Appendix B

Permits

Appendix B-1

Solid Waste Facility Permit

DAVID Y. IGE
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
File:

February 26, 2018 S0228LI

DEM	INFO	ACTION
DIRECTOR		
DEPUTY		
PERS		
WWR		
SW		✓
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SECTY		

CERTIFIED MAIL NO. 7016 1370 0001 1215 7596
RETURN RECEIPT REQUESTED

Mr. Stewart Stant, Director
Department of Environmental Management
County of Maui
One Main Plaza, Suite 2B
2050 Main Street
Wailuku, Hawaii 96793

Dear Mr. Stant:

SUBJECT: Solid Waste Management Permit LF-0074-13
Central Maui Landfill Phases I, II & IV, V, V-B Ext. and Entrance Facility
Pulehu Road, Puunene, Maui

This letter is in response to your solid waste permit applications dated October 2013 for renewal, February 2017 for modification to include Phase V-B Extension, and May 2017 for renewal of the transfer station area. The application form from the October 2013 permit application was only used to document request to renew the solid waste management permit. Attachments P1 to P6 and the submitted documents/plans with the February 2017 and May 2017 permit applications were used as a basis for approving the permit applications. The submitted documents included the Master Plan, Closure/Post Closure Plan, Landfill Operations Plan revised February 2017, and an Entrance Facility Operations Plan revised May 2017.

In accordance with Hawaii Revised Statutes, Chapter 342H and Hawaii Administrative Rules Chapter 11-58.1, the Department is issuing Solid Waste Management Permit LF-0074-13 (enclosed) for the closed Phases I and II, the current operation of Phases IV and V, the construction and operation of the new Phase V-B Extension, and the entrance facility at the Central Maui Municipal Solid Waste Landfill. The subject permit expires on February 25, 2023.

The public notice on the subject draft permit was published in *The Maui News* on January 7, 2018. The public notice stated that the Department was accepting comments for 30 days on the draft permit and application. During the public comment period from

January 7, 2018 to February 6, 2018, the Department of Health, Solid and Hazardous Waste Branch did not receive any public comments.

The permittee may appeal to the Director of Health any of the conditions to the subject permit. The appeal must be in writing and submitted to the Director of Health within 20 days after the receipt of this notice.

Hawaii Revised Statutes 342H-14 states that unless the submitted documents and other information secured by the Department from the permittees contain confidential information, such as secret processes or methods of manufacture, they shall be made available for inspection by the public. Please notify the Solid and Hazardous Waste Branch within 20 days of the receipt of this letter if you would like to make a claim of confidentiality. Otherwise, your entire application will be available for public inspection.

If you have any questions, please contact Ms. Lene Ichinotsubo of the Solid and Hazardous Waste Branch at (808) 586-4226.

Sincerely,

JOANNA SETO, P.E., ACTING CHIEF
Environmental Management Division

Enclosure: Solid Waste Management Permit No. LF-0074-13

c: Mr. Sage Kiyonaga, Solid Waste Division, County of Maui

PERMITTEE:
OWNER/OPERATOR:
County of Maui
Pulehu Road
Puunene, Hawaii

PERMIT NUMBER: LF-0074-13
DATE OF ISSUE: February 26, 2018
EXPIRATION DATE: February 25, 2023
COUNTY: Maui
LATITUDE/LONGITUDE: 20° 51'N/156° 25'W
PROJECT: Central Maui MSW Landfill

SOLID WASTE MANAGEMENT PERMIT

This solid waste management permit renewal and modification is issued under the provisions of Hawaii Revised Statutes (HRS), Chapter 342H, *Solid Waste Pollution*, and Hawaii Administrative Rules (HAR), Title 11, Chapter 58.1, *Solid Waste Management Control*. The above-named permittee is hereby authorized to maintain existing landfill, Phases I and II, maintain and operate, Phases IV and V, construct and operate the new Phase V-B Extension (Ext), and operate a materials drop-off facility, as shown on the application, additional submittals, and other documents on file with the Department of Health (DOH) as follows:

To Maintain/Construct: (1) A municipal solid waste (MSW) sanitary landfill consisting of approximately 42 acres in Phases I and II, approximately 18 acres in Phase IV (10 acres in Phase IV-A, 8 acres in Phase IV-B), approximately 19 acres in Phase V (Phase V-A and Phase V-B), and approximately 5 acres in Phase V-B Ext. Phases I and II are closed disposal areas constructed and placed in operation prior to 1993, and are not equipped with a bottom liner but do have a leachate collection system. Phase IV-A was constructed with a bottom and side slope composite liner system comprised of a 60-mil HDPE liner on top of a geosynthetic clay liner with a permeability of $5x10^{-9}$ cm/sec or less. Phases IV-B and V were, and Phase V-B Ext will be constructed with a prescribed liner system. Leachate from Phase IV-A is collected via a leachate manhole, leachate from Phases IV-B and V is collected via a sump in Phase IV-B, and leachate from Phase V-B Ext is collected via a sump in Phase V-B Ext.

Phases I and II were closed in 2007 and has a maximum elevation of 375 feet above mean sea level (MSL). Phases IV (Phase IV-A and IV-B) and V (Phase V-A and V-B) have already been constructed and are currently active. The newest expansion, Phase V-B Ext shall be limited to the 4.7-acre area as indicated in the Phase V-B Ext Design Report and Detailed Design Drawings prepared by A-Mehr, Inc., updated February 2017. Phases IV, V, and V-B Ext are contiguous and shall be limited to a maximum elevation of 390 feet above MSL.

Not included in the landfill acreage are areas used for appurtenant uses such as offices, equipment and maintenance facilities, leachate management facilities consisting of a leachate manhole and aboveground tanks, landfill gas management area, transfer station, soil stockpile area, buffer zones, stormwater management system, perimeter road, and parking.

(2) A transfer station, including a self-haul waste drop-off area, recyclables (fiber, plastic, glass and metal) collection and special waste (white goods, used oil, lead acid batteries and tires) collection.

To Operate: (1) An MSW sanitary landfill consisting of approximately 42 acres of closed landfill in Phases I and II (for post-closure care purposes only), approximately 18 acres in Phase IV, approximately 19 acres in Phase V, and approximately 5 acres in Phase V-B Ext.

The peak daily disposal rate for MSW shall not exceed 1200 tons per day. Adequate equipment and personnel to operate the MSW landfill facility shall be maintained. At the nominal operating rate of 800 tons per day, the site shall have a minimum of one bulldozer, one compactor, one water truck and one spotter. Greater than a nominal rate of 800 tons to a peak daily rate of 1200 tons per day will require a minimum of two bulldozers, one compactor, one water truck and two spotters. These requirements shall be met unless otherwise approved by the DOH.

(2) A transfer station, including a self-haul waste drop-off area, recyclables (fiber, plastic, glass and metal) collection and special waste (white goods, used oil, lead acid batteries and tires) collection.

IN ACCORDANCE WITH:
(a) The 'As-Built' drawings for Phases I and II, and The Closure and Post Closure Plan, dated February 2008, and last revised February 2017;
(b) 'As-Built' drawings dated September 1, 2004 for Phases IV-A, February 8, 2007 for IV-B, September 21, 2009 for V-A, and November 11, 2010 for V-B;
(c) the permit application for renewal dated October 2013, and the permit application for modification for Phase V-B Ext dated February 2017;
(d) the revised operations plan dated September 2004 and last revised in February 2017, prepared by A-Mehr, Inc. and submitted by the County of Maui, Department of Environmental Management;
(e) the master plan dated February 2017, prepared by A-Mehr, Inc.;
(f) the transfer station permit application dated May 2017;
(g) the updated Groundwater and Leachate Monitoring Plan dated January 2013 and supplemental reports, Groundwater Well Network Analysis dated February 2014, prepared by Element Environmental, LLC, and Conceptual Site Model dated February 2016, prepared by CH2M Hill;
(h) email correspondence from the County of Maui, regarding groundwater, general permit application questions, and the Entrance Facility that have been compiled into two emails dated August 21, 2017; and
(i) all other engineering plans, 'as built' drawings, and engineering data.

LOCATED AT: Pulehu Road, Puunene, Maui, Hawaii (TMK (2) 3-8-003:019).

SUBJECT TO: HRS 342H; HAR 11-58.1; Standard Conditions I; Special Conditions II; Special Conditions III

Acceptance of this permit constitutes an acknowledgement and agreement that the holder will comply with all rules, regulations, and orders of the DOH and the conditions precedent to the granting of this permit.

This permit supersedes the Solid Waste Management Permit Number LF-0089-08 dated November 1, 2009.

(for) DIRECTOR OF HEALTH
State of Hawaii

The solid waste management facility is subject to HRS Chapter 342H, *Solid Waste Pollution* and HAR Chapter 11-58.1, *Solid Waste Management Control*, and the following conditions:

STANDARD CONDITIONS I:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of HRS Chapter 342H. The DOH will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants, or representatives, contractors or subcontractors. If any term or condition of this permit becomes invalid as a result of a challenge to a portion of this permit the other terms and conditions of this permit shall not be affected and shall remain valid.

2. This permit:

    a. shall not in any manner affect the title of the premises upon which the facility is or will be located;
    b. does not release the permittee from any liability for any loss due to personal injury or property damage caused by, resulting from, or arising out of the design, installation, construction, operation, maintenance, closure or post-closure of this facility;
    c. does not release the permittee from compliance with other applicable statutes and regulations of the state of Hawaii, or with applicable federal or local laws, regulations or ordinances;
    d. in no way implies or suggests that the state of Hawaii, or its officers, agents, or employees assumes any liability, directly or indirectly for any losses due to personal injury or property damage caused by, resulting from, or arising out of the design, construction, operation or maintenance of the facility; and
    e. shall not constitute, nor be construed to be an approval of the design, construction, operation, maintenance, closure and post-closure of the facility beyond the regulatory requirements mandated by HRS 342H and HAR 11-58.1.

3. Issuance of this permit does not preclude the responsibility of the permittee to obtain any and all necessary approvals and permits from the appropriate federal, state, and local agencies, including zoning clearances, prior to the start of operations.

4. Unless the submitted documents and other information secured by the DOH from the permittee contain confidential information, such as secret processes or methods of manufacture, they shall be made available for inspection by the public (HRS 342-14). The permittee shall be responsible for identifying, in writing, the specific information

asserted to be confidential. The DOH shall review the permittee's assertion and determine if confidentiality is indeed warranted.

5. This permit is valid only for the specific processes and operations applied for and indicated in the submitted application and additional submittals on file with the DOH. Any unauthorized deviation from the submitted application, approved drawings, operations manual, additional submittals, or conditions of this permit may constitute grounds for revocation of this permit and enforcement action by the DOH. Should there be any discrepancies between the submitted documents and the permit conditions, the permit conditions shall take precedence. A copy of the submitted application and additional submissions shall be maintained at the facility.

6. This permit is non-transferable whether by operation of law or otherwise, either from one location to another, from one solid waste disposal operation to another, or from one person to another without the written approval of the director [HAR 11-58.1-04(e)(2)].

7. This permit shall be kept at or near the operation site for which the permit is issued and shall be available upon request [HAR 11-58.1-04(f)]. A request for a duplicate permit shall be made in writing to the director within ten (10) days after the destruction, loss, or defacement of this permit. A fee of $50 shall be submitted with the request [HAR 11-58.1-04(h)(3)].

8. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by DOH rules. The facility shall be designed, constructed and equipped so as to operate without causing a violation of applicable rules and regulations.

9. Incident Notification Requirements: The permittee shall notify the DOH, in writing or facsimile (fax), whenever there are incidents such as fire, explosion, or release of regulated material/waste, which could threaten human health or the environment (i.e. air, soil, or surface and subsurface waters). Initial notification may be by phone or fax and reported within eight hours, whenever possible, and no more than 24 hours. The notification report shall be completed and submitted by an Environmental Compliance Officer or other responsible official within seven (7) calendar days (three (3) calendar days for waste disposal facilities, such as landfills and incinerators) and shall include:

   a. name, address, and telephone number of the owner and operator;
   b. name, address, and telephone number of the facility at which the incident occurred;
   c. date, time and type of incident (i.e., fire, explosion, release, etc.);
   d. name and quantity of material(s) involved;

e. the extent of injuries, if any;
f. an assessment of actual or potential hazards to human health or the environment, where this is applicable;
g. estimated quantity and disposition of recovered and unrecovered material that resulted from the incident;
h. evaluation of the circumstances that led to the incident;
i. steps being taken to prevent, reduce, eliminate, and prevent recurrence, including an implementation schedule; and
j. other information or monitoring as required by the DOH.

Notification requirements for releases only apply to releases of a quantity equal or exceeding the reportable quantity listed in HAR Section 11-451.

10. Noncompliance Notification Requirements. If, for any reason, the permittee does not comply with, or will be unable to comply with, any condition or limitation specified in the permit, the permittee shall notify the DOH verbally within 24 hours followed by a written report within seven (7) calendar days (three (3) calendar days for waste disposal facilities, such as landfills and incinerators) of the verbal notification. The written report shall be completed and submitted by an Environmental Compliance Officer or other responsible official and contain the following information:

a. a description of and the cause of noncompliance;
b. period of noncompliance, including exact dates and times, or, if not corrected, the anticipated duration that the noncompliance is expected to continue;
c. steps that will be taken to correct the area of noncompliance;
d. steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance, including an implementation schedule; and
e. other information or monitoring as required by the DOH.

The permittee may be subject to enforcement action by the DOH, penalties or revocation of this permit.

The use of an electronic fax device or electronic mail (email) for use in written notifications is acceptable. Any data transmission or detailed explanations transmitted shall be accompanied by regular mail submissions. Failure to notify in accordance to this requirement may initiate enforcement action.

11. Monitoring and Recordkeeping Requirements: The permittee shall comply with the following monitoring and recordkeeping requirements:

a. Upon request, the permittee shall furnish all records (i.e. transaction reports, disposal receipts) and plans required by the DOH. The retention period for all

transaction reports and disposal receipts shall be a minimum of five (5) years; however, there shall be an indefinite retention period for all records associated with any unresolved enforcement action as determined by the DOH.

b. The permittee shall retain at the facility or other location designated by this permit, records of all monitoring information (including all calibration and maintenance records and all original recordings of monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The retention period shall be for the life of the facility, through closure and post-closure periods, for waste disposal facilities (such as landfills and incinerators).

c. Records of monitoring information shall include:
- The dates, exact place, and time of sampling or measurements;
- The person responsible for performing the sampling or measurements;
- The date(s) analyses were performed;
- The person responsible for performing the analyses;
- Analytical techniques or methods used; and
- Results of such analyses.

12. The permittee shall submit complete and detailed plans and reports on existing solid waste management systems and any proposed addition to, modification of, or alteration of any such systems that affects the facility's operations or procedures, or which could threaten human health and the environment, and contain the information requested by the DOH in the form prescribed by the DOH. Any submission for permit modification shall be submitted in accordance with Standard Condition No. 13. The plans and reports shall be prepared by a competent person acceptable to the DOH, and at the expense of the permittee.

13. Should the permittee decide to modify the permit or continue operation of the solid waste facility beyond the expiration date of the permit, the permittee shall submit a complete permit modification or renewal application at least one year for municipal solid waste landfills prior to the modification or the date of permit expiration. Any submission for permit modification does not affect these permit conditions until such modification becomes final in accordance with HAR §11-58.1-04, or as approved by the DOH.

14. The director may, in accordance with HRS §342H-6, enter and inspect the facility for the purpose of:

a. investigating an actual or suspected source of solid waste or other pollution;
b. ascertaining compliance or noncompliance with any rule, regulation, permit condition, or standard promulgated by the DOH; and
c. conducting tests in connection therewith (including collecting soil, water, air, ash, and any other material or samples).

The permittee, by accepting this permit, specifically agrees to allow authorized DOH personnel, upon presentation of credentials or other documents as may be required by law, access to the premises.

15. The DOH may require the permittee to conduct sampling and testing to determine the degree of pollution, if any, from the solid waste facility (including soil, water, air, ash, and any other materials or samples). If contamination is detected, the permittee shall remediate as necessary to protect public health and the environment.

16. When requested by the DOH, the permittee shall within a reasonable time, as specified by the DOH, furnish any information required by law, which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the DOH, such facts or information shall be submitted or corrected promptly. Upon the written request of the permittee, the deadline for submission of information may be extended, if the DOH determines that reasonable justification exists for the extension.

17. If the DOH determines that the permittee has violated or is violating any provision of HRS §342H, HAR §11-58.1, or these permit conditions, the DOH may pursue enforcement action in accordance with HRS §342H-7, *Enforcement*; §342H-9, *Penalties*; §342H-10, *Administrative Penalties*; §342H-11, *Injunctive and other relief*, or any other pertinent rules.

18. The DOH may, on its own motion, modify, suspend, or revoke a permit if, after affording the applicant a hearing in accordance with HRS 91, the DOH determines that any permit condition, rule, or provision of HRS §342H has been violated or that such is in the public interest [HAR §11-58.1-04(d)].

19. If the governor or the director determines that an imminent peril to the public health and safety is, or will be, caused by the disposal of solid waste or any combination of discharges of other waste that requires immediate action, the governor or the director, without a public hearing, may order the permittee to immediately reduce or stop the disposal, discharge, or process, and may take any and all other actions as may be necessary (HRS §342H-8).

SPECIAL CONDITIONS II: MSW Landfill
Section A. General Facility Conditions

1. The **Master Plan** dated February 2017 shall be maintained by the County for planning purposes and be revised on a regular basis of not greater than five-year intervals, or with each new permit application. If the remaining capacity of the landfill is less than 10 years, an update to the Master Plan, identifying status of obtaining additional disposal

capacity shall be incorporated into the Annual Operating Report (AOR) in accordance with Special Conditions II Section I, Item 2m. The Master Plan shall provide information on future landfill capacity requirements in both numerical and graphical presentations with a minimum projection of 20 years and shall include the waste footprints and service lives of the existing Phase IV, V, V-B Ext and any proposed future lateral expansions. The Master Plan shall include the proposed Basis of Design, buffer areas, appurtenant and support facilities. The Master Plan shall address special measures to permanently isolate Phase IV-A from the remaining facility phases.

2. The final maximum elevation of Phases IV (A & B), V (A & B), and V-B Ext shall not exceed 390 feet above MSL and in accordance with Operations Plan for Central Maui Landfill dated February 2017, prepared by A-Mehr, Inc.

3. **Impact Buffer Areas.** The permittee shall rectify any impacts from the site on nearby areas, including any adjacent public roads or environmentally sensitive areas. MSW disposal activities shall not occur within **buffer areas,** a minimum 150 feet from the property line along Pulehu Road, minimum 1000 feet from the property line along any present or future urban area, and minimum 80 feet of any agricultural area as defined in the Operations Plan. The permittee shall incorporate methods to minimize impacts from solid waste activities, including litter, vectors and odors.

4. **Air Criteria.** The permittee is responsible for obtaining permits and maintaining compliance with any state or federal Clean Air regulations, in accordance with HAR 11-58.1-15(e).

5. **Access Control.** The permittee is responsible for providing measures to control public access in accordance with HAR 11-58.1-15(f).

6. The permittee shall provide adequate queuing and storage space such that private self-haul and/or waste delivery vehicles will not queue on Pulehu Road outside of the landfill entrance gate, and as specified in the operations plan.

7. **Emergency Operations.** The permittee shall prepare and implement emergency operating procedures, including those in the Emergency Operating Procedures, provided as Section 13.5, in the February 2017 Operations Plan, and approved subsequent submissions.

    a. The permittee shall provide verbal and written notification of incidents to the DOH, in accordance with Standard Conditions, Item 9 of this permit. Incidents shall also include suspected subsurface fires, and be reported based on any of the notification criteria listed in the Operations Manual.

b. The permittee shall be prepared and implement emergency operating procedures for the minimum following situations:
   i. Fires (including surface, nearby, incoming waste loads, vehicle/equipment, subsurface, etc.),
   ii. Severe storm (2-year, 24-hour storm or greater, or continued rainy conditions over duration of 14 days), including hurricanes,
   iii. Earthquakes and tsunamis,
   iv. High winds conditions,
   v. Hazardous material spills at or above the reportable quantity, and
   vi. Other emergency procedures, and trigger levels, as provided in the emergency operating procedures.

c. The permittee shall assess, monitor, and maintain/repair the landfill after emergencies that may affect the integrity of the landfill, including, but not limited to, the liner system, leachate collection and control system, surface water management system, and any other affected portions of the landfill. If the acceptance and disposal of waste ceases, the permittee shall submit a written evaluation of whether waste acceptance can resume. The evaluation shall be prepared by a professional engineer registered in the state of Hawaii and/or the landfill manager, as appropriate, certifying that the landfill and its associated environmental controls are functional, equivalent or better than required, and that operation of the landfill will not cause a violation of environmental regulations. The evaluation shall also include a description of any findings and corrective actions. The facility may resume acceptance and disposal of waste upon submission of this evaluation to the DOH. The DOH may require additional assessment, monitoring, and corrective actions, as necessary to address the event.

Section B. Construction and Maintenance – MSW Disposal Cells

1. Construction of Phase V-B Ext, or significant modification of the Phases IV-A, IV-B, Phase V-A and/or Phase V-B disposal cells, shall not occur prior to the DOH's approval of the final construction plans and specifications prepared and certified by a professional engineer, registered in the state of Hawaii, with at least five (5) years' experience in designing landfills. Upon approval, construction shall be in conformance with the final construction plans and specifications.

2. The permittee is responsible for obtaining the services of a registered land surveyor who shall provide a minimum second order of accuracy on: triangulation, traverse, leveling and baseline measurements of the base grades, liner grades and key location and elevation points of the leachate collection and sump system as shown on the approved

drawings. The liner contractor and installer prior to liner placement shall certify the base grades in writing.

3. For Phase V-B Ext, the bottom composite liner shall be constructed in accordance with A-Mehr, Inc. drawings, dated February 2017. The bottom liner consists of the following layers (from bottom to top).

    a. Subbase grade shall be prepared to provide a smooth, firm, unyielding, rut-less foundation with well-graded material not to exceed three-fourths inch (0.75 inch).
    b. Low permeability soil liner shall be a minimum of 24 inches thick and constructed with a maximum permeability of 1.0×10^{-7} cm/sec for both cell floor and side slope areas.
    c. An 80-mil HDPE geomembrane, textured on both sides.
    d. A 16-ounce per square yard nonwoven geotextile.
    e. 12-inch gravel leachate collection layer on the cell floor not to exceed 1.5-inch in diameter with a minimum hydraulic conductivity of 1.0×10^{-2} cm/sec.
    f. A 16-ounce per square yard nonwoven separating geotextile.
    g. Operations layer shall be a minimum 24 inches thick, have a maximum aggregate size of 6 inches. The entire thickness of the drainage layer and operations layer combined shall be a minimum of 36 inches for the cell floor.
    h. The side slope liner consists of:
        i. Subbase grade and low permeability soil liner, as described in 3.a. and 3.b. above;
        ii. An 80-mil HDPE geomembrane, textured on the bottom side, secured with an anchor trench at the top of the slope;
        iii. A 16-ounce per square yard nonwoven geotextile;
        iv. A sacrificial ultraviolet (UV) protective rain cap; and
        v. Operations layer, consisting of a minimum 24 inches of soil, with 100 percent passing a 2-inch sieve.

4. Construction of the composite liner system shall be in accordance with the plans and specifications approved by the DOH. The QA/QC engineer shall observe construction, perform testing as specified in the most recent Technical Specifications and Construction Quality Assurance Plan dated October 2008 and revised in February 2017, and certify that the liner and leachate system comply with the approved plans and specifications, and these permit conditions.

5. Lined side slopes shall not exceed the slope of two to one (horizontal: vertical). Cell floor liner grades shall be a minimum 1% downgrade slope to the collection sump, and a minimum 2% cross slope to the leachate collection trenches as specified in the landfill operations plan, or as approved by the design engineer with concurrence from the DOH.

The liner grades shall prevent accumulation of 30 cm or more of leachate head anywhere on liner system.

6. Installation of any geosynthetic liner shall be performed by an experienced installer who has installed a minimum of 500,000 square feet of similar type liners or shall be performed under the supervision of the manufacturer. An experienced QA/QC landfill inspector with at least five (5) years of experience in landfill CQA, and works under the supervision of a professional engineer, shall observe liner installation and grade elevations. The permittee shall notify the DOH, in writing, at least five (5) days prior to any liner installation work.

7. The leachate collection system shall be installed per the approved plans and drawings. Phases IV-B and V-B Ext sump areas shall be lined with a minimum of two layers of 80-mil high-density polyethylene liner over the minimum 24-inch low permeability earthen liner, as defined in Special Condition II.B.3.b. Three layers of 6-feet by 6-feet by 80-mil HDPE shall be installed directly beneath the sump riser pipe in accordance with the A-Mehr, Inc. drawings, February 2017.

8. The earth berm used to control and manage surface water at the southeastern boundary of Phase V-B Ext shall be constructed such that it is a minimum of 80 feet wide, and 15 feet high, measured from the existing quarry floor as specified in the A-Mehr, Inc. design drawings, February 2017. The berm shall be constructed such that leachate seepage and external stormwater infiltration is minimized. Inspection shall be conducted weekly, and after storm events for erosion. Any deficiencies shall be addressed immediately.

9. The permittee shall retain a professional engineer, with at least five (5) years' experience in designing landfills, and registered in the state of Hawaii, to provide construction quality assurance (CQA) for construction of new lined disposal cells. Upon completion of construction, the professional CQA engineer shall prepare a report for submittal to the DOH at least thirty (30) days prior to proposed placement of the waste in the cell. The CQA Report shall contain, at a minimum, the following:

    a. Documentation of quality assurance/quality control testing procedures.
    b. Summary of field test results demonstrating that the liner and leachate collection systems were constructed as designed, including but not limited to, compaction tests, weld tests.
    c. Summary of results of laboratory analyses, demonstrating that the materials used met design criteria and assumptions, including but not limited to sieve analysis, compaction curves, permeability tests, and interface friction test results for side slopes with comparison between manufacturer specification and field results.
    d. A map of each sector showing panel layouts as installed.

e. Liner inspection reports.
f. Certification that all weld test results and vacuum or pressure testing of all welded seams was visually observed.
g. Certification that the bottom liner and leachate collection system have been installed in accordance with the plans as approved by the DOH.
h. As-built and survey drawings documenting the cell construction, including the location and elevation of base grades, liner system, and leachate collection system.
i. Detailed documentation to show that panels were properly joined to liner in previous constructed sections, and/or the construction of anchor trenches and berms.
j. Identification of any deviations from the construction plan, reason for the deviation and affect on the integrity of the design.

10. No solid waste shall be placed in any new cell or portion thereof until: (1) the professional CQA engineer certifies, by submittal of the report referenced in Special Conditions II.B.9 or a letter containing the certifications required therein, completion of construction in accordance with approved drawings; and (2) the permittee coordinates an inspection of the liner system, leachate collection system, and leachate sump for each new cell or portion thereof by the DOH, with the presence of the design engineer and on-site facility operator. Requests for inspection shall be given at least 21 days in advance of the inspection date.

11. The first layer of solid waste shall consist of a minimum thickness of 5 to 6 feet of select waste that is screened for the removal of objects that can cause puncture or displacement damage. The thickness of the select waste layer shall be determined based on the size/weight of the compactor and shall be defined in the Operation Plan. Material that may cause puncture or displacement damage to the liner shall be removed. Compactor work on the select waste layer shall avoid wheel spinning, twisting or any other activity that may cause damage to the liner. Equipment operation directly on the operations layer shall be prohibited. A record documenting select waste screening and placement shall be maintained at the facility and provided to the DOH with verification by the CQA engineer including photo documentation. An alternate select waste placement may be used if approved by the DOH.

12. Containment systems in Phases IV-B, V (A & B), and V-B Ext shall be constructed and maintained with no deformation to withstand the maximum horizontal acceleration due to the design earthquake (0.36g) for Seismic Zone 2B as defined by the United States Geological Survey. Following any occurrence of an earthquake determined to cause horizontal acceleration at the site equal to or greater than the design event, the permittee shall inspect any exposed liner system to identify and assess any damage that may have occurred. A report of the inspection shall be filed with the DOH within 30 days

following the event, including proposed corrective actions to repair any damage identified by the inspection. A professional engineer registered in the state of Hawaii shall conduct the inspection and prepare the report.

13. Once constructed, the permittee shall maintain the integrity of the liner system and leachate collection system as designed and constructed (inclusive of all landfill phases). In the event that damage has occurred, the permittee shall repair the liner and/or leachate collection system, or implement equivalent or better alternative environmental controls as approved by the DOH.

14. For Phases IV-B, V-A, and V-B, the bottom liner was constructed in accordance with A-Mehr, Inc. drawings, July 2006, June 2008 and September 2009, respectively. The bottom liner consisted of the following layers (from bottom to top).

    a. Prepared subbase grade.
    b. A minimum of 24-inch thick low permeability soil liner, with a maximum permeability of 1.0×10^{-7} cm/sec for both cell floor and side slope areas.
    c. An 80-mil HDPE geomembrane, textured on both sides.
    d. A 16-ounce per square yard nonwoven geotextile.
    e. A 12-inch gravel leachate collection layer, with a maximum 1.5-inch diameter particle size and a minimum hydraulic conductivity of 1.0×10^{-2} cm/sec.
    f. A 16-ounce per square yard nonwoven separating geotextile.
    g. A minimum 24-inch operations layer material, with a maximum aggregate size of 6 inches, and not more than 12 percent passing a No. 200 sieve for the cell floor.
    h. The side slope liner consisted of:
        i. Prepared subbase grade and low permeability soil liner, as described in 14.a. and 14.b. above;
        ii. An 80-mil HDPE geomembrane, textured on the bottom side;
        iii. A 16-ounce per square yard nonwoven geotextile; and
        iv. A minimum 24-inch thick soil operations layer, with 100 percent passing a 2-inch sieve.

15. For Phase IV-A, a portion of the cell floor and side slope liner was repaired in accordance with A-Mehr, Inc. drawings, dated September 2004. The portion of the bottom liner that was repaired as specified in the A-Mehr Drawings, dated July 2004, consisted of the following layers (from bottom to top).

    a. Prepared subbase grade.
    b. A geosynthetic clay liner (GCL).
    c. A 60-mil HDPE geomembrane, textured on both sides.
    d. A 16-ounce per square yard nonwoven geotextile.
    e. A 12-inch gravel leachate collection layer.

f. A 16 ounce per square yard nonwoven separating geotextile.
g. An operations layer with a minimum thickness of 24 inches.
h. The side slope liner consisted of:
   i. Prepared subbase grade and GCL;
   ii. 80-mil HDPE geomembrane, textured on the bottom side;
   iii. 16-ounce per square yard nonwoven geotextile; and
   iv. Minimum 24-inch thick soil operations layer.

16. For the remainder of Phase IV-A, the original bottom liner was constructed in accordance with Parametrix, Inc. drawings, dated June 1998. The cell floor and side slope liner consisted of the following layers (from bottom to top).

a. Prepared subbase grade.
b. A cushion layer.
c. A GCL.
d. A secondary 60-mil HDPE smooth FML.
e. A geocomposite drainage layer.
f. A primary 60-mil HDPE smooth FML.
g. A 16-ounce per square yard nonwoven geotextile.
h. An 18-inch thick soil operations layer.

Section C. Acceptance Criteria

1. The permittee is authorized to accept for landfill disposal, solid wastes, as defined in HAR 11-58.1-03, except as further described in this section.

2. The permittee shall implement a Waste Acceptance & Hazardous Waste Exclusion Program as set forth in the Operations Plan for Central Maui Landfill that meets the following conditions, Section C Items 2 to 4. Should there be conflicts between the Operations Plan and the permit or solid waste rules, the latter shall prevail.

a. The permittee shall make every practicable effort to screen waste and prevent unacceptable waste from entering and being disposed at the landfill.
b. The permittee shall post a sign on the property that lists unacceptable wastes.
c. The permittee shall conduct random visual surveillance of mixed commercial loads (not inclusive of loads known to only contain single-source-separated materials, such as sludge), at least six times per week, to spot check for unacceptable wastes. The permittee shall document findings on the Load Check Data Sheet.
d. The landfill operators at the active workface shall visually screen the contents of each load and remove unacceptable waste.

e. If unacceptable waste is observed, the permittee shall reject the load. If the waste has been unloaded, the permittee shall separate the unacceptable waste, move it away from the active workface, and manage and dispose of it in accordance with applicable regulations.
f. Operators shall receive training on visual surveillance and unacceptable waste handling procedures set forth in the Operations Plan. Training shall be attended at least once per year, or more frequently as needed to ensure compliance with the facility procedures.
g. The permittee shall maintain records of random inspections on the Load Check Data Sheets, and personnel training.
h. Unacceptable waste is defined as:
    i. Regulated hazardous waste, as defined in state hazardous waste regulations;
    ii. Radioactive waste, which shall be managed in accordance with HAR 11-58.1-64;
    iii. Polychlorinated biphenyl (PCB) waste, as defined in 40 CFR Part 761;
    iv. Untreated infectious waste, excluding infectious waste generated within the household, in accordance with HAR 11-58.1-63;
    v. Bulk or non-containerized liquid waste, except as provided in HAR 11-58.1-15(i);
    vi. Containers holding liquid waste, except as provided in HAR 11-58.1-15(i)(2);
    vii. Commercial loads containing greater than 25% greenwaste and household loads containing greater than 50% greenwaste, in accordance with HAR 11-58.1-65(b);
    viii. Scrap automobiles, white goods, and whole motor vehicle tires, in accordance with HAR 11-58.1-65(c);
    ix. Lead acid batteries, in accordance with HRS 342I;
    x. Compressed gas tanks; and
    xi. Other unacceptable wastes listed in the Operations Plan.

3. If unacceptable waste is identified at the landfill, the permittee shall separate the waste, manage, store, transport, and recycle/dispose of it in accordance with the Central Maui Landfill Operations Plan and applicable laws and rules. Unacceptable waste identified at the facility shall not be disposed of at the landfill.

    a. Unacceptable waste shall be transported from the landfill prior to posing a nuisance, health, or safety concern.
    b. Unacceptable waste shall be transported to a permitted solid waste management facility allowed to accept the waste, or appropriate out-of-state recycling/disposal facility.

c. The permittee shall maintain a daily operational log of unacceptable waste turned away from the landfill or separated from disposal, including date, hauler, waste type, estimated quantity, and destination.

d. The permittee shall notify the DOH, in writing, within 24 hours or the next working day of the identification of hazardous or PCB waste. The notification shall include the date and time of incident, origin of the waste, hauler/generator, description and quantity of waste, actions that will be taken to manage the waste at the site, and actions that will be taken to remove the waste from the premises. The permittee shall also provide written notification, including a copy of the associated manifests, within seven (7) days of removal of the waste from the facility.

4. Radioactive wastes shall be managed in accordance with HAR 11-58.1-64. The permittee shall implement the Radioactive Waste Monitoring Program that is provided in Appendix K of the Central Maui Landfill Operations Plan, updated February 2017. In accordance with the program, all incoming loads will be screened with a radiation detector to prevent the acceptance of radioactive wastes. If a radioactive load is identified, the permittee shall complete and submit a Radiation Monitoring Report, documenting the date, time, actions taken, and resolution of the event.

5. The permittee shall implement the Special Waste Acceptance Program provided in the Central Maui Landfill Operations Plan that meets the following conditions listed within this item. Should there be conflicts between the Operations Plan and the permit or solid waste rules, the permit and rules shall prevail. The DOH may require periodic revisions to the plan.

a. The permittee shall pre-approve special wastes, prior to acceptance at the facility.

b. The permittee shall maintain written documentation and implement special handling procedures associated with each type of special waste. The procedures shall be based on the physical, chemical or pertinent characteristics of the special waste.

c. Special waste means any solid waste which, because of its source or physical, chemical, or biological characteristics, requires special consideration for its proper processing or disposal, or both, includes, but is not limited to:
   i. Asbestos.
   ii. Semi-solid wastes including:
      (1) Water separation, car and equipment wash wastes;
      (2) Sewage sludges; and
      (3) Underground storage tank and other sludges.
   iii. Off-specification and outdated products.
   iv. Baghouse dusts.

v. Inorganic filter cakes.
vi. Treated infectious waste.
vii. Dead animals and offal.
viii. Contaminated Materials including:
(1) Contaminated soils and debris, including: resins and chemical debris, petroleum and other contaminated soils, and petroleum and other contaminated debris;
(2) Sandblast grits;
(3) Waste that are toxic in nature, such as insecticides, poisons, or radioactive materials (provided that they are not regulated under another authority such as RCRA Subtitle C, TSCA that requires disposal other than at a permitted MSW landfill); and
(4) Other solid waste, which may be accepted for disposal such as contaminated industrial/commercial waste and non-TSCA regulated PCB waste, provided such materials are not regulated hazardous waste.
ix. Other special waste listed in the Operations Plan.

d. The permittee shall maintain records of contaminated material approvals and acceptances. The records shall include: acceptance date(s), quantity and description of waste, origin of waste, waste profile sheet/approval manifest; proposed management of contaminated material; and any special management and handling procedures. The record shall be made available to the DOH upon request.

e. Contaminated soils under current DOH Environmental Action Levels (EALs) for commercial/industrial direct-exposure may be stored and used as daily cover at the MSW landfill working face. Contaminated soils that exceed the EALs for unrestricted use shall not be used as intermediate or final cover.

f. Records of all special waste documentation shall be maintained at the facility.

Section D. Operation of the MSW Landfill

1. The peak daily disposal rate for MSW shall not exceed 1200 tons per day. Adequate equipment and personnel to operate the MSW landfill facility shall be maintained. At the nominal operating rate of 800 tons per day, the site shall have a minimum of one bulldozer, one compactor, one water truck and one spotter. Greater than a nominal rate of 800 tons to a peak daily rate of 1200 tons per day requires a minimum of two bulldozers, one compactor, one water truck and two spotters. These requirements shall be met unless otherwise approved by the DOH. The DOH shall be notified if the

average disposal rate for a 12-month period exceeds an 800-ton per day nominal average or the 1200-ton per day peak disposal rate limit.

2. A permanent **sign** shall be posted at the facility entrance identifying the facility, the hours and days of operation, and the name and address of the operator, a telephone number and other pertinent information.

3. An **all-weather access road** shall be maintained into/out of the facility site, through the entrance facility and to/from the working face of the landfill.

4. Provide and maintain **controlled access** to the facility site in the form of fences and gates along the perimeter where natural barriers do not provide a means of controlled access. When natural barriers no longer prove to be an effective means of providing controlled access, then fences and gates shall be provided to meet the requirements of controlled access. All gates shall be kept locked when an attendant is not on duty.

5. Scavenging at the facility by the general public is prohibited.

6. **Operations Personnel Training**. Landfill operations shall be supervised at all times by an individual who has completed a Manager of Landfill Operations training course conducted by the Solid Waste Association of North America or equal as agreed upon by the DOH. Records of such training shall be placed in the facility's operating record and made available upon request.

7. **Program for Regular Training**. The permittee, at a minimum, shall provide training to landfill operators annually. Operators shall be familiar with the Operations Plan by the uses of regular training presentations by supervising staff. Records of such training shall be maintained at the facility and provided to the DOH upon request.

8. The facility shall have a Site Manager and Environmental Compliance Officer, who shall be knowledgeable of state solid waste laws, regulations, these permit conditions and the permit application components including the Operations Plan.

9. The **Operations Plan**, revised February 2017, and approved subsequent revisions shall be implemented. The DOH may periodically require revisions to the Operations Plan. This may include, but is not limited to, revisions based on findings from site inspections that are deemed necessary by the DOH. Any changes to the Operations Plan require approval from the DOH. Depending on the scope of the change, a permit modification may also be required. If there are discrepancies between the Operations Plan and these permit conditions or HAR 11-58.1, the permit conditions or rules shall take precedence.

10. **User Population.** The permittee shall maintain a list of the types of users for operator reference and regulatory review. If the user population changes, the permittee shall

submit a written update of such change. The written update shall propose adjustments to the waste screening and review process, as appropriate to respond to the changes in the user population.

11. **Mud Prevention Program**. The permittee shall provide measures for minimizing the tracking of mud onto public roads from the site. The measures shall include on-site road maintenance and cleaning, a wet-weather disposal area, and a truck or truck wheel cleaning area for vehicles prior to leaving the site. Possible truck or truck wheel cleaning measures that may be implemented include: rumble strip, drive-through tire wash, trash clean out pad, and/or wash pad.

12. **Dust Control Program.** The permittee shall provide measures to control dust from roads and all other areas of the site. The measures shall include road treatments and water sprays to minimize dust generation. Open areas of the landfill that are not to receive waste for a one-year period or more shall be further treated to minimize dust generation and erosion.

13. **Soil Cover Stockpile** stored within the landfill waste footprint shall be limited to a 30-day capacity and shall include stormwater controls. Cover material stored on the MSW landfill shall be placed on top of at least 12 inches of intermediate cover and shall not impede surface water flow. Storage of gravel for roads/wet weather and landfill equipment on the MSW landfill shall also be placed atop at least 12 inches of intermediate cover and shall not impede surface water flow. If the daily cover soil to be stockpiled exceeds unrestricted use EALs, placement of the stockpile should be limited near the workface, where stormwater from the stockpile area will not enter the stormwater system or soil will not disperse from the workface area and onto intermediate cover areas.

14. **Daily Cover** shall be a minimum of six inches of earthen material or an alternative in accordance with HAR 11-58.1-15(b), with no exposed waste. Aggregate size shall be less than 2.5 inches and well-graded (having the representation of all particle sizes less than the specified maximum). Two types of Alternative Daily Cover (ADC) materials have been approved. As specified in your demonstration report, the permittee may implement the following alternatives:

    a. Greenwaste Mulch. Greenwaste mulch shall be less than 6 inches in size, and shall only be used on an active working face that will receive waste on the following day. The top deck and side slope not receiving additional waste shall be covered with soil. The material shall achieve a minimum compacted cover thickness of 10 inches, but shall not exceed 12 inches. This ADC shall not be used in wet weather, or under high wind conditions. Mulch, if stored on the landfill, shall consist of no more than one-week's volume, and shall be stored on

12 inches of intermediate cover in windrows no higher than five feet high and no wider than 12 feet at the base to reduce the potential for fire. Mulch windrows shall be routinely monitored for fire potential and turned as necessary.

b. Compost Rejects. Compost rejects that are larger than the acceptable size for compost (greater than 3/8-inch) may be used as an ADC only on the active work face that will receive waste on the following day. The material shall achieve a minimum compacted cover thickness of 10 inches, but shall not exceed 12 inches. This material shall meet the compost requirements in 40 CFR Part 503 before use. Compost rejects shall not be used in wet weather. Compost rejects shall not be stored at the landfill and shall be transported at the time of daily cover placement.

15. The permittee may submit a written proposal to request the use of an ADC, comprised of alternative materials of an alternative thickness (other than at least six inches of earthen material). Request for the use of additional ADC materials as cover shall be submitted in writing to the DOH at the address listed in Special Conditions II.I.1.

a. The request shall evaluate the proposed ADC to its specific characteristics and its appropriate use at the facility.
b. The permittee shall obtain DOH approval prior to commencement of the demonstration project.
c. The DOH requires demonstration periods in 6-month increments to show that the ADC and its proposed thickness can control disease vectors, fires, odors, nuisance, litter and scavenging without presenting a threat to human health and the environment.
d. The use of ADC is limited to daily cover use.
e. The demonstration period shall include oversight by the DOH and at the end of increment period, the permittee shall report the performance of the ADC as to its specific characteristics and appropriate use at the facility.
f. The permittee shall obtain DOH approval, in writing, prior to commencement of continued use of ADC beyond the demonstration period. The DOH may impose conditions on the use of ADC. Those conditions shall become part of this permit.
g. The demonstration period or the approved use of an ADC may be rescinded or cancelled by either the DOH or permittee at any time without cause.

16. **Daily Cover-Monitoring-Verification-Program with Recordkeeping**. The permittee, using appropriate personnel shall take digital photos of the workface at the middle of each workday and at the end of each workday, from the same perspective, to demonstrate adequate placement of daily cover. The photos shall be transmitted to the DOH's landfill inspector via email on a daily basis within 12 hours with cell location information. The photos shall be maintained on file at the facility and certified as to its

authenticity by the appropriate personnel. The DOH may require changes to the program at any time including the use of independent third parties.

The Daily Cover Monitoring Verification Program shall include quantitative records of daily waste disposed, approximate cell dimensions and daily soil cover and/or ADC used in tons and cubic yards.

17. **Intermediate cover** is required for all inactive waste areas. Inactive waste areas are areas that do not receive waste within a 30-day period. Intermediate cover shall be a minimum of 12 inches of earthen material including daily cover, and be capable of shedding and directing stormwater to conveyance systems and withstanding traffic. Regardless of the time period since last receiving waste, all areas that have vehicular traffic shall be covered with intermediate cover.

    Intermediate cover shall be maintained on a regular basis including repairs by September 1 of each year for erosion and cracking. Recordkeeping of annual repairs shall be in accordance with Special Conditions II.E.2a. All intermediate slopes and top deck that are not to receive waste for a 1-year period shall be vegetated or have an equivalent plan to minimize infiltration and prevent dust and erosion. Intermediate cover shall shed and direct stormwater to conveyance systems.

    Soil used for intermediate cover shall meet DOH EALs for residential/unrestricted use.

18. **Disease Vector Control**. The permittee shall provide measures to evaluate, prevent and/or control on-site populations of disease vectors and minimize nuisance conditions, and document any associated activities. At a minimum, such measures shall be taken on a monthly basis and shall be implemented as discussed in the Operations Plan. The measures shall meet the requirements of HAR 11-58.1-15(c).

19. **Litter Control**. The permittee shall provide measures to minimize free litter in the landfill and prevent its occurrence beyond the property line of the facility. All windblown material on the primary litter fences shall be collected and be properly disposed of by the end of the workday. The measures, at a minimum, shall include:

    a. The use of portable litter screens which shall be deployed within 100 yards of the active workface.
    b. The use of permanent or semi-permanent litter screens or fences in primary and secondary control positions.
    c. Litter cleanup in the event of a major windstorm or other incident in which litter escapes the normal litter containment systems.

d. Provisions for a truck clean-out area near the active workface that shall be maintained on a daily basis. The truck clean-out area shall have litter control fencing and disposal receptacles for truck clean-out.
e. The collection of litter shall be quantified with the number of litter pickers and the number of bags of litter collected on a daily basis.

20. **Asbestos Disposal.** The permittee shall ensure that the disposal of asbestos waste is in accordance with current NESHAP (National Emission Standards for Hazardous Air Pollutants) regulations, 40 CFR Part 61. Asbestos disposals shall be immediately covered on a daily basis with a minimum of 2 feet of cover unless managed in a dedicated disposal area. Disposals in dedicated disposal area shall be identified to the public and covered daily. All disposal locations for asbestos shall be recorded by GPS (global positioning system) for future reference.

21. **Odor Control**. The permittee shall implement procedures for identifying odorous waste received at the landfill, and implement odor control procedures and/or mechanisms to control odor at the landfill. Odor control measures include acceptance standards for the receipt of waste, special handling at the landfill and immediate burial under a minimum of 2 feet of compacted soil. If the selected mechanisms are not adequate, the DOH may require that additional measures be taken.

22. **Dead Animals and Offal**. The permittee shall immediately place a minimum of two feet of compacted soil over any accepted dead animals, offal or odorous waste. The cover soil shall be compacted and be of sufficient thickness (2 feet minimum) to control the release of odors.

23. **Inclement Weather**. A wet weather deck shall be prepared to allow for safe disposal of waste during times of inclement weather.

24. The permittee shall stop accepting waste when the landfill has reached its design capacity or is terminated by any land use permits, whichever comes first, and begin closure actions as delineated in Special Conditions II.H.

25. The permittee shall install and maintain grade survey control markers in sufficient number to demonstrate compliance with final permitted grades when the active phases near disposal capacity.

Section E. Surface Water Management

1. **Surface Water Management**. At a minimum, the permittee shall:

   a. Provide run-on control to prevent flow onto the active portion during peak discharge from a twenty-five-year storm, and run-off control from a twenty-five year 24-hour storm, as provided in HAR 11-58.1-15(g).

   b. Prevent soil erosion and exposure of waste. Surface water that comes into contact with waste material shall be managed as leachate. Should waste become exposed or soil cover materials erode, the permittee shall repair the cover immediately.

   c. Prevent a discharge of pollutants into waters of the United States, or the violation of any requirement of the Clean Water Act or statewide water quality management plan, Title 11 Chapter 54.

   d. Comply with all state and federal requirements related to water quality, as provided in HAR 11-58.1-15(h).

2. **A Surface Water Management Plan** shall be prepared and updated **annually** and filed with the DOH no later than September 1 of each year. The surface water plan shall include the surface water management of all areas in the Central Maui Landfill. It shall contain the following information:

   a. Report of an annual inspection of surface water management features and facilities, together with a description of required maintenance and changes, which shall be completed by September 1 of each year.
   b. Updated drawings showing current topography of the landfill, surface water drainage paths and conveyances, and drainage system modifications planned for the next year in response to waste filling.
   c. All areas with intermediate cover shall be graded to direct surface water away from the workface and towards the surface water collection system.
   d. Engineering calculations documenting the capability of the surface water management system to comply with the run-on and run-off requirements listed under Special Conditions II Section E, Item 1.
   e. Any Storm Water Pollution Prevention Plan or Spill Prevention Control and Countermeasure Plan prepared pursuant to federal requirements under the Clean Water Act.

3. The permittee shall ensure that appropriate drainage as well as static and seismic stability is provided in the landfill design. Based on the submitted design and analysis,

top deck areas of the landfill will have minimum slopes of 2% to 5% to promote drainage. Interim side-slope grades will not exceed 2 horizontal to 1 vertical. Final side slope grades will not exceed 2.5 horizontal to 1 vertical.

4. Stockpiled materials within the landfill waste boundary shall be limited to cover material, and gravel for roads/wet weather pad. The volume of stockpiled soil and gravel shall not exceed a limit of 30 days' capacity and have stormwater controls. Stockpiled soil and gravel shall not exceed permit grades.

Section F. Perimeter Gas Management

1. The permittee shall implement the Perimeter Landfill Gas Management Monitoring Plan for all phases (I, II, IV, V, and V-B Ext) of the landfill, revised August 2012 by A-Mehr, Inc., and approved subsequent revisions. The DOH may periodically require revisions to the new revised plan. The program shall be conducted in accordance with HAR 11-58.1-15(d) and these permit conditions:

    a. The permittee shall monitor the concentration at depths that will minimize the infiltration of and dilution from atmospheric air.
    b. The permittee shall minimize the amount of time that the probe is open prior to recording the gas concentrations.

2. The permittee shall monitor the concentration of gases, including oxygen, methane and carbon dioxide. The permittee shall monitor the concentration of gases in facility structures, including temporary structures, and at the property boundary on a quarterly basis, or other frequency as approved by the DOH. If an exceedance is identified, the permittee may conduct a verification-monitoring event, provided that the verification monitoring is conducted within one (1) hour of the initially detected exceedance. If exceedances or other anomalous condition is identified, the DOH may increase the frequency of monitoring events.

    a. The concentration of methane gas shall not exceed 25% of the lower explosive limit (LEL) for methane in facility structures.
    b. The concentration of methane gas shall not exceed the LEL for methane at the facility property boundary.

3. The permittee shall inspect and maintain the gas monitoring probes. In the event that a probe is unusable, the permittee shall repair the probe or install a new probe prior to the next monitoring event.

a. If the probe is repaired, submit documentation to the DOH indicating the reason for repair, type of repairs completed, and evaluations performed to ensure the probe is acceptable for use.
b. If the probe is replaced:
   i. The permittee shall update the Perimeter Gas Monitoring Plan to show the new probe location and identification number within thirty (30) days. The update shall also document the reason for replacing the probe.
   ii. The permittee shall submit an installation report for the new probe within thirty (30) days of completion. The installation report shall include the information specified in Special Conditions II.F.1.
   iii. The permittee shall abandon the unusable probe, and submit associated documentation.

4. The permittee shall ensure that the field meters are factory calibrated in accordance with manufacturer's specifications. The permittee shall also field calibrate the meters prior to each monitoring event in accordance with the manufacturer's recommendations. The permittee shall conduct monitoring events only with equipment that has been properly calibrated and maintained.

5. The permittee shall submit a report with results within 45 days of each monitoring event. The results shall include the date and time, gas concentrations by volume, barometric pressure, site conditions, name of personnel conducting the monitoring, description of equipment and calibration results, description of monitoring procedure, and identification of any procedures or observations outside of normal conditions.

6. If verification monitoring performed within one (1) hour of the initial exceedance shows concentrations below the limits in Special Conditions II, Section F, Item 2, the permittee shall place results in the operating record and send written notification of the exceedance and verification monitoring results to the DOH within seven (7) days.

7. If combustible gas concentrations exceed the limits in Special Conditions II, Section F, Item 2, and verification monitoring is not performed within one (1) hour of the initial exceedance or verification monitoring confirms the initial exceedance, the permittee shall perform the following.

   a. Immediately take all necessary steps to ensure protection of human health.
   b. Immediately notify the DOH of the exceedance.
   c. Within three (3) days of detection, place in the operating record and submit to the DOH, the type of gas, gas levels detected and a description of the steps taken to protect human health.
   d. Within sixty (60) days of detection, prepare and implement a remediation plan for the combustible gas releases, place a copy of the plan in the operating record,

provide a copy of the plan to the DOH, and notify the DOH that the plan has been implemented.

e. Within thirty (30) days after the remediation plan has been completed, submit a report to the DOH documenting the actions taken, additional monitoring results, and plans to prevent future recurrences.

f. The DOH may modify the reporting and implementation schedule, as necessary to protect human health and the environment.

Section G. Groundwater and Leachate Management

1. If not already submitted by the issuance date of this permit, the permittee shall submit a new Groundwater and Leachate Monitoring Plan within ninety (90) days from the issuance date of this permit. At a minimum, the plan shall discuss the new sump at Phase V-B Ext and the additional groundwater monitoring wells, and comply with HAR 11-58.1-16. The permittee shall implement the existing Groundwater and Leachate Monitoring Plan, dated 2012 by A-Mehr, Inc., as subsequently amended and approved by the DOH for Phases I, II, IV and V of the landfill until the DOH has approved the new revised plan. The DOH may periodically require revisions to the new revised plan.

2. By January 1, 2019, the permittee shall install monitoring wells (MW) 7, 8, and 9 in accordance with the *Site Map* by A-Mehr, Inc. on sheet 1 in the February 2017 Phase V-B Ext permit application, and install MW-10 as recommended by the 2016 Conceptual Site Model *Figure 8 Groundwater Monitoring Well Network* by CH2M Hill prepared February 2016, or as otherwise approved by the DOH. The exact number, and installation location of the wells shall be submitted to the DOH for review and approval prior to construction.

3. Within thirty (30) days of installation of MW-7, 8, 9, and 10, and approved future wells, submit a Well Completion Report for each of the wells, describing subsurface condition, well design, and installation activities, and including as-built drawings (with depths and elevations of all pertinent components of the well, such as top of casing, total depth of well, screened interval, groundwater elevation, and pump intake placement) and locations. Upon well completion, the permittee shall incorporate wells into the groundwater monitoring program.

4. The permittee shall submit a detailed CQA plan, complete with specifications and design drawings to the DOH thirty (30) days prior to the construction and extension of the Phase V-B Ext leachate sump riser pipe. At a minimum, the permittee shall install additional pipes to the riser at the Phase V-B Ext sump as the surrounding waste fill increases in height as depicted in the 'Leachate Sump Detail' drawing on sheet 15 in the 2017 Phase V-B Ext permit application, as prepared in January 2017 by A-Mehr, Inc.

Soil fill shall be placed and compacted around the extended riser pipe such that it does not damage the sump or any of the associated components.

5. The permittee shall also submit a CQA report that is prepared by a professional engineer with the requirements listed in Special Conditions II.B.9 for the Phase V-B Ext sump riser at least thirty (30) days following the construction of each riser extension. The CQA report shall contain, at a minimum:

    a. Documentation and description of any temporary stormwater control measures implemented.
    b. Documentation and as-built drawings for installation, and extension for the Phase V-B Ext Leachate Sump riser pipe with a summary of materials used, the length of pipe used in the extension, compaction results, and surveyed elevation grades. The elevation grades shall be measured at (1) the top of the riser pipe after extension or modification, and (2) the surrounding soil fill that is placed around the riser until construction is complete and final grade has been achieved.
    c. Documentation to show that the extended risers have been properly installed, and the condition of previously installed riser pipes and the sump to ensure no damage has occurred.

6. The permittee shall maintain reasonable access to all groundwater monitoring stations and leachate manholes/sumps required by this permit. To assure that accurate measurements and representative samples are obtained, it shall be the responsibility of the permittee to periodically validate top of casing elevation and maintain the integrity of the monitoring stations and manholes and protect them from destruction or vandalism. If any of these stations/manholes are destroyed, the permittee shall notify the DOH immediately. The notification shall include pertinent information as to the cause, and what steps are being taken to replace the monitoring station/manhole and prevent the recurrence of such problems in the future. If the damage occurred at the leachate manhole/sump, an assessment as to the damage to the leachate collection and containment system shall also be performed and provided to the DOH. If repairs are required, the DOH shall have an opportunity to review and approve the proposed repairs. A Manhole/Well Completion Report shall be sent to the DOH within thirty (30) days of any new or repaired leachate manhole/sump or groundwater well construction.

7. Leachate Management. The permittee shall implement leachate management measures as provided in the Operations Plan including the following:

    a. Stormwater that comes in contact with solid waste shall be treated as leachate. Leachate shall be managed to prevent any entry into the stormwater collection system and any contact with the public.

b. Leachate shall be removed from the landfill in a manner that maintains a maximum depth of 30 centimeters (12 inches) of leachate above any part of the liner outside the sump area in Phases IV-B and V-B Ext. The IV-B sump services Phases IV-B and V. The Phase V-B Ext sump services Phases V-B Ext. The compliance level for the leachate manhole for IV-A is 207 feet above MSL to avoid overflow and maintain an acceptable leachate level within the inner tank. The compliance level for leachate in the IV-B sump is 212 feet above MSL. The compliance level for leachate in the V-B Ext Sump is 228 feet above MSL, or otherwise determined by the DOH based on as-built drawings of the liner and sump in V-B Ext. The compliance level for leachate in the Phase I and II manholes is one-foot of leachate in the manhole.

c. Leachate from IV-A manhole and IV-B sump shall be pumped to on-site storage tanks having a minimum total capacity of 30,000 gallons for temporary storage, currently consisting of eight 4,000-gallon tanks. Storage tanks shall be double lined or be located within a secondary containment structure with capacity to hold the contents of the largest storage tank. Leachate shall be removed from the storage tanks and managed in accordance with Special Conditions II.G.7.f. Leachate from Phase IV-A manhole shall be pumped via an automated pump that is triggered by a high level sensor. Leachate removal from the IV-B sump shall be through its own dedicated and automated pump and plumbing system. Leachate removal from the V-B Ext and Phases I and II will be directly into pumper trucks. The permittee shall follow the automated and/or manual fill pump procedures specified in the Operations Plan dated February 2017, or as otherwise approved by the DOH.

d. The permittee shall inspect the leachate storage tanks servicing Phase IV-A, IV-B, V-A, and V-B daily to ensure that the tanks and plumbing system are operational, and repair if leaking. At a minimum, leachate shall be pumped and removed from the tank(s) when more than 10,000 gallons are present, and removed at a rate to ensure that no more than 10,000 gallons are present at the end of each operational day. Maintain daily operational records on the inspections and maintenance of the tanks, volume of leachate in the tank, the volume of leachate removed, and disposition of leachate. Any leachate pumped and removed from Phases I and II and from Phase V-B Ext shall also be recorded as to date, volume pumped and disposition of leachate.

e. The permittee shall manage leachate removed from storage tanks or sumps in one or more of the following ways:

    i. Not more than 2,000 gallons per day may be spread at the active disposal face when the active disposal face is located above the liner system of

Phase IV-A. Leachate application shall be done by a water truck using methods that ensure leachate does not come in contact with site personnel or the public, and is only used to aid litter control and waste compaction. Leachate placement shall not promote infiltration.

ii. Leachate may be reintroduced to refuse in Phase IV-B or Phase V-A/B by spreading at the active face for litter control and aid to waste compaction, or outside the active face using vertical injection wells or infiltration trenches. Leachate shall not be recirculated and/or reintroduced in Phase V-B Ext by any means aside from using as litter control as specified in Special Condition II.G.7.e., unless approved by the DOH. Methods used for leachate reintroduction shall be approved by the DOH and shall not allow leachate to be released from the site or exposed to the public or site personnel. The automated and manual control procedures for leachate recirculation described within the Leachate Management Section of the Operations Plan dated May 2017 shall be implemented, unless otherwise approved by the DOH.

iii. Leachate may be transported to a public wastewater treatment facility. Permittee shall maintain a list of one or more qualified and properly licensed third-party contractors to remove and transport leachate from the temporary storage tanks or directly from the leachate sumps, to supplement any leachate transport capability of the permittee. The combined pumping and transport capability of the permittee and contractors shall be not less than 20,000 gallons per day.

f. The permittee shall maintain daily records of leachate monitoring and pumping and management activities, and shall report results in the Annual Operating Report as provided in Special Conditions II.I.2.e.

8. Leachate Monitoring. Leachate levels shall be monitored to ensure compliance with the leachate levels specified in Special Conditions II.G.7.b. The levels of leachate shall be measured and recorded as follows or as otherwise approved by the DOH:

a. Closed landfill Phases I and II (according to the county, only Manhole 4 remains accessible): Minimum once per week.
b. Phase IV-A Leachate Manhole: Minimum once per week.
c. Phase IV-B Leachate Sump: Minimum once per week.
d. Phase V-B Ext Sump: Minimum once per operational day, and after rain events until the select waste layer has been completely installed; minimum two (2) times per week thereafter. Based on data, the DOH may revise the monitoring frequency.

e. All leachate collection points shall be monitored after storm events.
f. If an exceedance occurs, leachate level measurements shall be performed before and after leachate pumping on a daily basis until the level has remained within the allowable limit for a period of one week.
g. All monitoring activities and measured levels shall be recorded and maintained by the permittee.

Leachate and Groundwater Sampling

9. All groundwater and leachate analyses shall be submitted to the DOH within 45 days of sampling and analysis.

10. A sample of leachate shall be collected from each collection point or sump on a minimum semi-annual basis for constituent analysis, or as otherwise approved by the DOH. Leachate samples shall be analyzed for parameters listed in 40 CFR Part 258, Appendix II and major leachate indicators including cations/anions per the Hawaii Landfill Groundwater Monitoring Guidance Document, unless an alternate parameter list has been approved by the DOH.

11. Groundwater sampling for all monitoring wells shall be performed on a quarterly basis unless otherwise approved by the DOH.

12. The permittee shall measure groundwater elevations from each monitoring well prior groundwater sampling and within a reasonable time period in order to estimate groundwater flow direction.

13. The permittee shall sample and analyze groundwater in accordance with the Groundwater and Leachate Monitoring Plan, dated 2012 by A-Mehr, Inc., approved subsequent revisions, and requirements of HAR 1-58.1-16 unless an alternate detection parameter program has been approved by the DOH. The permittee shall request and receive approval from the DOH before implementing any changes to the groundwater analyte list.

14. All sample collection, handling, management, and analysis shall be conducted in accordance with EPA SW-846, *Test Methods for Evaluating Solid Waste*.

15. Each sample shall be properly collected, identified, contained, and preserved. The name and signature of the person who collected the sample shall be included in the records. A chain of custody shall be maintained from the time of sample collection through the final analysis and disposition.

16. Sample analysis shall be conducted by an independent third party with appropriate credentials and performed at the expense of the permittee.

17. The permittee shall provide statistical analysis and documentation in each groundwater and leachate report that adequately supports each assumption, position, and/or conclusion. This shall include, but is not limited to:

    a. Step-by-step methodology for determining and/or updating baseline statistics.
    b. Methodology and statistical data for evaluating monitoring data.
    c. Methodology and historical analysis for determining trends or spikes.
    d. Methodology and statistical data for describing changes or additions to the parameter monitoring list.

18. The permittee shall compare and provide a detailed description of the results obtained from both leachate and groundwater analyses to determine if there is a correlation that may indicate issues with leachate infiltrating into the groundwater, or if these results are independent.

Section H. Closure and Post-Closure

1. The permittee shall maintain and implement the Closure and Post-Closure Plan dated October 2008 and revised February 2017 for all phases unless otherwise approved by the DOH or required by HAR Chapter 11-58.1, and these permit conditions. Should there be discrepancies between these documents, the HAR and these conditions will take precedence.

2. At a minimum, the Closure and Post-Closure Plan and the Financial Assurance report shall be revised every five (5) years or earlier if facility plans are updated and/or changed. This is not withstanding the requirement to make adjustments for inflation on an annual basis. Revisions to the plan shall be prepared in accordance with HAR 11-58.1-17, "Closure and Post-Closure Care," and HAR 11-58.1-18, "Financial Assurance." The Closure Plan and all revisions shall be prepared and certified by a professional engineer, with at least five (5) years' experience in designing landfills, and registered in the state of Hawaii. The Closure Plan shall identify all buffer areas.

3. Two years prior to the final receipt of waste at the facility, the permittee shall submit a final closure and post-closure plan, prepared by a professional engineer registered in the state of Hawaii. The final closure plan shall contain detailed engineering drawings, plans and specifications for construction of closure cap, surface water management improvements and other elements of final closure. The final post-closure plan shall include all maintenance and monitoring requirements based on HAR 11-58.1-17 and the

design/construction of the closure. If an alternative final cover design will be used, a test plot demonstrating compliance with regulations may be required.

4. The permittee shall begin closure activities within 30 days after the date on which the facility receives the known final receipt of waste, unless the DOH grants an extension of time pursuant to HAR 11.58.1-17(a)(6). Closure activities shall be completed within

   180 days following the beginning of closure unless the DOH grants an extension of time pursuant to HAR 11.58.1-17(a)(7).

5. The permittee shall retain a professional engineer registered in the state of Hawaii for the supervision of the closure construction, and upon the completion, the engineer shall submit a summary report to the DOH as to the complete conformity to the plans and specifications as approved. This summary report shall be submitted within 60 days after closure activities are completed. The summary report shall include a documented control program of the closure cap construction, and the quality assurance/quality control testing procedures, laboratory analyses, and engineer's certification of construction and conformity to the approved designs and to HAR Chapter 11-58.1-17.

6. Following completion of any closure construction, the permittee shall submit a copy of the notation on the deed to the landfill property in accordance with HAR 11-58.1-17; and implement post-closure care as provided in the approved post-closure plan in accordance with HAR 11-58.1-17. The DOH may periodically require revisions to the plan.

7. The permittee shall maintain and submit evidence that HAR 11-58.1-18, Financial Assurance, is satisfied on an annual basis.

Section I. Recordkeeping and Reporting

1. By July 31 of each year, the permittee shall submit an AOR, using June 30 of each year as the year-end to:

   Solid and Hazardous Waste Branch
   Environmental Management Division
   Hawaii Department of Health
   P.O. Box 3378
   Honolulu, Hawaii 96801-3378
   Fax No. (808) 586-7509

2. The AOR shall include the following information:

   a. Types of solid waste received (MSW, greenwaste, industrial/commercial, tires, wood, metals, containers of 20 gallons or larger capacity, asbestos, and other special wastes).
   b. Quantities of solid wastes received by type with totals using an appropriate unit of measure.
   c. The average daily disposal rate on a yearly basis.
   d. Quantities of semi-solid liquid waste (tons) received and how it is handled or disposed.
   e. Quantities of leachate (gallons) generated and how it was handled or disposed. If requested by the DOH, the permittee shall also provide water balance estimates of leachate generation using the most recent EPA HELP model using climatic information collected in accordance with Special Conditions II.I.4. Annual rain data for the site on a daily basis shall be provided with this analysis.
   f. Volume of airspace filled during the reporting year, airspace filled during previous years, and airspace remaining in each phase in both cubic yards and years shall be provided. The information shall be provided in both numerical and graphical presentations.
   g. An annual topographic survey and an isopach drawing (depicting the vertical difference between the permitted final grades and existing site elevations) of the site as prepared by a land surveyor registered in the state of Hawaii or an approved alternate method. Any exceedance of permit grades shall be identified and the DOH shall be notified by the use of a Non-Compliance Report. This survey shall clearly show the horizontal and vertical dimensions of the landfill area.
   h. A Sequencing Plan, including a drawing, identifying the cell areas to be filled in the coming year including identification of the wet weather areas. The cell areas and wet weather area capacity shall be provided using an appropriate unit of measure.
   i. Final fill areas, intermediate fill areas, and future unused fill areas shall be identified for the projected year.
   j. A soil-balance report of the past year and coming projected year reported separately. The soil daily cover and intermediate cover including erosion replacement soil shall be reported separately. The source and type of soil shall be recorded separately for daily cover and intermediate cover. The soil-balance report for the past year shall be based on records of actual use in a daily, weekly and monthly basis. Any incomplete/non-application of daily cover shall be identified. Current soil use records shall be maintained at the facility for review.
   k. After closure of any portion of the landfill, a summary of post-closure care and maintenance activities conducted at the closed landfill phases.

l. A copy of the detailed written estimates and documentation of financial assurance.
m. If the remaining disposal capacity for the facility is less than 10 years, as described in 2(f) of this section, the AOR shall include an updated timeline to acquire property, submit design and solid waste application, and start and complete construction of planned future expansions.

3. **Recordkeeping Requirements.** The permittee shall maintain records in accordance with HAR 11-58.1-15(j), Standard Conditions, Item 11, and the conditions of this permit. Records shall include the following list and any other recordkeeping requirements set forth in this permit:

a. Impact buffer area identification within operations plan drawings (Special Conditions II, Section A, Item 3)
b. Load Check Data Sheet (Special Conditions II, Section C Item 2g)
c. Daily log of unacceptable waste (Special Conditions II, Section C Item 3c)
d. Radiation Monitoring Report (Special Conditions II, Section C Item 4)
e. Special Waste Acceptance Program records (Special Conditions II, Section C Item 5b and 5d)
f. Training records (Special Conditions II, Section D Item 6 and 7)
g. Daily Cover-Monitoring-Verification-Program (Special Conditions II, Section D Item 16)
h. Litter control (Special Conditions II, Section D Item 19e)
i. Asbestos disposal locations (Special Conditions II, Section D Item 20)
j. Annual surface water management plan (Special Conditions II, Section E Item 2)
k. Landfill gas monitoring records (Special Conditions II, Section F Item 1)
l. Leachate monitoring records (Special Conditions II, Section G Items 7d, 7f, and 8)
m. Financial assurance requirements (Special Conditions II, Section H Item 7)
n. Climatic information (Special Conditions II, Section I Item 4)

4. **Climatic Information.** Climate information shall be collected on a daily basis and shall include information on rainfall, solar radiation, evaporation, wind speed and direction, humidity, temperature, and other applicable meteorological data, as applicable, for use in modeling evapotranspiration and leachate generation with the HELP Model at the landfill and evaluating litter/odor control. The permittee shall also monitor and record daily wind speed and direction at the active workface of the MSW landfill. The permittee shall minimize any weather equipment downtimes. In the event that the equipment is not operational, the permittee shall maintain a record of the affected date(s), reason, and actions taken. Data shall be provided to the DOH upon request.

SPECIAL CONDITIONS III: ENTRANCE FACILITY—WASTE TRANSFER AND RECYCLING OPERATIONS

1. The entrance facility may only accept, store, and transport household and commercial waste as defined in HAR §11-58.1-03, for disposal. Commercial loads are limited to vehicles that require manual unloading of waste. The entrance facility may accept and temporary store select household-generated recyclables and special waste for recycling, as identified under Special Conditions III, Items 6 and 7. Industrial waste, construction & demolition waste, and waste identified under Special Conditions III, Items 2 and 3 shall not be accepted at the entrance facility. The operations of the facility shall be in accordance with the Central Maui Landfill Entrance Facility Operations Plan revised May 2017, and approved subsequent submissions, unless otherwise specified in these permit conditions.

2. No regulated hazardous waste as defined in state hazardous waste regulations, and PCB waste as defined in 40 CFR Part 761 shall be accepted at the entrance facility.

3. No infectious waste from commercial sources as defined by HAR Chapter 11-104.1, shall be accepted at the entrance facility.

4. The permittee shall implement a screening program at the entrance to ensure that only acceptable solid wastes enter the entrance facility. If the entrance facility inadvertently accepts unacceptable wastes or receives unacceptable wastes at the landfill disposal area of Central Maui Landfill, the permittee shall properly manage and dispose of the unacceptable materials, in accordance with applicable federal, state, and local laws and regulations prior to causing a nuisance, health or environmental threat.

