

Global Minimums

Method: bishop simplified

FS	1.064300
Center:	1079.097, 5278.043
Radius:	22.006
Left Slip Surface Endpoint:	1058.007, 5271.757
Right Slip Surface Endpoint:	1069.583, 5258.199
Resisting Moment:	90227.6 lb-ft
Driving Moment:	84776.5 lb-ft
Total Slice Area:	37.6327 ft ²
Surface Horizontal Width:	11.5762 ft
Surface Average Height:	3.25087 ft

Method: janbu simplified

FS	1.015310
Center:	1077.686, 5276.462
Radius:	19.984
Left Slip Surface Endpoint:	1058.275, 5271.708
Right Slip Surface Endpoint:	1069.588, 5258.192
Resisting Horizontal Force:	2511.15 lb
Driving Horizontal Force:	2473.27 lb
Total Slice Area:	37.8136 ft ²
Surface Horizontal Width:	11.3129 ft
Surface Average Height:	3.34251 ft

Method: spencer

FS	1.054070
Center:	1079.097, 5278.043
Radius:	22.006
Left Slip Surface Endpoint:	1058.007, 5271.757
Right Slip Surface Endpoint:	1069.583, 5258.199
Resisting Moment:	89360.6 lb-ft
Driving Moment:	84776.5 lb-ft
Resisting Horizontal Force:	2625.89 lb
Driving Horizontal Force:	2491.18 lb
Total Slice Area:	37.6327 ft ²
Surface Horizontal Width:	11.5762 ft
Surface Average Height:	3.25087 ft

Global Minimum Support Data

No Supports Present

Valid and Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 23457

Number of Invalid Surfaces: 11844

Error Codes

Error Code -103 reported for 7360 surfaces

Error Code -106 reported for 2 surfaces

Error Code -108 reported for 318 surfaces

Error Code -112 reported for 154 surfaces

Error Code -114 reported for 4010 surfaces

Method: janbu simplified

Number of Valid Surfaces: 23403

Number of Invalid Surfaces: 11898

Error Codes

Error Code -103 reported for 7360 surfaces

Error Code -106 reported for 2 surfaces

Error Code -108 reported for 358 surfaces

Error Code -111 reported for 120 surfaces

Error Code -112 reported for 48 surfaces

Error Code -114 reported for 4010 surfaces

Method: spencer

Number of Valid Surfaces: 22953

Number of Invalid Surfaces: 12348

Error Codes

Error Code -103 reported for 7360 surfaces

Error Code -106 reported for 2 surfaces

Error Code -108 reported for 358 surfaces

Error Code -111 reported for 298 surfaces

Error Code -112 reported for 320 surfaces

Error Code -114 reported for 4010 surfaces

Error Code Descriptions

The following errors were encountered during the computation:

- 103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
- 106 = Average slice width is less than $0.0001 * (\text{maximum horizontal extent of soil region})$. This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
- 108 = Total driving moment or total driving force < 0.1 . This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
- 111 = Safety factor equation did not converge
- 112 = The coefficient $M\text{-}\alpha = \cos(\alpha)(1 + \tan(\alpha)\tan(\phi))/F < 0.2$ for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.
- 114 = Surface with Reverse Curvature.

Slice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.0643

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.231524	9.54723	-72.4063	Old Alluvium (Qalo)	100	32	92.9381	98.914	-1.7379	0	-1.7379	291.352	291.352
2	0.231524	27.5843	-70.5059	Old Alluvium (Qalo)	100	32	116.894	124.41	39.065	0	39.065	369.272	369.272
3	0.231524	43.7579	-68.7703	Old Alluvium (Qalo)	100	32	140.078	149.085	78.5525	0	78.5525	439.141	439.141
4	0.231524	58.4829	-67.1614	Old Alluvium (Qalo)	100	32	162.54	172.992	116.811	0	116.811	502.751	502.751
5	0.231524	72.0365	-65.6537	Old Alluvium (Qalo)	100	32	184.332	196.185	153.928	0	153.928	561.301	561.301
6	0.231524	84.6153	-64.2294	Old Alluvium (Qalo)	100	32	205.5	218.714	189.983	0	189.983	615.637	615.637
7	0.231524	96.3645	-62.875	Old Alluvium (Qalo)	100	32	226.089	240.626	225.049	0	225.049	666.391	666.391
8	0.231524	107.395	-61.5807	Old Alluvium (Qalo)	100	32	246.135	261.961	259.192	0	259.192	714.042	714.042
9	0.231524	117.795	-60.3383	Old Alluvium (Qalo)	100	32	265.672	282.755	292.469	0	292.469	758.966	758.966
10	0.231524	127.635	-59.1417	Old Alluvium (Qalo)	100	32	284.731	303.039	324.932	0	324.932	801.468	801.468
11	0.231524	136.971	-57.9855	Old Alluvium (Qalo)	100	32	303.339	322.844	356.625	0	356.625	841.796	841.796
12	0.231524	144.237	-56.8656	Old Alluvium (Qalo)	100	32	270.904	288.323	301.378	0	301.378	716.398	716.398
13	0.231524	145.063	-55.7782	Old Alluvium (Qalo)	100	32	247.908	263.848	262.212	0	262.212	626.699	626.699
14	0.231524	144.936	-54.7205	Old Alluvium (Qalo)	100	32	252.252	268.472	269.611	0	269.611	626.15	626.15
15	0.231524	144.458	-53.6896	Old Alluvium (Qalo)	100	32	255.906	272.361	275.835	0	275.835	624.077	624.077
16	0.231524	143.652	-52.6835	Old Alluvium (Qalo)	100	32	258.904	275.551	280.941	0	280.941	620.597	620.597
17	0.231524	142.543	-51.7	Old Alluvium (Qalo)	100	32	261.272	278.072	284.975	0	284.975	615.802	615.802
18	0.231524	141.149	-50.7374	Old Alluvium (Qalo)	100	32	263.037	279.95	287.981	0	287.981	609.778	609.778
19	0.231524	139.487	-49.7943	Old Alluvium (Qalo)	100	32	264.221	281.21	289.997	0	289.997	602.596	602.596
20	0.231524	137.574	-48.8692	Old Alluvium (Qalo)	100	32	264.845	281.875	291.061	0	291.061	594.329	594.329
21	0.231524	135.423	-47.9609	Old Alluvium (Qalo)	100	32	264.929	281.964	291.202	0	291.202	585.032	585.032

22	0.231524	133.046	-47.0683	Old Alluvium (Qalo)	100	32	264.489	281.496	290.454	0	290.454	574.763	574.763
23	0.231524	130.454	-46.1904	Old Alluvium (Qalo)	100	32	263.541	280.487	288.84	0	288.84	563.566	563.566
24	0.231524	127.659	-45.3263	Old Alluvium (Qalo)	100	32	262.101	278.954	286.385	0	286.385	551.489	551.489
25	0.231524	124.669	-44.4752	Old Alluvium (Qalo)	100	32	260.179	276.908	283.113	0	283.113	538.569	538.569
26	0.231524	121.492	-43.6364	Old Alluvium (Qalo)	100	32	257.789	274.365	279.042	0	279.042	524.844	524.844
27	0.231524	118.136	-42.8091	Old Alluvium (Qalo)	100	32	254.942	271.335	274.193	0	274.193	510.348	510.348
28	0.231524	114.61	-41.9927	Old Alluvium (Qalo)	100	32	251.648	267.829	268.583	0	268.583	495.11	495.11
29	0.231524	110.918	-41.1867	Old Alluvium (Qalo)	100	32	247.917	263.858	262.228	0	262.228	479.161	479.161
30	0.231524	107.067	-40.3905	Old Alluvium (Qalo)	100	32	243.756	259.43	255.142	0	255.142	462.525	462.525
31	0.231524	103.063	-39.6036	Old Alluvium (Qalo)	100	32	239.176	254.555	247.339	0	247.339	445.228	445.228
32	0.231524	98.9112	-38.8255	Old Alluvium (Qalo)	100	32	234.181	249.239	238.833	0	238.833	427.291	427.291
33	0.231524	94.6161	-38.0559	Old Alluvium (Qalo)	100	32	228.78	243.491	229.633	0	229.633	408.736	408.736
34	0.231524	90.1823	-37.2943	Old Alluvium (Qalo)	100	32	222.979	237.317	219.753	0	219.753	389.582	389.582
35	0.231524	85.614	-36.5403	Old Alluvium (Qalo)	100	32	216.784	230.723	209.2	0	209.2	369.847	369.847
36	0.231524	80.9152	-35.7935	Old Alluvium (Qalo)	100	32	210.198	223.714	197.984	0	197.984	349.548	349.548
37	0.231524	76.0895	-35.0538	Old Alluvium (Qalo)	100	32	203.229	216.297	186.114	0	186.114	328.702	328.702
38	0.231524	71.1404	-34.3207	Old Alluvium (Qalo)	100	32	195.881	208.476	173.598	0	173.598	307.322	307.322
39	0.231524	66.0712	-33.5939	Old Alluvium (Qalo)	100	32	188.157	200.255	160.442	0	160.442	285.424	285.424
40	0.231524	60.8848	-32.8732	Old Alluvium (Qalo)	100	32	180.061	191.639	146.653	0	146.653	263.02	263.02
41	0.231524	55.5842	-32.1583	Old Alluvium (Qalo)	100	32	171.597	182.63	132.236	0	132.236	240.122	240.122
42	0.231524	50.172	-31.449	Old Alluvium (Qalo)	100	32	162.767	173.233	117.198	0	117.198	216.742	216.742
43	0.231524	44.6508	-30.745	Old Alluvium (Qalo)	100	32	153.576	163.451	101.542	0	101.542	192.892	192.892
44	0.231524	39.023	-30.0461	Old Alluvium (Qalo)	100	32	144.024	153.285	85.2737	0	85.2737	168.581	168.581
45	0.231524	33.2908	-29.3522	Old Alluvium (Qalo)	100	32	134.115	142.739	68.3966	0	68.3966	143.819	143.819
46	0.231524	27.4564	-28.6629	Old Alluvium (Qalo)	100	32	123.851	131.815	50.9141	0	50.9141	118.616	118.616

47	0.231524	21.5218	-27.9781	Old Alluvium (Qalo)	100	32	113.233	120.514	32.829	0	32.829	92.9805	92.9805
48	0.231524	15.4889	-27.2977	Old Alluvium (Qalo)	100	32	102.263	108.838	14.1441	0	14.1441	66.9205	66.9205
49	0.231524	9.35958	-26.6213	Old Alluvium (Qalo)	100	32	90.9415	96.789	-5.13867	0	-5.13867	40.4438	40.4438
50	0.231524	3.13551	-25.949	Old Alluvium (Qalo)	100	32	79.2703	84.3674	-25.0174	0	-25.0174	13.558	13.558

Global Minimum Query (janbu simplified) - Safety Factor: 1.01531

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.226259	10.8837	-74.9863	Old Alluvium (Qalo)	100	32	85.5844	86.8947	-20.973	0	-20.973	298.126	298.126
2	0.226259	31.0281	-72.6466	Old Alluvium (Qalo)	100	32	113.41	115.146	24.2384	0	24.2384	387.162	387.162
3	0.226259	48.4344	-70.5833	Old Alluvium (Qalo)	100	32	139.881	142.023	67.2504	0	67.2504	464.095	464.095
4	0.226259	63.8951	-68.7141	Old Alluvium (Qalo)	100	32	165.204	167.733	108.396	0	108.396	532.429	532.429
5	0.226259	77.8747	-66.9908	Old Alluvium (Qalo)	100	32	189.528	192.429	147.918	0	147.918	594.217	594.217
6	0.226259	90.6738	-65.3823	Old Alluvium (Qalo)	100	32	212.967	216.228	186.005	0	186.005	650.786	650.786
7	0.226259	102.501	-63.8672	Old Alluvium (Qalo)	100	32	235.616	239.223	222.803	0	222.803	703.058	703.058
8	0.226259	113.507	-62.43	Old Alluvium (Qalo)	100	32	257.546	261.489	258.438	0	258.438	751.706	751.706
9	0.226259	123.807	-61.0589	Old Alluvium (Qalo)	100	32	278.82	283.089	293.004	0	293.004	797.23	797.23
10	0.226259	133.491	-59.7448	Old Alluvium (Qalo)	100	32	299.491	304.076	326.59	0	326.59	840.029	840.029
11	0.226259	141.445	-58.4806	Old Alluvium (Qalo)	100	32	275.803	280.026	288.1	0	288.1	737.829	737.829
12	0.226259	143.048	-57.2604	Old Alluvium (Qalo)	100	32	249.139	252.953	244.776	0	244.776	632.261	632.261
13	0.226259	143.414	-56.0795	Old Alluvium (Qalo)	100	32	255.126	259.032	254.504	0	254.504	633.878	633.878
14	0.226259	143.379	-54.9337	Old Alluvium (Qalo)	100	32	260.293	264.278	262.9	0	262.9	633.722	633.722
15	0.226259	142.976	-53.8196	Old Alluvium (Qalo)	100	32	264.685	268.737	270.035	0	270.035	631.941	631.941
16	0.226259	142.235	-52.7345	Old Alluvium (Qalo)	100	32	268.34	272.448	275.976	0	275.976	628.662	628.662
17	0.226259	141.179	-51.6758	Old Alluvium (Qalo)	100	32	271.294	275.448	280.775	0	280.775	623.995	623.995
18	0.226259	139.831	-50.6413	Old Alluvium (Qalo)	100	32	273.579	277.768	284.488	0	284.488	618.039	618.039
19	0.226259	138.211	-49.6291	Old Alluvium (Qalo)	100	32	275.222	279.436	287.159	0	287.159	610.876	610.876
20	0.226259	136.334	-48.6375	Old Alluvium (Qalo)	100	32	276.248	280.477	288.824	0	288.824	602.579	602.579
21	0.226259	134.215	-47.665	Old Alluvium (Qalo)	100	32	276.678	280.914	289.523	0	289.523	593.216	593.216
22	0.226259	131.869	-46.7104	Old Alluvium (Qalo)	100	32	276.533	280.767	289.288	0	289.288	582.845	582.845
23	0.226259	129.307	-45.7723	Old Alluvium (Qalo)	100	32	275.833	280.056	288.149	0	288.149	571.52	571.52

24	0.226259	126.539	-44.8498	Old Alluvium (Qalo)	100	32	274.591	278.795	286.133	0	286.133	559.287	559.287
25	0.226259	123.576	-43.9418	Old Alluvium (Qalo)	100	32	272.825	277.002	283.263	0	283.263	546.192	546.192
26	0.226259	120.427	-43.0475	Old Alluvium (Qalo)	100	32	270.548	274.69	279.563	0	279.563	532.273	532.273
27	0.226259	117.1	-42.1661	Old Alluvium (Qalo)	100	32	267.772	271.872	275.053	0	275.053	517.565	517.565
28	0.226259	113.601	-41.2967	Old Alluvium (Qalo)	100	32	264.509	268.559	269.751	0	269.751	502.102	502.102
29	0.226259	109.939	-40.4388	Old Alluvium (Qalo)	100	32	260.771	264.763	263.675	0	263.675	485.914	485.914
30	0.226259	106.118	-39.5918	Old Alluvium (Qalo)	100	32	256.564	260.492	256.841	0	256.841	469.027	469.027
31	0.226259	102.146	-38.7549	Old Alluvium (Qalo)	100	32	251.899	255.756	249.262	0	249.262	451.469	451.469
32	0.226259	98.0263	-37.9278	Old Alluvium (Qalo)	100	32	246.786	250.564	240.953	0	240.953	433.262	433.262
33	0.226259	93.7652	-37.1099	Old Alluvium (Qalo)	100	32	241.229	244.922	231.924	0	231.924	414.429	414.429
34	0.226259	89.3669	-36.3007	Old Alluvium (Qalo)	100	32	235.237	238.838	222.187	0	222.187	394.989	394.989
35	0.226259	84.8357	-35.4998	Old Alluvium (Qalo)	100	32	228.814	232.317	211.752	0	211.752	374.962	374.962
36	0.226259	80.1756	-34.7069	Old Alluvium (Qalo)	100	32	221.968	225.366	200.628	0	200.628	354.365	354.365
37	0.226259	75.3902	-33.9214	Old Alluvium (Qalo)	100	32	214.703	217.99	188.823	0	188.823	333.214	333.214
38	0.226259	70.4831	-33.1432	Old Alluvium (Qalo)	100	32	207.023	210.193	176.346	0	176.346	311.525	311.525
39	0.226259	65.4574	-32.3718	Old Alluvium (Qalo)	100	32	198.934	201.98	163.202	0	163.202	289.312	289.312
40	0.226259	60.3163	-31.6069	Old Alluvium (Qalo)	100	32	190.439	193.355	149.399	0	149.399	266.589	266.589
41	0.226259	55.0625	-30.8482	Old Alluvium (Qalo)	100	32	181.541	184.32	134.941	0	134.941	243.368	243.368
42	0.226259	49.6988	-30.0955	Old Alluvium (Qalo)	100	32	172.243	174.88	119.834	0	119.834	219.662	219.662
43	0.226259	44.2276	-29.3485	Old Alluvium (Qalo)	100	32	162.548	165.037	104.081	0	104.081	195.48	195.48
44	0.226259	38.6514	-28.607	Old Alluvium (Qalo)	100	32	152.459	154.793	87.687	0	87.687	170.834	170.834
45	0.226259	32.9724	-27.8706	Old Alluvium (Qalo)	100	32	141.976	144.15	70.6548	0	70.6548	145.734	145.734
46	0.226259	27.1927	-27.1392	Old Alluvium (Qalo)	100	32	131.103	133.11	52.9873	0	52.9873	120.189	120.189
47	0.226259	21.3143	-26.4126	Old Alluvium (Qalo)	100	32	119.839	121.674	34.6859	0	34.6859	94.2075	94.2075
48	0.226259	15.339	-25.6905	Old Alluvium (Qalo)	100	32	108.187	109.844	15.7531	0	15.7531	67.798	67.798

49	0.226259	9.26871	-24.9727	Old Alluvium (Qalo)	100	32	96.1471	97.6192	-3.81015	0	-3.81015	40.9683	40.9683
50	0.226259	3.105	-24.2592	Old Alluvium (Qalo)	100	32	83.7195	85.0012	-24.0031	0	-24.0031	13.7259	13.7259

Global Minimum Query (spencer) - Safety Factor: 1.05407

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.231524	9.54723	-72.4063	Old Alluvium (Qalo)	100	32	99.0019	104.355	6.96936	0	6.96936	319.182	319.182
2	0.231524	27.5843	-70.5059	Old Alluvium (Qalo)	100	32	119.106	125.546	40.8821	0	40.8821	377.337	377.337
3	0.231524	43.7579	-68.7703	Old Alluvium (Qalo)	100	32	138.058	145.523	72.8518	0	72.8518	428.24	428.24
4	0.231524	58.4829	-67.1614	Old Alluvium (Qalo)	100	32	156.19	164.635	103.438	0	103.438	474.3	474.3
5	0.231524	72.0365	-65.6537	Old Alluvium (Qalo)	100	32	173.72	183.113	133.009	0	133.009	516.93	516.93
6	0.231524	84.6153	-64.2294	Old Alluvium (Qalo)	100	32	190.799	201.116	161.82	0	161.82	557.024	557.024
7	0.231524	96.3645	-62.875	Old Alluvium (Qalo)	100	32	207.537	218.758	190.053	0	190.053	595.18	595.18
8	0.231524	107.395	-61.5807	Old Alluvium (Qalo)	100	32	224.012	236.124	217.844	0	217.844	631.811	631.811
9	0.231524	117.795	-60.3383	Old Alluvium (Qalo)	100	32	240.287	253.279	245.297	0	245.297	667.22	667.22
10	0.231524	127.635	-59.1417	Old Alluvium (Qalo)	100	32	256.406	270.27	272.489	0	272.489	701.62	701.62
11	0.231524	136.971	-57.9855	Old Alluvium (Qalo)	100	32	272.41	287.139	299.486	0	299.486	735.187	735.187
12	0.231524	144.237	-56.8656	Old Alluvium (Qalo)	100	32	245.451	258.723	254.009	0	254.009	630.036	630.036
13	0.231524	145.063	-55.7782	Old Alluvium (Qalo)	100	32	226.88	239.147	222.681	0	222.681	556.251	556.251
14	0.231524	144.936	-54.7205	Old Alluvium (Qalo)	100	32	231.789	244.322	230.963	0	230.963	558.578	558.578
15	0.231524	144.458	-53.6896	Old Alluvium (Qalo)	100	32	236.248	249.022	238.485	0	238.485	559.975	559.975
16	0.231524	143.652	-52.6835	Old Alluvium (Qalo)	100	32	240.267	253.258	245.265	0	245.265	560.471	560.471
17	0.231524	142.543	-51.7	Old Alluvium (Qalo)	100	32	243.857	257.042	251.319	0	251.319	560.095	560.095
18	0.231524	141.149	-50.7374	Old Alluvium (Qalo)	100	32	247.022	260.378	256.659	0	256.659	558.863	558.863
19	0.231524	139.487	-49.7943	Old Alluvium (Qalo)	100	32	249.769	263.274	261.293	0	261.293	556.795	556.795
20	0.231524	137.574	-48.8692	Old Alluvium (Qalo)	100	32	252.102	265.733	265.227	0	265.227	553.904	553.904
21	0.231524	135.423	-47.9609	Old Alluvium (Qalo)	100	32	254.021	267.756	268.466	0	268.466	550.198	550.198
22	0.231524	133.046	-47.0683	Old Alluvium (Qalo)	100	32	255.53	269.346	271.011	0	271.011	545.688	545.688
23	0.231524	130.454	-46.1904	Old Alluvium (Qalo)	100	32	256.627	270.503	272.862	0	272.862	540.381	540.381

24	0.231524	127.659	-45.3263	Old Alluvium (Qalo)	100	32	257.313	271.226	274.019	0	274.019	534.28	534.28
25	0.231524	124.669	-44.4752	Old Alluvium (Qalo)	100	32	257.585	271.513	274.479	0	274.479	527.389	527.389
26	0.231524	121.492	-43.6364	Old Alluvium (Qalo)	100	32	257.443	271.363	274.238	0	274.238	519.71	519.71
27	0.231524	118.136	-42.8091	Old Alluvium (Qalo)	100	32	256.883	270.773	273.293	0	273.293	511.245	511.245
28	0.231524	114.61	-41.9927	Old Alluvium (Qalo)	100	32	255.901	269.738	271.638	0	271.638	501.994	501.994
29	0.231524	110.918	-41.1867	Old Alluvium (Qalo)	100	32	254.495	268.256	269.265	0	269.265	491.955	491.955
30	0.231524	107.067	-40.3905	Old Alluvium (Qalo)	100	32	252.66	266.321	266.169	0	266.169	481.127	481.127
31	0.231524	103.063	-39.6036	Old Alluvium (Qalo)	100	32	250.389	263.928	262.34	0	262.34	469.507	469.507
32	0.231524	98.9112	-38.8255	Old Alluvium (Qalo)	100	32	247.681	261.073	257.77	0	257.77	457.093	457.093
33	0.231524	94.6161	-38.0559	Old Alluvium (Qalo)	100	32	244.526	257.748	252.45	0	252.45	443.879	443.879
34	0.231524	90.1823	-37.2943	Old Alluvium (Qalo)	100	32	240.921	253.948	246.368	0	246.368	429.863	429.863
35	0.231524	85.614	-36.5403	Old Alluvium (Qalo)	100	32	236.858	249.665	239.514	0	239.514	415.037	415.037
36	0.231524	80.9152	-35.7935	Old Alluvium (Qalo)	100	32	232.33	244.892	231.875	0	231.875	399.397	399.397
37	0.231524	76.0895	-35.0538	Old Alluvium (Qalo)	100	32	227.329	239.621	223.44	0	223.44	382.936	382.936
38	0.231524	71.1404	-34.3207	Old Alluvium (Qalo)	100	32	221.848	233.843	214.194	0	214.194	365.645	365.645
39	0.231524	66.0712	-33.5939	Old Alluvium (Qalo)	100	32	215.878	227.551	204.124	0	204.124	347.52	347.52
40	0.231524	60.8848	-32.8732	Old Alluvium (Qalo)	100	32	209.411	220.734	193.214	0	193.214	328.55	328.55
41	0.231524	55.5842	-32.1583	Old Alluvium (Qalo)	100	32	202.437	213.383	181.45	0	181.45	308.726	308.726
42	0.231524	50.172	-31.449	Old Alluvium (Qalo)	100	32	194.946	205.487	168.815	0	168.815	288.039	288.039
43	0.231524	44.6508	-30.745	Old Alluvium (Qalo)	100	32	186.929	197.036	155.291	0	155.291	266.48	266.48
44	0.231524	39.023	-30.0461	Old Alluvium (Qalo)	100	32	178.375	188.019	140.861	0	140.861	244.037	244.037
45	0.231524	33.2908	-29.3522	Old Alluvium (Qalo)	100	32	169.272	178.424	125.505	0	125.505	220.699	220.699
46	0.231524	27.4564	-28.6629	Old Alluvium (Qalo)	100	32	159.608	168.238	109.204	0	109.204	196.453	196.453
47	0.231524	21.5218	-27.9781	Old Alluvium (Qalo)	100	32	149.373	157.45	91.9385	0	91.9385	171.288	171.288
48	0.231524	15.4889	-27.2977	Old Alluvium (Qalo)	100	32	138.552	146.044	73.6853	0	73.6853	145.19	145.19

49	0.231524	9.35958	-26.6213	Old Alluvium (Qalo)	100	32	127.133	134.007	54.4228	0	54.4228	118.146	118.146
50	0.231524	3.13551	-25.949	Old Alluvium (Qalo)	100	32	116.768	123.081	36.9377	0	36.9377	93.7605	93.7605

Interslice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.0643

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	1058.01	5271.76	0	0	0
2	1058.24	5271.03	-33.4935	0	0
3	1058.47	5270.37	-45.7131	0	0
4	1058.7	5269.78	-42.0309	0	0
5	1058.93	5269.23	-26.1483	0	0
6	1059.16	5268.72	-0.764704	0	0
7	1059.4	5268.24	32.0678	0	0
8	1059.63	5267.78	70.7393	0	0
9	1059.86	5267.36	113.955	0	0
10	1060.09	5266.95	160.654	0	0
11	1060.32	5266.56	209.949	0	0
12	1060.55	5266.19	261.091	0	0
13	1060.79	5265.84	301.295	0	0
14	1061.02	5265.5	333.178	0	0
15	1061.25	5265.17	363.026	0	0
16	1061.48	5264.85	390.706	0	0
17	1061.71	5264.55	416.119	0	0
18	1061.94	5264.26	439.196	0	0
19	1062.17	5263.97	459.889	0	0
20	1062.41	5263.7	478.174	0	0
21	1062.64	5263.44	494.044	0	0
22	1062.87	5263.18	507.507	0	0
23	1063.1	5262.93	518.581	0	0
24	1063.33	5262.69	527.301	0	0
25	1063.56	5262.45	533.707	0	0
26	1063.79	5262.23	537.85	0	0
27	1064.03	5262.01	539.79	0	0
28	1064.26	5261.79	539.592	0	0
29	1064.49	5261.58	537.329	0	0
30	1064.72	5261.38	533.077	0	0
31	1064.95	5261.18	526.921	0	0
32	1065.18	5260.99	518.947	0	0
33	1065.42	5260.81	509.249	0	0
34	1065.65	5260.62	497.923	0	0
35	1065.88	5260.45	485.069	0	0
36	1066.11	5260.28	470.791	0	0
37	1066.34	5260.11	455.195	0	0
38	1066.57	5259.95	438.394	0	0
39	1066.8	5259.79	420.499	0	0
40	1067.04	5259.64	401.627	0	0
41	1067.27	5259.49	381.898	0	0
42	1067.5	5259.34	361.434	0	0
43	1067.73	5259.2	340.359	0	0
44	1067.96	5259.06	318.8	0	0
45	1068.19	5258.93	296.888	0	0
46	1068.43	5258.8	274.754	0	0
47	1068.66	5258.67	252.535	0	0
48	1068.89	5258.55	230.367	0	0
49	1069.12	5258.43	208.39	0	0
50	1069.35	5258.31	186.747	0	0
51	1069.58	5258.2	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.01531

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	1058.28	5271.71	0	0	0
2	1058.5	5270.86	-47.5275	0	0
3	1058.73	5270.14	-66.1075	0	0
4	1058.95	5269.5	-65.0584	0	0
5	1059.18	5268.92	-49.9561	0	0
6	1059.41	5268.38	-24.4975	0	0
7	1059.63	5267.89	8.69508	0	0
8	1059.86	5267.43	47.6702	0	0
9	1060.09	5267	90.9228	0	0
10	1060.31	5266.59	137.259	0	0
11	1060.54	5266.2	185.711	0	0
12	1060.76	5265.83	224.887	0	0
13	1060.99	5265.48	254.657	0	0
14	1061.22	5265.14	282.565	0	0
15	1061.44	5264.82	308.417	0	0
16	1061.67	5264.51	332.074	0	0
17	1061.9	5264.21	353.433	0	0
18	1062.12	5263.93	372.426	0	0
19	1062.35	5263.65	389.009	0	0
20	1062.57	5263.38	403.162	0	0
21	1062.8	5263.13	414.885	0	0
22	1063.03	5262.88	424.192	0	0
23	1063.25	5262.64	431.111	0	0
24	1063.48	5262.41	435.684	0	0
25	1063.71	5262.18	437.962	0	0
26	1063.93	5261.96	438.003	0	0
27	1064.16	5261.75	435.877	0	0
28	1064.38	5261.55	431.657	0	0
29	1064.61	5261.35	425.427	0	0
30	1064.84	5261.16	417.274	0	0
31	1065.06	5260.97	407.289	0	0
32	1065.29	5260.79	395.57	0	0
33	1065.52	5260.61	382.22	0	0
34	1065.74	5260.44	367.345	0	0
35	1065.97	5260.27	351.054	0	0
36	1066.19	5260.11	333.46	0	0
37	1066.42	5259.96	314.682	0	0
38	1066.65	5259.8	294.839	0	0
39	1066.87	5259.66	274.055	0	0
40	1067.1	5259.51	252.456	0	0
41	1067.33	5259.37	230.172	0	0
42	1067.55	5259.24	207.335	0	0
43	1067.78	5259.11	184.08	0	0
44	1068	5258.98	160.546	0	0
45	1068.23	5258.86	136.874	0	0
46	1068.46	5258.74	113.207	0	0
47	1068.68	5258.62	89.6911	0	0
48	1068.91	5258.51	66.4763	0	0
49	1069.14	5258.4	43.7144	0	0
50	1069.36	5258.29	21.5604	0	0
51	1069.59	5258.19	0	0	0

Global Minimum Query (spencer) - Safety Factor: 1.05407

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	1058.01	5271.76	0	0	0
2	1058.24	5271.03	-28.4608	-22.2224	37.983
3	1058.47	5270.37	-39.9094	-31.1615	37.9829
4	1058.7	5269.78	-39.0478	-30.4887	37.9829
5	1058.93	5269.23	-28.9234	-22.5835	37.9829
6	1059.16	5268.72	-11.6494	-9.09592	37.9829
7	1059.4	5268.24	11.2309	8.76914	37.9829
8	1059.63	5267.78	38.544	30.0953	37.9829
9	1059.86	5267.36	69.3671	54.1622	37.9829
10	1060.09	5266.95	102.954	80.3871	37.9829
11	1060.32	5266.56	138.687	108.288	37.983
12	1060.55	5266.19	176.045	137.457	37.9829
13	1060.79	5265.84	205.532	160.481	37.983
14	1061.02	5265.5	229.005	178.808	37.9829
15	1061.25	5265.17	251.126	196.08	37.9828
16	1061.48	5264.85	271.775	212.204	37.983
17	1061.71	5264.55	290.856	227.102	37.9829
18	1061.94	5264.26	308.29	240.714	37.9829
19	1062.17	5263.97	324.014	252.992	37.9829
20	1062.41	5263.7	337.98	263.896	37.9828
21	1062.64	5263.44	350.151	273.399	37.9828
22	1062.87	5263.18	360.5	281.48	37.9829
23	1063.1	5262.93	369.012	288.126	37.9829
24	1063.33	5262.69	375.679	293.332	37.9829
25	1063.56	5262.45	380.501	297.097	37.9829
26	1063.79	5262.23	383.486	299.428	37.9829
27	1064.03	5262.01	384.65	300.337	37.9829
28	1064.26	5261.79	384.014	299.84	37.9829
29	1064.49	5261.58	381.605	297.959	37.9829
30	1064.72	5261.38	377.459	294.722	37.9829
31	1064.95	5261.18	371.614	290.158	37.9829
32	1065.18	5260.99	364.118	284.305	37.9829
33	1065.42	5260.81	355.02	277.202	37.983
34	1065.65	5260.62	344.379	268.893	37.9829
35	1065.88	5260.45	332.257	259.428	37.9829
36	1066.11	5260.28	318.722	248.86	37.9829
37	1066.34	5260.11	303.847	237.245	37.9829
38	1066.57	5259.95	287.711	224.646	37.9829
39	1066.8	5259.79	270.399	211.129	37.9829
40	1067.04	5259.64	252.001	196.763	37.9828
41	1067.27	5259.49	232.612	181.625	37.983
42	1067.5	5259.34	212.335	165.792	37.9829
43	1067.73	5259.2	191.276	149.349	37.9828
44	1067.96	5259.06	169.548	132.384	37.9829
45	1068.19	5258.93	147.272	114.99	37.9827
46	1068.43	5258.8	124.572	97.2663	37.9829
47	1068.66	5258.67	101.581	79.3148	37.9828
48	1068.89	5258.55	78.4369	61.2439	37.9829
49	1069.12	5258.43	55.2856	43.1673	37.9829
50	1069.35	5258.31	32.2792	25.2038	37.9829
51	1069.58	5258.2	0	0	0

Discharge Sections

Entity Information

◆ Group 1

Shared Entities

Type	Coordinates (x,y)
External Boundary	1001.07, 5279.77
	1001.07, 5275.16
	1001.07, 5219.77
	1204.43, 5219.77
	1204.43, 5273.92
	1204.43, 5279.17
	1198.05, 5278.32
	1190.1, 5277.27
	1181.72, 5276.03
	1175.38, 5275.1
	1166.07, 5273.49
	1155.39, 5271.65
	1143.02, 5258.15
	1069.61, 5258.16
	1060.64, 5271.27
	1046.92, 5273.81
	1037.13, 5275.27
	1031.01, 5276.18
	1014.5, 5278.6
	1005.69, 5279.49
Material Boundary	1001.07, 5275.16
	1041.19, 5272.72
	1042.6, 5272.72
	1045.47, 5273.36
	1046.92, 5273.81
Material Boundary	1166.07, 5273.49
	1166.77, 5272.72
	1167.51, 5272.18
	1169.23, 5271.52
	1172.34, 5270.68
	1182.51, 5269.7
	1193.01, 5271.04
	1204.43, 5273.92

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario
Water Table	1001.07, 5258.31 1069.61, 5258.16 1143.02, 5258.16 1204.43, 5258.16	Assigned to:  Old Alluvium (Qalo)  Young Alluvium (Qaly)
Distributed Load	1060.64, 5271.27 1046.92, 5273.81 1037.13, 5275.27 1031.01, 5276.18 1014.5, 5278.6 1005.69, 5279.49 1001.07, 5279.77	Constant DistributionOrientation: Normal to boundaryMagnitude: 250 lbs/ft2Creates Excess Pore Pressure: No
Distributed Load	1204.43, 5279.17 1198.05, 5278.32 1190.1, 5277.27 1181.72, 5276.03 1175.38, 5275.1 1166.07, 5273.49 1155.39, 5271.65	Constant DistributionOrientation: Normal to boundaryMagnitude: 250 lbs/ft2Creates Excess Pore Pressure: No



Static - Station 102+20 Right
Slide2 - An Interactive Slope Stability Program
Date Created: 6/23/2026, 9:36:58 AM
Software Version: 9.04

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Slide2 Analysis Information

Static - Station 102+20 Right

Project Summary

File Name:	Static - Station 102+20 Right.slmd
Slide2 Modeler Version:	9.04
Compute Time:	00h:00m:00.647s
Project Title:	Slide2 - An Interactive Slope Stability Program
Date Created:	6/23/2026, 9:36:58 AM

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Data Output:	Standard
Failure Direction:	Right to Left

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	Bishop simplified
	Janbu simplified
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:

Pore Fluid Unit Weight [lbs/ft³]:

Advanced Groundwater Method:

Water Surfaces

62.4

None

Random Numbers

Pseudo-random Seed:

10116

Random Number Generation Method:

Park and Miller v.3

Surface Options

Surface Type:	Circular
Search Method:	Grid Search
Radius Increment:	10
Composite Surfaces:	Disabled
Reverse Curvature:	Invalid Surfaces
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Loading

2 Distributed Loads present

Distributed Load 1	
Distribution:	Constant
Magnitude [psf]:	250
Orientation:	Normal to boundary
Distributed Load 2	
Distribution:	Constant
Magnitude [psf]:	250
Orientation:	Normal to boundary

Materials

Old Alluvium (Qalo)

Color	
Strength Type	Mohr-Coulomb
Unit Weight	120 lbs/ft3
Cohesion	100 psf
Phi	32 °
Water Surface	Water Table
Hu Type	Custom
Hu	1
Specify alternate strength type above water surface	No

Young Alluvium (Qaly)

Color	
Strength Type	Mohr-Coulomb
Unit Weight	120 lbs/ft3
Cohesion	100 psf
Phi	30 °
Water Surface	Water Table
Hu Type	Custom
Hu	1
Specify alternate strength type above water surface	No

Global Minimums

Method: bishop simplified

FS	1.283680
Center:	1137.611, 5287.697
Radius:	30.027
Left Slip Surface Endpoint:	1143.033, 5258.164
Right Slip Surface Endpoint:	1163.857, 5273.111
Resisting Moment:	300678 lb-ft
Driving Moment:	234231 lb-ft
Total Slice Area:	97.6272 ft ²
Surface Horizontal Width:	20.8246 ft
Surface Average Height:	4.68808 ft

Method: janbu simplified

FS	1.229110
Center:	1141.844, 5280.976
Radius:	22.773
Left Slip Surface Endpoint:	1143.100, 5258.237
Right Slip Surface Endpoint:	1163.172, 5272.993
Resisting Horizontal Force:	8234.82 lb
Driving Horizontal Force:	6699.81 lb
Total Slice Area:	106.573 ft ²
Surface Horizontal Width:	20.0722 ft
Surface Average Height:	5.30947 ft

Method: spencer

FS	1.279940
Center:	1137.611, 5287.697
Radius:	30.027
Left Slip Surface Endpoint:	1143.033, 5258.164
Right Slip Surface Endpoint:	1163.857, 5273.111
Resisting Moment:	299803 lb-ft
Driving Moment:	234231 lb-ft
Resisting Horizontal Force:	7983.55 lb
Driving Horizontal Force:	6237.42 lb
Total Slice Area:	97.6272 ft ²
Surface Horizontal Width:	20.8246 ft
Surface Average Height:	4.68808 ft

Global Minimum Support Data

No Supports Present

Valid and Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 28389

Number of Invalid Surfaces: 6912

Error Codes

Error Code -103 reported for 2506 surfaces

Error Code -106 reported for 4 surfaces

Error Code -107 reported for 80 surfaces

Error Code -114 reported for 4322 surfaces

Method: janbu simplified

Number of Valid Surfaces: 28341

Number of Invalid Surfaces: 6960

Error Codes

Error Code -103 reported for 2506 surfaces

Error Code -106 reported for 4 surfaces

Error Code -107 reported for 80 surfaces

Error Code -108 reported for 22 surfaces

Error Code -112 reported for 26 surfaces

Error Code -114 reported for 4322 surfaces

Method: spencer

Number of Valid Surfaces: 28153

Number of Invalid Surfaces: 7148

Error Codes

Error Code -103 reported for 2506 surfaces

Error Code -106 reported for 4 surfaces

Error Code -107 reported for 80 surfaces

Error Code -108 reported for 30 surfaces

Error Code -111 reported for 178 surfaces

Error Code -112 reported for 28 surfaces

Error Code -114 reported for 4322 surfaces

Error Code Descriptions

The following errors were encountered during the computation:

- 103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
- 106 = Average slice width is less than $0.0001 * (\text{maximum horizontal extent of soil region})$. This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
- 107 = Total driving moment or total driving force is negative. This will occur if the wrong failure direction is specified, or if high external or anchor loads are applied against the failure direction.
- 108 = Total driving moment or total driving force < 0.1 . This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
- 111 = Safety factor equation did not converge
- 112 = The coefficient $M\text{-}\alpha = \cos(\alpha)(1 + \tan(\alpha)\tan(\phi)/F) < 0.2$ for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.
- 114 = Surface with Reverse Curvature.

Slice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.28368

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.416491	9.37199	10.8066	Old Alluvium (Qalo)	100	32	81.3076	104.373	6.99812	0	6.99812	22.5181	22.5181
2	0.416491	27.963	11.6169	Old Alluvium (Qalo)	100	32	100.533	129.052	46.4933	0	46.4933	67.1606	67.1606
3	0.416491	46.2468	12.4294	Old Alluvium (Qalo)	100	32	119.179	152.988	84.7983	0	84.7983	111.066	111.066
4	0.416491	64.2204	13.2446	Old Alluvium (Qalo)	100	32	137.25	176.186	121.923	0	121.923	154.227	154.227
5	0.416491	81.881	14.0625	Old Alluvium (Qalo)	100	32	154.751	198.651	157.874	0	157.874	196.637	196.637
6	0.416491	99.2252	14.8833	Old Alluvium (Qalo)	100	32	171.684	220.387	192.66	0	192.66	238.287	238.287
7	0.416491	116.25	15.7072	Old Alluvium (Qalo)	100	32	188.052	241.399	226.286	0	226.286	279.17	279.17
8	0.416491	132.95	16.5345	Old Alluvium (Qalo)	100	32	203.859	261.69	258.758	0	258.758	319.277	319.277
9	0.416491	149.323	17.3654	Old Alluvium (Qalo)	100	32	219.105	281.261	290.079	0	290.079	358.597	358.597
10	0.416491	165.364	18.2	Old Alluvium (Qalo)	100	32	233.793	300.115	320.251	0	320.251	397.118	397.118
11	0.416491	181.067	19.0386	Old Alluvium (Qalo)	100	32	247.922	318.253	349.278	0	349.278	434.831	434.831
12	0.416491	196.429	19.8816	Old Alluvium (Qalo)	100	32	261.495	335.676	377.16	0	377.16	471.725	471.725
13	0.416491	211.444	20.729	Old Alluvium (Qalo)	100	32	274.51	352.383	403.897	0	403.897	507.785	507.785
14	0.416491	226.106	21.5812	Old Alluvium (Qalo)	100	32	286.967	368.374	429.488	0	429.488	542.997	542.997
15	0.416491	240.408	22.4384	Old Alluvium (Qalo)	100	32	298.865	383.647	453.93	0	453.93	577.348	577.348
16	0.416491	254.345	23.301	Old Alluvium (Qalo)	100	32	310.203	398.201	477.222	0	477.222	610.822	610.822
17	0.416491	267.909	24.1692	Old Alluvium (Qalo)	100	32	320.976	412.031	499.353	0	499.353	643.398	643.398
18	0.416491	281.092	25.0434	Old Alluvium (Qalo)	100	32	331.185	425.135	520.324	0	520.324	675.063	675.063
19	0.416491	293.888	25.9238	Old Alluvium (Qalo)	100	32	340.824	437.509	540.127	0	540.127	705.798	705.798
20	0.416491	306.286	26.8109	Old Alluvium (Qalo)	100	32	349.89	449.147	558.751	0	558.751	735.577	735.577
21	0.416491	318.278	27.7049	Old Alluvium (Qalo)	100	32	358.378	460.043	576.189	0	576.189	764.381	764.381

22	0.416491	329.854	28.6064	Old Alluvium (Qalo)	100	32	366.284	470.191	592.431	0	592.431	792.188	792.188
23	0.416491	341.003	29.5156	Old Alluvium (Qalo)	100	32	373.601	479.584	607.461	0	607.461	818.969	818.969
24	0.416491	351.714	30.4331	Old Alluvium (Qalo)	100	32	380.321	488.211	621.268	0	621.268	844.697	844.697
25	0.416491	361.974	31.3593	Old Alluvium (Qalo)	100	32	386.44	496.065	633.836	0	633.836	869.343	869.343
26	0.416491	371.77	32.2948	Old Alluvium (Qalo)	100	32	391.947	503.134	645.149	0	645.149	892.877	892.877
27	0.416491	381.088	33.2399	Old Alluvium (Qalo)	100	32	396.833	509.406	655.187	0	655.187	915.263	915.263
28	0.416491	389.912	34.1955	Old Alluvium (Qalo)	100	32	401.088	514.869	663.928	0	663.928	936.461	936.461
29	0.416491	398.226	35.162	Old Alluvium (Qalo)	100	32	404.702	519.508	671.352	0	671.352	956.436	956.436
30	0.416491	404.966	36.1401	Old Alluvium (Qalo)	100	32	436.445	560.256	736.563	0	736.563	1055.29	1055.29
31	0.416491	397.363	37.1305	Old Alluvium (Qalo)	100	32	485.33	623.009	836.99	0	836.99	1204.45	1204.45
32	0.416491	384.904	38.1342	Old Alluvium (Qalo)	100	32	470.022	603.358	805.541	0	805.541	1174.54	1174.54
33	0.416491	371.852	39.1518	Old Alluvium (Qalo)	100	32	454.326	583.209	773.297	0	773.297	1143.2	1143.2
34	0.416491	358.18	40.1843	Old Alluvium (Qalo)	100	32	438.235	562.554	740.242	0	740.242	1110.37	1110.37
35	0.416491	343.86	41.2329	Old Alluvium (Qalo)	100	32	421.741	541.381	706.357	0	706.357	1075.99	1075.99
36	0.416491	328.861	42.2985	Old Alluvium (Qalo)	100	32	404.834	519.677	671.624	0	671.624	1039.98	1039.98
37	0.416491	313.147	43.3825	Old Alluvium (Qalo)	100	32	387.505	497.432	636.024	0	636.024	1002.24	1002.24
38	0.416491	296.681	44.4862	Old Alluvium (Qalo)	100	32	369.742	474.631	599.535	0	599.535	962.705	962.705
39	0.416491	279.418	45.6113	Old Alluvium (Qalo)	100	32	351.536	451.26	562.134	0	562.134	921.253	921.253
40	0.416491	261.311	46.7594	Old Alluvium (Qalo)	100	32	332.875	427.305	523.798	0	523.798	877.771	877.771
41	0.416491	242.304	47.9326	Old Alluvium (Qalo)	100	32	313.747	402.751	484.502	0	484.502	832.13	832.13
42	0.416491	222.335	49.133	Old Alluvium (Qalo)	100	32	294.138	377.579	444.219	0	444.219	784.177	784.177
43	0.416491	201.334	50.3632	Old Alluvium (Qalo)	100	32	274.036	351.775	402.924	0	402.924	733.744	733.744
44	0.416491	179.218	51.6262	Old Alluvium (Qalo)	100	32	253.427	325.319	360.585	0	360.585	680.631	680.631
45	0.416491	155.892	52.9255	Old Alluvium (Qalo)	100	32	232.297	298.195	317.178	0	317.178	624.614	624.614
46	0.416491	131.245	54.265	Old Alluvium (Qalo)	100	32	210.632	270.384	272.672	0	272.672	565.42	565.42

47	0.416491	105.143	55.6497	Old Alluvium (Qalo)	100	32	188.419	241.87	227.04	0	227.04	502.732	502.732
48	0.416491	77.4281	57.0852	Old Alluvium (Qalo)	100	32	165.648	212.639	180.26	0	180.26	436.168	436.168
49	0.416491	47.9049	58.5788	Old Alluvium (Qalo)	100	32	142.309	182.679	132.313	0	132.313	365.258	365.258
50	0.416491	16.3323	60.1391	Old Alluvium (Qalo)	100	32	118.399	151.987	83.1964	0	83.1964	289.425	289.425

Global Minimum Query (janbu simplified) - Safety Factor: 1.22911

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.401444	9.93287	3.66803	Old Alluvium (Qalo)	100	32	90.9794	111.824	18.9219	0	18.9219	24.7543	24.7543
2	0.401444	29.6268	4.68077	Old Alluvium (Qalo)	100	32	114.138	140.288	64.4737	0	64.4737	73.8189	73.8189
3	0.401444	48.9763	5.69498	Old Alluvium (Qalo)	100	32	136.478	167.746	108.417	0	108.417	122.027	122.027
4	0.401444	67.9797	6.71099	Old Alluvium (Qalo)	100	32	158.016	194.219	150.781	0	150.781	169.374	169.374
5	0.401444	86.6351	7.72912	Old Alluvium (Qalo)	100	32	178.764	219.721	191.594	0	191.594	215.856	215.856
6	0.401444	104.94	8.74972	Old Alluvium (Qalo)	100	32	198.736	244.269	230.879	0	230.879	261.466	261.466
7	0.401444	122.892	9.77312	Old Alluvium (Qalo)	100	32	217.943	267.876	268.657	0	268.657	306.197	306.197
8	0.401444	140.487	10.7997	Old Alluvium (Qalo)	100	32	236.394	290.554	304.951	0	304.951	350.044	350.044
9	0.401444	157.723	11.8298	Old Alluvium (Qalo)	100	32	254.097	312.313	339.771	0	339.771	392.993	392.993
10	0.401444	174.595	12.8637	Old Alluvium (Qalo)	100	32	271.06	333.163	373.137	0	373.137	435.038	435.038
11	0.401444	191.099	13.902	Old Alluvium (Qalo)	100	32	287.289	353.11	405.06	0	405.06	476.168	476.168
12	0.401444	207.23	14.9449	Old Alluvium (Qalo)	100	32	302.79	372.162	435.551	0	435.551	516.372	516.372
13	0.401444	222.983	15.993	Old Alluvium (Qalo)	100	32	317.566	390.323	464.613	0	464.613	555.632	555.632
14	0.401444	238.353	17.0465	Old Alluvium (Qalo)	100	32	331.619	407.596	492.258	0	492.258	593.939	593.939
15	0.401444	253.332	18.1061	Old Alluvium (Qalo)	100	32	344.953	423.985	518.484	0	518.484	631.273	631.273
16	0.401444	267.914	19.172	Old Alluvium (Qalo)	100	32	357.567	439.489	543.296	0	543.296	667.618	667.618
17	0.401444	282.091	20.245	Old Alluvium (Qalo)	100	32	369.462	454.109	566.692	0	566.692	702.957	702.957
18	0.401444	295.855	21.3254	Old Alluvium (Qalo)	100	32	380.636	467.843	588.672	0	588.672	737.27	737.27
19	0.401444	309.198	22.4138	Old Alluvium (Qalo)	100	32	391.085	480.687	609.228	0	609.228	770.531	770.531
20	0.401444	322.108	23.5108	Old Alluvium (Qalo)	100	32	400.808	492.637	628.351	0	628.351	802.717	802.717
21	0.401444	334.577	24.617	Old Alluvium (Qalo)	100	32	409.798	503.687	646.035	0	646.035	833.803	833.803
22	0.401444	346.591	25.7331	Old Alluvium (Qalo)	100	32	418.05	513.83	662.266	0	662.266	863.757	863.757
23	0.401444	358.139	26.8598	Old Alluvium (Qalo)	100	32	425.556	523.055	677.03	0	677.03	892.552	892.552