5. Household and commercial waste for disposal from incoming vehicles shall be unloaded directly into the roll-off containers at the self-haul disposal bays. Commercial vehicles shall be screened in accordance with the screening program described in Special Conditions III, Item 4 before offloading. Roll-off containers shall be switched with empty ones when they are filled and shall be transported to the landfill. Household and commercial waste shall not be stored in roll-off containers for period exceeding 24 hours, except roll-off containers that are not full by the end of Saturday's operation may be stored for longer than 24 hours provided containers are appropriately covered (such as before an expected rain event), and runoff is collected and treated as leachate—to prevent vectors, odors, litter, and other nuisances.

6. Acceptance of household-generated source-separated waste materials for recycling shall be limited to fiber materials (including cardboard, newspaper, and paper bags), plastic bottles and bags, glass containers, metal (aluminum, bi-metal, and steel) containers, and scrap metals unless otherwise specified under Special Conditions III,

Item 7. The accepted materials listed in this condition shall be free of fluids and/or contaminants that may cause harm to human health or the environment (i.e., paints, oils, solvents, etc.). Leaded glass such as lead crystals shall not be accepted. The accepted materials for recycling shall be stored in a safe and orderly manner in the designated drop-off containers indicated in the site plan in Figure 2A of the Entrance Operations Manual submitted May 16, 2017, and transported to DOH-permitted recycling facilities. Measures shall be taken to control windblown litter, insects, odors, and vectors.

7. The permittee may accept additional types of recyclable materials, if an updated site plan and operation plan addressing nuisance controls, storage method and location, site holding capacity, removal frequency is submitted and approved by the DOH prior to accepting additional recyclables. Upon approval of the updated site plan and operation plan, the plan shall become part of this permit. The DOH may impose additional conditions for this added activity.

8. Acceptance of special waste shall be limited to used motor oil, scrap tires, white goods, and batteries, from residential sources. The special waste shall be stored in a safe and orderly manner at the designated areas/containers indicated in the site plan in Figure 2A of the Entrance Operations Manual submitted May 16, 2017, and transported to DOH-permitted/approved facilities before creating a nuisance, health, safety, or environmental hazard. Measures shall be taken to prevent and respond to fires, and to control nuisance and environmental impact (spills, leaks, and emissions).

   a. Used motor oil collection, storage, transport, and recordkeeping should be managed in accordance with HAR §11-279, *Standards for The Management of Used Oil*. In accordance with the Entrance Facility Operations Plan, revised May 2017, used motor oil will be stored in a locked shipping container.

   b. The permittee shall comply with the tire disposal requirements specified under HRS 342 I for Used Motor Vehicle Tire Recovery. Tire storage must be free of all contaminants such as oil, grease, gasoline, diesel, etc. that could create fire hazards. Tires must be stored in a manner so that they minimize the accumulation of water and creation of a vector problem. Tires shall only be transported to a DOH-permitted recycling or tire processing facility, or out of state recycling facility.

   c. White goods that enter the facility shall be unloaded properly, stored in an upright position at the designated area, and transported to a permitted facility for refrigerant removal and processing. Refrigerant containing items shall not be pushed into a scrap metal roll-off container unless refrigerant is removed and verified by an EPA certified personnel. Measures shall be taken to prevent the release of CFCs from refrigerant containing items into the atmosphere during

storage and transport. Federal regulations prohibit venting of CFCs into the atmosphere.

d. Batteries shall be placed in a locked, covered, leak-proof container. The permittee shall comply with the disposal, collection, and recycling requirements specified under HRS 342I Lead Acid Battery Recycling. Releases that occur shall be removed immediately and disposed of accordingly. Cracked or leaking batteries must be containerized and managed separately, in accordance with applicable regulations. Battery storage shall be limited to the floor in the container and shall be removed from the site, at least on a monthly basis.

9. If special waste requires processing at the site, such as refrigerant removal and mercury switch and/or mercury thermostat removal from the white goods, an operations plan for special waste processing shall be submitted for DOH review and approval, at least 60 days prior to processing. Upon approval of the revised plan, the plan shall become part of this permit. Depending on the nature of the processing, a permit modification may be required.

10. The maximum storage capacity for collected household waste, recyclable materials, and special waste is as follows:

a.	MSW for disposal:		Five 20-cubic yard roll-offs (in use) in the self-haul disposal bays only
b.	Recyclables:		Four 20-cubic yard roll-offs or compactors below grade Five 20-cubic yard roll-offs at grade
c.	Special Waste:		
	i.	White goods:	25 pieces in the designated area
	ii.	Used oil:	Eight 55-gallon drums in the designated area
	iii.	Used tires:	One 20-cubic yard roll-off container below grade
	iv.	Batteries:	One 20-cubic yard container

11. An all-weather access road shall be maintained into and within the entrance facility.

12. The facility shall be supervised, secured, and have a permanent sign posted at the facility entrance identifying the facility, the name and address of the operator, a contact in case of an emergency, the hours and days of operation, and the waste accepted or not accepted.

13. Scavenging at the facility by the general public is prohibited.

14. Adequate measures shall be prepared to prevent standing water, and to control stormwater run-on and run-off.

15. Adequate measures shall be implemented to collect generated leachate. Any collected leachate shall be properly managed and disposed of prior to creating a nuisance, health or environmental threat. Records shall be maintained as to the quantity and management of all collected leachates.

16. Suitable means shall be provided to prevent and control fires, including the implementation of Fire Prevention and Control Plan and Hazardous Material Spill Response Plan. All incidents shall be reported to the DOH and records of incidents shall be maintained for five (5) years.

17. Suitable means shall be provided to prevent solid waste from scattering; control litter, odors, insects, and vectors; and minimize nuisance conditions.

18. All solid waste passing through this facility shall be collected, treated, recycled, or disposed of at a permitted solid waste management disposal and/or recycling facility.

19. Operational records shall be maintained and shall include a daily log of type and volume of solid waste received, waste screening, waste transported, and the disposal/recycling destination of the solid waste.

20. An annual report shall be prepared and submitted to the DOH reviewing the past year's operations and detailing the total tonnage of each type of material collected at the entrance facility, processed, recycled, transferred, and disposed from the previous fiscal year (July 1 to June 30) by July 31 of each year using the address provided in Special Conditions II, Section I, Item 1. The report shall also include a summary of incidents outside of normal operations.

    The permittee may choose to submit a separate annual report for the entrance facility, or combine with the annual report requirements listed in Special Condition II, Section I.

21. The annual report for the entrance facility shall include the following information:

    a. Quantities of solid waste received by type including destination for disposal.
    b. Quantities (in gallons) of liquid waste (leachate) generated and method of management disposal.
    c. Quantities of materials recycled from the waste stream by type and destination.

    An estimate in gross values of tons, cubic yards, or quantity count, as appropriate, is sufficient.

22. The permittee shall comply with the recordkeeping requirements relating to used motor vehicle tires as provided under HRS Chapter 342 I. The statute requires facilities that

accept used tires to submit a summary of the following information by July 31 of each year:

a. date of receipt of used tires;
b. quantity of used tires received; and
c. record of shipment indicating:
    i. ultimate destination of the used tires;
    ii. identification of the transporter;
    iii. date of shipment; and
    iv. quantity of tires shipped.

23. If the permittee terminates the facility operation (or faces lease termination or eviction), the permittee shall perform necessary closure activities including, but not limited to, the removal of all remaining solid waste and performing appropriate site assessments and remedial activities. The permittee shall notify the DOH in writing at least within ninety (90) calendar days prior to the facility's closure [HAR §11-58. 1-04(e)(3)J. The written notification shall include an updated closure plan, which should accomplish the following objectives:

    a. Provide an assessment of the site's present and future threat to public health and the environment due to contaminants possibly left on-site from the facility's operation.
    b. Provide a plan of action to minimize or mitigate any threats to public health and the environment due to contaminants possibly left on-site by the facility's operation.
    c. Provide a schedule to implement the plan of action.

    Upon DOH approval of the closure plan, the permittee shall implement the plan in accordance with the approved implementation schedule.

Appendix B-2

Special Use Permit

BEFORE THE LAND USE COMMISSION
STATE OF HAWAI'I

In The Matter Of The Petition Of	)	DOCKET NO. SP97-390
	)	
PUBLIC WORKS AND WASTE MANAGEMENT, SOLID WASTE DIVISION, COUNTY OF MAUI (DEPT. OF ENVIRONMENTAL MANAGEMENT)	)	APPROVING A THIRD AMENDMENT TO THE LAND USE COMMISSION'S SPECIAL USE PERMIT
To Obtain A Third Amendment To Land Use Commission Special Use Permit To Obtain a Time Extension; For Expansion Of The Permit Area By 41.2 Acres, For Addition Of Composting And Quarrying Related Activities as Permitted Uses; And To Request A Transfer Of Permit Holder To Establish And Operate Central Maui Sanitary Landfill On Approximately 70.5 Acres Of Land Situated Within The State Land Use Agricultural District At Pu`unene Maui, Hawai`i, Tax Map Key: 3-8-03: Por. 4, Por. 20, and Por. 21	)	

DECISION AND ORDER APPROVING A THIRD AMENDMENT TO THE LAND USE COMMISSION'S SPECIAL USE PERMIT

THIS IS TO CERTIFY THAT THIS IS A TRUE AND CORRECT COPY OF THE DOCUMENT ON FILE IN THE OFFICE OF THE STATE LAND USE COMMISSION, HONOLULU, HAWAII.

MAR 23 2009 BY _____

Date Executive Officer

BEFORE THE LAND USE COMMISSION
STATE OF HAWAI'I

In The Matter Of The Petition Of	)	DOCKET NO. SP97-390
	)	
PUBLIC WORKS AND WASTE MANAGEMENT, SOLID WASTE DIVISION, COUNTY OF MAUI (DEPT. OF ENVIRONMENTAL MANAGEMENT)	)	APPROVING A THIRD AMENDMENT TO THE LAND USE COMMISSION SPECIAL USE PERMIT
To Obtain A Third Amendment To Land Use Commission Special Use Permit To Obtain a Time Extension; For Expansion Of The Permit Area By 41.2 Acres, For Addition Of Composting And Quarrying Related Activities as Permitted Uses; And To Request A Transfer Of Permit Holder To Establish And Operate Central Maui Sanitary Landfill On Approximately 70.5 Acres Of Land Situated Within The State Land Use Agricultural District At Pu`unene Maui, Hawai`i, Tax Map Key: 3-8-03: Por. 4, Por. 20, and Por. 21	)	

DECISION AND ORDER APPROVING A THIRD AMENDMENT TO THE LAND USE COMMISSION'S SPECIAL USE PERMIT

On June 12, 2008, the County of Maui, Department of Environmental Management ("Petitioner"), filed a written request for amendment to State Special Use Permit SP97-390 with the County of Maui Department of Planning ("DP"), pursuant to section 205-6, Hawai`i Revised Statutes ("HRS"), and sections 15-15-95 and 15-15-96, Hawai`i Administrative Rules ("HAR").[1]

The Petitioner sought to amend SP97-390 by: 1) Requesting a Ten Year Time Extension; 2) Expanding the Permit Area by 41.2 acres; 3) adding composting and quarrying related uses; and 4) requesting a transfer of permit holder from the Department of Public Works to the Department of Environmental Management. The Maui Planning Department supported the request with conditions.

On October 28, 2008, the County of Maui Planning Commission ("Planning Commission") conducted a hearing on the Petitioner's Request. One public witness expressed opposition to the request. After due deliberation, the Planning Commission voted to approve the amendment with the existing Conditions currently included in SP97-390, as amended, plus the addition of two new Conditions that provide as follows: 1)" That the Applicant shall clarify the entire acreage that is the subject of LUC Docket No. SP97-390 with the Maui Planning

[1] The Applicant concurrently filed applications for a Special Management Area ("SMA") Use Permit and a County Special Use Permit. This is the Third Amendment to this Docket. The Applicant had titled it the Second Amendment.

Commission and the LUC by filing an aerial photographic map with overlay and a site map clearly depicting the proper acreage of SP97-390."; and 2) " That to the extent practicable, leachate generated at the landfill shall be returned to the landfill." The Planning Commission also amended existing Condition 1. by extending the term of the Special Permit 20 years until October 31, 2028, instead of the ten years recommended by the Planning Department.

The Land Use Commission ("Commission") has jurisdiction over the Applicant's Request. Section 205-6, HRS, and sections 15-15-95 and 15-15-96, HAR, authorize this Commission to approve special use permits and amendments thereto for areas greater than 15 acres.

On December 24, 2008, the Commission received a copy of the decision and a portion of the record of the Planning Commission's proceedings on the Petitioner's Request. On February 9, 2009, the Commission received the remaining portion of the record.

On February 19, 2009, the Commission met in Kahului, Maui, Hawai`i, to consider the Petitioner's Request. Cheryl Okuma, Director of the Maui Department of Environmental Management, and Tracy Takamine of the Department of Environmental Management represented the Petitioner. Michael Hopper, Esq. and Robyn Loudermilk represented the County of Maui Planning Department.

Following a presentation by Petitioner, in which it pointed out that approval of this special permit was needed to satisfy Department of Health requirements, and questions and discussion by the Commissioners, a motion was made and seconded to approve the Petitioner's Request as approved by the Maui Planning Commission, subject to the following amendments to the existing Conditions and the addition of new Conditions 16 and 17 as recommended by the Maui Planning Commission. However, the Commission approved a 10 year rather than 20 year extension of the Special Permit. The amended conditions provide as follows:

1. That the State Land Use Commission Special Permit shall be valid until October 31, 2018, subject to further time extensions by the Land Use Commission upon a timely request for extension filed at least one-hundred twenty (120) days prior to its expiration. The appropriate Commission shall make a recommendation to the Land Use Commission and may require a public hearing on the time extension.

13. That the Applicant use non-drinking water, to the extent possible, for grading, dust control, and irrigation of the landfill.

14. That the Applicant shall reasonably ensure that windblown debris around the perimeter of the landfill, particularly within areas visible from the public right-of-way, are removed on a daily basis.

16. That the Applicant shall clarify the entire acreage that is the subject of LUC Docket No. SP97-390 with the Maui Planning Commission and the LUC by filing an aerial photographic map with overlay and a site map clearly depicting the proper acreage of SP97-390.

17. That to the extent practicable, leachate generated at the landfill shall be returned to the landfill.

Following deliberation by the Commissioners, a vote was taken on the motion. There being a vote tally 7 ayes and 2 absent, the motion carried.

ORDER

Having duly considered the complete record of Petitioner's Request and the oral arguments presented by the parties present in the proceeding, and a motion having been made at a meeting on February 19, 2009, in Kahului, Maui, Hawai`i, and the motion having received the affirmative votes required by section 15-15-13, HAR, and there being good cause for the motion, the LUC hereby APPROVES Petitioner's Request to (i) transfer the Permit holder from the Department of Public Works and Waste Management, Solid Waste Division County of Maui to the Department of Environmental Management, County of Maui; (ii) add approximately 41.2 acres of land to the Permit Area as shown on Exhibit "A" attached hereto and incorporated by reference herein; and (iii) add composting and quarrying activities as allowed uses in this 41.2 acre area being added to the Permit Area; subject to the following Amendments: to the existing Permit Conditions and new Conditions 16 and 17:

1. That the State Land Use Commission Special Permit shall be valid until October 31, 2018, subject to further time extensions by the Land Use Commission upon a timely request for extension filed at least one-hundred twenty (120) days prior to its expiration. The appropriate Commission

shall make a recommendation to the Land Use Commission and may require a public hearing on the time extension.

13. That the Applicant use non-drinking water, to the extent possible, for grading, dust control, and irrigation of the landfill.

14. That the Applicant shall reasonably ensure that windblown debris around the perimeter of the landfill, particularly within areas visible from the public right-of-way, are removed on a daily basis.

16. That the Applicant shall clarify the entire acreage that is the subject of LUC Docket No. SP97-390 with the Maui Planning Commission and the LUC by filing an aerial photographic map with overlay and a site map clearly depicting the proper acreage of SP97-390.

17. That to the extent practicable, leachate generated at the landfill shall be returned to the landfill.

All other conditions to the Decision and Order dated May 13, 2002, as further amended by Decision and Order dated December 14, 2004 are hereby reaffirmed and shall continue in effect.

DONE at Honolulu, Hawai`i, this 19th day of March, 2009, per motion on February 19, 2009.

APPROVED AS TO FORM:

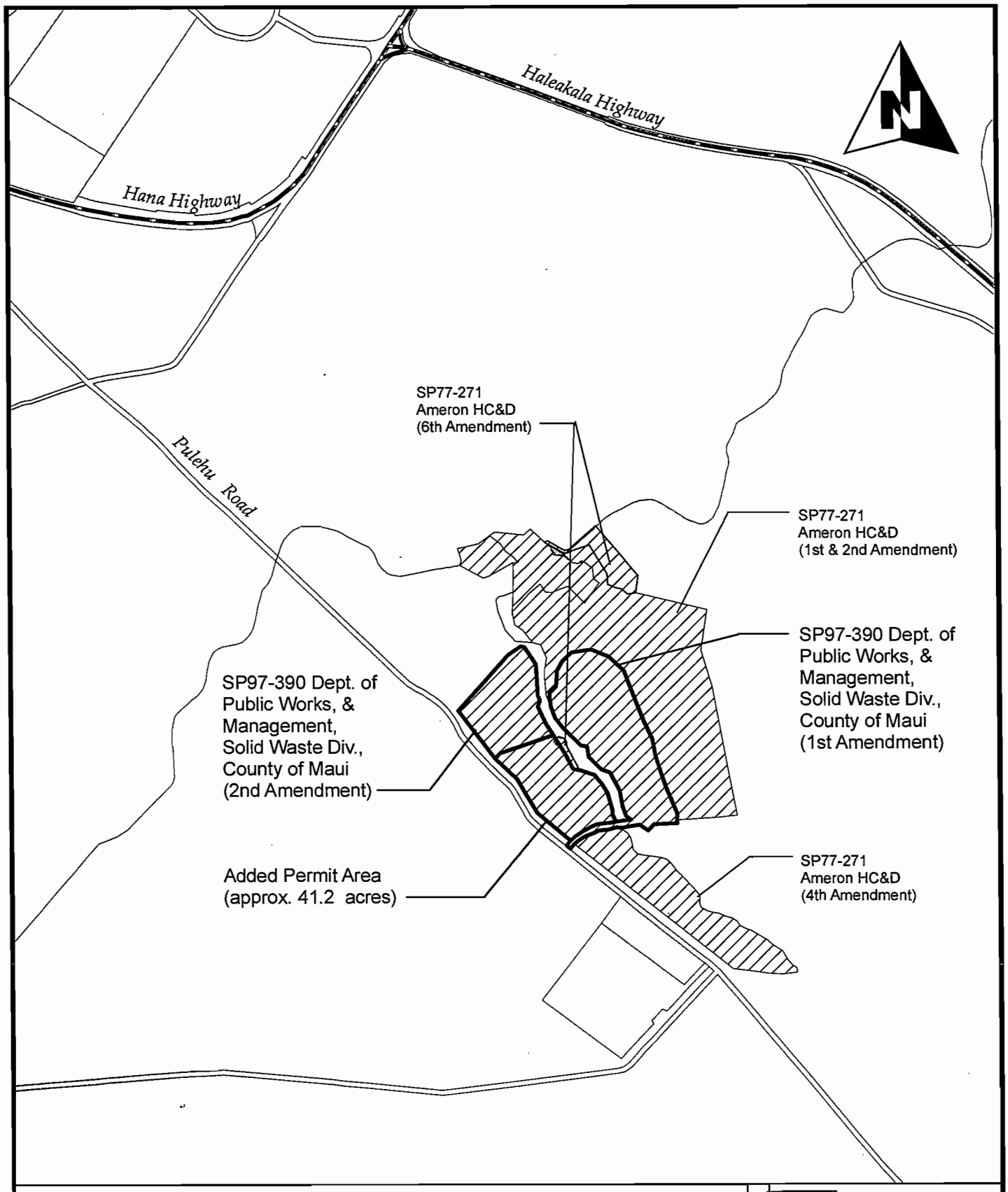
Deputy Attorney General

LAND USE COMMISSION
STATE OF HAWAII

By
DUANE KANUHA
Chairperson and Commissioner

Filed on:
MAR 23 2009

Executive Officer



SP97-390 PUBLIC WORKS AND WASTE MANAGEMENT, SOLID WASTE DIVISION, COUNTY OF MAUI (DEPT. OF ENVIRONMENTAL MANAGEMENT)

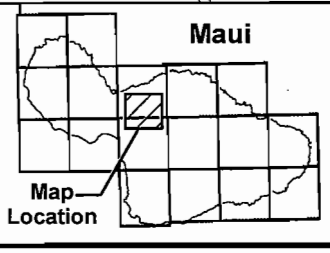
Location Map

Tax Map Key: 3-8-03: Por. 4, Por. 20, and Por. 21

Pu`unene, Maui, Hawai`i

Scale: 1" = 2,000 ft.

Exhibit "A"



c:/websluc/dockets/sp97390dpwwm/sp77271dando_exhibit_a.mxd

BEFORE THE LAND USE COMMISSION
STATE OF HAWAI'I

In The Matter Of The Petition Of	)	DOCKET NO. SP97-390
	)	
PUBLIC WORKS AND WASTE MANAGEMENT, SOLID WASTE DIVISION, COUNTY OF MAUI (DEPT. OF ENVIRONMENTAL MANAGEMENT)	)	CERTIFICATE OF SERVICE
To Obtain A Third Amendment To Land Use Commission Special Use Permit To Obtain a Time Extension; For Expansion Of The Permit Area By 41.2 Acres, For Addition Of Composting And Quarrying Related Activities as Permitted Uses; And To Request A Transfer Of Permit Holder To Establish And Operate Central Maui Sanitary Landfill On Approximately 70.5 Acres Of Land Situated Within The State Land Use Agricultural District At Pu`unene Maui, Hawai`i, Tax Map Key: 3-8-03: Por. 4, Por. 20, and Por. 21	)	

CERTIFICATE OF SERVICE

I hereby certify that a copy of DECISION AND ORDER APPROVING A THIRD AMENDMENT TO THE LAND USE COMMISSION SPECIAL USE PERMIT was

served upon the following by either hand delivery or depositing the same in the U. S. Postal Service by regular or certified mail as noted:

DEL. ABBEY SETH MAYER, Director
Office of Planning
P. O. Box 2359
Honolulu, Hawaii 96804-2359

DEL. BRYAN YEE, Esq.
Deputy Attorney General
Hale Auhau, Third Floor
425 Queen Street
Honolulu, Hawaii 96813

REGULAR MAIL: Mr. Mike Munekiyo
Munekiyo & Hiraga, Inc.
395 High Street, Suite 104
Wailuku, Hawai`i 96793

REGULAR MAIL: Cheryl Okuma, Director
County of Maui
Department of Environmental Management
200 South High Street, Room 322
Wailuku, Hawaii 96793

CERTIFIED MAIL: Mr. Michael Hopper Esq.,
County of Maui
Department of Environmental Management
200 South High Street, Room 322
Wailuku, Hawaii 96793

Honolulu, Hawaii, MAR 23 2009.

ORLANDO DAVIDSON
Executive Officer

Appendix B-3

Stormwater Permit

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

LAWRENCE MIKE
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801-3378

(10)

'98 AUG 17 P1:51

In reply, please refer to:
EMD/CWB

August 12, 1998

Mr. Charles Jencks
Director
Department of Public Works
and Waste Management
County of Maui
200 South High Street
Wailuku, Hawaii 96793

RUSH
DEPT. OF PUBLIC WORKS

	INFO	ACTION	SEE ME	COMMENTS	COPY	FILE
DIRECTOR						
DEP. DIR						
PERS.						
STAFF CE						
LUCA						
WW RECL.						
SOLID W.						
ENGR.						
HWYS.						
SECTY.						

Return to _____ Due _____
Ref. No. _____
By _____ Date: _____

Attention: Ms. Elaine L. Baker, P.E.

Dear Mr. Jencks:

Subject: **Notice of General Permit Coverage**
Central Maui Sanitary Landfill
Pulehu Road
Puunene, Maui, Hawaii
TMK: (2)3-8-03:4,18,19
File No. HI R50A623

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. $ 1251 et seq.; the "Act") and Chapter 342D, Hawaii Revised Statutes, and Chapters 11-54 and 11-55, Hawaii Administrative Rules (HAR), Department of Health, State of Hawaii,

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS AND WASTE MANAGEMENT

(hereinafter "PERMITTEE")

is authorized to discharge storm water runoff associated with industrial activity from its facility located on Pulehu Road, Puunene, Maui, Hawaii, TMK:(2)3-8-03:4,18,19, to the receiving water named Kalialinui Gulch, at coordinates Latitude 20°51'37"N, Longitude 156°25'18"W.

This Notice of General Permit Coverage (NGPC) is subject to compliance with the following regulations and conditions:

1. HAR Chapter 11-55, Appendix B, NPDES General Permit Authorizing Discharges of Storm Water Associated With Industrial Activities;

2. HAR Chapter 11-55, Appendix A, Department of Health Standard General Permit Conditions;

3. HAR Sections 11-55-34.04(a), 11-55-34.07, 11-55-34.11, 11-55-34.12, and any other applicable sections of HAR Chapter 11-55;

4. Plans, reports, specifications and other related materials submitted in and with the Notice of Intent (NOI) dated September 11, 1997, and/or later amendments to the NOI;

5. A copy of this NGPC and its enclosures; and plans, reports, specifications and other related materials submitted in and with the NOI dated September 11, 1997, and/or later amendments to the NOI shall be kept at the facility until termination of subject activities;

6. Discharge quality data as required by DOH-NOI Form A shall be collected during the next representative rainfall event and submitted within 30 days of such sampling. Data shall include the concentrations of all parameters listed under Item 2.a, and the concentrations of all parameters listed under Item 2.b believed to be present in the discharge;

7. In accordance with HAR Chapter 11-55, Appendix B, Table 34.1, and the Federal Register, Volume 60, Number 189, Sector L, the discharge shall be limited and monitored by the Permittee as follows:

Parameter	Discharge Limitation	Control Concentration	Units	Measurement Frequency	Type of Sample
Flow	N/L	N/A	MGD	Annually[1]	Calculated or Estimated
Biochemical Oxygen Demand (5-Day)	N/L	N/A	mg/l	Annually[1]	Composite or Grab
Chemical Oxygen Demand	N/L	N/A	mg/l	Annually[1]	Composite or Grab
Total Suspended Solids	N/L	100	mg/l	Annually[1]	Composite or Grab
Total Phosphorus	N/L	N/A	mg/l	Annually[1]	Composite or Grab

Parameter	Discharge Limitation	Outfall Concentration	Units	Measurement Frequency	Sample Type
Total Nitrogen	N/L	N/A	mg/l	Annually[1]	Composite or Grab
Nitrate + Nitrite Nitrogen	N/L	N/A	mg/l	Annually[1]	Composite or Grab
Oil and Grease	15	N/A	mg/l	Annually[1]	Grab
pH Range	5.5 to 8.0	N/A	Standard Units	Annually[1]	Grab
Total Recoverable Iron	N/L	1.0	mg/l	Annually[1]	Composite or Grab

N/L No Limitation at this time. Only monitoring and reporting required.
N/A Not Applicable.
MGD Million gallons per day
mg/l Milligrams per liter
[1] The monitoring year shall start on the effective date of this NGPC.
[2] Samples shall be collected from a discharge resulting from a representative storm. A representative storm means a rainfall that accumulates more than 0.1 inch of rain and occurs at least seventy-two hours after the previous measurable (greater than 0.1 inch) rainfall.

8. In addition to the water quality monitoring requirements specified in Item 7 above, the Permittee shall also conduct visual monitoring of the storm water runoff. At a minimum, visual monitoring shall be conducted annually and reported along with water quality monitoring results. Visual monitoring reports shall include a description of the presence/absence of turbidity, color, floating oil and grease, floating debris, and scum;

9. Reporting of monitoring results shall be in accordance with HAR Chapter 11-55, Appendix B, Section 9;

10. The Director may specify additional monitoring requirements and limitations in addition to those specified in Items 7 and 8 of this NGPC;

11. The Permittee shall submit a Storm Water Pollution Control Plan (SWPCP) in accordance with HAR Chapter 11-55, Appendix B, Section 5, and Section 6, if applicable, within 120 days of issuance of this NGPC. The SWPCP shall be implemented within 180 days of issuance of this NGPC;

12. The Permittee shall revise their SWPCP should any discharge limitation or cutoff concentration be exceeded. The revisions shall include measures to reduce the amount of pollutants found to be in exceedance from entering storm water runoff;

13. The Permittee shall notify the Department of Health upon termination of the subject activities; and

14. The Permittee shall be responsible for ensuring that anyone working under this NGPC understands the NGPC's terms and conditions.

This NGPC will take effect on the date of this notice. This NGPC will expire at midnight, September 21, 2002, or when amendments to HAR Chapter 11-55, Appendix B are adopted, whichever occurs first.

Should you have any questions regarding this NGPC, please contact Ms. Kris Poentis, Engineering Section of the Clean Water Branch, at (808)586-4309.

Sincerely,

THOMAS E. ARIZUMI, P.E., CHIEF
Environmental Management Division

KP/cr

Enclosures:
1. HAR Chapter 11-55, Section 34, Appendices A and B
2. Discharge Monitoring Report Form
3. Title 40, Code of Federal Regulations Citations as referenced in Chapter 11-55, Appendix A
4. Federal Register, Volume 60, Number 189, Sector L
5. Guidance Manual for Developing the Storm Water Pollution Control Plan

c: DHSA, Maui

STORM WATER SAMPLING PROCEDURES
CITY OF MAUI LANDFILLS

1.	Is.rain in the forecast?	
	If yes, be sure rain gauge is empty and in place.	If no, no action required
2.	Has it rained in the past 72 hours more than 0.1 inch?	
	If yes, do not sample.	If no, mobilize for storm water sampling at the site. a. Go over checklist to be sure sample kit is complete. b. Bring kit, calculator, cardboard box, and ice to the site. c. Check rain gauge at site and record accumulated rainfall.
3.	Has runoff begun at the sampling station? And do you think that you may have missed the first hour of runoff?	
	If yes, do not sample (first flush was missed).	If no, prepare to sample runoff. a. Set up the rain gauge near the sampling station. b. Calibrate pH meter.
4.	Has runoff started?	
	If yes, complete preparations and begin sampling. a. Be sure the channel has a pool big enough to fill sample bottles, if necessary, use a shovel to dig a hole and let it clear before sampling (be sure you don't dig into landfilled rubbish).	If no, continue reading the rain gauge at 20 minute intervals for 3 hours or until rain ends (if less than 3 hours).

	b. Enter heading information in the field book (see sample pages). c. Label sample bottles for the first flush grab samples and the initial grab sample for later compositing with name of the landfill, date and time of sample collection, sample no., Maui County/PMX, your initials, and place "clear" over label. d. Place clear tape over the sample labels. e. Collect first flush water samples directly into the following containers: one 1L glass bottle, one 1L plastic bottle, one 500 ml plastic bottle. f. Collect two 500 ml plastic bottle samples for later compositing. g. Place samples in cooler with ice. h. Read the rain gauge: record rainfall accumulation and the time in field book i. Measure first sample for pH only and record in field book. j. Preserve the glass bottle and initial 500 ml plastic bottle samples with hydrochloric acid (HCl), add half the volume of a disposable pipette to the 500 ml bottle and a full pipette volume to the glass container, do not acidify the 1L plastic bottle or grab samples for later compositing. k. Return samples to cooler.	
5.	Has runoff stopped flowing at the sample station?	
	If yes, continue to step 6, below.	If no, repeat steps 4c through 4h at 20 minute intervals.

6.	Have three hours passed since the start of the rain event?	
	If yes, continue to step 7, below.	If no, continue recording rainfall every 20 minutes, if runoff resumes return to step 4c, if you are sure the storm has passed, go on to step 7.
7.	Was the total rainfall accumulation for the storm event at least 0.1 inch?	
	If yes, complete sample event. a. Calculate sample volumes for compositing (see sample page in field book, total volume should be between 1,500 ml and 4,000 ml). b. Measure the calculated volume of each grab sample with the graduated cylinder and pour into the compositing jug. c. Label a 1L plastic bottle and a 500 ml plastic bottle with the name of the landfill, date, and time of the last grab sample, Maui County/PMX, your initials, and "composite". d. Place clear tape over the sample labels. e. Mix the composite sample by inverting the jug several times. f. Fill the 1L and 500 ml plastic bottles from the composited sample. g. Place samples in cooler with ice. h. Complete the Chain-of-Custody information. i. Remove crushed ice from the cooler and repack the sample bottles tightly n the cooler with "blue ice".	If no, continue monitoring rainfall until at least 0.1 inch of rainfall has accumulated and proceed with step 7.

j. Ship the cooler to Aquatic Research, Inc. by Federal Express or an equivalent overnight carrier.

k. Call Jim Good at Parametrix (206) 882-8880 or 827-3218 (H) and I will notify the laboratory to expect the samples. Also, please call me at any hour if you have questions.

STORMWATER SAMPLING KIT CHECKLIST

_____ Rubber Gloves
_____ Headlamp Flashlight
_____ Field Book
_____ Marking Pens
_____ Sampling Procedures
_____ Sampling Kit Checklist
_____ Chain-of-Custody Forms
_____ Ziplock Freezer Bags
_____ pH Meter
_____ Thermometer
_____ Tap Water Wash Bottles
_____ HCI (hydrochloric acid)
_____ Disposable Pippets
_____ Paper Towels
_____ Compositing Jug
_____ Graduated Cylinder
_____ Glass Sample Bottle
_____ (2) one-liter Plastic Sample Bottles
_____ (20) 500-ml Plastic Sample Bottles
_____ Clear Tape
_____ Large Cooler

In addition to the above-listed items found in the Sample Kit, you will need two bags of crushed ice, a calculator to generate sample volumes for compositing, and a cardboard box to hold empty bottles and equipment presently in the cooler.

Appendix C

Stability Analysis

(Gross Slope Stability of The Liner System)

(For Stability Analysis of The Final Closure Cover, Please See Appendix B of The Closure Plan)

Appendix C-1

Stability Analysis

Phase III

Slope Stability Analysis
Central Maui Landfill – Phases III
January 2019

Introduction

Central Maui Landfill (CML) is located within a "seismic impact zone", defined by Hawaii Administrative Rules (HAR) Section 11-58.1-13(e), as an area with a ten percent or greater probability of experiencing a horizontal acceleration in lithified earth material, due to seismic shaking, of more than 0.10 g in a 250 year period.

The United States Geological Survey (USGS) has classified the island of Maui in UBC Seismic Zone 2B, defined as having a ten percent probability of exceeding a peak ground acceleration of 0.15 g in 50 years. (USGS, 2004a) USGS earthquake hazard maps estimate the peak horizontal ground acceleration in central Maui to be 0.36 g with a 2% probability of occurrence in 50 years (See Figure 1). A probability of exceedance of 2% in 50 years is approximately equivalent to a probability of 10% in 250 years (USGS, 2004b), and represents an event expected to occur one time in approximately 2,400 years (USGS, 1996).

HAR 1.58.1-13(e) prohibits municipal solid waste landfills to be constructed or expanded in a seismic impact zone unless the landfill operator or owner demonstrates that the containment structures of the landfill are designed to withstand the maximum horizontal acceleration due to an earthquake. A-Mehr, Inc. has prepared the following analysis to make the required demonstration.

Methodology

A-Mehr, Inc. used the slope stability analysis computer program STABL5M as well as STED (which is a pre- and post-processor program for data input and output) to compute the static factor of safety and yield acceleration. The program uses the Modified Bishop and Modified Janbu methods, to determine the location of the lowest factor of safety for failure planes through the liner system for static and pseudostatic conditions.

The analysis is based on a gross slope stability evaluation of the landfill at the time when the landfill has reached its maximum permitted elevation, with design final slope gradients generally 3:1 (horizontal to vertical), and no steeper than 2.5:1 (horizontal to vertical).

Five critical cross-sections were developed for analysis, located as shown on Figures 1, and 2 on site plans displaying Phase III landfill liner grades existing final cover, and schematic grades of the refuse bottom in Phases I and II, and proposed final refuse over Phase III, which blend into the adjacent Phases I and II area. These sections, designated as III-S1, III-S2, III-S3, III-S4, and III-S5, show maximum thickness of refuse over the liner system roughly on the order of 70 to 170 feet.

The analysis was conducted according to procedures specified in the document "RCRA Subtitle D (248) Seismic Design Guidance for Municipal Solid Waste Facilities (U.S. Environmental

Protection Agency, April 1995). The document provides a straightforward procedure for evaluating the seismic stability[1] of refuse slopes, as follows:

- Establish cross-sections and assign appropriate shear strength parameters.
- Conduct static stability analyses, using appropriate programs to search for the most critical locations in the cross-section to determine the lowest static factor of safety.
- Determine the seismic coefficient, k_s. The generally recommended value for k_s is 50% of the peak horizontal acceleration during the design earthquake (USAPE, 1995).
- Conduct pseudo-static stability analyses of the most critical locations for each cross-section, applying a horizontal load equivalent to the selected seismic coefficient k_s.
- Based on Newmark-type slope material model for seismic analyses, if the resulting pseudo-static factor of safety is greater than 1.0, or the corresponding yield acceleration, K_y, is greater and the applied horizontal acceleration, K_s, there are no seismically-induced permanent slope displacements for the design earthquake event, and the seismic stability analysis is complete.

Input Data

The analysis requires shear strength properties to be assigned to each material in the system. Table 1 lists the components forming the liner–waste system in the Phase III. Liner components are the essentially same on the floor and side slopes, except for the presence of leachate collection gravel media on the floor. Table 2 lists the properties for each component and interface, including the existing final cover soil over the Phase II area.

The seismic coefficient used in the pseudo-static stability analysis is 50% of the peak horizontal acceleration as recommended by USEPA (1995), and the design earthquake is 0.5 x 0.36 = 0.18g.

Table 1
System Components – From Bottom to Top

Prepared subgrade
Two (2) feet of low permeability soil liner
80 mil HDPE textured (both sides) geomembrane
16 ounce/square yard nonwoven geotextile
12 inches leachate collection sand or gravel
16 ounce/square yard nonwoven geotextile
2 ft. sandy clay soil (operations/protecting layer)
Solid waste

Analyses of gross stability of landfill slopes, including the liner system, and the existing Phase II final cover were conducted for the most critical conditions. These analyses evaluated the cross-sections illustrated on Figure 3, with shear strength properties typical of solid waste, the soil, liner, and existing final cover materials present at the landfill, including a refuse mass unit weight of 65 pounds per cubic foot (pcf) based on site-specific waste compaction and soil use data for CML.

Appendix C presents the data and calculations used to estimate the site-specific refuse mass unit weight of 65 pcf. Table 2 summarizes the input values for the stability analyses.

[1] Seismic stability as evaluated in this report refers to stability against potential movements of significant volumes of refuse or soil, as distinguished from minor slippage of surface materials.

Table 2
Shear Strength Properties for Gross Slope Stability Analysis

Material	Friction angle (degrees)	Cohesion (lb./sq. ft.)	Unit Weight (lb./cu. ft.)
Natural Subgrade (Rock)	45	2000	140
Low-permeability bottom and side-slope soil liner, as well as structural fill against quarry walls	25	250	120
Solid Waste	33	0	65
Liner Interface System Low permeability soil liner vs. textured HDPE liner interface	18	0	100
Phase II Final Cover Low permeability soil	18	0	100

Results

The computer output sheets for the STABL5M stability analyses are presented in Appendix A. The results are summarized in the following discussion.

Static Slope Stability:

Each of the Five cross-sections was evaluated for gross (or deep-seated) slope stability using the material properties listed in Table 2. The liner system was assigned the properties of the most critical interface, the low permeability soil liner / textured HDPE interface, and the Phase II final cover materials.

Cross-sections analyzed were determined to have computed static factors of safety (FS) equal to or greater than 1.5 for all cases. As shown in Table 3, the lowest FS determined using wedge [W] type of potential sliding surfaces (including weakest bottom and slide-slope liner interface elements), as well as circular [C] surfaces, for each cross section was:

Cross-section III-S1 2.58 [W], 3.20 [C]
Cross-section III-S2 2.16 [W], 2.31 [C]
Cross-section III-S3 2.58 [W], 2.69 [C]
Cross-section III-S4 2.03 [W], 2.28 [C]
Cross-section III-S5 2.68 [W], 3.28 [C]

Pseudostatic Stability Analysis:

All cross-sections were determined to have pseudo-static factors of safety (FS) in excess of 1.0 when analyzed using the seismic coefficient k_s = 0.18g.

As shown in Table 3, the lowest seismic FS values for each cross-section are:

Cross-section III-S1 1.25 [W], 1.72 [C]
Cross-section III-S2 1.13 [W], 1.34 [C]
Cross-section III-S3 1.25 [W], 1.48 [C]
Cross-section III-S4 1.11 [W], 1.31 [C]
Cross-section III-S5 1.26 [W], 1.66 [C]

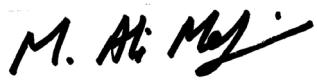
Table 3
Summary of Gross Slope Stability Analysis Results - Liner System
Static and Pseudo-Static Factors of Safety and Yield Acceleration

Cross Section	Analysis Type	Static Factor of Safety FS	Pseudo-Static PSFS (for 0.18g)	Yield Acceleration, Ky	Search Area
III-S1	Static, W	2.58	1.32	0.29	≈ 215-845' liner
	Static, C	3.20	1.73	0.44	W 3:1 (H:V) Slope
	Static, W	2.78	1.25	0.26	≈ 455-1085' liner
		2.82	1.32	0.28	≈ 265-455' liner
		3.60	1.69	0.39	≈ 200-265' liner
	Static, C	3.38	1.72	0.42	E 3:1 (H:V) Slope
III-S2	Static, W	2.61	1.47	0.36	≈ 365-740' liner
		2.80	1.54	0.37	≈ 340-365' liner
		2.81	1.57	0.41	≈ 320-340' liner
		3.04	1.70	0.44	≈ 270-320' liner
		3.35	1.85	0.58	≈ 230-270' liner
		3.68	2.14	0.57	≈ 208-230' liner
		3.77	2.21	0.63	≈ 195-208' liner
		3.93	2.34	0.84	≈ 185-195' liner
		2.19	1.34	0.33	≈ 100-185' liner
	Static, C	2.32	1.37	0.32	W 3:1 (H:V) Slope
	Static, W	2.26	1.13	0.84	≈ 560-935' liner
		2.16	1.15	0.33	≈ 180-560' liner
		5.33	2.36	0.62	≈ 130-180' liner
	Static, C	2.31	1.34	0.32	E 3:1 (H:V) Slope
III-S3	Static, W	7.72	1.47	0.28	≈ 1167-1220' liner
		7.06	1.46	0.28	≈ 1115-1167' liner
		6.96	1.47	0.28	≈ 930-1115' liner
		2.58	1.25	0.26	≈ 290-900' liner
		2.82	1.47	0.34	≈ 220-290' liner
	Static, C	2.69	1.48	0.35	NW 3:1 (H:V) Slope
III-S4	Static, W	3.99	1.43	0.30	≈ 1090-1255' liner
		3.88	1.42	0.29	≈ 1060-1090' liner
		3.84	1.41	0.29	≈ 1040-1060' liner
		3.81	1.41	0.29	≈ 1025-1040' liner
		3.79	1.42	0.29	≈ 980-1025' liner
Cross Section	**Analysis Type**	**Static Factor of Safety FS**	**Pseudo-Static PSFS (for 0.18g)**	**Yield Acceleration, Ky**	**Search Area**
		3.74	1.44	0.30	≈ 955-980' liner
		3.22	1.28	0.26	≈ 900-955' liner
		3.22	1.28	0.26	≈ 865-900' liner
		2.03	1.11	0.22	≈ 120-865' liner
	Static, C	2.28	1.31	0.30	NW 3:1 (H:V) Slope
III-S5	Static, W	2.68	1.26	0.26	≈ 175-480' liner
		3.55	1.64	0.37	≈ 115-175' liner
	Static, C	3.28	1.66	0.40	NW 3:1 (H:V) Slope

It should be noted that the analysis of gross slope stability was conducted using the interface shear strength of the textured HDPE against low-permeability soil liner, and the existing Phase II final cover, with a friction angle of 18 degrees for the lined area of Phase III and Phase II final cover materials. The areas of Phases I and II were evaluated using the parameters for natural subgrade (rock), with a friction angle of 45 degrees and a cohesion of 2000 psf as indicated in Table 2. With computed pseudo-static factors of safety greater than 1.0, or the corresponding computed yield acceleration greater than the applied horizontal acceleration, it can be concluded there will be no permanent seismically-induced displacement of the liner system during the design earthquake event.

Based on this analysis, we conclude that the containment system for the landfill is designed to resist the maximum horizontal acceleration from the design earthquake, and therefore meets the requirements of HAR 11-58.1-13(e).

Respectfully Submitted,



A-MEHR, INC.
M. Ali Mehrazarin, P.E.
Principal Engineer

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FIGURES

GRAPHIC SCALE 1"=200'

0 200 400 600

N

III-S1

III-S2

III-S3

III-S4

III-S5

GP-1

GP-2

GP-3.1

GP-7

GP-8

GP-10

MW-2

MW-3

MW-4

MW-5

Proposed Phase III-A Area

Future Phase III-B Area

Phase IV-A

Phase IV-A Sump

Phase IV-B Sump

Phase IV-B Leachate Manhole

Phase VB-E Sump

Manhole 4 Leachate Sump

Closed Landfill Phase I & II

Existing Conveyor Belt to be Removed

Kalihiwai Gulch

Stormwater Sedimentation Basin

Leachate Storage Tanks

Stormwater

Legend

- Existing Grades as of 5/15/18
- Limits of Disposal/Cell Areas
- As-Built Liner Grades
- Phase III and VI Liner Grades
- III-S5 — III-S5 Cross Section

A-Mehr, Inc.

Central Maui Landfill (CML)
Phase III Design Plan
Slope Stability Report

Proposed Liner Grades

FILENAME: Master plan.dwg
DRAWN: RM
CHECKED:
DATE: 1/10/19
REVISED:

1

GRAPHIC SCALE 1"=200'

0 200 400 600

N

III-S1

III-S2

III-S3

III-S4

III-S5

Proposed Phase III-A Area

Future Phase III-B Area

Manhole 4 Leachate Sump

Closed Landfill Phase I & II

Kalihiwai Gulch

Stormwater Sedimentation Basin

Leachate Storage Tanks

Phase IV-B Leachate Manhole

Phase IV-A Sump

Phase IV-A

Phase IV-B Sump

Phase VB-E Sump

Stormwater

Legend

Existing Grades as of 5/15/18

Proposed Refuse Final Grades

Limits of Disposal/Cell Areas

III-S5 III-S5 Cross Section

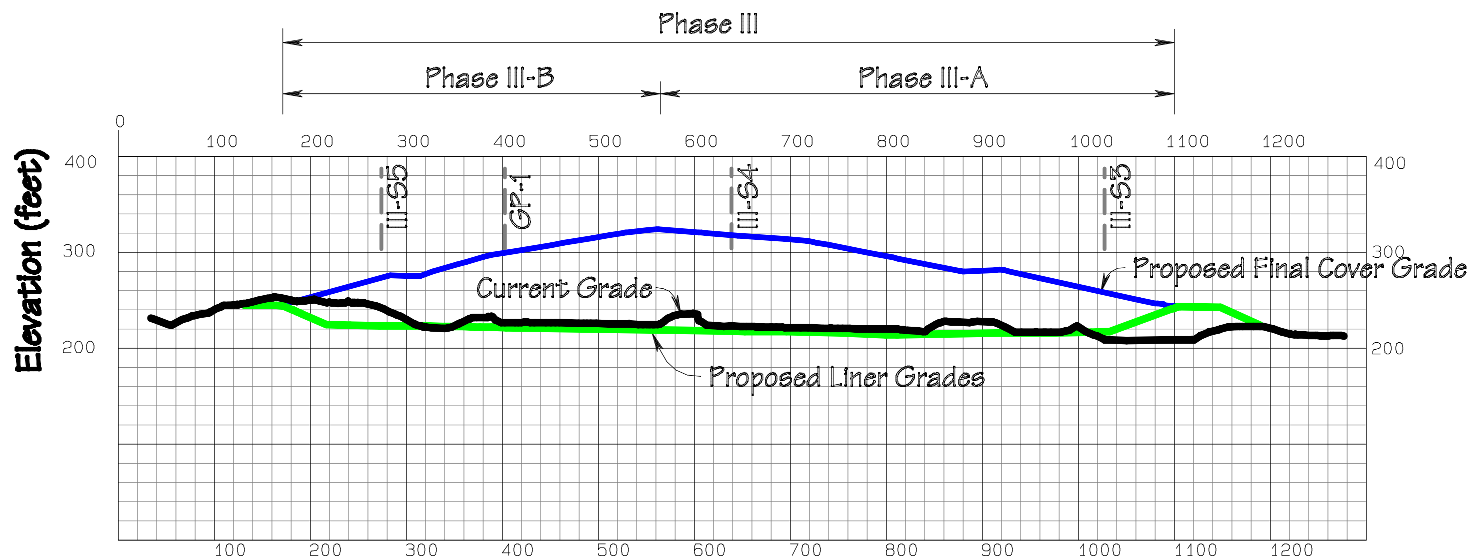
A-Mehr, Inc.

Central Maui Landfill (CML)

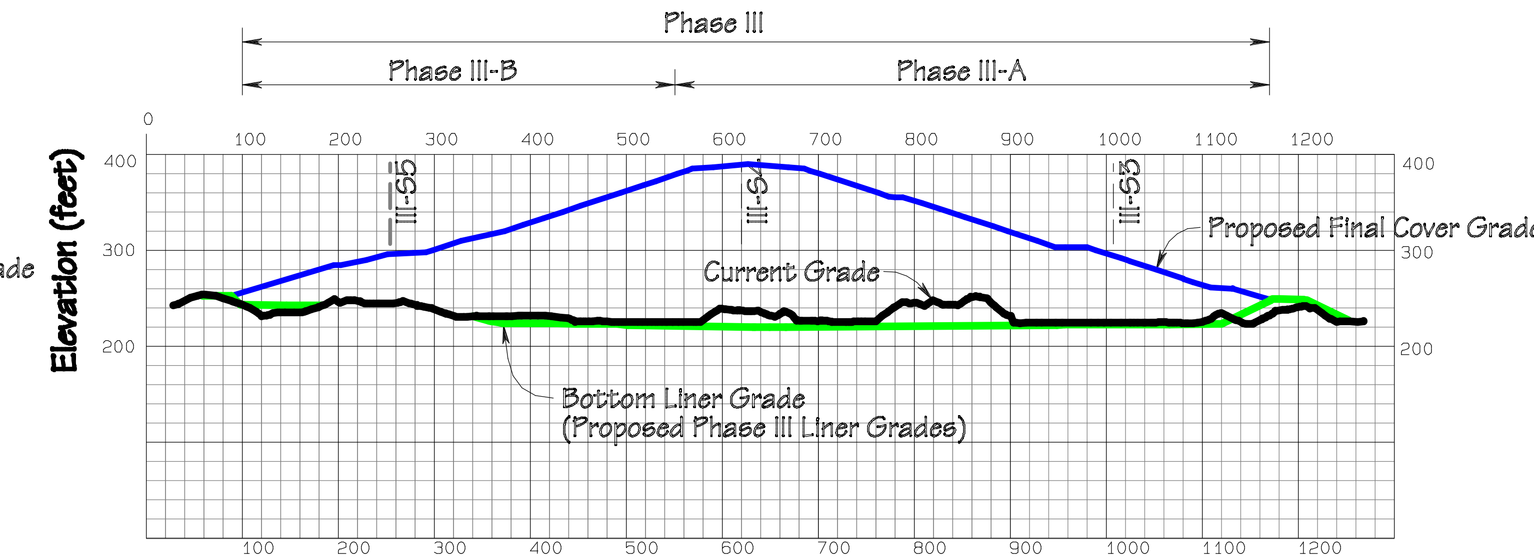
Phase III Design Plan
Slope Stability Report

Proposed Final Cover Grades

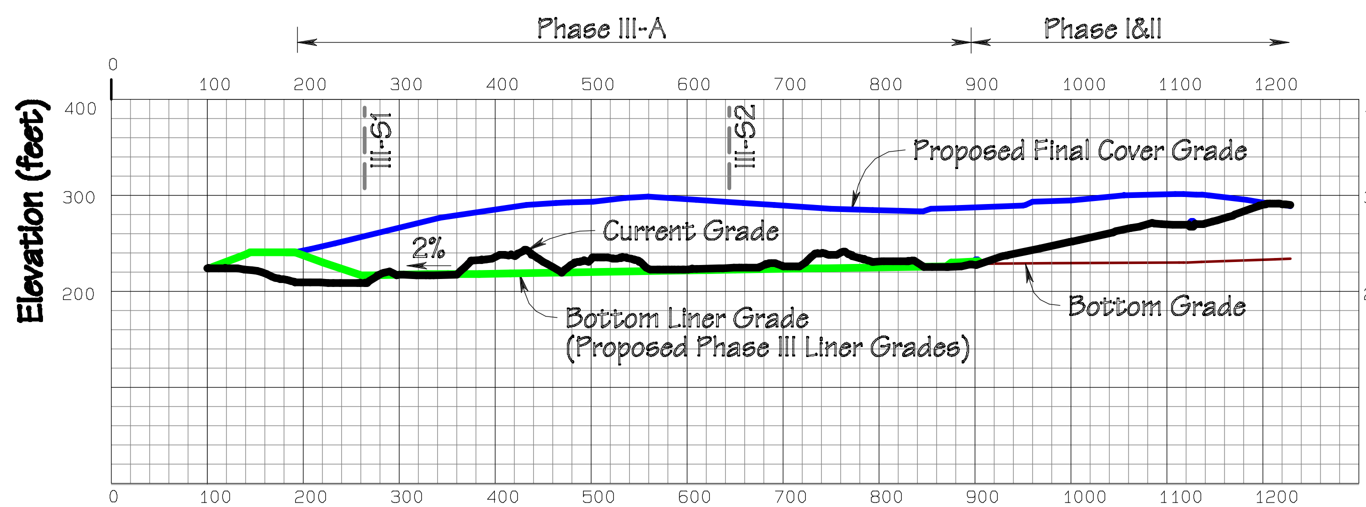
FILENAME	Master plan 2020
DRAWN	KM
CHECKED	MM
DATE	1/10/19
FIGURE	2



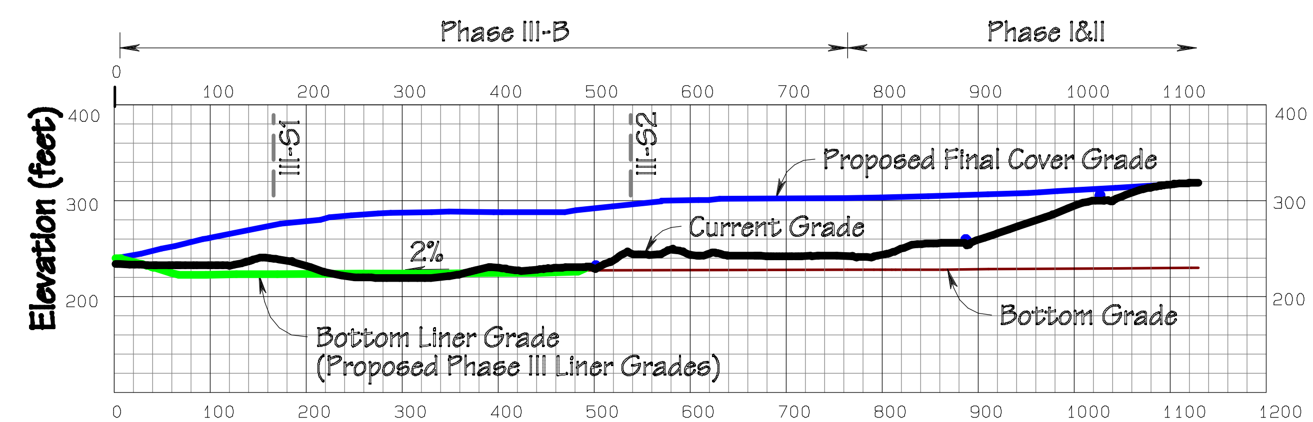
Cross-Section III-S1



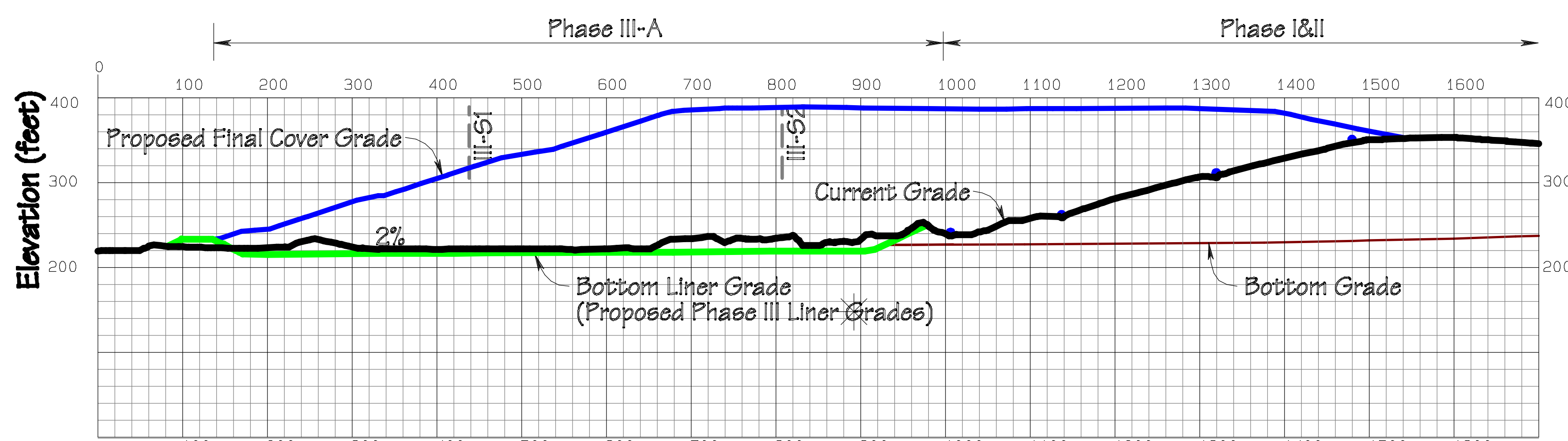
Cross-Section III-S2



Cross-Section III-S3



Cross-Section III-S5



Cross-Section III-S4

A-Mehr, Inc.

Central Maui Landfill (CML)

Phase III Design Plan
Slope Stability Report

Cross Sections III-S1, III-S2, III-S3, III-S4 and III-S5

FILENAME	Master plan SSR
DRAWN	RM
CHECKED	EBV
DATE	1/10/19
FIGURE	5

APPENDIX A

STABILITY ANALYSIS RESULTS

Summary of Gross Stability Analysis - Liner System

Cross Section	Analysis	FS	PSFS @ 0.18g	Ky	Search Area
III-S1	Static, W	2.58	1.32	0.29	≈ 215-845' liner
	Static, C	3.20	1.73	0.44	W 3:1 (H:V) Slope
	Static, W	2.78	1.25	0.26	≈ 455-1085' liner
		2.82	1.32	0.28	≈ 265-455' liner
		3.60	1.69	0.39	≈ 200-265' liner
	Static, C	3.38	1.72	0.42	E 3:1 (H:V) Slope
III-S2	Static, W	2.61	1.47	0.36	≈ 365-740' liner
		2.80	1.54	0.37	≈ 340-365' liner
		2.81	1.57	0.41	≈ 320-340' liner
		3.04	1.70	0.44	≈ 270-320' liner
		3.35	1.85	0.58	≈ 230-270' liner
		3.68	2.14	0.57	≈ 208-230' liner
		3.77	2.21	0.63	≈ 195-208' liner
		3.93	2.34	0.84	≈ 185-195' liner
		2.19	1.34	0.33	≈ 100-185' liner
	Static, C	2.32	1.37	0.32	W 3:1 (H:V) Slope
	Static, W	2.26	1.13	0.84	≈ 560-935' liner
		2.16	1.15	0.33	≈ 180-560' liner
		5.33	2.36	0.62	≈ 130-180' liner
	Static, C	2.31	1.34	0.32	E 3:1 (H:V) Slope
III-S3	Static, W	7.72	1.47	0.28	≈ 1167-1220' liner
		7.06	1.46	0.28	≈ 1115-1167' liner
		6.96	1.47	0.28	≈ 930-1115' liner
		2.58	1.25	0.26	≈ 290-900' liner
		2.82	1.47	0.34	≈ 220-290' liner
	Static, C	2.69	1.48	0.35	NW 3:1 (H:V) Slope
III-S4	Static, W	3.99	1.43	0.30	≈ 1090-1255' liner
		3.88	1.42	0.29	≈ 1060-1090' liner
		3.84	1.41	0.29	≈ 1040-1060' liner
		3.81	1.41	0.29	≈ 1025-1040' liner
		3.79	1.42	0.29	≈ 980-1025' liner
		3.74	1.44	0.30	≈ 955-980' liner
		3.22	1.28	0.26	≈ 900-955' liner
		3.22	1.28	0.26	≈ 865-900' liner
		2.03	1.11	0.22	≈ 120-865' liner
	Static, C	2.28	1.31	0.30	NW 3:1 (H:V) Slope
III-S5	Static, W	2.68	1.26	0.26	≈ 175-480' liner
		3.55	1.64	0.37	≈ 115-175' liner
	Static, C	3.28	1.66	0.40	NW 3:1 (H:V) Slope

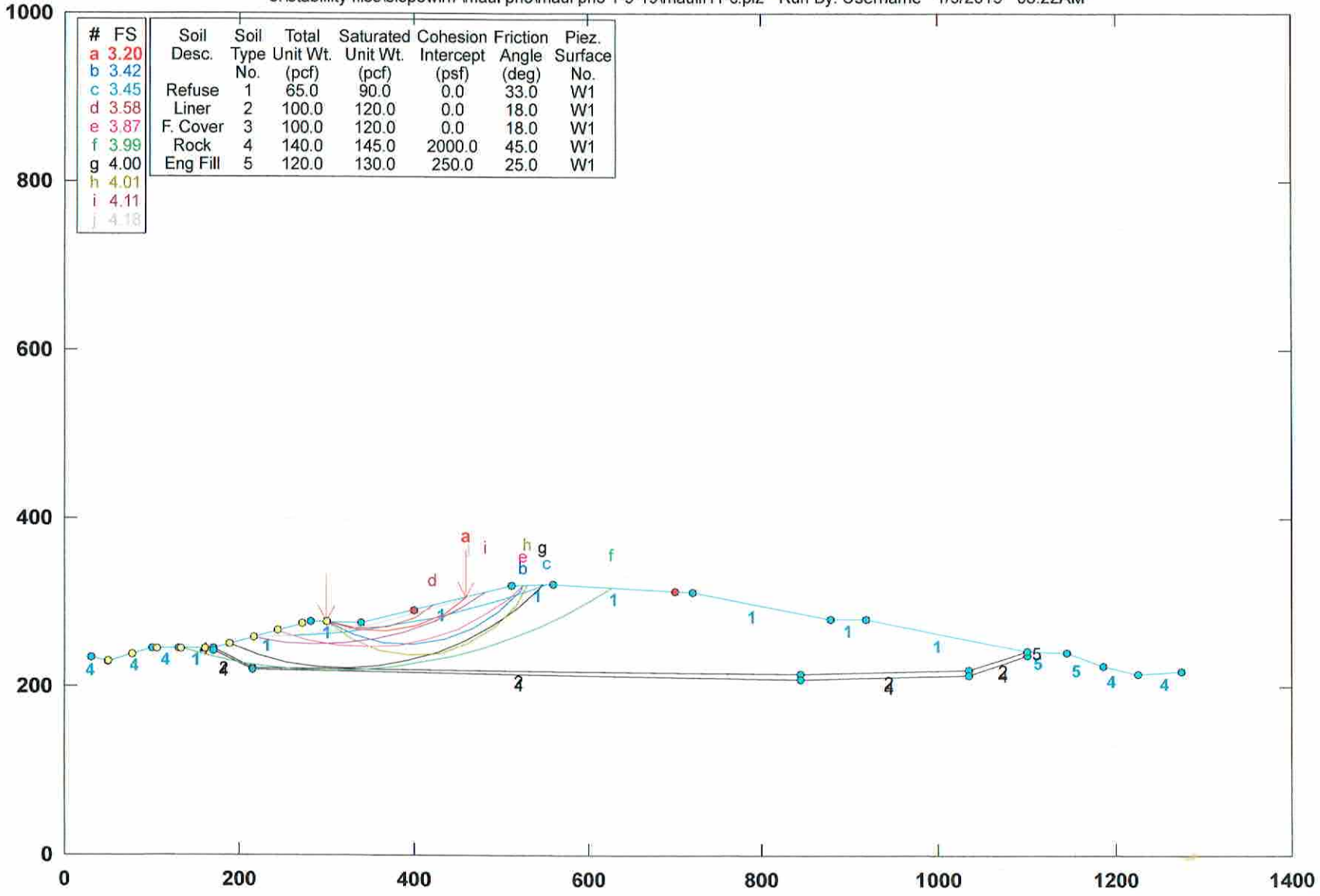
CROSS SECTION
III-S1

CML - ph III Slope Stab. Section III-S1 Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf11-c.pl2 Run By: Username 1/9/2019 08:22AM

#	FS
a	3.20
b	3.42
c	3.45
d	3.58
e	3.87
f	3.99
g	4.00
h	4.01
i	4.11
j	4.18

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



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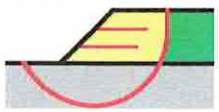
Safety Factors Are Calculated By The Modified Bishop Method

STED

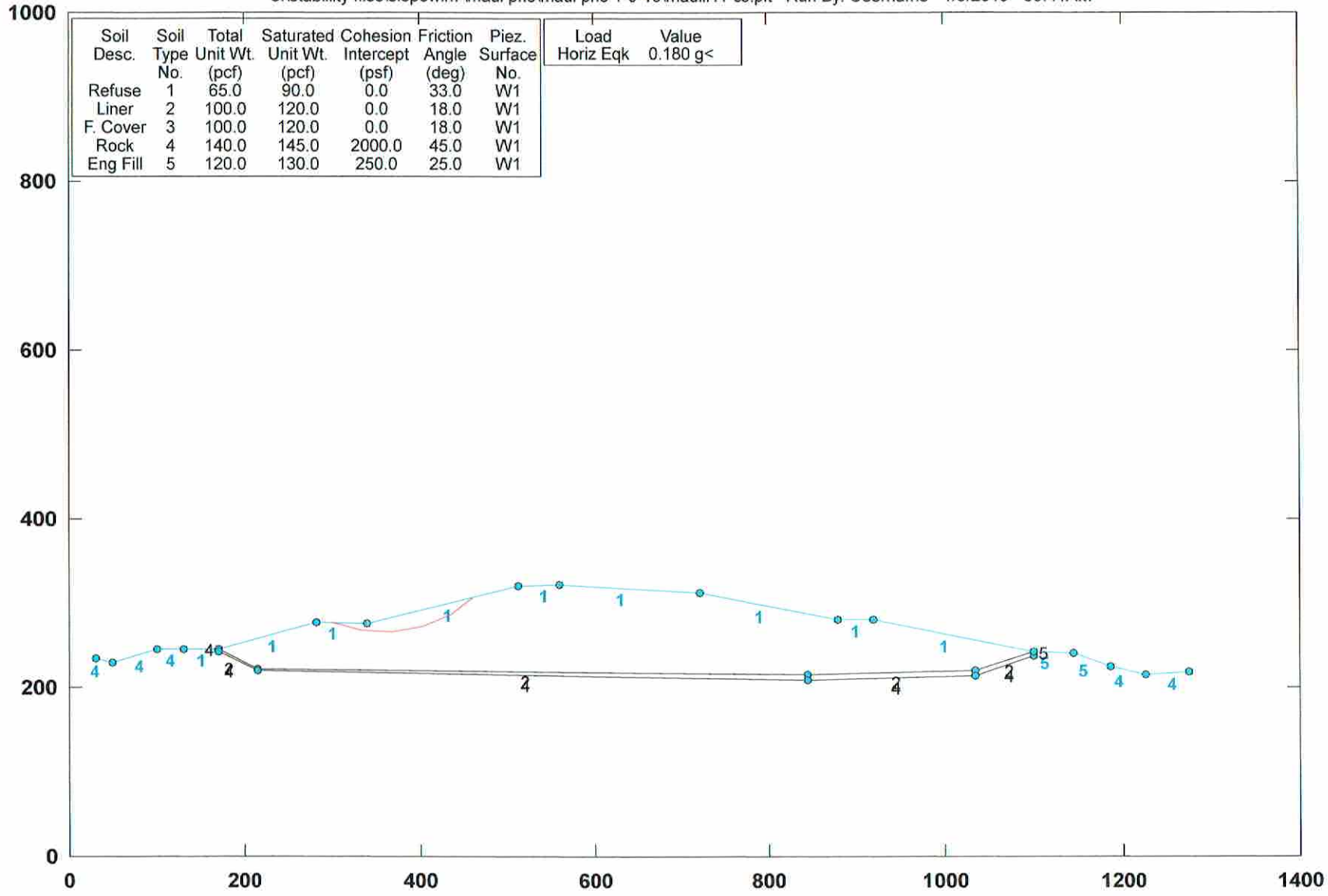


CML - ph III Slope Stab. Section III-S1 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf11-cs.plt Run By: Username 1/9/2019 09:41AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.180 g<



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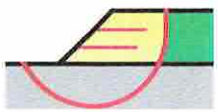
Factor Of Safety Is Calculated By The Modified Bishop Method

STED



CML - ph III Slope Stab. Section III-S1 Pseudo-Static

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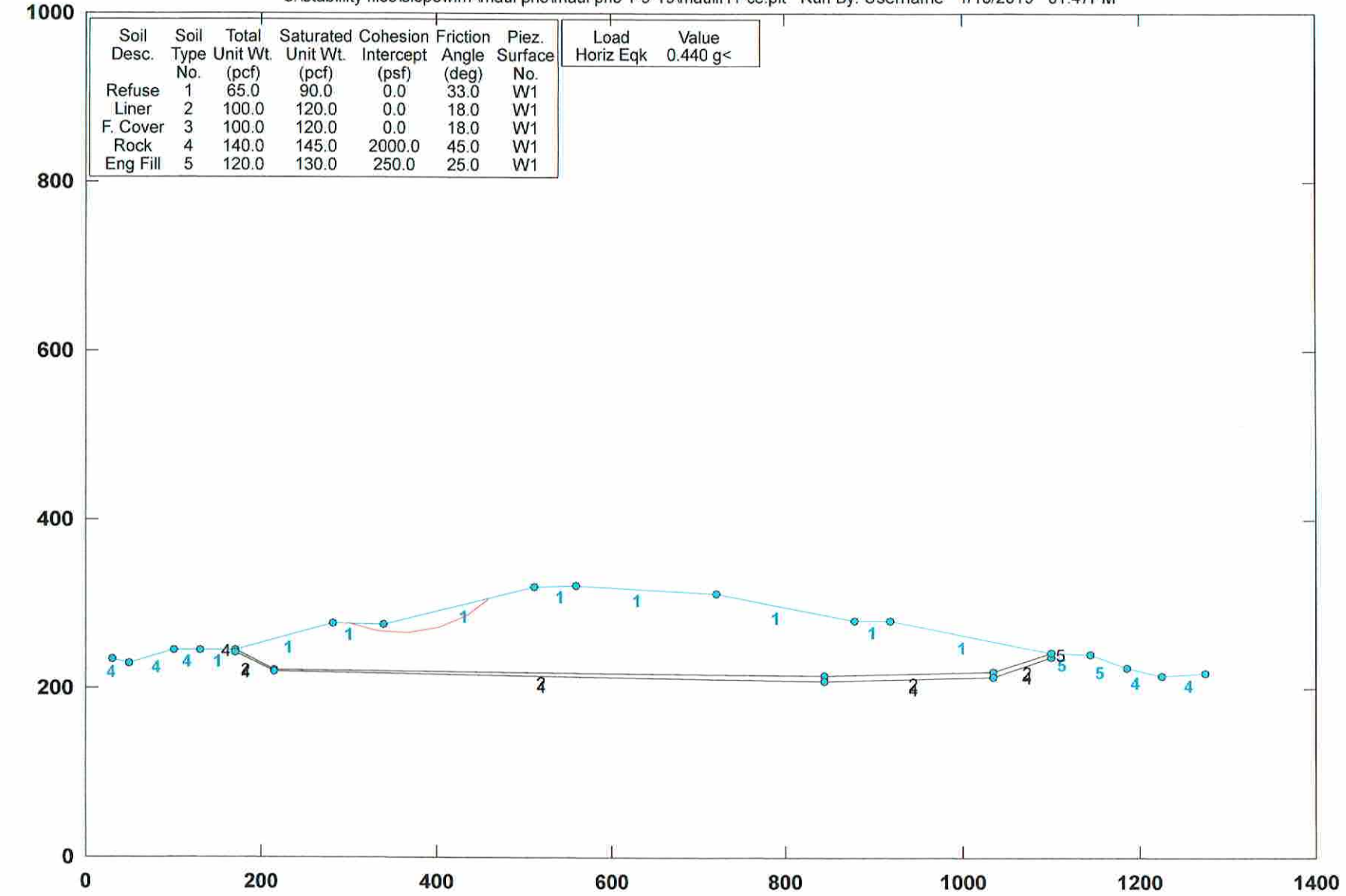
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.440 g<