24	0.401444	369.207	27.9978	Old Alluvium (Qalo)	100	32	432.307	531.353	690.309	0	690.309	920.15	920.15
25	0.401444	379.779	29.148	Old Alluvium (Qalo)	100	32	438.292	538.709	702.08	0	702.08	946.512	946.512
26	0.401444	389.839	30.3112	Old Alluvium (Qalo)	100	32	443.5	545.11	712.324	0	712.324	971.601	971.601
27	0.401444	399.369	31.4884	Old Alluvium (Qalo)	100	32	447.916	550.538	721.011	0	721.011	995.37	995.37
28	0.401444	408.349	32.6806	Old Alluvium (Qalo)	100	32	451.525	554.974	728.11	0	728.11	1017.77	1017.77
29	0.401444	416.756	33.889	Old Alluvium (Qalo)	100	32	454.308	558.395	733.586	0	733.586	1038.74	1038.74
30	0.401444	424.567	35.1147	Old Alluvium (Qalo)	100	32	456.247	560.778	737.398	0	737.398	1058.23	1058.23
31	0.401444	430.439	36.3592	Old Alluvium (Qalo)	100	32	491.723	604.382	807.181	0	807.181	1169.17	1169.17
32	0.401444	422.566	37.6239	Old Alluvium (Qalo)	100	32	534.546	657.016	891.413	0	891.413	1303.42	1303.42
33	0.401444	410.645	38.9105	Old Alluvium (Qalo)	100	32	516.826	635.236	856.558	0	856.558	1273.74	1273.74
34	0.401444	398	40.2209	Old Alluvium (Qalo)	100	32	498.558	612.783	820.625	0	820.625	1242.25	1242.25
35	0.401444	384.589	41.5572	Old Alluvium (Qalo)	100	32	479.721	589.63	783.571	0	783.571	1208.85	1208.85
36	0.401444	370.362	42.9217	Old Alluvium (Qalo)	100	32	460.294	565.752	745.358	0	745.358	1173.41	1173.41
37	0.401444	355.266	44.3172	Old Alluvium (Qalo)	100	32	440.25	541.116	705.933	0	705.933	1135.81	1135.81
38	0.401444	339.237	45.7468	Old Alluvium (Qalo)	100	32	419.564	515.69	665.243	0	665.243	1095.89	1095.89
39	0.401444	322.202	47.2139	Old Alluvium (Qalo)	100	32	398.202	489.434	623.225	0	623.225	1053.45	1053.45
40	0.401444	304.077	48.7229	Old Alluvium (Qalo)	100	32	376.132	462.308	579.814	0	579.814	1008.3	1008.3
41	0.401444	284.762	50.2787	Old Alluvium (Qalo)	100	32	353.314	434.262	534.931	0	534.931	960.179	960.179
42	0.401444	264.135	51.8872	Old Alluvium (Qalo)	100	32	329.705	405.244	488.492	0	488.492	908.787	908.787
43	0.401444	242.052	53.5556	Old Alluvium (Qalo)	100	32	305.255	375.192	440.4	0	440.4	853.767	853.767
44	0.401444	218.335	55.2927	Old Alluvium (Qalo)	100	32	279.907	344.037	390.542	0	390.542	794.669	794.669
45	0.401444	192.76	57.1096	Old Alluvium (Qalo)	100	32	253.598	311.7	338.79	0	338.79	730.938	730.938
46	0.401444	165.039	59.0208	Old Alluvium (Qalo)	100	32	226.252	278.088	285	0	285	661.855	661.855
47	0.401444	134.795	61.0452	Old Alluvium (Qalo)	100	32	197.783	243.097	229.003	0	229.003	586.477	586.477
48	0.401444	101.506	63.2088	Old Alluvium (Qalo)	100	32	168.096	206.608	170.608	0	170.608	503.508	503.508

49	0.401444	64.4279	65.5494	Old Alluvium (Qalo)	100	32	137.08	168.486	109.6	0	109.6	411.083	411.083
50	0.401444	22.4152	68.1251	Old Alluvium (Qalo)	100	32	104.623	128.594	45.7594	0	45.7594	306.349	306.349

Global Minimum Query (spencer) - Safety Factor: 1.27994

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.416491	9.37199	10.8066	Old Alluvium (Qalo)	100	32	100.942	129.2	46.7302	0	46.7302	65.9981	65.9981
2	0.416491	27.963	11.6169	Old Alluvium (Qalo)	100	32	122.61	156.934	91.1134	0	91.1134	116.319	116.319
3	0.416491	46.2468	12.4294	Old Alluvium (Qalo)	100	32	143.279	183.388	133.449	0	133.449	165.028	165.028
4	0.416491	64.2204	13.2446	Old Alluvium (Qalo)	100	32	162.976	208.599	173.794	0	173.794	212.154	212.154
5	0.416491	81.881	14.0625	Old Alluvium (Qalo)	100	32	181.727	232.6	212.204	0	212.204	257.724	257.724
6	0.416491	99.2252	14.8833	Old Alluvium (Qalo)	100	32	199.559	255.423	248.73	0	248.73	301.766	301.766
7	0.416491	116.25	15.7072	Old Alluvium (Qalo)	100	32	216.494	277.099	283.418	0	283.418	344.301	344.301
8	0.416491	132.95	16.5345	Old Alluvium (Qalo)	100	32	232.555	297.656	316.315	0	316.315	385.353	385.353
9	0.416491	149.323	17.3654	Old Alluvium (Qalo)	100	32	247.761	317.119	347.462	0	347.462	424.941	424.941
10	0.416491	165.364	18.2	Old Alluvium (Qalo)	100	32	262.133	335.514	376.902	0	376.902	463.087	463.087
11	0.416491	181.067	19.0386	Old Alluvium (Qalo)	100	32	275.688	352.864	404.667	0	404.667	499.802	499.802
12	0.416491	196.429	19.8816	Old Alluvium (Qalo)	100	32	288.443	369.19	430.795	0	430.795	535.105	535.105
13	0.416491	211.444	20.729	Old Alluvium (Qalo)	100	32	300.415	384.513	455.316	0	455.316	569.008	569.008
14	0.416491	226.106	21.5812	Old Alluvium (Qalo)	100	32	311.617	398.851	478.261	0	478.261	601.52	601.52
15	0.416491	240.408	22.4384	Old Alluvium (Qalo)	100	32	322.064	412.223	499.66	0	499.66	632.658	632.658
16	0.416491	254.345	23.301	Old Alluvium (Qalo)	100	32	331.769	424.644	519.539	0	519.539	662.428	662.428
17	0.416491	267.909	24.1692	Old Alluvium (Qalo)	100	32	340.743	436.13	537.92	0	537.92	690.836	690.836
18	0.416491	281.092	25.0434	Old Alluvium (Qalo)	100	32	348.996	446.694	554.826	0	554.826	717.888	717.888
19	0.416491	293.888	25.9238	Old Alluvium (Qalo)	100	32	356.541	456.351	570.281	0	570.281	743.591	743.591
20	0.416491	306.286	26.8109	Old Alluvium (Qalo)	100	32	363.385	465.111	584.299	0	584.299	767.944	767.944
21	0.416491	318.278	27.7049	Old Alluvium (Qalo)	100	32	369.537	472.985	596.901	0	596.901	790.952	790.952
22	0.416491	329.854	28.6064	Old Alluvium (Qalo)	100	32	375.004	479.983	608.099	0	608.099	812.612	812.612
23	0.416491	341.003	29.5156	Old Alluvium (Qalo)	100	32	379.794	486.114	617.91	0	617.91	832.924	832.924

24	0.416491	351.714	30.4331	Old Alluvium (Qalo)	100	32	383.912	491.384	626.346	0	626.346	851.884	851.884
25	0.416491	361.974	31.3593	Old Alluvium (Qalo)	100	32	387.363	495.802	633.415	0	633.415	869.486	869.486
26	0.416491	371.77	32.2948	Old Alluvium (Qalo)	100	32	390.153	499.372	639.129	0	639.129	885.724	885.724
27	0.416491	381.088	33.2399	Old Alluvium (Qalo)	100	32	392.284	502.1	643.494	0	643.494	900.588	900.588
28	0.416491	389.912	34.1955	Old Alluvium (Qalo)	100	32	393.758	503.987	646.516	0	646.516	914.068	914.068
29	0.416491	398.226	35.162	Old Alluvium (Qalo)	100	32	394.579	505.038	648.196	0	648.196	926.149	926.149
30	0.416491	404.966	36.1401	Old Alluvium (Qalo)	100	32	423.566	542.139	707.571	0	707.571	1016.89	1016.89
31	0.416491	397.363	37.1305	Old Alluvium (Qalo)	100	32	469.981	601.547	802.643	0	802.643	1158.48	1158.48
32	0.416491	384.904	38.1342	Old Alluvium (Qalo)	100	32	452.8	579.557	767.451	0	767.451	1122.93	1122.93
33	0.416491	371.852	39.1518	Old Alluvium (Qalo)	100	32	435.485	557.395	731.985	0	731.985	1086.55	1086.55
34	0.416491	358.18	40.1843	Old Alluvium (Qalo)	100	32	418.034	535.059	696.24	0	696.24	1049.31	1049.31
35	0.416491	343.86	41.2329	Old Alluvium (Qalo)	100	32	400.447	512.548	660.216	0	660.216	1011.19	1011.19
36	0.416491	328.861	42.2985	Old Alluvium (Qalo)	100	32	382.723	489.862	623.909	0	623.909	972.142	972.142
37	0.416491	313.147	43.3825	Old Alluvium (Qalo)	100	32	364.86	466.999	587.321	0	587.321	932.141	932.141
38	0.416491	296.681	44.4862	Old Alluvium (Qalo)	100	32	346.857	443.956	550.445	0	550.445	891.137	891.137
39	0.416491	279.418	45.6113	Old Alluvium (Qalo)	100	32	328.715	420.735	513.282	0	513.282	849.087	849.087
40	0.416491	261.311	46.7594	Old Alluvium (Qalo)	100	32	310.43	397.332	475.831	0	475.831	805.936	805.936
41	0.416491	242.304	47.9326	Old Alluvium (Qalo)	100	32	292.004	373.747	438.088	0	438.088	761.624	761.624
42	0.416491	222.335	49.133	Old Alluvium (Qalo)	100	32	273.435	349.98	400.051	0	400.051	716.08	716.08
43	0.416491	201.334	50.3632	Old Alluvium (Qalo)	100	32	254.721	326.028	361.721	0	361.721	669.223	669.223
44	0.416491	179.218	51.6262	Old Alluvium (Qalo)	100	32	235.863	301.891	323.094	0	323.094	620.96	620.96
45	0.416491	155.892	52.9255	Old Alluvium (Qalo)	100	32	216.862	277.57	284.172	0	284.172	571.18	571.18
46	0.416491	131.245	54.265	Old Alluvium (Qalo)	100	32	197.716	253.064	244.954	0	244.954	519.751	519.751
47	0.416491	105.143	55.6497	Old Alluvium (Qalo)	100	32	178.426	228.375	205.443	0	205.443	466.514	466.514
48	0.416491	77.4281	57.0852	Old Alluvium (Qalo)	100	32	158.995	203.504	165.642	0	165.642	411.272	411.272

49	0.416491	47.9049	58.5788	Old Alluvium (Qalo)	100	32	139.425	178.456	125.555	0	125.555	353.78	353.78
50	0.416491	16.3323	60.1391	Old Alluvium (Qalo)	100	32	118.745	151.986	83.1956	0	83.1956	290.026	290.026

Interslice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.28368

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	1143.03	5258.16	0	0	0
2	1143.45	5258.24	33.2729	0	0
3	1143.87	5258.33	71.1204	0	0
4	1144.28	5258.42	112.923	0	0
5	1144.7	5258.52	158.076	0	0
6	1145.12	5258.62	205.992	0	0
7	1145.53	5258.73	256.098	0	0
8	1145.95	5258.85	307.836	0	0
9	1146.36	5258.97	360.661	0	0
10	1146.78	5259.11	414.042	0	0
11	1147.2	5259.24	467.462	0	0
12	1147.61	5259.39	520.414	0	0
13	1148.03	5259.54	572.407	0	0
14	1148.45	5259.69	622.959	0	0
15	1148.86	5259.86	671.601	0	0
16	1149.28	5260.03	717.876	0	0
17	1149.7	5260.21	761.337	0	0
18	1150.11	5260.4	801.55	0	0
19	1150.53	5260.59	838.091	0	0
20	1150.95	5260.79	870.547	0	0
21	1151.36	5261	898.515	0	0
22	1151.78	5261.22	921.607	0	0
23	1152.2	5261.45	939.441	0	0
24	1152.61	5261.69	951.651	0	0
25	1153.03	5261.93	957.879	0	0
26	1153.45	5262.18	957.782	0	0
27	1153.86	5262.45	951.027	0	0
28	1154.28	5262.72	937.296	0	0
29	1154.69	5263	916.284	0	0
30	1155.11	5263.3	887.699	0	0
31	1155.53	5263.6	851.198	0	0
32	1155.94	5263.92	807.162	0	0
33	1156.36	5264.24	757.303	0	0
34	1156.78	5264.58	702.078	0	0
35	1157.19	5264.93	641.99	0	0
36	1157.61	5265.3	577.589	0	0
37	1158.03	5265.68	509.479	0	0
38	1158.44	5266.07	438.328	0	0
39	1158.86	5266.48	364.873	0	0
40	1159.28	5266.91	289.931	0	0
41	1159.69	5267.35	214.415	0	0
42	1160.11	5267.81	139.342	0	0
43	1160.53	5268.29	65.8591	0	0
44	1160.94	5268.8	-4.74124	0	0
45	1161.36	5269.32	-70.9884	0	0
46	1161.78	5269.87	-131.199	0	0
47	1162.19	5270.45	-183.432	0	0
48	1162.61	5271.06	-225.426	0	0
49	1163.02	5271.7	-254.521	0	0
50	1163.44	5272.39	-267.546	0	0
51	1163.86	5273.11	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.22911

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	1143.1	5258.24	0	0	0
2	1143.5	5258.26	35.9644	0	0
3	1143.9	5258.3	79.575	0	0
4	1144.3	5258.34	129.915	0	0
5	1144.71	5258.38	186.102	0	0
6	1145.11	5258.44	247.286	0	0
7	1145.51	5258.5	312.646	0	0
8	1145.91	5258.57	381.389	0	0
9	1146.31	5258.64	452.749	0	0
10	1146.71	5258.73	525.985	0	0
11	1147.11	5258.82	600.379	0	0
12	1147.52	5258.92	675.235	0	0
13	1147.92	5259.03	749.879	0	0
14	1148.32	5259.14	823.655	0	0
15	1148.72	5259.27	895.928	0	0
16	1149.12	5259.4	966.079	0	0
17	1149.52	5259.54	1033.51	0	0
18	1149.92	5259.68	1097.63	0	0
19	1150.33	5259.84	1157.88	0	0
20	1150.73	5260.01	1213.69	0	0
21	1151.13	5260.18	1264.54	0	0
22	1151.53	5260.37	1309.9	0	0
23	1151.93	5260.56	1349.25	0	0
24	1152.33	5260.76	1382.11	0	0
25	1152.73	5260.98	1407.98	0	0
26	1153.14	5261.2	1426.4	0	0
27	1153.54	5261.43	1436.91	0	0
28	1153.94	5261.68	1439.08	0	0
29	1154.34	5261.94	1432.47	0	0
30	1154.74	5262.21	1416.69	0	0
31	1155.14	5262.49	1391.32	0	0
32	1155.54	5262.78	1356.45	0	0
33	1155.95	5263.09	1312.12	0	0
34	1156.35	5263.42	1258.95	0	0
35	1156.75	5263.76	1197.42	0	0
36	1157.15	5264.11	1128.08	0	0
37	1157.55	5264.49	1051.56	0	0
38	1157.95	5264.88	968.549	0	0
39	1158.35	5265.29	879.859	0	0
40	1158.76	5265.72	786.409	0	0
41	1159.16	5266.18	689.267	0	0
42	1159.56	5266.67	589.679	0	0
43	1159.96	5267.18	489.114	0	0
44	1160.36	5267.72	389.326	0	0
45	1160.76	5268.3	292.435	0	0
46	1161.16	5268.92	201.051	0	0
47	1161.57	5269.59	118.451	0	0
48	1161.97	5270.32	48.8566	0	0
49	1162.37	5271.11	-2.11214	0	0
50	1162.77	5271.99	-26.6364	0	0
51	1163.17	5272.99	0	0	0

Global Minimum Query (spencer) - Safety Factor: 1.27994

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	1143.03	5258.16	0	0	0
2	1143.45	5258.24	38.299	18.3266	25.5718
3	1143.87	5258.33	81.5305	39.0135	25.5718
4	1144.28	5258.42	128.916	61.6879	25.5717
5	1144.7	5258.52	179.712	85.9947	25.5718
6	1145.12	5258.62	233.212	111.595	25.5717
7	1145.53	5258.73	288.74	138.166	25.5717
8	1145.95	5258.85	345.653	165.4	25.5718
9	1146.36	5258.97	403.336	193.002	25.5718
10	1146.78	5259.11	461.204	220.692	25.5717
11	1147.2	5259.24	518.697	248.204	25.5718
12	1147.61	5259.39	575.283	275.281	25.5718
13	1148.03	5259.54	630.454	301.681	25.5718
14	1148.45	5259.69	683.726	327.172	25.5717
15	1148.86	5259.86	734.636	351.534	25.5718
16	1149.28	5260.03	782.747	374.555	25.5717
17	1149.7	5260.21	827.642	396.038	25.5718
18	1150.11	5260.4	868.922	415.791	25.5717
19	1150.53	5260.59	906.213	433.636	25.5718
20	1150.95	5260.79	939.158	449.4	25.5718
21	1151.36	5261	967.42	462.924	25.5718
22	1151.78	5261.22	990.681	474.054	25.5717
23	1152.2	5261.45	1008.64	482.649	25.5718
24	1152.61	5261.69	1021.02	488.573	25.5718
25	1153.03	5261.93	1027.56	491.702	25.5718
26	1153.45	5262.18	1028.01	491.919	25.5719
27	1153.86	5262.45	1022.16	489.116	25.5717
28	1154.28	5262.72	1009.79	483.196	25.5716
29	1154.69	5263	990.712	474.069	25.5717
30	1155.11	5263.3	964.77	461.656	25.5718
31	1155.53	5263.6	931.793	445.876	25.5718
32	1155.94	5263.92	892.273	426.965	25.5718
33	1156.36	5264.24	847.772	405.671	25.5718
34	1156.78	5264.58	798.784	382.229	25.5717
35	1157.19	5264.93	745.834	356.892	25.5718
36	1157.61	5265.3	689.477	329.924	25.5717
37	1158.03	5265.68	630.308	301.611	25.5718
38	1158.44	5266.07	568.961	272.256	25.5718
39	1158.86	5266.48	506.119	242.185	25.5718
40	1159.28	5266.91	442.517	211.75	25.5717
41	1159.69	5267.35	378.954	181.335	25.5718
42	1160.11	5267.81	316.299	151.353	25.5717
43	1160.53	5268.29	255.505	122.262	25.5716
44	1160.94	5268.8	197.624	94.5658	25.5718
45	1161.36	5269.32	143.825	68.8224	25.5718
46	1161.78	5269.87	95.4193	45.6594	25.5717
47	1162.19	5270.45	53.8873	25.7858	25.5717
48	1162.61	5271.06	20.9241	10.0125	25.5718
49	1163.02	5271.7	-1.50839	-0.721784	25.5717
50	1163.44	5272.39	-11.1048	-5.31381	25.5718
51	1163.86	5273.11	0	0	0

Discharge Sections

Entity Information

◆ **Group 1**

Shared Entities

Type	Coordinates (x,y)
External Boundary	1001.07, 5279.77
	1001.07, 5275.16
	1001.07, 5219.77
	1204.43, 5219.77
	1204.43, 5273.92
	1204.43, 5279.17
	1198.05, 5278.32
	1190.1, 5277.27
	1181.72, 5276.03
	1175.38, 5275.1
	1166.07, 5273.49
	1155.39, 5271.65
	1143.02, 5258.15
	1069.61, 5258.16
	1060.64, 5271.27
	1046.92, 5273.81
	1037.13, 5275.27
	1031.01, 5276.18
	1014.5, 5278.6
	1005.69, 5279.49
Material Boundary	1001.07, 5275.16
	1041.19, 5272.72
	1042.6, 5272.72
	1045.47, 5273.36
	1046.92, 5273.81
Material Boundary	1166.07, 5273.49
	1166.77, 5272.72
	1167.51, 5272.18
	1169.23, 5271.52
	1172.34, 5270.68
	1182.51, 5269.7
	1193.01, 5271.04
	1204.43, 5273.92

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario
Water Table	1001.07, 5258.31 1069.61, 5258.16 1143.02, 5258.16 1204.43, 5258.16	Assigned to:  Old Alluvium (Qalo)  Young Alluvium (Qaly)
Distributed Load	1060.64, 5271.27 1046.92, 5273.81 1037.13, 5275.27 1031.01, 5276.18 1014.5, 5278.6 1005.69, 5279.49 1001.07, 5279.77	Constant DistributionOrientation: Normal to boundaryMagnitude: 250 lbs/ft2Creates Excess Pore Pressure: No
Distributed Load	1204.43, 5279.17 1198.05, 5278.32 1190.1, 5277.27 1181.72, 5276.03 1175.38, 5275.1 1166.07, 5273.49 1155.39, 5271.65	Constant DistributionOrientation: Normal to boundaryMagnitude: 250 lbs/ft2Creates Excess Pore Pressure: No



Static - Station 102+20 Left - Stabilized
Slide2 - An Interactive Slope Stability Program
Date Created: 6/23/2026, 9:36:58 AM
Software Version: 9.04

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Slide2 Analysis Information

Static - Station 102+20 Left - Stabilized

Project Summary

File Name:	Static - Station 102+20 Left - Stabilized.slmd
Slide2 Modeler Version:	9.04
Compute Time:	00h:00m:00.579s
Project Title:	Slide2 - An Interactive Slope Stability Program
Date Created:	6/23/2026, 9:36:58 AM

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Data Output:	Standard
Failure Direction:	Left to Right

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	Bishop simplified
	Janbu simplified
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:

Pore Fluid Unit Weight [lbs/ft³]:

Advanced Groundwater Method:

Water Surfaces

62.4

None

Random Numbers

Pseudo-random Seed:

10116

Random Number Generation Method:

Park and Miller v.3

Surface Options

Surface Type:	Circular
Search Method:	Grid Search
Radius Increment:	10
Composite Surfaces:	Disabled
Reverse Curvature:	Invalid Surfaces
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Loading

2 Distributed Loads present

Distributed Load 1	
Distribution:	Constant
Magnitude [psf]:	250
Orientation:	Normal to boundary
Distributed Load 2	
Distribution:	Constant
Magnitude [psf]:	250
Orientation:	Normal to boundary

Materials

Old Alluvium (Qalo)

Color	
Strength Type	Mohr-Coulomb
Unit Weight	120 lbs/ft3
Cohesion	100 psf
Phi	32 °
Water Surface	Water Table
Hu Type	Custom
Hu	1
Specify alternate strength type above water surface	No

Young Alluvium (Qaly)

Color	
Strength Type	Mohr-Coulomb
Unit Weight	120 lbs/ft3
Cohesion	100 psf
Phi	30 °
Water Surface	Water Table
Hu Type	Custom
Hu	1
Specify alternate strength type above water surface	No

Global Minimums

Method: bishop simplified

FS	1.798030
Center:	1072.401, 5307.235
Radius:	50.376
Left Slip Surface Endpoint:	1032.965, 5275.889
Right Slip Surface Endpoint:	1074.177, 5256.891
Resisting Moment:	1.11488e+06 lb-ft
Driving Moment:	620059 lb-ft
Total Slice Area:	234.039 ft ²
Surface Horizontal Width:	41.2121 ft
Surface Average Height:	5.67889 ft

Method: janbu simplified

FS	1.632960
Center:	1067.435, 5285.941
Radius:	32.036
Left Slip Surface Endpoint:	1037.235, 5275.253
Right Slip Surface Endpoint:	1080.724, 5256.791
Resisting Horizontal Force:	22814.1 lb
Driving Horizontal Force:	13971 lb
Total Slice Area:	322.494 ft ²
Surface Horizontal Width:	43.4892 ft
Surface Average Height:	7.41551 ft

Method: spencer

FS	1.791940
Center:	1072.401, 5307.235
Radius:	50.376
Left Slip Surface Endpoint:	1032.965, 5275.889
Right Slip Surface Endpoint:	1074.177, 5256.891
Resisting Moment:	1.11111e+06 lb-ft
Driving Moment:	620059 lb-ft
Resisting Horizontal Force:	19605.1 lb
Driving Horizontal Force:	10940.7 lb
Total Slice Area:	234.039 ft ²
Surface Horizontal Width:	41.2121 ft
Surface Average Height:	5.67889 ft

Global Minimum Support Data

No Supports Present

Valid and Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces:	31514
Number of Invalid Surfaces:	3787

Error Codes

Error Code -103 reported for 2158 surfaces
Error Code -107 reported for 80 surfaces
Error Code -112 reported for 62 surfaces
Error Code -114 reported for 1487 surfaces

Method: janbu simplified

Number of Valid Surfaces:	31556
Number of Invalid Surfaces:	3745

Error Codes

Error Code -103 reported for 2158 surfaces
Error Code -107 reported for 80 surfaces
Error Code -108 reported for 10 surfaces
Error Code -111 reported for 4 surfaces
Error Code -112 reported for 6 surfaces
Error Code -114 reported for 1487 surfaces

Method: spencer

Number of Valid Surfaces:	31392
Number of Invalid Surfaces:	3909

Error Codes

Error Code -103 reported for 2158 surfaces
Error Code -107 reported for 80 surfaces
Error Code -108 reported for 10 surfaces
Error Code -111 reported for 92 surfaces
Error Code -112 reported for 82 surfaces
Error Code -114 reported for 1487 surfaces

Error Code Descriptions

The following errors were encountered during the computation:

- 103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
- 107 = Total driving moment or total driving force is negative. This will occur if the wrong failure direction is specified, or if high external or anchor loads are applied against the failure direction.
- 108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
- 111 = Safety factor equation did not converge
- 112 = The coefficient $M\text{-}\alpha = \cos(\alpha)(1 + \tan(\alpha)\tan(\phi))/F < 0.2$ for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.
- 114 = Surface with Reverse Curvature.

Slice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.79803

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.804832	41.8556	-50.795	Young Alluvium (Qaly)	100	30	109.534	196.946	167.915	0	167.915	302.194	302.194
2	0.804832	123.215	-49.368	Young Alluvium (Qaly)	100	30	134.711	242.214	246.322	0	246.322	403.315	403.315
3	0.804832	200.066	-47.9814	Young Alluvium (Qaly)	100	30	159.093	286.054	322.255	0	322.255	498.83	498.83
4	0.825481	280.67	-46.6142	Old Alluvium (Qalo)	100	32	190.658	342.809	388.576	0	388.576	590.291	590.291
5	0.825481	353.009	-45.2638	Old Alluvium (Qalo)	100	32	215.602	387.658	460.35	0	460.35	677.946	677.946
6	0.825481	421.498	-43.9448	Old Alluvium (Qalo)	100	32	239.755	431.087	529.85	0	529.85	760.933	760.933
7	0.825481	486.391	-42.6545	Old Alluvium (Qalo)	100	32	263.137	473.129	597.132	0	597.132	839.562	839.562
8	0.825481	547.911	-41.3905	Old Alluvium (Qalo)	100	32	285.767	513.818	662.248	0	662.248	914.101	914.101
9	0.825481	600.135	-40.1506	Old Alluvium (Qalo)	100	32	250.977	451.264	562.139	0	562.139	773.86	773.86
10	0.825481	637.315	-38.9329	Old Alluvium (Qalo)	100	32	252.999	454.899	567.957	0	567.957	772.341	772.341
11	0.825481	671.326	-37.7358	Old Alluvium (Qalo)	100	32	266.636	479.419	607.198	0	607.198	813.544	813.544
12	0.825481	702.625	-36.5578	Old Alluvium (Qalo)	100	32	279.498	502.545	644.207	0	644.207	851.461	851.461
13	0.825481	731.336	-35.3975	Old Alluvium (Qalo)	100	32	291.6	524.306	679.032	0	679.032	886.242	886.242
14	0.825481	757.571	-34.2536	Old Alluvium (Qalo)	100	32	302.959	544.73	711.717	0	711.717	918.023	918.023
15	0.825481	781.391	-33.1251	Old Alluvium (Qalo)	100	32	313.575	563.817	742.263	0	742.263	946.876	946.876
16	0.825481	802.898	-32.011	Old Alluvium (Qalo)	100	32	323.464	581.598	770.717	0	770.717	972.926	972.926
17	0.825481	822.206	-30.9102	Old Alluvium (Qalo)	100	32	332.649	598.112	797.146	0	797.146	996.312	996.312
18	0.825481	839.391	-29.822	Old Alluvium (Qalo)	100	32	341.14	613.38	821.579	0	821.579	1017.13	1017.13
19	0.825481	854.523	-28.7454	Old Alluvium (Qalo)	100	32	348.949	627.42	844.047	0	844.047	1035.45	1035.45
20	0.825481	867.666	-27.6799	Old Alluvium (Qalo)	100	32	356.083	640.248	864.578	0	864.578	1051.37	1051.37
21	0.825481	877.616	-26.6247	Old Alluvium (Qalo)	100	32	362.1	651.067	881.892	0	881.892	1063.41	1063.41

22	0.825481	873.186	-25.5791	Old Alluvium (Qalo)	100	32	362.939	652.576	884.306	0	884.306	1058.03	1058.03
23	0.825481	863.73	-24.5426	Old Alluvium (Qalo)	100	32	361.9	650.707	881.315	0	881.315	1046.57	1046.57
24	0.825481	852.492	-23.5146	Old Alluvium (Qalo)	100	32	360.136	647.536	876.24	0	876.24	1032.94	1032.94
25	0.825481	839.516	-22.4945	Old Alluvium (Qalo)	100	32	357.656	643.076	869.104	0	869.104	1017.21	1017.21
26	0.825481	824.84	-21.4819	Old Alluvium (Qalo)	100	32	354.465	637.338	859.921	0	859.921	999.42	999.42
27	0.825481	808.501	-20.4763	Old Alluvium (Qalo)	100	32	350.568	630.331	848.707	0	848.707	979.614	979.614
28	0.825481	790.531	-19.4773	Old Alluvium (Qalo)	100	32	345.969	622.062	835.473	0	835.473	957.833	957.833
29	0.825481	770.962	-18.4844	Old Alluvium (Qalo)	100	32	340.671	612.537	820.231	0	820.231	934.115	934.115
30	0.825481	749.822	-17.4972	Old Alluvium (Qalo)	100	32	334.679	601.763	802.988	0	802.988	908.494	908.494
31	0.825481	727.137	-16.5154	Old Alluvium (Qalo)	100	32	327.993	589.741	783.75	0	783.75	881.001	881.001
32	0.825481	702.931	-15.5385	Old Alluvium (Qalo)	100	32	320.615	576.476	762.521	0	762.521	851.667	851.667
33	0.825481	677.227	-14.5662	Old Alluvium (Qalo)	100	32	312.546	561.967	739.302	0	739.302	820.517	820.517
34	0.825481	650.044	-13.5982	Old Alluvium (Qalo)	100	32	303.785	546.215	714.094	0	714.094	787.577	787.577
35	0.825481	621.402	-12.6341	Old Alluvium (Qalo)	100	32	294.332	529.218	686.893	0	686.893	752.868	752.868
36	0.825481	591.317	-11.6737	Old Alluvium (Qalo)	100	32	284.186	510.975	657.697	0	657.697	716.413	716.413
37	0.825481	559.805	-10.7165	Old Alluvium (Qalo)	100	32	273.344	491.48	626.499	0	626.499	678.23	678.23
38	0.825481	526.881	-9.76244	Old Alluvium (Qalo)	100	32	261.803	470.729	593.29	0	593.29	638.335	638.335
39	0.825481	492.556	-8.81105	Old Alluvium (Qalo)	100	32	249.559	448.715	558.061	0	558.061	596.744	596.744
40	0.825481	456.843	-7.86211	Old Alluvium (Qalo)	100	32	236.61	425.432	520.799	0	520.799	553.472	553.472
41	0.825481	419.751	-6.91534	Old Alluvium (Qalo)	100	32	222.948	400.868	481.491	0	481.491	508.531	508.531
42	0.825481	381.289	-5.97046	Old Alluvium (Qalo)	100	32	208.57	375.016	440.117	0	440.117	461.93	461.93
43	0.825481	341.465	-5.02721	Old Alluvium (Qalo)	100	32	193.468	347.861	396.66	0	396.66	413.679	413.679
44	0.825481	300.285	-4.08532	Old Alluvium (Qalo)	100	32	177.634	319.392	351.1	0	351.1	363.788	363.788
45	0.825481	257.755	-3.14454	Old Alluvium (Qalo)	100	32	161.061	289.593	303.413	0	303.413	312.261	312.261
46	0.825481	213.878	-2.2046	Old Alluvium (Qalo)	100	32	143.74	258.448	253.57	0	253.57	259.103	259.103

47	0.825481	168.659	-1.26526	Old Alluvium (Qalo)	100	32	125.659	225.939	201.544	0	201.544	204.319	204.319
48	0.825481	122.098	-0.326262	Old Alluvium (Qalo)	100	32	106.809	192.046	147.304	0	147.304	147.913	147.913
49	0.825481	74.1971	0.612651	Old Alluvium (Qalo)	100	32	87.1771	156.747	90.8143	0	90.8143	89.8821	89.8821
50	0.825481	24.9558	1.55173	Old Alluvium (Qalo)	100	32	66.7504	120.019	32.0376	0	32.0376	30.2293	30.2293

Global Minimum Query (janbu simplified) - Safety Factor: 1.63296

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.938706	124.614	-68.2455	Young Alluvium (Qaly)	100	30	104.092	169.977	121.204	0	121.204	382.053	382.053
2	0.885057	325.05	-64.1637	Old Alluvium (Qalo)	100	32	165.945	270.981	273.627	0	273.627	616.346	616.346
3	0.885057	490.88	-60.7284	Old Alluvium (Qalo)	100	32	200.995	328.217	365.223	0	365.223	723.808	723.808
4	0.885057	618.552	-57.631	Old Alluvium (Qalo)	100	32	204.741	334.334	375.012	0	375.012	698.019	698.019
5	0.885057	724.033	-54.78	Old Alluvium (Qalo)	100	32	242.487	395.971	473.652	0	473.652	817.144	817.144
6	0.885057	815.78	-52.1185	Old Alluvium (Qalo)	100	32	277.222	452.693	564.426	0	564.426	920.771	920.771
7	0.885057	896.19	-49.608	Old Alluvium (Qalo)	100	32	309.253	504.998	648.132	0	648.132	1011.61	1011.61
8	0.885057	966.978	-47.2211	Old Alluvium (Qalo)	100	32	338.825	553.287	725.411	0	725.411	1091.58	1091.58
9	0.885057	1029.38	-44.9376	Old Alluvium (Qalo)	100	32	366.128	597.872	796.762	0	796.762	1162.09	1162.09
10	0.885057	1084.39	-42.7417	Old Alluvium (Qalo)	100	32	391.328	639.023	862.619	0	862.619	1224.25	1224.25
11	0.885057	1132.81	-40.6212	Old Alluvium (Qalo)	100	32	414.578	676.989	923.376	0	923.376	1278.98	1278.98
12	0.885057	1175.27	-38.5661	Old Alluvium (Qalo)	100	32	435.995	711.963	979.348	0	979.348	1326.98	1326.98
13	0.885057	1212.29	-36.5684	Old Alluvium (Qalo)	100	32	455.682	744.11	1030.79	0	1030.79	1368.82	1368.82
14	0.885057	1244.27	-34.6211	Old Alluvium (Qalo)	100	32	473.722	773.569	1077.94	0	1077.94	1404.99	1404.99
15	0.885057	1266.42	-32.7185	Old Alluvium (Qalo)	100	32	488.397	797.532	1116.28	0	1116.28	1430.05	1430.05
16	0.885057	1270.59	-30.8558	Old Alluvium (Qalo)	100	32	496.723	811.128	1138.04	0	1138.04	1434.8	1434.8
17	0.885057	1269.92	-29.0286	Old Alluvium (Qalo)	100	32	503.159	821.639	1154.86	0	1154.86	1434.1	1434.1
18	0.885057	1265.36	-27.2332	Old Alluvium (Qalo)	100	32	508.011	829.561	1167.55	0	1167.55	1429	1429
19	0.885057	1257.11	-25.4664	Old Alluvium (Qalo)	100	32	511.322	834.968	1176.19	0	1176.19	1419.71	1419.71
20	0.858691	1208.44	-23.7508	Old Alluvium (Qalo)	100	32	509.29	831.651	1182.6	11.7128	1170.89	1406.7	1394.99
21	0.858691	1194.24	-22.0831	Old Alluvium (Qalo)	100	32	502.134	819.964	1186.5	34.3179	1152.19	1390.23	1355.91
22	0.858691	1177.06	-20.4349	Old Alluvium (Qalo)	100	32	494.056	806.774	1186.2	55.1164	1131.08	1370.28	1315.16
23	0.858691	1157	-18.8043	Old Alluvium (Qalo)	100	32	485.079	792.114	1181.78	74.1679	1107.61	1346.95	1272.79

24	0.858691	1134.14	-17.1893	Old Alluvium (Qalo)	100	32	475.22	776.015	1173.37	91.5251	1081.84	1320.38	1228.85
25	0.858691	1108.56	-15.5882	Old Alluvium (Qalo)	100	32	464.492	758.497	1161.04	107.234	1053.81	1290.63	1183.4
26	0.858691	1080.32	-13.9996	Old Alluvium (Qalo)	100	32	452.907	739.579	1144.88	121.335	1023.54	1257.8	1136.46
27	0.858691	1049.48	-12.4219	Old Alluvium (Qalo)	100	32	440.472	719.273	1124.91	133.862	991.044	1221.93	1088.06
28	0.858691	1016.1	-10.8537	Old Alluvium (Qalo)	100	32	427.191	697.585	1101.18	144.847	956.336	1183.09	1038.24
29	0.858691	980.206	-9.29368	Old Alluvium (Qalo)	100	32	413.065	674.519	1073.74	154.314	919.422	1141.33	987.017
30	0.858691	941.848	-7.7406	Old Alluvium (Qalo)	100	32	398.094	650.071	1042.59	162.287	880.298	1096.7	934.41
31	0.858691	901.051	-6.19323	Old Alluvium (Qalo)	100	32	382.273	624.237	1007.74	168.782	838.956	1049.22	880.438
32	0.858691	857.839	-4.65038	Old Alluvium (Qalo)	100	32	365.597	597.005	969.19	173.816	795.374	998.928	825.112
33	0.858691	812.231	-3.11091	Old Alluvium (Qalo)	100	32	348.054	568.358	926.927	177.398	749.529	945.843	768.445
34	0.858691	764.239	-1.57369	Old Alluvium (Qalo)	100	32	329.632	538.276	880.924	179.537	701.387	889.98	710.443
35	0.858691	713.872	-0.0375994	Old Alluvium (Qalo)	100	32	310.315	506.732	831.145	180.237	650.908	831.349	651.112
36	0.858691	661.132	1.49846	Old Alluvium (Qalo)	100	32	290.084	473.696	777.539	179.501	598.038	769.951	590.45
37	0.858691	606.017	3.03561	Old Alluvium (Qalo)	100	32	268.915	439.128	720.045	177.326	542.719	705.784	528.458
38	0.858691	548.52	4.57494	Old Alluvium (Qalo)	100	32	246.782	402.985	658.586	173.708	484.878	638.839	465.131
39	0.858691	488.626	6.11759	Old Alluvium (Qalo)	100	32	223.652	365.215	593.072	168.639	424.433	569.101	400.462
40	0.858691	426.319	7.66472	Old Alluvium (Qalo)	100	32	199.488	325.756	523.395	162.109	361.286	496.548	334.439
41	0.858691	361.574	9.21749	Old Alluvium (Qalo)	100	32	174.248	284.54	449.429	154.103	295.326	421.152	267.049
42	0.858691	294.363	10.7771	Old Alluvium (Qalo)	100	32	147.883	241.487	371.028	144.602	226.426	342.879	198.277
43	0.858691	229.264	12.3449	Old Alluvium (Qalo)	100	32	122.581	200.17	293.893	133.586	160.307	267.065	133.479
44	0.858691	200.032	13.9221	Old Alluvium (Qalo)	100	32	114.981	187.759	261.529	121.085	140.444	233.027	111.942
45	0.858691	176.801	15.5102	Old Alluvium (Qalo)	100	32	110.882	181.066	236.75	107.016	129.734	205.978	98.9621
46	0.858691	150.917	17.1106	Old Alluvium (Qalo)	100	32	106.067	173.203	208.492	91.3416	117.15	175.84	84.4983
47	0.858691	122.314	18.7248	Old Alluvium (Qalo)	100	32	100.49	164.096	176.596	74.0206	102.575	142.533	68.5127
48	0.858691	90.9172	20.3547	Old Alluvium (Qalo)	100	32	94.0996	153.661	140.883	55.0076	85.8753	105.972	50.9646

49	0.858691	56.6403	22.002	Old Alluvium (Qalo)	100	32	86.8354	141.799	101.142	34.2504	66.8921	66.0552	31.8048
50	0.858691	19.3852	23.6686	Old Alluvium (Qalo)	100	32	78.6272	128.395	57.1311	11.6897	45.4414	22.6675	10.9778

Global Minimum Query (spencer) - Safety Factor: 1.79194

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.804832	41.8556	-50.795	Young Alluvium (Qaly)	100	30	105.505	189.059	154.255	0	154.255	283.594	283.594
2	0.804832	123.215	-49.368	Young Alluvium (Qaly)	100	30	126.574	226.813	219.647	0	219.647	367.157	367.157
3	0.804832	200.066	-47.9814	Young Alluvium (Qaly)	100	30	147.335	264.015	284.082	0	284.082	447.607	447.607
4	0.825481	280.67	-46.6142	Old Alluvium (Qalo)	100	32	175.874	315.156	344.321	0	344.321	530.395	530.395
5	0.825481	353.009	-45.2638	Old Alluvium (Qalo)	100	32	198.056	354.905	407.933	0	407.933	607.821	607.821
6	0.825481	421.498	-43.9448	Old Alluvium (Qalo)	100	32	219.911	394.068	470.607	0	470.607	682.564	682.564
7	0.825481	486.391	-42.6545	Old Alluvium (Qalo)	100	32	241.436	432.638	532.333	0	532.333	754.769	754.769
8	0.825481	547.911	-41.3905	Old Alluvium (Qalo)	100	32	262.627	470.611	593.102	0	593.102	824.561	824.561
9	0.825481	600.135	-40.1506	Old Alluvium (Qalo)	100	32	231.384	414.626	503.506	0	503.506	698.699	698.699
10	0.825481	637.315	-38.9329	Old Alluvium (Qalo)	100	32	233.997	419.309	511.002	0	511.002	700.036	700.036
11	0.825481	671.326	-37.7358	Old Alluvium (Qalo)	100	32	247.534	443.566	549.82	0	549.82	741.383	741.383
12	0.825481	702.625	-36.5578	Old Alluvium (Qalo)	100	32	260.56	466.907	587.173	0	587.173	780.384	780.384
13	0.825481	731.336	-35.3975	Old Alluvium (Qalo)	100	32	273.073	489.331	623.059	0	623.059	817.104	817.104
14	0.825481	757.571	-34.2536	Old Alluvium (Qalo)	100	32	285.074	510.835	657.473	0	657.473	851.6	851.6
15	0.825481	781.391	-33.1251	Old Alluvium (Qalo)	100	32	296.547	531.395	690.376	0	690.376	883.879	883.879
16	0.825481	802.898	-32.011	Old Alluvium (Qalo)	100	32	307.495	551.012	721.771	0	721.771	913.997	913.997
17	0.825481	822.206	-30.9102	Old Alluvium (Qalo)	100	32	317.923	569.699	751.676	0	751.676	942.026	942.026
18	0.825481	839.391	-29.822	Old Alluvium (Qalo)	100	32	327.83	587.451	780.085	0	780.085	968.002	968.002
19	0.825481	854.523	-28.7454	Old Alluvium (Qalo)	100	32	337.212	604.263	806.99	0	806.99	991.955	991.955
20	0.825481	867.666	-27.6799	Old Alluvium (Qalo)	100	32	346.065	620.128	832.379	0	832.379	1013.91	1013.91
21	0.825481	877.616	-26.6247	Old Alluvium (Qalo)	100	32	353.956	634.268	855.007	0	855.007	1032.45	1032.45
22	0.825481	873.186	-25.5791	Old Alluvium (Qalo)	100	32	356.969	639.667	863.649	0	863.649	1034.52	1034.52
23	0.825481	863.73	-24.5426	Old Alluvium (Qalo)	100	32	358.186	641.848	867.138	0	867.138	1030.69	1030.69

24	0.825481	852.492	-23.5146	Old Alluvium (Qalo)	100	32	358.693	642.756	868.59	0	868.59	1024.66	1024.66
25	0.825481	839.516	-22.4945	Old Alluvium (Qalo)	100	32	358.482	642.379	867.988	0	867.988	1016.44	1016.44
26	0.825481	824.84	-21.4819	Old Alluvium (Qalo)	100	32	357.548	640.704	865.307	0	865.307	1006.02	1006.02
27	0.825481	808.501	-20.4763	Old Alluvium (Qalo)	100	32	355.88	637.715	860.524	0	860.524	993.414	993.414
28	0.825481	790.531	-19.4773	Old Alluvium (Qalo)	100	32	353.468	633.394	853.609	0	853.609	978.622	978.622
29	0.825481	770.962	-18.4844	Old Alluvium (Qalo)	100	32	350.304	627.724	844.535	0	844.535	961.639	961.639
30	0.825481	749.822	-17.4972	Old Alluvium (Qalo)	100	32	346.375	620.683	833.267	0	833.267	942.46	942.46
31	0.825481	727.137	-16.5154	Old Alluvium (Qalo)	100	32	341.669	612.25	819.771	0	819.771	921.077	921.077
32	0.825481	702.931	-15.5385	Old Alluvium (Qalo)	100	32	336.172	602.4	804.007	0	804.007	897.479	897.479
33	0.825481	677.227	-14.5662	Old Alluvium (Qalo)	100	32	329.869	591.106	785.934	0	785.934	871.65	871.65
34	0.825481	650.044	-13.5982	Old Alluvium (Qalo)	100	32	322.746	578.341	765.506	0	765.506	843.576	843.576
35	0.825481	621.402	-12.6341	Old Alluvium (Qalo)	100	32	314.784	564.074	742.674	0	742.674	813.233	813.233
36	0.825481	591.317	-11.6737	Old Alluvium (Qalo)	100	32	305.966	548.272	717.386	0	717.386	780.602	780.602
37	0.825481	559.805	-10.7165	Old Alluvium (Qalo)	100	32	296.271	530.9	689.584	0	689.584	745.654	745.654
38	0.825481	526.881	-9.76244	Old Alluvium (Qalo)	100	32	285.679	511.92	659.21	0	659.21	708.362	708.362
39	0.825481	492.556	-8.81105	Old Alluvium (Qalo)	100	32	274.167	491.291	626.196	0	626.196	668.694	668.694
40	0.825481	456.843	-7.86211	Old Alluvium (Qalo)	100	32	261.71	468.968	590.472	0	590.472	626.611	626.611
41	0.825481	419.751	-6.91534	Old Alluvium (Qalo)	100	32	248.282	444.906	551.964	0	551.964	582.077	582.077
42	0.825481	381.289	-5.97046	Old Alluvium (Qalo)	100	32	233.854	419.052	510.59	0	510.59	535.047	535.047
43	0.825481	341.465	-5.02721	Old Alluvium (Qalo)	100	32	218.396	391.352	466.261	0	466.261	485.473	485.473
44	0.825481	300.285	-4.08532	Old Alluvium (Qalo)	100	32	201.876	361.749	418.886	0	418.886	433.304	433.304
45	0.825481	257.755	-3.14454	Old Alluvium (Qalo)	100	32	184.257	330.178	368.363	0	368.363	378.485	378.485
46	0.825481	213.878	-2.2046	Old Alluvium (Qalo)	100	32	165.504	296.573	314.582	0	314.582	320.954	320.954
47	0.825481	168.659	-1.26526	Old Alluvium (Qalo)	100	32	145.574	260.859	257.428	0	257.428	260.644	260.644
48	0.825481	122.098	-0.326262	Old Alluvium (Qalo)	100	32	124.423	222.958	196.774	0	196.774	197.483	197.483