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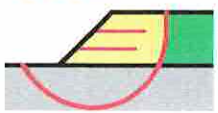
Factor Of Safety Is Calculated By The Modified Bishop Method

STED



CML - ph III Slope Stab. Section III-S1 Static

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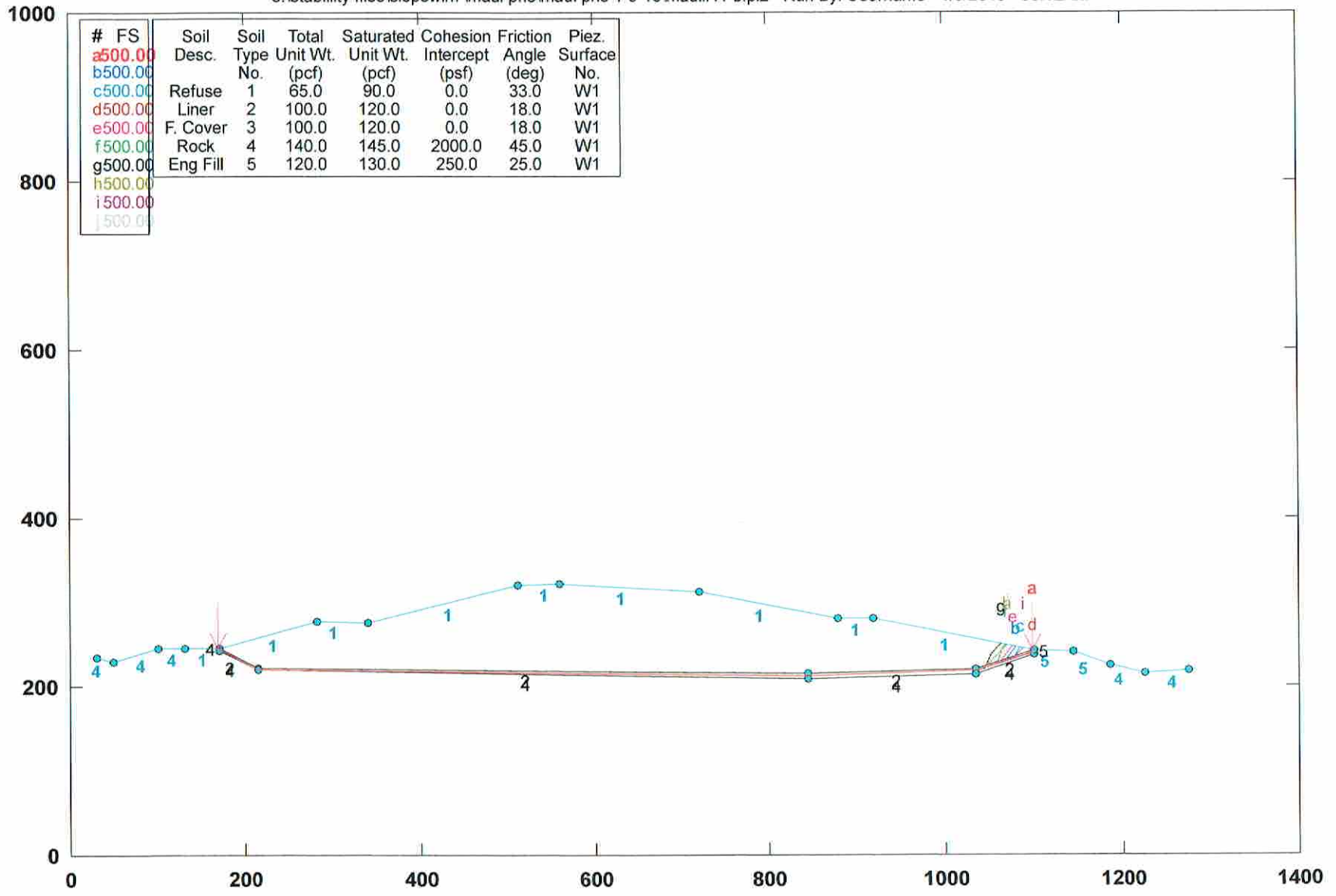

#	FS
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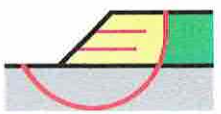
b	500.00
c	500.00
d	500.00
e	500.00
f	500.00
g	500.00
h	500.00
i	500.00
j	500.00

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

PCSTABL5M/si FSmin=500.00

Safety Factors Are Calculated By The Modified Janbu Method

STED

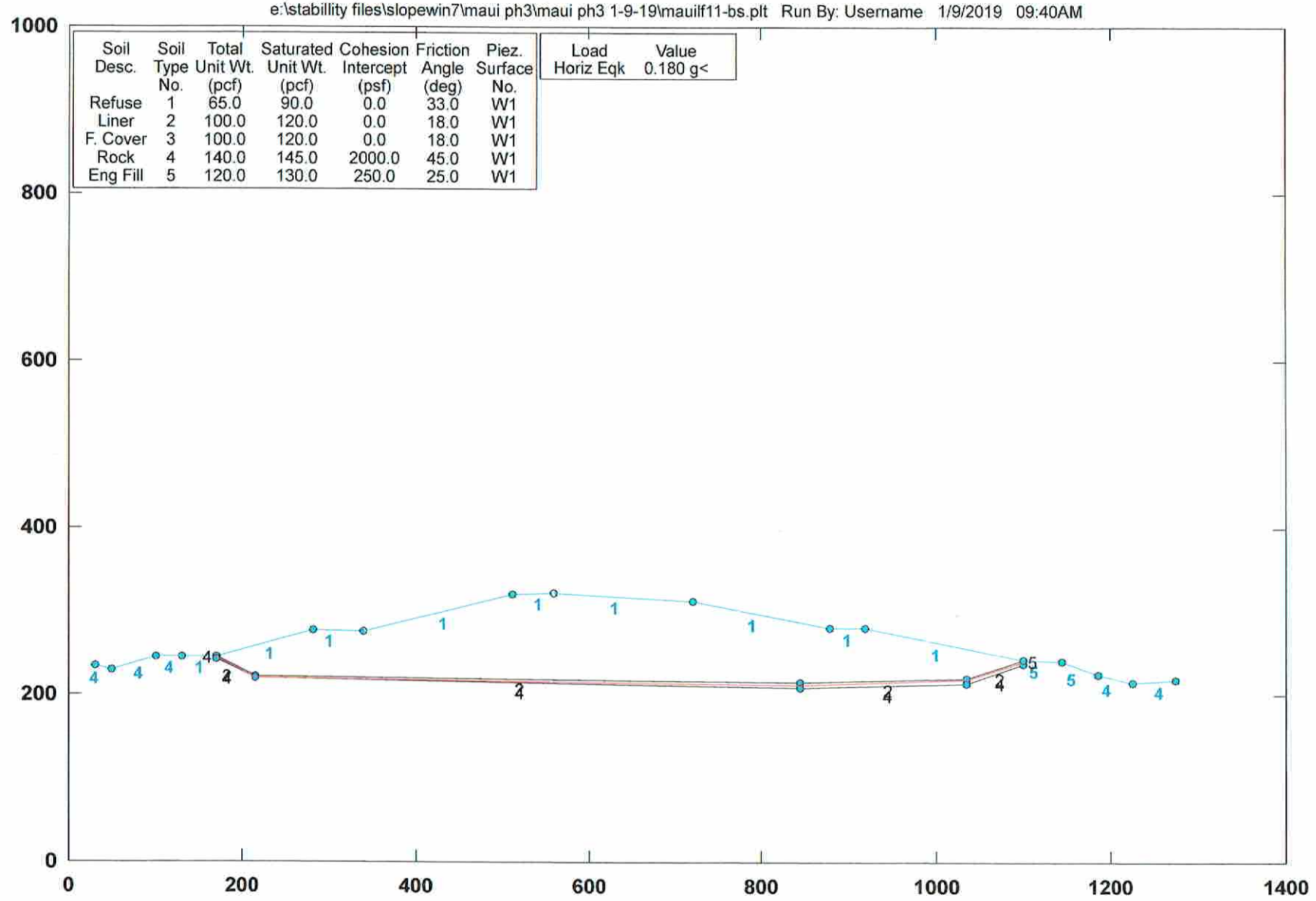


CML - ph III Slope Stab. Section III-S1 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf11-bs.plt Run By: Username 1/9/2019 09:40AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.180 g<



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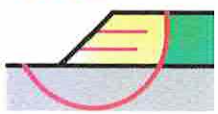
Factors of Safety Calculated by Janbu Method

STED



CML - ph III Slope Stab. Section III-S1 Pseudo-Static

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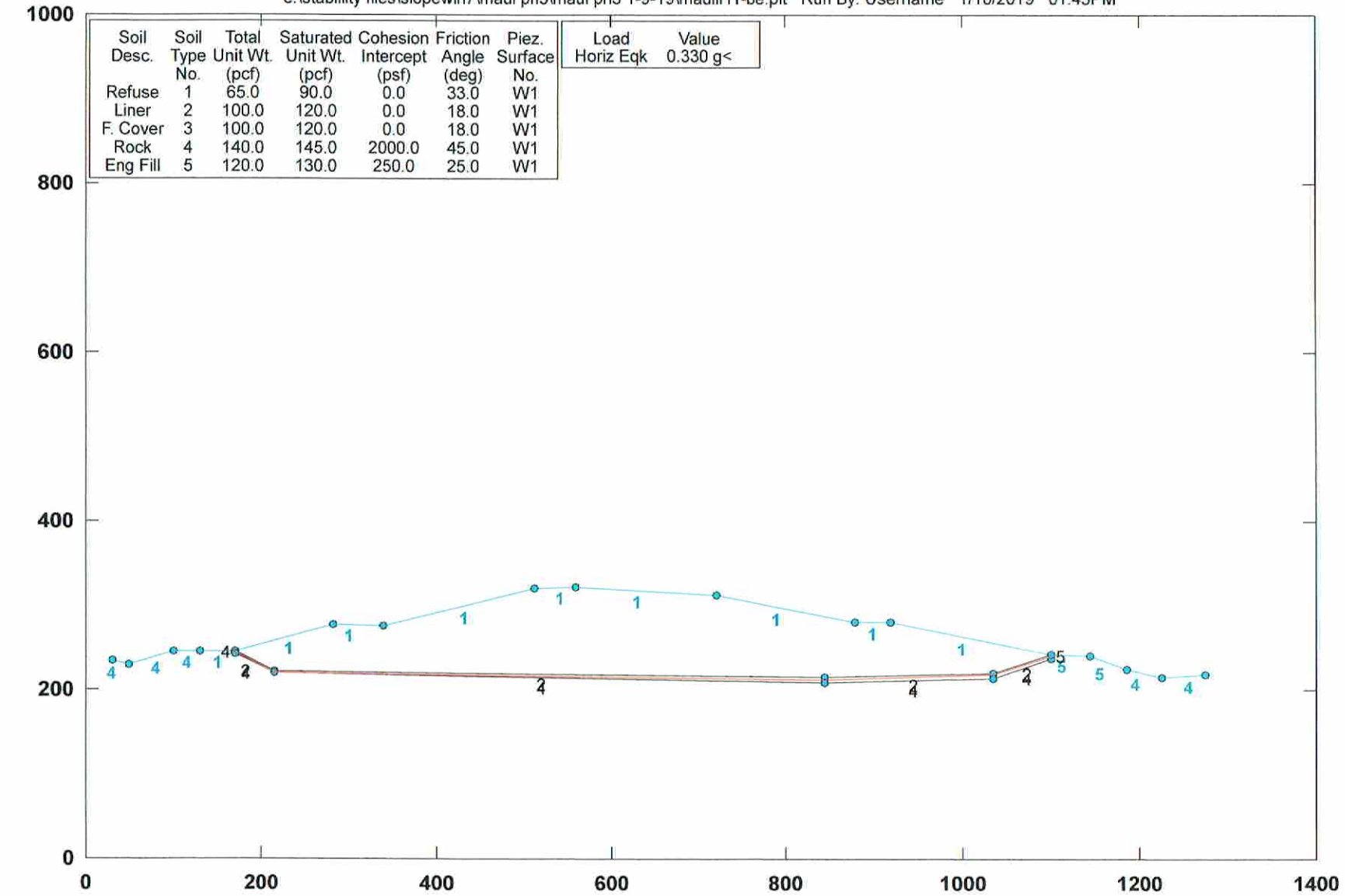
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.330 g<



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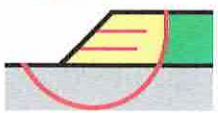
Factors of Safety Calculated by Janbu Method

STED



CML - ph III Slope Stab. Section III-S1 Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf12-b.pl2 Run By: Username 1/9/2019 08:16AM

#	FS
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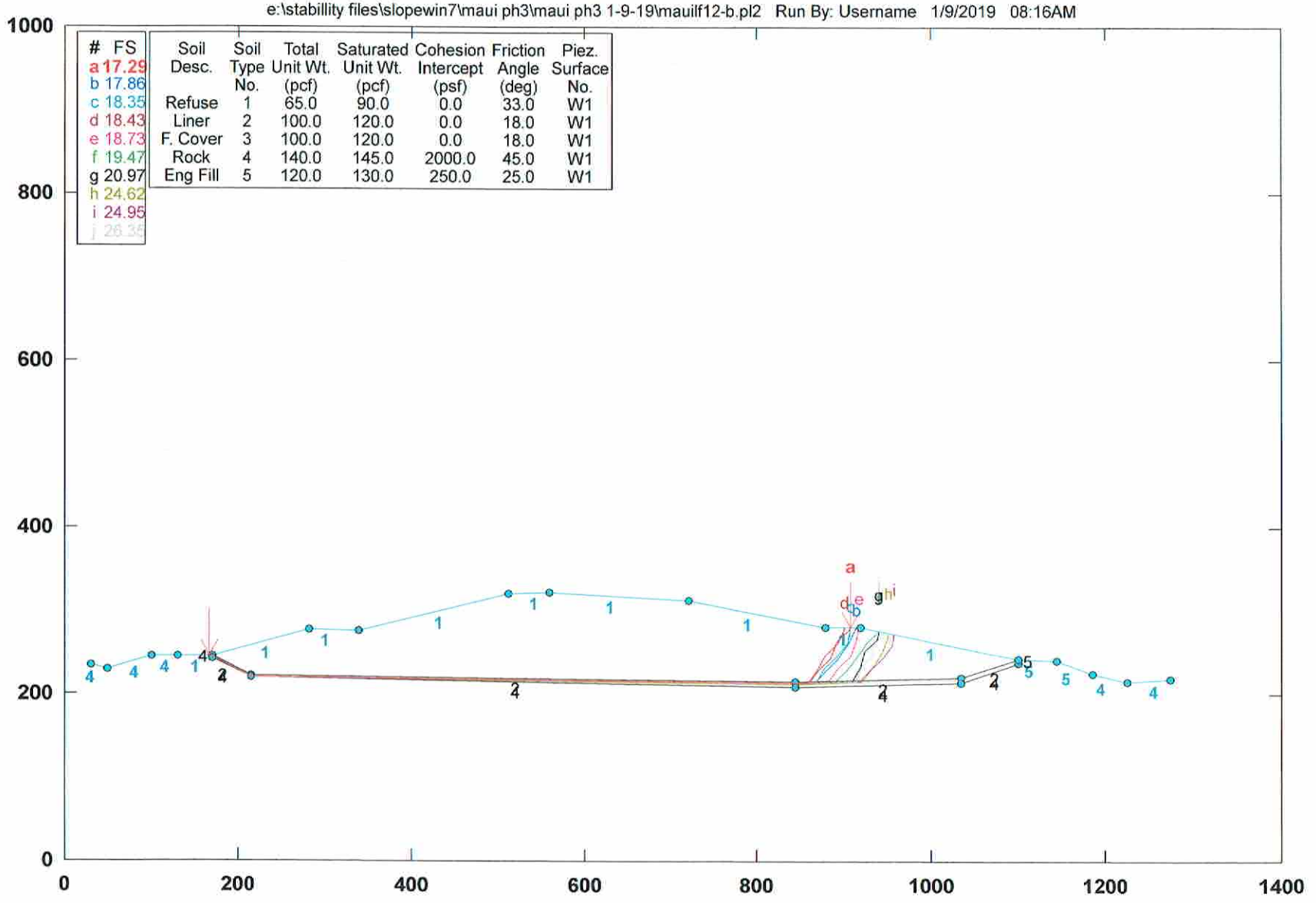
b	17.86
c	18.35
d	18.43
e	18.73
f	19.47
g	20.97
h	24.62
i	24.95
j	26.35

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=17.29

Safety Factors Are Calculated By The Modified Janbu Method

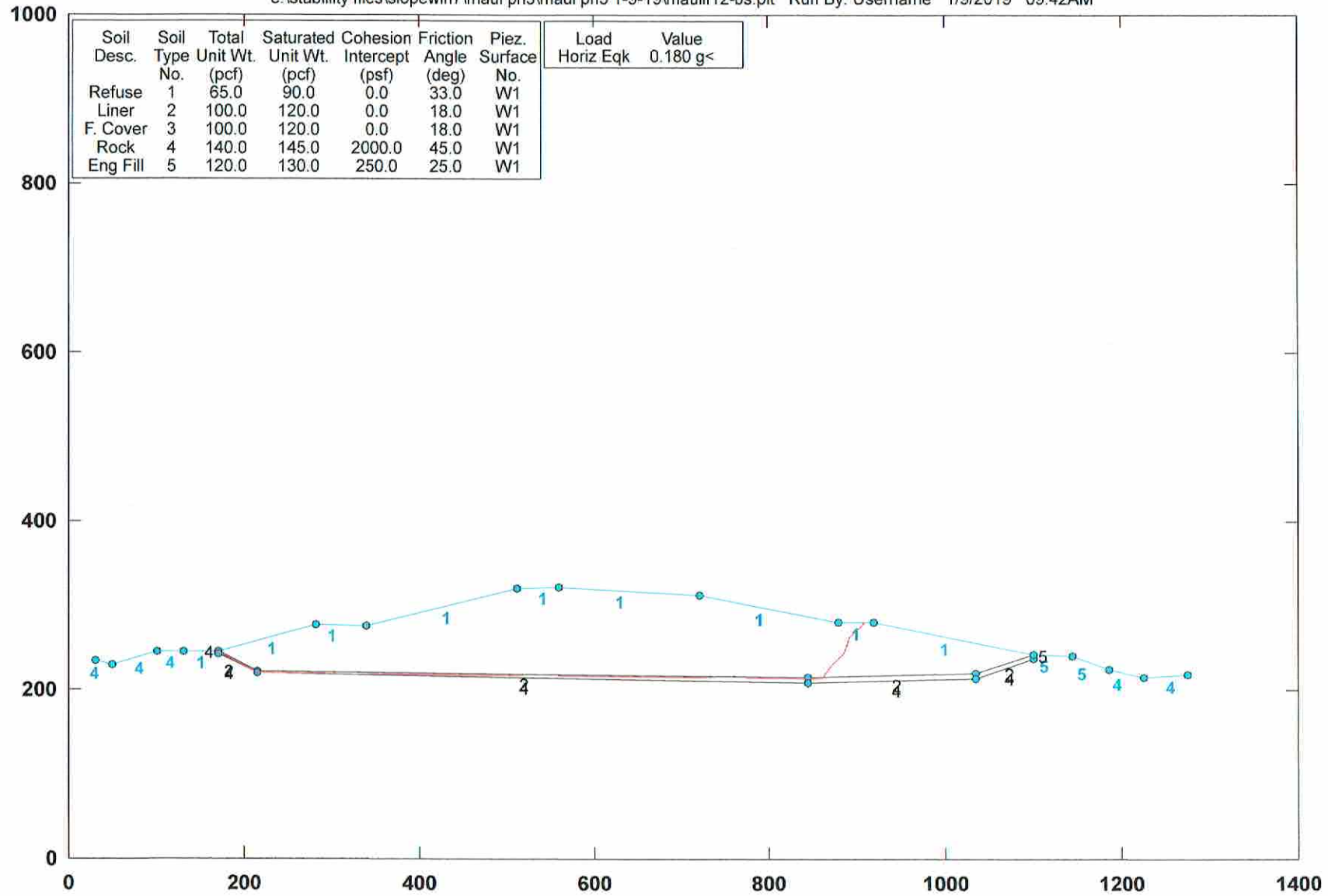
STED

CML - ph III Slope Stab. Section III-S1 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf12-bs.plt Run By: Username 1/9/2019 09:42AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.76

Factors of Safety Calculated by Janbu Method

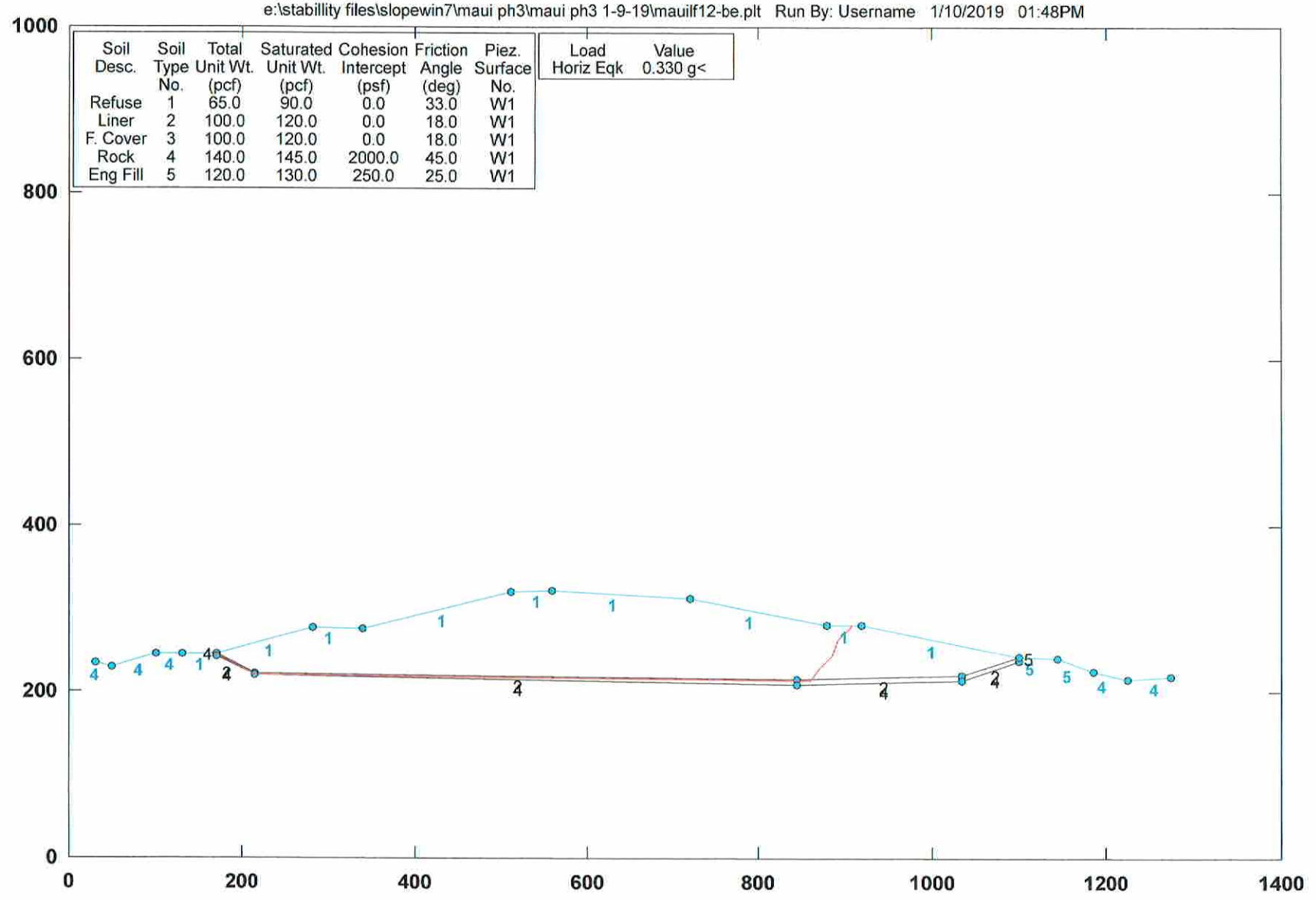
STED

CML - ph III Slope Stab. Section III-S1 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf12-be.plt Run By: Username 1/10/2019 01:48PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.330 g<



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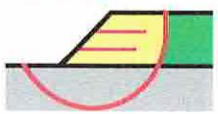
Factors of Safety Calculated by Janbu Method

STED



CML - ph III Slope Stab. Section III-S1 Static

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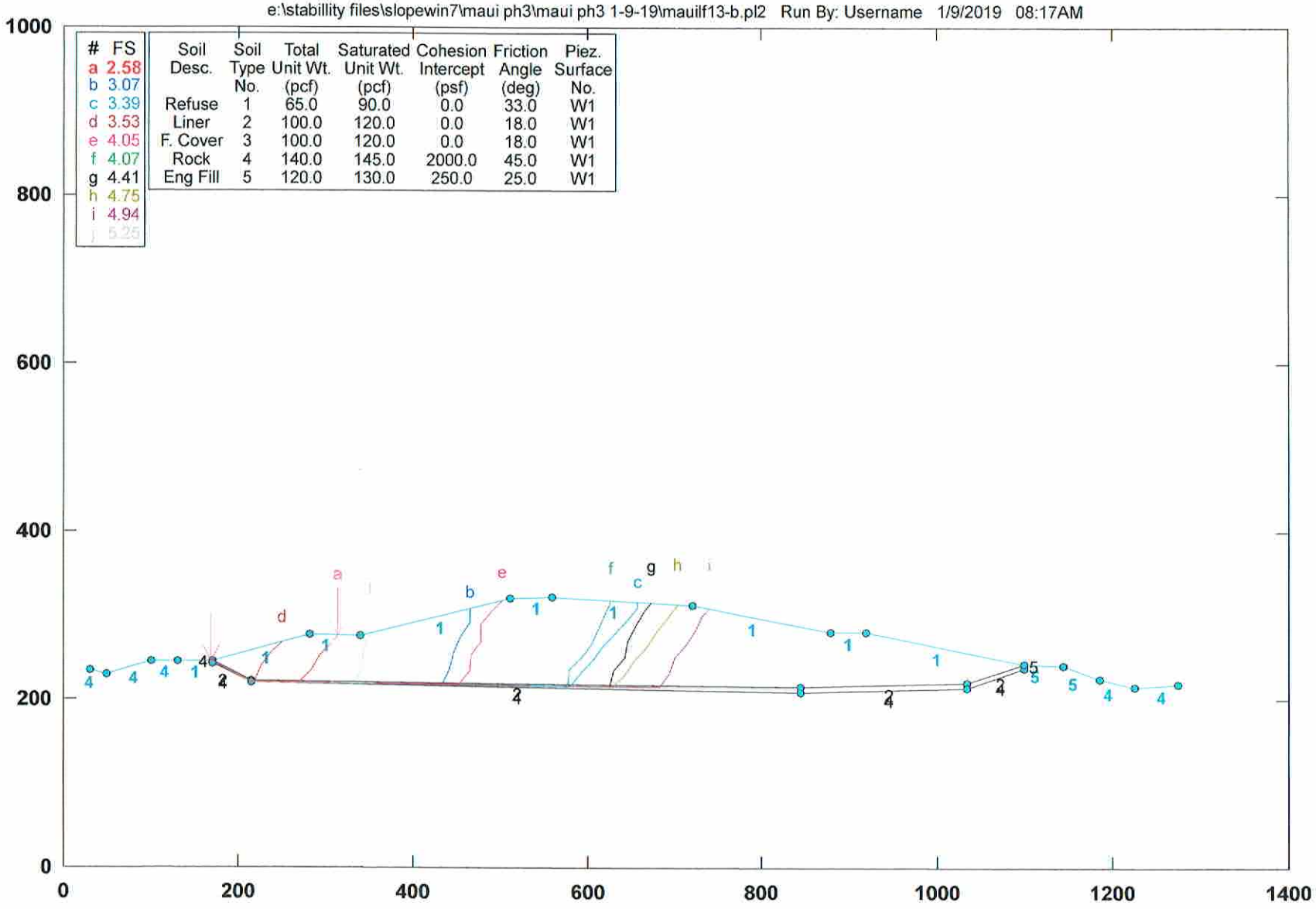
#	FS
a	2.58
b	3.07
c	3.39
d	3.53
e	4.05
f	4.07
g	4.41
h	4.75
i	4.94
j	5.25

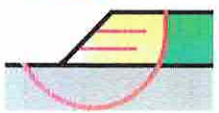
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=2.58

Safety Factors Are Calculated By The Modified Janbu Method

STED

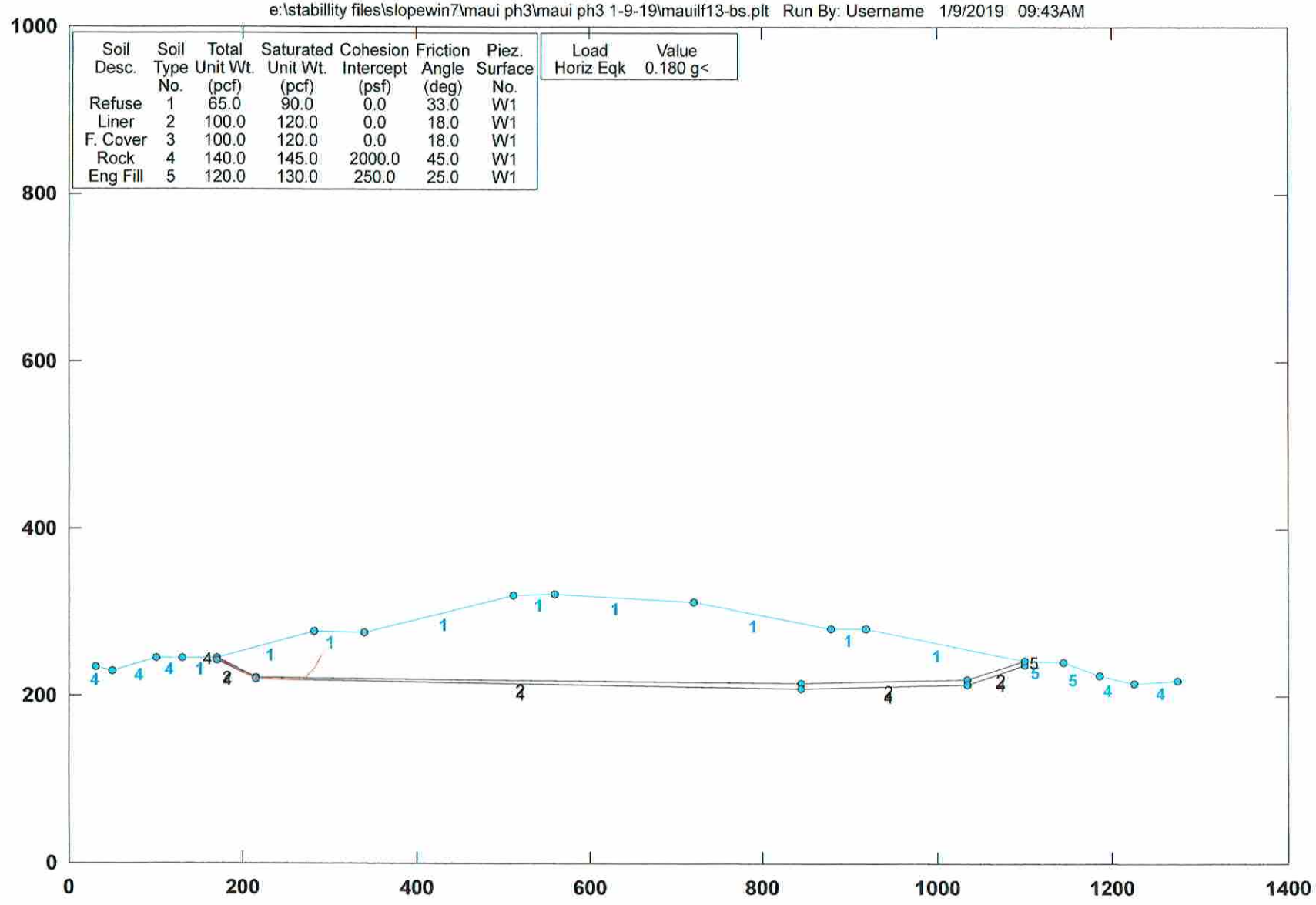


CML - ph III Slope Stab. Section III-S1 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf13-bs.plt Run By: Username 1/9/2019 09:43AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.32

Factors of Safety Calculated by Janbu Method

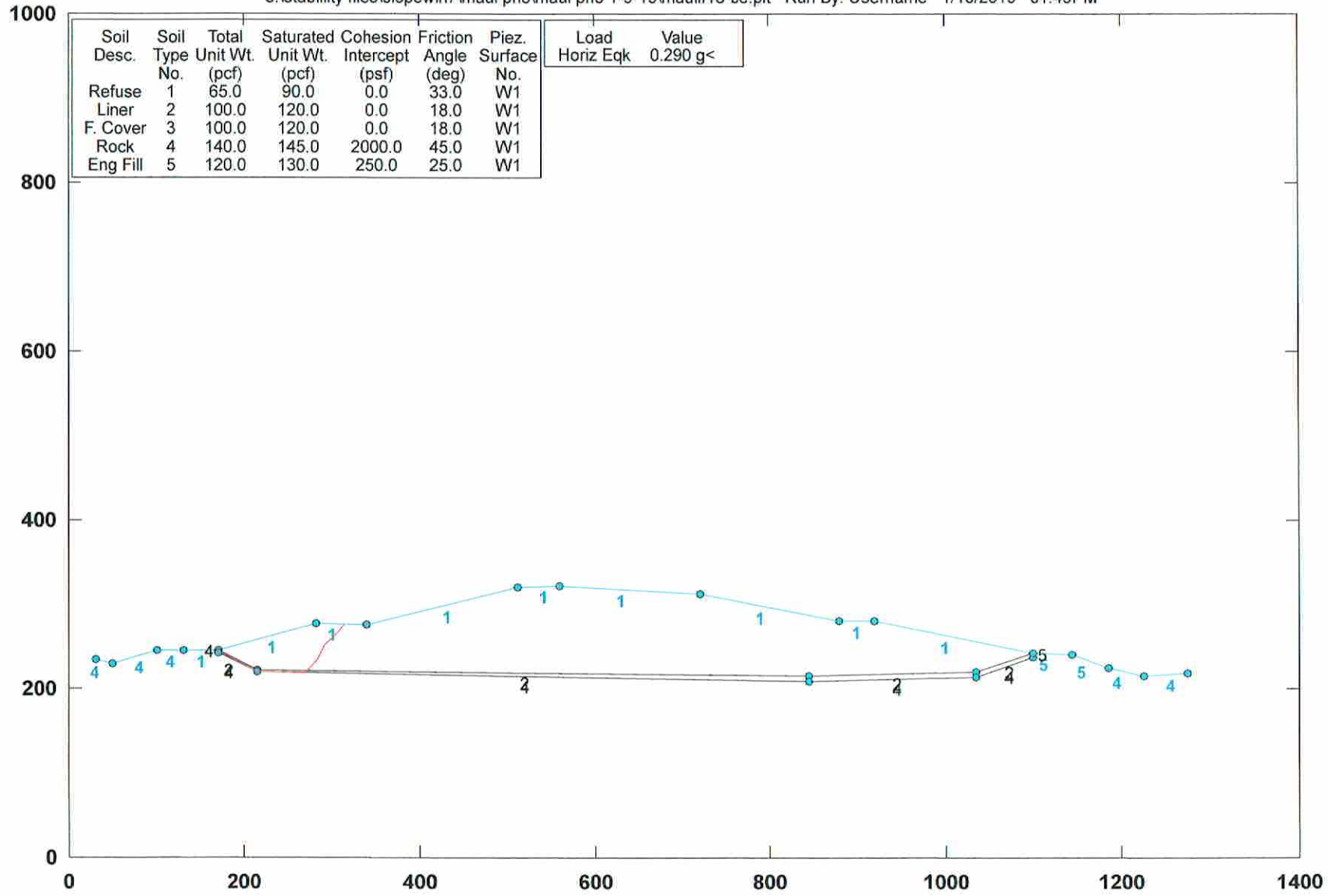
STED

CML - ph III Slope Stab. Section III-S1 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf13-be.plt Run By: Username 1/10/2019 01:49PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.290 g<



PCSTABL5M/si FSmin=0.99

Factors of Safety Calculated by Janbu Method

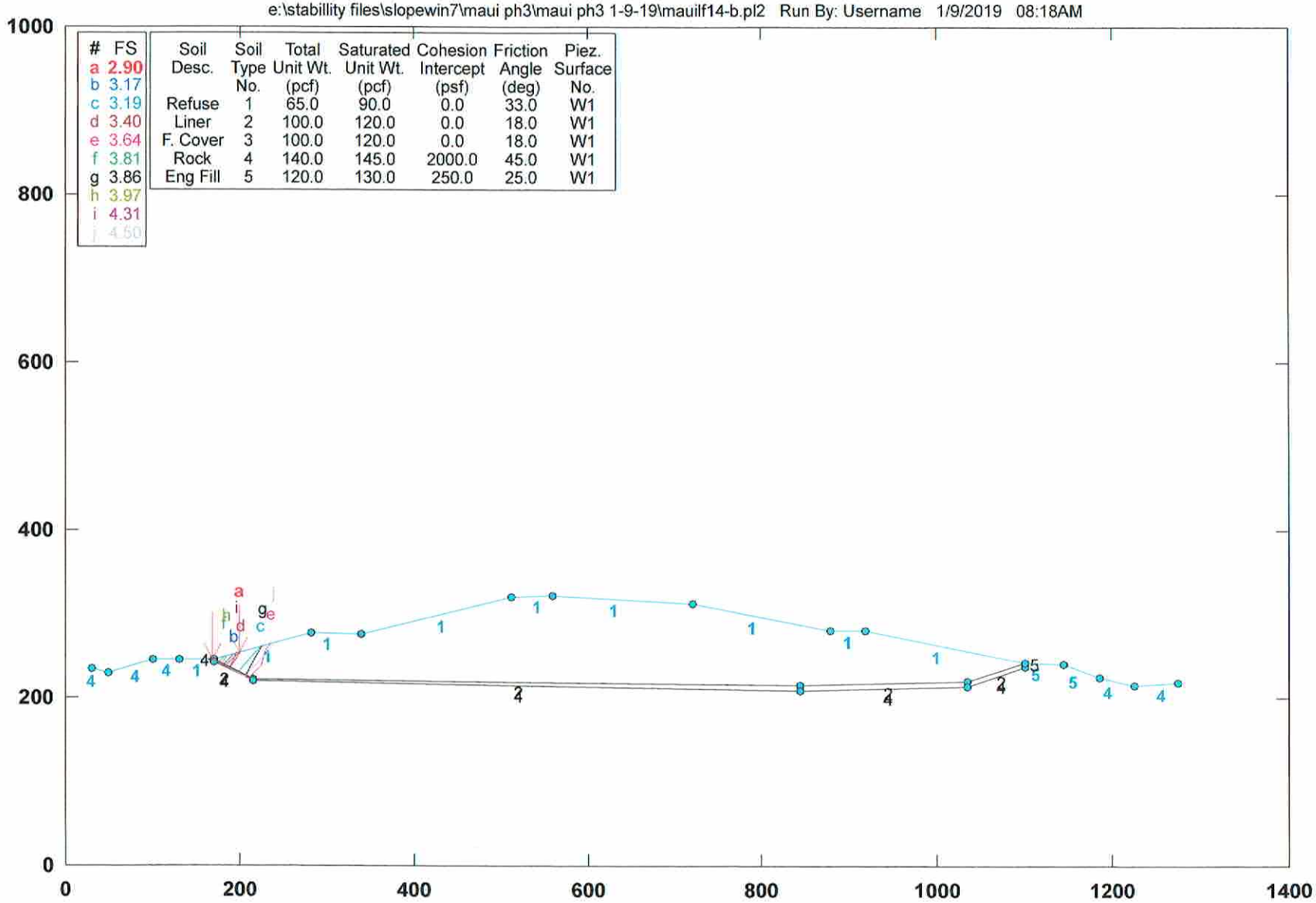
STED

CML - ph III Slope Stab. Section III-S1 Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf14-b.pl2 Run By: Username 1/9/2019 08:18AM

#	FS
a	2.90
b	3.17
c	3.19
d	3.40
e	3.64
f	3.81
g	3.86
h	3.97
i	4.31
j	4.50

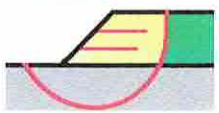
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=2.90

Safety Factors Are Calculated By The Modified Janbu Method

STED

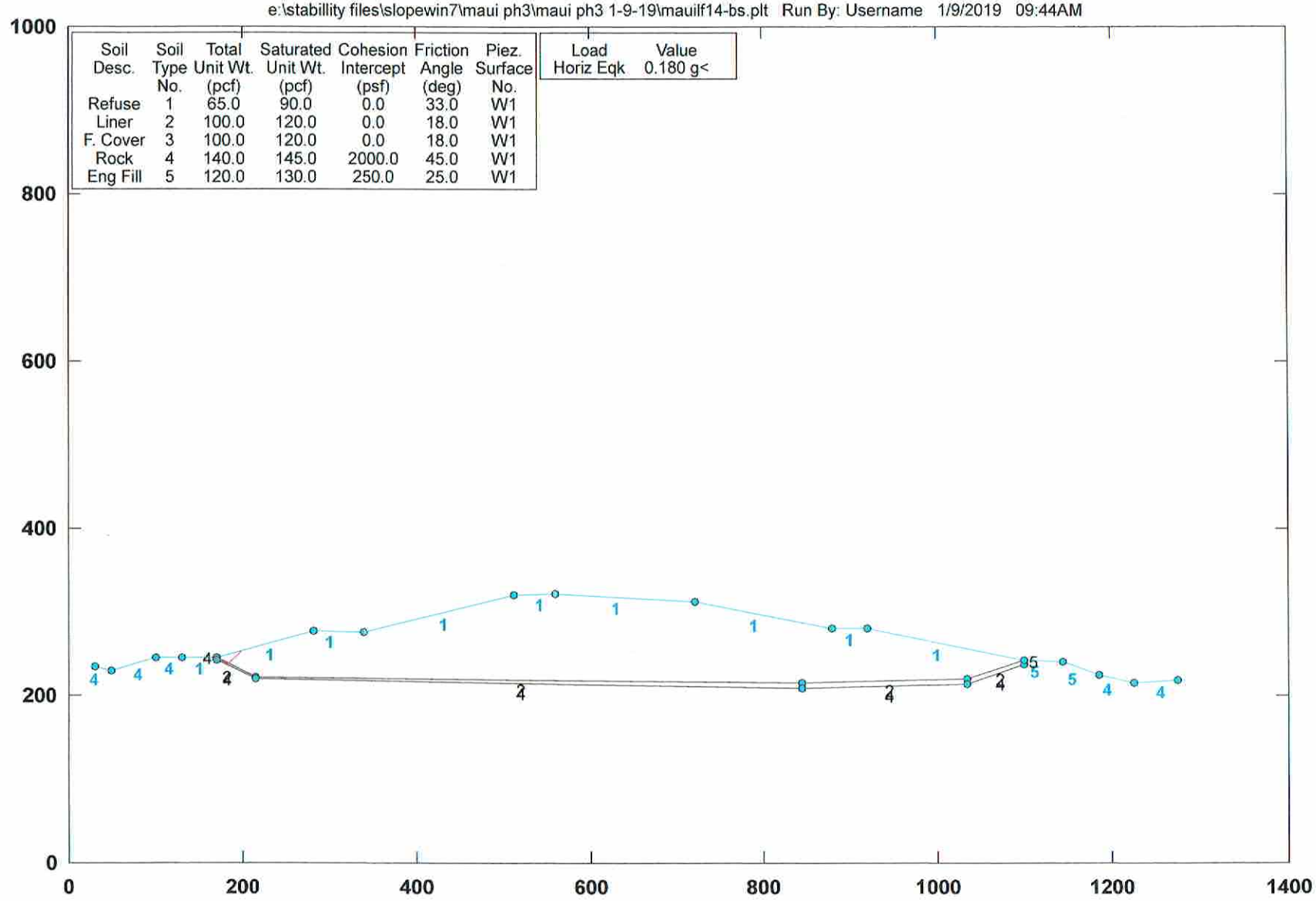


CML - ph III Slope Stab. Section III-S1 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf14-bs.plt Run By: Username 1/9/2019 09:44AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.60

Factors of Safety Calculated by Janbu Method

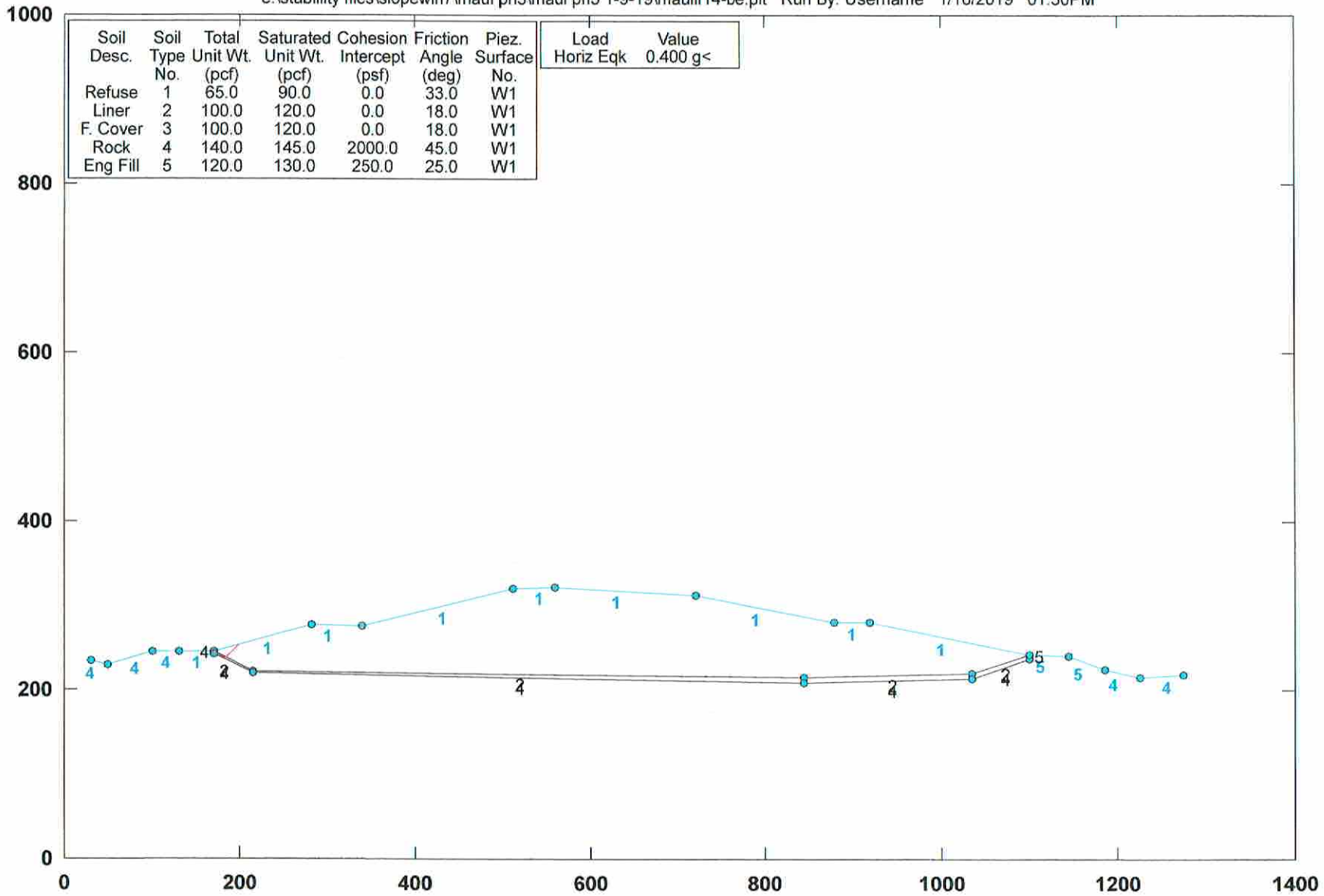
STED

CML - ph III Slope Stab. Section III-S1 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf14-be.plt Run By: Username 1/10/2019 01:50PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

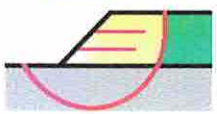
Load	Value
Horiz Eqk	0.400 g<



PCSTABL5M/si FSmin=1.00

Factors of Safety Calculated by Janbu Method

STED

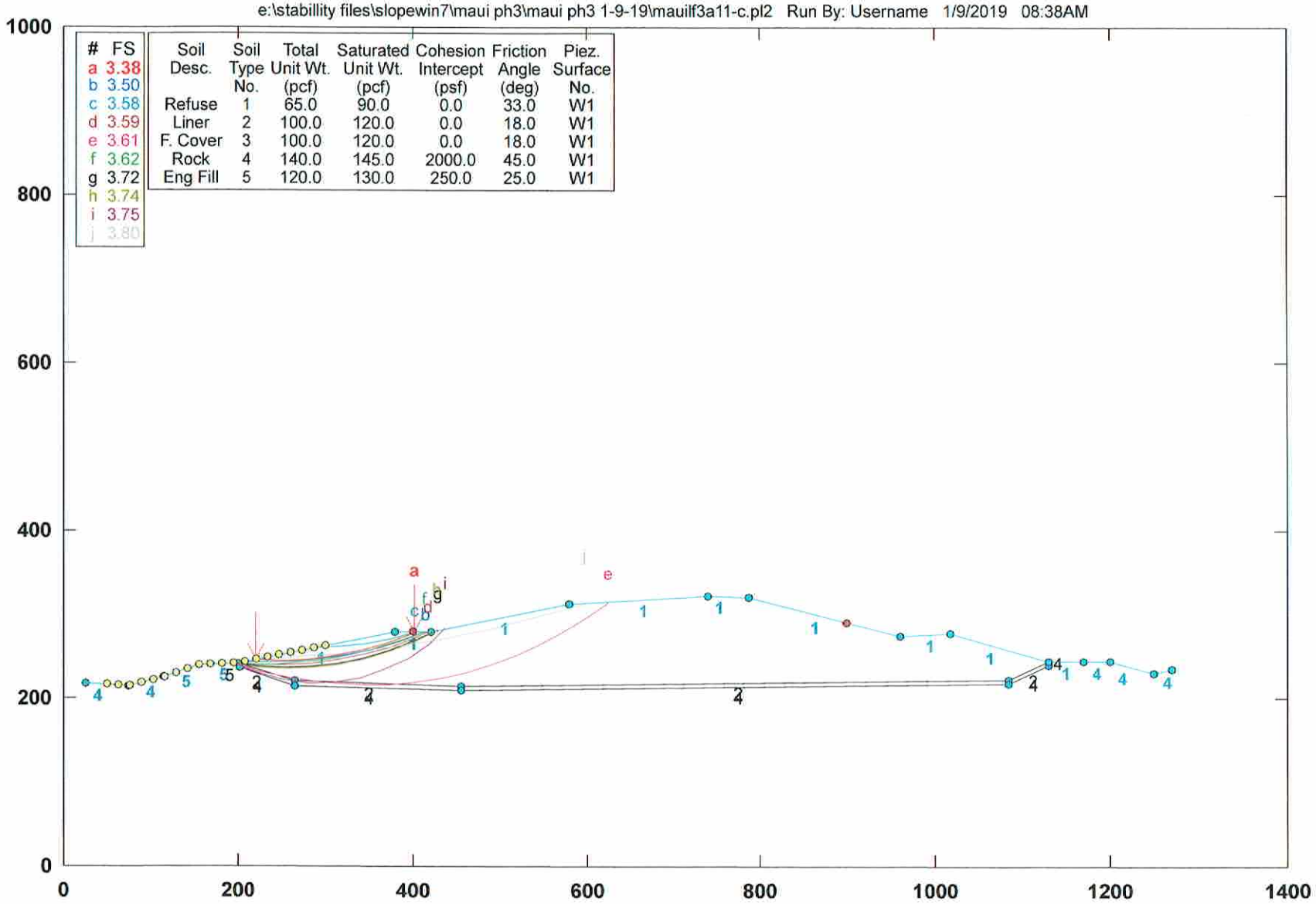


CML - ph III Sl. Stab. Section III-S1-3AStatic

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a11-c.pl2 Run By: Username 1/9/2019 08:38AM

#	FS
a	3.38
b	3.50
c	3.58
d	3.59
e	3.61
f	3.62
g	3.72
h	3.74
i	3.75
j	3.80

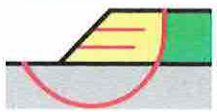
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=3.38

Safety Factors Are Calculated By The Modified Bishop Method

STED

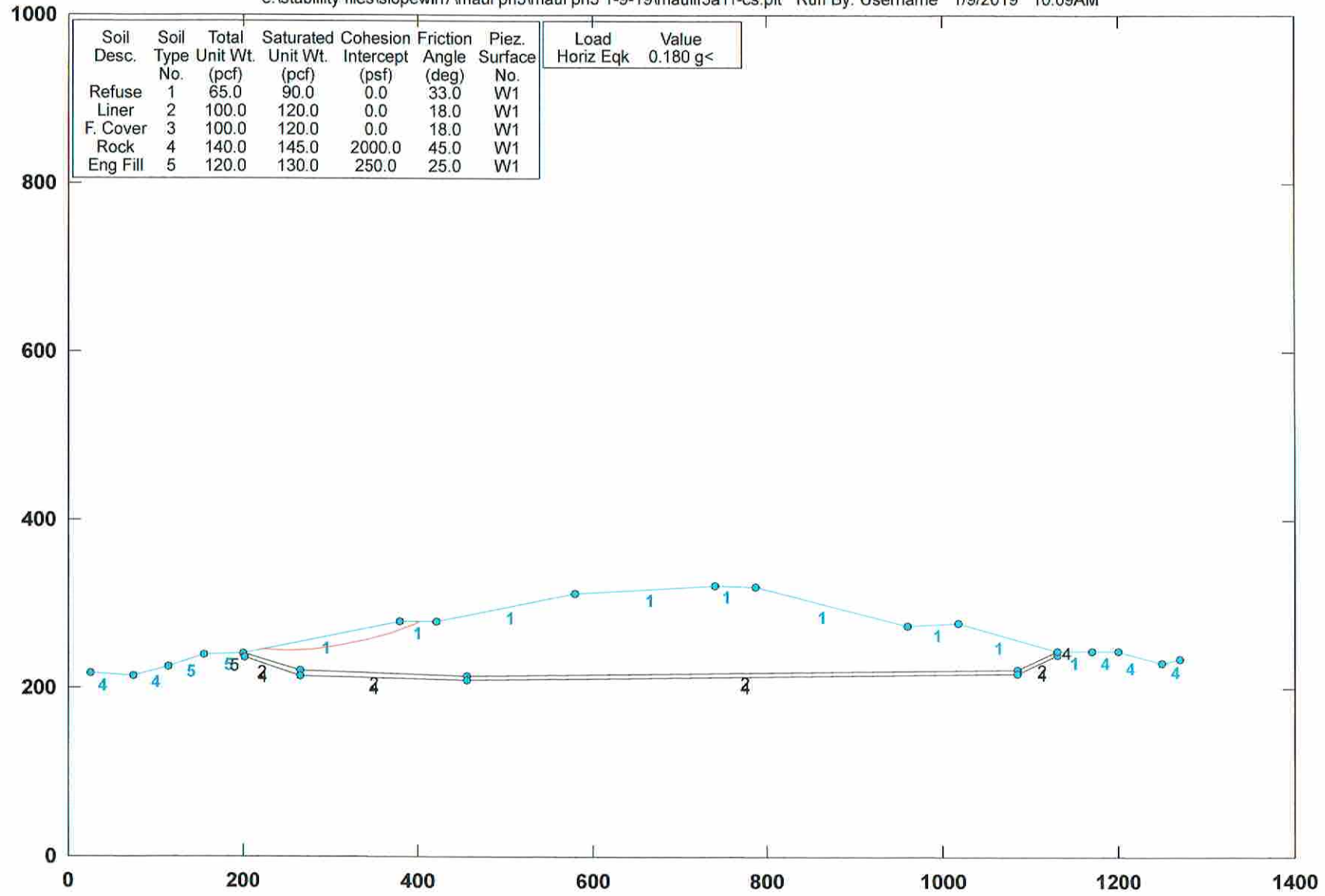


CML - ph III Sl. Stab. Section III-S1-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a11-cs.plt Run By: Username 1/9/2019 10:09AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

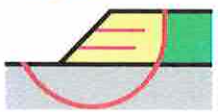
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.72

Factor Of Safety Is Calculated By The Modified Bishop Method

STED

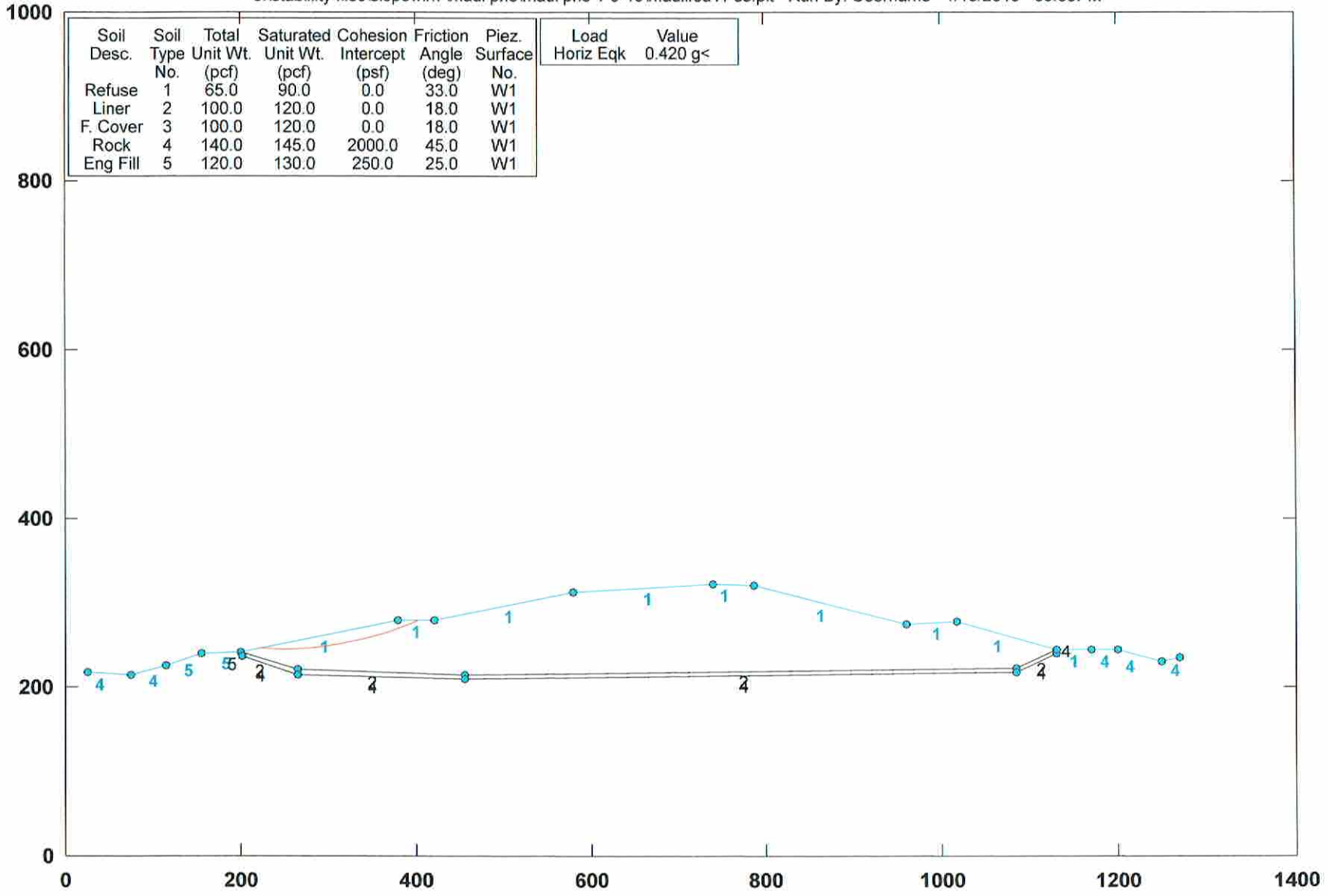


CML - ph III Sl. Stab. Section III-S1-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a11-ce.plt Run By: Username 1/10/2019 03:35PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

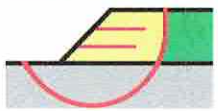
Load	Value
Horiz Eqk	0.420 g<



PCSTABL5M/si FSmin=1.00

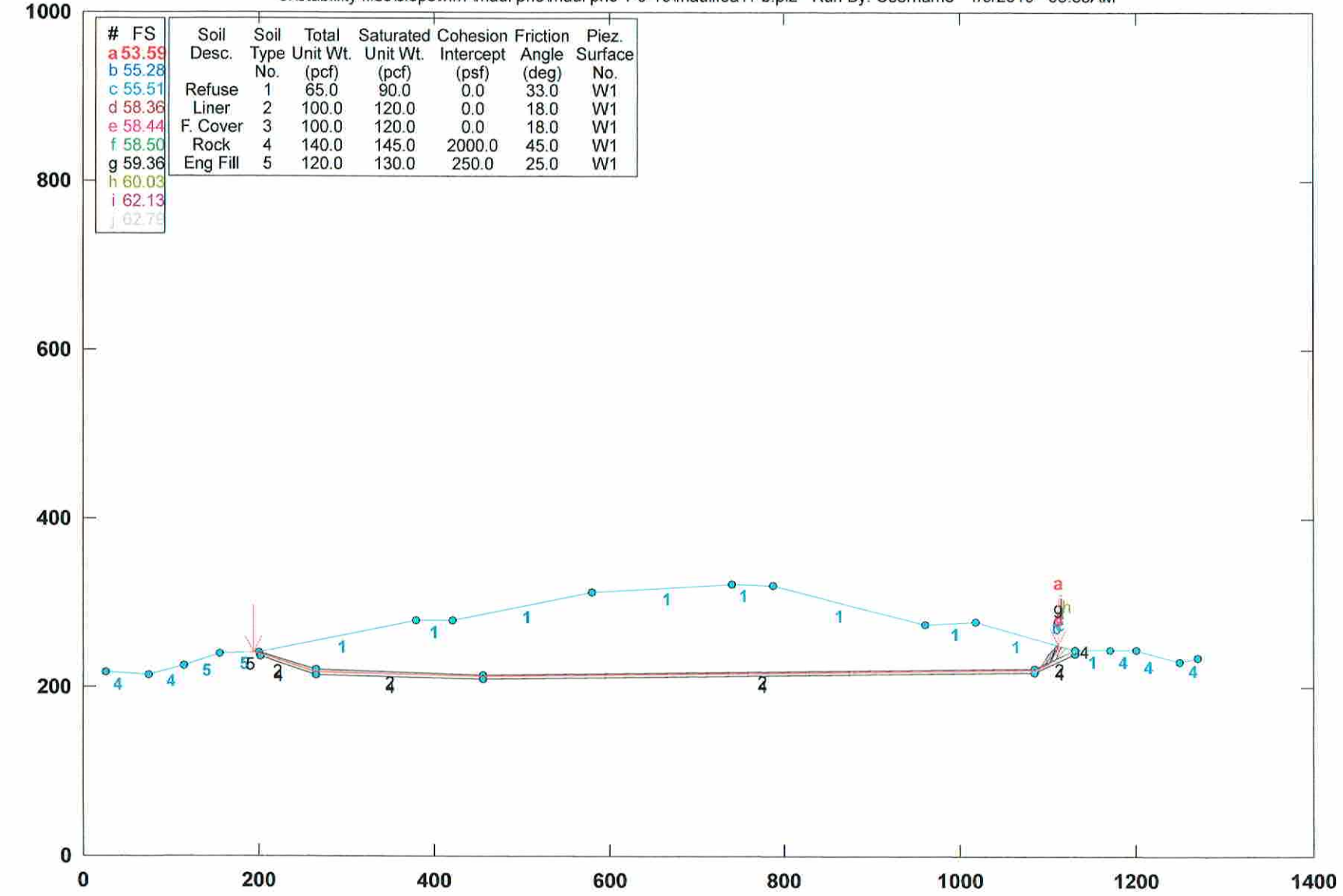
Factor Of Safety Is Calculated By The Modified Bishop Method

STED



CML - ph III Sl. Stab. Section III-S1-3AStatic

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a11-b.pl2 Run By: Username 1/9/2019 08:33AM



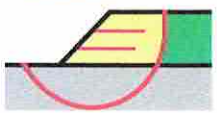
#	FS
a	53.59
b	55.28
c	55.51
d	58.36
e	58.44
f	58.50
g	59.36
h	60.03
i	62.13
j	62.75

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

PCSTABL5M/si FSmin=53.59

Safety Factors Are Calculated By The Modified Janbu Method

STED

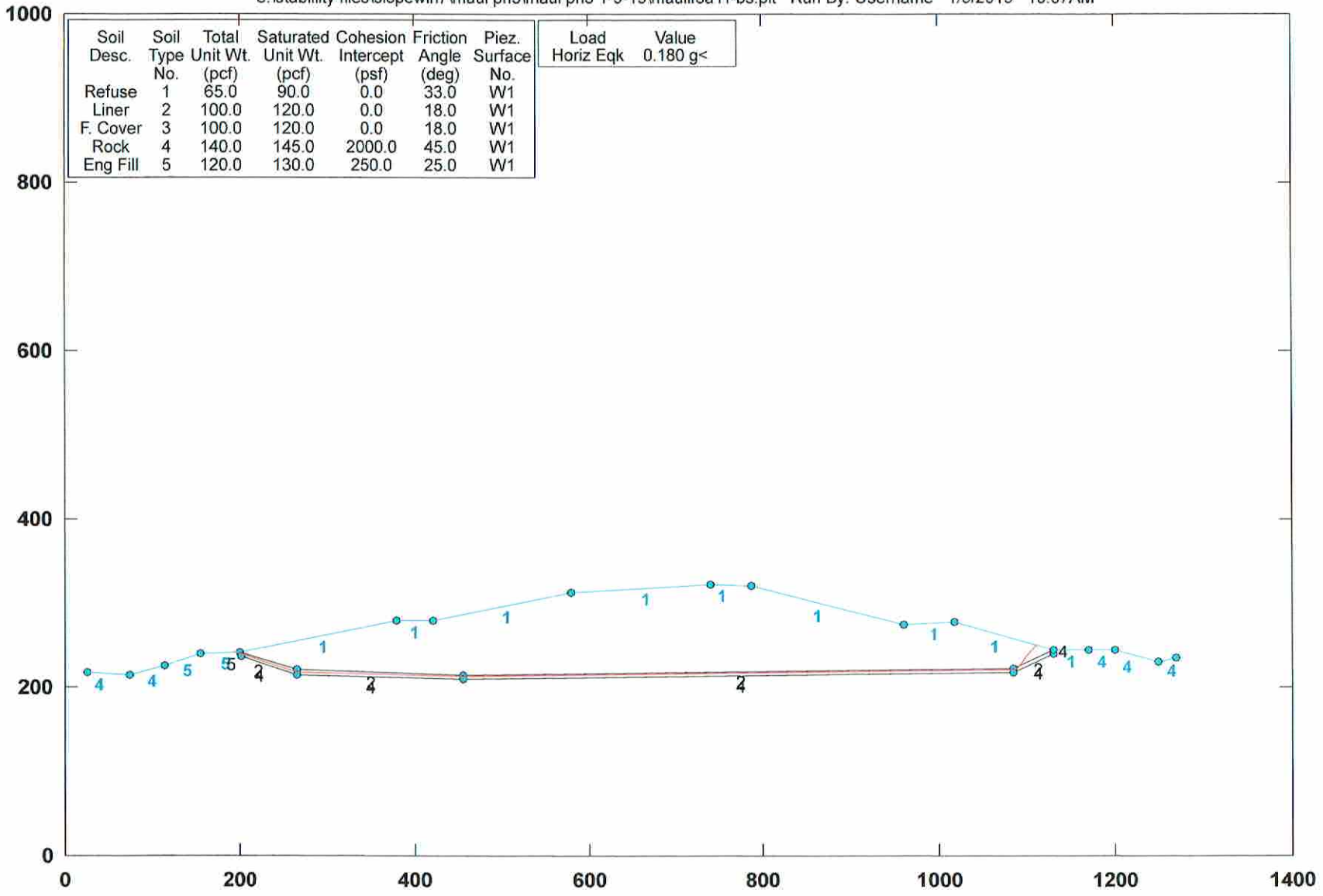


CML - ph III Sl. Stab. Section III-S1-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a11-bs.plt Run By: Username 1/9/2019 10:07AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

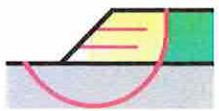
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.78

Factors of Safety Calculated by Janbu Method

STED

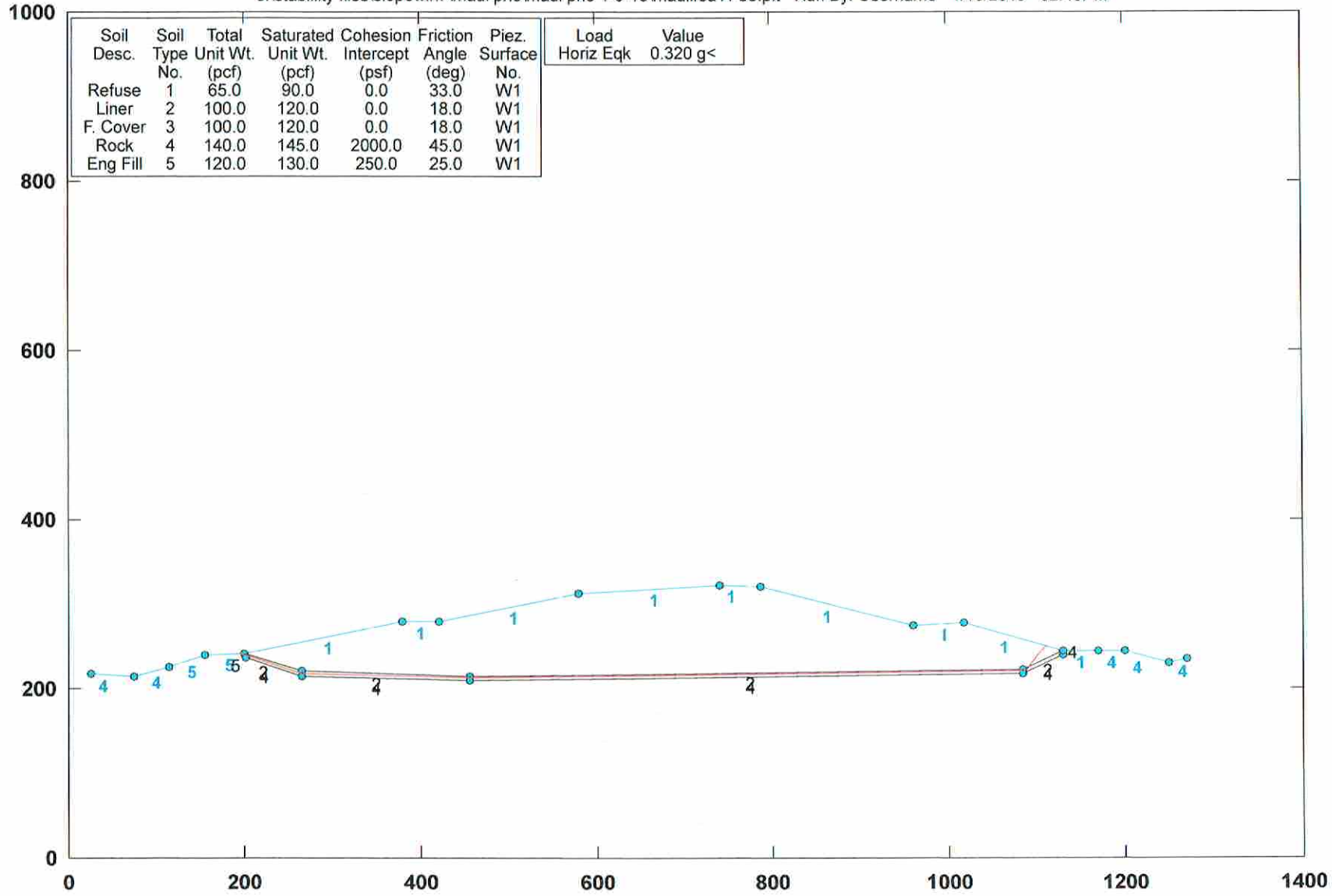


CML - ph III Sl. Stab. Section III-S1-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a11-be.plt Run By: Username 1/10/2019 02:46PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.320 g<



PCSTABL5M/si FSmin=1.01

Factors of Safety Calculated by Janbu Method

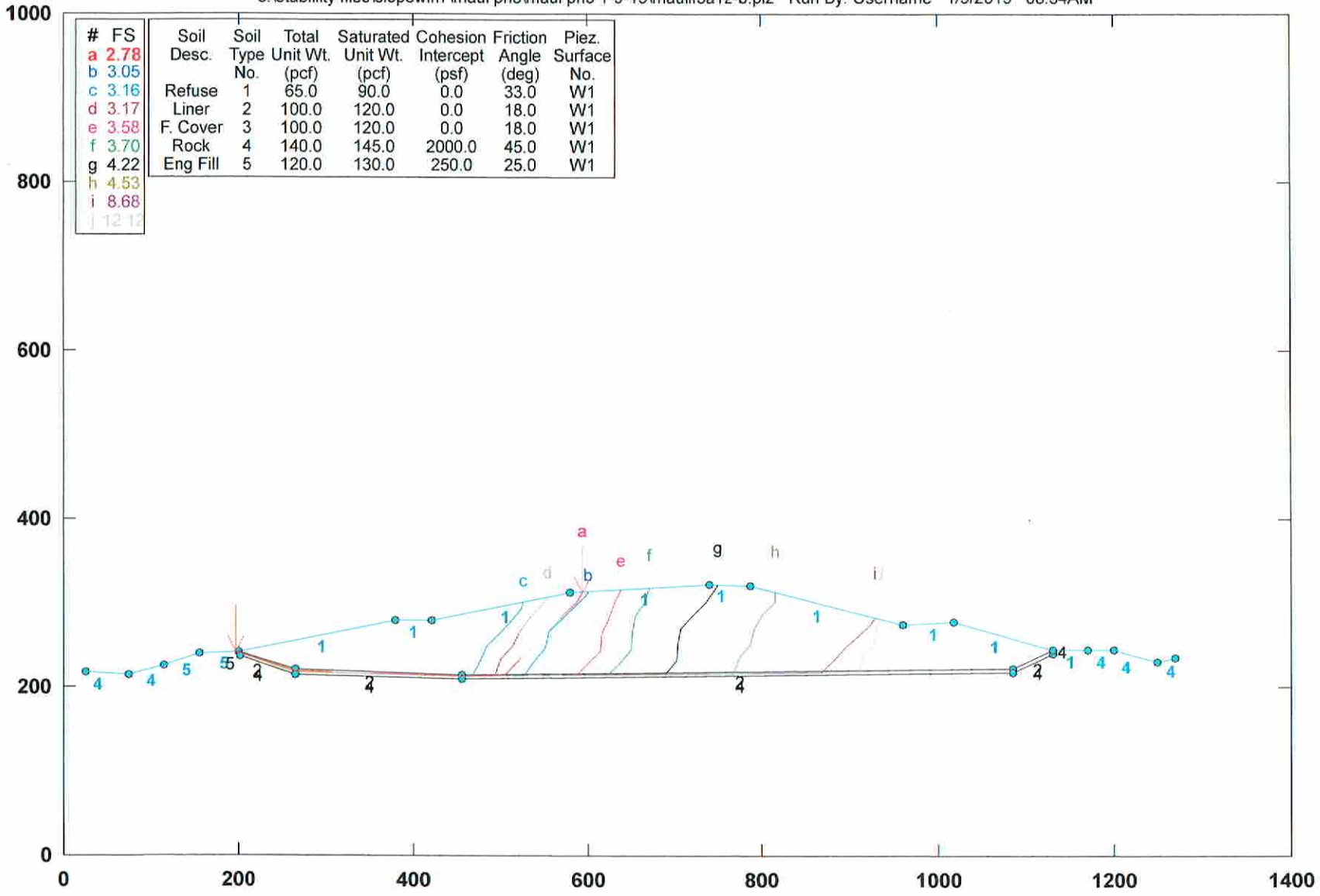
STED

CML - ph III Sl. Stab. Section III-S1-3AStatic

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a12-b.pl2 Run By: Username 1/9/2019 08:34AM

#	FS
a	2.78
b	3.05
c	3.16
d	3.17
e	3.58
f	3.70
g	4.22
h	4.53
i	8.68
j	12.12

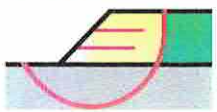
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=2.78

Safety Factors Are Calculated By The Modified Janbu Method

STED

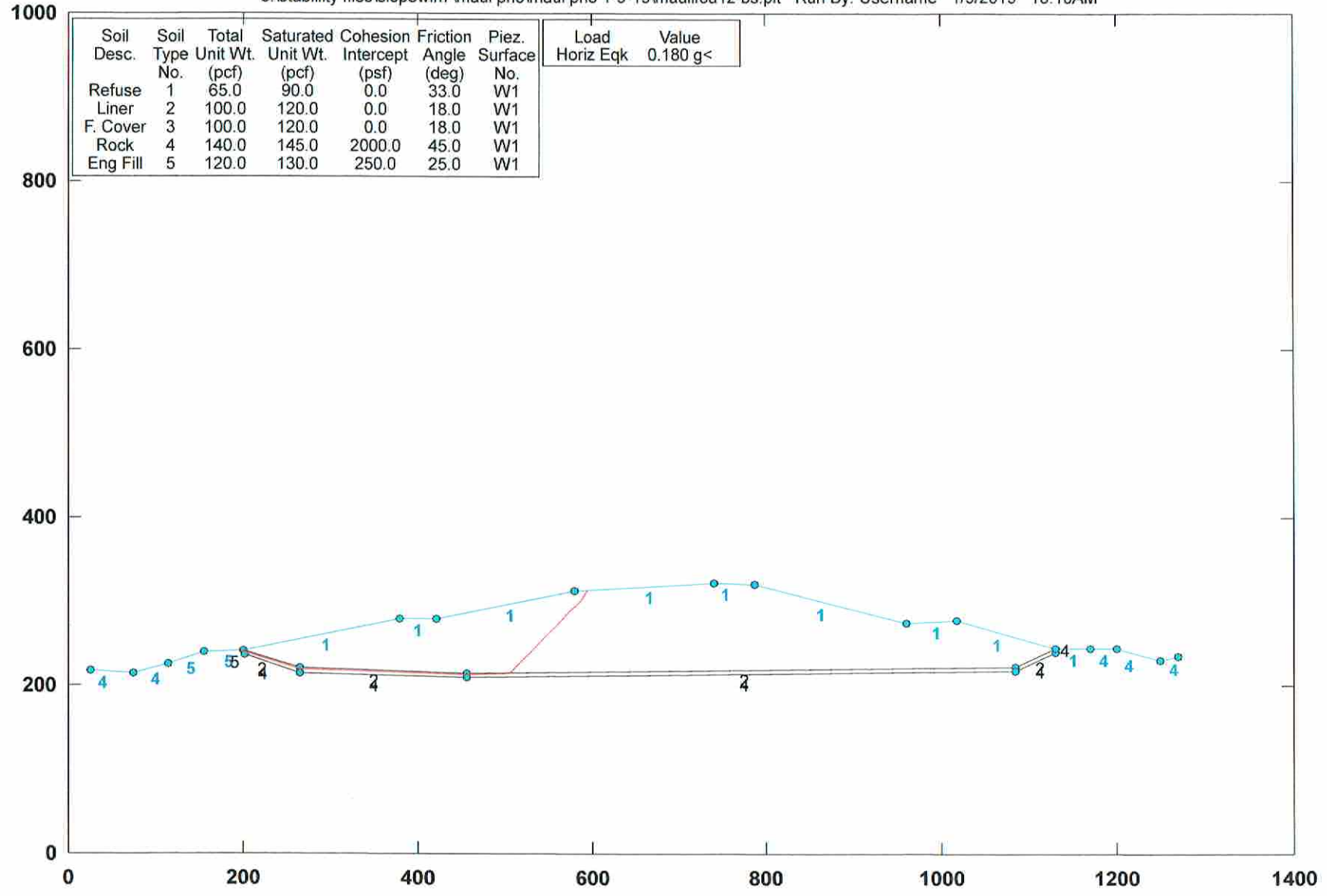


CML - ph III Sl. Stab. Section III-S1-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a12-bs.plt Run By: Username 1/9/2019 10:10AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.25

Factors of Safety Calculated by Janbu Method

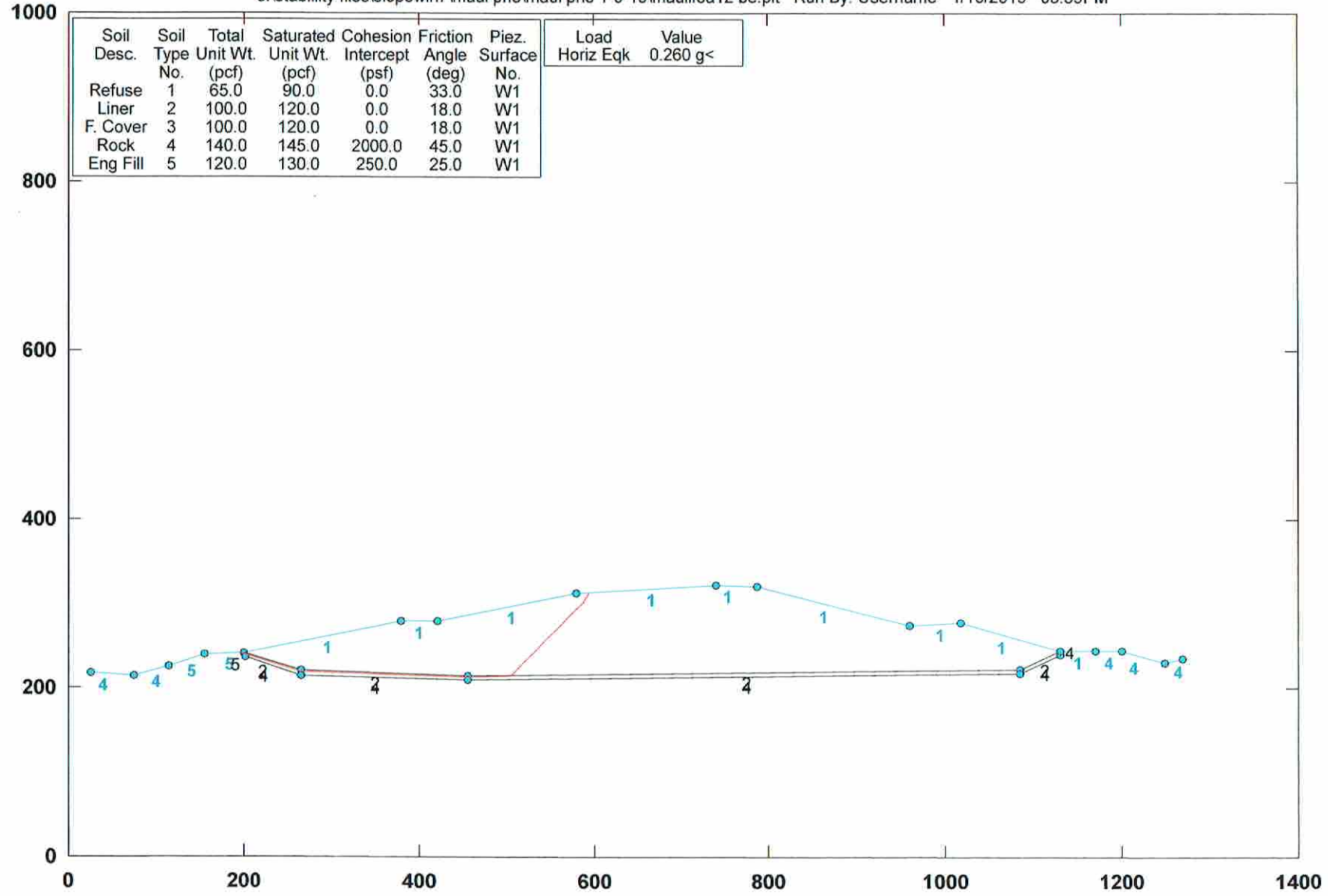
STED

CML - ph III Sl. Stab. Section III-S1-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a12-be.plt Run By: Username 1/10/2019 03:39PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

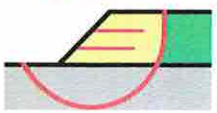
Load	Value
Horiz Eqk	0.260 g<



PCSTABL5M/si FSmin=0.99

Factors of Safety Calculated by Janbu Method

STED

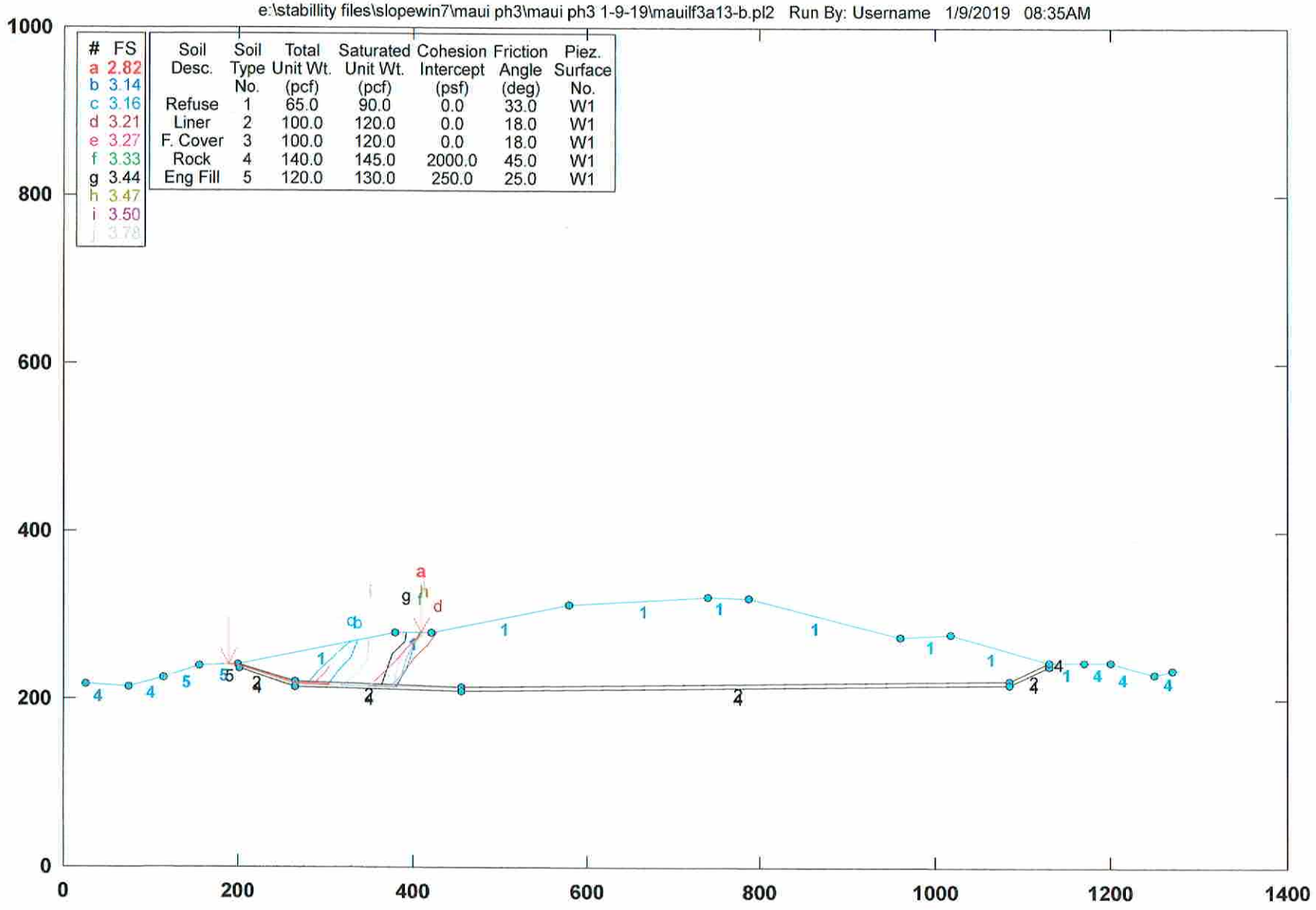


CML - ph III Sl. Stab. Section III-S1-3AStatic

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a13-b.pl2 Run By: Username 1/9/2019 08:35AM

#	FS
a	2.82
b	3.14
c	3.16
d	3.21
e	3.27
f	3.33
g	3.44
h	3.47
i	3.50
j	3.78

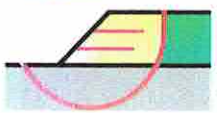
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=2.82

Safety Factors Are Calculated By The Modified Janbu Method

STED

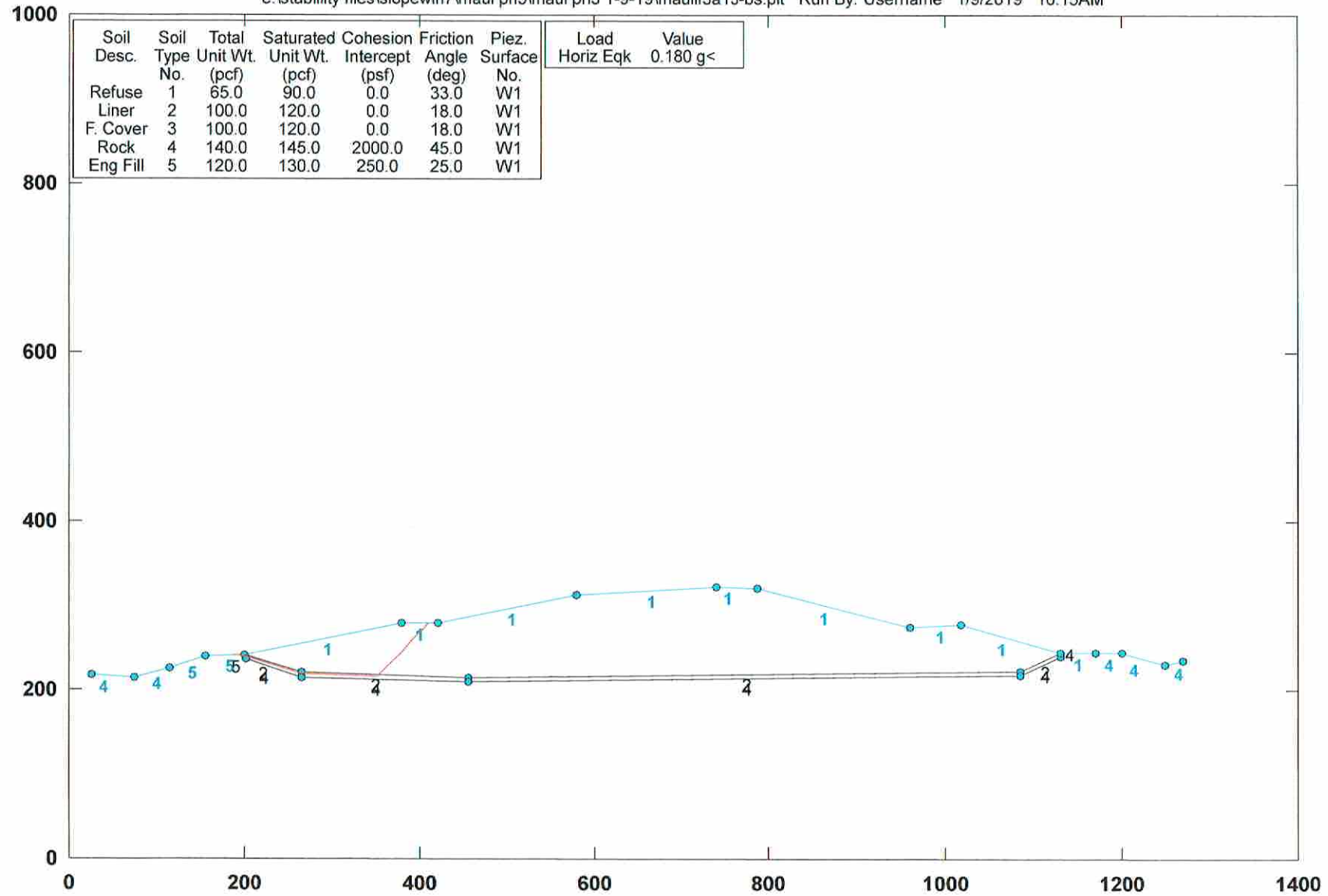


CML - ph III Sl. Stab. Section III-S1-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a13-bs.plt Run By: Username 1/9/2019 10:15AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

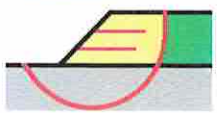
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.32

Factors of Safety Calculated by Janbu Method

STED

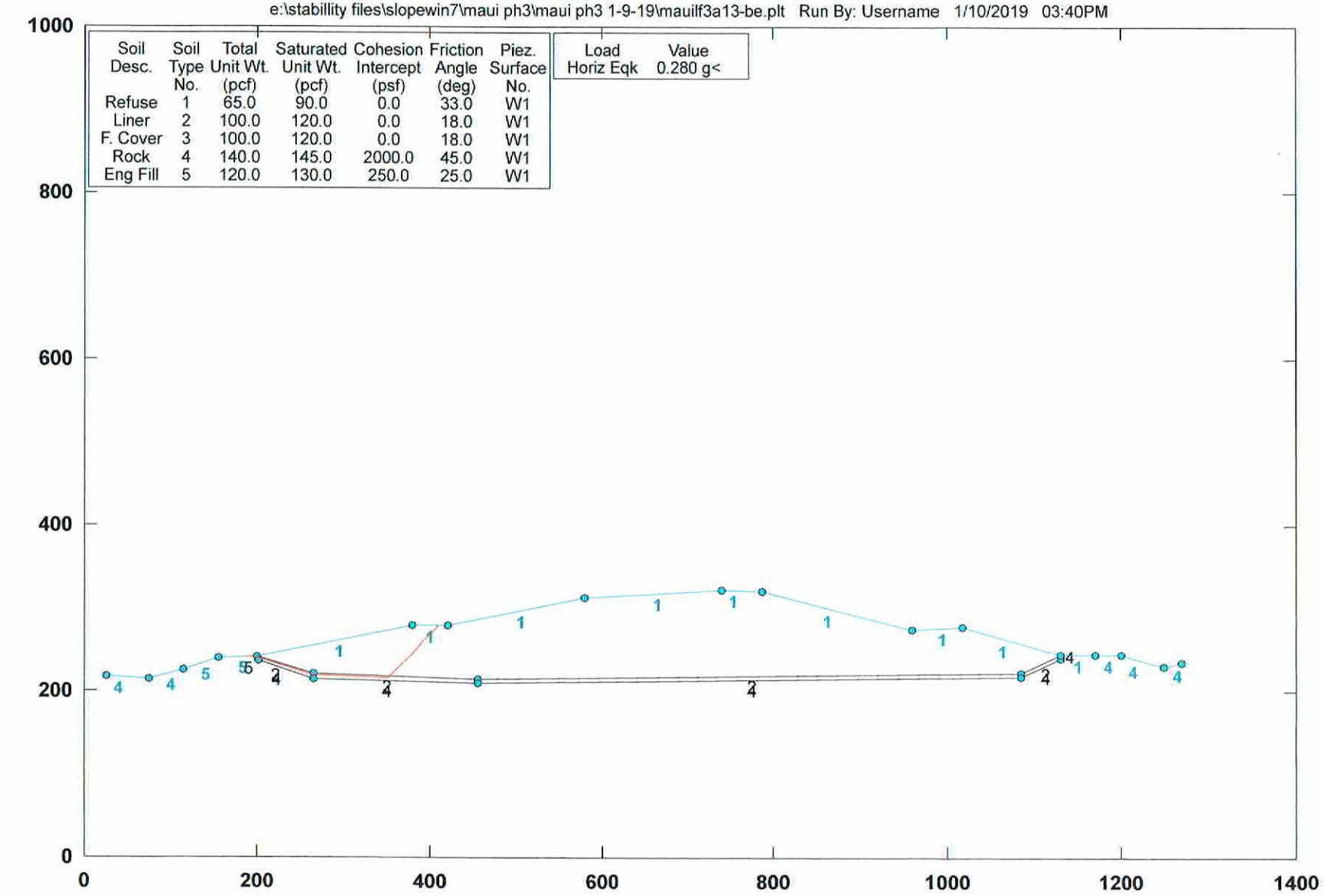


CML - ph III Sl. Stab. Section III-S1-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a13-be.plt Run By: Username 1/10/2019 03:40PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

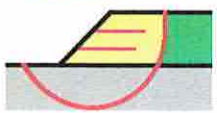
Load	Value
Horiz Eqk	0.280 g<



PCSTABL5M/si FSmin=1.00

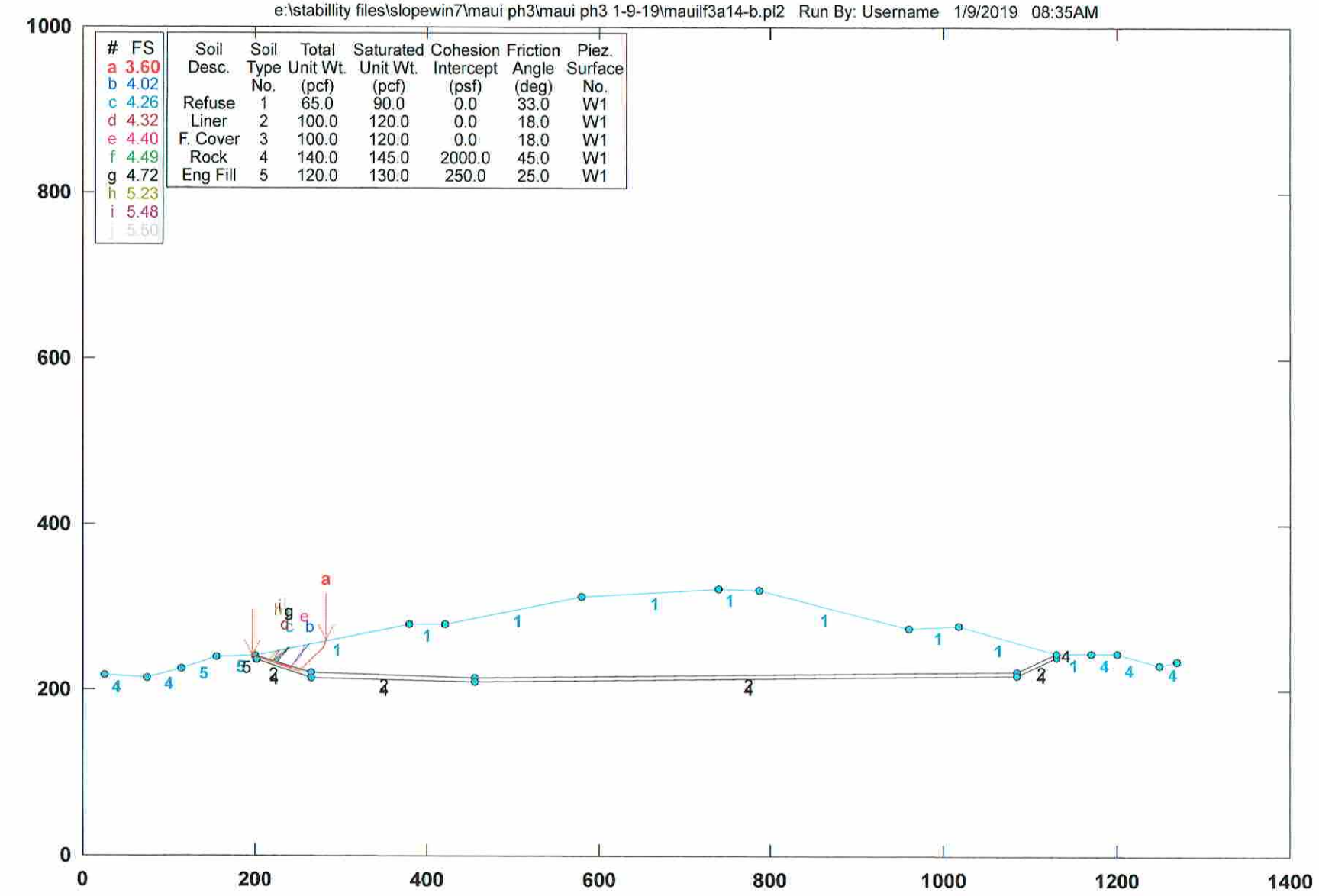
Factors of Safety Calculated by Janbu Method

STED



CML - ph III Sl. Stab. Section III-S1-3AStatic

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a14-b.pl2 Run By: Username 1/9/2019 08:35AM



#	FS
a	3.60
b	4.02
c	4.26
d	4.32
e	4.40
f	4.49
g	4.72
h	5.23
i	5.48
j	5.60

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

PCSTABL5M/si FSmin=3.60

Safety Factors Are Calculated By The Modified Janbu Method

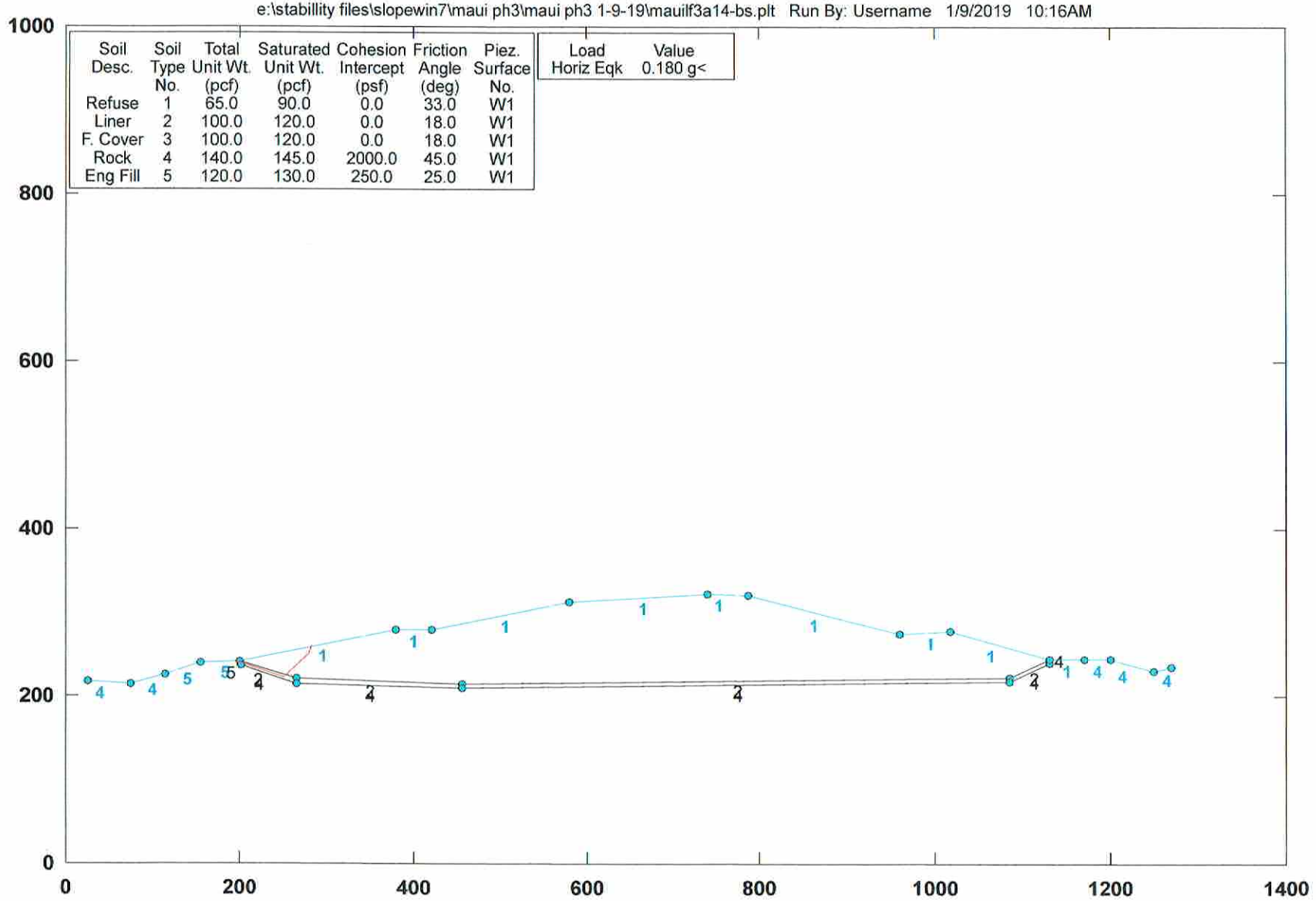
STED

CML - ph III Sl. Stab. Section III-S1-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a14-bs.plt Run By: Username 1/9/2019 10:16AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.69

Factors of Safety Calculated by Janbu Method

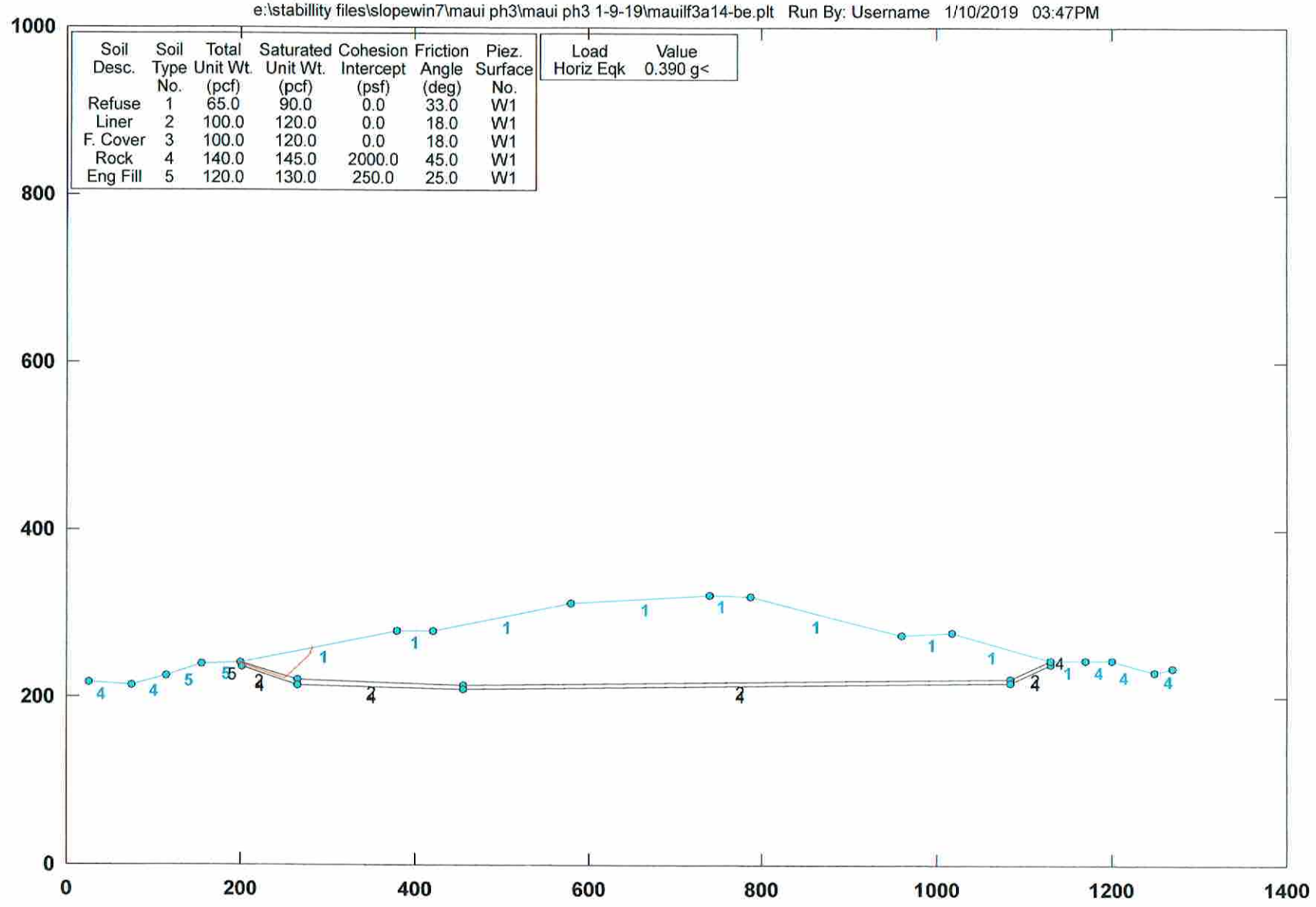
STED

CML - ph III Sl. Stab. Section III-S1-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a14-be.plt Run By: Username 1/10/2019 03:47PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

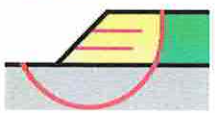
Load	Value
Horiz Eqk	0.390 g<



PCSTABL5M/si FSmin=1.00

Factors of Safety Calculated by Janbu Method

STED



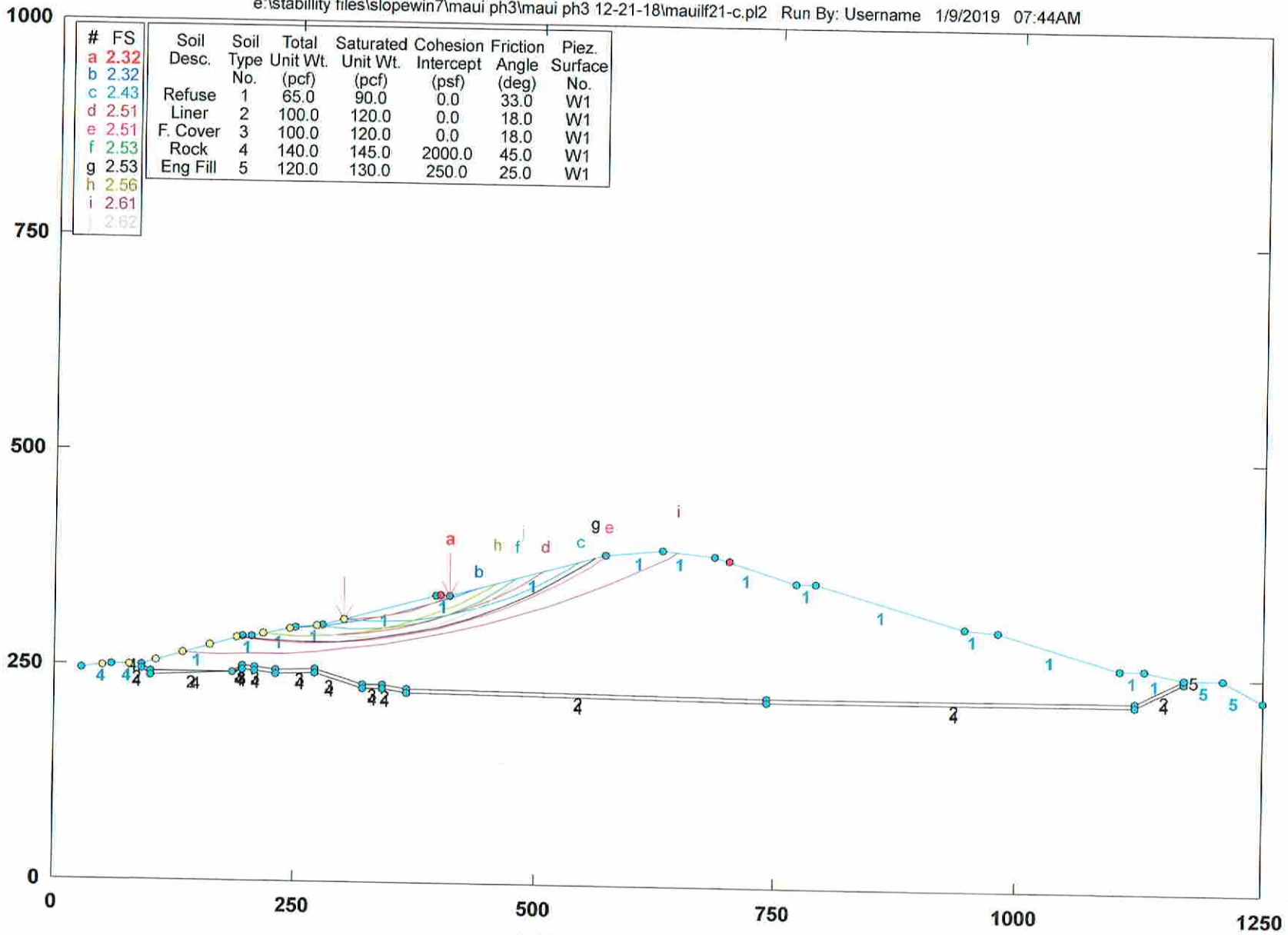
CROSS SECTION
III-S2

CML - ph III Slope Stab. Section III-S2 Static

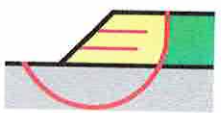
e:\stabillity files\slopewin7\maui ph3\maui ph3 12-21-18\mauilf21-c.pl2 Run By: Username 1/9/2019 07:44AM

#	FS
a	2.32
b	2.32
c	2.43
d	2.51
e	2.51
f	2.53
g	2.53
h	2.56
i	2.61
j	2.62

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



STED



PCSTABL5M/si FSmin=2.32

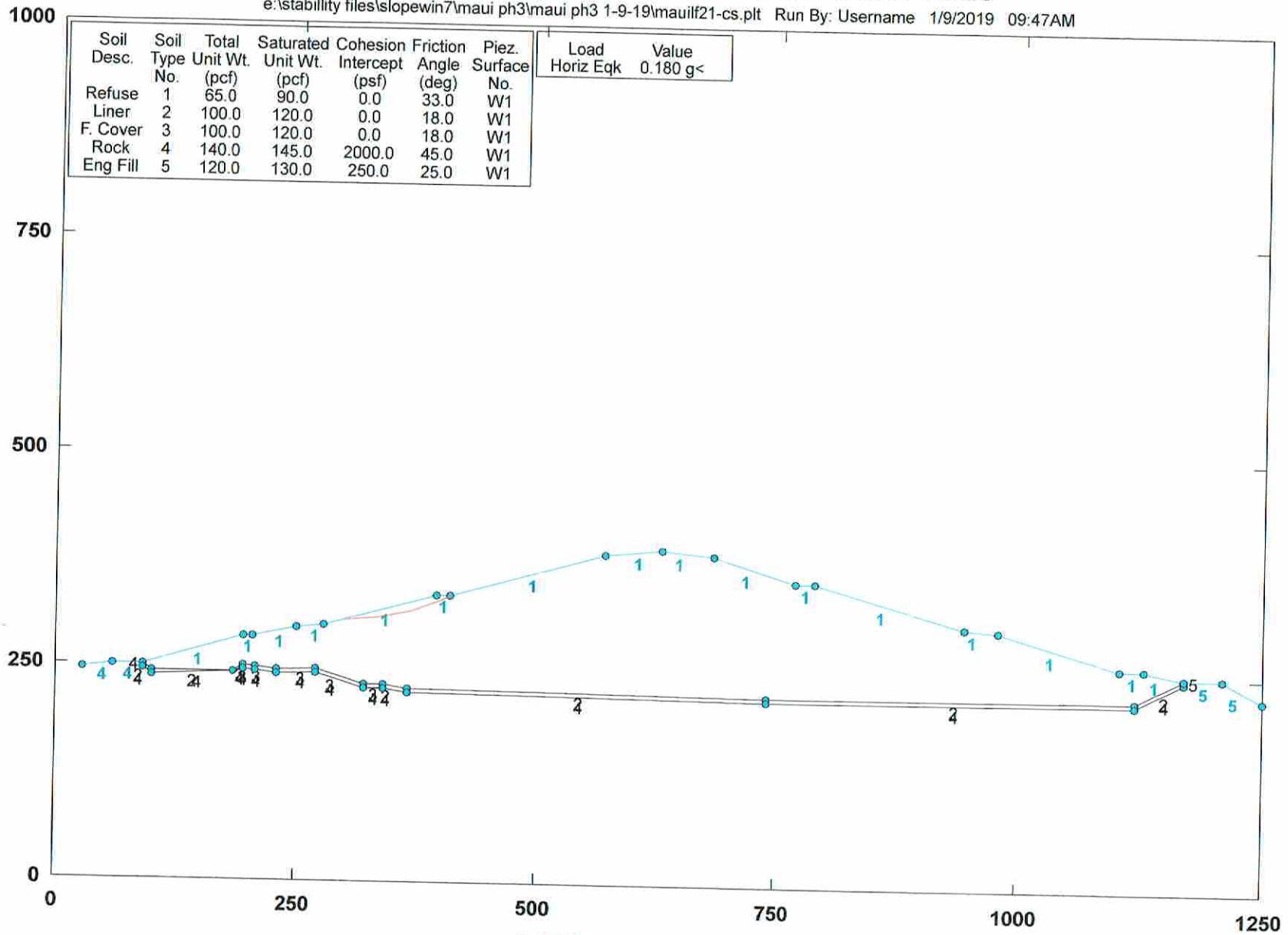
Safety Factors Are Calculated By The Modified Bishop Method

CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf21-cs.plt Run By: Username 1/9/2019 09:47AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

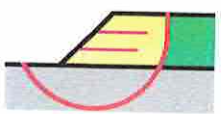
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.37

Factor Of Safety Is Calculated By The Modified Bishop Method

STED

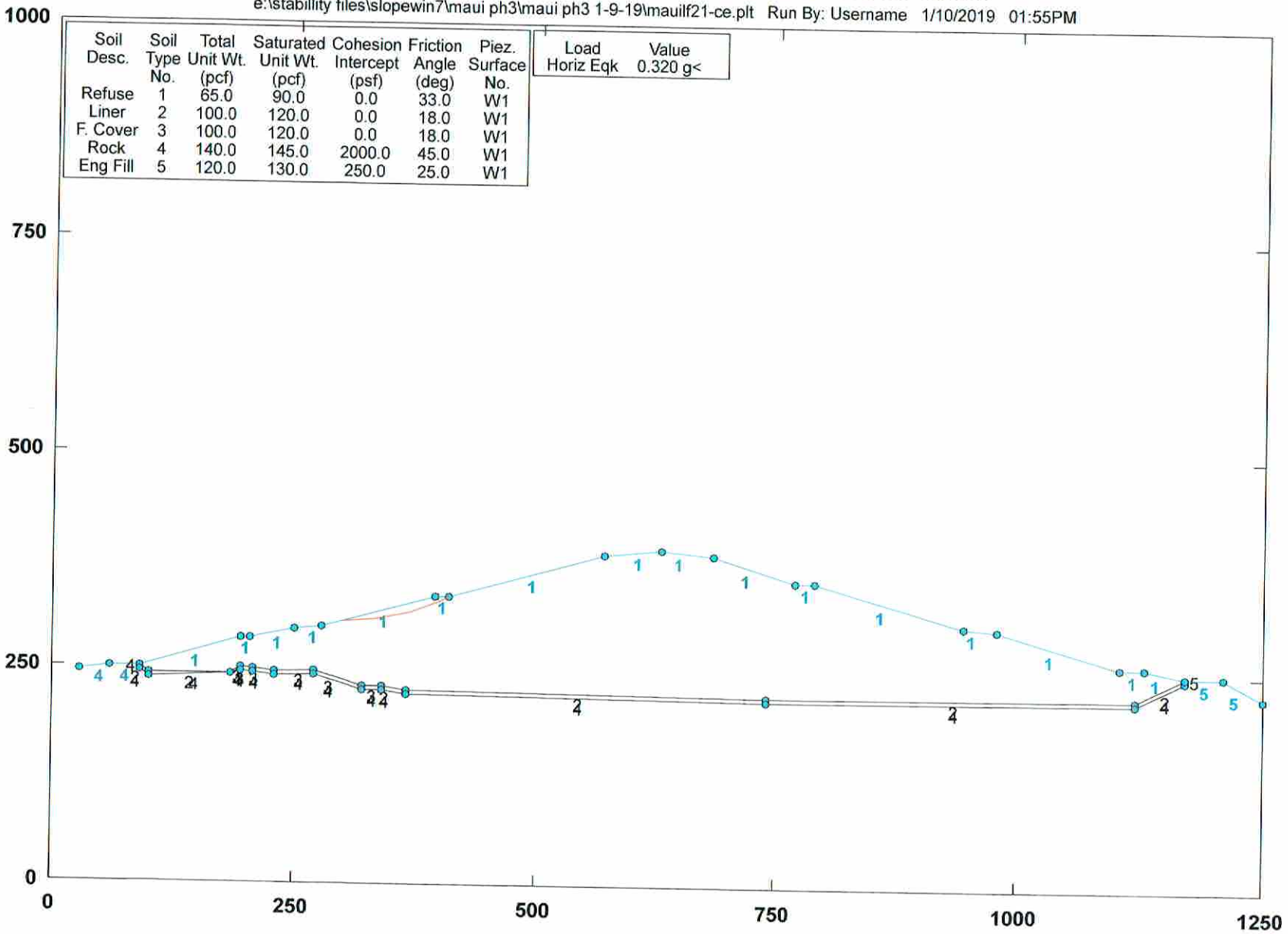


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf21-ce.plt Run By: Username 1/10/2019 01:55PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

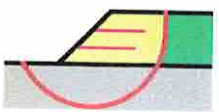
Load	Value
Horiz Eqk	0.320 g<



PCSTABL5M/si FSmin=1.01

Factor Of Safety Is Calculated By The Modified Bishop Method

STED

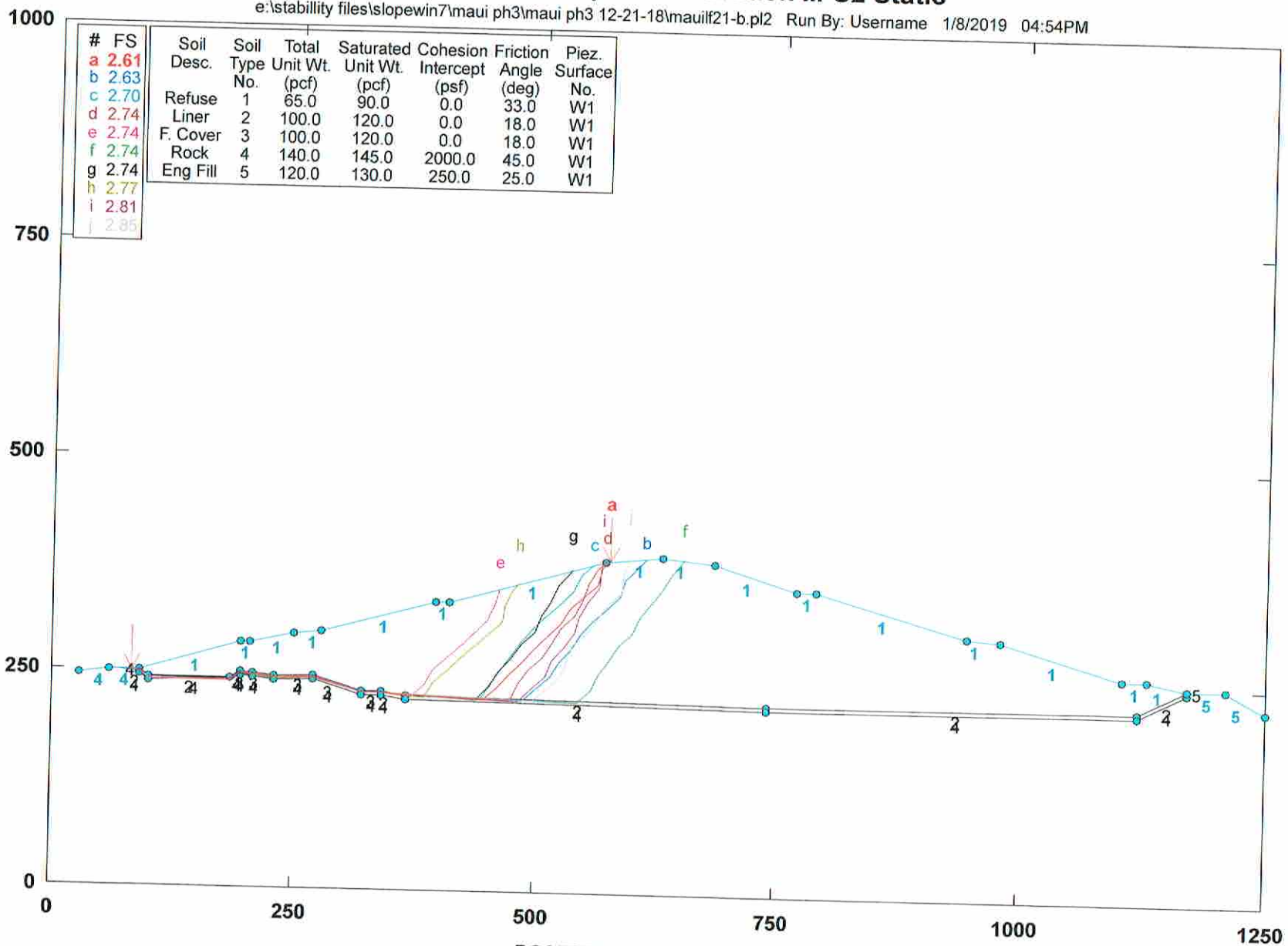


CML - ph III Slope Stab. Section III-S2 Static

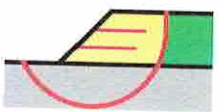
e:\stabillity files\slopewin7\maui ph3\maui ph3 12-21-18\mauilf21-b.pl2 Run By: Username 1/8/2019 04:54PM

#	FS
a	2.61
b	2.63
c	2.70
d	2.74
e	2.74
f	2.74
g	2.74
h	2.77
i	2.81
j	2.85

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



STED



PCSTABL5M/si FSmin=2.61

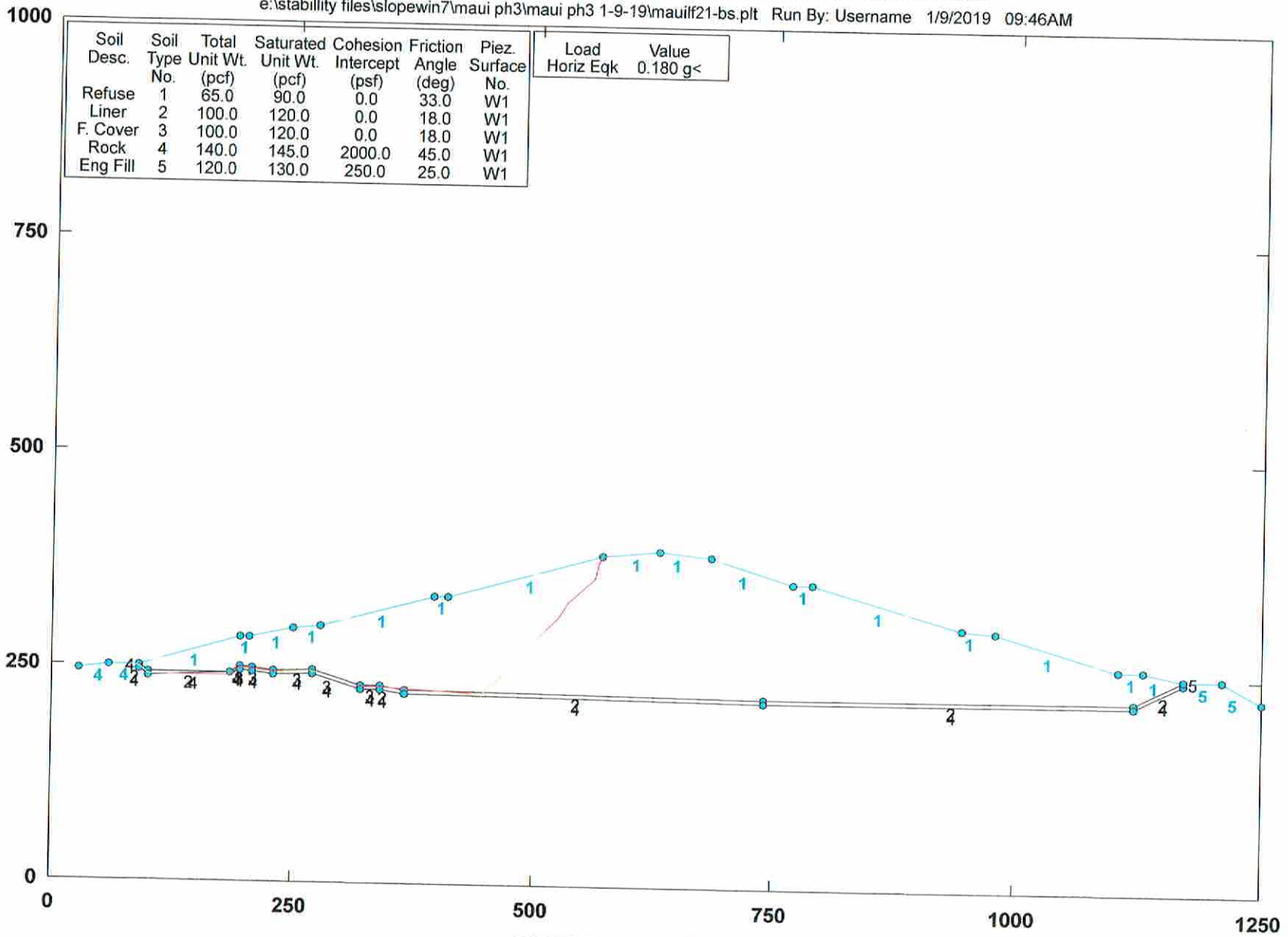
Safety Factors Are Calculated By The Modified Janbu Method

CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf21-bs.plt Run By: Username 1/9/2019 09:46AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

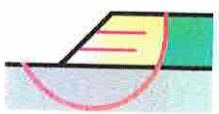
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.47

Factors of Safety Calculated by Janbu Method

STED

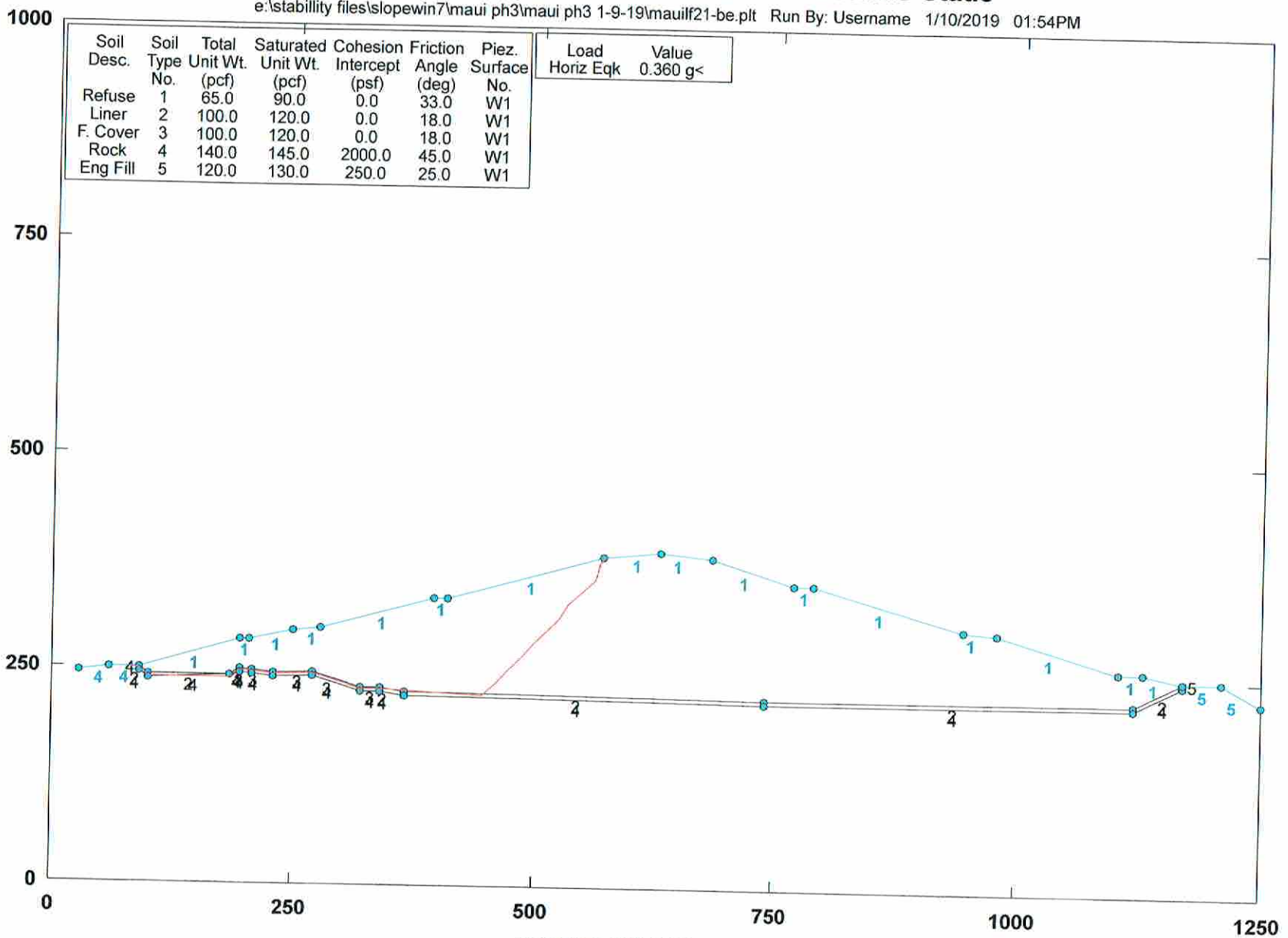


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf21-be.plt Run By: Username 1/10/2019 01:54PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

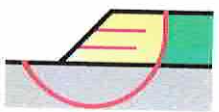
Load	Value
Horiz Eqk	0.360 g<



PCSTABL5M/si FSmin=1.00

Factors of Safety Calculated by Janbu Method

STED

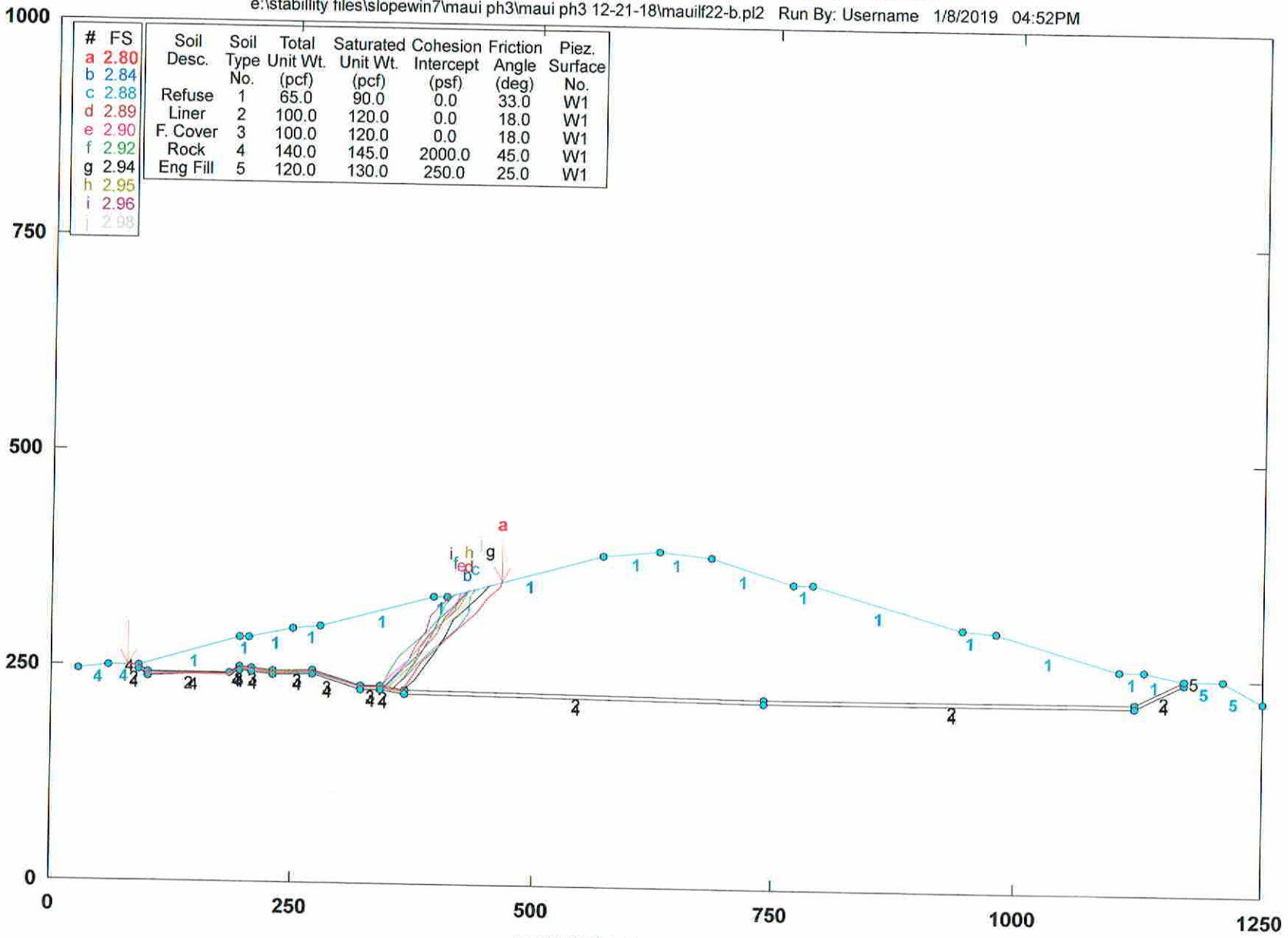


CML - ph III Slope Stab. Section III-S2 Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 12-21-18\mauilf22-b.pl2 Run By: Username 1/8/2019 04:52PM

#	FS
a	2.80
b	2.84
c	2.88
d	2.89
e	2.90
f	2.92
g	2.94
h	2.95
i	2.96
j	2.98

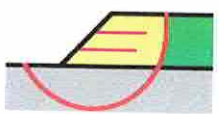
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=2.80

Safety Factors Are Calculated By The Modified Janbu Method

STED

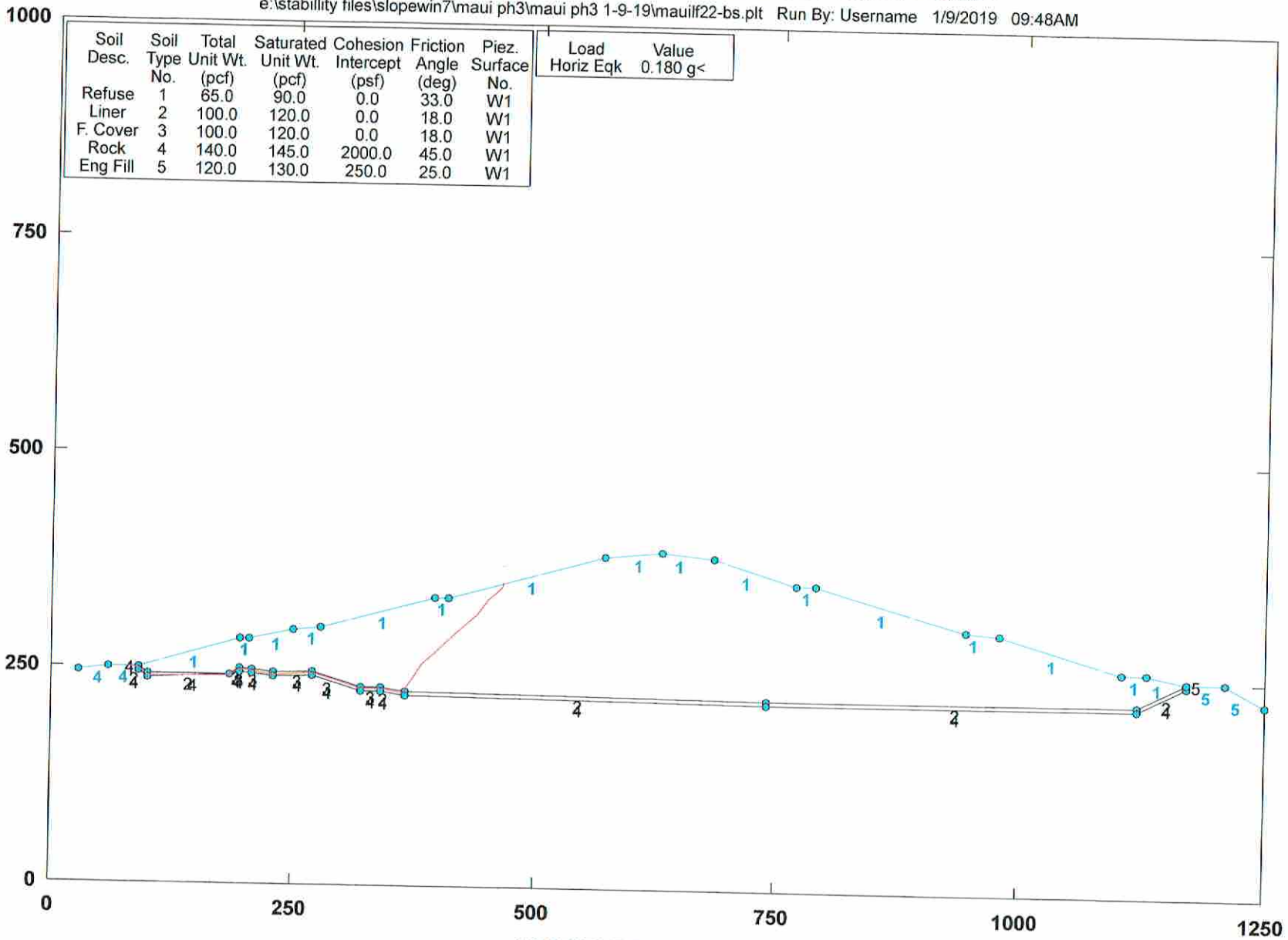


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf22-bs.plt Run By: Username 1/9/2019 09:48AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

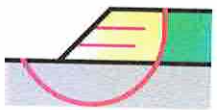
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.54

Factors of Safety Calculated by Janbu Method

STED

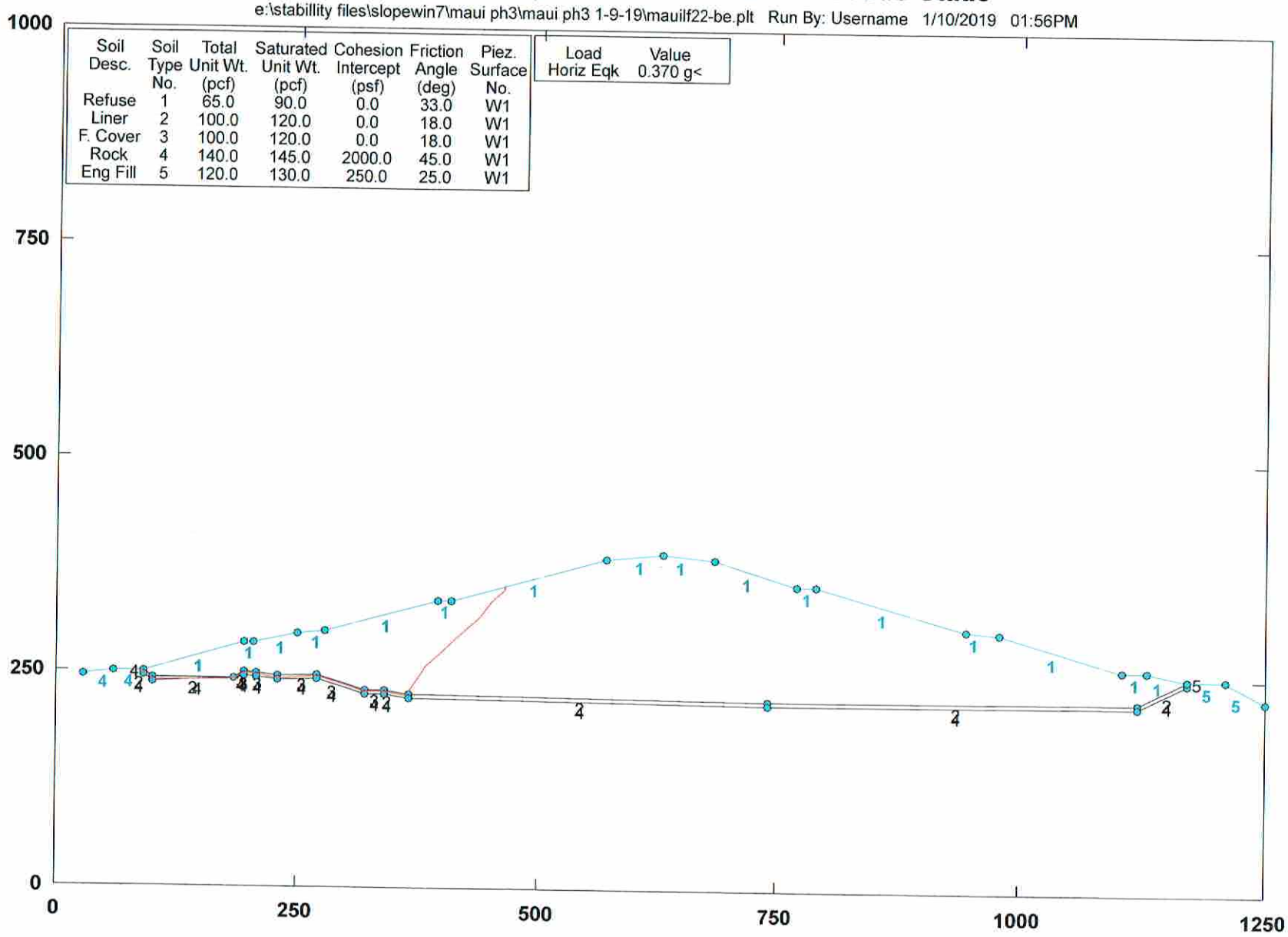


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf22-be.plt Run By: Username 1/10/2019 01:56PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