49	0.825481	74.1971	0.612651	Old Alluvium (Qalo)	100	32	102.005	182.786	132.486	0	132.486	131.395	131.395
50	0.825481	24.9558	1.55173	Old Alluvium (Qalo)	100	32	78.1759	140.087	64.1518	0	64.1518	62.034	62.034

Interslice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.79803

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	1032.97	5275.89	0	0	0
2	1033.77	5274.9	47.6677	0	0
3	1034.57	5273.96	140.467	0	0
4	1035.38	5273.07	270.493	0	0
5	1036.21	5272.2	421.952	0	0
6	1037.03	5271.36	597.011	0	0
7	1037.86	5270.57	790.195	0	0
8	1038.68	5269.81	996.675	0	0
9	1039.51	5269.08	1212.16	0	0
10	1040.33	5268.38	1391.01	0	0
11	1041.16	5267.72	1561.21	0	0
12	1041.98	5267.08	1729.31	0	0
13	1042.81	5266.47	1893.24	0	0
14	1043.63	5265.88	2051.18	0	0
15	1044.46	5265.32	2201.52	0	0
16	1045.29	5264.78	2342.84	0	0
17	1046.11	5264.26	2473.93	0	0
18	1046.94	5263.77	2593.7	0	0
19	1047.76	5263.3	2701.24	0	0
20	1048.59	5262.84	2795.77	0	0
21	1049.41	5262.41	2876.62	0	0
22	1050.24	5262	2943.08	0	0
23	1051.06	5261.6	2993.32	0	0
24	1051.89	5261.22	3027.19	0	0
25	1052.71	5260.86	3045.05	0	0
26	1053.54	5260.52	3047.32	0	0
27	1054.37	5260.2	3034.48	0	0
28	1055.19	5259.89	3007.11	0	0
29	1056.02	5259.6	2965.84	0	0
30	1056.84	5259.32	2911.36	0	0
31	1057.67	5259.06	2844.44	0	0
32	1058.49	5258.82	2765.9	0	0
33	1059.32	5258.59	2676.63	0	0
34	1060.14	5258.37	2577.57	0	0
35	1060.97	5258.17	2469.74	0	0
36	1061.8	5257.99	2354.21	0	0
37	1062.62	5257.82	2232.13	0	0
38	1063.45	5257.66	2104.68	0	0
39	1064.27	5257.52	1973.13	0	0
40	1065.1	5257.39	1838.82	0	0
41	1065.92	5257.28	1703.14	0	0
42	1066.75	5257.18	1567.57	0	0
43	1067.57	5257.09	1433.63	0	0
44	1068.4	5257.02	1302.96	0	0
45	1069.22	5256.96	1177.23	0	0
46	1070.05	5256.91	1058.22	0	0
47	1070.88	5256.88	947.795	0	0
48	1071.7	5256.86	847.886	0	0
49	1072.53	5256.86	760.534	0	0
50	1073.35	5256.87	687.87	0	0
51	1074.18	5256.89	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.63296

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	1037.23	5275.25	0	0	0
2	1038.17	5272.9	152.184	0	0
3	1039.06	5271.07	472.116	0	0
4	1039.94	5269.49	847.998	0	0
5	1040.83	5268.1	1189.93	0	0
6	1041.71	5266.84	1568.57	0	0
7	1042.6	5265.71	1964.68	0	0
8	1043.48	5264.67	2364.45	0	0
9	1044.37	5263.71	2757.61	0	0
10	1045.25	5262.83	3136.34	0	0
11	1046.14	5262.01	3494.6	0	0
12	1047.02	5261.25	3827.68	0	0
13	1047.91	5260.54	4131.87	0	0
14	1048.79	5259.89	4404.24	0	0
15	1049.68	5259.28	4642.51	0	0
16	1050.56	5258.71	4843.82	0	0
17	1051.45	5258.18	5004.77	0	0
18	1052.33	5257.69	5125.49	0	0
19	1053.22	5257.23	5206.49	0	0
20	1054.1	5256.81	5248.51	0	0
21	1054.96	5256.43	5256.86	0	0
22	1055.82	5256.08	5237.89	0	0
23	1056.68	5255.76	5192.02	0	0
24	1057.54	5255.47	5119.92	0	0
25	1058.4	5255.21	5022.44	0	0
26	1059.26	5254.97	4900.66	0	0
27	1060.12	5254.75	4755.82	0	0
28	1060.97	5254.56	4589.34	0	0
29	1061.83	5254.4	4402.83	0	0
30	1062.69	5254.26	4198.06	0	0
31	1063.55	5254.14	3977	0	0
32	1064.41	5254.05	3741.77	0	0
33	1065.27	5253.98	3494.69	0	0
34	1066.13	5253.93	3238.28	0	0
35	1066.98	5253.91	2975.25	0	0
36	1067.84	5253.91	2708.54	0	0
37	1068.7	5253.93	2441.31	0	0
38	1069.56	5253.98	2176.99	0	0
39	1070.42	5254.04	1919.26	0	0
40	1071.28	5254.14	1672.12	0	0
41	1072.14	5254.25	1439.88	0	0
42	1073	5254.39	1227.22	0	0
43	1073.85	5254.55	1039.25	0	0
44	1074.71	5254.74	878.481	0	0
45	1075.57	5254.96	723.816	0	0
46	1076.43	5255.19	571.93	0	0
47	1077.29	5255.46	425.494	0	0
48	1078.15	5255.75	287.572	0	0
49	1079.01	5256.07	161.672	0	0
50	1079.87	5256.41	51.814	0	0
51	1080.72	5256.79	0	0	0

Global Minimum Query (spencer) - Safety Factor: 1.79194

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	1032.97	5275.89	0	0	0
2	1033.77	5274.9	37.4324	15.247	22.1621
3	1034.57	5273.96	111.756	45.5208	22.1622
4	1035.38	5273.07	217.14	88.446	22.1622
5	1036.21	5272.2	342.145	139.363	22.1621
6	1037.03	5271.36	488.006	198.775	22.1621
7	1037.86	5270.57	650.422	264.931	22.1621
8	1038.68	5269.81	825.52	336.252	22.1621
9	1039.51	5269.08	1009.79	411.311	22.1622
10	1040.33	5268.38	1163.97	474.11	22.1621
11	1041.16	5267.72	1311.86	534.348	22.1621
12	1041.98	5267.08	1459.06	594.308	22.1622
13	1042.81	5266.47	1603.71	653.224	22.1621
14	1043.63	5265.88	1744.09	710.408	22.1622
15	1044.46	5265.32	1878.7	765.235	22.1621
16	1045.29	5264.78	2006.13	817.139	22.1621
17	1046.11	5264.26	2125.13	865.61	22.1621
18	1046.94	5263.77	2234.58	910.192	22.1621
19	1047.76	5263.3	2333.47	950.475	22.1622
20	1048.59	5262.84	2420.91	986.091	22.1622
21	1049.41	5262.41	2496.1	1016.71	22.162
22	1050.24	5262	2558.15	1041.99	22.1621
23	1051.06	5261.6	2605.17	1061.14	22.1621
24	1051.89	5261.22	2636.78	1074.02	22.1622
25	1052.71	5260.86	2653.1	1080.66	22.162
26	1053.54	5260.52	2654.31	1081.16	22.1622
27	1054.37	5260.2	2640.7	1075.62	22.1622
28	1055.19	5259.89	2612.61	1064.17	22.1621
29	1056.02	5259.6	2570.47	1047.01	22.1622
30	1056.84	5259.32	2514.77	1024.32	22.1621
31	1057.67	5259.06	2446.1	996.351	22.1622
32	1058.49	5258.82	2365.12	963.365	22.1621
33	1059.32	5258.59	2272.56	925.663	22.1621
34	1060.14	5258.37	2169.24	883.579	22.1621
35	1060.97	5258.17	2056.06	837.479	22.1622
36	1061.8	5257.99	1934.01	787.765	22.1622
37	1062.62	5257.82	1804.16	734.875	22.1622
38	1063.45	5257.66	1667.68	679.284	22.1622
39	1064.27	5257.52	1525.83	621.504	22.1621
40	1065.1	5257.39	1379.97	562.09	22.1621
41	1065.92	5257.28	1231.55	501.638	22.1622
42	1066.75	5257.18	1082.16	440.787	22.1621
43	1067.57	5257.09	933.48	380.227	22.1622
44	1068.4	5257.02	787.318	320.692	22.1622
45	1069.22	5256.96	645.614	262.973	22.1622
46	1070.05	5256.91	510.44	207.913	22.1621
47	1070.88	5256.88	384.016	156.418	22.1621
48	1071.7	5256.86	268.717	109.454	22.1621
49	1072.53	5256.86	167.083	68.0564	22.1621
50	1073.35	5256.87	81.8329	33.3323	22.1621
51	1074.18	5256.89	0	0	0

Discharge Sections

Entity Information

◆ **Group 1**

Shared Entities

Type	Coordinates (x,y)
External Boundary	1001.07, 5279.77
	1001.07, 5275.16
	1001.07, 5219.77
	1204.43, 5219.77
	1204.43, 5273.92
	1204.43, 5279.17
	1198.05, 5278.32
	1190.1, 5277.27
	1181.72, 5276.03
	1179.78, 5275.75
	1173.72, 5274.18
	1168.1, 5271.95
	1163.3, 5270.05
	1143.9, 5256.8
	1074.35, 5256.79
	1049.92, 5271.04
	1044.39, 5273.12
	1039.66, 5274.89
	1037.13, 5275.27
	1031.01, 5276.18
	1014.5, 5278.6
	1005.69, 5279.49
Material Boundary	1001.07, 5275.16
	1041.19, 5272.72
	1042.6, 5272.72
	1044.39, 5273.12
Material Boundary	1168.1, 5271.95
	1169.23, 5271.52
	1172.34, 5270.68
	1182.51, 5269.7
	1193.01, 5271.04
	1204.43, 5273.92

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario
Water Table	1001.07, 5256.86 1074.35, 5256.79 1143.9, 5256.8 1204.43, 5256.8	Assigned to:  Old Alluvium (Qalo)  Young Alluvium (Qaly)
Distributed Load	1039.66, 5274.89 1037.13, 5275.27 1031.01, 5276.18 1014.5, 5278.6 1005.69, 5279.49 1001.07, 5279.77	Constant DistributionOrientation: Normal to boundaryMagnitude: 250 lbs/ft2Creates Excess Pore Pressure: No
Distributed Load	1204.43, 5279.17 1198.05, 5278.32 1190.1, 5277.27 1181.72, 5276.03 1179.78, 5275.75 1173.72, 5274.18	Constant DistributionOrientation: Normal to boundaryMagnitude: 250 lbs/ft2Creates Excess Pore Pressure: No



Static - Station 102+20 Right - Stabilized
Slide2 - An Interactive Slope Stability Program
Date Created: 6/23/2026, 9:36:58 AM
Software Version: 9.04

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Slide2 Analysis Information

Static - Station 102+20 Right - Stabilized

Project Summary

File Name:	Static - Station 102+20 Right - Stabilized.slmd
Slide2 Modeler Version:	9.04
Compute Time:	00h:00m:00.645s
Project Title:	Slide2 - An Interactive Slope Stability Program
Date Created:	6/23/2026, 9:36:58 AM

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Data Output:	Standard
Failure Direction:	Right to Left

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	Bishop simplified
	Janbu simplified
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:

Pore Fluid Unit Weight [lbs/ft³]:

Advanced Groundwater Method:

Water Surfaces

62.4

None

Random Numbers

Pseudo-random Seed:

10116

Random Number Generation Method:

Park and Miller v.3

Surface Options

Surface Type:	Circular
Search Method:	Grid Search
Radius Increment:	10
Composite Surfaces:	Disabled
Reverse Curvature:	Invalid Surfaces
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Loading

2 Distributed Loads present

Distributed Load 1	
Distribution:	Constant
Magnitude [psf]:	250
Orientation:	Normal to boundary
Distributed Load 2	
Distribution:	Constant
Magnitude [psf]:	250
Orientation:	Normal to boundary

Materials

Old Alluvium (Qalo)

Color	
Strength Type	Mohr-Coulomb
Unit Weight	120 lbs/ft3
Cohesion	100 psf
Phi	32 °
Water Surface	Water Table
Hu Type	Custom
Hu	1
Specify alternate strength type above water surface	No

Young Alluvium (Qaly)

Color	
Strength Type	Mohr-Coulomb
Unit Weight	120 lbs/ft3
Cohesion	100 psf
Phi	30 °
Water Surface	Water Table
Hu Type	Custom
Hu	1
Specify alternate strength type above water surface	No

Global Minimums

Method: bishop simplified

FS	1.653870
Center:	1142.856, 5298.969
Radius:	42.142
Left Slip Surface Endpoint:	1143.961, 5256.841
Right Slip Surface Endpoint:	1177.654, 5275.198
Resisting Moment:	673691 lb-ft
Driving Moment:	407342 lb-ft
Total Slice Area:	167.312 ft ²
Surface Horizontal Width:	33.6932 ft
Surface Average Height:	4.96575 ft

Method: janbu simplified

FS	1.548060
Center:	1150.019, 5282.811
Radius:	29.709
Left Slip Surface Endpoint:	1135.665, 5256.799
Right Slip Surface Endpoint:	1178.814, 5275.498
Resisting Horizontal Force:	24184.3 lb
Driving Horizontal Force:	15622.3 lb
Total Slice Area:	355.327 ft ²
Surface Horizontal Width:	43.1488 ft
Surface Average Height:	8.23492 ft

Method: spencer

FS	1.647260
Center:	1142.856, 5298.969
Radius:	42.142
Left Slip Surface Endpoint:	1143.961, 5256.841
Right Slip Surface Endpoint:	1177.654, 5275.198
Resisting Moment:	670997 lb-ft
Driving Moment:	407342 lb-ft
Resisting Horizontal Force:	13774 lb
Driving Horizontal Force:	8361.78 lb
Total Slice Area:	167.312 ft ²
Surface Horizontal Width:	33.6932 ft
Surface Average Height:	4.96575 ft

Global Minimum Support Data

No Supports Present

Valid and Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces:	34317
Number of Invalid Surfaces:	984

Error Codes

Error Code -103 reported for 64 surfaces
Error Code -114 reported for 920 surfaces

Method: janbu simplified

Number of Valid Surfaces:	34311
Number of Invalid Surfaces:	990

Error Codes

Error Code -103 reported for 64 surfaces
Error Code -108 reported for 6 surfaces
Error Code -114 reported for 920 surfaces

Method: spencer

Number of Valid Surfaces:	34149
Number of Invalid Surfaces:	1152

Error Codes

Error Code -103 reported for 64 surfaces
Error Code -108 reported for 6 surfaces
Error Code -111 reported for 162 surfaces
Error Code -114 reported for 920 surfaces

Error Code Descriptions

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.

-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).

-111 = Safety factor equation did not converge

-114 = Surface with Reverse Curvature.

Slice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.65387

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.666498	17.2952	1.95544	Old Alluvium (Qalo)	100	32	69.375	114.737	23.5847	0	23.5847	25.9533	25.9533
2	0.666498	51.4631	2.86245	Old Alluvium (Qalo)	100	32	87.9781	145.504	72.8222	0	72.8222	77.2211	77.2211
3	0.666498	84.7845	3.77017	Old Alluvium (Qalo)	100	32	105.894	175.135	120.242	0	120.242	127.22	127.22
4	0.666498	117.257	4.67884	Old Alluvium (Qalo)	100	32	123.133	203.646	165.869	0	165.869	175.946	175.946
5	0.666498	148.878	5.5887	Old Alluvium (Qalo)	100	32	139.703	231.051	209.725	0	209.725	223.395	223.395
6	0.666498	179.644	6.49997	Old Alluvium (Qalo)	100	32	155.613	257.363	251.833	0	251.833	269.562	269.562
7	0.666498	209.55	7.41289	Old Alluvium (Qalo)	100	32	170.868	282.593	292.209	0	292.209	314.439	314.439
8	0.666498	238.591	8.32772	Old Alluvium (Qalo)	100	32	185.475	306.751	330.871	0	330.871	358.02	358.02
9	0.666498	266.762	9.24468	Old Alluvium (Qalo)	100	32	199.44	329.848	367.834	0	367.834	400.296	400.296
10	0.666498	294.056	10.164	Old Alluvium (Qalo)	100	32	212.769	351.892	403.112	0	403.112	441.257	441.257
11	0.666498	320.466	11.0861	Old Alluvium (Qalo)	100	32	225.465	372.889	436.714	0	436.714	480.891	480.891
12	0.666498	345.983	12.011	Old Alluvium (Qalo)	100	32	237.531	392.845	468.65	0	468.65	519.187	519.187
13	0.666498	370.599	12.9391	Old Alluvium (Qalo)	100	32	248.971	411.766	498.931	0	498.931	556.131	556.131
14	0.666498	394.305	13.8707	Old Alluvium (Qalo)	100	32	259.788	429.656	527.559	0	527.559	591.71	591.71
15	0.666498	417.089	14.806	Old Alluvium (Qalo)	100	32	269.983	446.517	554.542	0	554.542	625.905	625.905
16	0.666498	438.939	15.7455	Old Alluvium (Qalo)	100	32	279.557	462.351	579.883	0	579.883	658.702	658.702
17	0.666498	459.844	16.6892	Old Alluvium (Qalo)	100	32	288.511	477.16	603.581	0	603.581	690.08	690.08
18	0.666498	479.79	17.6377	Old Alluvium (Qalo)	100	32	296.844	490.942	625.639	0	625.639	720.018	720.018
19	0.666498	498.761	18.5911	Old Alluvium (Qalo)	100	32	304.557	503.698	646.052	0	646.052	748.494	748.494
20	0.666498	516.741	19.55	Old Alluvium (Qalo)	100	32	311.648	515.425	664.82	0	664.82	775.486	775.486
21	0.666498	533.714	20.5146	Old Alluvium (Qalo)	100	32	318.114	526.12	681.935	0	681.935	800.966	800.966

22	0.666498	549.661	21.4852	Old Alluvium (Qalo)	100	32	323.955	535.779	697.393	0	697.393	824.905	824.905
23	0.666498	564.561	22.4625	Old Alluvium (Qalo)	100	32	329.165	544.396	711.182	0	711.182	847.274	847.274
24	0.666498	578.392	23.4466	Old Alluvium (Qalo)	100	32	333.741	551.965	723.295	0	723.295	868.041	868.041
25	0.666498	591.131	24.4381	Old Alluvium (Qalo)	100	32	337.68	558.478	733.718	0	733.718	887.168	887.168
26	0.666498	602.752	25.4376	Old Alluvium (Qalo)	100	32	340.974	563.926	742.438	0	742.438	904.618	904.618
27	0.666498	613.228	26.4453	Old Alluvium (Qalo)	100	32	343.618	568.3	749.437	0	749.437	920.35	920.35
28	0.666498	622.529	27.462	Old Alluvium (Qalo)	100	32	345.606	571.588	754.699	0	754.699	934.319	934.319
29	0.666498	630.623	28.4881	Old Alluvium (Qalo)	100	32	346.93	573.777	758.202	0	758.202	946.477	946.477
30	0.666498	630.058	29.5243	Old Alluvium (Qalo)	100	32	344.117	569.124	750.756	0	750.756	945.641	945.641
31	0.666498	620.302	30.5713	Old Alluvium (Qalo)	100	32	337.005	557.362	731.933	0	731.933	931.009	931.009
32	0.666498	609.223	31.6297	Old Alluvium (Qalo)	100	32	329.309	544.635	711.564	0	711.564	914.392	914.392
33	0.666498	596.777	32.7002	Old Alluvium (Qalo)	100	32	321.022	530.928	689.628	0	689.628	895.722	895.722
34	0.666498	582.915	33.7838	Old Alluvium (Qalo)	100	32	312.133	516.227	666.102	0	666.102	874.929	874.929
35	0.666498	567.584	34.8812	Old Alluvium (Qalo)	100	32	302.633	500.515	640.958	0	640.958	851.93	851.93
36	0.666498	550.724	35.9936	Old Alluvium (Qalo)	100	32	292.51	483.774	614.166	0	614.166	826.637	826.637
37	0.666498	532.295	37.1218	Old Alluvium (Qalo)	100	32	281.764	466.001	585.723	0	585.723	798.989	798.989
38	0.666498	512.254	38.2672	Old Alluvium (Qalo)	100	32	270.392	447.194	555.627	0	555.627	768.919	768.919
39	0.666498	490.471	39.4308	Old Alluvium (Qalo)	100	32	258.361	427.295	523.781	0	523.781	736.234	736.234
40	0.666498	466.856	40.6143	Old Alluvium (Qalo)	100	32	245.652	406.277	490.145	0	490.145	700.801	700.801
41	0.666498	441.312	41.8192	Old Alluvium (Qalo)	100	32	232.25	384.112	454.675	0	454.675	662.47	662.47
42	0.666498	413.729	43.0471	Old Alluvium (Qalo)	100	32	218.139	360.773	417.324	0	417.324	621.078	621.078
43	0.666498	383.982	44.3002	Old Alluvium (Qalo)	100	32	203.298	336.229	378.046	0	378.046	576.438	576.438
44	0.666498	351.932	45.5807	Old Alluvium (Qalo)	100	32	187.709	310.447	336.787	0	336.787	528.34	528.34
45	0.666498	316.968	46.891	Old Alluvium (Qalo)	100	32	194.715	322.033	355.327	0	355.327	563.338	563.338
46	0.740151	301.366	48.3106	Young Alluvium (Qaly)	100	30	208.345	344.575	423.617	0	423.617	657.545	657.545

47	0.740151	242.513	49.8474	Young Alluvium (Qaly)	100	30	185.489	306.774	358.143	0	358.143	578.008	578.008
48	0.740151	179.339	51.4349	Young Alluvium (Qaly)	100	30	161.656	267.358	289.871	0	289.871	492.627	492.627
49	0.740151	111.381	53.0797	Young Alluvium (Qaly)	100	30	136.81	226.266	218.698	0	218.698	400.778	400.778
50	0.740151	38.0712	54.79	Young Alluvium (Qaly)	100	30	110.914	183.438	144.518	0	144.518	301.69	301.69

Global Minimum Query (janbu simplified) - Safety Factor: 1.54806

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.869972	24.0915	-27.9404	Old Alluvium (Qalo)	100	32	89.0455	137.848	74.9195	14.3506	60.5689	27.6919	13.3413
2	0.869972	70.394	-26.057	Old Alluvium (Qalo)	100	32	100.039	154.866	129.83	42.0265	87.8038	80.915	38.8885
3	0.869972	113.023	-24.2033	Old Alluvium (Qalo)	100	32	109.689	169.806	179.219	67.5068	111.712	129.915	62.4081
4	0.869972	152.143	-22.3763	Old Alluvium (Qalo)	100	32	118.131	182.874	223.515	90.8896	132.626	174.882	83.9928
5	0.869972	187.896	-20.573	Old Alluvium (Qalo)	100	32	125.472	194.239	263.074	112.26	150.814	215.979	103.719
6	0.869972	220.404	-18.7908	Old Alluvium (Qalo)	100	32	131.805	204.042	298.192	131.691	166.501	253.346	121.655
7	0.869972	249.776	-17.0272	Old Alluvium (Qalo)	100	32	137.205	212.401	329.126	149.247	179.879	287.107	137.86
8	0.869972	276.102	-15.2802	Old Alluvium (Qalo)	100	32	141.737	219.418	356.091	164.982	191.109	317.369	152.387
9	0.869972	299.464	-13.5476	Old Alluvium (Qalo)	100	32	145.458	225.177	379.271	178.946	200.325	344.222	165.276
10	0.869972	328.781	-11.8275	Old Alluvium (Qalo)	100	32	152.9	236.698	409.941	191.178	218.763	377.921	186.743
11	0.869972	401.705	-10.1182	Old Alluvium (Qalo)	100	32	182.723	282.866	494.352	201.706	292.646	461.744	260.038
12	0.869972	478.564	-8.41801	Old Alluvium (Qalo)	100	32	214.456	331.99	581.828	210.567	371.261	550.091	339.524
13	0.869972	552.675	-6.72522	Old Alluvium (Qalo)	100	32	244.768	378.915	664.142	217.784	446.358	635.279	417.495
14	0.869972	624.069	-5.03831	Old Alluvium (Qalo)	100	32	273.725	423.743	741.475	223.378	518.097	717.343	493.965
15	0.869972	692.77	-3.35577	Old Alluvium (Qalo)	100	32	301.385	466.562	813.985	227.363	586.622	796.313	568.95
16	0.869972	758.797	-1.67613	Old Alluvium (Qalo)	100	32	327.795	507.447	881.8	229.748	652.052	872.208	642.46
17	0.869972	822.16	0.0020691	Old Alluvium (Qalo)	100	32	352.997	546.461	945.028	230.542	714.486	945.041	714.499
18	0.869972	882.861	1.68027	Old Alluvium (Qalo)	100	32	377.024	583.656	1003.76	229.744	774.011	1014.82	785.071
19	0.869972	940.898	3.35992	Old Alluvium (Qalo)	100	32	399.904	619.075	1058.05	227.355	830.694	1081.53	854.172
20	0.869972	996.261	5.04247	Old Alluvium (Qalo)	100	32	421.66	652.755	1107.96	223.366	884.592	1145.16	921.798
21	0.869972	1048.93	6.72939	Old Alluvium (Qalo)	100	32	442.309	684.721	1153.52	217.768	935.75	1205.71	987.939
22	0.869972	1098.88	8.4222	Old Alluvium (Qalo)	100	32	461.864	714.993	1194.74	210.547	984.191	1263.12	1052.58
23	0.869972	1146.09	10.1225	Old Alluvium (Qalo)	100	32	480.333	743.584	1231.63	201.682	1029.95	1317.39	1115.71