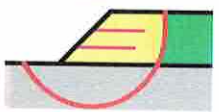
Load	Value
Horiz Eqk	0.370 g<



PCSTABL5M/si FSmin=1.01

Factors of Safety Calculated by Janbu Method

STED

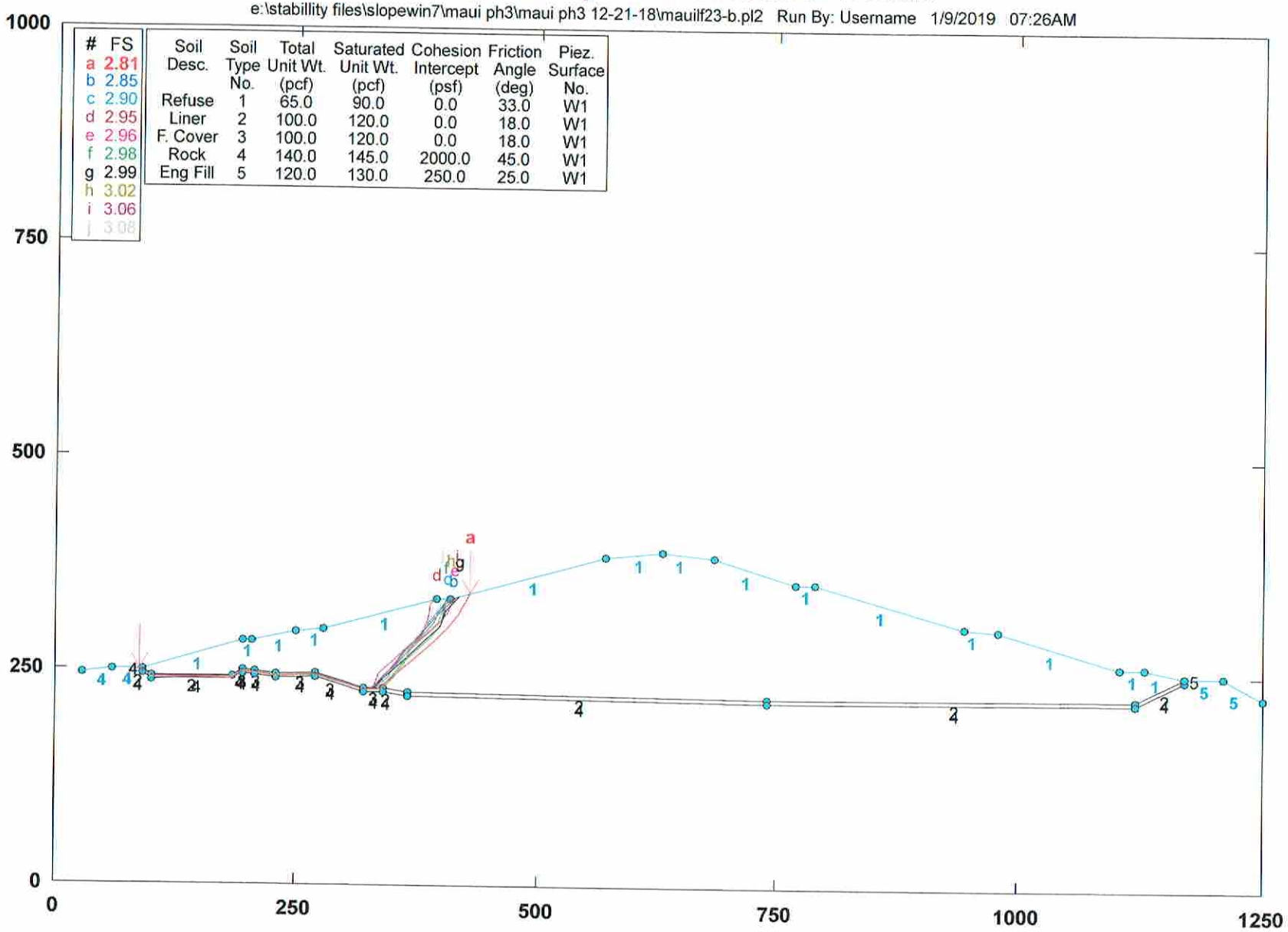


CML - ph III Slope Stab. Section III-S2 Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 12-21-18\mauilf23-b.pl2 Run By: Username 1/9/2019 07:26AM

#	FS
a	2.81
b	2.85
c	2.90
d	2.95
e	2.96
f	2.98
g	2.99
h	3.02
i	3.06
j	3.08

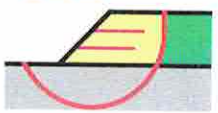
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=2.81

Safety Factors Are Calculated By The Modified Janbu Method

STED

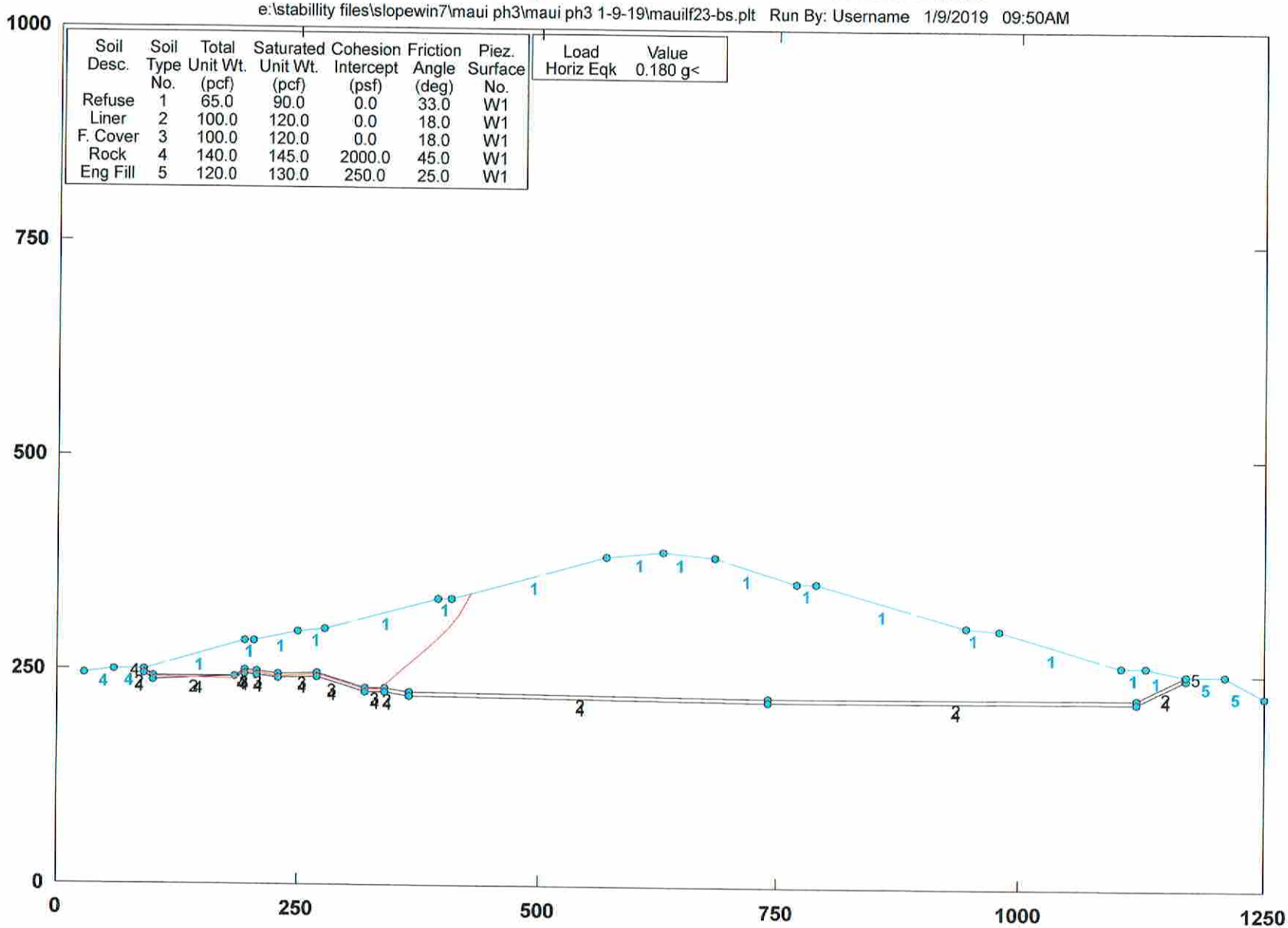


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf23-bs.plt Run By: Username 1/9/2019 09:50AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

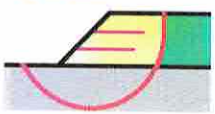
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.57

Factors of Safety Calculated by Janbu Method

STED

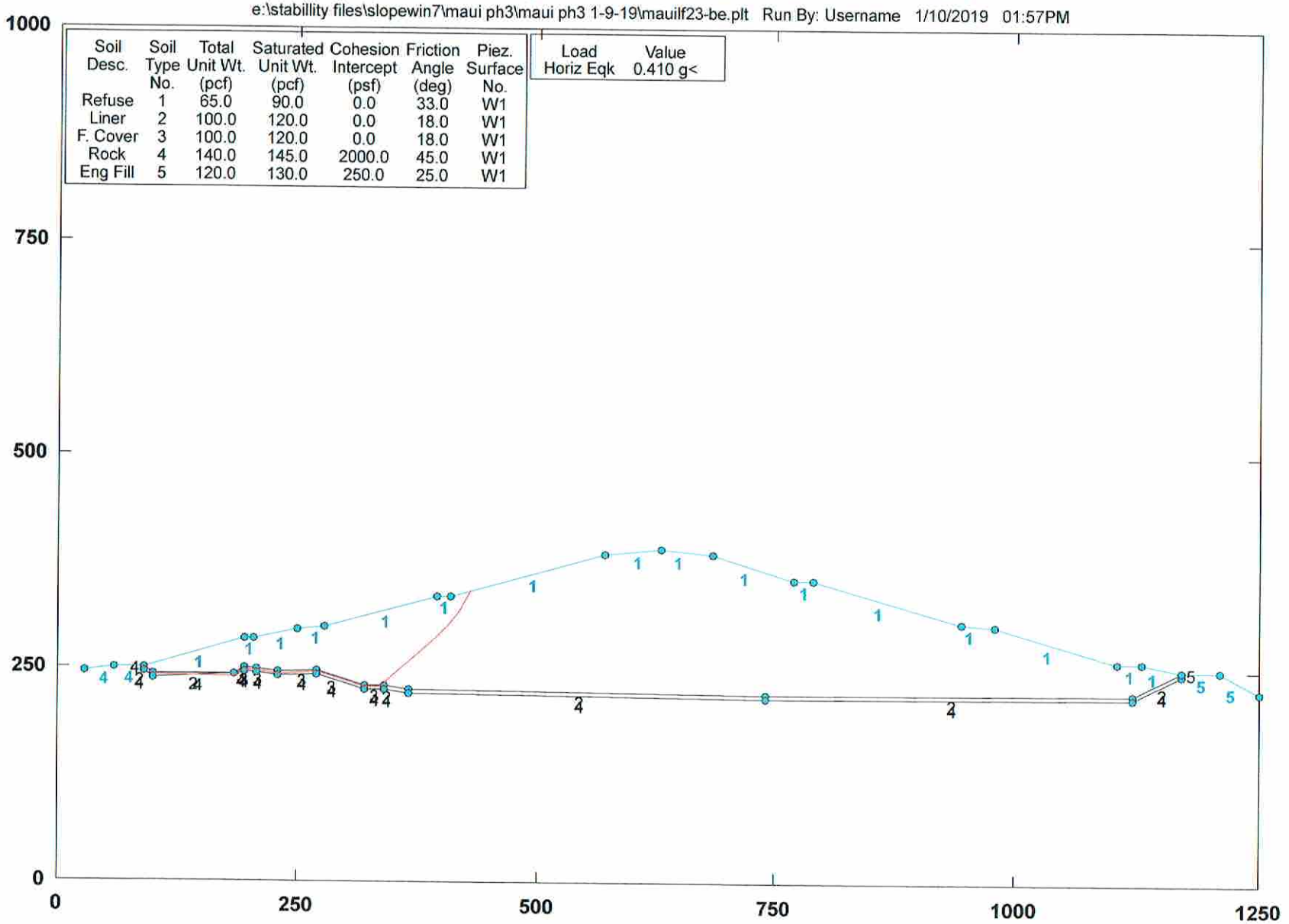


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf23-be.plt Run By: Username 1/10/2019 01:57PM

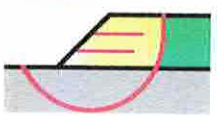
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.410 g<



PCSTABL5M/si FSmin=1.01
Factors of Safety Calculated by Janbu Method

STED

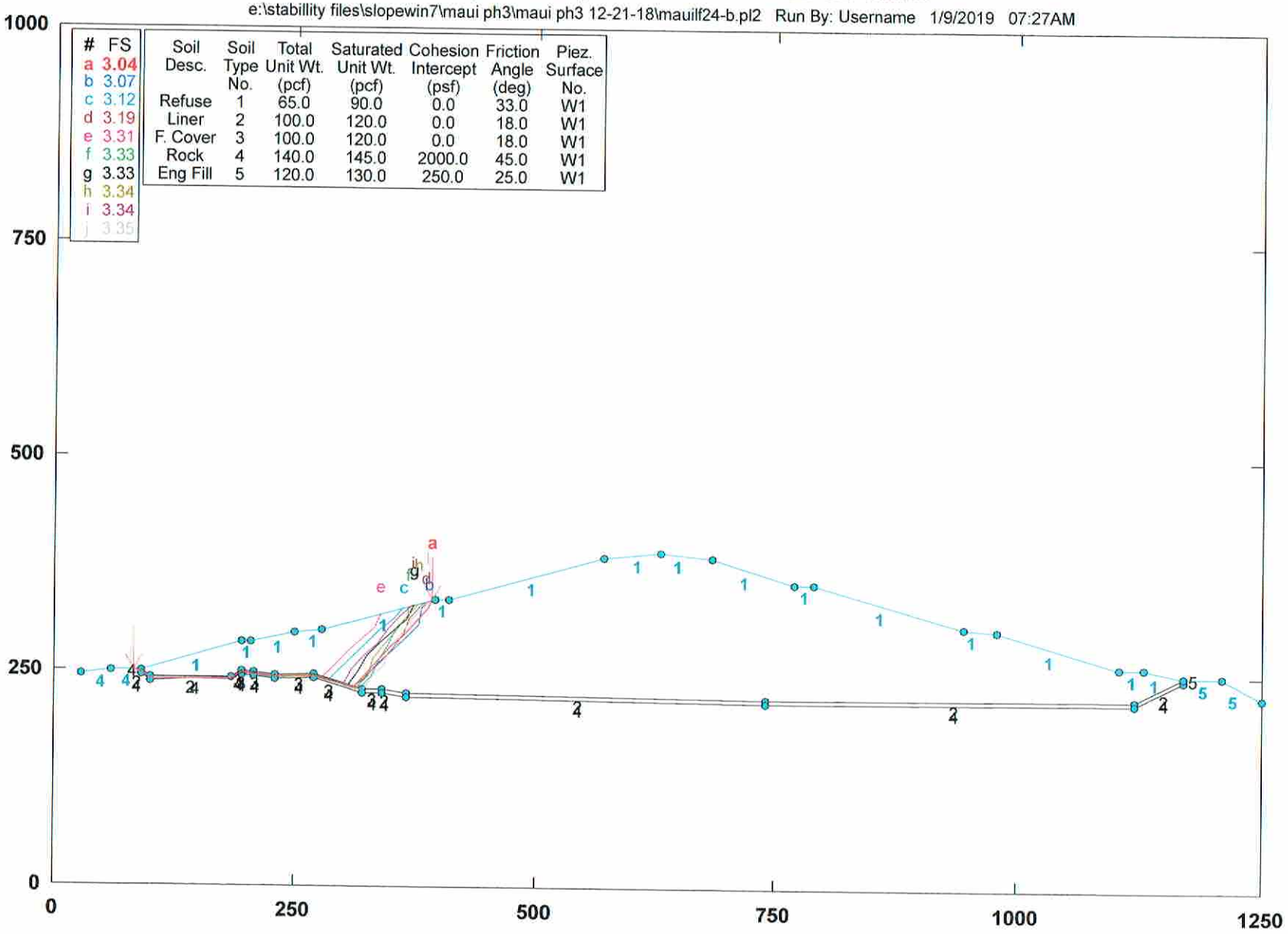


CML - ph III Slope Stab. Section III-S2 Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 12-21-18\mauilf24-b.pl2 Run By: Username 1/9/2019 07:27AM

#	FS
a	3.04
b	3.07
c	3.12
d	3.19
e	3.31
f	3.33
g	3.33
h	3.34
i	3.34
j	3.35

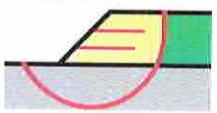
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=3.04

Safety Factors Are Calculated By The Modified Janbu Method

STED

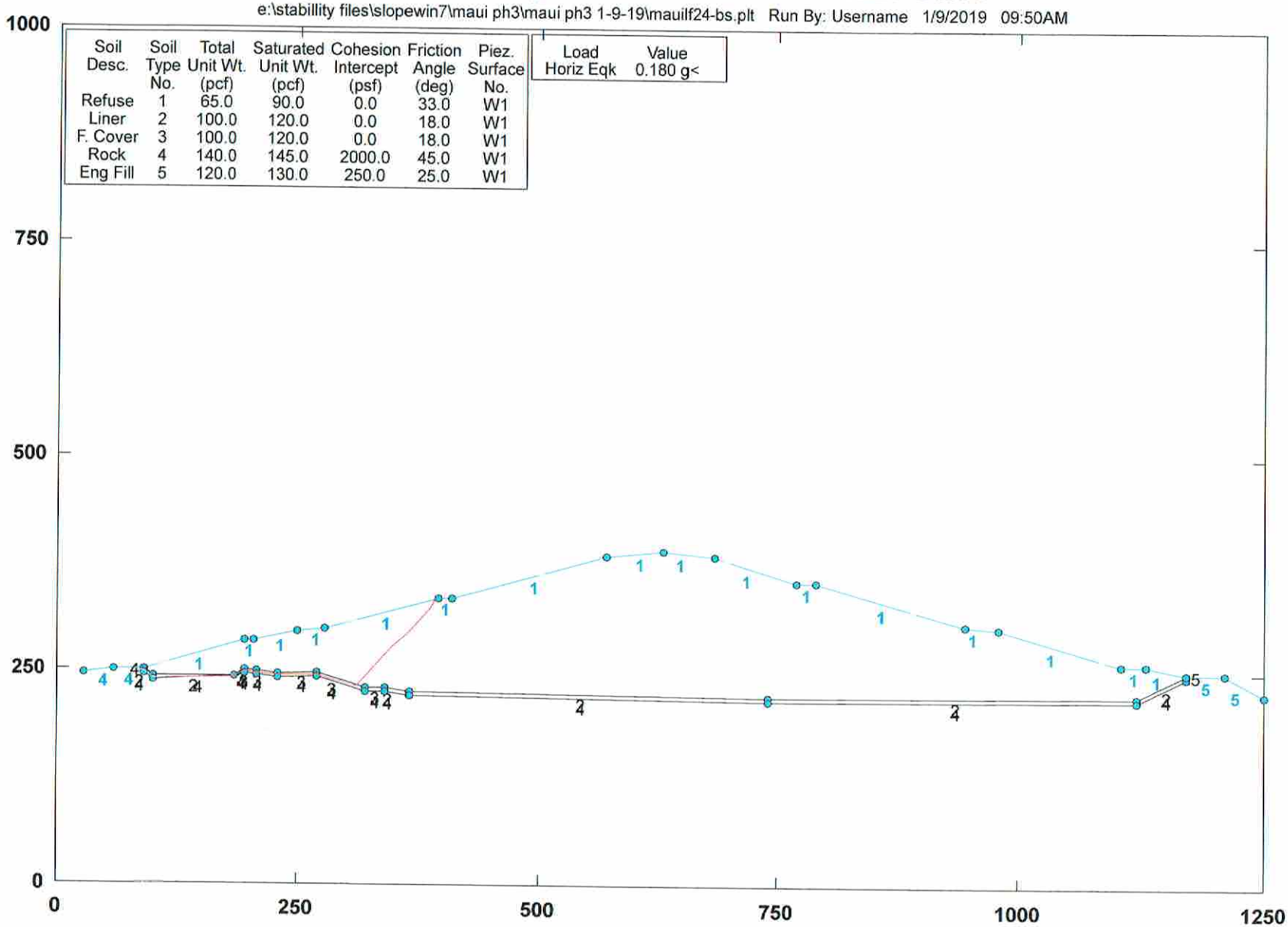


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf24-bs.plt Run By: Username 1/9/2019 09:50AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.70
Factors of Safety Calculated by Janbu Method

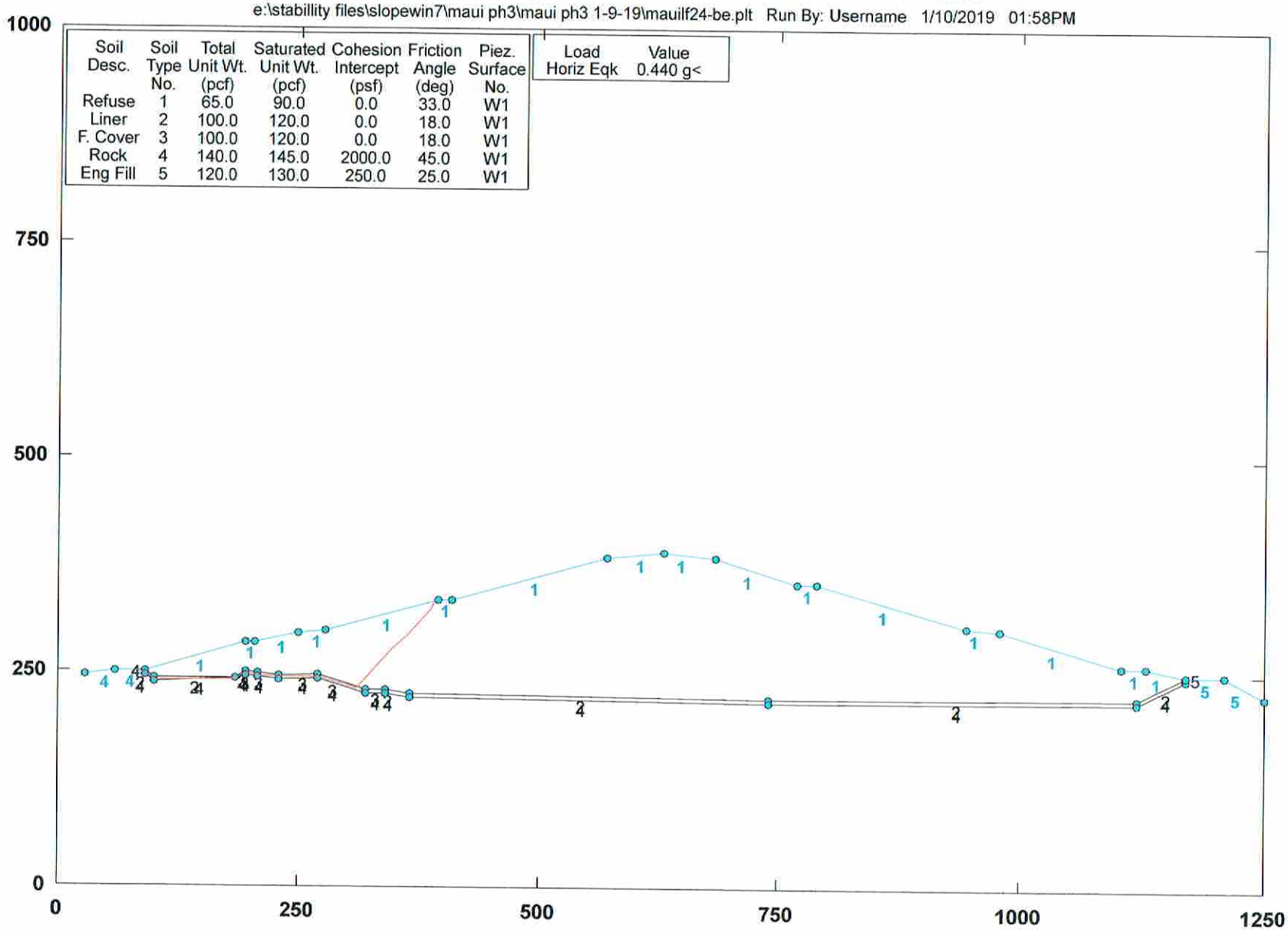
STED

CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf24-be.plt Run By: Username 1/10/2019 01:58PM

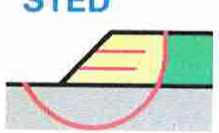
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.440 g<



PCSTABL5M/si FSmin=1.00
Factors of Safety Calculated by Janbu Method

STED

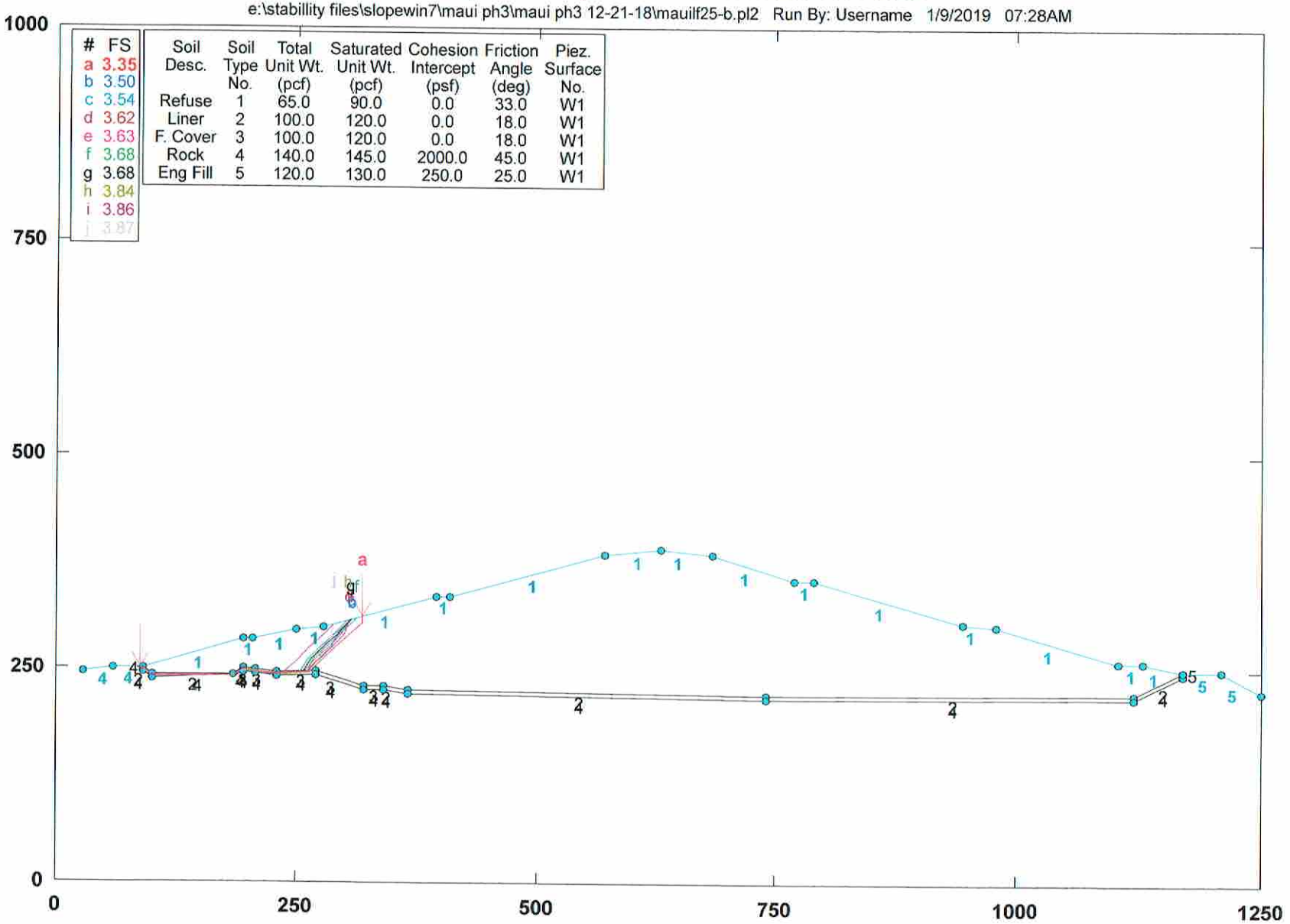


CML - ph III Slope Stab. Section III-S2 Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 12-21-18\mauilf25-b.pl2 Run By: Username 1/9/2019 07:28AM

#	FS
a	3.35
b	3.50
c	3.54
d	3.62
e	3.63
f	3.68
g	3.68
h	3.84
i	3.86
j	3.87

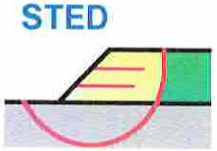
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=3.35

Safety Factors Are Calculated By The Modified Janbu Method

STED

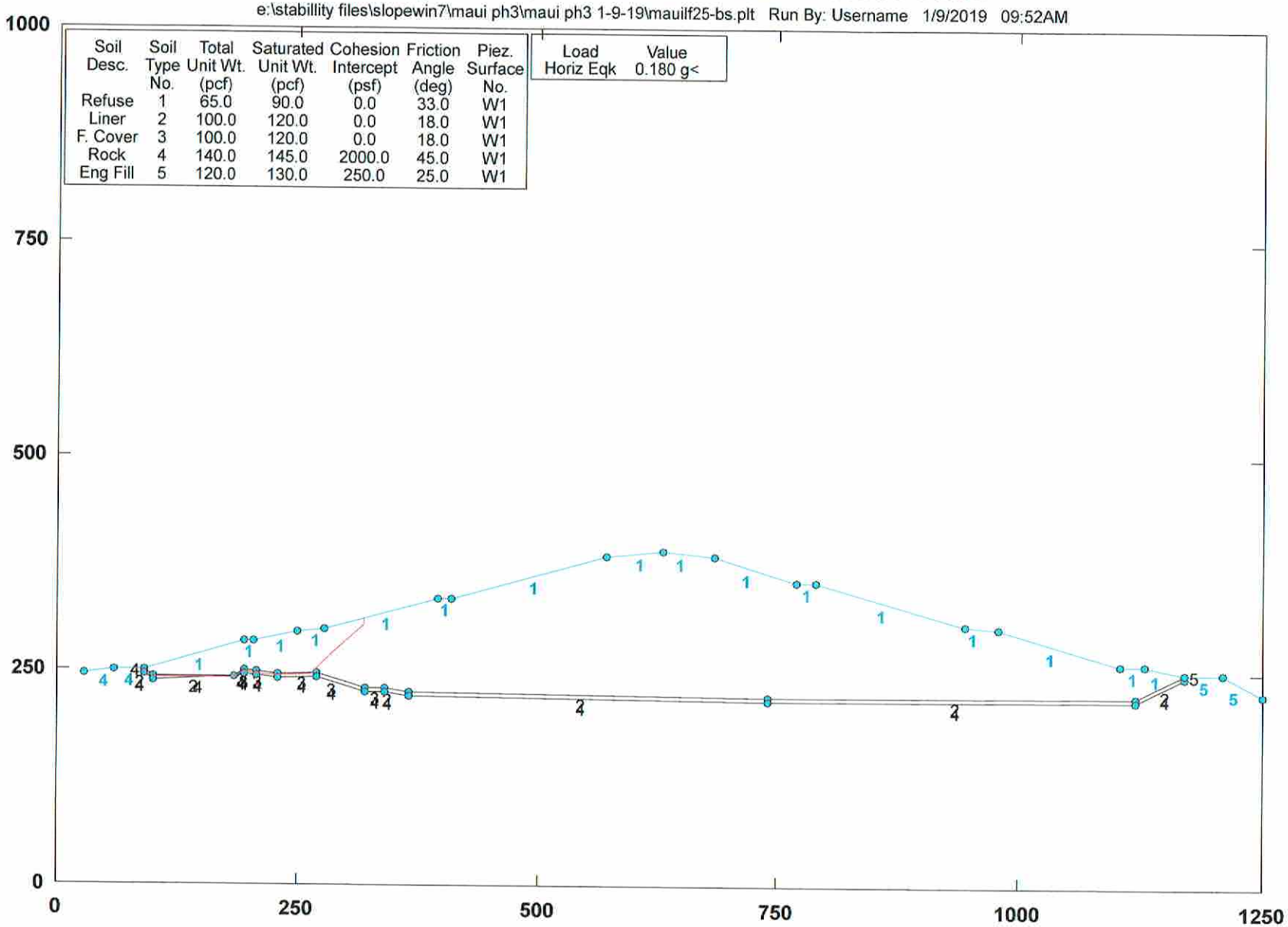


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf25-bs.plt Run By: Username 1/9/2019 09:52AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

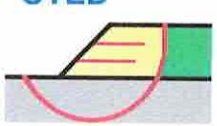
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.85

Factors of Safety Calculated by Janbu Method

STED

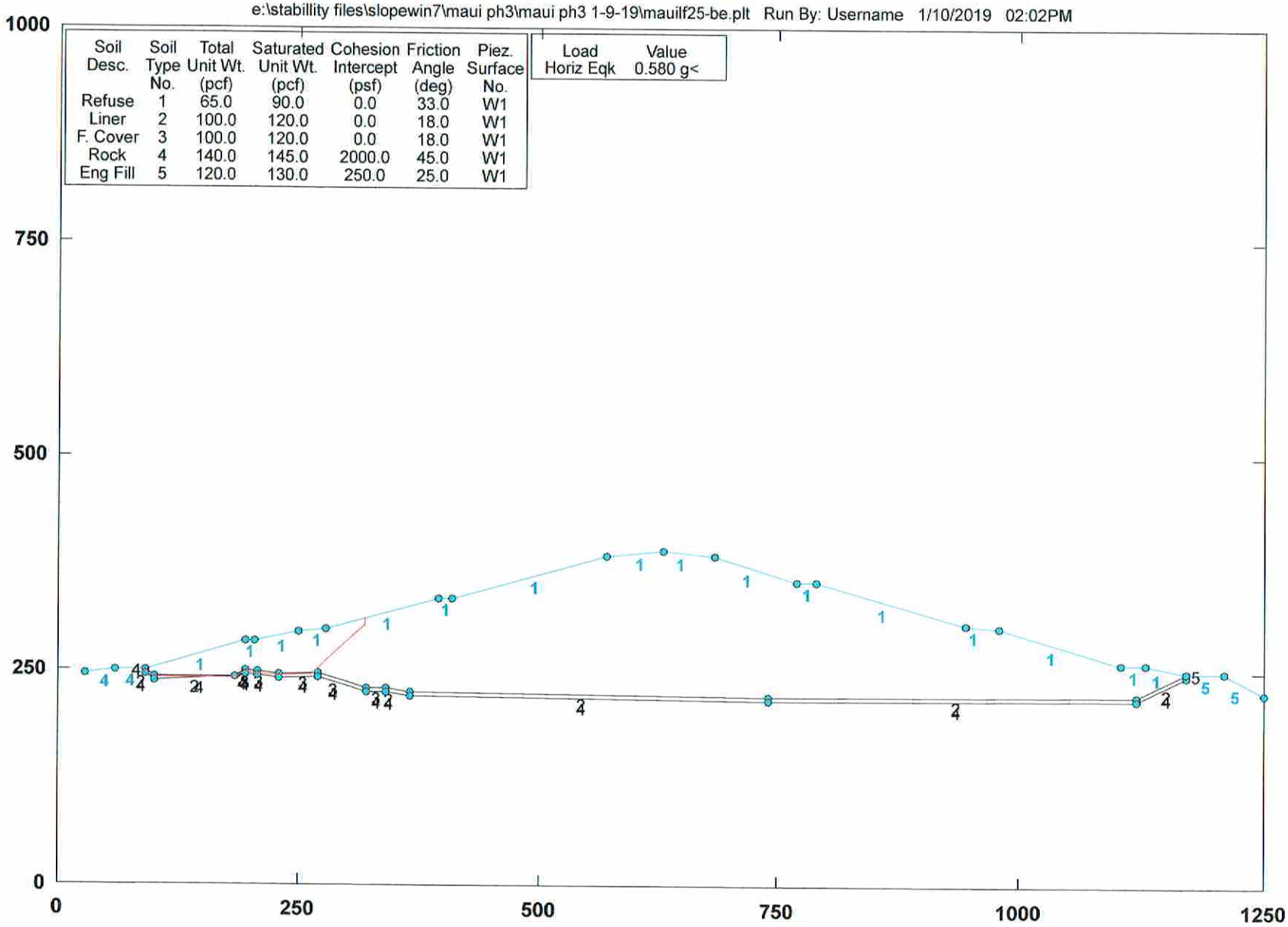


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf25-be.plt Run By: Username 1/10/2019 02:02PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

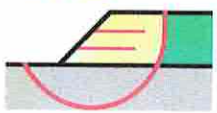
Load	Value
Horiz Eqk	0.580 g<



PCSTABL5M/si FSmin=0.95

Factors of Safety Calculated by Janbu Method

STED

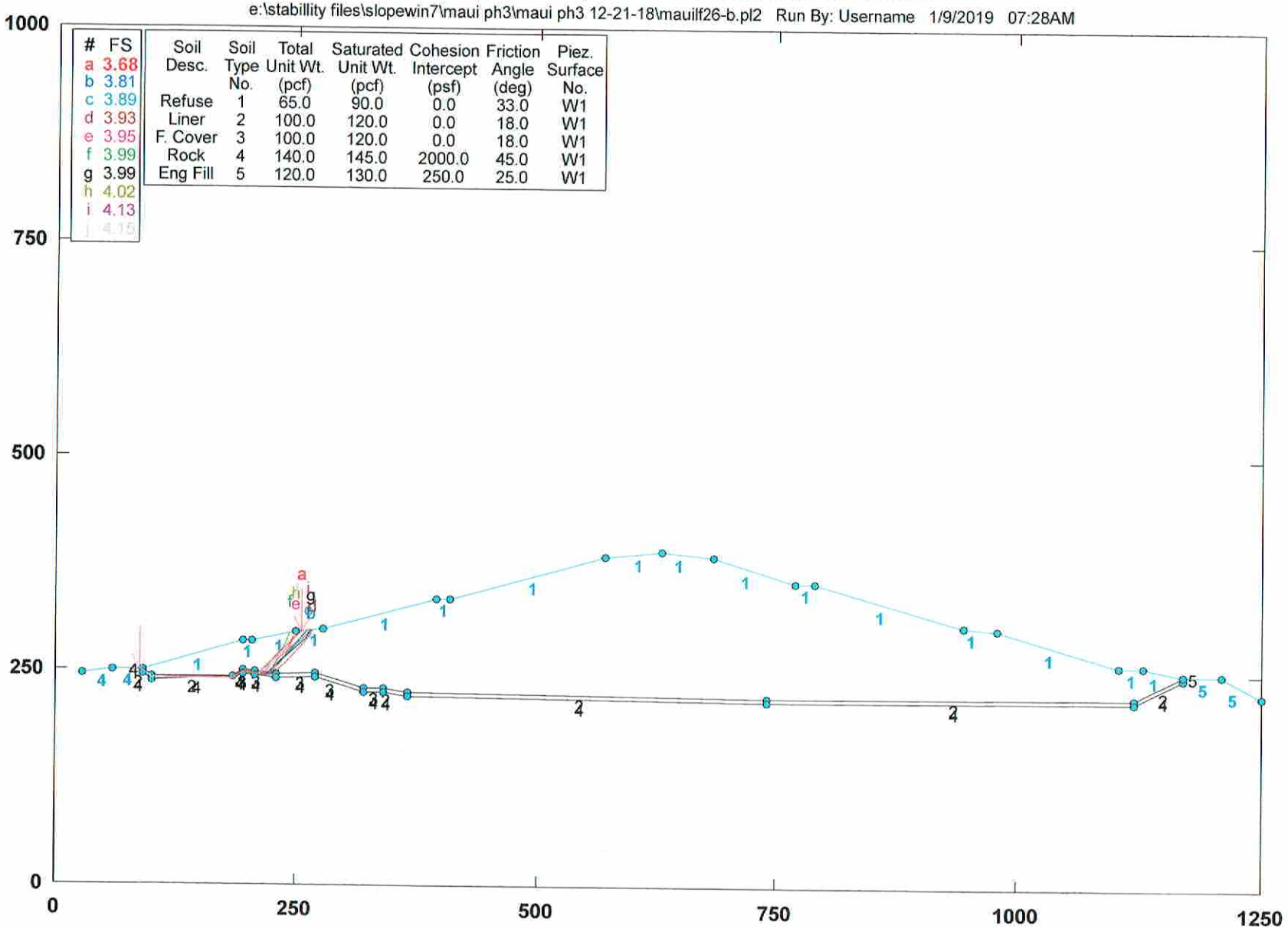


CML - ph III Slope Stab. Section III-S2 Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 12-21-18\mauilf26-b.pl2 Run By: Username 1/9/2019 07:28AM

#	FS
a	3.68
b	3.81
c	3.89
d	3.93
e	3.95
f	3.99
g	3.99
h	4.02
i	4.13
j	4.15

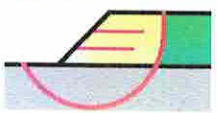
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=3.68

Safety Factors Are Calculated By The Modified Janbu Method

STED

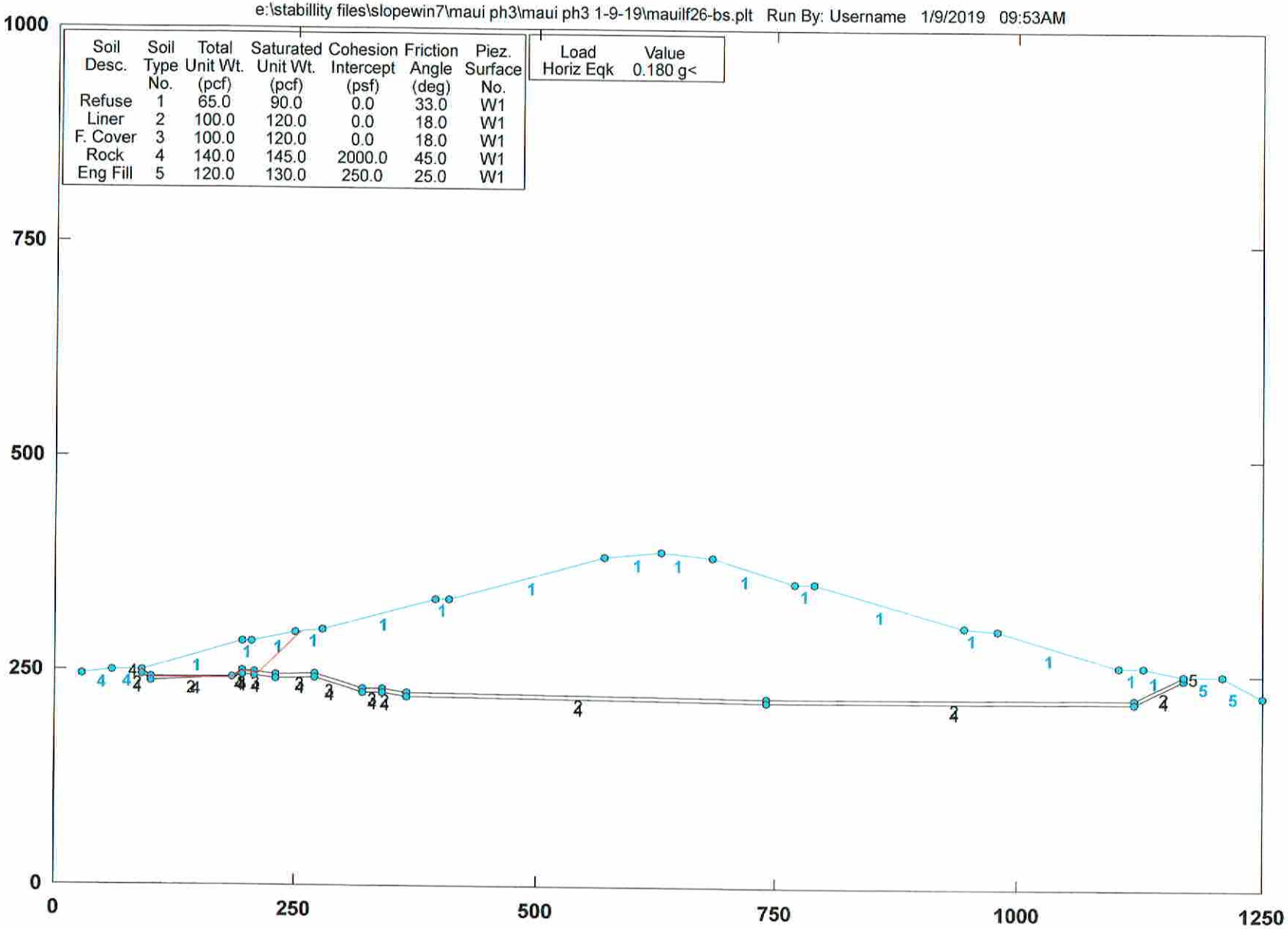


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf26-bs.plt Run By: Username 1/9/2019 09:53AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

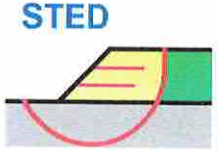
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=2.14

Factors of Safety Calculated by Janbu Method

STED

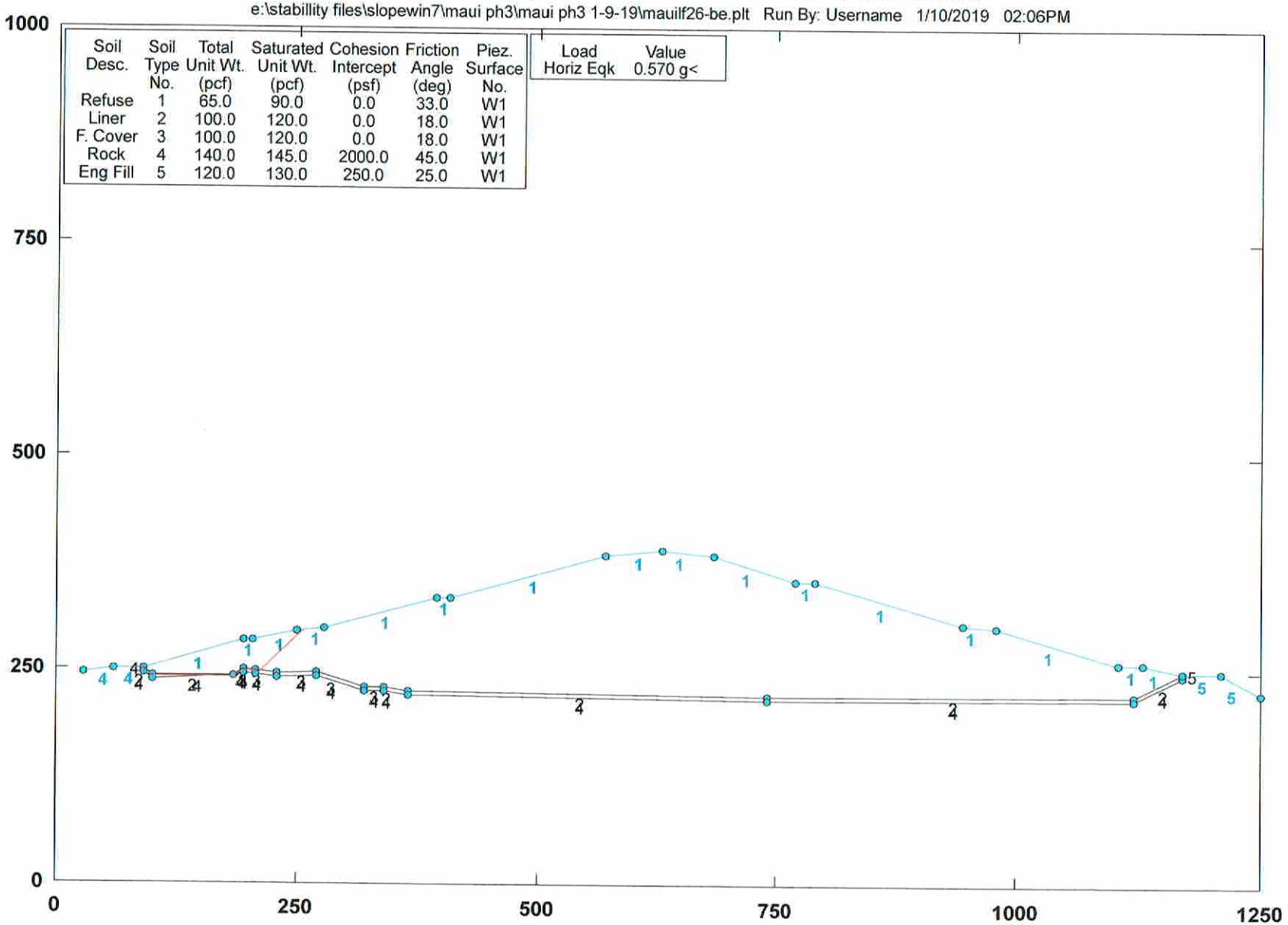


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf26-be.plt Run By: Username 1/10/2019 02:06PM

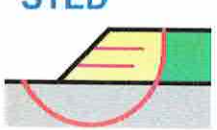
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.570 g<



PCSTABL5M/si FSmin=1.18
Factors of Safety Calculated by Janbu Method

STED

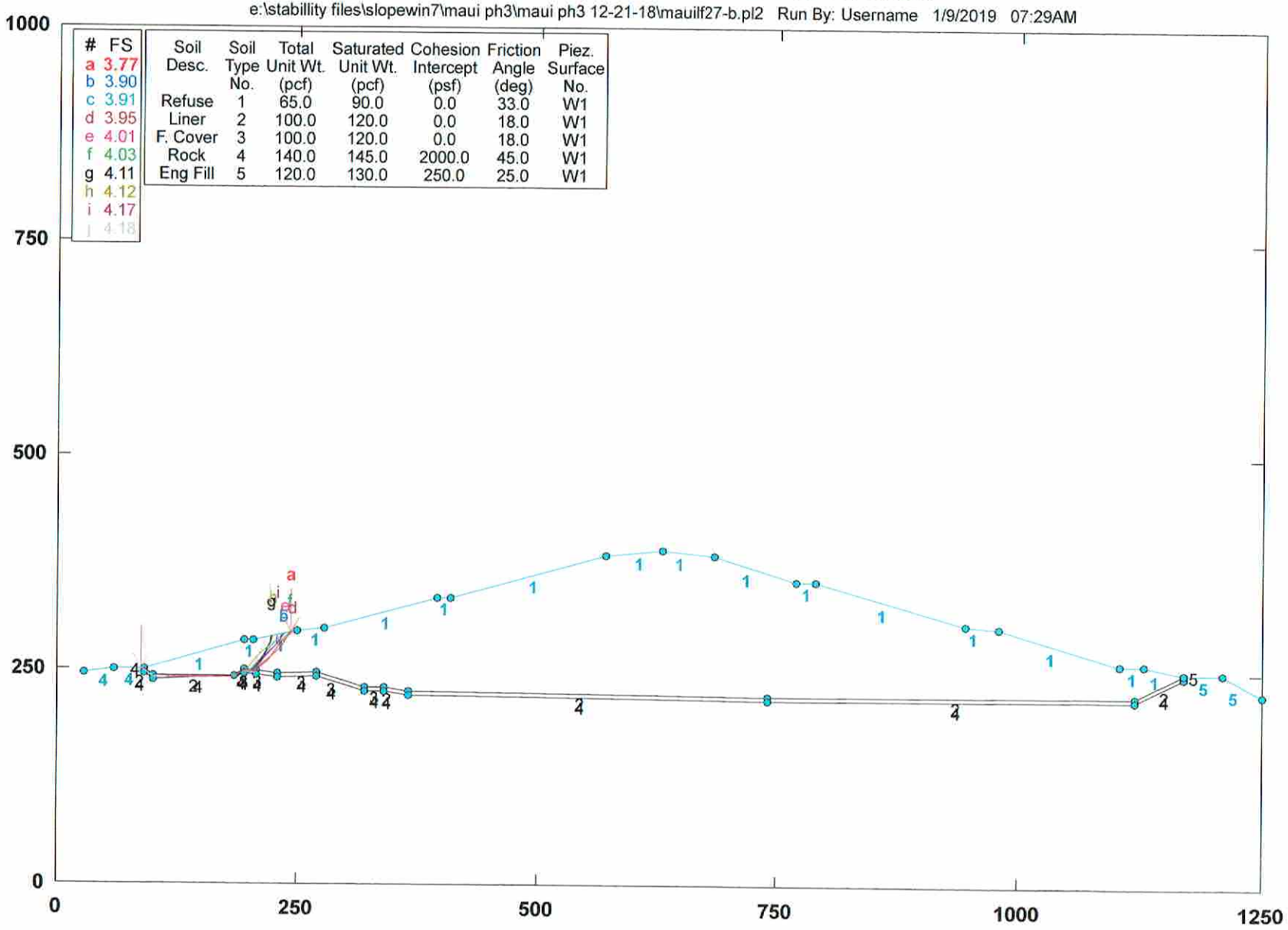


CML - ph III Slope Stab. Section III-S2 Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 12-21-18\mauilf27-b.pl2 Run By: Username 1/9/2019 07:29AM

#	FS
a	3.77
b	3.90
c	3.91
d	3.95
e	4.01
f	4.03
g	4.11
h	4.12
i	4.17
j	4.18

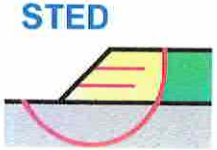
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=3.77

Safety Factors Are Calculated By The Modified Janbu Method

STED

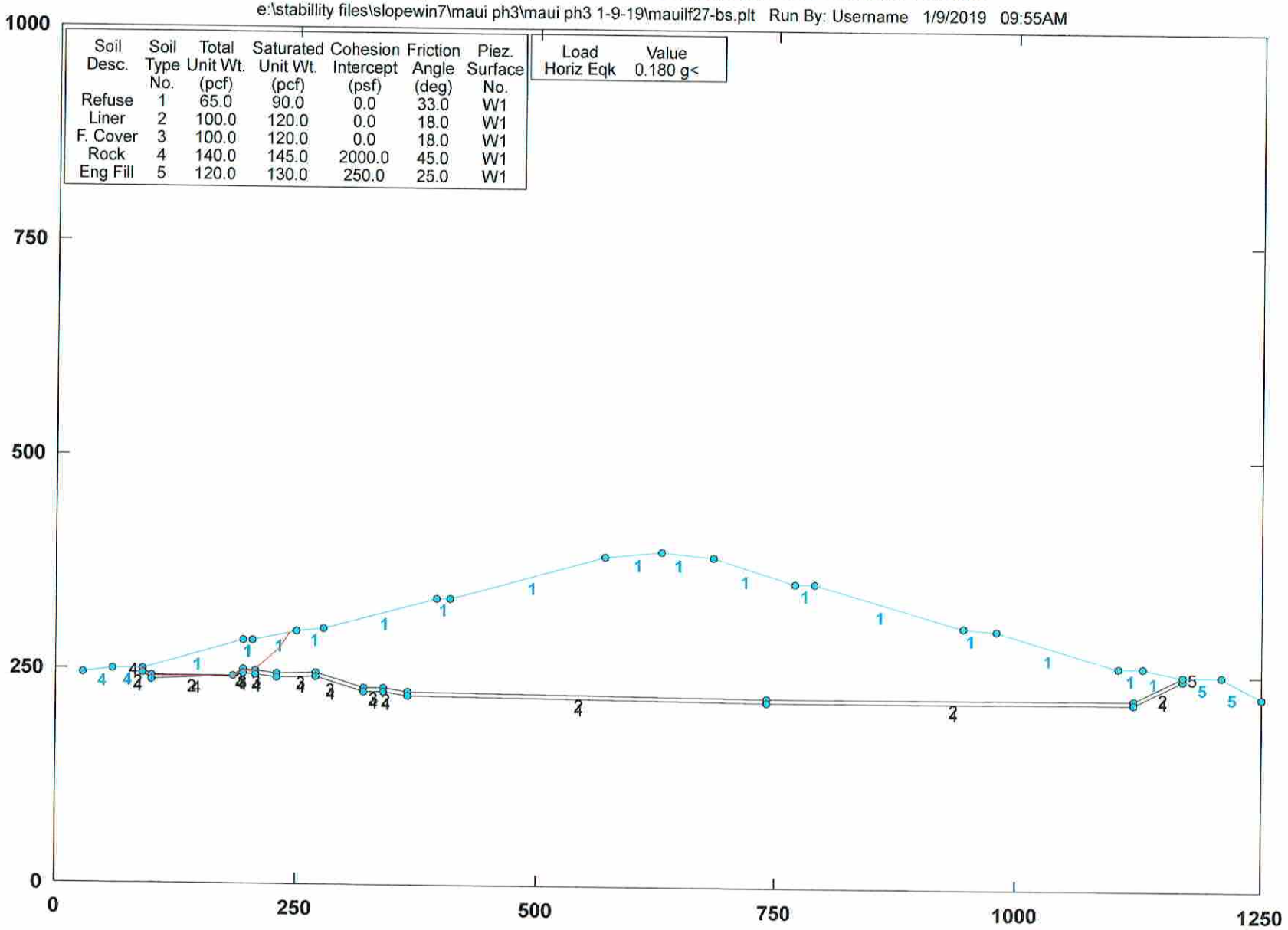


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf27-bs.plt Run By: Username 1/9/2019 09:55AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

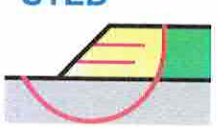
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=2.21

Factors of Safety Calculated by Janbu Method

STED

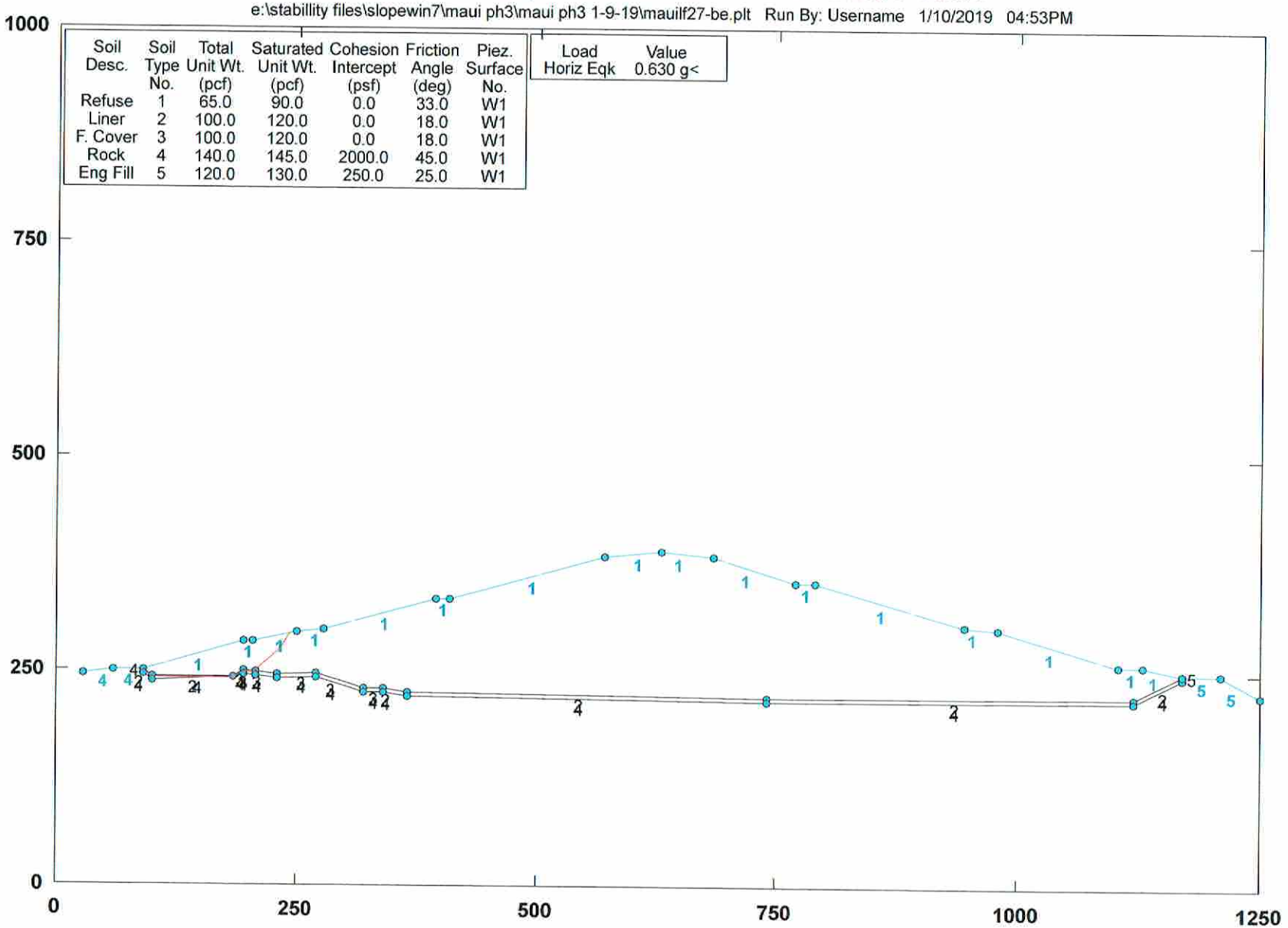


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf27-be.plt Run By: Username 1/10/2019 04:53PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

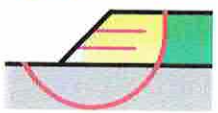
Load	Value
Horiz Eqk	0.630 g<



PCSTABL5M/si FSmin=1.16

Factors of Safety Calculated by Janbu Method

STED

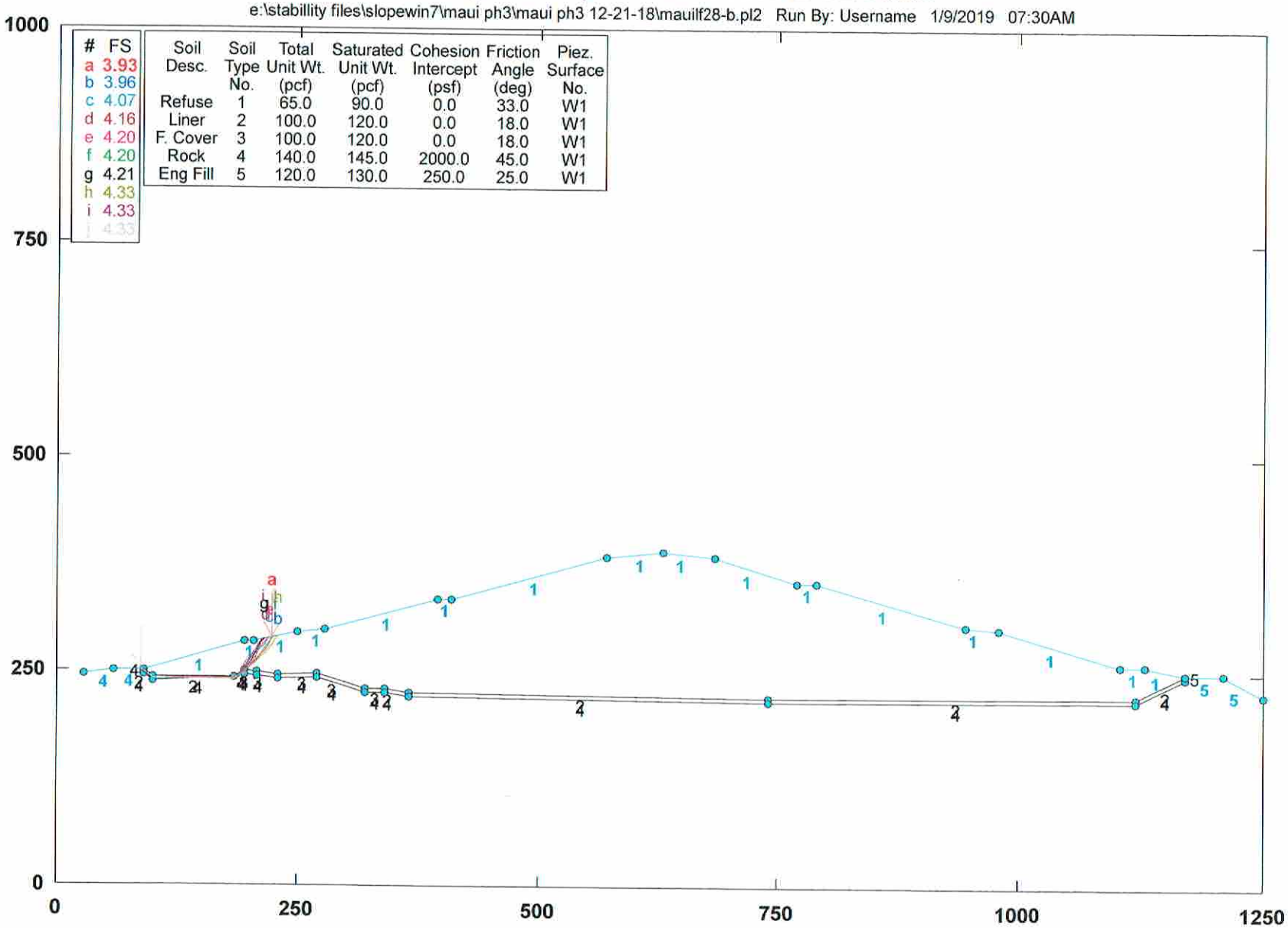


CML - ph III Slope Stab. Section III-S2 Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 12-21-18\mauilf28-b.pl2 Run By: Username 1/9/2019 07:30AM

#	FS
a	3.93
b	3.96
c	4.07
d	4.16
e	4.20
f	4.20
g	4.21
h	4.33
i	4.33
j	4.33

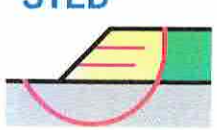
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=3.93

Safety Factors Are Calculated By The Modified Janbu Method

STED

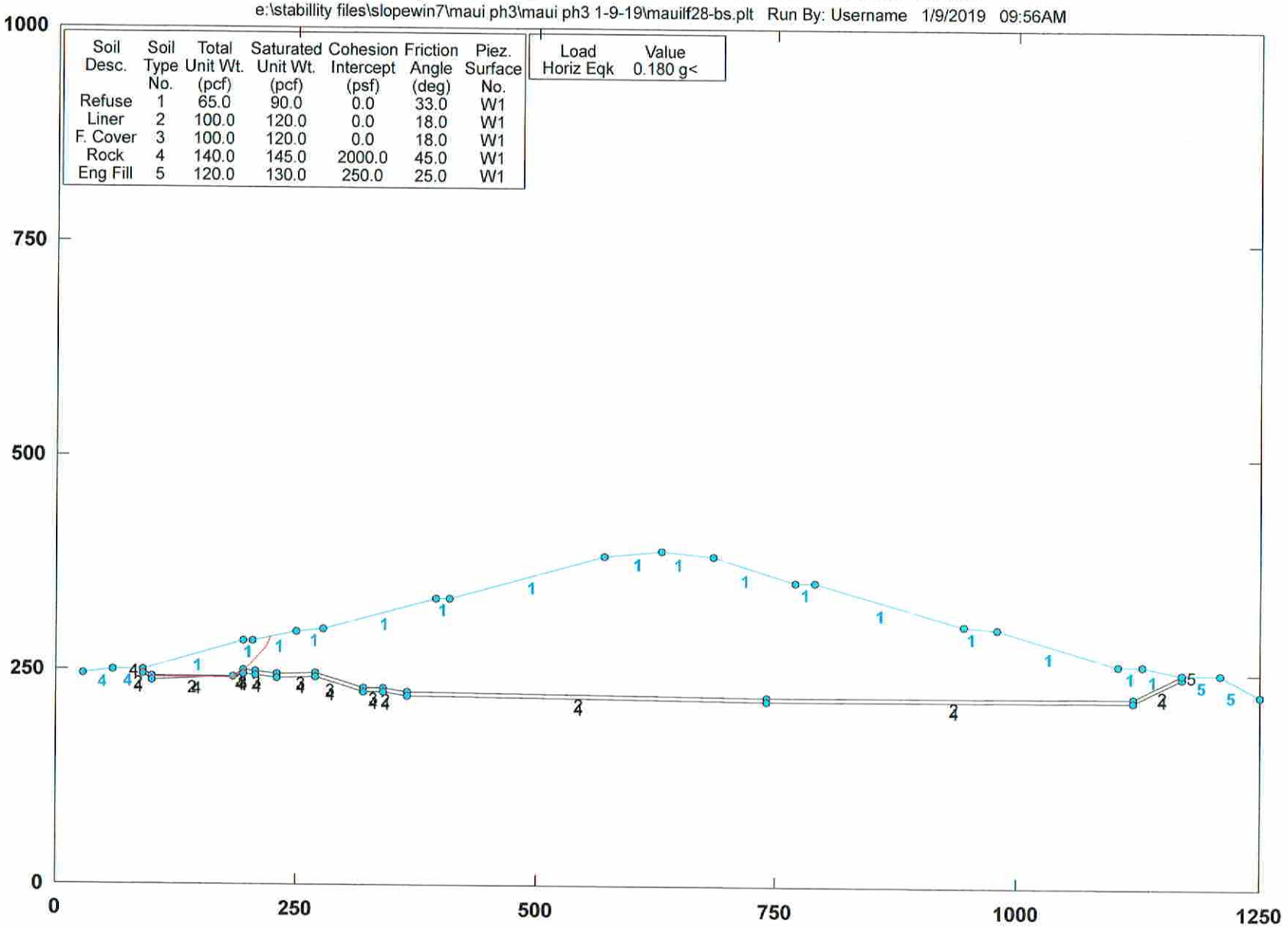


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf28-bs.plt Run By: Username 1/9/2019 09:56AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

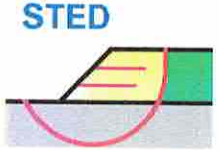
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=2.34

Factors of Safety Calculated by Janbu Method

STED

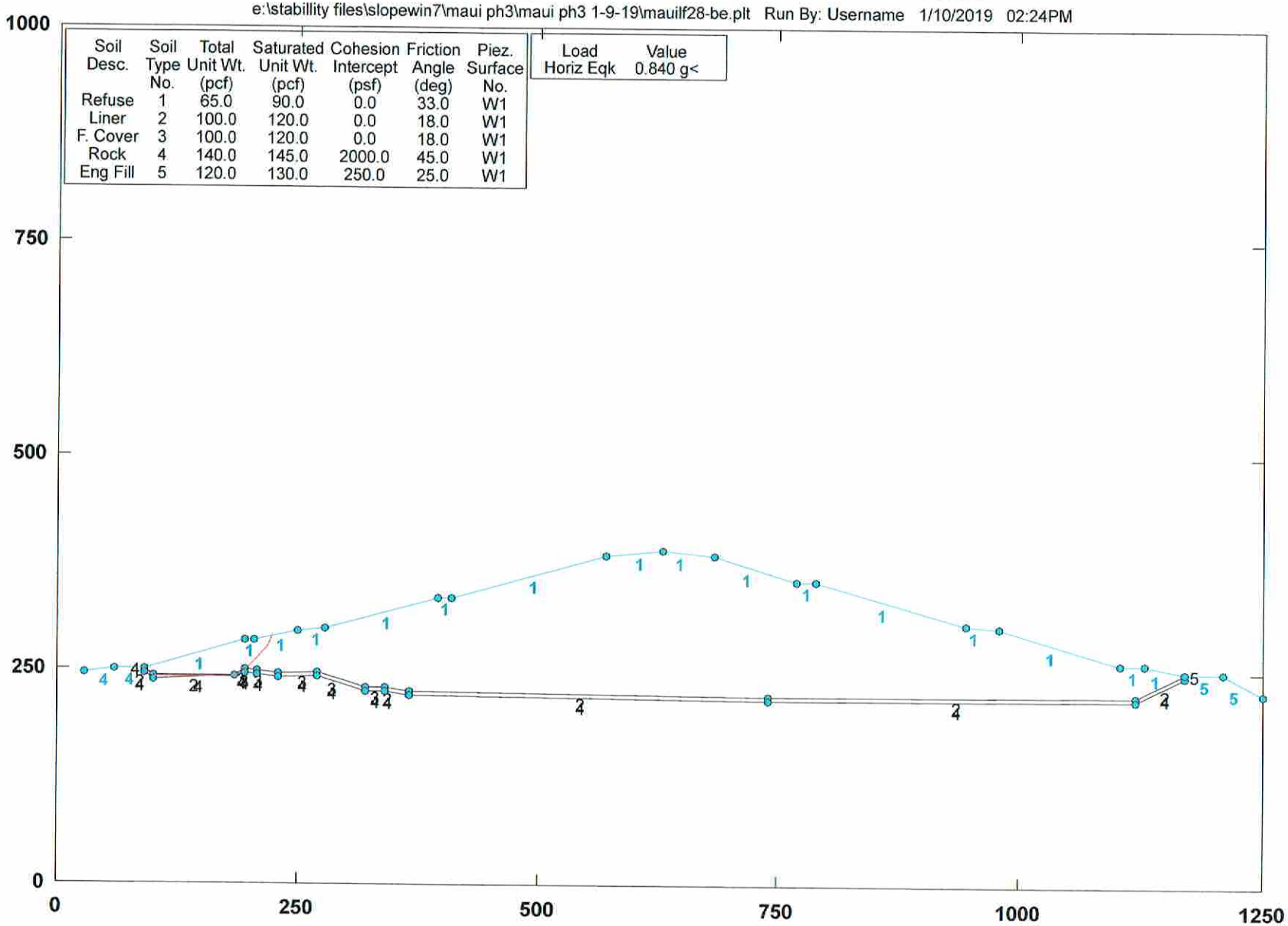


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf28-be.plt Run By: Username 1/10/2019 02:24PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

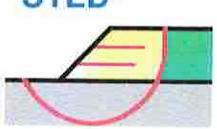
Load	Value
Horiz Eqk	0.840 g<



PCSTABL5M/si FSmin=1.00

Factors of Safety Calculated by Janbu Method

STED

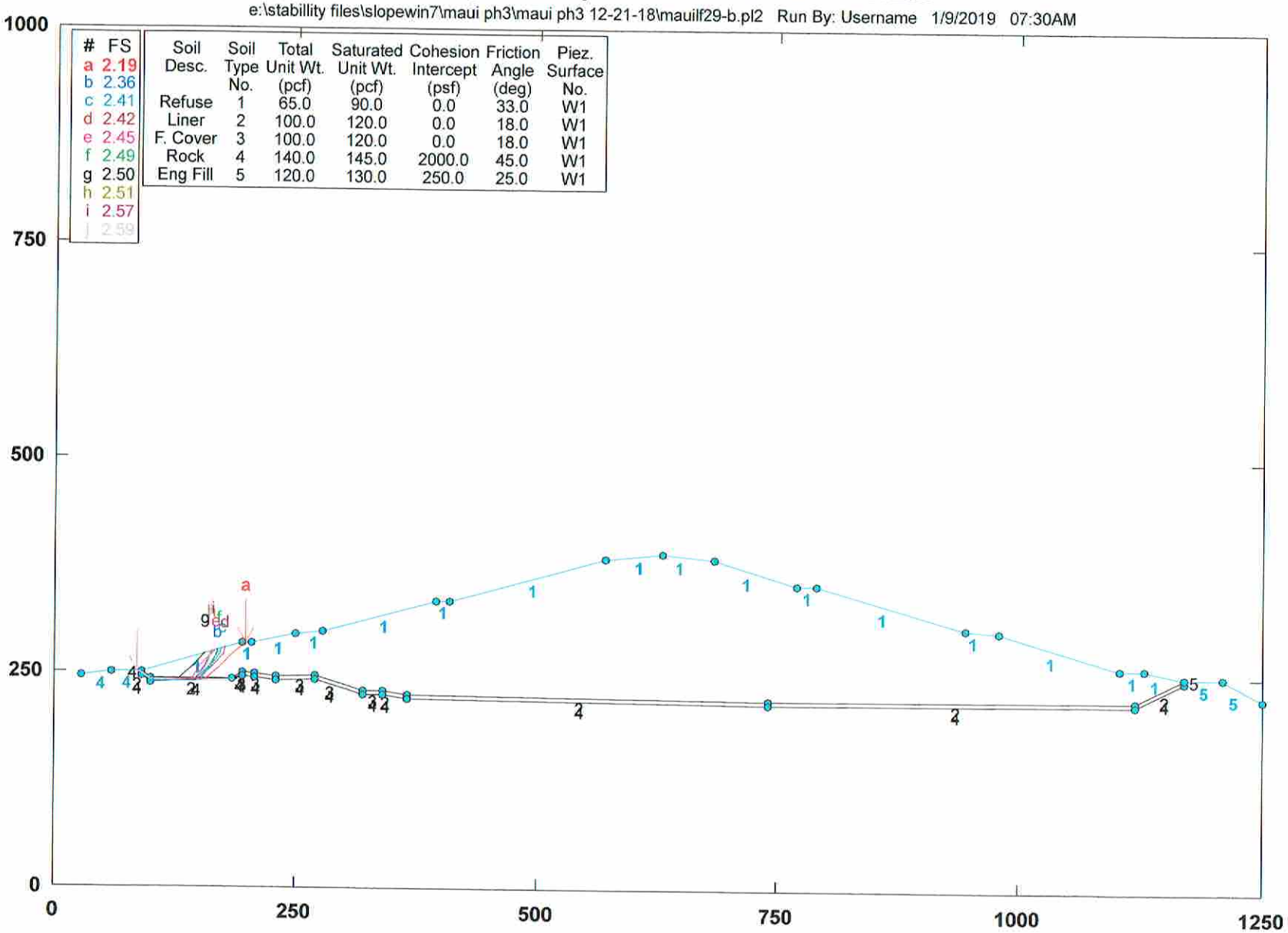


CML - ph III Slope Stab. Section III-S2 Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 12-21-18\mauilf29-b.pl2 Run By: Username 1/9/2019 07:30AM

#	FS
a	2.19
b	2.36
c	2.41
d	2.42
e	2.45
f	2.49
g	2.50
h	2.51
i	2.57
j	2.59

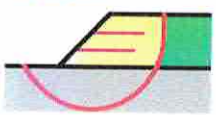
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=2.19

Safety Factors Are Calculated By The Modified Janbu Method

STED

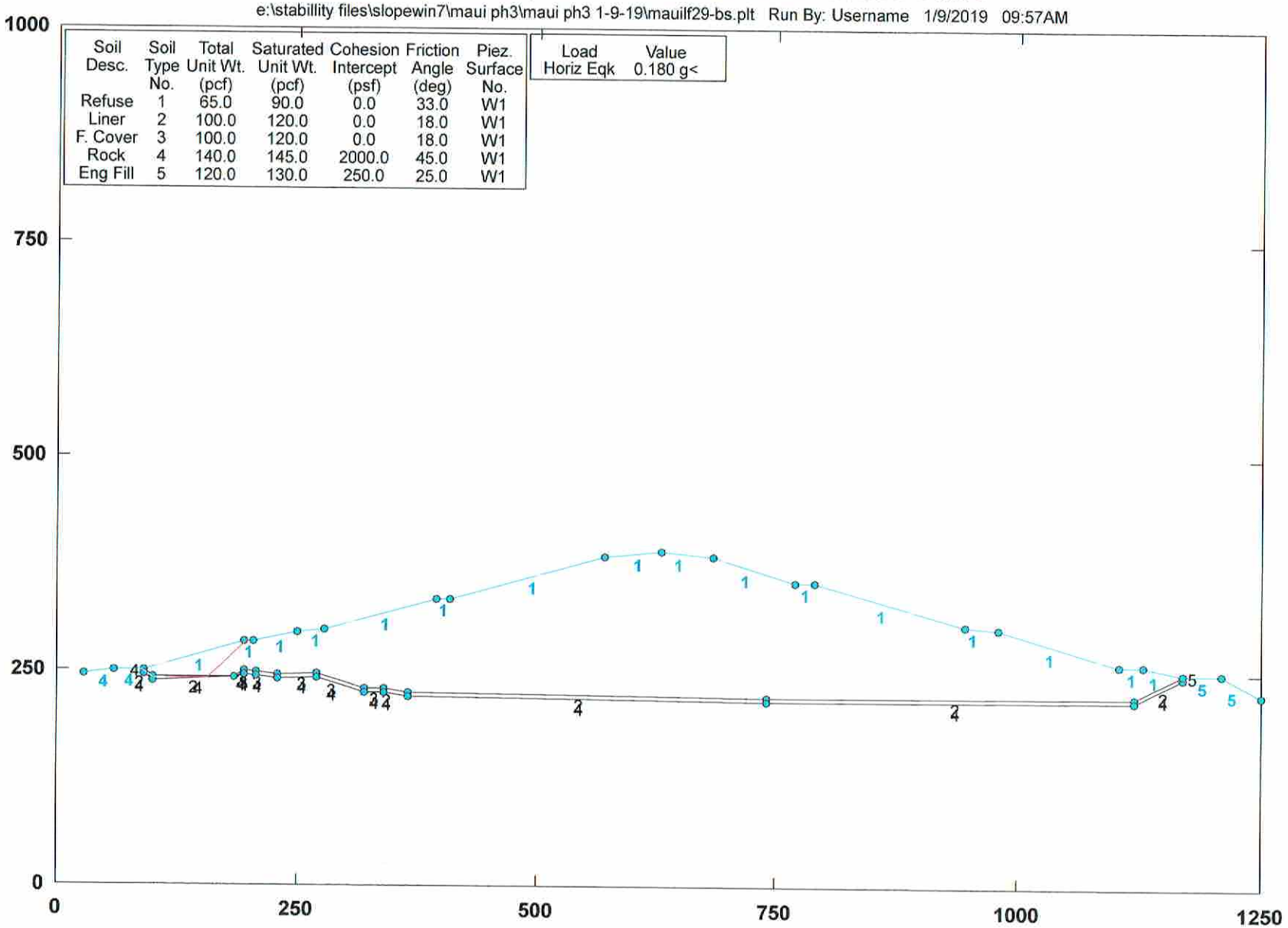


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf29-bs.plt Run By: Username 1/9/2019 09:57AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.34

Factors of Safety Calculated by Janbu Method

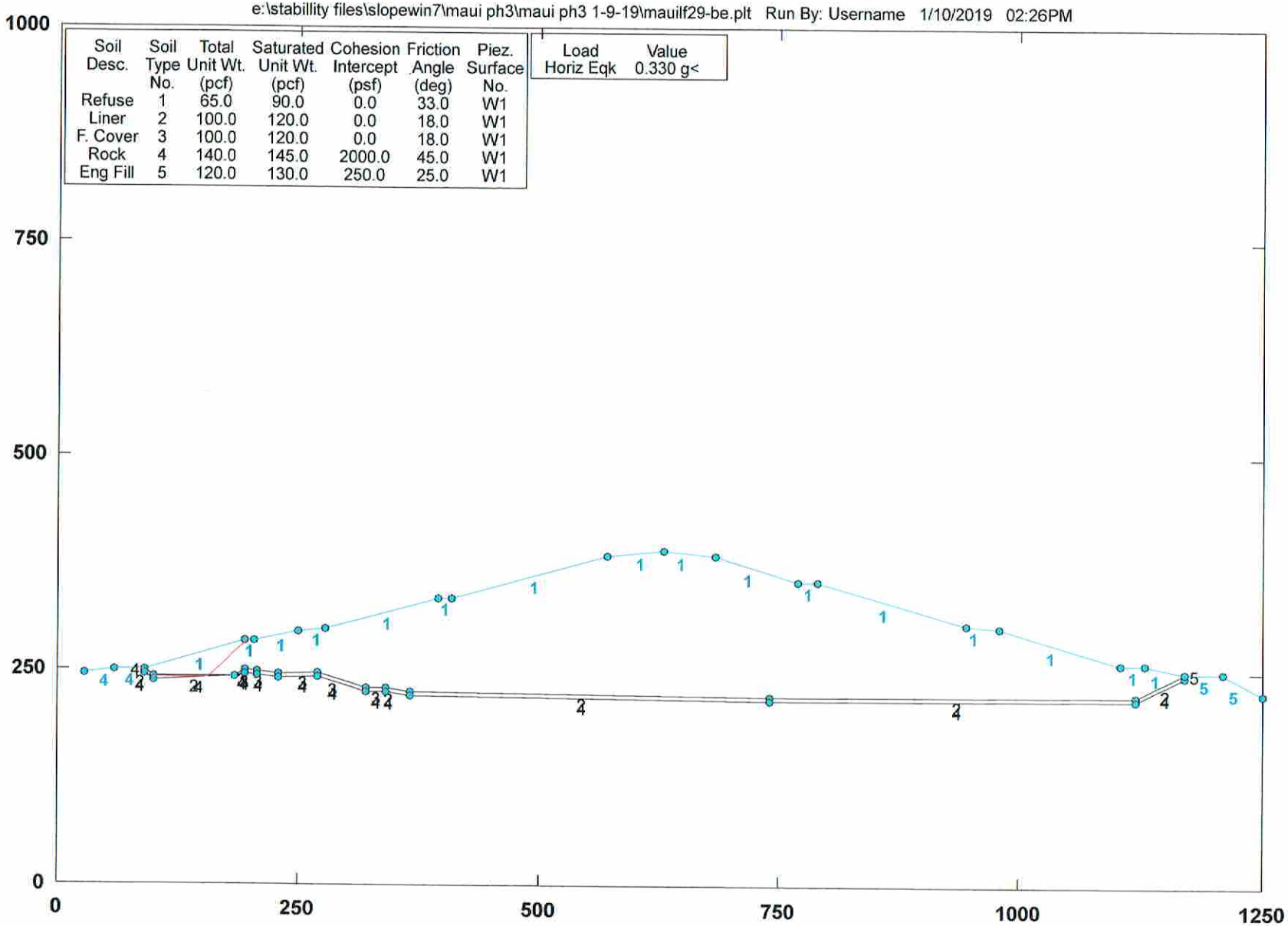
STED

CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf29-be.plt Run By: Username 1/10/2019 02:26PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

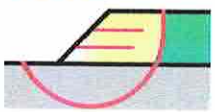
Load	Value
Horiz Eqk	0.330 g<



PCSTABL5M/si FSmin=1.01

Factors of Safety Calculated by Janbu Method

STED

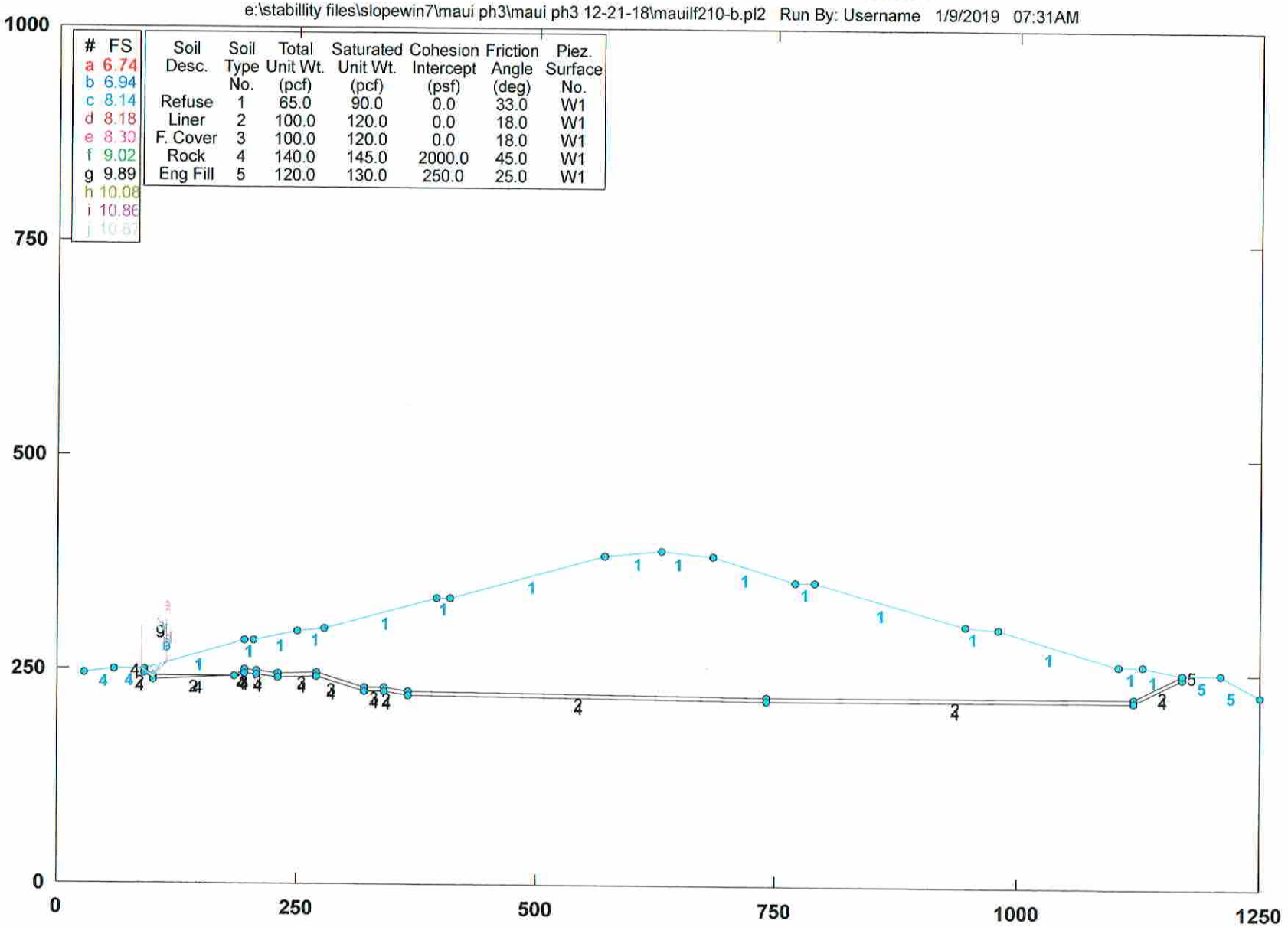


CML - ph III Slope Stab. Section III-S2 Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 12-21-18\mauilf210-b.pl2 Run By: Username 1/9/2019 07:31AM

#	FS
a	6.74
b	6.94
c	8.14
d	8.18
e	8.30
f	9.02
g	9.89
h	10.08
i	10.86
j	10.87

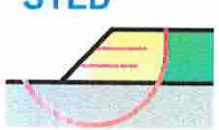
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=6.74

Safety Factors Are Calculated By The Modified Janbu Method

STED

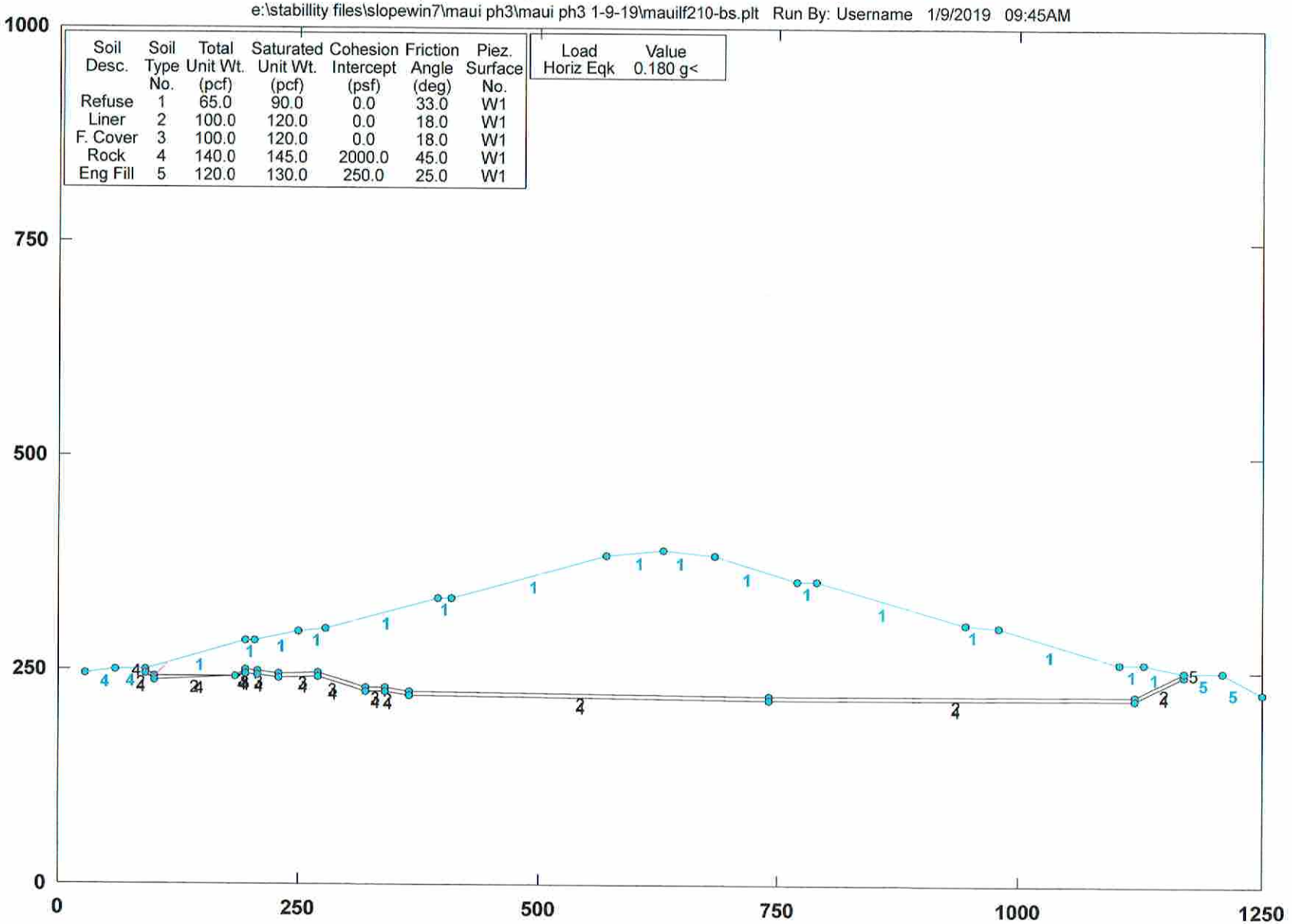


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf210-bs.plt Run By: Username 1/9/2019 09:45AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

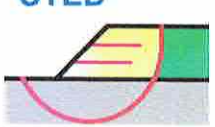
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=4.08

Factors of Safety Calculated by Janbu Method

STED

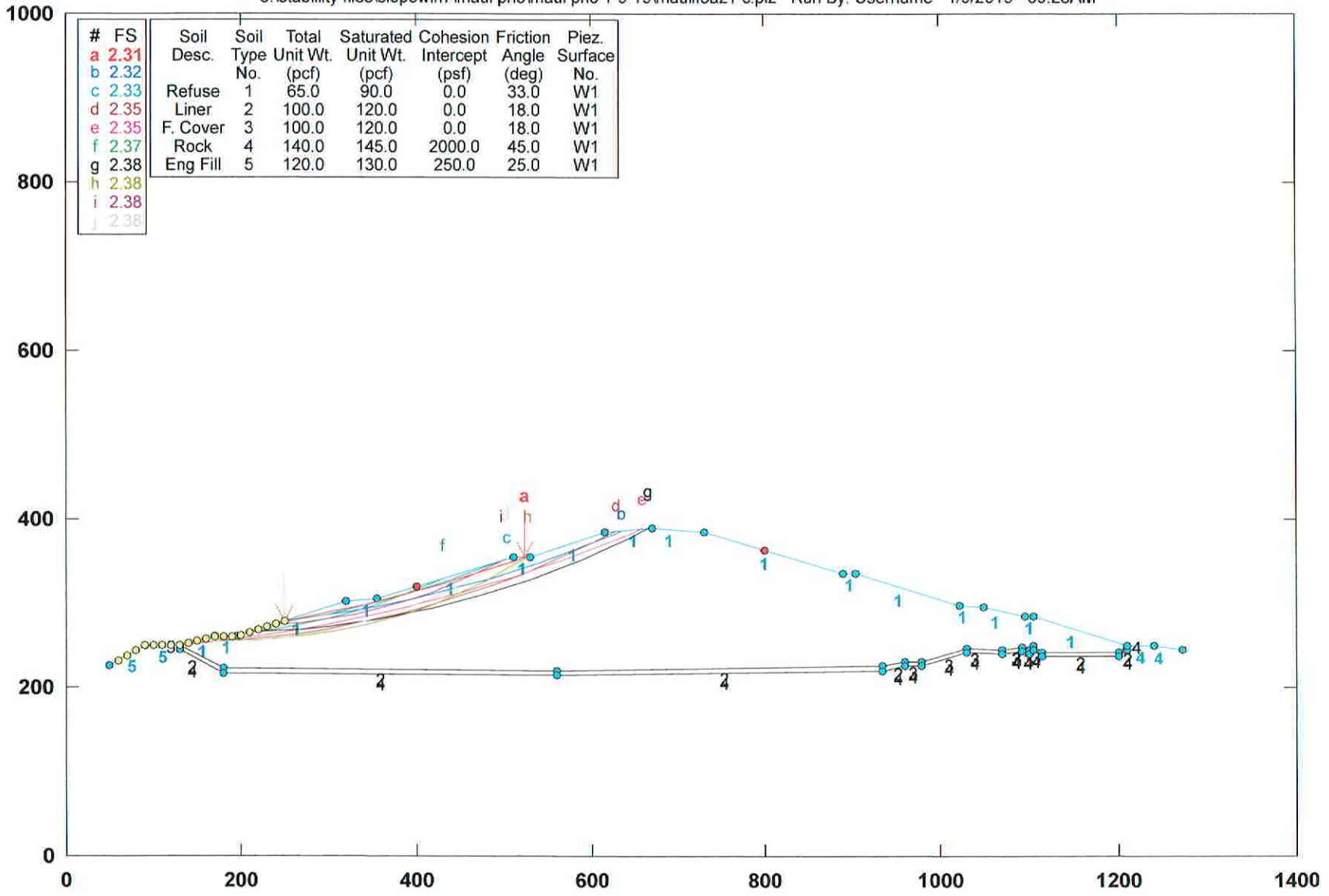


CML - ph III Sl. Stab. Section III-S2-3AStatic

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a21-c.pl2 Run By: Username 1/9/2019 09:28AM

#	FS
a	2.31
b	2.32
c	2.33
d	2.35
e	2.35
f	2.37
g	2.38
h	2.38
i	2.38
j	2.38

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=2.31

Safety Factors Are Calculated By The Modified Bishop Method

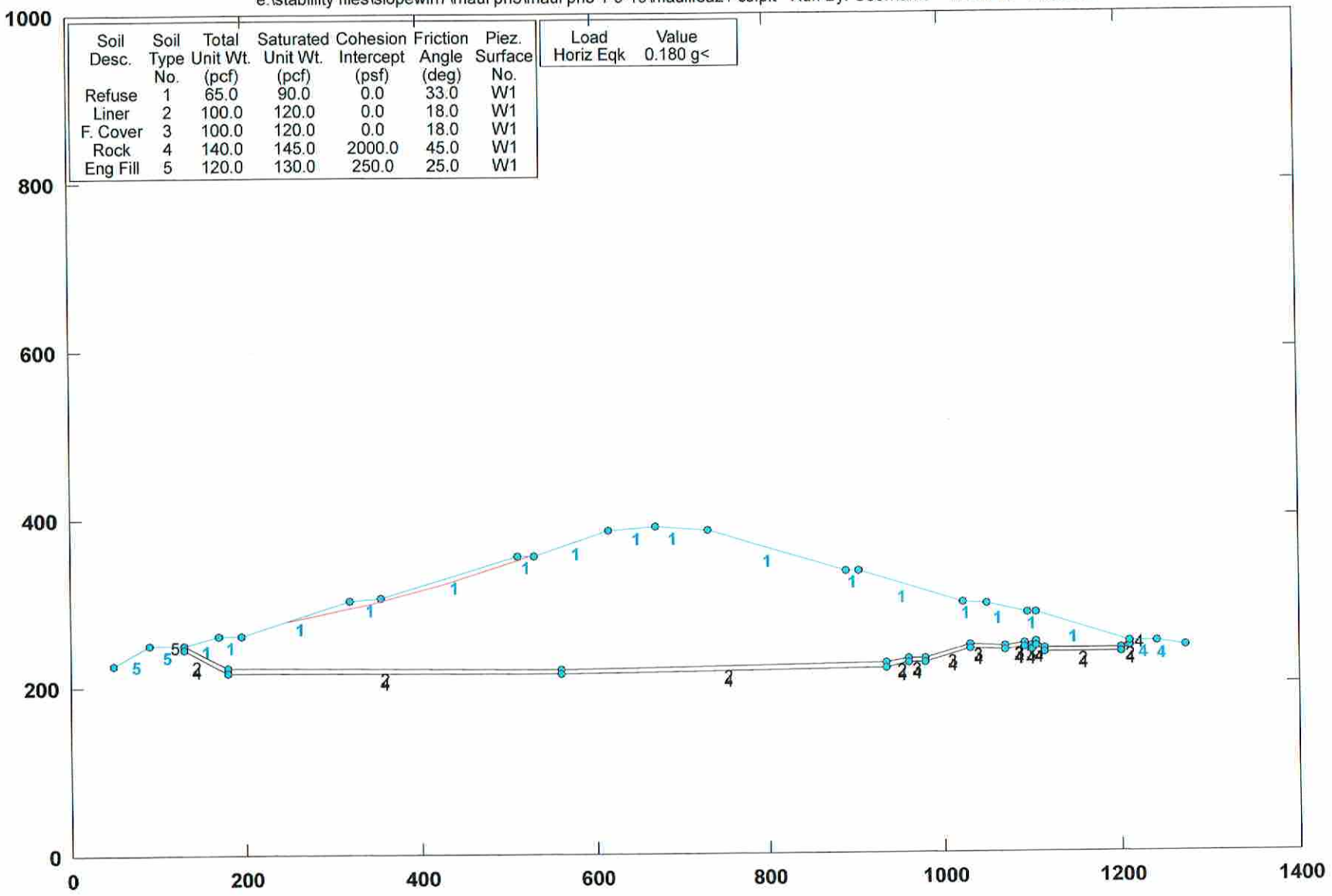
STED

CML - ph III Sl. Stab. Section III-S2-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a21-cs.plt Run By: Username 1/9/2019 09:38AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

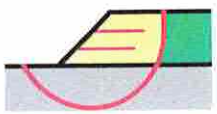
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.34

Factor Of Safety Is Calculated By The Modified Bishop Method

STED

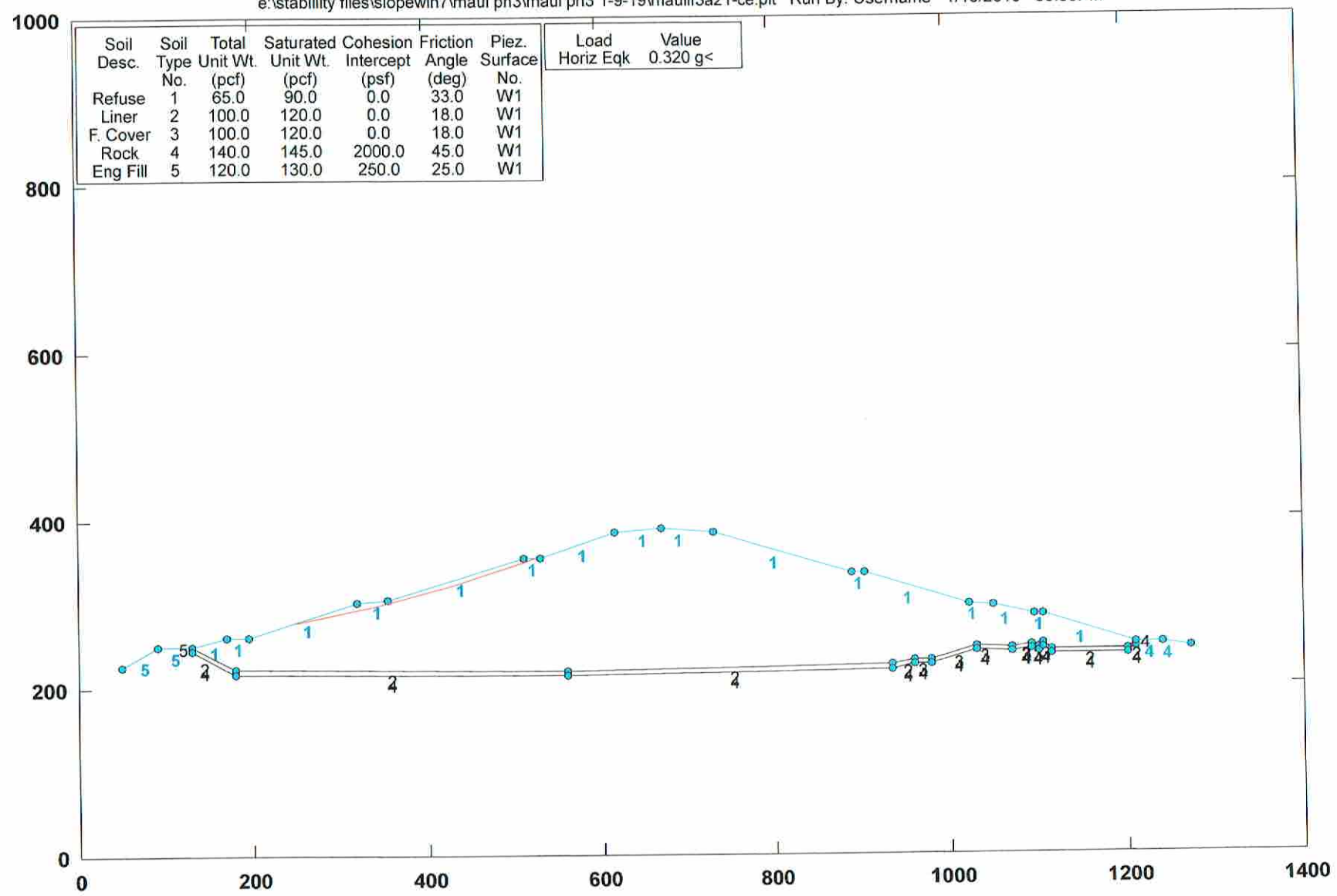


CML - ph III Sl. Stab. Section III-S2-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a21-ce.plt Run By: Username 1/10/2019 03:36PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

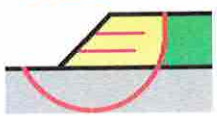
Load	Value
Horiz Eqk	0.320 g<



PCSTABL5M/si FSmin=0.99

Factor Of Safety Is Calculated By The Modified Bishop Method

STED

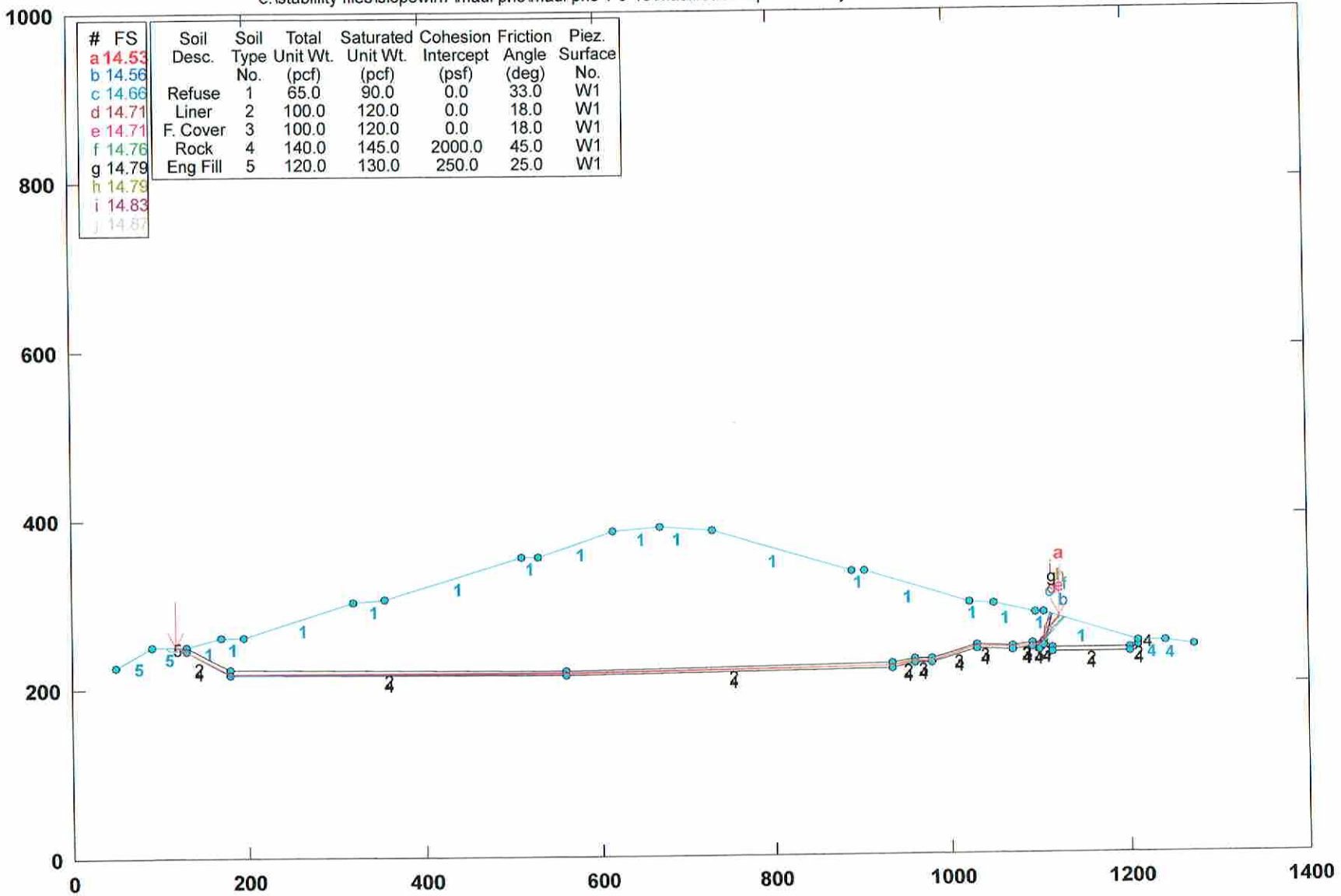


CML - ph III Sl. Stab. Section III-S2-3AStatic

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a21-b.pl2 Run By: Username 1/9/2019 09:15AM

#	FS
a	14.53
b	14.56
c	14.66
d	14.71
e	14.71
f	14.76
g	14.79
h	14.79
i	14.83
j	14.87

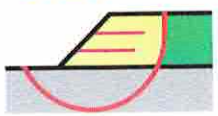
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=14.53

Safety Factors Are Calculated By The Modified Janbu Method

STED

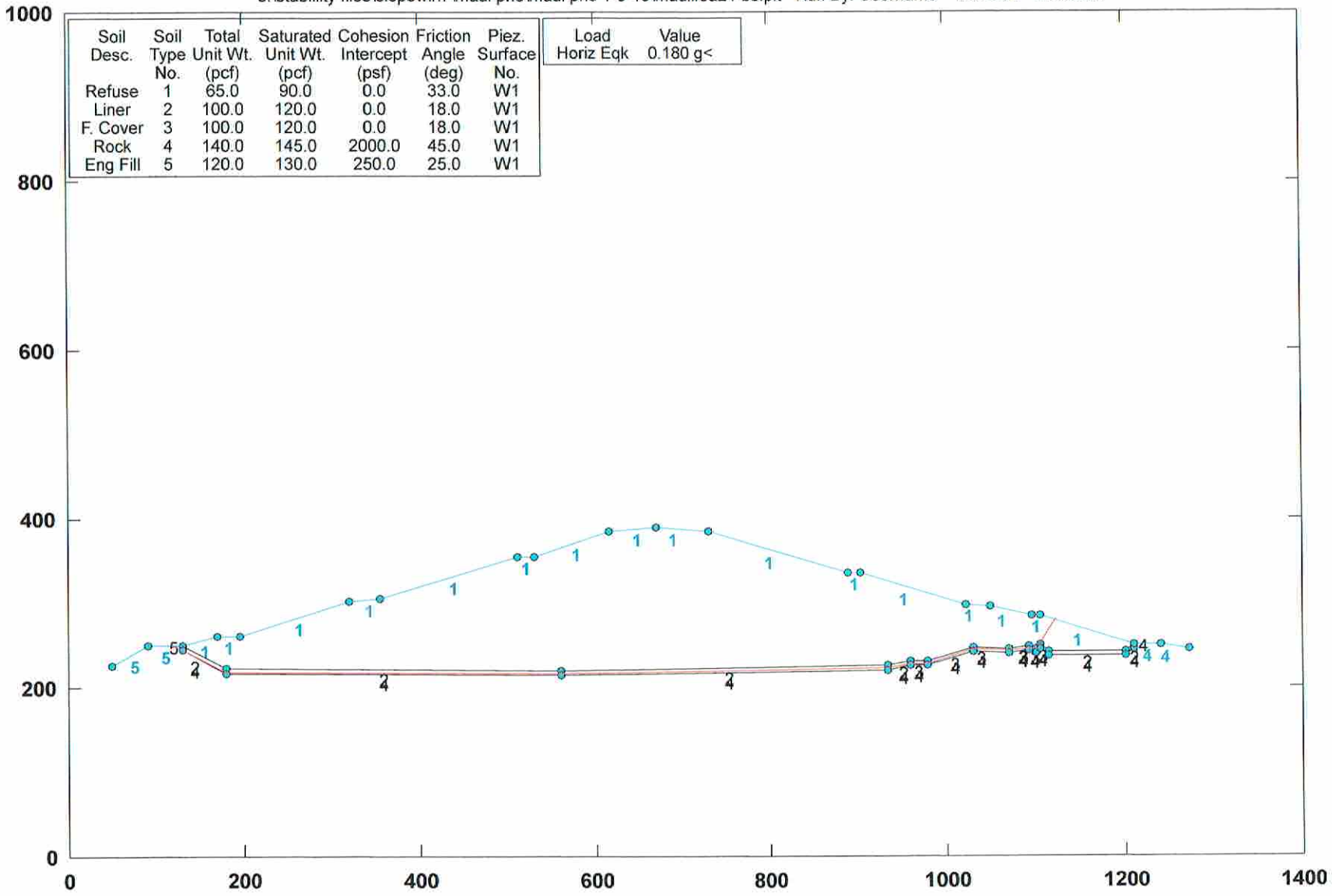


CML - ph III Sl. Stab. Section III-S2-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a21-bs.plt Run By: Username 1/9/2019 10:23AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

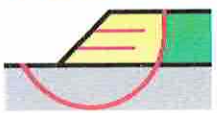
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.63

Factors of Safety Calculated by Janbu Method

STED

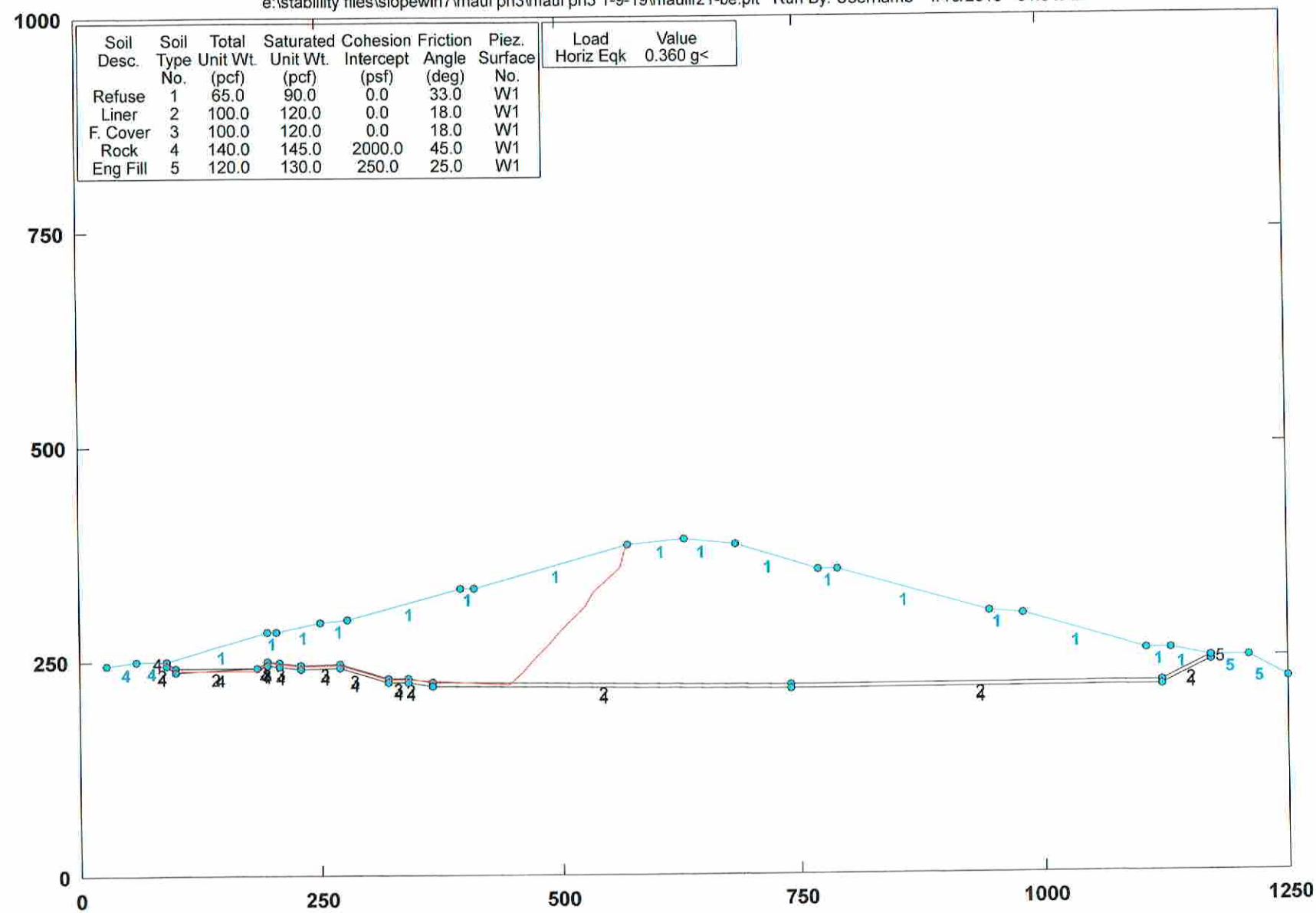


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf21-be.plt Run By: Username 1/10/2019 01:54PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

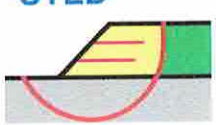
Load	Value
Horiz Eqk	0.360 g<



PCSTABL5M/si FSmin=1.00

Factors of Safety Calculated by Janbu Method

STED

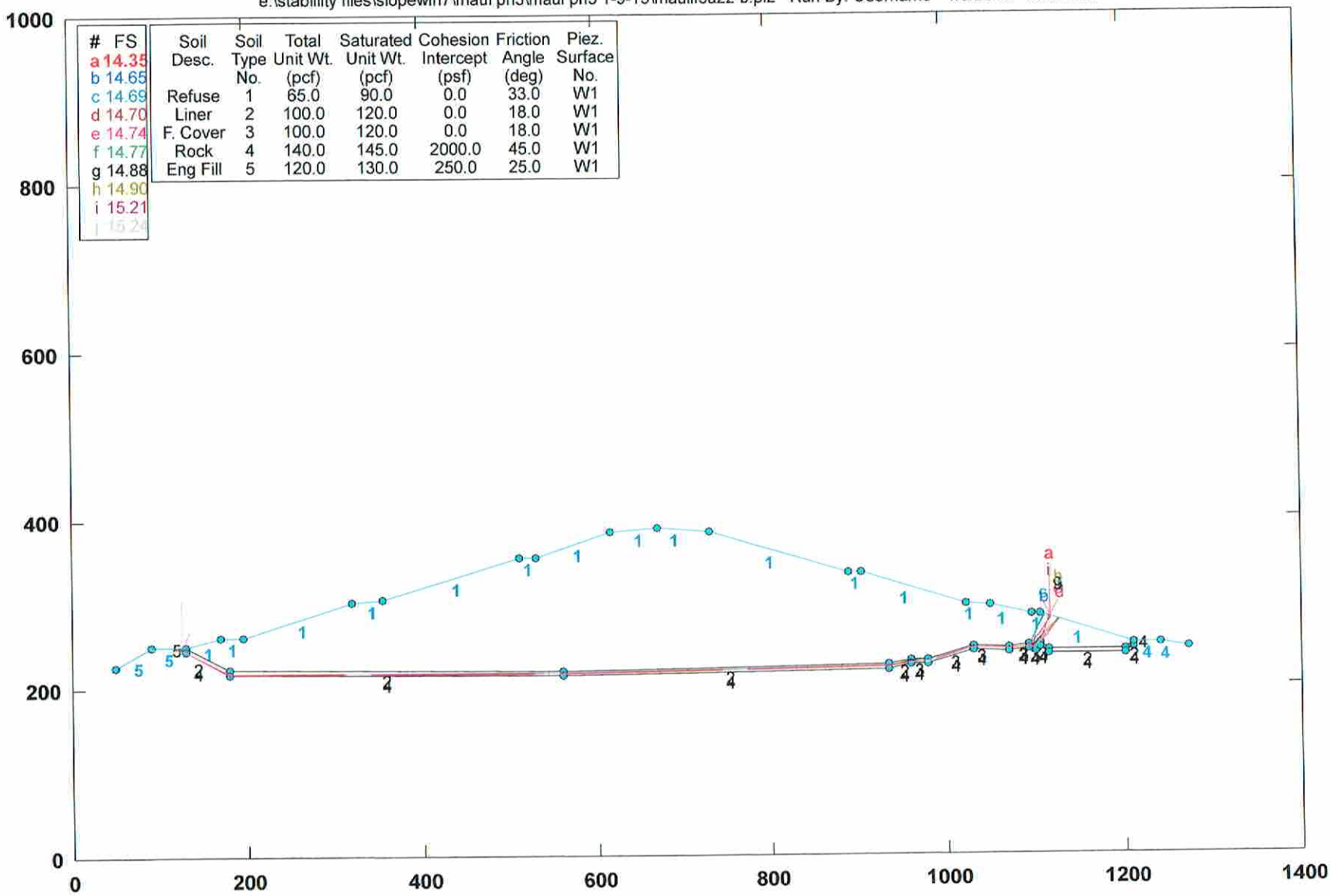


CML - ph III Sl. Stab. Section III-S2-3AStatic

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a22-b.pl2 Run By: Username 1/9/2019 09:18AM

#	FS
a	14.35
b	14.65
c	14.69
d	14.70
e	14.74
f	14.77
g	14.88
h	14.90
i	15.21
j	15.24

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=14.35

Safety Factors Are Calculated By The Modified Janbu Method

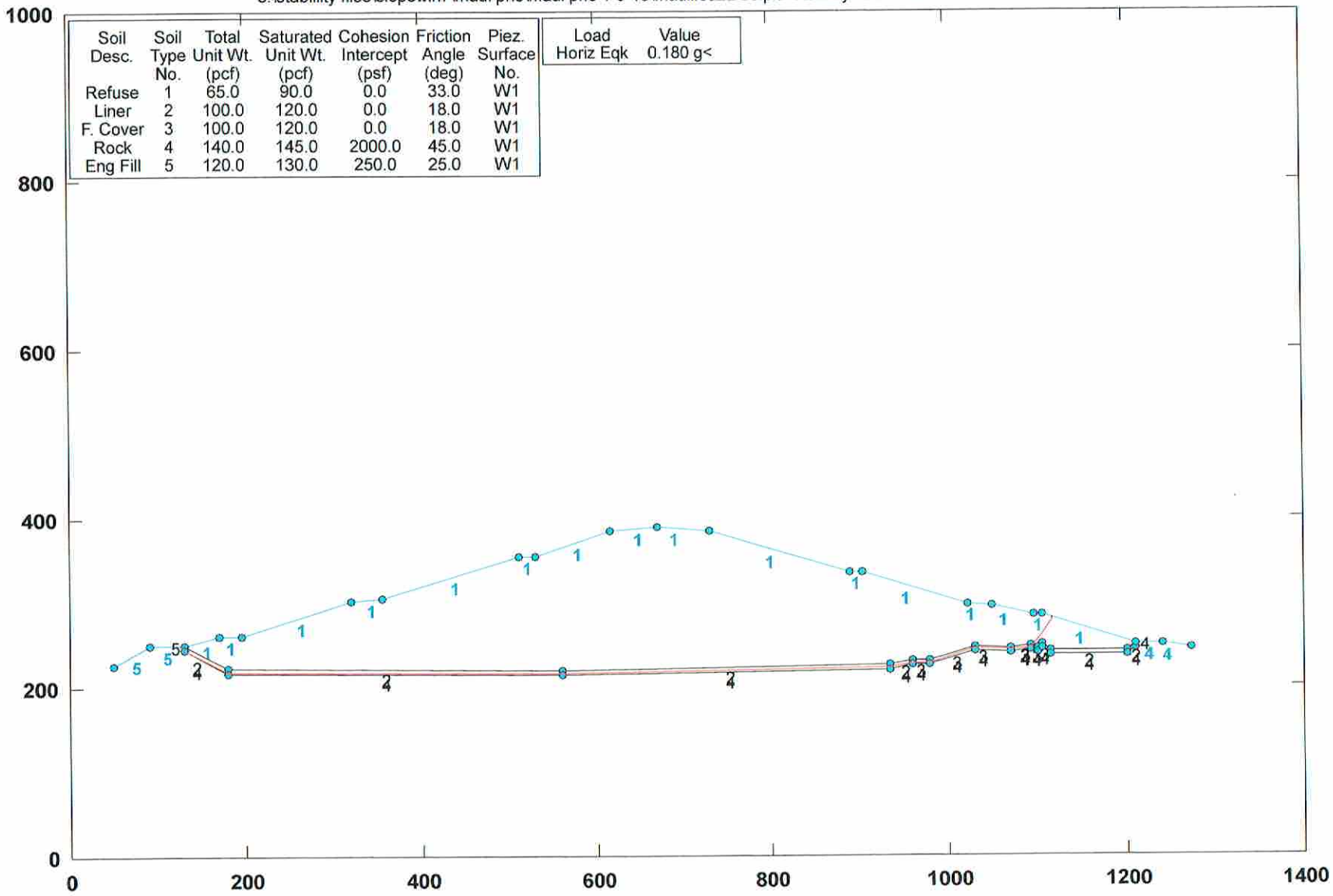
STED

CML - ph III Sl. Stab. Section III-S2-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a22-bs.plt Run By: Username 1/9/2019 10:24AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

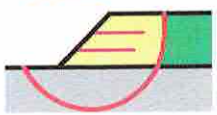
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.63

Factors of Safety Calculated by Janbu Method

STED

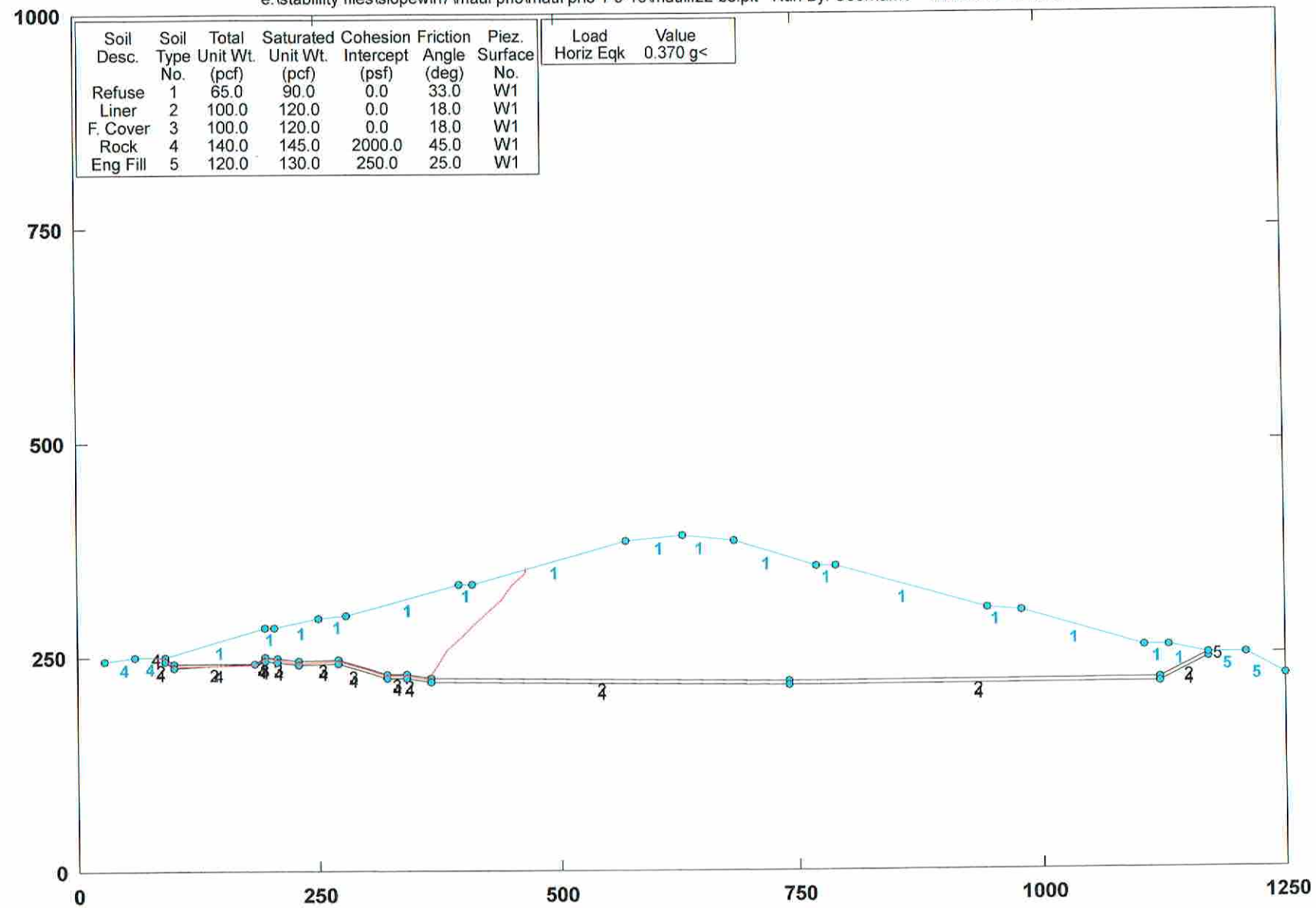


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf22-be.plt Run By: Username 1/10/2019 01:56PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

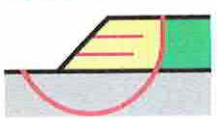
Load	Value
Horiz Eqk	0.370 g<



PCSTABL5M/si FSmin=1.01

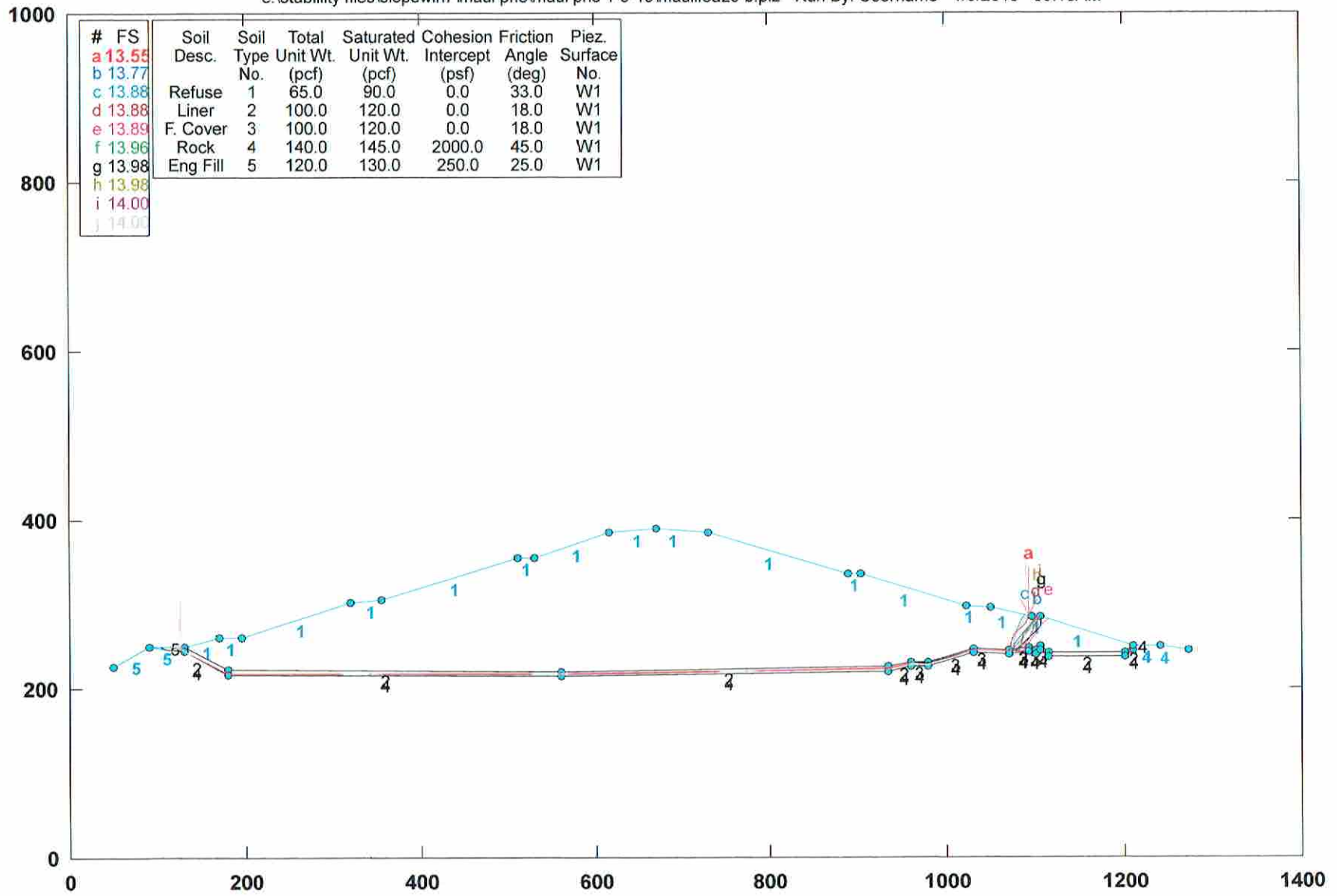
Factors of Safety Calculated by Janbu Method

STED



CML - ph III Sl. Stab. Section III-S2-3AStatic

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a23-b.pl2 Run By: Username 1/9/2019 09:18AM



#	FS
a	13.55
b	13.77
c	13.88
d	13.88
e	13.89
f	13.96
g	13.98
h	13.98
i	14.00
j	14.06

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

PCSTABL5M/si FSmin=13.55

Safety Factors Are Calculated By The Modified Janbu Method

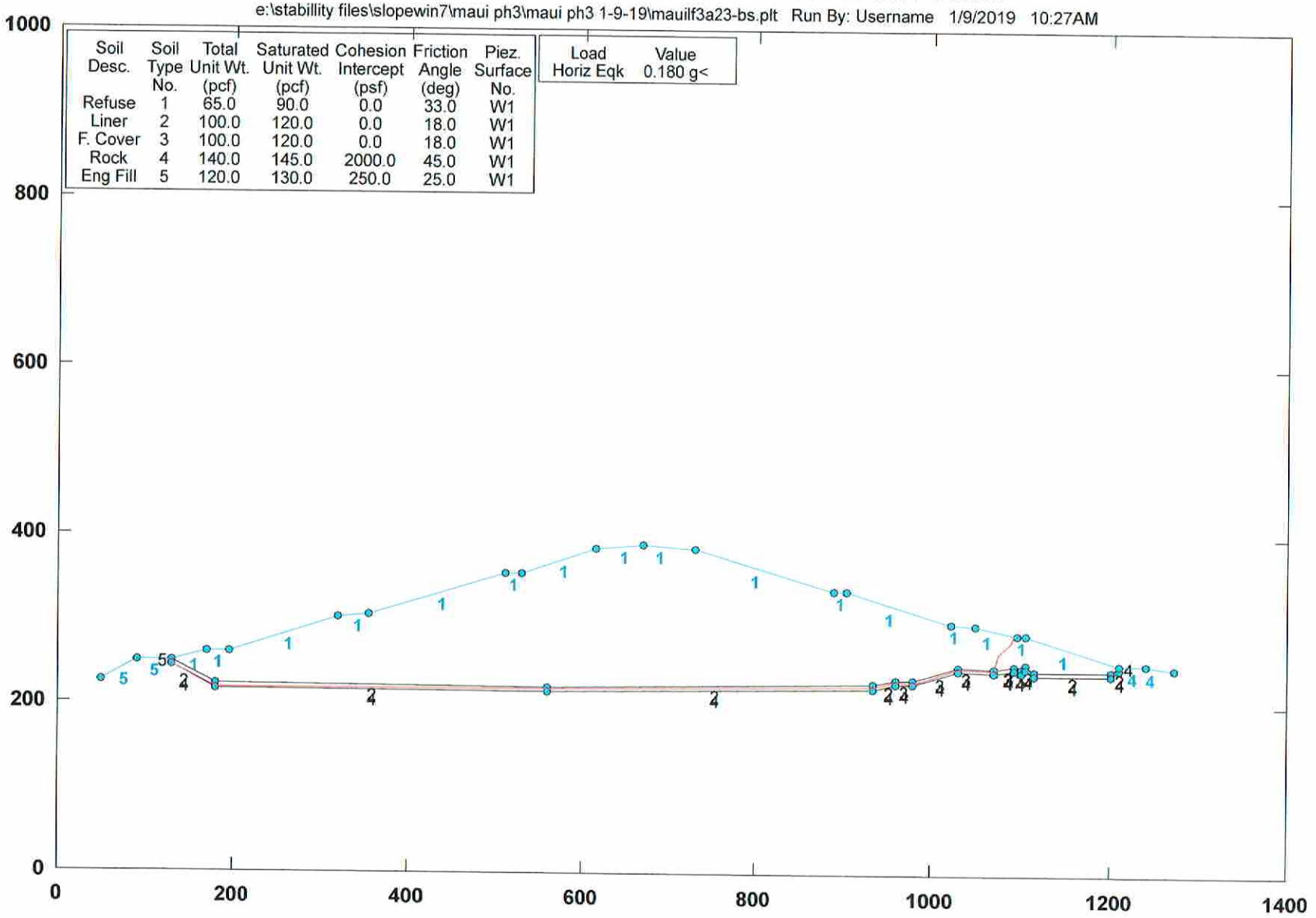
STED

CML - ph III Sl. Stab. Section III-S2-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a23-bs.plt Run By: Username 1/9/2019 10:27AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

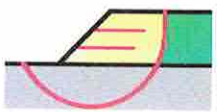
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.64

Factors of Safety Calculated by Janbu Method

STED

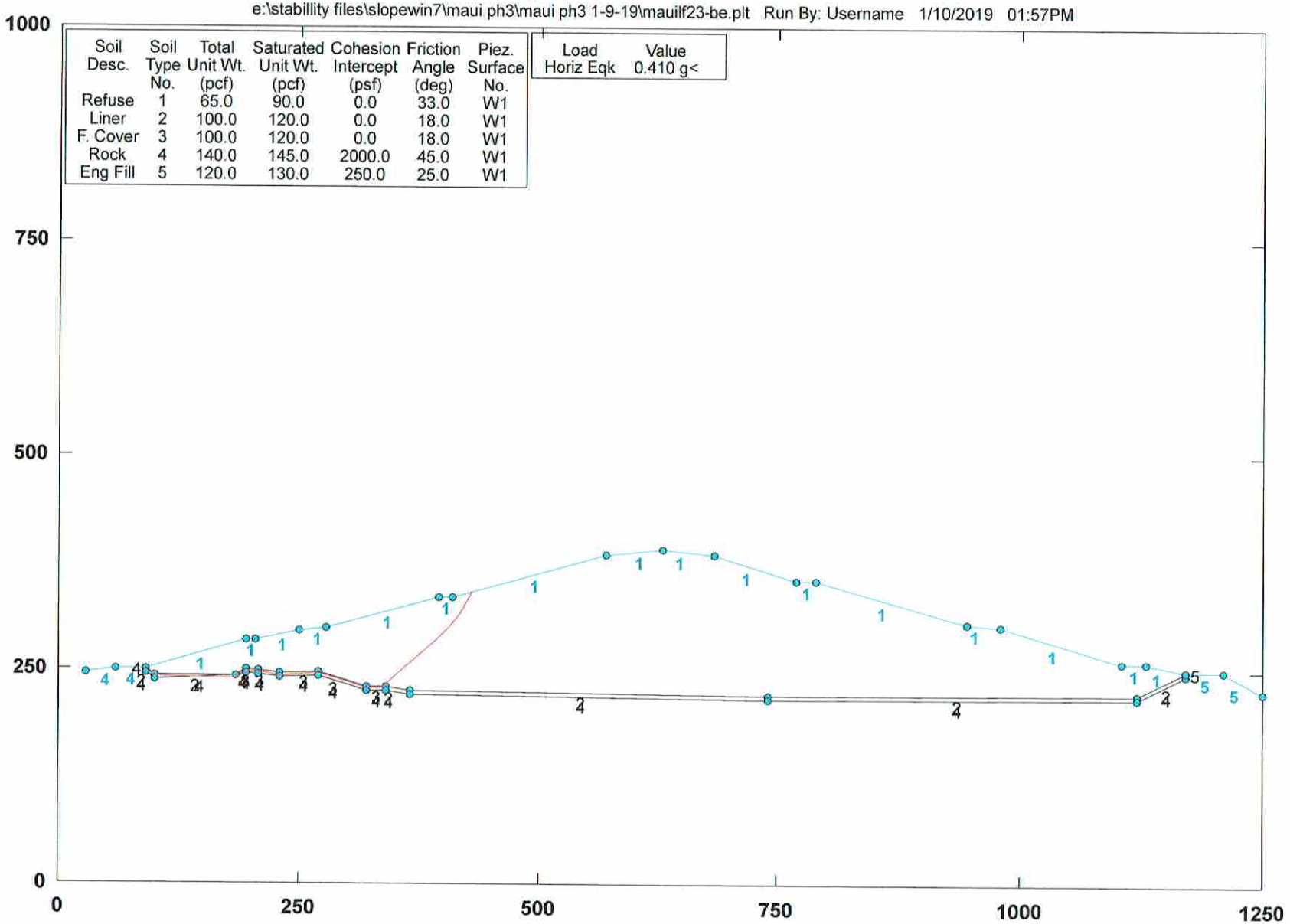


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf23-be.plt Run By: Username 1/10/2019 01:57PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