24	0.869972	1190.5	11.8318	Old Alluvium (Qalo)	100	32	497.719	770.499	1264.17	191.15	1073.02	1368.44	1177.29
25	0.869972	1232.08	13.5519	Old Alluvium (Qalo)	100	32	514.021	795.736	1292.33	178.921	1113.41	1416.23	1237.31
26	0.869972	1270.76	15.2845	Old Alluvium (Qalo)	100	32	529.235	819.288	1316.06	164.961	1151.1	1460.69	1295.73
27	0.869972	1306.47	17.0316	Old Alluvium (Qalo)	100	32	543.35	841.138	1335.3	149.229	1186.07	1501.75	1352.52
28	0.869972	1339.14	18.7952	Old Alluvium (Qalo)	100	32	556.35	861.263	1349.95	131.676	1218.27	1539.29	1407.62
29	0.869972	1368.68	20.5774	Old Alluvium (Qalo)	100	32	568.216	879.632	1359.92	112.248	1247.67	1573.24	1460.99
30	0.869972	1394.96	22.3808	Old Alluvium (Qalo)	100	32	578.92	896.203	1365.07	90.881	1274.19	1603.46	1512.58
31	0.869972	1417.88	24.2079	Old Alluvium (Qalo)	100	32	588.431	910.927	1365.26	67.501	1297.76	1629.8	1562.3
32	0.869972	1436.57	26.0616	Old Alluvium (Qalo)	100	32	596.431	923.311	1359.6	42.0232	1317.57	1651.29	1609.27
33	0.869972	1433.84	27.9451	Old Alluvium (Qalo)	100	32	596.374	923.223	1331.78	14.3495	1317.43	1648.14	1633.79
34	0.837505	1366.94	29.8257	Old Alluvium (Qalo)	100	32	587.468	909.436	1295.37	0	1295.37	1632.17	1632.17
35	0.837505	1350.1	31.7059	Old Alluvium (Qalo)	100	32	572.535	886.318	1258.37	0	1258.37	1612.06	1612.06
36	0.837505	1329.41	33.6251	Old Alluvium (Qalo)	100	32	556.057	860.809	1217.55	0	1217.55	1587.35	1587.35
37	0.837505	1304.59	35.5882	Old Alluvium (Qalo)	100	32	537.967	832.805	1172.73	0	1172.73	1557.71	1557.71
38	0.837505	1275.37	37.6007	Old Alluvium (Qalo)	100	32	518.194	802.195	1123.75	0	1123.75	1522.82	1522.82
39	0.837505	1241.45	39.6692	Old Alluvium (Qalo)	100	32	496.673	768.879	1070.43	0	1070.43	1482.32	1482.32
40	0.837505	1202.33	41.8019	Old Alluvium (Qalo)	100	32	473.264	732.641	1012.44	0	1012.44	1435.62	1435.62
41	0.837505	1157.45	44.0082	Old Alluvium (Qalo)	100	32	447.835	693.275	949.435	0	949.435	1382.03	1382.03
42	0.837505	1106.17	46.3001	Old Alluvium (Qalo)	100	32	420.23	650.542	881.048	0	881.048	1320.8	1320.8
43	0.837505	1047.65	48.6926	Old Alluvium (Qalo)	100	32	390.263	604.151	806.813	0	806.813	1250.92	1250.92
44	0.837505	980.815	51.2052	Old Alluvium (Qalo)	100	32	357.703	553.745	726.144	0	726.144	1171.12	1171.12
45	0.837505	900.125	53.8639	Old Alluvium (Qalo)	100	32	375.631	581.499	770.563	0	770.563	1285	1285
46	0.837505	800.34	56.7048	Old Alluvium (Qalo)	100	32	341.412	528.526	685.784	0	685.784	1205.63	1205.63
47	0.837505	685.791	59.7808	Old Alluvium (Qalo)	100	32	292.993	453.57	565.829	0	565.829	1068.85	1068.85
48	0.837505	552.095	63.1755	Old Alluvium (Qalo)	100	32	240.013	371.554	434.578	0	434.578	909.218	909.218

49	0.938574	424.906	67.3125	Young Alluvium (Qaly)	100	30	172.651	267.274	289.728	0	289.728	702.717	702.717
50	0.938574	156.077	72.7055	Young Alluvium (Qaly)	100	30	100.033	154.858	95.0159	0	95.0159	416.294	416.294

Global Minimum Query (spencer) - Safety Factor: 1.64726

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.666498	17.2952	1.95544	Old Alluvium (Qalo)	100	32	83.5311	137.597	60.1684	0	60.1684	63.0203	63.0203
2	0.666498	51.4631	2.86245	Old Alluvium (Qalo)	100	32	105.176	173.253	117.229	0	117.229	122.488	122.488
3	0.666498	84.7845	3.77017	Old Alluvium (Qalo)	100	32	125.633	206.95	171.157	0	171.157	179.435	179.435
4	0.666498	117.257	4.67884	Old Alluvium (Qalo)	100	32	144.945	238.762	222.065	0	222.065	233.928	233.928
5	0.666498	148.878	5.5887	Old Alluvium (Qalo)	100	32	163.153	268.755	270.064	0	270.064	286.029	286.029
6	0.666498	179.644	6.49997	Old Alluvium (Qalo)	100	32	180.296	296.994	315.256	0	315.256	335.798	335.798
7	0.666498	209.55	7.41289	Old Alluvium (Qalo)	100	32	196.409	323.536	357.733	0	357.733	383.287	383.287
8	0.666498	238.591	8.32772	Old Alluvium (Qalo)	100	32	211.526	348.438	397.584	0	397.584	428.547	428.547
9	0.666498	266.762	9.24468	Old Alluvium (Qalo)	100	32	225.677	371.749	434.89	0	434.89	471.623	471.623
10	0.666498	294.056	10.164	Old Alluvium (Qalo)	100	32	238.892	393.518	469.727	0	469.727	512.556	512.556
11	0.666498	320.466	11.0861	Old Alluvium (Qalo)	100	32	251.198	413.789	502.167	0	502.167	551.387	551.387
12	0.666498	345.983	12.011	Old Alluvium (Qalo)	100	32	262.62	432.604	532.278	0	532.278	588.153	588.153
13	0.666498	370.599	12.9391	Old Alluvium (Qalo)	100	32	273.182	450.002	560.12	0	560.12	622.883	622.883
14	0.666498	394.305	13.8707	Old Alluvium (Qalo)	100	32	282.905	466.018	585.752	0	585.752	655.61	655.61
15	0.666498	417.089	14.806	Old Alluvium (Qalo)	100	32	291.81	480.687	609.227	0	609.227	686.359	686.359
16	0.666498	438.939	15.7455	Old Alluvium (Qalo)	100	32	299.916	494.04	630.596	0	630.596	715.156	715.156
17	0.666498	459.844	16.6892	Old Alluvium (Qalo)	100	32	307.242	506.107	649.906	0	649.906	742.02	742.02
18	0.666498	479.79	17.6377	Old Alluvium (Qalo)	100	32	313.802	516.914	667.201	0	667.201	766.973	766.973
19	0.666498	498.761	18.5911	Old Alluvium (Qalo)	100	32	319.614	526.488	682.524	0	682.524	790.031	790.031
20	0.666498	516.741	19.55	Old Alluvium (Qalo)	100	32	324.692	534.852	695.91	0	695.91	811.208	811.208
21	0.666498	533.714	20.5146	Old Alluvium (Qalo)	100	32	329.049	542.029	707.394	0	707.394	830.515	830.515
22	0.666498	549.661	21.4852	Old Alluvium (Qalo)	100	32	332.697	548.038	717.01	0	717.01	847.963	847.963
23	0.666498	564.561	22.4625	Old Alluvium (Qalo)	100	32	335.647	552.898	724.789	0	724.789	863.561	863.561

24	0.666498	578.392	23.4466	Old Alluvium (Qalo)	100	32	337.911	556.627	730.755	0	730.755	877.308	877.308
25	0.666498	591.131	24.4381	Old Alluvium (Qalo)	100	32	339.497	559.24	734.937	0	734.937	889.212	889.212
26	0.666498	602.752	25.4376	Old Alluvium (Qalo)	100	32	340.414	560.751	737.357	0	737.357	899.271	899.271
27	0.666498	613.228	26.4453	Old Alluvium (Qalo)	100	32	340.672	561.175	738.035	0	738.035	907.482	907.482
28	0.666498	622.529	27.462	Old Alluvium (Qalo)	100	32	340.276	560.523	736.99	0	736.99	913.84	913.84
29	0.666498	630.623	28.4881	Old Alluvium (Qalo)	100	32	339.232	558.804	734.241	0	734.241	918.339	918.339
30	0.666498	630.058	29.5243	Old Alluvium (Qalo)	100	32	334.305	550.688	721.252	0	721.252	910.58	910.58
31	0.666498	620.302	30.5713	Old Alluvium (Qalo)	100	32	325.436	536.078	697.87	0	697.87	890.113	890.113
32	0.666498	609.223	31.6297	Old Alluvium (Qalo)	100	32	316.14	520.765	673.366	0	673.366	868.082	868.082
33	0.666498	596.777	32.7002	Old Alluvium (Qalo)	100	32	306.422	504.757	647.747	0	647.747	844.468	844.468
34	0.666498	582.915	33.7838	Old Alluvium (Qalo)	100	32	296.285	488.058	621.023	0	621.023	819.247	819.247
35	0.666498	567.584	34.8812	Old Alluvium (Qalo)	100	32	285.731	470.673	593.201	0	593.201	792.39	792.39
36	0.666498	550.724	35.9936	Old Alluvium (Qalo)	100	32	274.762	452.605	564.286	0	564.286	763.865	763.865
37	0.666498	532.295	37.1218	Old Alluvium (Qalo)	100	32	263.391	433.873	534.307	0	534.307	733.666	733.666
38	0.666498	512.254	38.2672	Old Alluvium (Qalo)	100	32	251.628	414.496	503.298	0	503.298	701.787	701.787
39	0.666498	490.471	39.4308	Old Alluvium (Qalo)	100	32	239.455	394.444	471.209	0	471.209	668.115	668.115
40	0.666498	466.856	40.6143	Old Alluvium (Qalo)	100	32	226.872	373.717	438.038	0	438.038	632.589	632.589
41	0.666498	441.312	41.8192	Old Alluvium (Qalo)	100	32	213.88	352.316	403.789	0	403.789	595.149	595.149
42	0.666498	413.729	43.0471	Old Alluvium (Qalo)	100	32	200.48	330.242	368.464	0	368.464	555.723	555.723
43	0.666498	383.982	44.3002	Old Alluvium (Qalo)	100	32	186.671	307.495	332.06	0	332.06	514.226	514.226
44	0.666498	351.932	45.5807	Old Alluvium (Qalo)	100	32	172.452	284.074	294.58	0	294.58	470.564	470.564
45	0.666498	316.968	46.891	Old Alluvium (Qalo)	100	32	179.278	295.318	312.574	0	312.574	504.095	504.095
46	0.740151	301.366	48.3106	Young Alluvium (Qaly)	100	30	191.012	314.646	371.778	0	371.778	586.245	586.245
47	0.740151	242.513	49.8474	Young Alluvium (Qaly)	100	30	171.095	281.838	314.953	0	314.953	517.757	517.757
48	0.740151	179.339	51.4349	Young Alluvium (Qaly)	100	30	150.755	248.333	256.921	0	256.921	446.005	446.005

49	0.740151	111.381	53.0797	Young Alluvium (Qaly)	100	30	129.983	214.116	197.655	0	197.655	370.648	370.648
50	0.740151	38.0712	54.79	Young Alluvium (Qaly)	100	30	109.072	179.67	137.992	0	137.992	292.554	292.554

Interslice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.65387

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	1143.96	5256.84	0	0	0
2	1144.63	5256.86	45.6271	0	0
3	1145.29	5256.9	101.743	0	0
4	1145.96	5256.94	166.927	0	0
5	1146.63	5257	239.815	0	0
6	1147.29	5257.06	319.099	0	0
7	1147.96	5257.14	403.523	0	0
8	1148.63	5257.22	491.884	0	0
9	1149.29	5257.32	583.023	0	0
10	1149.96	5257.43	675.832	0	0
11	1150.63	5257.55	769.245	0	0
12	1151.29	5257.68	862.243	0	0
13	1151.96	5257.82	953.846	0	0
14	1152.63	5257.97	1043.12	0	0
15	1153.29	5258.14	1129.16	0	0
16	1153.96	5258.32	1211.12	0	0
17	1154.62	5258.5	1288.18	0	0
18	1155.29	5258.7	1359.55	0	0
19	1155.96	5258.92	1424.5	0	0
20	1156.62	5259.14	1482.32	0	0
21	1157.29	5259.38	1532.35	0	0
22	1157.96	5259.63	1573.97	0	0
23	1158.62	5259.89	1606.58	0	0
24	1159.29	5260.16	1629.64	0	0
25	1159.96	5260.45	1642.64	0	0
26	1160.62	5260.76	1645.12	0	0
27	1161.29	5261.07	1636.65	0	0
28	1161.96	5261.4	1616.86	0	0
29	1162.62	5261.75	1585.41	0	0
30	1163.29	5262.11	1542.02	0	0
31	1163.96	5262.49	1487.62	0	0
32	1164.62	5262.88	1423.7	0	0
33	1165.29	5263.29	1350.73	0	0
34	1165.96	5263.72	1269.26	0	0
35	1166.62	5264.17	1179.94	0	0
36	1167.29	5264.63	1083.51	0	0
37	1167.95	5265.12	980.82	0	0
38	1168.62	5265.62	872.834	0	0
39	1169.29	5266.15	760.64	0	0
40	1169.95	5266.69	645.491	0	0
41	1170.62	5267.27	528.812	0	0
42	1171.29	5267.86	412.226	0	0
43	1171.95	5268.48	297.577	0	0
44	1172.62	5269.14	186.971	0	0
45	1173.29	5269.82	82.8133	0	0
46	1173.95	5270.53	-25.5344	0	0
47	1174.69	5271.36	-175.728	0	0
48	1175.43	5272.24	-304.977	0	0
49	1176.17	5273.16	-406.727	0	0
50	1176.91	5274.15	-473.173	0	0
51	1177.65	5275.2	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.54806

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	1135.67	5256.8	0	0	0
2	1136.54	5256.34	112.035	0	0
3	1137.41	5255.91	254.293	0	0
4	1138.28	5255.52	419.801	0	0
5	1139.14	5255.16	602.624	0	0
6	1140.01	5254.84	797.683	0	0
7	1140.88	5254.54	1000.62	0	0
8	1141.75	5254.27	1207.67	0	0
9	1142.62	5254.04	1415.61	0	0
10	1143.49	5253.83	1621.66	0	0
11	1144.36	5253.64	1829.36	0	0
12	1145.23	5253.49	2065.07	0	0
13	1146.1	5253.36	2326.55	0	0
14	1146.97	5253.26	2607.62	0	0
15	1147.84	5253.18	2902.62	0	0
16	1148.71	5253.13	3206.34	0	0
17	1149.58	5253.1	3513.96	0	0
18	1150.45	5253.1	3821.02	0	0
19	1151.32	5253.13	4123.4	0	0
20	1152.19	5253.18	4417.26	0	0
21	1153.06	5253.26	4699.04	0	0
22	1153.93	5253.36	4965.43	0	0
23	1154.8	5253.49	5213.34	0	0
24	1155.67	5253.64	5439.92	0	0
25	1156.54	5253.83	5642.52	0	0
26	1157.41	5254.04	5818.7	0	0
27	1158.28	5254.27	5966.23	0	0
28	1159.15	5254.54	6083.07	0	0
29	1160.02	5254.84	6167.38	0	0
30	1160.89	5255.16	6217.54	0	0
31	1161.76	5255.52	6232.17	0	0
32	1162.63	5255.91	6210.1	0	0
33	1163.5	5256.34	6150.5	0	0
34	1164.37	5256.8	6054.7	0	0
35	1165.21	5257.28	5924.74	0	0
36	1166.05	5257.8	5753.19	0	0
37	1166.89	5258.35	5540.75	0	0
38	1167.72	5258.95	5288.44	0	0
39	1168.56	5259.6	4997.63	0	0
40	1169.4	5260.29	4670.13	0	0
41	1170.24	5261.04	4308.31	0	0
42	1171.07	5261.85	3915.27	0	0
43	1171.91	5262.73	3495.06	0	0
44	1172.75	5263.68	3052.96	0	0
45	1173.59	5264.72	2596.01	0	0
46	1174.42	5265.87	2072.35	0	0
47	1175.26	5267.14	1537.95	0	0
48	1176.1	5268.58	1023.92	0	0
49	1176.94	5270.24	559.367	0	0
50	1177.88	5272.48	131.667	0	0
51	1178.81	5275.5	0	0	0

Global Minimum Query (spencer) - Safety Factor: 1.64726

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	1143.96	5256.84	0	0	0
2	1144.63	5256.86	54.1583	25.0868	24.8542
3	1145.29	5256.9	120.168	55.6633	24.8542
4	1145.96	5256.94	196.165	90.8663	24.8542
5	1146.63	5257	280.404	129.887	24.8542
6	1147.29	5257.06	371.248	171.967	24.8542
7	1147.96	5257.14	467.16	216.394	24.8541
8	1148.63	5257.22	566.702	262.503	24.8541
9	1149.29	5257.32	668.525	309.669	24.8542
10	1149.96	5257.43	771.367	357.307	24.8542
11	1150.63	5257.55	874.043	404.868	24.8542
12	1151.29	5257.68	975.448	451.84	24.8542
13	1151.96	5257.82	1074.55	497.744	24.8541
14	1152.63	5257.97	1170.38	542.133	24.8541
15	1153.29	5258.14	1262.03	584.59	24.8542
16	1153.96	5258.32	1348.69	624.729	24.8541
17	1154.62	5258.5	1429.56	662.19	24.8542
18	1155.29	5258.7	1503.93	696.641	24.8542
19	1155.96	5258.92	1571.15	727.776	24.8542
20	1156.62	5259.14	1630.6	755.314	24.8542
21	1157.29	5259.38	1681.74	779.001	24.8541
22	1157.96	5259.63	1724.06	798.605	24.8541
23	1158.62	5259.89	1757.12	813.918	24.8541
24	1159.29	5260.16	1780.51	824.757	24.8542
25	1159.96	5260.45	1793.91	830.96	24.8541
26	1160.62	5260.76	1797	832.391	24.8541
27	1161.29	5261.07	1789.54	828.936	24.8541
28	1161.96	5261.4	1771.33	820.504	24.8542
29	1162.62	5261.75	1742.24	807.028	24.8542
30	1163.29	5262.11	1702.17	788.468	24.8542
31	1163.96	5262.49	1652.16	765.301	24.8542
32	1164.62	5262.88	1593.73	738.236	24.8542
33	1165.29	5263.29	1527.46	707.54	24.8542
34	1165.96	5263.72	1454	673.509	24.8541
35	1166.62	5264.17	1374.03	636.469	24.8542
36	1167.29	5264.63	1288.35	596.781	24.8542
37	1167.95	5265.12	1197.82	554.844	24.8541
38	1168.62	5265.62	1103.36	511.092	24.8542
39	1169.29	5266.15	1006.03	466.004	24.8541
40	1169.95	5266.69	906.949	420.11	24.8542
41	1170.62	5267.27	807.403	373.999	24.8542
42	1171.29	5267.86	708.792	328.321	24.8541
43	1171.95	5268.48	612.676	283.799	24.8541
44	1172.62	5269.14	520.788	241.236	24.8542
45	1173.29	5269.82	435.069	201.529	24.8541
46	1173.95	5270.53	346.769	160.628	24.8542
47	1174.69	5271.36	226.705	105.013	24.8542
48	1175.43	5272.24	124.583	57.7085	24.8542
49	1176.17	5273.16	45.2546	20.9625	24.8542
50	1176.91	5274.15	-5.6024	-2.5951	24.8541
51	1177.65	5275.2	0	0	0

Discharge Sections

Entity Information

◆ **Group 1**

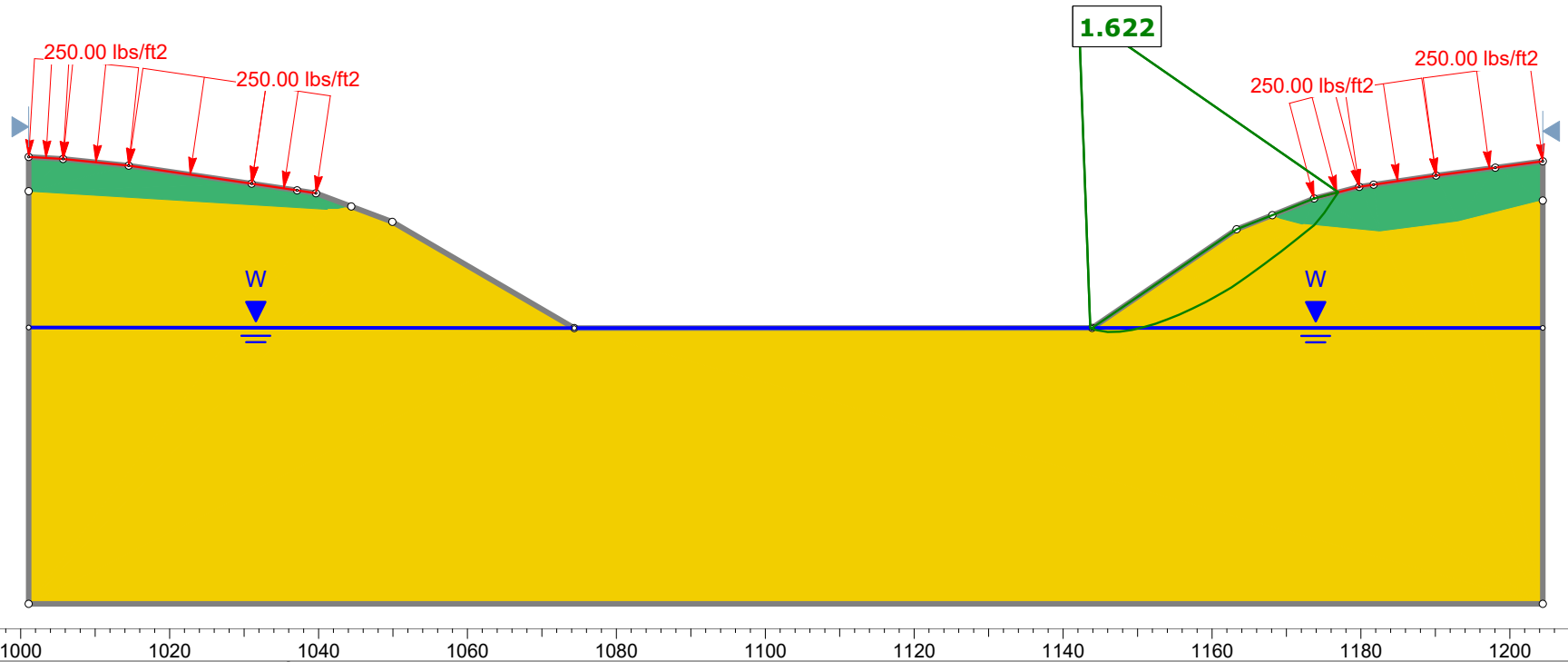
Shared Entities

Type	Coordinates (x,y)
External Boundary	1001.07, 5279.77
	1001.07, 5275.16
	1001.07, 5219.77
	1204.43, 5219.77
	1204.43, 5273.92
	1204.43, 5279.17
	1198.05, 5278.32
	1190.1, 5277.27
	1181.72, 5276.03
	1179.78, 5275.75
	1173.72, 5274.18
	1168.1, 5271.95
	1163.3, 5270.05
	1143.9, 5256.8
	1074.35, 5256.79
	1049.92, 5271.04
	1044.39, 5273.12
	1039.66, 5274.89
	1037.13, 5275.27
	1031.01, 5276.18
	1014.5, 5278.6
	1005.69, 5279.49
Material Boundary	1001.07, 5275.16
	1041.19, 5272.72
	1042.6, 5272.72
	1044.39, 5273.12
Material Boundary	1168.1, 5271.95
	1169.23, 5271.52
	1172.34, 5270.68
	1182.51, 5269.7
	1193.01, 5271.04
	1204.43, 5273.92