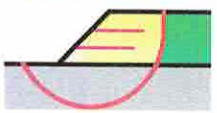
Load	Value
Horiz Eqk	0.410 g<



PCSTABL5M/si FSmin=1.01

Factors of Safety Calculated by Janbu Method

STED

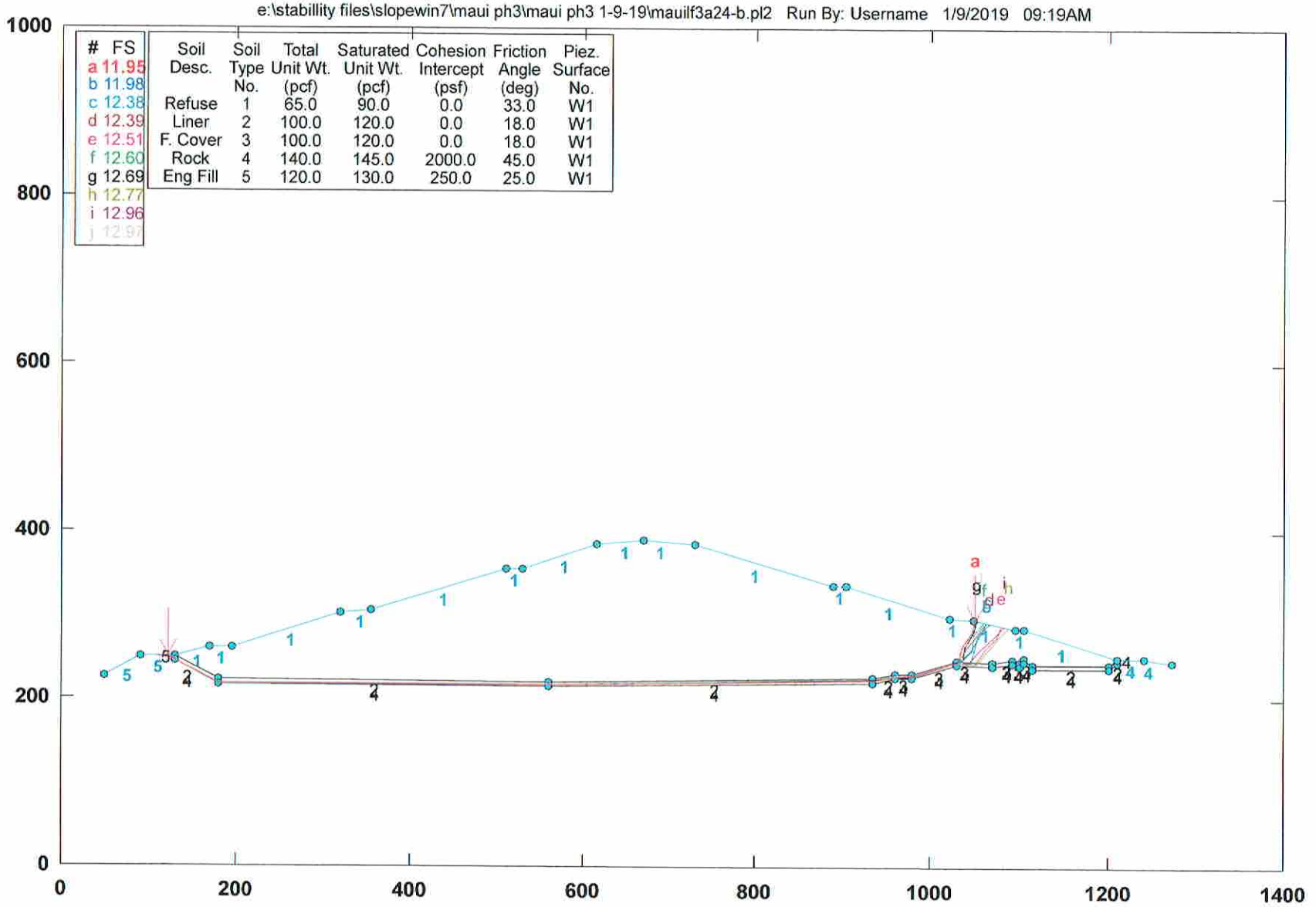


CML - ph III Sl. Stab. Section III-S2-3AStatic

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a24-b.pl2 Run By: Username 1/9/2019 09:19AM

#	FS
a	11.95
b	11.98
c	12.38
d	12.39
e	12.51
f	12.60
g	12.69
h	12.77
i	12.96
j	12.97

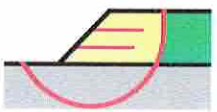
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=11.95

Safety Factors Are Calculated By The Modified Janbu Method

STED

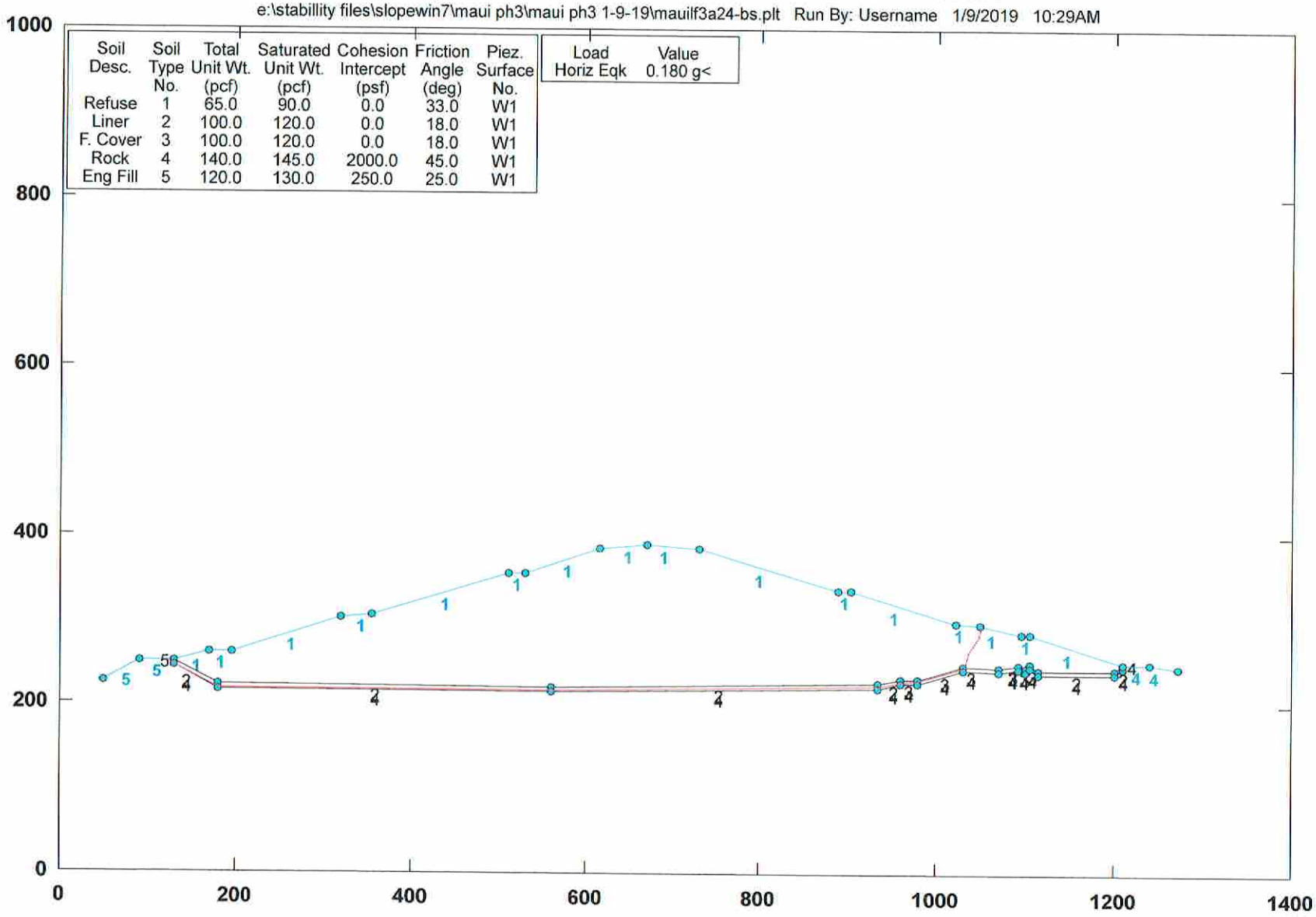


CML - ph III Sl. Stab. Section III-S2-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a24-bs.plt Run By: Username 1/9/2019 10:29AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

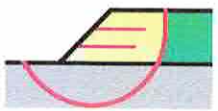
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.63

Factors of Safety Calculated by Janbu Method

STED

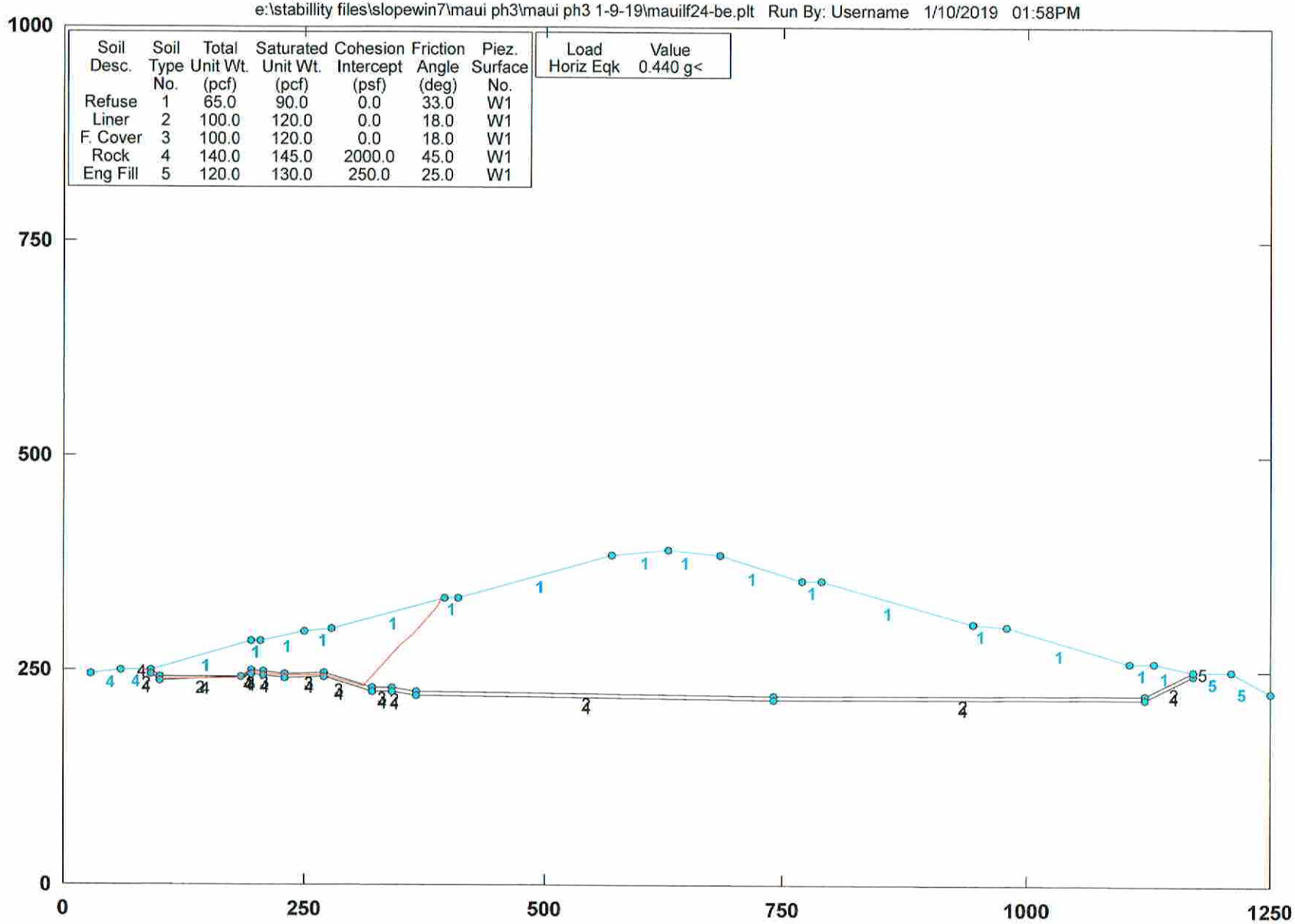


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf24-be.plt Run By: Username 1/10/2019 01:58PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

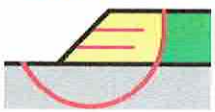
Load	Value
Horiz Eqk	0.440 g<



PCSTABL5M/si FSmin=1.00

Factors of Safety Calculated by Janbu Method

STED

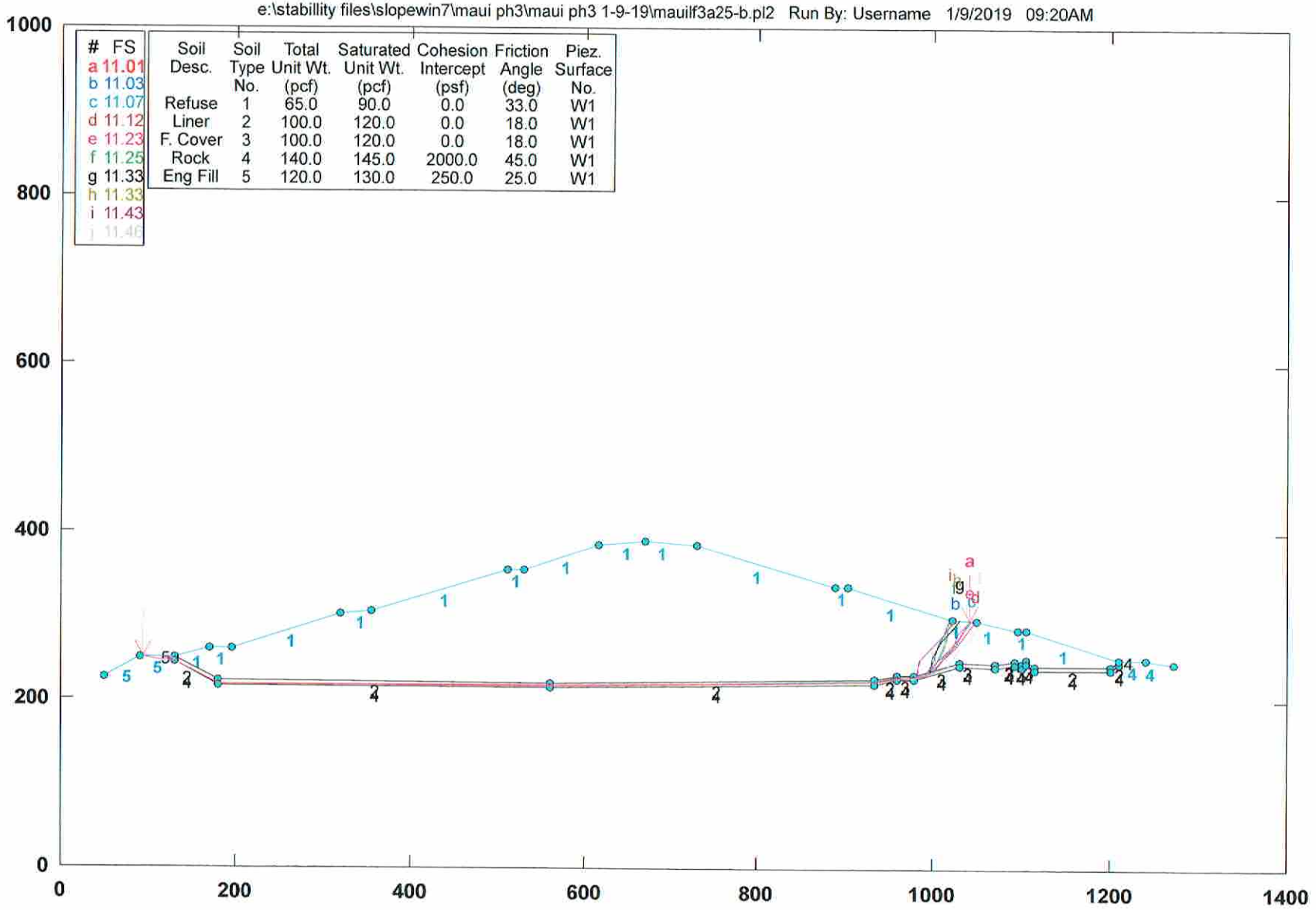


CML - ph III Sl. Stab. Section III-S2-3AStatic

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a25-b.pl2 Run By: Username 1/9/2019 09:20AM

#	FS
a	11.01
b	11.03
c	11.07
d	11.12
e	11.23
f	11.25
g	11.33
h	11.33
i	11.43
j	11.46

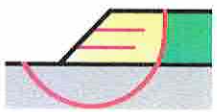
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=11.01

Safety Factors Are Calculated By The Modified Janbu Method

STED

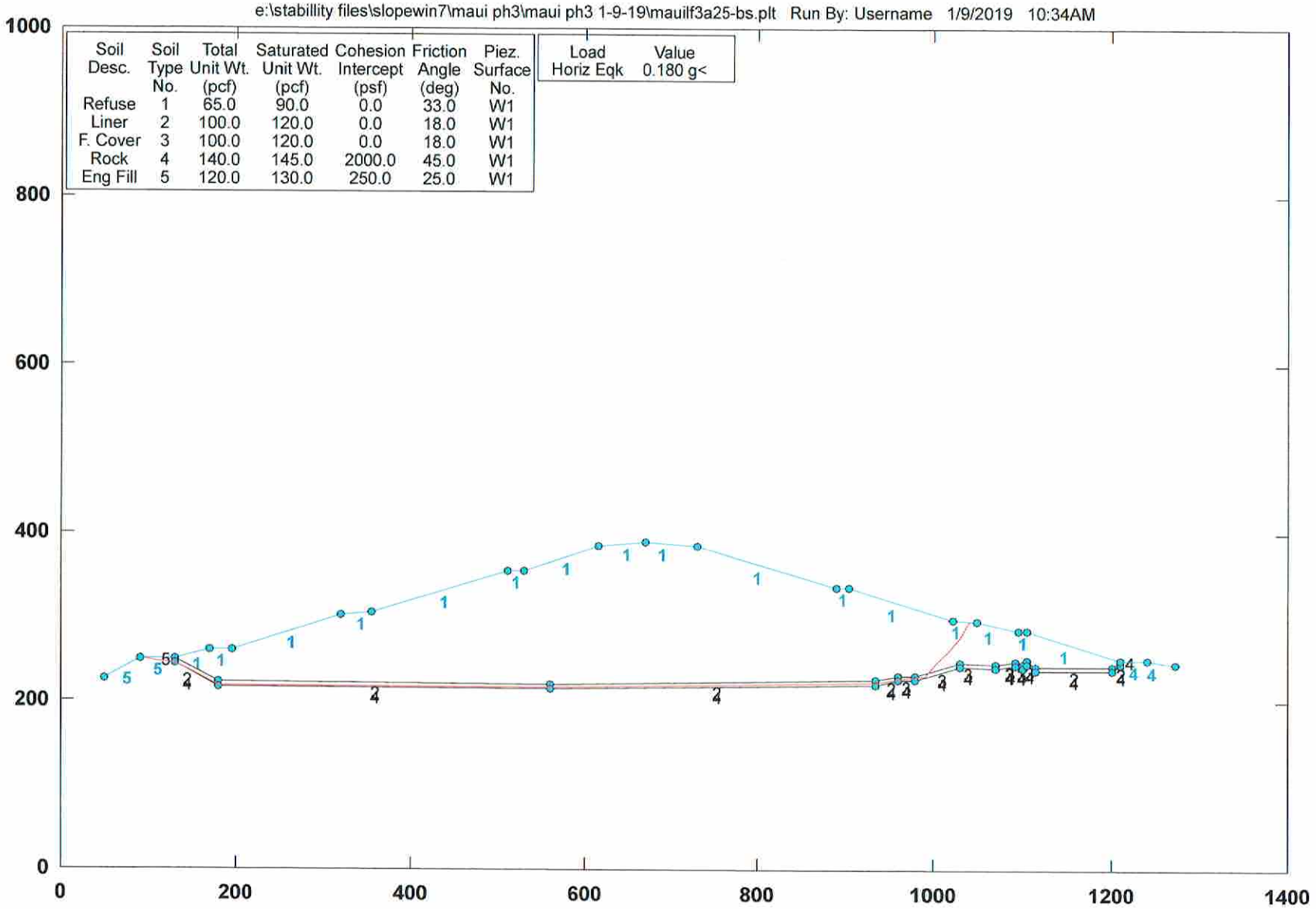


CML - ph III Sl. Stab. Section III-S2-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a25-bs.plt Run By: Username 1/9/2019 10:34AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

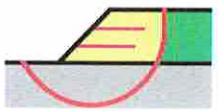
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.62

Factors of Safety Calculated by Janbu Method

STED

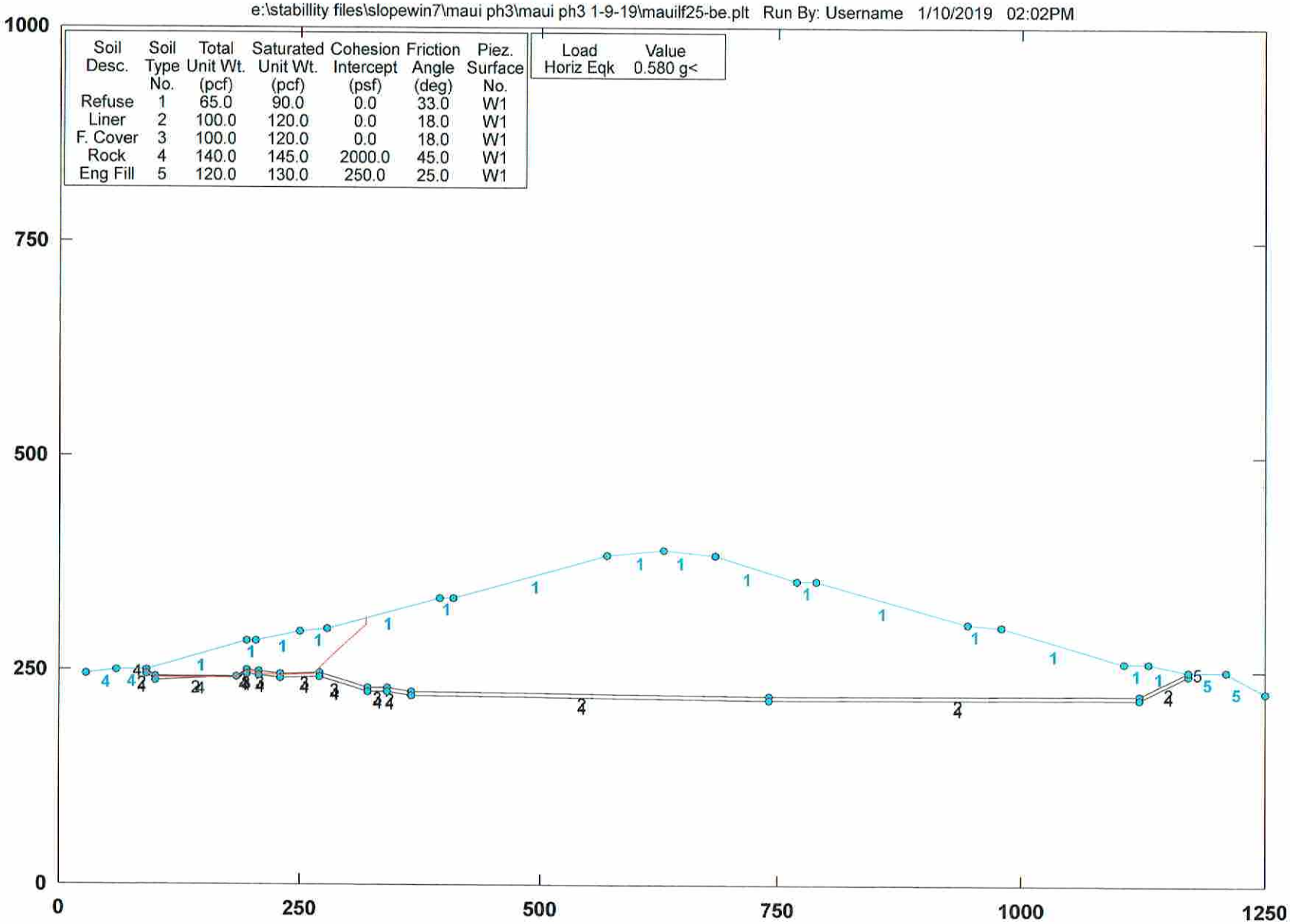


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf25-be.plt Run By: Username 1/10/2019 02:02PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

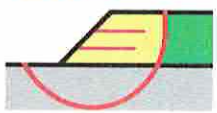
Load	Value
Horiz Eqk	0.580 g<



PCSTABL5M/si FSmin=0.95

Factors of Safety Calculated by Janbu Method

STED

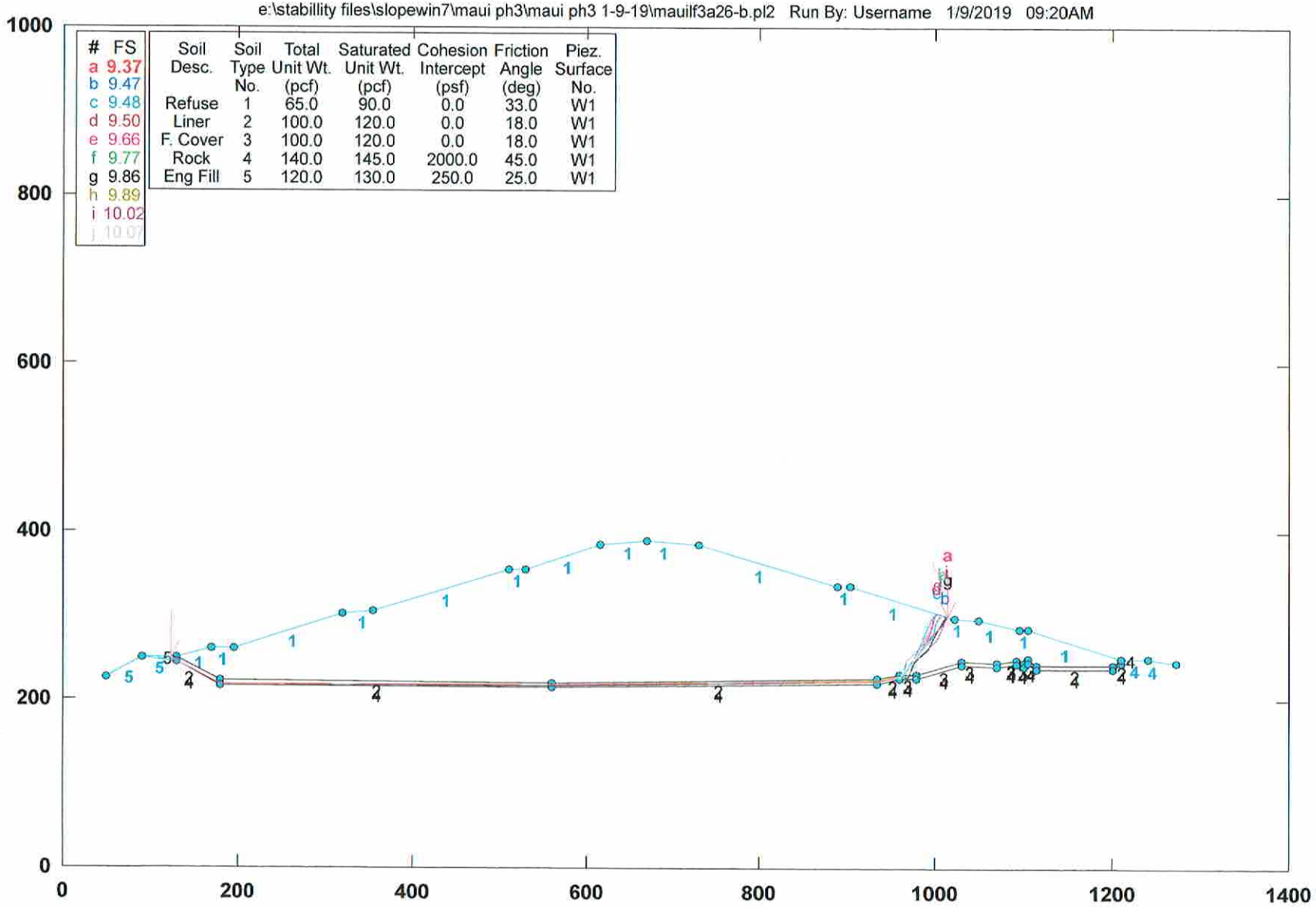


CML - ph III Sl. Stab. Section III-S2-3AStatic

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a26-b.pl2 Run By: Username 1/9/2019 09:20AM

#	FS
a	9.37
b	9.47
c	9.48
d	9.50
e	9.66
f	9.77
g	9.86
h	9.89
i	10.02
j	10.07

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=9.37

Safety Factors Are Calculated By The Modified Janbu Method

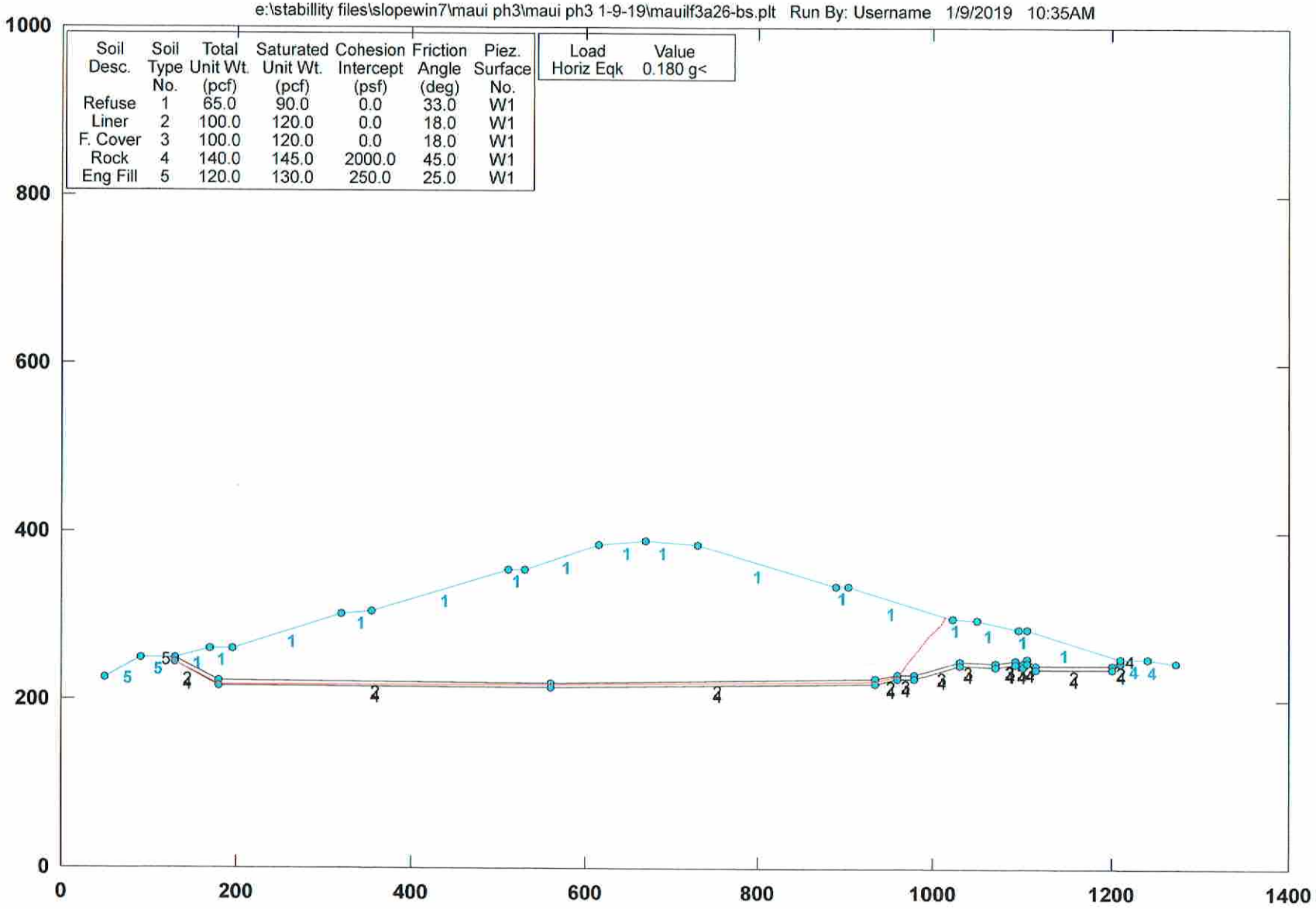
STED

CML - ph III Sl. Stab. Section III-S2-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a26-bs.plt Run By: Username 1/9/2019 10:35AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

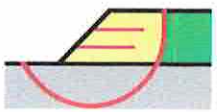
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.59

Factors of Safety Calculated by Janbu Method

STED

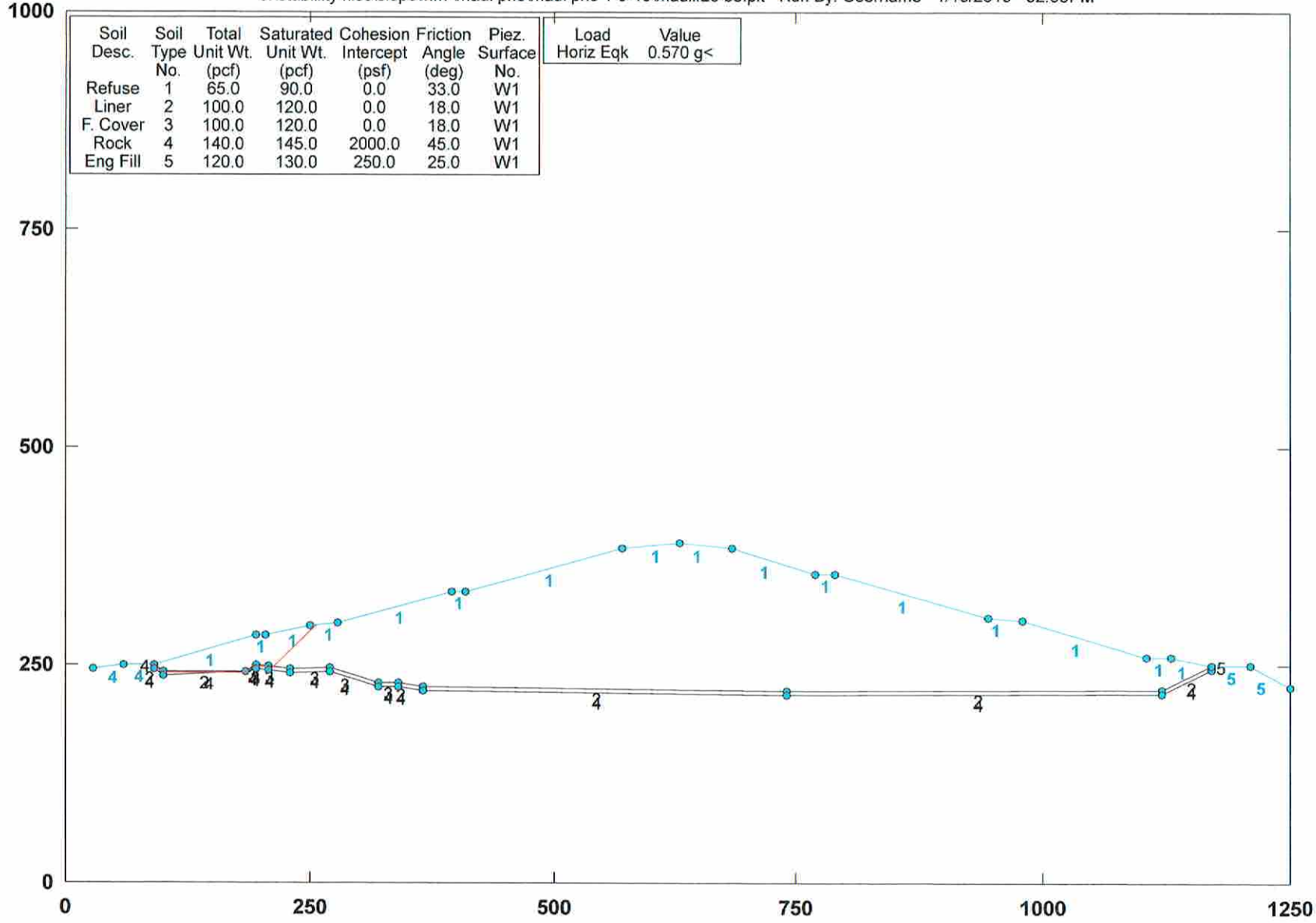


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf26-be.plt Run By: Username 1/10/2019 02:06PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

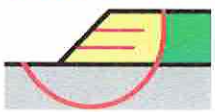
Load	Value
Horiz Eqk	0.570 g<



PCSTABL5M/si FSmin=1.18

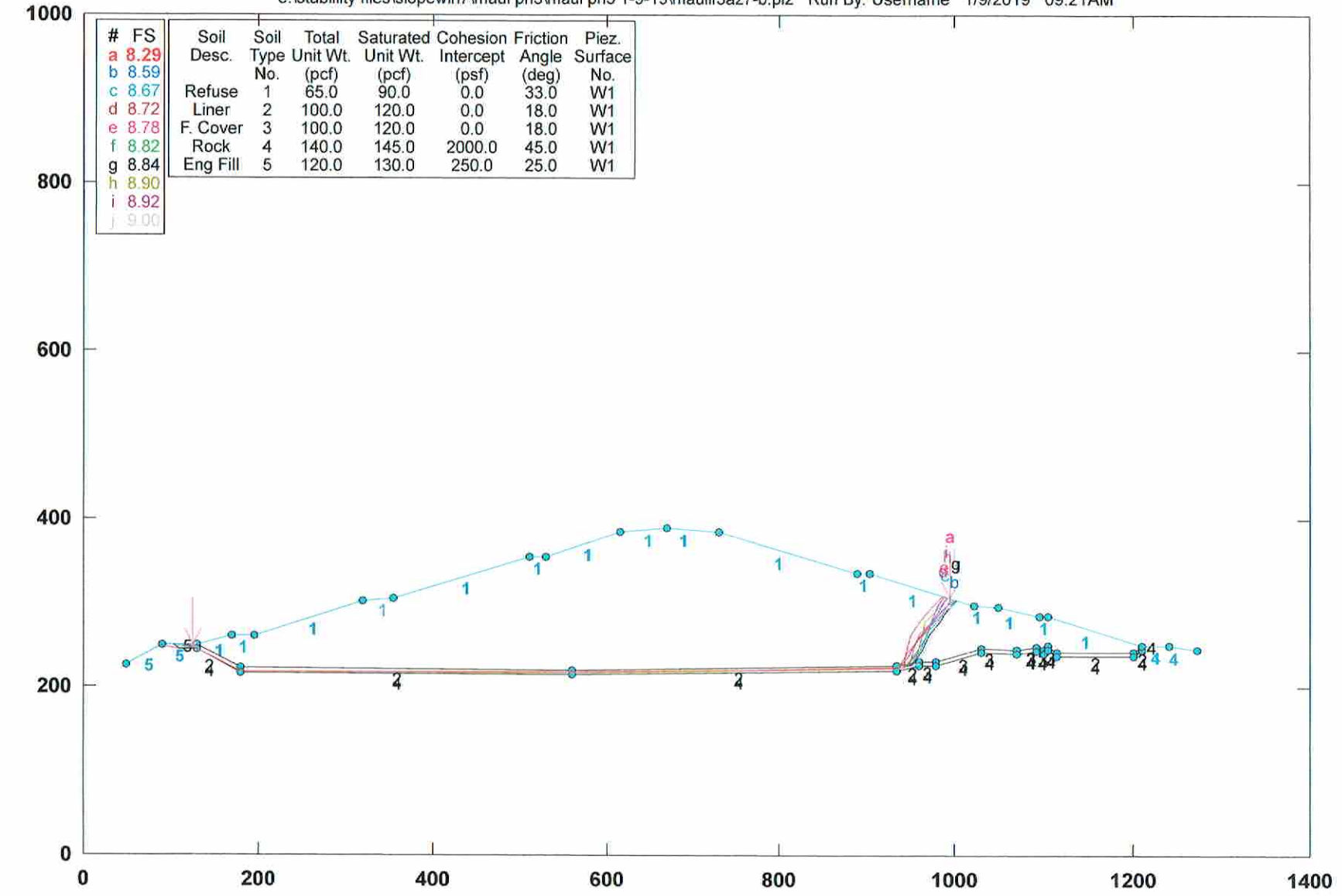
Factors of Safety Calculated by Janbu Method

STED



CML - ph III Sl. Stab. Section III-S2-3AStatic

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a27-b.pl2 Run By: Username 1/9/2019 09:21AM



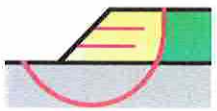
#	FS
a	8.29
b	8.59
c	8.67
d	8.72
e	8.78
f	8.82
g	8.84
h	8.90
i	8.92
j	9.00

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

PCSTABL5M/si FSmin=8.29

Safety Factors Are Calculated By The Modified Janbu Method

STED

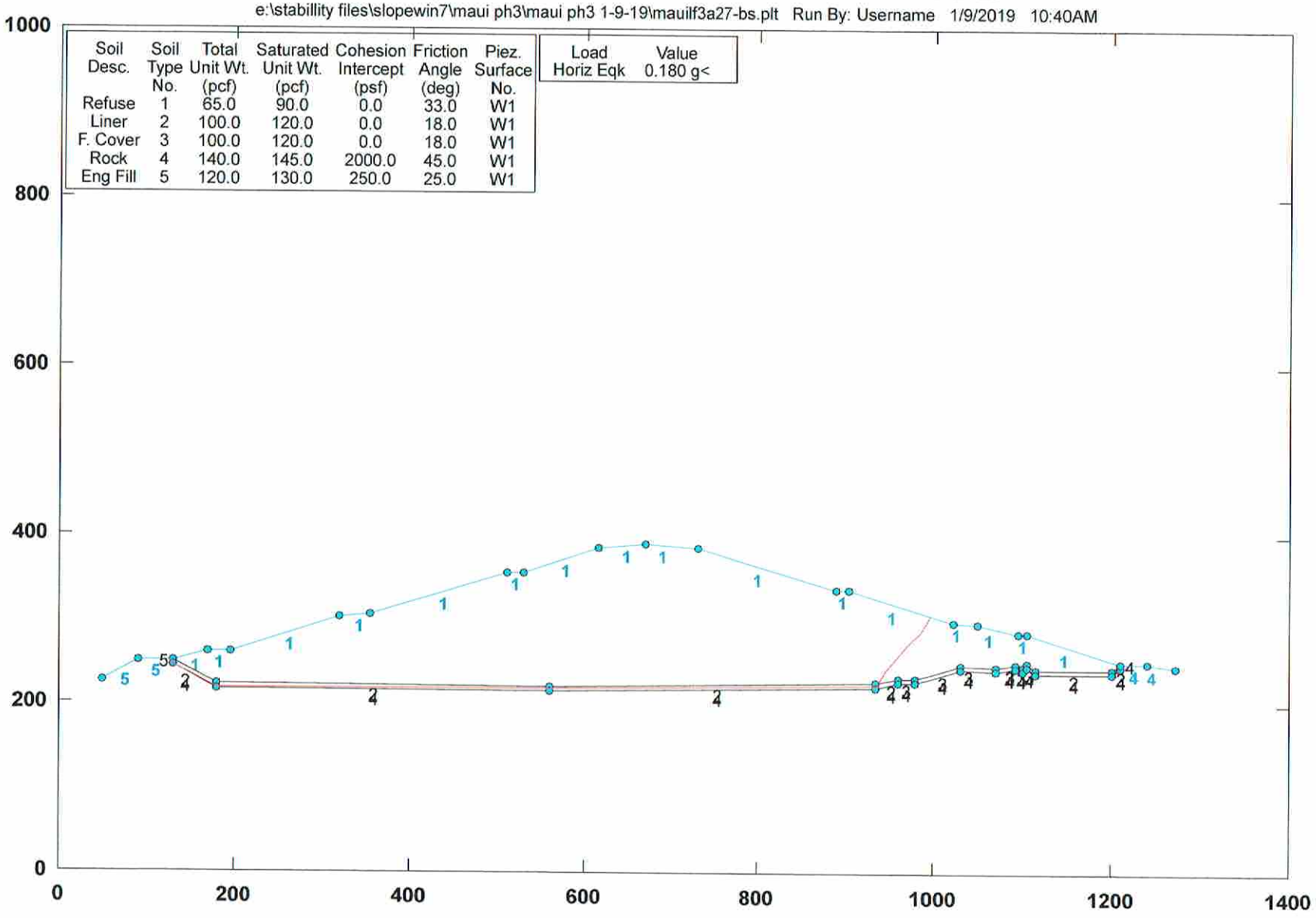


CML - ph III Sl. Stab. Section III-S2-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a27-bs.plt Run By: Username 1/9/2019 10:40AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.58

Factors of Safety Calculated by Janbu Method

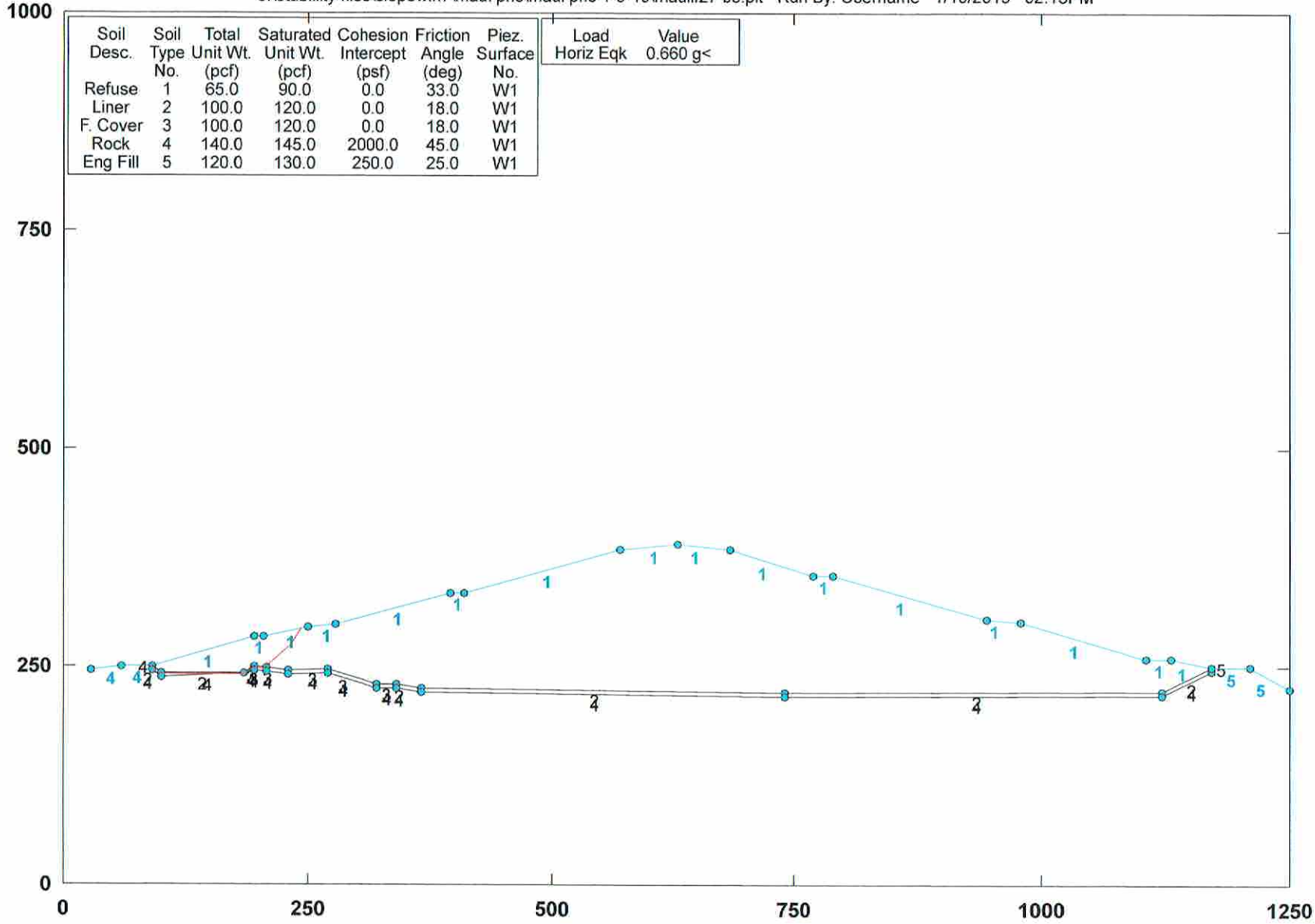
STED

CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf27-be.plt Run By: Username 1/10/2019 02:13PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

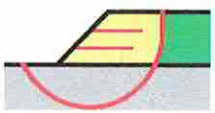
Load	Value
Horiz Eqk	0.660 g<



PCSTABL5M/si FSmin=1.14

Factors of Safety Calculated by Janbu Method

STED

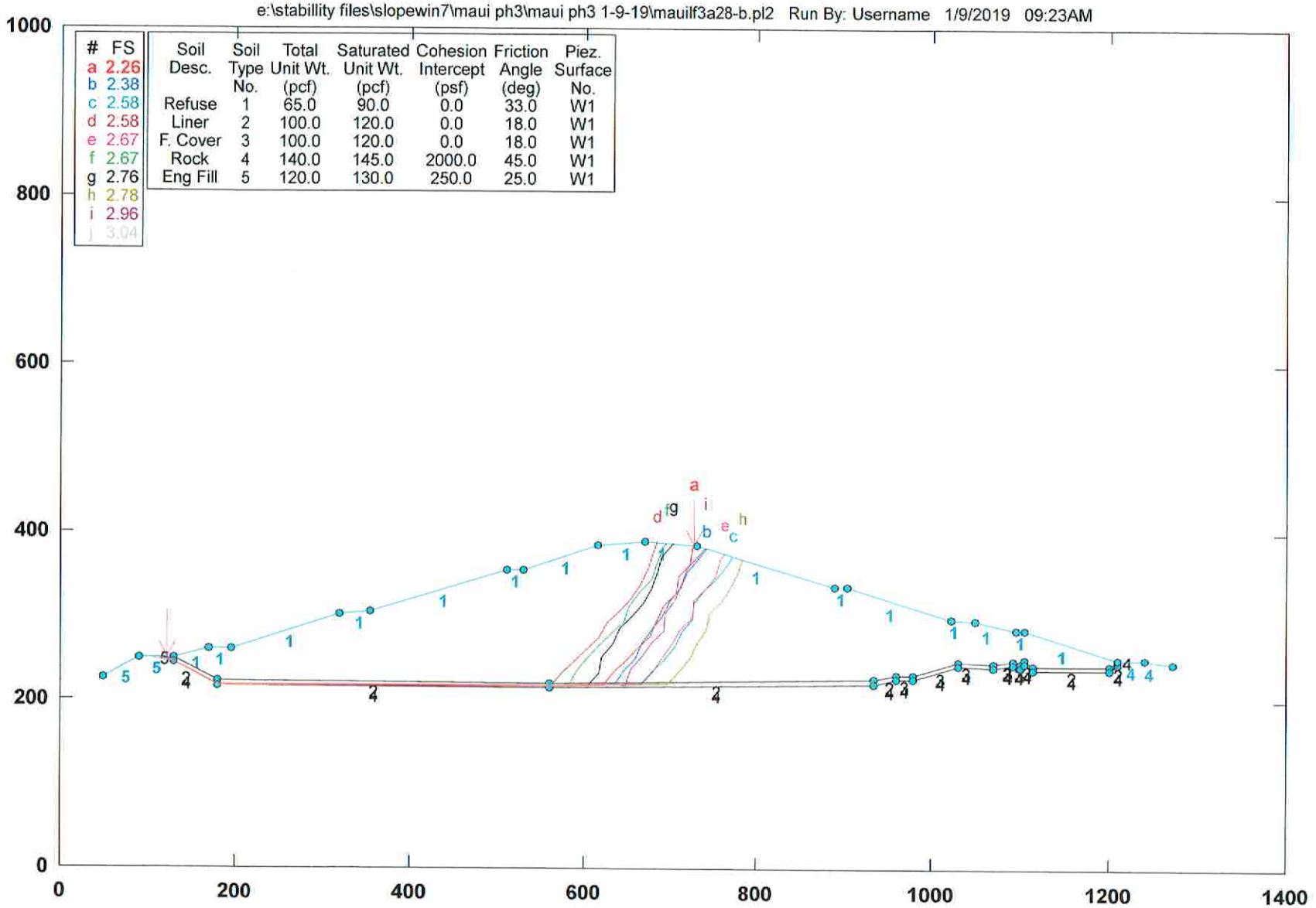


CML - ph III Sl. Stab. Section III-S2-3AStatic

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a28-b.pl2 Run By: Username 1/9/2019 09:23AM

#	FS
a	2.26
b	2.38
c	2.58
d	2.58
e	2.67
f	2.67
g	2.76
h	2.78
i	2.96
j	3.04

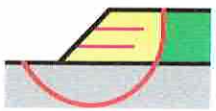
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=2.26

Safety Factors Are Calculated By The Modified Janbu Method

STED

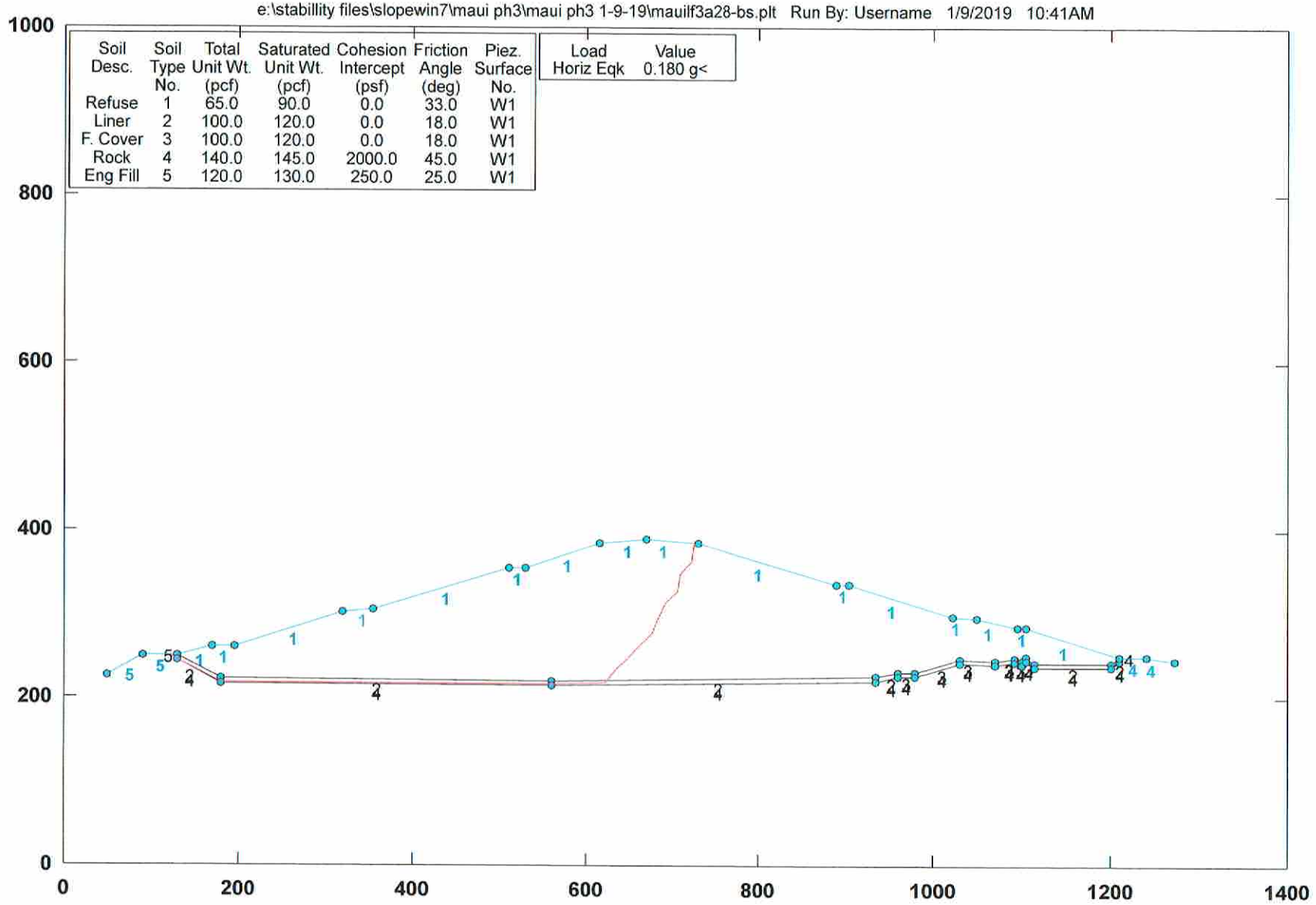


CML - ph III Sl. Stab. Section III-S2-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a28-bs.plt Run By: Username 1/9/2019 10:41AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

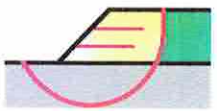
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.13

Factors of Safety Calculated by Janbu Method

STED

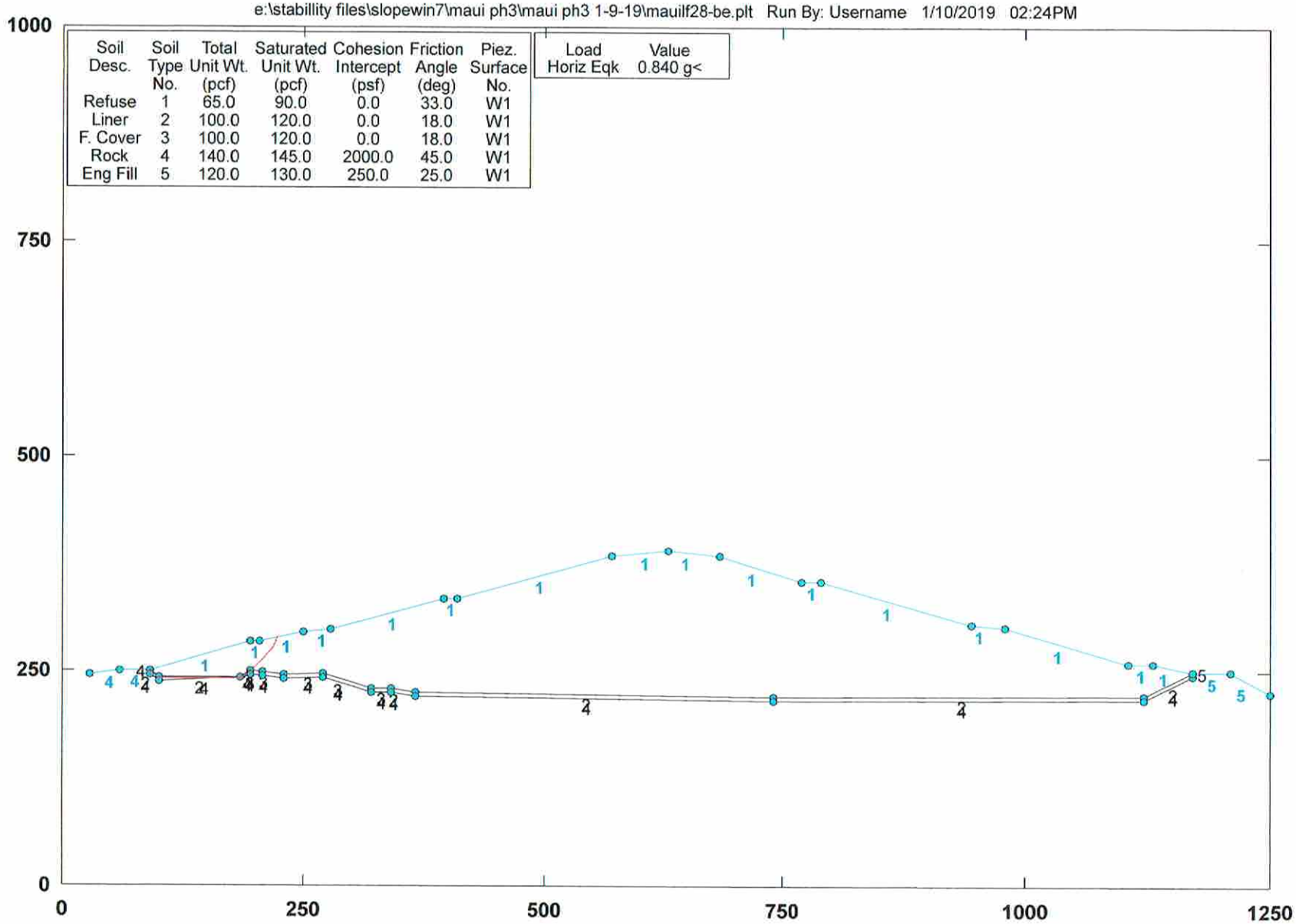


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf28-be.plt Run By: Username 1/10/2019 02:24PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

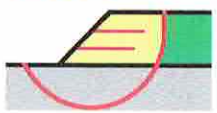
Load	Value
Horiz Eqk	0.840 g<



PCSTABL5M/si FSmin=1.00

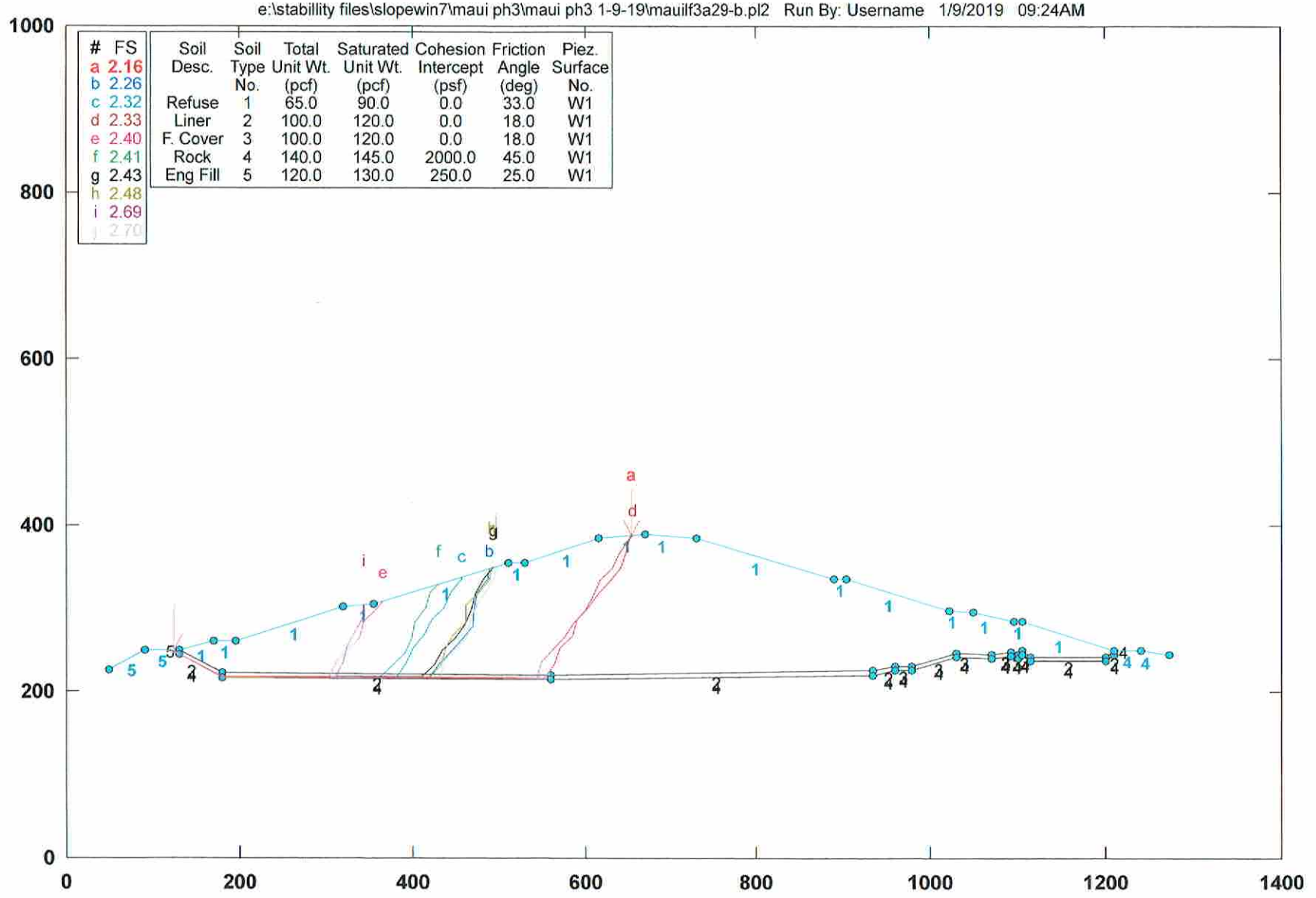
Factors of Safety Calculated by Janbu Method

STED



CML - ph III Sl. Stab. Section III-S2-3AStatic

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a29-b.pl2 Run By: Username 1/9/2019 09:24AM



#	FS
a	2.16
b	2.26
c	2.32
d	2.33
e	2.40
f	2.41
g	2.43
h	2.48
i	2.69
j	2.70

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

PCSTABL5M/si FSmin=2.16

Safety Factors Are Calculated By The Modified Janbu Method

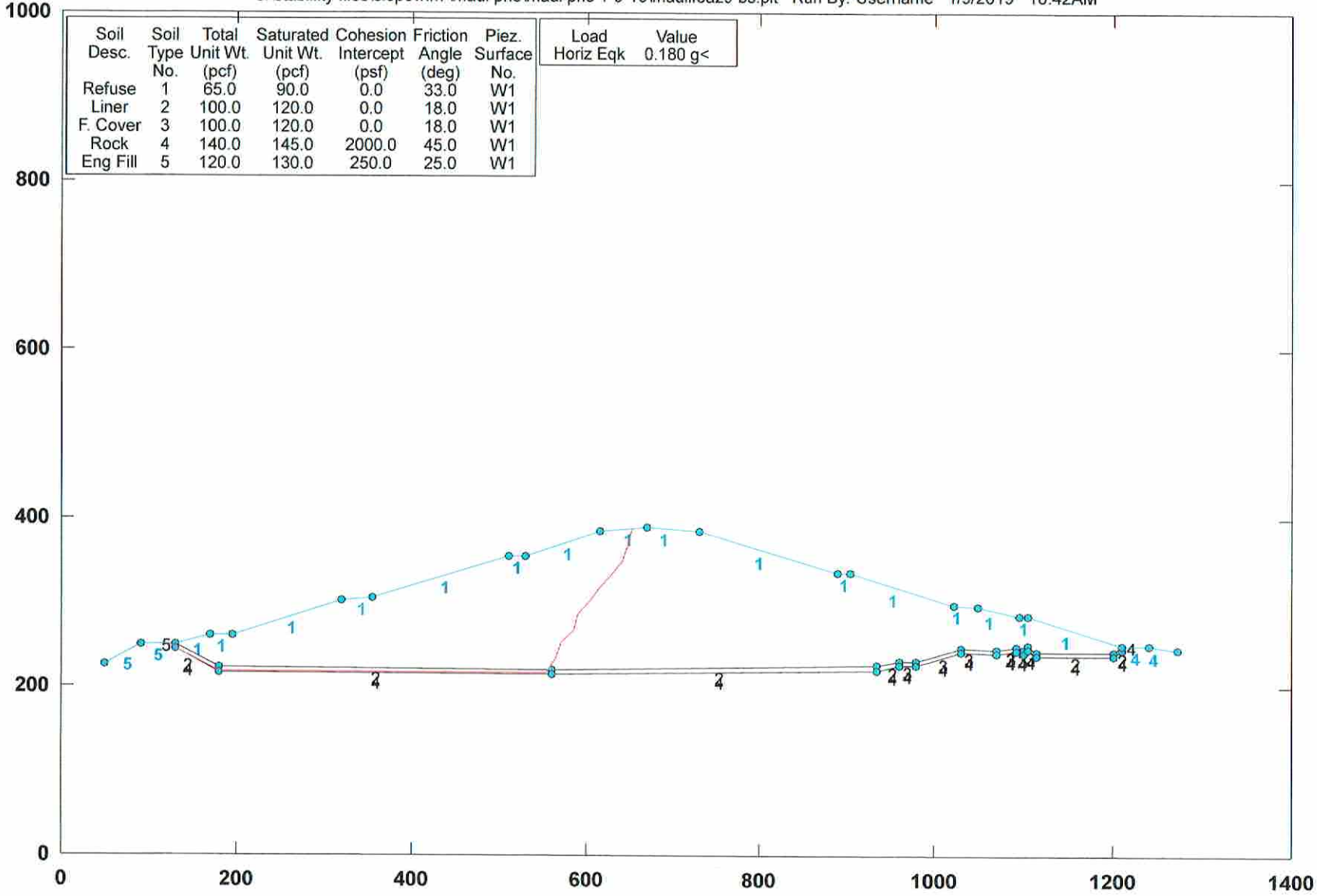
STED

CML - ph III Sl. Stab. Section III-S2-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a29-bs.plt Run By: Username 1/9/2019 10:42AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

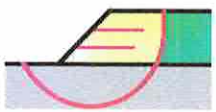
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.15

Factors of Safety Calculated by Janbu Method

STED

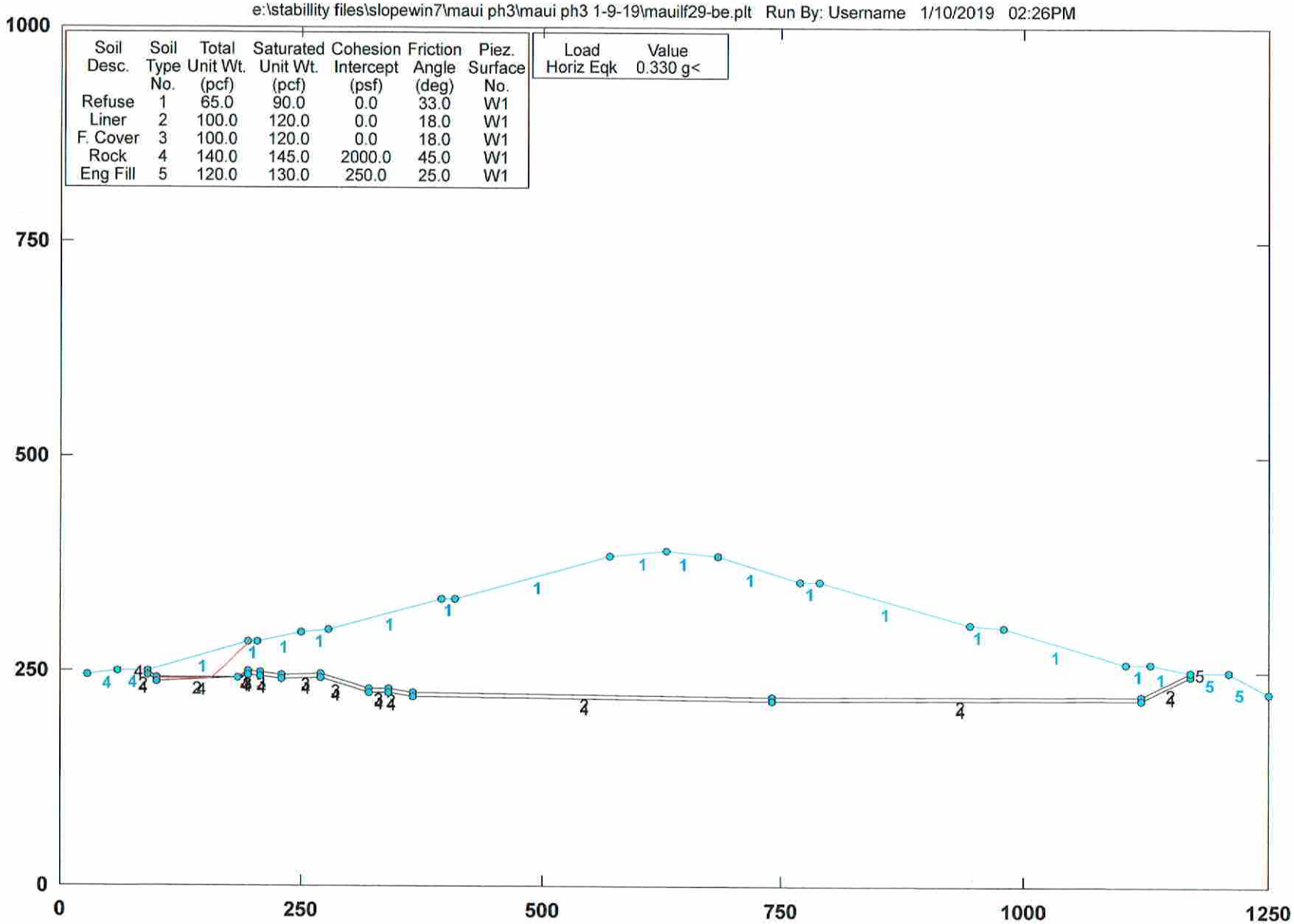


CML - ph III Slope Stab. Section III-S2 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf29-be.plt Run By: Username 1/10/2019 02:26PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