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario
Water Table	1001.07, 5256.86 1074.35, 5256.79 1143.9, 5256.8 1204.43, 5256.8	Assigned to:  Old Alluvium (Qalo)  Young Alluvium (Qaly)
Distributed Load	1039.66, 5274.89 1037.13, 5275.27 1031.01, 5276.18 1014.5, 5278.6 1005.69, 5279.49 1001.07, 5279.77	Constant DistributionOrientation: Normal to boundaryMagnitude: 250 lbs/ft2Creates Excess Pore Pressure: No
Distributed Load	1204.43, 5279.17 1198.05, 5278.32 1190.1, 5277.27 1181.72, 5276.03 1179.78, 5275.75 1173.72, 5274.18	Constant DistributionOrientation: Normal to boundaryMagnitude: 250 lbs/ft2Creates Excess Pore Pressure: No

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (°)	Water Surface	Hu Type	Hu
Old Alluvium (Qalo)		120	Mohr-Coulomb	100	32	Water Table	Custom	1
Young Alluvium (Qaly)		120	Mohr-Coulomb	100	30	Water Table	Custom	1



	Project	Sportsplex Dam Outfall Slope Stabilization	
	Analysis Description	Static - Graded Slope - Long-Term - NonCircular Failure Surfaces at Station	
	Drawn By	HMN	Company NV5
	Date	6/23/2026, 9:36:58 AM	File Name Static - Station 102+20 Right - Stabilized.slmd



Static - Station 102+20 Right - Stabilized
Slide2 - An Interactive Slope Stability Program
Date Created: 6/23/2026, 9:36:58 AM
Software Version: 9.04

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Slide2 Analysis Information

Static - Station 102+20 Right - Stabilized

Project Summary

File Name:	Static - Station 102+20 Right - Stabilized.slmd
Slide2 Modeler Version:	9.04
Compute Time:	00h:00m:05.744s
Project Title:	Slide2 - An Interactive Slope Stability Program
Date Created:	6/23/2026, 9:36:58 AM

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Data Output:	Standard
Failure Direction:	Right to Left

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	Bishop simplified
	Janbu simplified
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:

Pore Fluid Unit Weight [lbs/ft³]:

Advanced Groundwater Method:

Water Surfaces

62.4

None

Random Numbers

Pseudo-random Seed:

10116

Random Number Generation Method:

Park and Miller v.3

Surface Options

Search Method:	Cuckoo Search
Initial # of Surface Vertices:	8
Maximum Iterations:	500
Number of Nests:	50
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined
Convex Surfaces Only:	Enabled
Optimize Surfaces:	Enabled

Seismic Loading

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Loading

2 Distributed Loads present

Distributed Load 1	
Distribution:	Constant
Magnitude [psf]:	250
Orientation:	Normal to boundary
Distributed Load 2	
Distribution:	Constant
Magnitude [psf]:	250
Orientation:	Normal to boundary

Materials

Old Alluvium (Qalo)

Color	
Strength Type	Mohr-Coulomb
Unit Weight	120 lbs/ft3
Cohesion	100 psf
Phi	32 °
Water Surface	Water Table
Hu Type	Custom
Hu	1
Specify alternate strength type above water surface	No

Young Alluvium (Qaly)

Color	
Strength Type	Mohr-Coulomb
Unit Weight	120 lbs/ft3
Cohesion	100 psf
Phi	30 °
Water Surface	Water Table
Hu Type	Custom
Hu	1
Specify alternate strength type above water surface	No

Global Minimums

Method: bishop simplified

FS	1.540100
Axis Location:	1140.414, 5304.153
Left Slip Surface Endpoint:	1139.830, 5256.799
Right Slip Surface Endpoint:	1177.947, 5275.274
Resisting Moment:	1.03553e+06 lb-ft
Driving Moment:	672376 lb-ft
Total Slice Area:	248.391 ft ²
Surface Horizontal Width:	38.1162 ft
Surface Average Height:	6.51667 ft

Method: janbu simplified

FS	1.455720
Axis Location:	1140.207, 5303.189
Left Slip Surface Endpoint:	1139.828, 5256.799
Right Slip Surface Endpoint:	1177.091, 5275.052
Resisting Horizontal Force:	17552.2 lb
Driving Horizontal Force:	12057.4 lb
Total Slice Area:	258.043 ft ²
Surface Horizontal Width:	37.2631 ft
Surface Average Height:	6.92489 ft

Method: spencer

FS	1.621720
Axis Location:	1142.085, 5299.214
Left Slip Surface Endpoint:	1143.650, 5256.800
Right Slip Surface Endpoint:	1176.955, 5275.017
Resisting Moment:	652090 lb-ft
Driving Moment:	402097 lb-ft
Resisting Horizontal Force:	13171 lb
Driving Horizontal Force:	8121.59 lb
Total Slice Area:	162.065 ft ²
Surface Horizontal Width:	33.3051 ft
Surface Average Height:	4.86608 ft

Global Minimum Coordinates

Method: bishop simplified

X	Y
1139.83	5256.8
1140.95	5256.11
1142.08	5255.42
1143.41	5254.61
1145	5253.69
1146.27	5253.31
1147.46	5253.12
1148.67	5253.04
1149.89	5253.07
1151.83	5253.53
1153.76	5254.21
1155.69	5255.13
1157.57	5256.23
1159.36	5257.5
1161.19	5258.93
1162.5	5260.02
1163.81	5261.11
1165.12	5262.2
1166.43	5263.29
1168.21	5264.77
1170	5266.25
1171.24	5267.28
1172.48	5268.32
1173.72	5269.35
1175	5271.03
1176.28	5272.77
1177.11	5274.02
1177.95	5275.27

Method: janbu simplified

X	Y
1139.83	5256.8
1141.14	5255.94
1142.45	5255.12
1143.77	5254.3
1145.08	5253.53
1146.81	5253.04
1148.54	5252.86
1150.6	5252.98
1152.65	5253.34
1154.2	5253.87
1155.76	5254.53
1157.33	5255.39
1158.9	5256.36
1160.44	5257.65
1161.97	5258.94
1163.5	5260.25
1164.93	5261.48
1166.36	5262.71
1167.87	5264
1169.34	5265.36
1170.8	5266.74
1172.26	5268.12
1173.72	5269.5
1174.59	5270.9
1175.43	5272.29
1176.26	5273.67
1177.09	5275.05

Method: spencer

X	Y
1143.65	5256.8
1144.49	5256.51
1145.99	5256.26
1147.61	5256.31
1149.24	5256.53
1150.86	5256.93
1152.42	5257.38
1154.01	5257.96
1155.59	5258.58
1157.36	5259.39
1159.11	5260.26
1160.28	5260.91
1161.45	5261.57
1162.62	5262.25
1163.75	5263.03
1164.87	5263.81
1165.94	5264.59
1167	5265.37
1168.12	5266.2
1169.24	5267.03
1170.35	5267.91
1171.47	5268.81
1172.6	5269.7
1173.72	5270.59
1174.4	5271.41
1175.08	5272.26
1176.02	5273.64
1176.95	5275.02

Global Minimum Support Data

No Supports Present

Valid and Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 21648

Number of Invalid Surfaces: 53520

Error Codes

Error Code -106 reported for 14 surfaces

Error Code -108 reported for 85 surfaces

Error Code -109 reported for 14 surfaces

Error Code -111 reported for 390 surfaces

Error Code -112 reported for 574 surfaces

Error Code -121 reported for 2386 surfaces

Error Code -124 reported for 5 surfaces

Error Code -1000 reported for 50052 surfaces

Method: janbu simplified

Number of Valid Surfaces: 21266

Number of Invalid Surfaces: 53902

Error Codes

Error Code -106 reported for 14 surfaces

Error Code -108 reported for 76 surfaces

Error Code -109 reported for 14 surfaces

Error Code -111 reported for 674 surfaces

Error Code -112 reported for 521 surfaces

Error Code -121 reported for 2386 surfaces

Error Code -124 reported for 5 surfaces

Error Code -1000 reported for 50212 surfaces

Method: spencer

Number of Valid Surfaces: 20852

Number of Invalid Surfaces: 54316

Error Codes

Error Code -106 reported for 14 surfaces

Error Code -108 reported for 138 surfaces

Error Code -109 reported for 14 surfaces

Error Code -111 reported for 759 surfaces

Error Code -112 reported for 466 surfaces

Error Code -121 reported for 2386 surfaces

Error Code -124 reported for 5 surfaces

Error Code -1000 reported for 50534 surfaces

Error Code Descriptions

The following errors were encountered during the computation:

-106 = Average slice width is less than $0.0001 * (\text{maximum horizontal extent of soil region})$. This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.

-108 = Total driving moment or total driving force < 0.1 . This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).

-109 = Soiltype for slice base not located. It may occur for circular slip surfaces if a very low number of slices is combined with certain soil geometries, such that the midpoint of a slice base is actually outside the soil region, even though the slip surface is wholly within the soil region. It can also occur if the midpoint of a slice is above or too close to the external boundary.

-111 = Safety factor equation did not converge

-112 = The coefficient $M\text{-}\alpha = \cos(\alpha)(1 + \tan(\alpha)\tan(\phi)/F) < 0.2$ for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.

-121 = Concave failure surface, only convex surfaces have been defined as being allowed.

-124 = A slice has a width less than the minimum acceptable value.

-1000 = No valid slip surface is generated

Slice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.5401

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	1.12439	46.4255	-31.4618	Old Alluvium (Qalo)	100	32	97.0979	149.54	100.702	21.4211	79.2809	41.2892	19.8681
2	1.12438	139.275	-31.4618	Old Alluvium (Qalo)	100	32	118.491	182.489	196.372	64.3621	132.01	123.868	59.5064
3	1.32796	284.08	-31.4618	Old Alluvium (Qalo)	100	32	141.821	218.419	300.701	111.19	189.511	213.922	102.732
4	0.797896	235.577	-30.121	Old Alluvium (Qalo)	100	32	161.467	248.676	388.926	150.995	237.931	295.248	144.253
5	0.797896	322.128	-30.121	Old Alluvium (Qalo)	100	32	203.7	313.719	521.903	179.881	342.022	403.723	223.842
6	0.63491	318.358	-16.3893	Old Alluvium (Qalo)	100	32	212.528	327.314	563.928	200.15	363.778	501.421	301.271
7	0.63491	365.626	-16.3893	Old Alluvium (Qalo)	100	32	241.458	371.87	646.886	211.803	435.083	575.87	364.067
8	0.594537	382.465	-9.29585	Old Alluvium (Qalo)	100	32	253.224	389.991	684.747	220.665	464.082	643.299	422.634
9	0.594537	418.38	-9.29585	Old Alluvium (Qalo)	100	32	276.839	426.359	749.022	226.737	522.285	703.708	476.971
10	0.604495	460.004	-3.60762	Old Alluvium (Qalo)	100	32	287.324	442.507	779.088	230.963	548.125	760.972	530.009
11	0.604495	492.72	-3.60762	Old Alluvium (Qalo)	100	32	308.868	475.688	834.568	233.341	601.227	815.094	581.753
12	0.608785	527.386	1.27135	Old Alluvium (Qalo)	100	32	318.56	490.615	859.223	234.109	625.114	866.293	632.184
13	0.608785	556.777	1.27135	Old Alluvium (Qalo)	100	32	338.312	521.035	907.062	233.266	673.796	914.57	681.304
14	0.646329	617.911	13.2983	Old Alluvium (Qalo)	100	32	328.759	506.321	878.327	228.078	650.249	956.032	727.954
15	0.646329	640.303	13.2983	Old Alluvium (Qalo)	100	32	345.114	531.51	909.105	218.545	690.56	990.676	772.131
16	0.646329	662.695	13.2983	Old Alluvium (Qalo)	100	32	361.469	556.699	939.884	209.013	730.871	1025.32	816.307
17	0.965149	1024.65	19.5315	Old Alluvium (Qalo)	100	32	364.659	561.611	932.296	193.564	738.732	1061.65	868.091
18	0.965149	1061.35	19.5315	Old Alluvium (Qalo)	100	32	385.723	594.052	962.848	172.2	790.648	1099.68	927.478
19	0.965512	1091.74	25.414	Old Alluvium (Qalo)	100	32	388.992	599.086	945.906	147.205	798.701	1130.73	983.524
20	0.965512	1114.99	25.414	Old Alluvium (Qalo)	100	32	406.923	626.702	961.482	118.579	842.903	1154.82	1036.25
21	0.94078	1102.94	30.3496	Old Alluvium (Qalo)	100	32	408.278	628.789	933.323	87.0799	846.243	1172.38	1085.3

22	0.94078	1113.3	30.3496	Old Alluvium (Qalo)	100	32	423.156	651.703	935.616	52.7075	882.909	1183.38	1130.67
23	0.80429	955.212	35.3272	Old Alluvium (Qalo)	100	32	419.088	645.437	890.616	17.7359	872.881	1187.65	1169.91
24	0.986255	1168.6	35.3272	Old Alluvium (Qalo)	100	32	423.806	652.703	884.511	0	884.511	1184.88	1184.88
25	0.91443	1077.21	37.9774	Old Alluvium (Qalo)	100	32	412.298	634.98	856.147	0	856.147	1178.01	1178.01
26	0.91443	1067.41	37.9774	Old Alluvium (Qalo)	100	32	408.997	629.897	848.012	0	848.012	1167.3	1167.3
27	0.65551	757.831	39.7498	Old Alluvium (Qalo)	100	32	399.267	614.911	824.03	0	824.03	1156.09	1156.09
28	0.65551	750.167	39.7498	Old Alluvium (Qalo)	100	32	395.72	609.448	815.287	0	815.287	1144.4	1144.4
29	0.65551	742.502	39.7498	Old Alluvium (Qalo)	100	32	392.173	603.985	806.545	0	806.545	1132.71	1132.71
30	0.65551	730.32	39.7498	Old Alluvium (Qalo)	100	32	386.535	595.302	792.649	0	792.649	1114.12	1114.12
31	0.65551	708.184	39.7498	Old Alluvium (Qalo)	100	32	376.291	579.525	767.401	0	767.401	1080.36	1080.36
32	0.65551	685.691	39.7498	Old Alluvium (Qalo)	100	32	365.881	563.494	741.745	0	741.745	1046.04	1046.04
33	0.655515	663.204	39.7498	Old Alluvium (Qalo)	100	32	355.472	547.462	716.089	0	716.089	1011.73	1011.73
34	0.655515	640.711	39.7498	Old Alluvium (Qalo)	100	32	345.063	531.431	690.433	0	690.433	977.417	977.417
35	0.890377	834.245	39.7498	Old Alluvium (Qalo)	100	32	332.788	512.527	660.181	0	660.181	936.956	936.956
36	0.890377	792.748	39.7498	Old Alluvium (Qalo)	100	32	318.649	490.752	625.334	0	625.334	890.35	890.35
37	0.890382	751.34	39.7498	Old Alluvium (Qalo)	100	32	304.54	469.022	590.558	0	590.558	843.839	843.839
38	0.890382	709.98	39.7498	Old Alluvium (Qalo)	100	32	290.448	447.319	555.826	0	555.826	797.388	797.388
39	0.621339	470.946	39.7498	Old Alluvium (Qalo)	100	32	278.485	428.895	526.341	0	526.341	757.953	757.953
40	0.621339	450.805	39.7498	Old Alluvium (Qalo)	100	32	268.651	413.75	502.104	0	502.104	725.538	725.538
41	0.621339	430.664	39.7498	Old Alluvium (Qalo)	100	32	258.818	398.605	477.868	0	477.868	693.122	693.122
42	0.621339	410.522	39.7498	Old Alluvium (Qalo)	100	32	248.984	383.46	453.631	0	453.631	660.707	660.707
43	0.61958	389.304	39.7498	Old Alluvium (Qalo)	100	32	239.164	368.336	429.428	0	429.428	628.337	628.337
44	0.61958	369.277	39.7498	Old Alluvium (Qalo)	100	32	229.358	353.234	405.258	0	405.258	596.012	596.012
45	0.84988	446.909	52.8088	Old Alluvium (Qalo)	100	32	247.405	381.028	449.738	0	449.738	775.786	775.786
46	0.429707	191.022	52.8088	Young Alluvium (Qaly)	100	30	217.731	335.327	407.599	0	407.599	694.54	694.54

47	0.639793	239.937	53.6417	Young Alluvium (Qaly)	100	30	198.27	305.355	355.686	0	355.686	625.022	625.022
48	0.639793	185.923	53.6417	Young Alluvium (Qaly)	100	30	177.3	273.06	299.748	0	299.748	540.599	540.599
49	0.833819	155.332	56.3103	Young Alluvium (Qaly)	100	30	146.248	225.236	216.916	0	216.916	436.29	436.29
50	0.833819	51.7774	56.3103	Young Alluvium (Qaly)	100	30	116.448	179.341	137.423	0	137.423	312.097	312.097

Global Minimum Query (janbu simplified) - Safety Factor: 1.45572

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.6562	16.8414	-33.093	Old Alluvium (Qalo)	100	32	102.748	149.572	92.6279	13.2964	79.3315	25.6654	12.369
2	0.6562	50.5243	-33.093	Old Alluvium (Qalo)	100	32	117.432	170.947	153.528	39.9881	113.54	76.9962	37.0081
3	0.656201	83.5119	-31.997	Old Alluvium (Qalo)	100	32	129.731	188.852	208.321	66.1287	142.192	127.266	61.1369
4	0.656201	115.804	-31.997	Old Alluvium (Qalo)	100	32	143.586	209.021	266.188	91.7181	174.47	176.476	84.7582
5	0.656205	148.097	-31.997	Old Alluvium (Qalo)	100	32	157.442	229.191	324.056	117.308	206.748	225.687	108.379
6	0.656205	180.389	-31.997	Old Alluvium (Qalo)	100	32	171.297	249.36	381.923	142.897	239.026	274.898	132.001
7	0.656206	222.846	-30.4145	Old Alluvium (Qalo)	100	32	190.474	277.277	451.414	167.712	283.702	339.599	171.887
8	0.656206	287.731	-30.4145	Old Alluvium (Qalo)	100	32	233.421	339.796	575.503	191.75	383.753	438.476	246.726
9	0.865017	466.045	-15.9538	Old Alluvium (Qalo)	100	32	238.442	347.105	606.934	211.484	395.45	538.77	327.286
10	0.865017	553.045	-15.9538	Old Alluvium (Qalo)	100	32	280.103	407.751	719.42	226.914	492.506	639.346	412.432
11	0.866695	633.241	-6.02301	Old Alluvium (Qalo)	100	32	293.684	427.521	761.625	237.483	524.142	730.639	493.156
12	0.866695	704.321	-6.02301	Old Alluvium (Qalo)	100	32	327.992	477.464	847.257	243.189	604.068	812.651	569.462
13	1.02705	916.16	3.44932	Old Alluvium (Qalo)	100	32	338.069	492.134	871.657	244.111	627.546	892.034	647.923
14	1.02705	994.989	3.44932	Old Alluvium (Qalo)	100	32	371.801	541.238	946.376	240.248	706.128	968.787	728.539
15	0.6847	703.935	9.84884	Old Alluvium (Qalo)	100	32	380.913	554.502	961.962	234.607	727.355	1028.09	793.485
16	0.6847	732.594	9.84884	Old Alluvium (Qalo)	100	32	400.596	583.156	1000.4	227.19	773.211	1069.95	842.758
17	0.6847	761.254	9.84884	Old Alluvium (Qalo)	100	32	420.281	611.811	1038.84	219.773	819.069	1111.81	892.033
18	0.775628	890.783	19.0342	Old Alluvium (Qalo)	100	32	411.565	599.123	1006.48	207.715	798.764	1148.47	940.751
19	0.775628	915.187	19.0342	Old Alluvium (Qalo)	100	32	429.571	625.335	1031.73	191.018	840.711	1179.93	988.911
20	0.78159	944.005	22.9872	Old Alluvium (Qalo)	100	32	434.123	631.961	1023.64	172.324	851.315	1207.8	1035.47
21	0.78159	962.978	22.9872	Old Alluvium (Qalo)	100	32	450.451	655.73	1040.99	151.635	889.354	1232.08	1080.44
22	0.784495	981.14	28.6343	Old Alluvium (Qalo)	100	32	446.083	649.372	1007.1	127.926	879.178	1250.66	1122.74
23	0.784495	991.261	28.6343	Old Alluvium (Qalo)	100	32	459.864	669.433	1012.48	101.198	911.283	1263.56	1162.37

24	0.784495	998.834	31.5908	Old Alluvium (Qalo)	100	32	462.019	672.57	989.086	72.7821	916.304	1273.22	1200.44
25	0.784495	1003.86	31.5908	Old Alluvium (Qalo)	100	32	474.418	690.62	987.868	42.6773	945.191	1279.63	1236.95
26	0.526967	673.367	40.0841	Old Alluvium (Qalo)	100	32	449.055	653.698	899.89	13.7877	886.102	1277.82	1264.03
27	1.00639	1271.31	40.0841	Old Alluvium (Qalo)	100	32	448.802	653.33	885.511	0	885.511	1263.22	1263.22
28	0.766681	955.471	40.1693	Old Alluvium (Qalo)	100	32	443.091	645.016	872.208	0	872.208	1246.24	1246.24
29	0.766681	944.107	40.1693	Old Alluvium (Qalo)	100	32	438.421	638.218	861.329	0	861.329	1231.42	1231.42
30	0.766682	932.317	40.5732	Old Alluvium (Qalo)	100	32	431.922	628.757	846.189	0	846.189	1216.04	1216.04
31	0.766682	919.394	40.5732	Old Alluvium (Qalo)	100	32	426.631	621.056	833.863	0	833.863	1199.18	1199.18
32	0.715341	833.637	40.5892	Old Alluvium (Qalo)	100	32	415.954	605.512	808.989	0	808.989	1165.37	1165.37
33	0.715341	805.31	40.5892	Old Alluvium (Qalo)	100	32	403.527	587.422	780.037	0	780.037	1125.77	1125.77
34	0.71534	776.983	40.5892	Old Alluvium (Qalo)	100	32	391.099	569.331	751.086	0	751.086	1086.17	1086.17
35	0.71534	748.656	40.5892	Old Alluvium (Qalo)	100	32	378.672	551.24	722.135	0	722.135	1046.57	1046.57
36	0.755654	760.081	40.5892	Old Alluvium (Qalo)	100	32	365.894	532.639	692.368	0	692.368	1005.86	1005.86
37	0.755654	728.472	40.5892	Old Alluvium (Qalo)	100	32	352.766	513.529	661.785	0	661.785	964.028	964.028
38	0.732206	673.375	42.9284	Old Alluvium (Qalo)	100	32	331.21	482.149	611.566	0	611.566	919.651	919.651
39	0.732206	639.064	42.9284	Old Alluvium (Qalo)	100	32	316.835	461.223	578.078	0	578.078	872.792	872.792
40	0.732206	604.346	43.3179	Old Alluvium (Qalo)	100	32	301.111	438.333	541.446	0	541.446	825.377	825.377
41	0.732206	569.219	43.3179	Old Alluvium (Qalo)	100	32	286.451	416.993	507.295	0	507.295	777.402	777.402
42	0.728857	531.622	43.4191	Old Alluvium (Qalo)	100	32	271.503	395.232	472.47	0	472.47	729.389	729.389
43	0.728857	496.601	43.4191	Old Alluvium (Qalo)	100	32	256.836	373.881	438.301	0	438.301	681.341	681.341
44	0.729258	461.818	43.4254	Old Alluvium (Qalo)	100	32	242.146	352.497	404.081	0	404.081	633.271	633.271
45	0.729258	426.746	43.4254	Old Alluvium (Qalo)	100	32	227.467	331.128	369.881	0	369.881	585.177	585.177
46	0.616353	315.267	58.011	Old Alluvium (Qalo)	100	32	234.395	341.213	386.021	0	386.021	761.291	761.291
47	0.257557	113.615	58.011	Young Alluvium (Qaly)	100	30	209.667	305.216	355.445	0	355.445	691.124	691.124
48	0.832574	291.668	58.9556	Young Alluvium (Qaly)	100	30	184.933	269.21	293.079	0	293.079	600.32	600.32

49	0.832574	175.001	58.9557	Young Alluvium (Qaly)	100	30	151.431	220.441	208.609	0	208.609	460.192	460.192
50	0.832574	58.3336	58.9557	Young Alluvium (Qaly)	100	30	117.929	171.672	124.139	0	124.139	320.063	320.063

Global Minimum Query (spencer) - Safety Factor: 1.62172

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	0.839442	28.6127	-18.8012	Old Alluvium (Qalo)	100	32	119.225	193.349	158.259	8.86947	149.389	117.668	108.799
2	0.751207	90.934	-9.68438	Old Alluvium (Qalo)	100	32	143.486	232.694	234.141	21.7858	212.355	209.655	187.869
3	0.751207	148.744	-9.68438	Old Alluvium (Qalo)	100	32	183.78	298.039	346.714	29.7852	316.928	315.351	285.566
4	0.808965	216.97	1.68918	Old Alluvium (Qalo)	100	32	182.219	295.509	345.92	33.0406	312.88	351.294	318.253
5	0.808965	268.294	1.68918	Old Alluvium (Qalo)	100	32	212.032	343.857	421.804	31.5519	390.252	428.057	396.505
6	0.813237	317.22	7.73807	Old Alluvium (Qalo)	100	32	219.744	356.364	437.628	27.3598	410.268	467.487	440.128
7	0.813237	360.644	7.73807	Old Alluvium (Qalo)	100	32	244.861	397.096	495.918	20.4644	475.453	529.19	508.726
8	0.547226	265.069	14.0304	Old Alluvium (Qalo)	100	32	242.745	393.665	482.713	12.7501	469.963	543.373	530.623
9	0.547226	280.635	14.0304	Old Alluvium (Qalo)	100	32	256.951	416.703	511.049	4.2171	506.832	575.259	571.042
10	0.531868	287.674	14.0304	Old Alluvium (Qalo)	100	32	269.2	436.567	538.62	0	538.62	605.891	605.891
11	0.777948	445.905	16.0172	Old Alluvium (Qalo)	100	32	273.775	443.987	550.494	0	550.494	629.087	629.087
12	0.777948	474.662	16.0172	Old Alluvium (Qalo)	100	32	287.172	465.713	585.263	0	585.263	667.702	667.702
13	0.797604	513.584	19.9888	Old Alluvium (Qalo)	100	32	283.785	460.219	576.471	0	576.471	679.697	679.697
14	0.797604	537.959	19.9888	Old Alluvium (Qalo)	100	32	294.207	477.122	603.522	0	603.522	710.539	710.539
15	0.788814	554.884	21.4924	Old Alluvium (Qalo)	100	32	298.006	483.283	613.381	0	613.381	730.723	730.723
16	0.788814	576.484	21.4924	Old Alluvium (Qalo)	100	32	307.136	498.088	637.074	0	637.074	758.011	758.011
17	0.58995	443.908	24.6482	Old Alluvium (Qalo)	100	32	301.288	488.605	621.897	0	621.897	760.144	760.144
18	0.58995	453.272	24.6482	Old Alluvium (Qalo)	100	32	306.332	496.785	634.989	0	634.989	775.551	775.551
19	0.58995	462.635	24.6482	Old Alluvium (Qalo)	100	32	311.376	504.965	648.081	0	648.081	790.957	790.957
20	0.876893	703.409	26.214	Old Alluvium (Qalo)	100	32	310.459	503.478	645.699	0	645.699	798.558	798.558
21	0.876893	721.004	26.214	Old Alluvium (Qalo)	100	32	316.687	513.577	661.862	0	661.862	817.787	817.787
22	0.584563	489.067	29.1685	Old Alluvium (Qalo)	100	32	308.539	500.364	640.717	0	640.717	812.931	812.931
23	0.584563	494.188	29.1685	Old Alluvium (Qalo)	100	32	311.139	504.58	647.463	0	647.463	821.128	821.128

24	1.16913	1003.34	29.3811	Old Alluvium (Qalo)	100	32	314.023	509.258	654.95	0	654.95	831.757	831.757
25	0.584563	508.591	30.3468	Old Alluvium (Qalo)	100	32	313.357	508.177	653.22	0	653.22	836.675	836.675
26	0.584563	512.593	30.3468	Old Alluvium (Qalo)	100	32	315.352	511.413	658.398	0	658.398	843.021	843.021
27	1.12564	987.016	34.5593	Old Alluvium (Qalo)	100	32	297.479	482.427	612.011	0	612.011	816.916	816.916
28	0.562821	480.592	34.8827	Old Alluvium (Qalo)	100	32	289.903	470.141	592.349	0	592.349	794.457	794.457
29	0.562821	469.124	34.8827	Old Alluvium (Qalo)	100	32	284.371	461.17	577.994	0	577.994	776.246	776.246
30	0.531981	432.306	36.1547	Old Alluvium (Qalo)	100	32	273.79	444.01	550.532	0	550.532	750.583	750.583
31	0.531981	420.922	36.1547	Old Alluvium (Qalo)	100	32	268.097	434.778	535.756	0	535.756	731.648	731.648
32	0.531981	409.539	36.1547	Old Alluvium (Qalo)	100	32	262.404	425.546	520.982	0	520.982	712.714	712.714
33	0.531981	398.155	36.1547	Old Alluvium (Qalo)	100	32	256.711	416.314	506.208	0	506.208	693.781	693.781
34	0.561608	407.727	36.645	Old Alluvium (Qalo)	100	32	249.041	403.874	486.301	0	486.301	671.559	671.559
35	0.561608	394.54	36.645	Old Alluvium (Qalo)	100	32	242.843	393.824	470.216	0	470.216	650.864	650.864
36	0.555511	377.239	36.7934	Old Alluvium (Qalo)	100	32	236.174	383.008	452.907	0	452.907	629.545	629.545
37	0.555511	364.241	36.7934	Old Alluvium (Qalo)	100	32	230.013	373.017	436.918	0	436.918	608.949	608.949
38	0.555496	350.407	38.3997	Old Alluvium (Qalo)	100	32	218.576	354.469	407.236	0	407.236	580.475	580.475
39	0.555496	335.757	38.3997	Old Alluvium (Qalo)	100	32	211.811	343.498	389.677	0	389.677	557.555	557.555
40	0.56246	325.038	38.3997	Old Alluvium (Qalo)	100	32	205.003	332.457	372.01	0	372.01	534.491	534.491
41	0.56246	310.018	38.3997	Old Alluvium (Qalo)	100	32	198.153	321.348	354.231	0	354.231	511.283	511.283
42	0.562463	294.999	38.3997	Old Alluvium (Qalo)	100	32	191.302	310.239	336.453	0	336.453	488.076	488.076
43	0.562463	279.979	38.3997	Old Alluvium (Qalo)	100	32	184.452	299.13	318.674	0	318.674	464.868	464.868
44	0.540713	254.992	38.3997	Old Alluvium (Qalo)	100	32	177.735	288.236	301.24	0	301.24	442.109	442.109
45	0.540713	241.11	38.3997	Old Alluvium (Qalo)	100	32	171.149	277.556	284.149	0	284.149	419.799	419.799
46	0.0451219	19.4928	38.3997	Young Alluvium (Qaly)	100	30	164.089	266.106	287.704	0	287.704	417.758	417.758
47	0.678014	265.926	50.4173	Young Alluvium (Qaly)	100	30	183.111	296.954	341.135	0	341.135	562.613	562.613
48	0.678014	212.395	51.3145	Young Alluvium (Qaly)	100	30	165.531	268.445	291.755	0	291.755	498.479	498.479

49	0.937981	192.041	55.8	Young Alluvium (Qaly)	100	30	135.027	218.976	206.072	0	206.072	404.757	404.757
50	0.937981	64.0136	55.8	Young Alluvium (Qaly)	100	30	111.468	180.769	139.897	0	139.897	303.917	303.917

Interslice Data

Global Minimum Query (bishop simplified) - Safety Factor: 1.5401

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	1139.83	5256.8	0	0	0
2	1140.95	5256.11	178.459	0	0
3	1142.08	5255.42	446.79	0	0
4	1143.41	5254.61	879.46	0	0
5	1144.21	5254.15	1188.33	0	0
6	1145	5253.69	1592.46	0	0
7	1145.64	5253.5	1832.7	0	0
8	1146.27	5253.31	2106.81	0	0
9	1146.87	5253.21	2323.99	0	0
10	1147.46	5253.12	2561.47	0	0
11	1148.07	5253.08	2764.85	0	0
12	1148.67	5253.04	2983.37	0	0
13	1149.28	5253.05	3165.7	0	0
14	1149.89	5253.07	3359.4	0	0
15	1150.53	5253.22	3437.71	0	0
16	1151.18	5253.37	3521.89	0	0
17	1151.83	5253.53	3611.93	0	0
18	1152.79	5253.87	3644.69	0	0
19	1153.76	5254.21	3687.31	0	0
20	1154.72	5254.67	3628.96	0	0
21	1155.69	5255.13	3580.77	0	0
22	1156.63	5255.68	3450.76	0	0
23	1157.57	5256.23	3333.48	0	0
24	1158.37	5256.8	3162.86	0	0
25	1159.36	5257.5	2962.56	0	0
26	1160.28	5258.21	2728.41	0	0
27	1161.19	5258.93	2497.06	0	0
28	1161.85	5259.47	2309.54	0	0
29	1162.5	5260.02	2124.46	0	0
30	1163.16	5260.56	1941.83	0	0
31	1163.81	5261.11	1763.07	0	0
32	1164.47	5261.65	1591.36	0	0
33	1165.12	5262.2	1426.82	0	0
34	1165.78	5262.74	1269.43	0	0
35	1166.43	5263.29	1119.22	0	0
36	1167.32	5264.03	926.65	0	0
37	1168.21	5264.77	747.3	0	0
38	1169.1	5265.51	581.138	0	0
39	1170	5266.25	428.149	0	0
40	1170.62	5266.77	329.191	0	0
41	1171.24	5267.28	236.648	0	0
42	1171.86	5267.8	150.52	0	0
43	1172.48	5268.32	70.8056	0	0
44	1173.1	5268.83	-2.29521	0	0
45	1173.72	5269.35	-69.0177	0	0
46	1174.57	5270.47	-307.499	0	0
47	1175	5271.03	-416.958	0	0
48	1175.64	5271.9	-557.843	0	0
49	1176.28	5272.77	-663.527	0	0
50	1177.11	5274.02	-758.939	0	0
51	1177.95	5275.27	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.45572

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	1139.83	5256.8	0	0	0
2	1140.48	5256.37	107.036	0	0
3	1141.14	5255.94	249.752	0	0
4	1141.8	5255.53	420.292	0	0
5	1142.45	5255.12	623.649	0	0
6	1143.11	5254.71	859.825	0	0
7	1143.77	5254.3	1128.82	0	0
8	1144.42	5253.92	1427.7	0	0
9	1145.08	5253.53	1802.57	0	0
10	1145.94	5253.29	2158.91	0	0
11	1146.81	5253.04	2579.11	0	0
12	1147.67	5252.95	2903.29	0	0
13	1148.54	5252.86	3265.04	0	0
14	1149.57	5252.92	3558.29	0	0
15	1150.6	5252.98	3881.57	0	0
16	1151.28	5253.1	4028.03	0	0
17	1151.96	5253.22	4183.4	0	0
18	1152.65	5253.34	4347.68	0	0
19	1153.42	5253.6	4397.58	0	0
20	1154.2	5253.87	4454.69	0	0
21	1154.98	5254.2	4454.6	0	0
22	1155.76	5254.53	4461.52	0	0
23	1156.55	5254.96	4380.1	0	0
24	1157.33	5255.39	4307.18	0	0
25	1158.12	5255.87	4192.45	0	0
26	1158.9	5256.36	4088.04	0	0
27	1159.43	5256.8	3925.58	0	0
28	1160.44	5257.65	3627.23	0	0
29	1161.2	5258.29	3402.46	0	0
30	1161.97	5258.94	3181.14	0	0
31	1162.74	5259.6	2956.76	0	0
32	1163.5	5260.25	2736.42	0	0
33	1164.22	5260.87	2538.15	0	0
34	1164.93	5261.48	2348.74	0	0
35	1165.65	5262.09	2168.17	0	0
36	1166.36	5262.71	1996.47	0	0
37	1167.12	5263.35	1824.7	0	0
38	1167.87	5264	1662.81	0	0
39	1168.61	5264.68	1488.8	0	0
40	1169.34	5265.36	1327.07	0	0
41	1170.07	5266.05	1173.72	0	0
42	1170.8	5266.74	1033.21	0	0
43	1171.53	5267.43	905.228	0	0
44	1172.26	5268.12	790.126	0	0
45	1172.99	5268.81	687.802	0	0
46	1173.72	5269.5	598.378	0	0
47	1174.34	5270.49	401.772	0	0
48	1174.59	5270.9	325.869	0	0
49	1175.43	5272.29	128.318	0	0
50	1176.26	5273.67	19.7146	0	0
51	1177.09	5275.05	0	0	0

Global Minimum Query (spencer) - Safety Factor: 1.62172

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	1143.65	5256.8	0	0	0
2	1144.49	5256.51	145.311	70.1868	25.781
3	1145.24	5256.39	283.114	136.747	25.781
4	1145.99	5256.26	465.617	224.899	25.7811
5	1146.8	5256.28	604.774	292.113	25.7811
6	1147.61	5256.31	766.237	370.101	25.7811
7	1148.42	5256.42	896.581	433.059	25.7811
8	1149.24	5256.53	1040.91	502.772	25.7811
9	1149.78	5256.66	1107.74	535.05	25.781
10	1150.33	5256.8	1178.46	569.211	25.7811
11	1150.86	5256.93	1250.05	603.791	25.7812
12	1151.64	5257.16	1340.1	647.282	25.781
13	1152.42	5257.38	1432.8	692.057	25.781
14	1153.22	5257.67	1491.89	720.602	25.7811
15	1154.01	5257.96	1551.45	749.371	25.7812
16	1154.8	5258.27	1596.01	770.891	25.7811
17	1155.59	5258.58	1640.41	792.336	25.7811
18	1156.18	5258.85	1649.8	796.874	25.7811
19	1156.77	5259.12	1658.63	801.138	25.7811
20	1157.36	5259.39	1666.89	805.128	25.7811
21	1158.24	5259.82	1660.35	801.968	25.7811
22	1159.11	5260.26	1652.29	798.075	25.7811
23	1159.7	5260.58	1623.6	784.216	25.781
24	1160.28	5260.91	1594.22	770.028	25.7811
25	1161.45	5261.57	1530.23	739.117	25.781
26	1162.04	5261.91	1489.85	719.615	25.7811
27	1162.62	5262.25	1448.87	699.82	25.781
28	1163.75	5263.03	1309.2	632.358	25.7811
29	1164.31	5263.42	1239.94	598.904	25.781
30	1164.87	5263.81	1173.2	566.667	25.781
31	1165.41	5264.2	1104.85	533.657	25.7812
32	1165.94	5264.59	1039.22	501.957	25.7812
33	1166.47	5264.98	976.307	471.568	25.7811
34	1167	5265.37	916.107	442.49	25.7811
35	1167.56	5265.78	852.807	411.916	25.7811
36	1168.12	5266.2	792.746	382.906	25.7811
37	1168.68	5266.62	735.771	355.386	25.7811
38	1169.24	5267.03	682.017	329.422	25.7811
39	1169.79	5267.47	624.139	301.466	25.7811
40	1170.35	5267.91	570.233	275.429	25.7811
41	1170.91	5268.36	519.698	251.02	25.7811
42	1171.47	5268.81	473.236	228.579	25.7811
43	1172.03	5269.25	430.846	208.104	25.7811
44	1172.6	5269.7	392.529	189.596	25.7811
45	1173.14	5270.13	359.533	173.659	25.7811
46	1173.68	5270.55	330.301	159.539	25.7811
47	1173.72	5270.59	327.588	158.229	25.7811
48	1174.4	5271.41	215.85	104.258	25.7811
49	1175.08	5272.26	124.91	60.3332	25.7812
50	1176.02	5273.64	27.8331	13.4437	25.7811
51	1176.95	5275.02	0	0	0

Discharge Sections

Entity Information

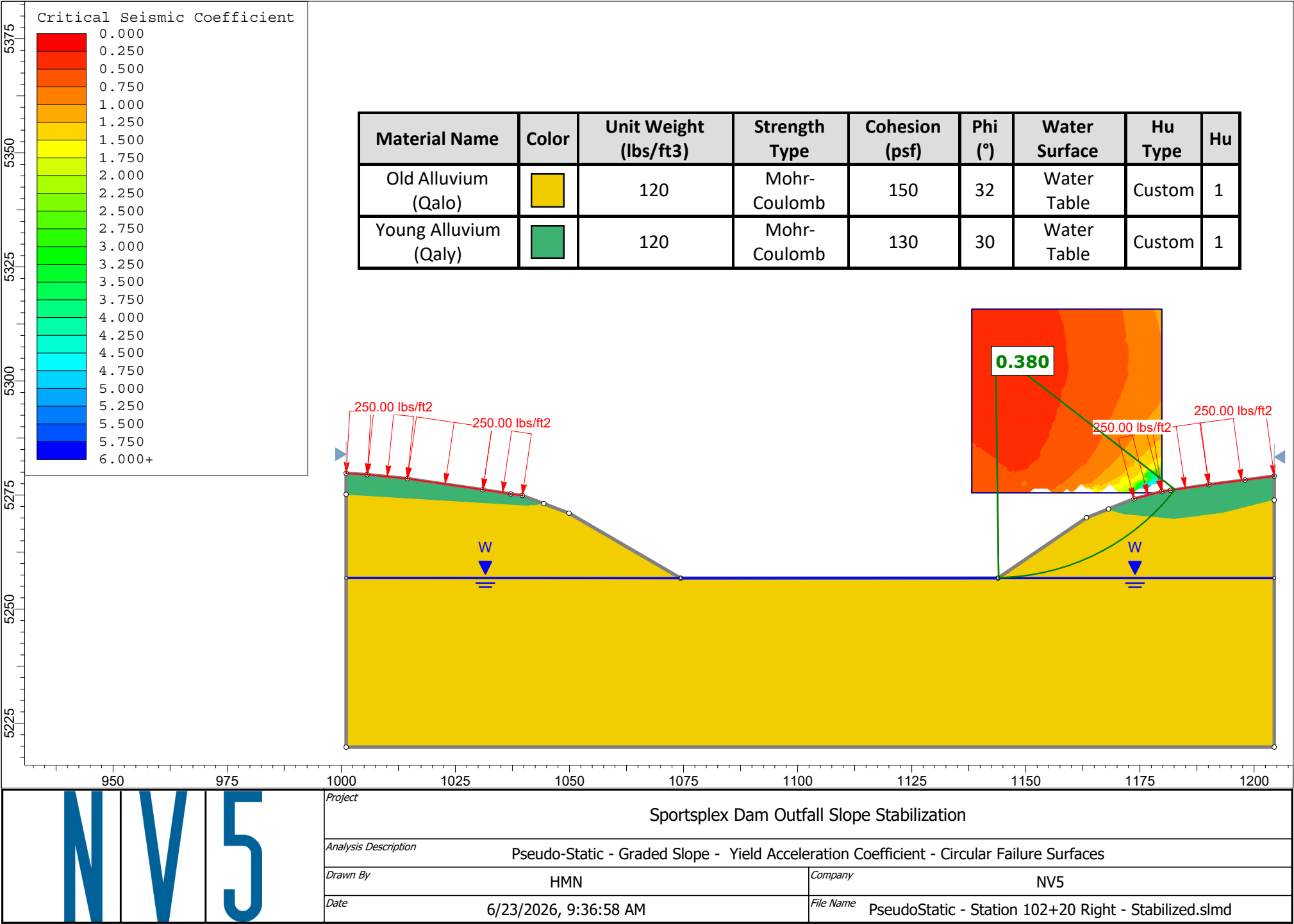
◆ **Group 1**

Shared Entities

Type	Coordinates (x,y)
External Boundary	1001.07, 5279.77
	1001.07, 5275.16
	1001.07, 5219.77
	1204.43, 5219.77
	1204.43, 5273.92
	1204.43, 5279.17
	1198.05, 5278.32
	1190.1, 5277.27
	1181.72, 5276.03
	1179.78, 5275.75
	1173.72, 5274.18
	1168.1, 5271.95
	1163.3, 5270.05
	1143.9, 5256.8
	1074.35, 5256.79
	1049.92, 5271.04
	1044.39, 5273.12
	1039.66, 5274.89
	1037.13, 5275.27
	1031.01, 5276.18
	1014.5, 5278.6
	1005.69, 5279.49
Material Boundary	1001.07, 5275.16
	1041.19, 5272.72
	1042.6, 5272.72
	1044.39, 5273.12
Material Boundary	1168.1, 5271.95
	1169.23, 5271.52
	1172.34, 5270.68
	1182.51, 5269.7
	1193.01, 5271.04
	1204.43, 5273.92

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario
Water Table	1001.07, 5256.86 1074.35, 5256.79 1143.9, 5256.8 1204.43, 5256.8	Assigned to:  Old Alluvium (Qalo)  Young Alluvium (Qaly)
Distributed Load	1039.66, 5274.89 1037.13, 5275.27 1031.01, 5276.18 1014.5, 5278.6 1005.69, 5279.49 1001.07, 5279.77	Constant DistributionOrientation: Normal to boundaryMagnitude: 250 lbs/ft2Creates Excess Pore Pressure: No
Distributed Load	1204.43, 5279.17 1198.05, 5278.32 1190.1, 5277.27 1181.72, 5276.03 1179.78, 5275.75 1173.72, 5274.18	Constant DistributionOrientation: Normal to boundaryMagnitude: 250 lbs/ft2Creates Excess Pore Pressure: No





PseudoStatic - Station 102+20 Right - Stabilized
Slide2 - An Interactive Slope Stability Program
Date Created: 6/23/2026, 9:36:58 AM
Software Version: 9.04

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Slide2 Analysis Information

PseudoStatic - Station 102+20 Right - Stabilized

Project Summary

File Name:	PseudoStatic - Station 102+20 Right - Stabilized.slmd
Last saved with Slide2 version:	9.04
Project Title:	Slide2 - An Interactive Slope Stability Program
Date Created:	6/23/2026, 9:36:58 AM

General Settings

Units of Measurement:

Time Units:

Permeability Units:

Data Output:

Failure Direction:

Imperial Units

days

feet/second

Standard

Right to Left

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	Bishop simplified
	Janbu simplified
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:

Pore Fluid Unit Weight [lbs/ft³]:

Advanced Groundwater Method:

Water Surfaces

62.4

None

Random Numbers

Pseudo-random Seed:

10116

Random Number Generation Method:

Park and Miller v.3

Surface Options

Surface Type:	Circular
Search Method:	Grid Search
Radius Increment:	10
Composite Surfaces:	Disabled
Reverse Curvature:	Invalid Surfaces
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

Advanced seismic analysis:	Yes
Locate surface with minimum critical horizontal seismic acceleration (K_y):	Yes
Target factor of safety:	1
Using Newmark analysis:	No
Staged pseudostatic analysis:	No

Loading

2 Distributed Loads present

Distributed Load 1	
Distribution:	Constant
Magnitude [psf]:	250
Orientation:	Normal to boundary
Distributed Load 2	
Distribution:	Constant
Magnitude [psf]:	250
Orientation:	Normal to boundary

Materials

Old Alluvium (Qalo)

Color	
Strength Type	Mohr-Coulomb
Unit Weight	120 lbs/ft3
Cohesion	150 psf
Phi	32 °
Water Surface	Water Table
Hu Type	Custom
Hu	1
Specify alternate strength type above water surface	No

Young Alluvium (Qaly)

Color	
Strength Type	Mohr-Coulomb
Unit Weight	120 lbs/ft3
Cohesion	130 psf
Phi	30 °
Water Surface	Water Table
Hu Type	Custom
Hu	1
Specify alternate strength type above water surface	No

Entity Information

◆ Group 1

Shared Entities

Type	Coordinates (x,y)
External Boundary	1001.07, 5279.77
	1001.07, 5275.16
	1001.07, 5219.77
	1204.43, 5219.77
	1204.43, 5273.92
	1204.43, 5279.17
	1198.05, 5278.32
	1190.1, 5277.27
	1181.72, 5276.03
	1179.78, 5275.75
	1173.72, 5274.18
	1168.1, 5271.95
	1163.3, 5270.05
	1143.9, 5256.8
	1074.35, 5256.79
	1049.92, 5271.04
	1044.39, 5273.12
	1039.66, 5274.89
	1037.13, 5275.27
	1031.01, 5276.18
	1014.5, 5278.6
	1005.69, 5279.49
Material Boundary	1001.07, 5275.16
	1041.19, 5272.72
	1042.6, 5272.72
	1044.39, 5273.12
Material Boundary	1168.1, 5271.95
	1169.23, 5271.52
	1172.34, 5270.68
	1182.51, 5269.7
	1193.01, 5271.04
	1204.43, 5273.92

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario
Water Table	1001.07, 5256.86 1074.35, 5256.79 1143.9, 5256.8 1204.43, 5256.8	Assigned to:  Old Alluvium (Qalo)  Young Alluvium (Qaly)
Distributed Load	1039.66, 5274.89 1037.13, 5275.27 1031.01, 5276.18 1014.5, 5278.6 1005.69, 5279.49 1001.07, 5279.77	Constant DistributionOrientation: Normal to boundaryMagnitude: 250 lbs/ft2Creates Excess Pore Pressure: No
Distributed Load	1204.43, 5279.17 1198.05, 5278.32 1190.1, 5277.27 1181.72, 5276.03 1179.78, 5275.75 1173.72, 5274.18	Constant DistributionOrientation: Normal to boundaryMagnitude: 250 lbs/ft2Creates Excess Pore Pressure: No