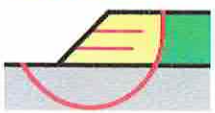
Load	Value
Horiz Eqk	0.330 g<



PCSTABL5M/si FSmin=1.01

Factors of Safety Calculated by Janbu Method

STED

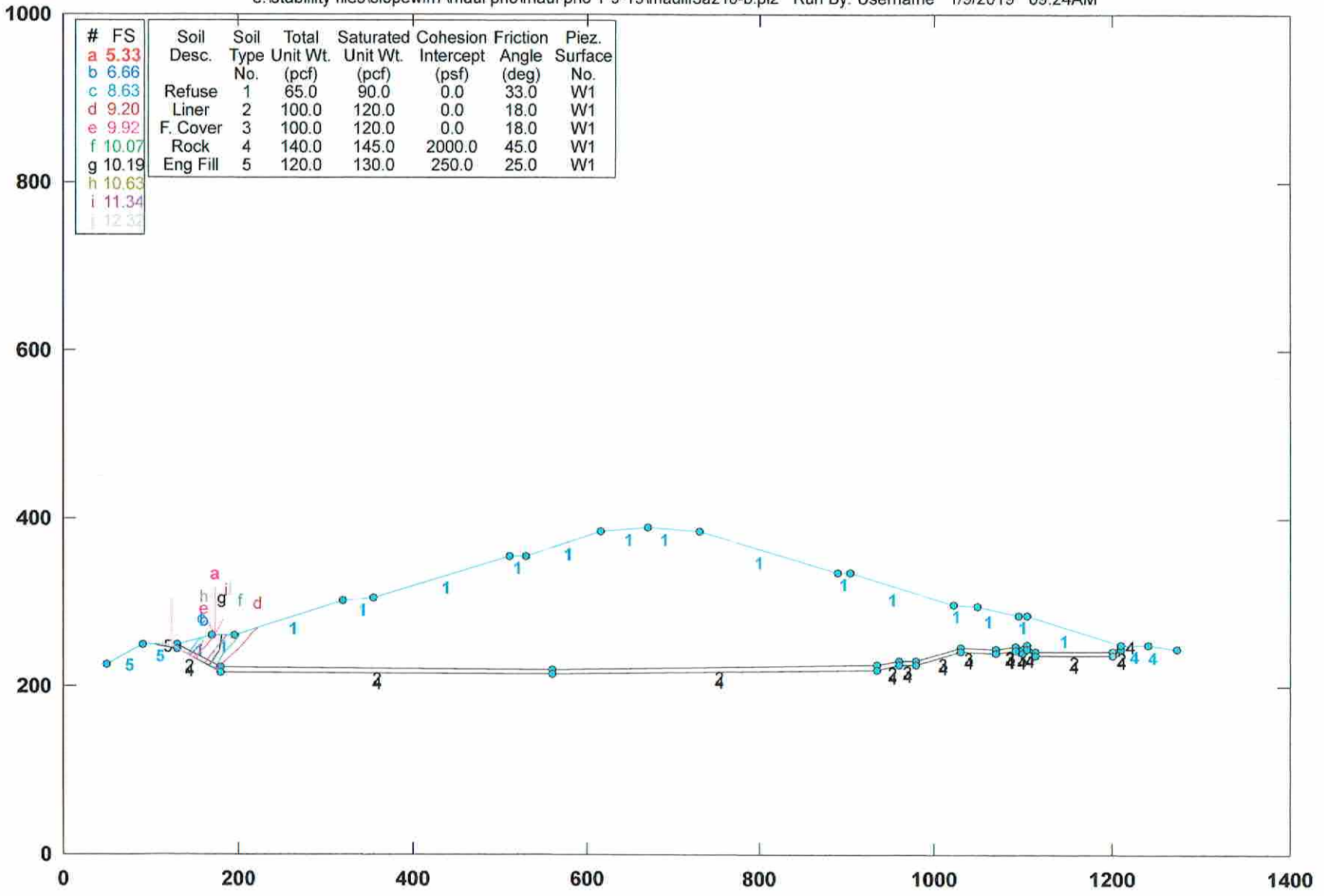


CML - ph III Sl. Stab. Section III-S2-3AStatic

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a210-b.pl2 Run By: Username 1/9/2019 09:24AM

#	FS
a	5.33
b	6.66
c	8.63
d	9.20
e	9.92
f	10.07
g	10.19
h	10.63
i	11.34
j	12.32

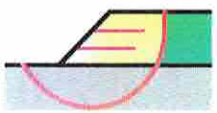
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=5.33

Safety Factors Are Calculated By The Modified Janbu Method

STED

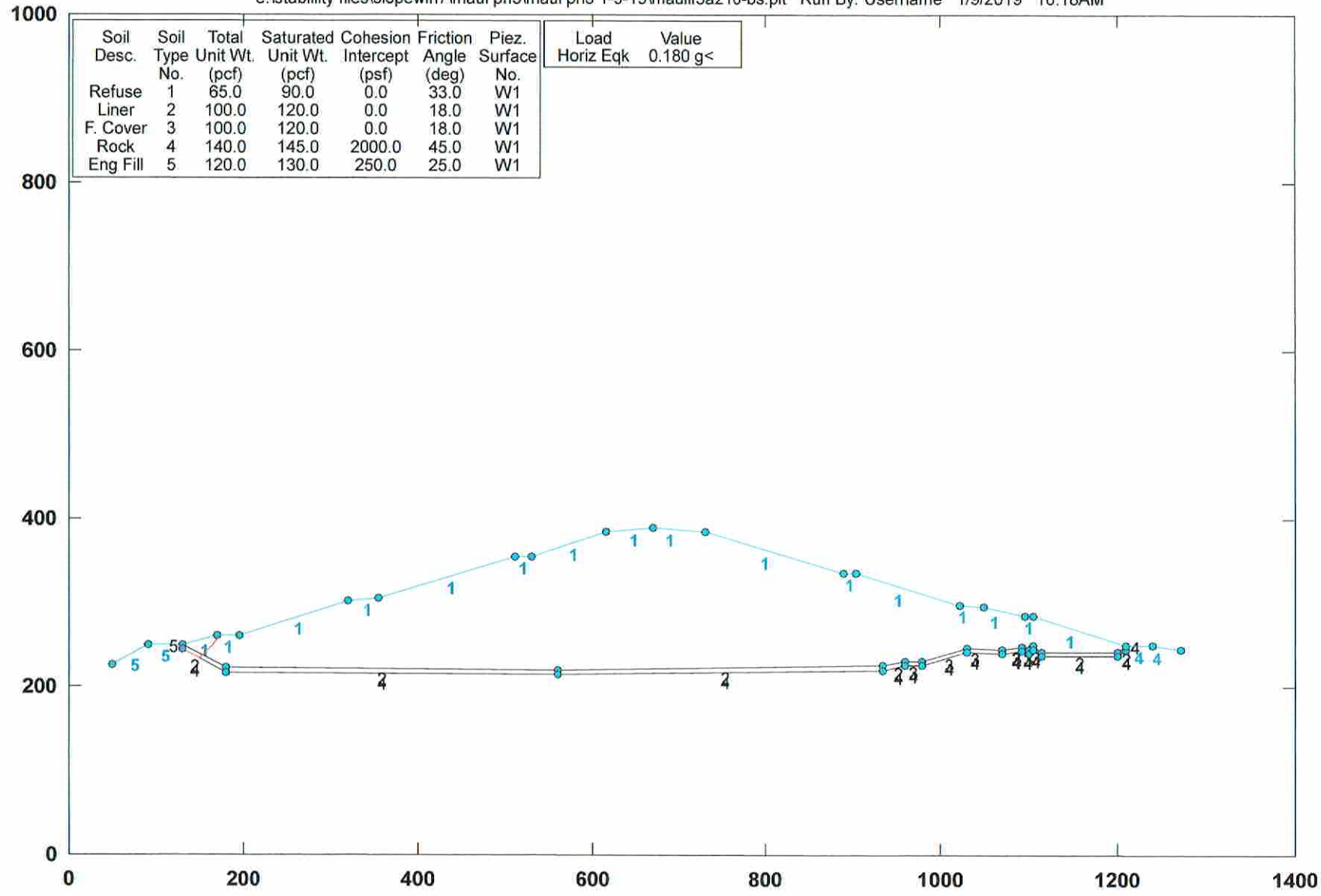


CML - ph III Sl. Stab. Section III-S2-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a210-bs.plt Run By: Username 1/9/2019 10:18AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

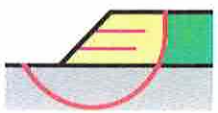
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=2.36

Factors of Safety Calculated by Janbu Method

STED

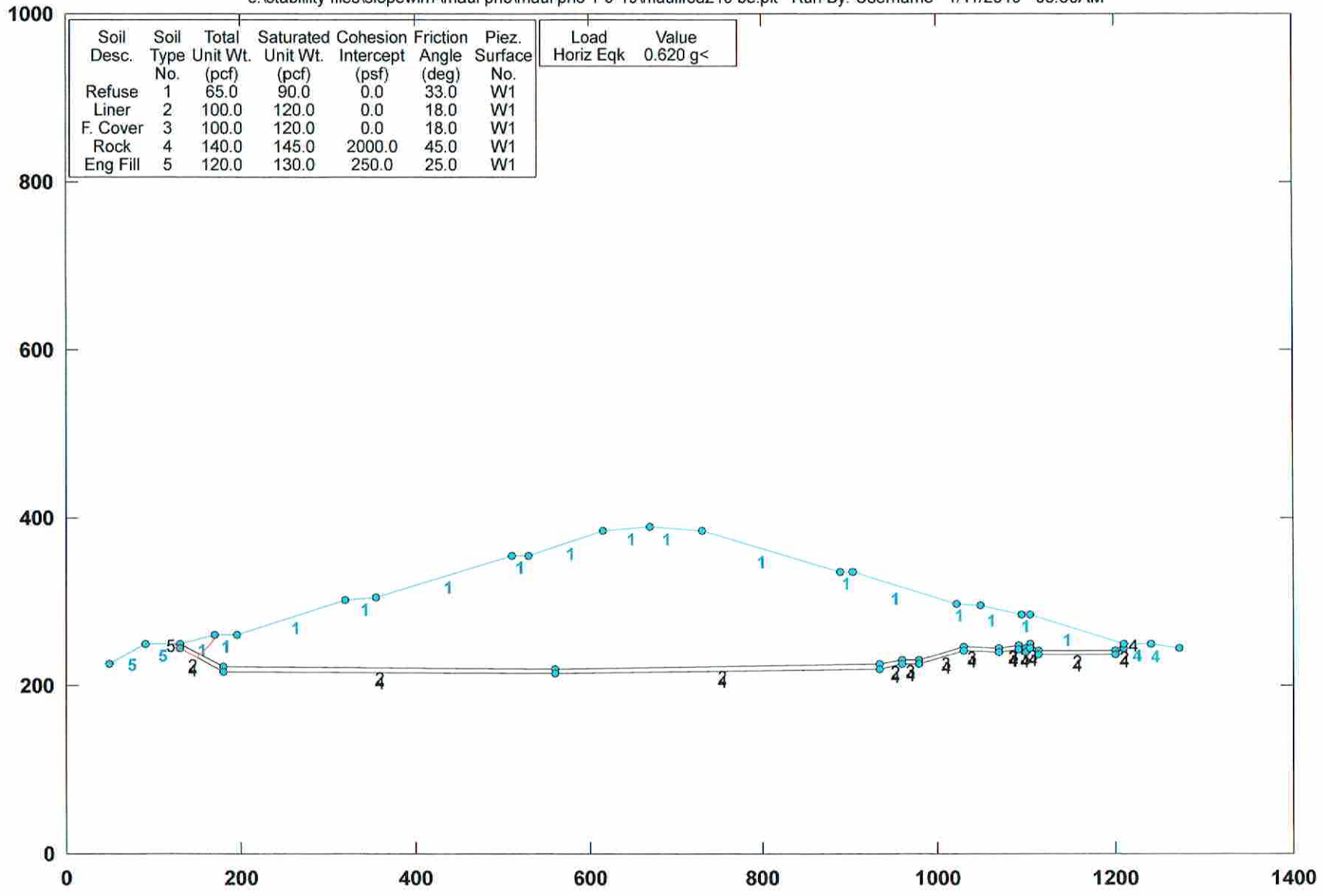


CML - ph III Sl. Stab. Section III-S2-3APseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf3a210-be.plt Run By: Username 1/11/2019 08:30AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

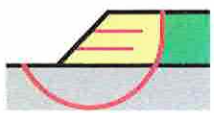
Load	Value
Horiz Eqk	0.620 g<



PCSTABL5M/si FSmin=1.00

Factors of Safety Calculated by Janbu Method

STED



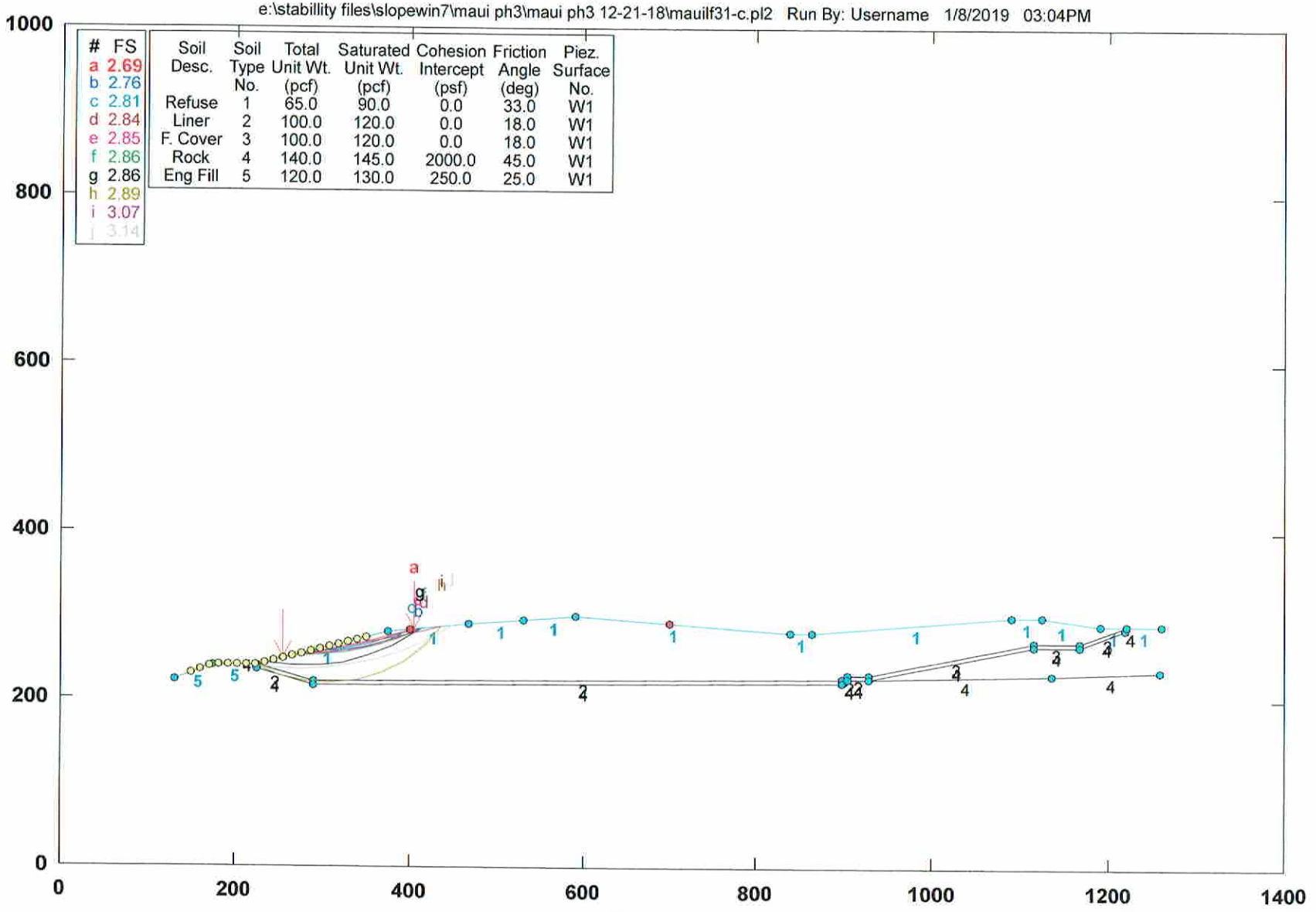
CROSS SECTION
III-S3

CML - ph III Slope Stab. Section III-S3 Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 12-21-18\mauilf31-c.pl2 Run By: Username 1/8/2019 03:04PM

#	FS
a	2.69
b	2.76
c	2.81
d	2.84
e	2.85
f	2.86
g	2.86
h	2.89
i	3.07
j	3.14

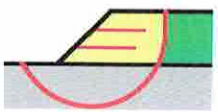
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=2.69

Safety Factors Are Calculated By The Modified Bishop Method

STED

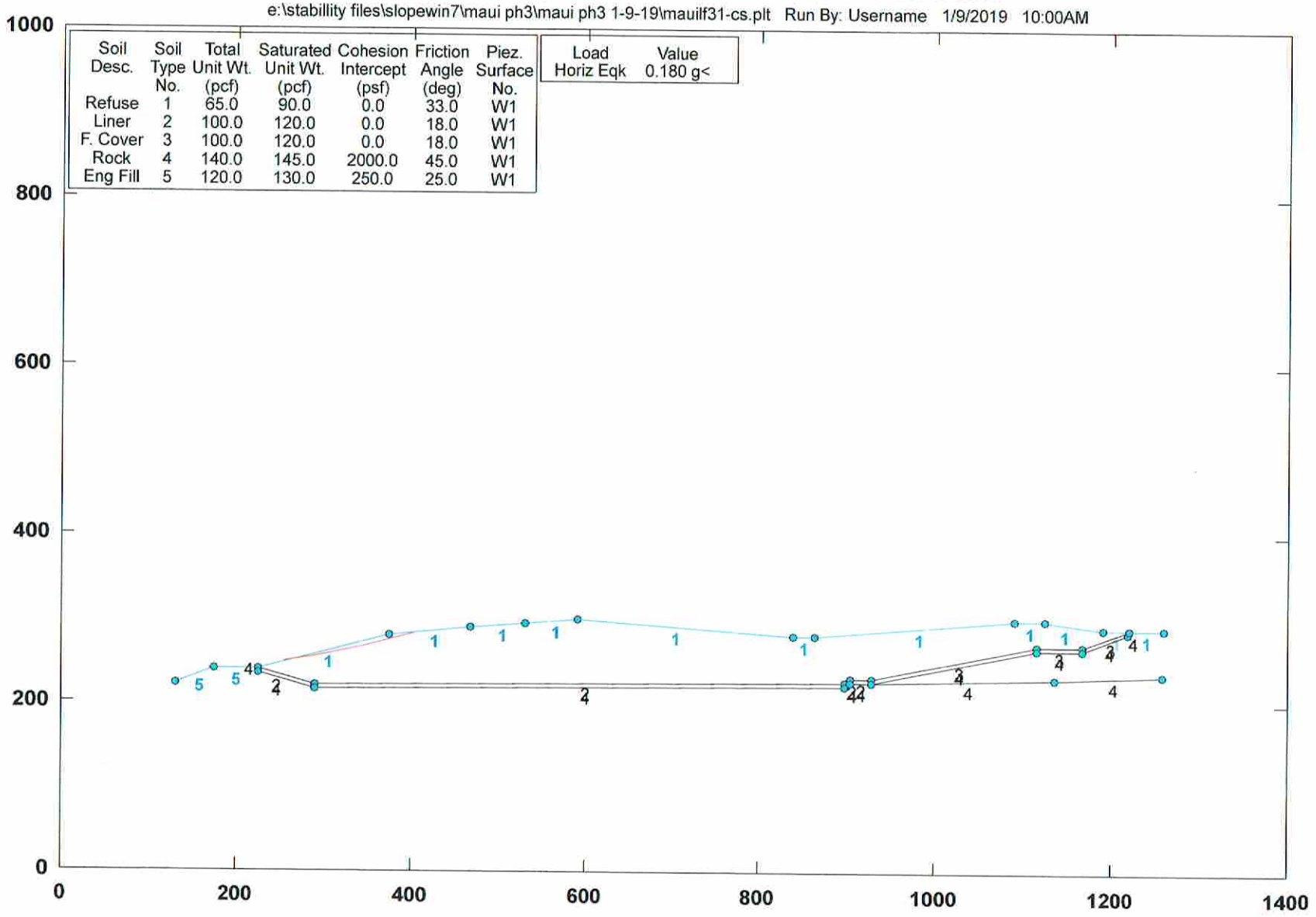


CML - ph III Slope Stab. Section III-S3 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf31-cs.plt Run By: Username 1/9/2019 10:00AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

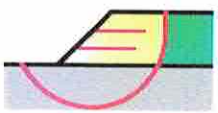
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.48

Factor Of Safety Is Calculated By The Modified Bishop Method

STED

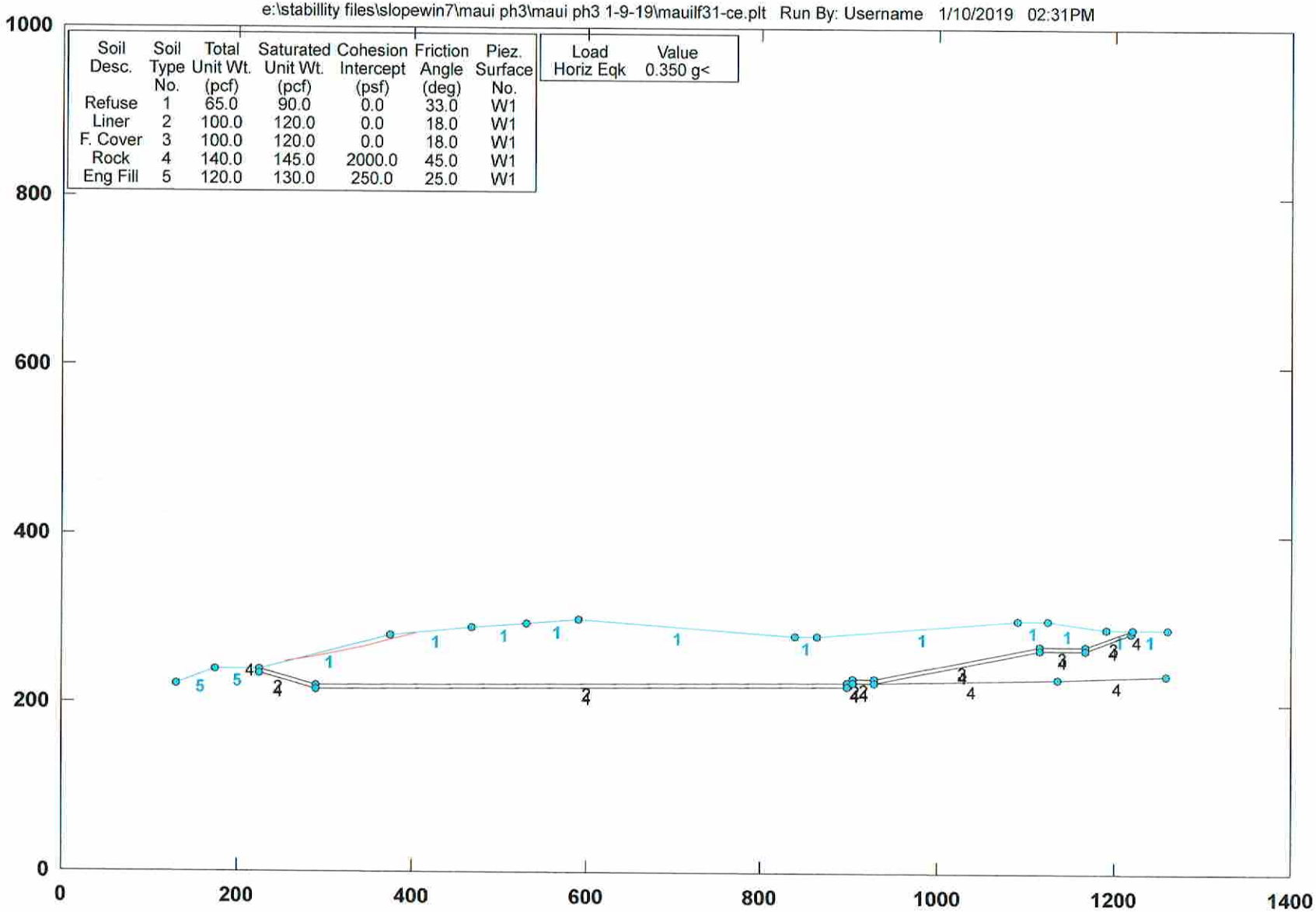


CML - ph III Slope Stab. Section III-S3 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf31-ce.plt Run By: Username 1/10/2019 02:31PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

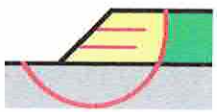
Load	Value
Horiz Eqk	0.350 g<



PCSTABL5M/si FSmin=1.01

Factor Of Safety Is Calculated By The Modified Bishop Method

STED

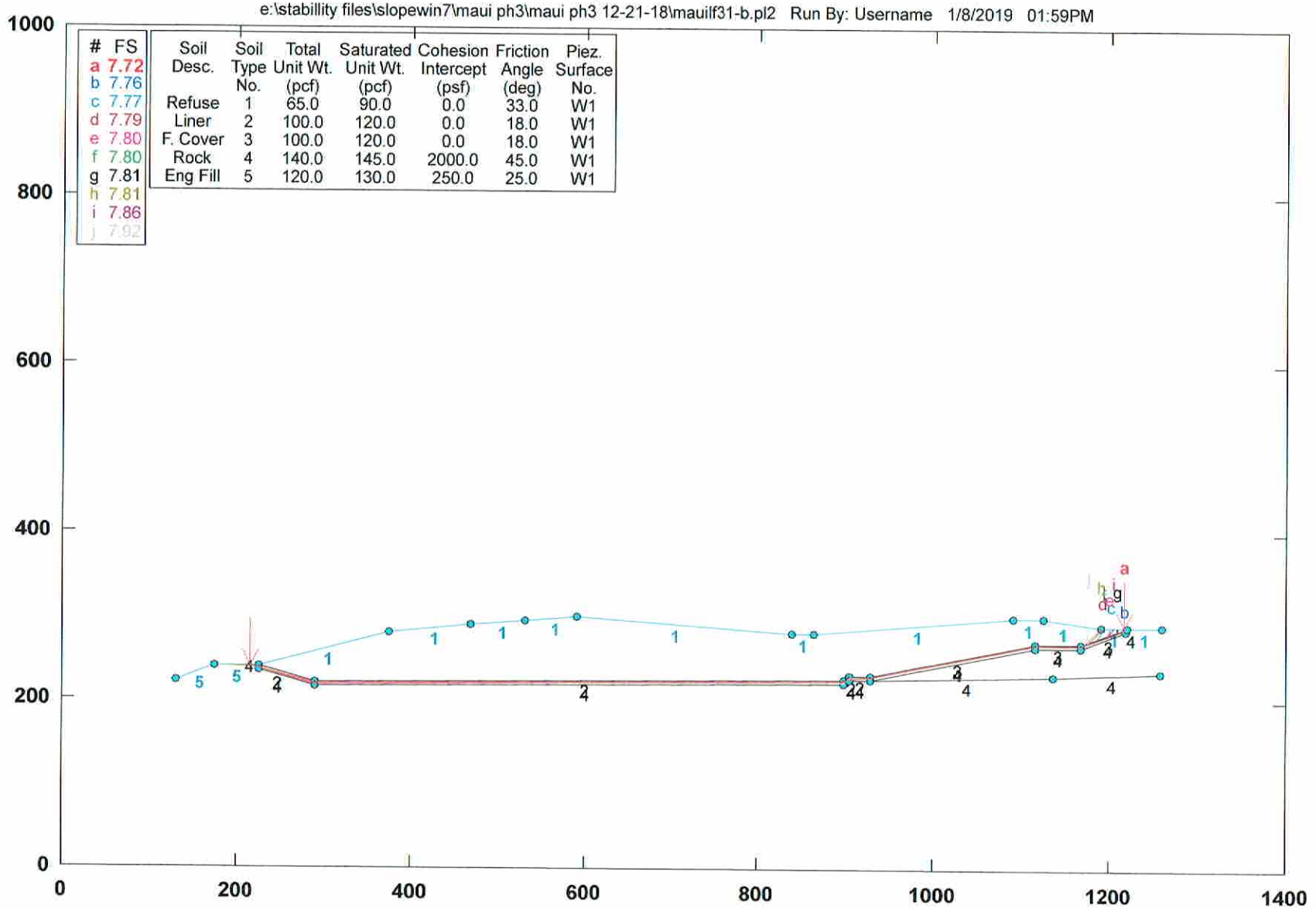


CML - ph III Slope Stab. Section III-S3 Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 12-21-18\mauilf31-b.pl2 Run By: Username 1/8/2019 01:59PM

#	FS
a	7.72
b	7.76
c	7.77
d	7.79
e	7.80
f	7.80
g	7.81
h	7.81
i	7.86
j	7.92

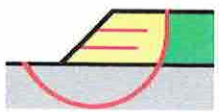
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=7.72

Safety Factors Are Calculated By The Modified Janbu Method

STED

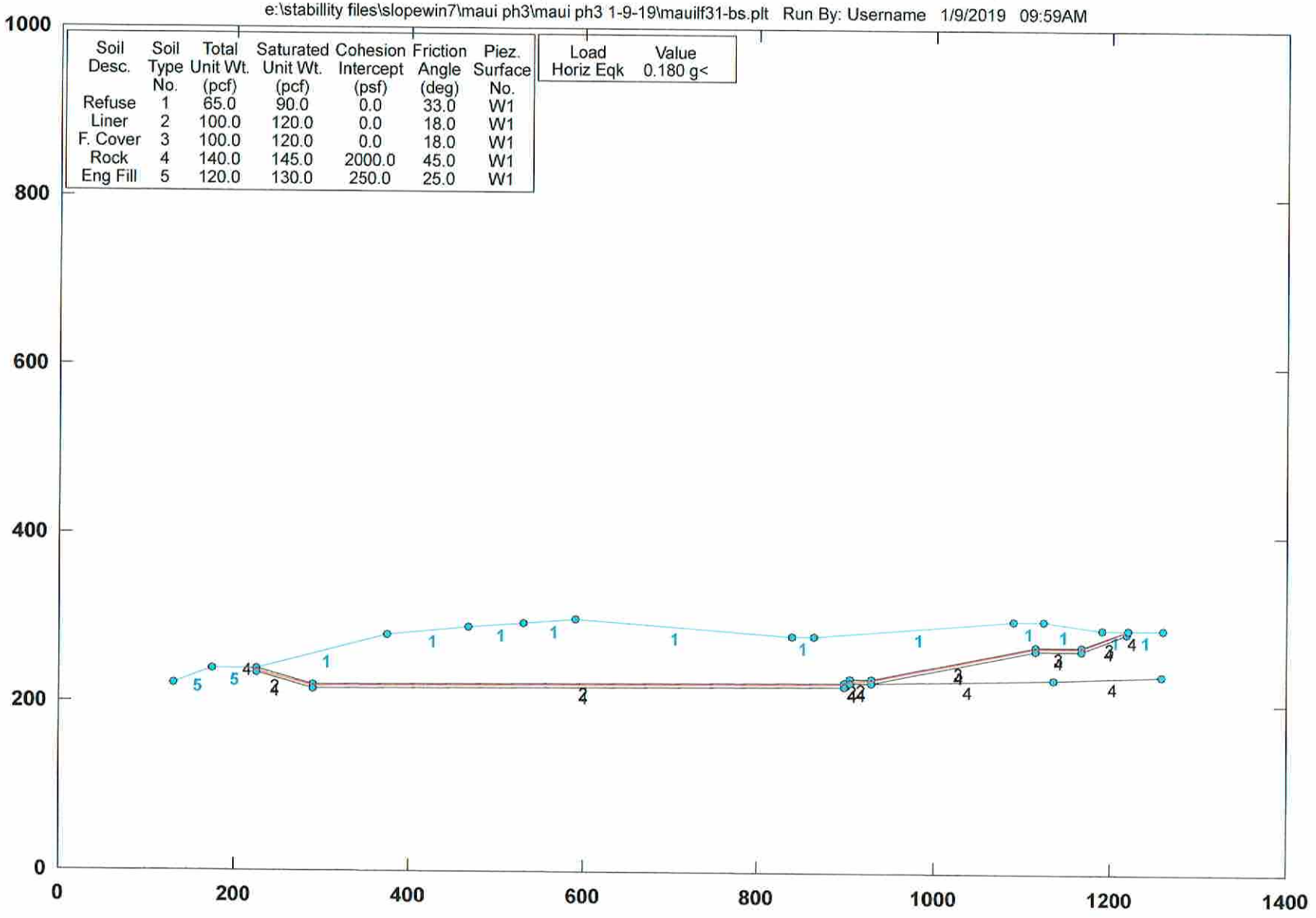


CML - ph III Slope Stab. Section III-S3 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf31-bs.plt Run By: Username 1/9/2019 09:59AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

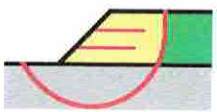
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.47

Factors of Safety Calculated by Janbu Method

STED

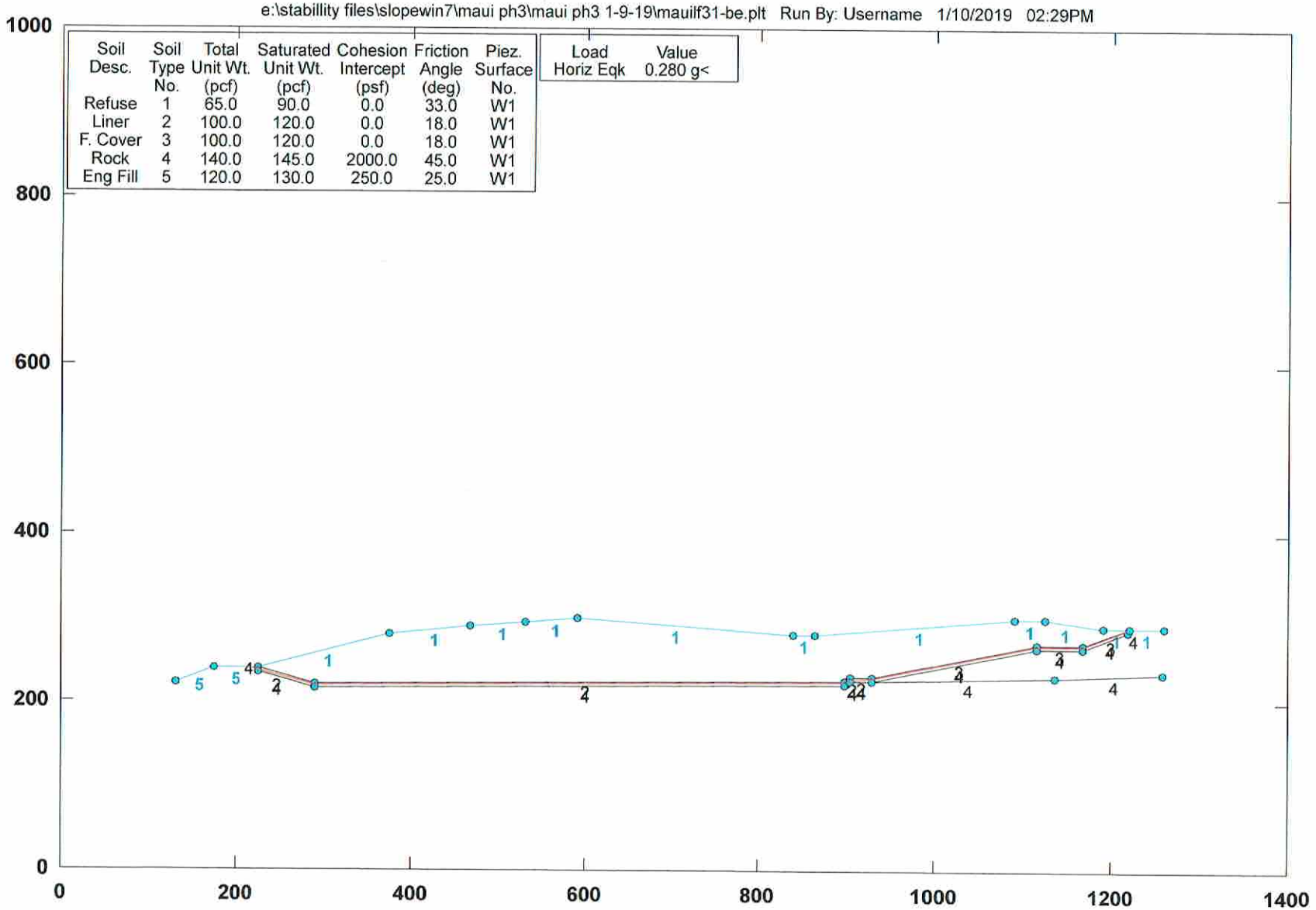


CML - ph III Slope Stab. Section III-S3 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf31-be.plt Run By: Username 1/10/2019 02:29PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

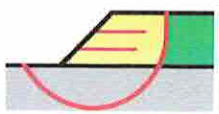
Load	Value
Horiz Eqk	0.280 g<



PCSTABL5M/si FSmin=1.01

Factors of Safety Calculated by Janbu Method

STED

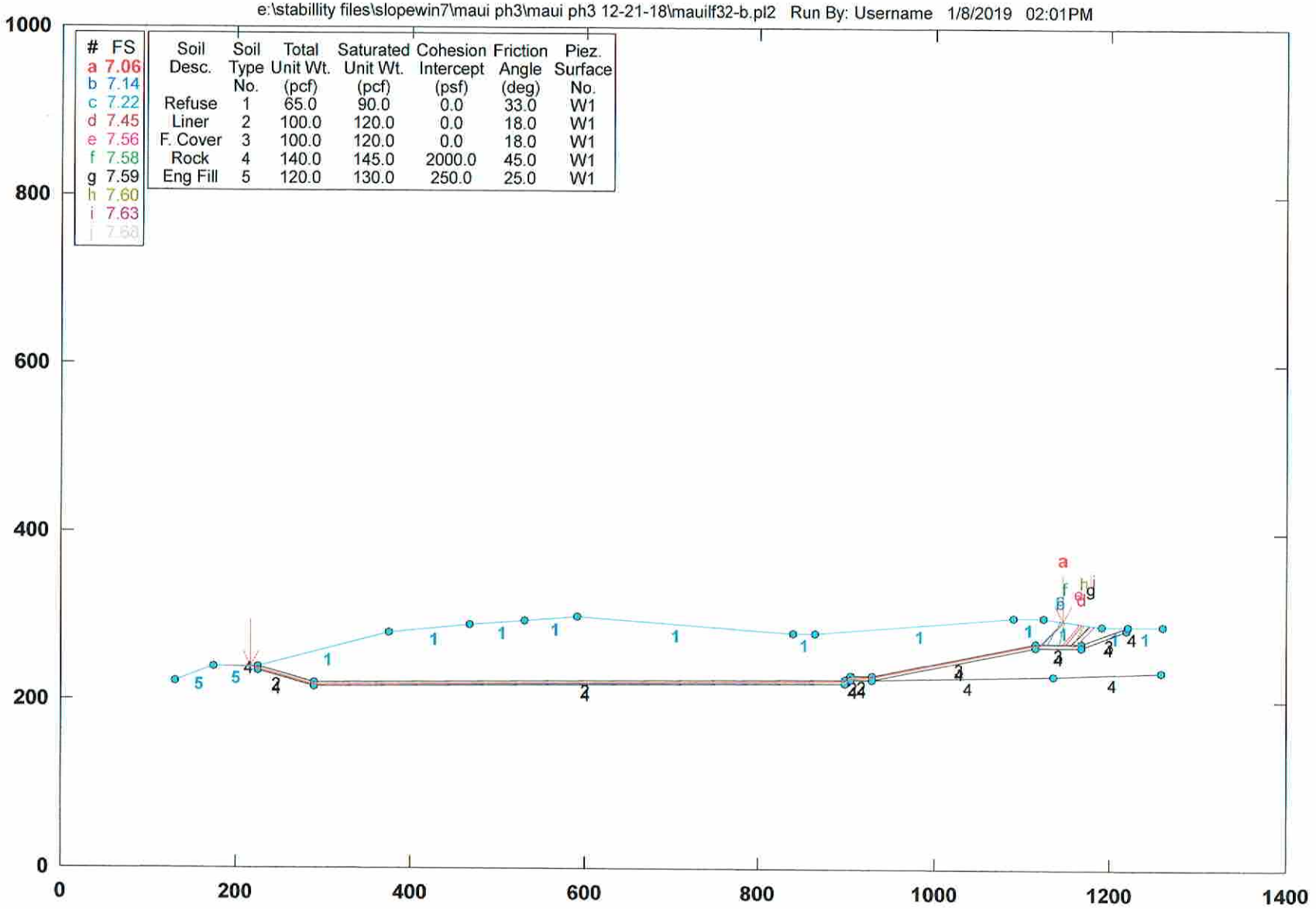


CML - ph III Slope Stab. Section III-S3 Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 12-21-18\mauilf32-b.pl2 Run By: Username 1/8/2019 02:01PM

#	FS
a	7.06
b	7.14
c	7.22
d	7.45
e	7.56
f	7.58
g	7.59
h	7.60
i	7.63
j	7.68

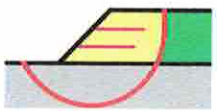
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=7.06

Safety Factors Are Calculated By The Modified Janbu Method

STED

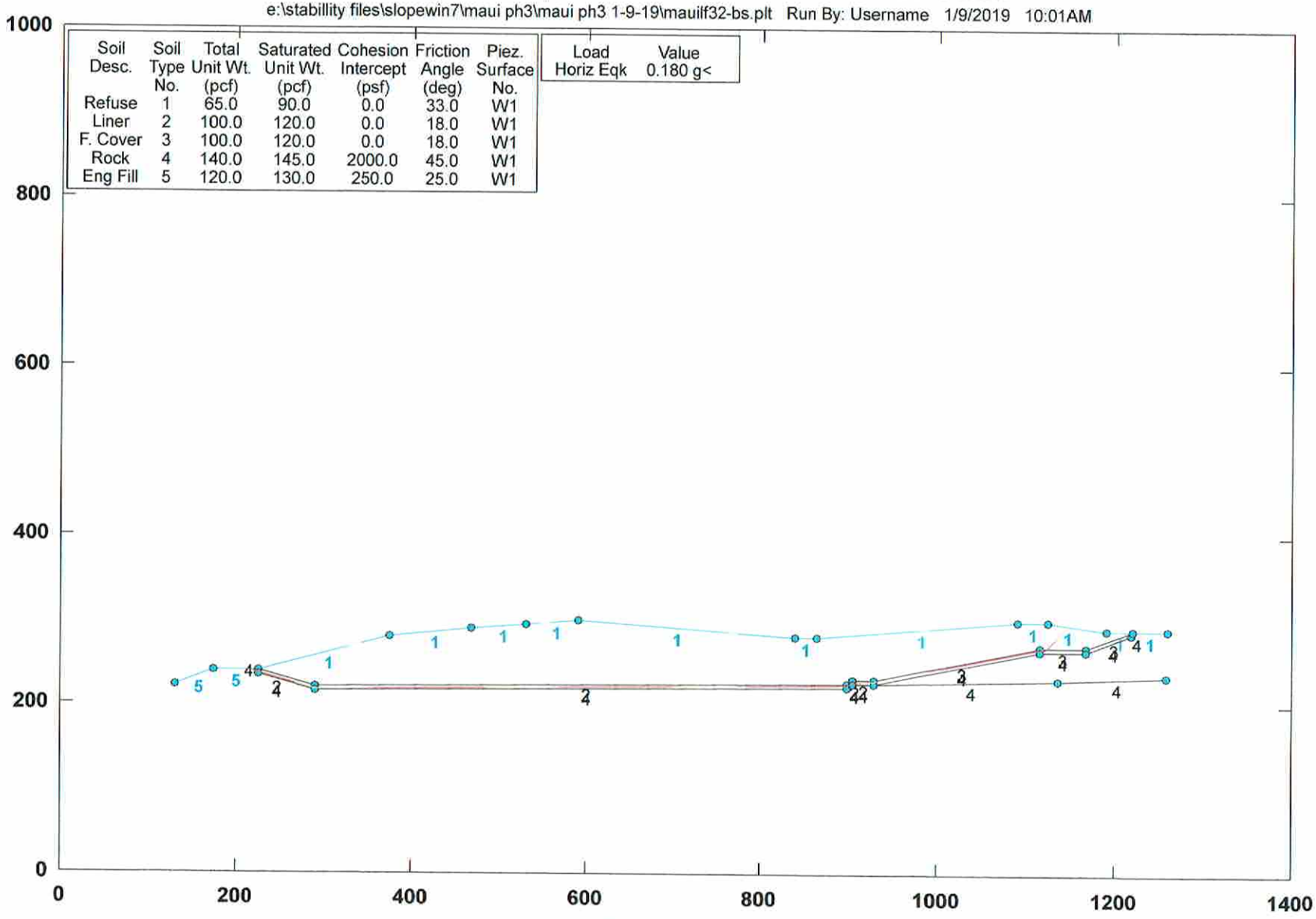


CML - ph III Slope Stab. Section III-S3 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf32-bs.plt Run By: Username 1/9/2019 10:01AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.46

Factors of Safety Calculated by Janbu Method

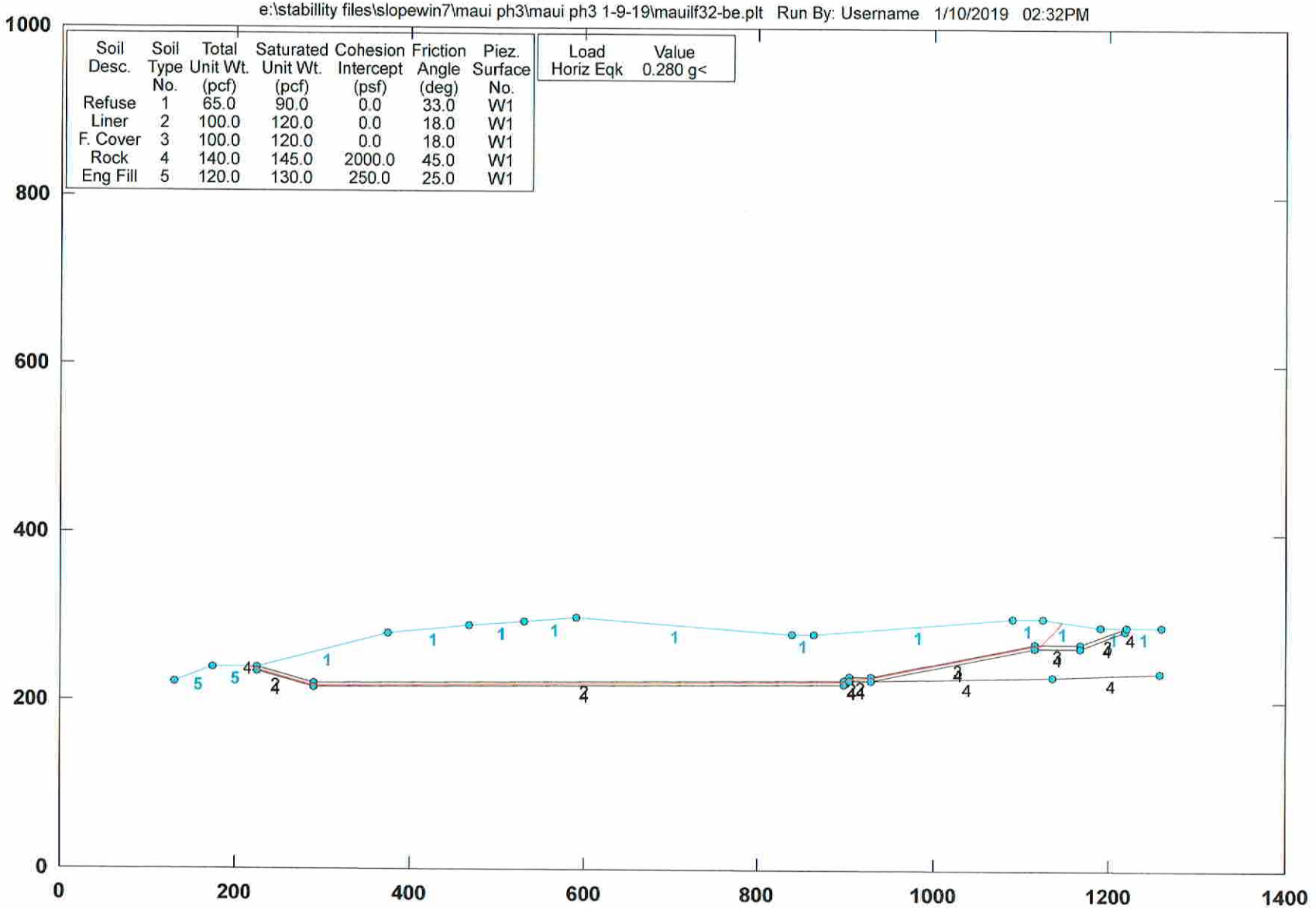
STED

CML - ph III Slope Stab. Section III-S3 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf32-be.plt Run By: Username 1/10/2019 02:32PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

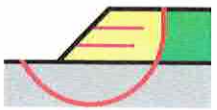
Load	Value
Horiz Eqk	0.280 g<



PCSTABL5M/si FSmin=1.01

Factors of Safety Calculated by Janbu Method

STED

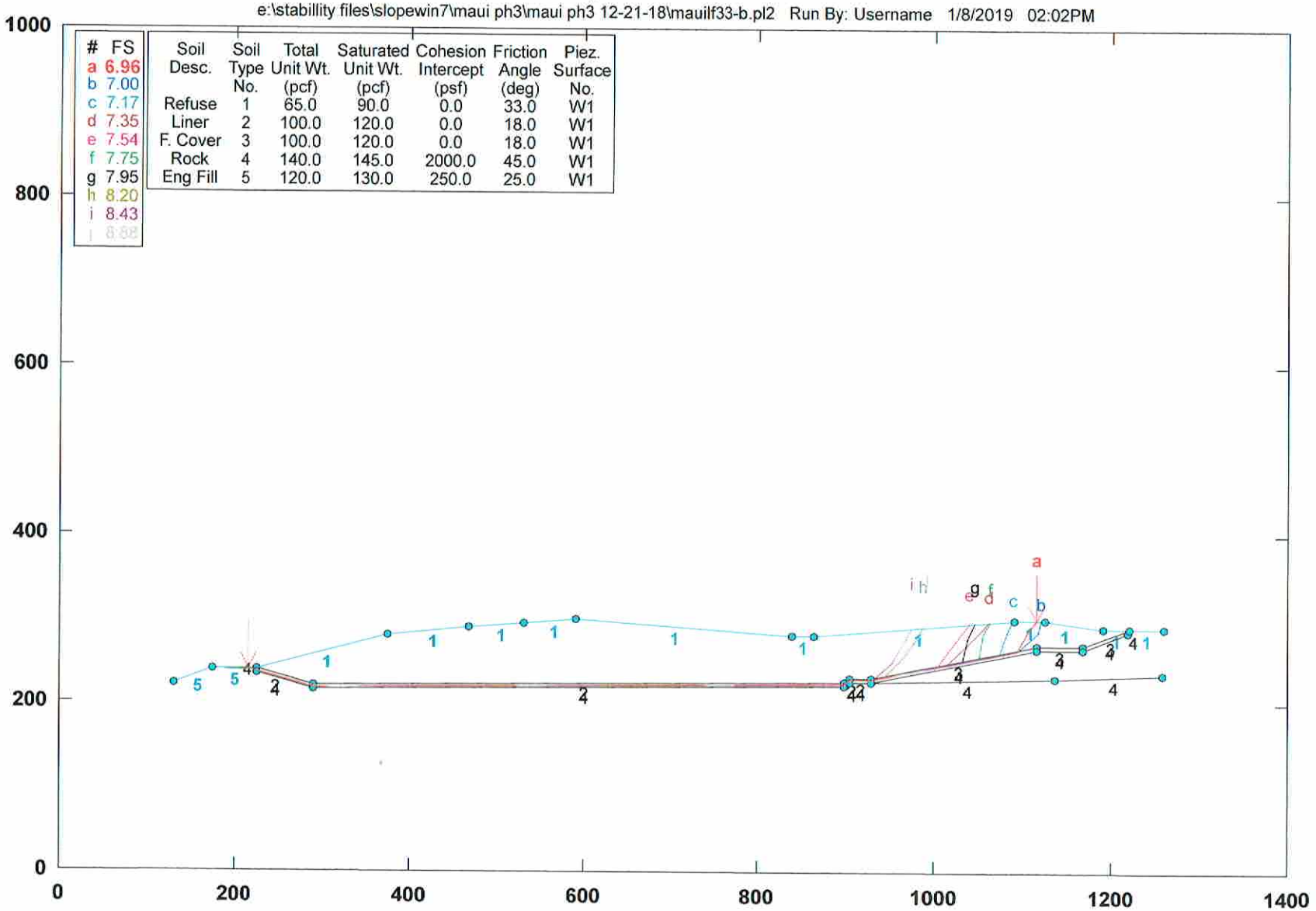


CML - ph III Slope Stab. Section III-S3 Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 12-21-18\mauilf33-b.pl2 Run By: Username 1/8/2019 02:02PM

#	FS
a	6.96
b	7.00
c	7.17
d	7.35
e	7.54
f	7.75
g	7.95
h	8.20
i	8.43
j	8.68

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=6.96

Safety Factors Are Calculated By The Modified Janbu Method

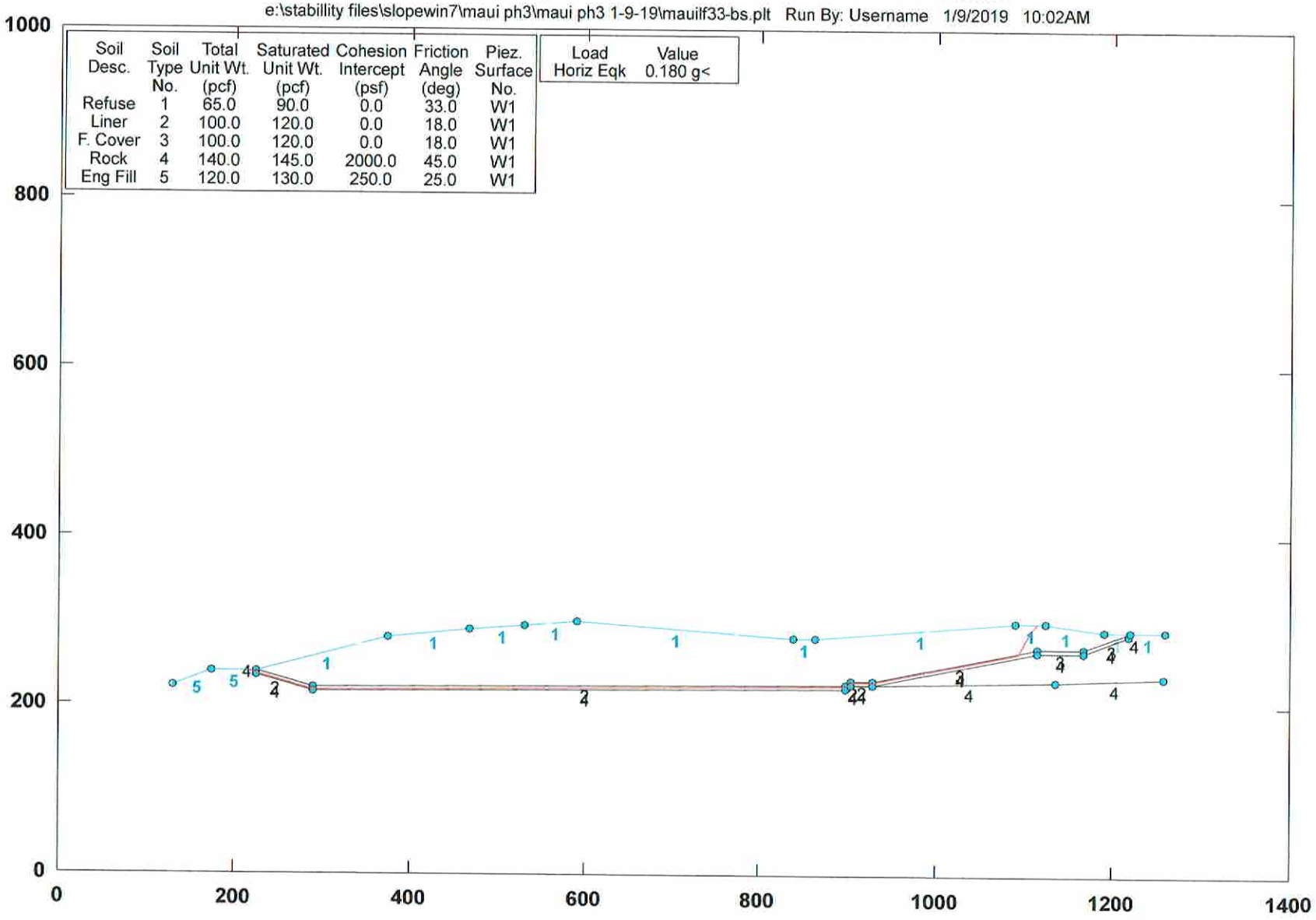
STED

CML - ph III Slope Stab. Section III-S3 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf33-bs.plt Run By: Username 1/9/2019 10:02AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

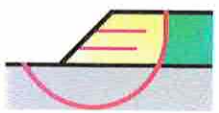
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.47

Factors of Safety Calculated by Janbu Method

STED

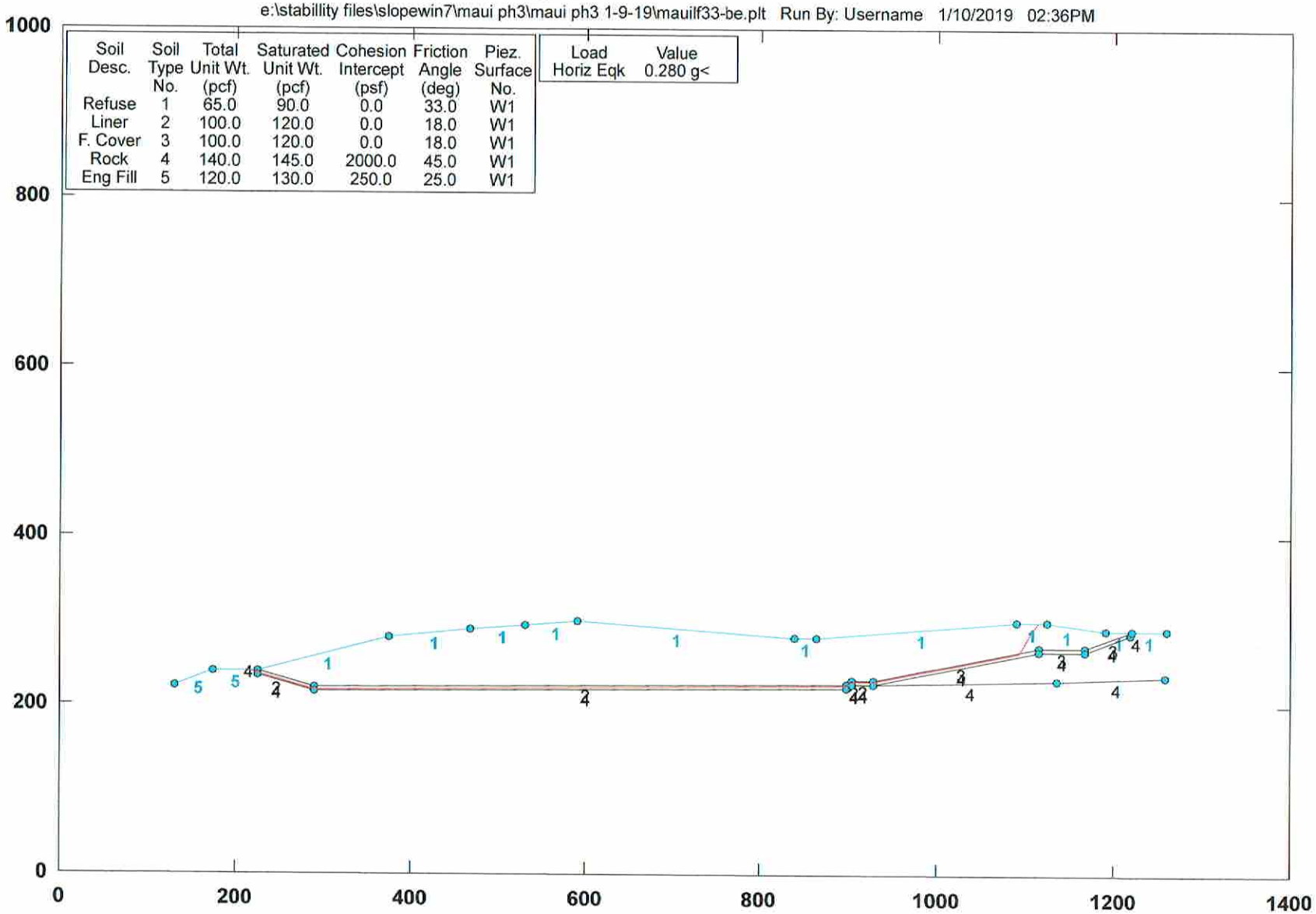


CML - ph III Slope Stab. Section III-S3 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf33-be.plt Run By: Username 1/10/2019 02:36PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

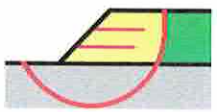
Load	Value
Horiz Eqk	0.280 g<



PCSTABL5M/si FSmin=1.01

Factors of Safety Calculated by Janbu Method

STED

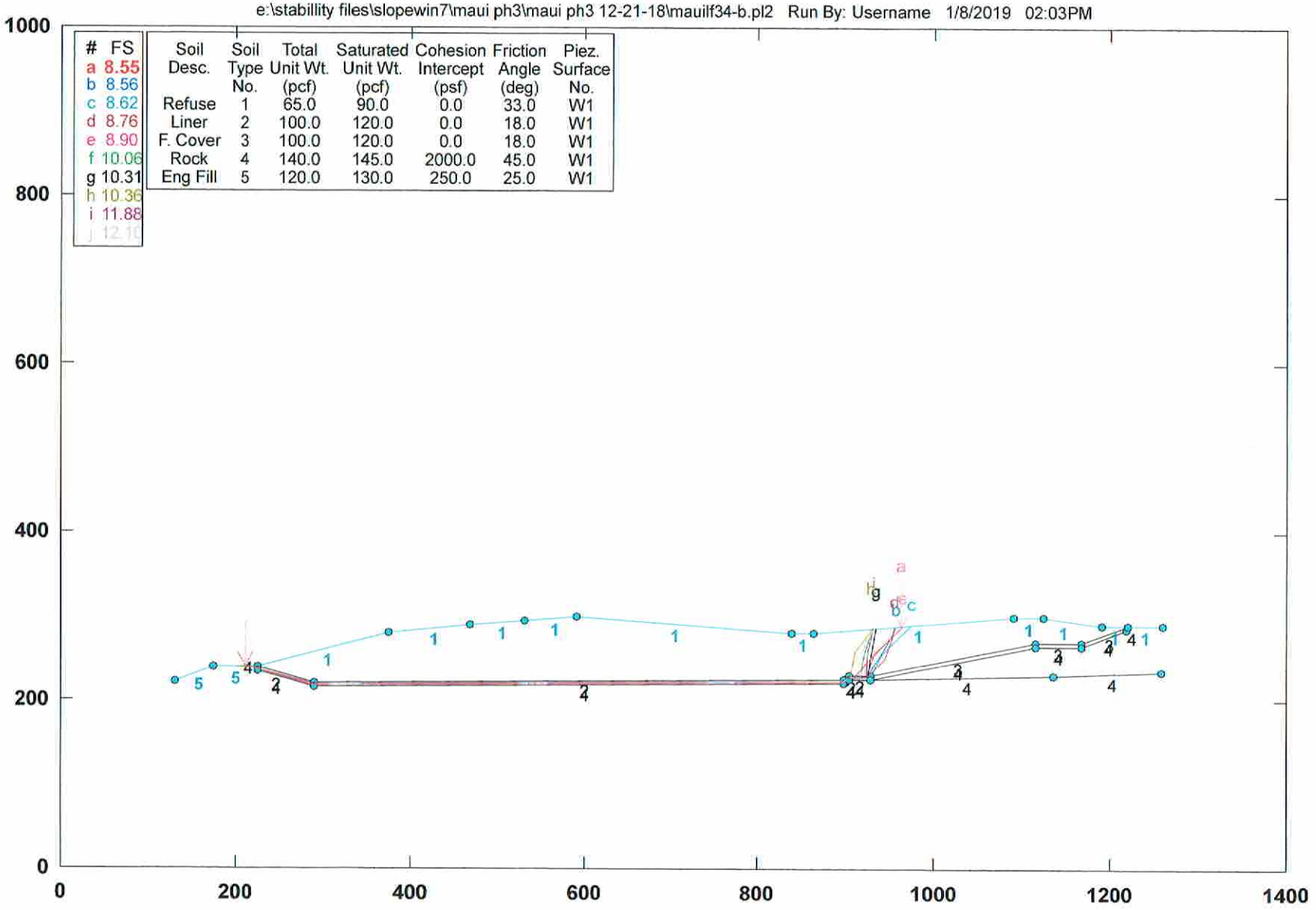


CML - ph III Slope Stab. Section III-S3 Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 12-21-18\mauilf34-b.pl2 Run By: Username 1/8/2019 02:03PM

#	FS
a	8.55
b	8.56
c	8.62
d	8.76
e	8.90
f	10.06
g	10.31
h	10.36
i	11.88
j	12.10

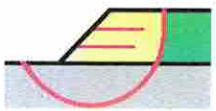
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=8.55

Safety Factors Are Calculated By The Modified Janbu Method

STED

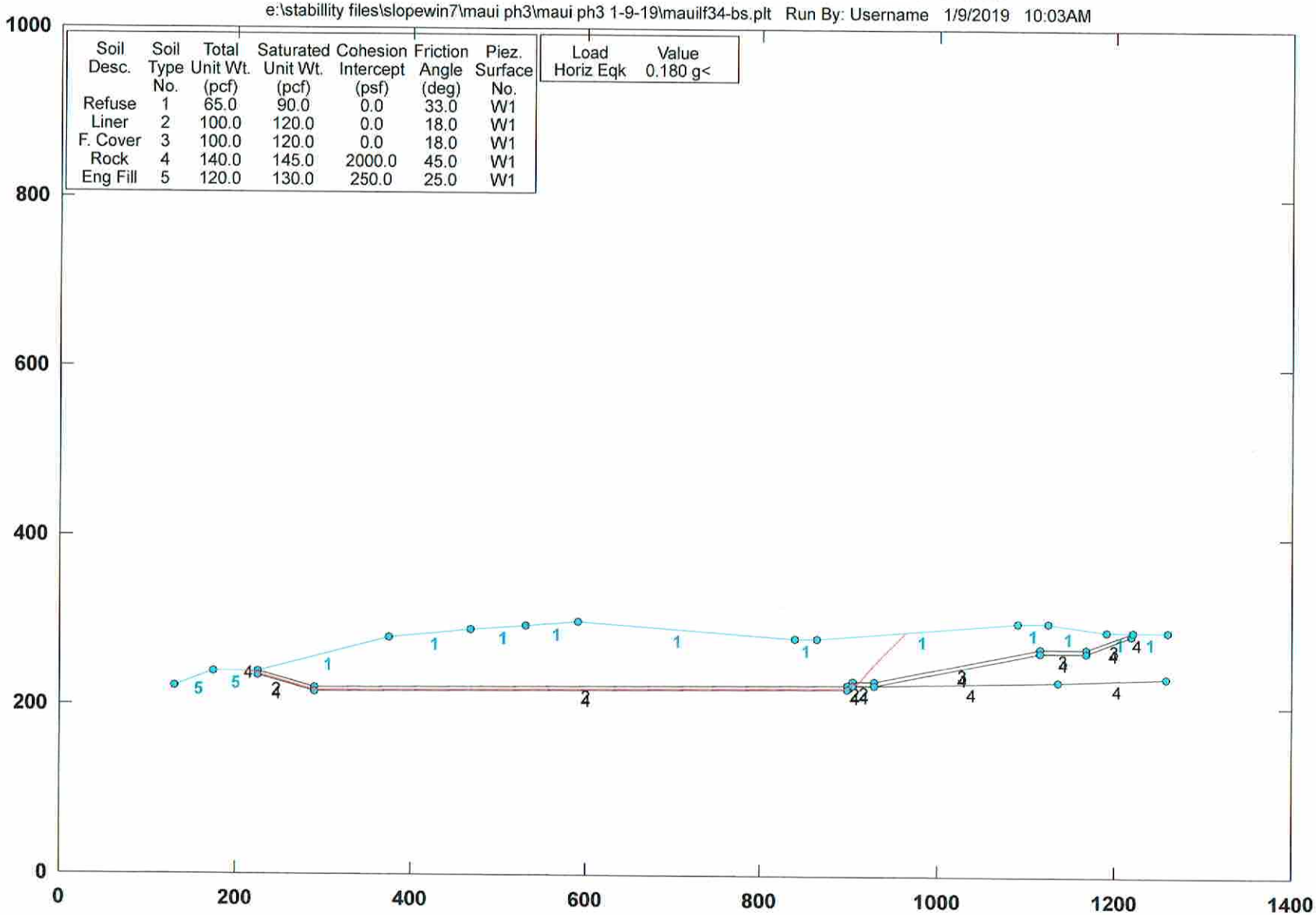


CML - ph III Slope Stab. Section III-S3 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf34-bs.plt Run By: Username 1/9/2019 10:03AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

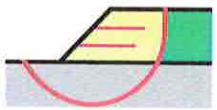
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.58

Factors of Safety Calculated by Janbu Method

STED

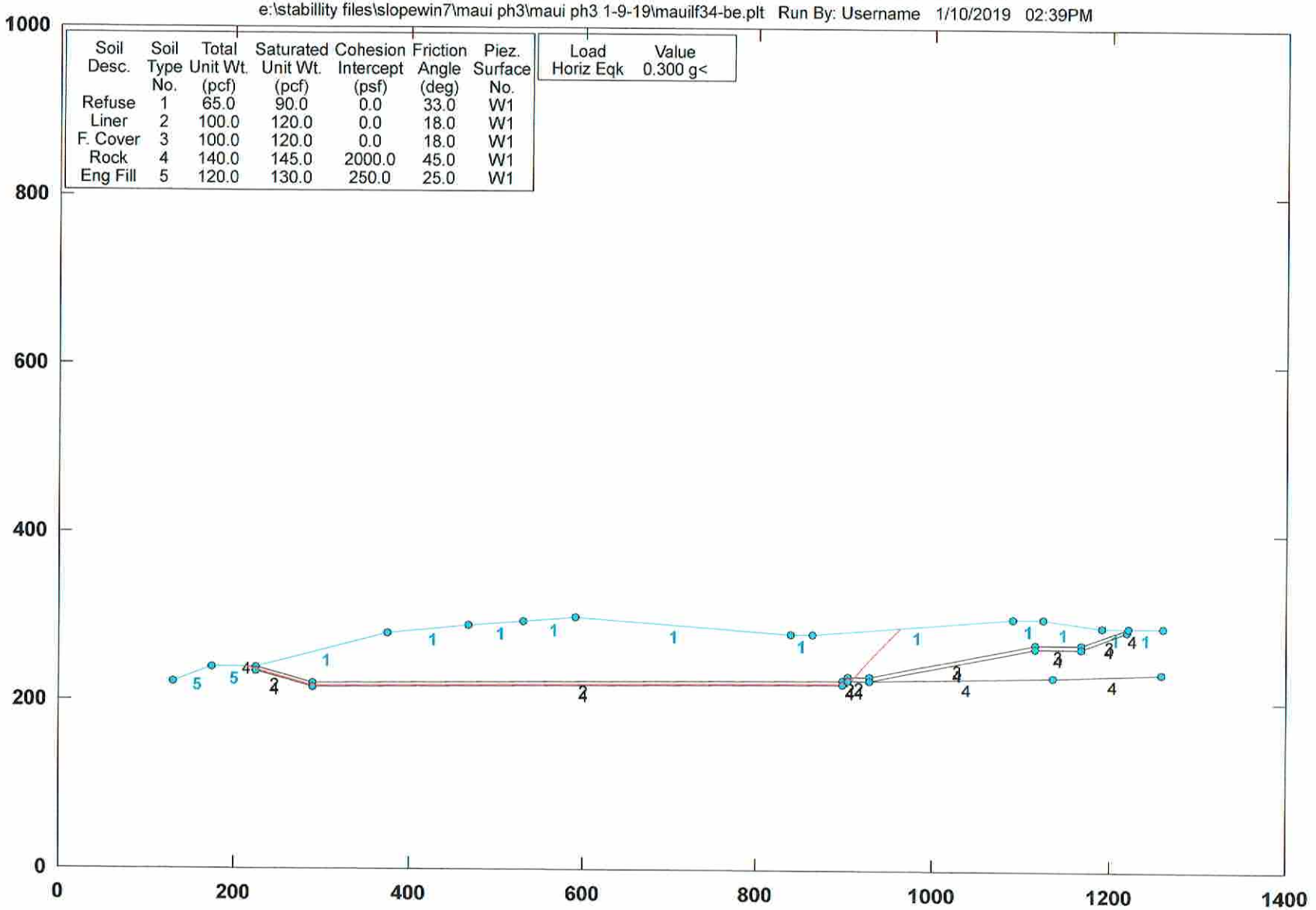


CML - ph III Slope Stab. Section III-S3 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf34-be.plt Run By: Username 1/10/2019 02:39PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

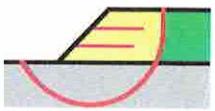
Load	Value
Horiz Eqk	0.300 g<



PCSTABL5M/si FSmin=1.01

Factors of Safety Calculated by Janbu Method

STED

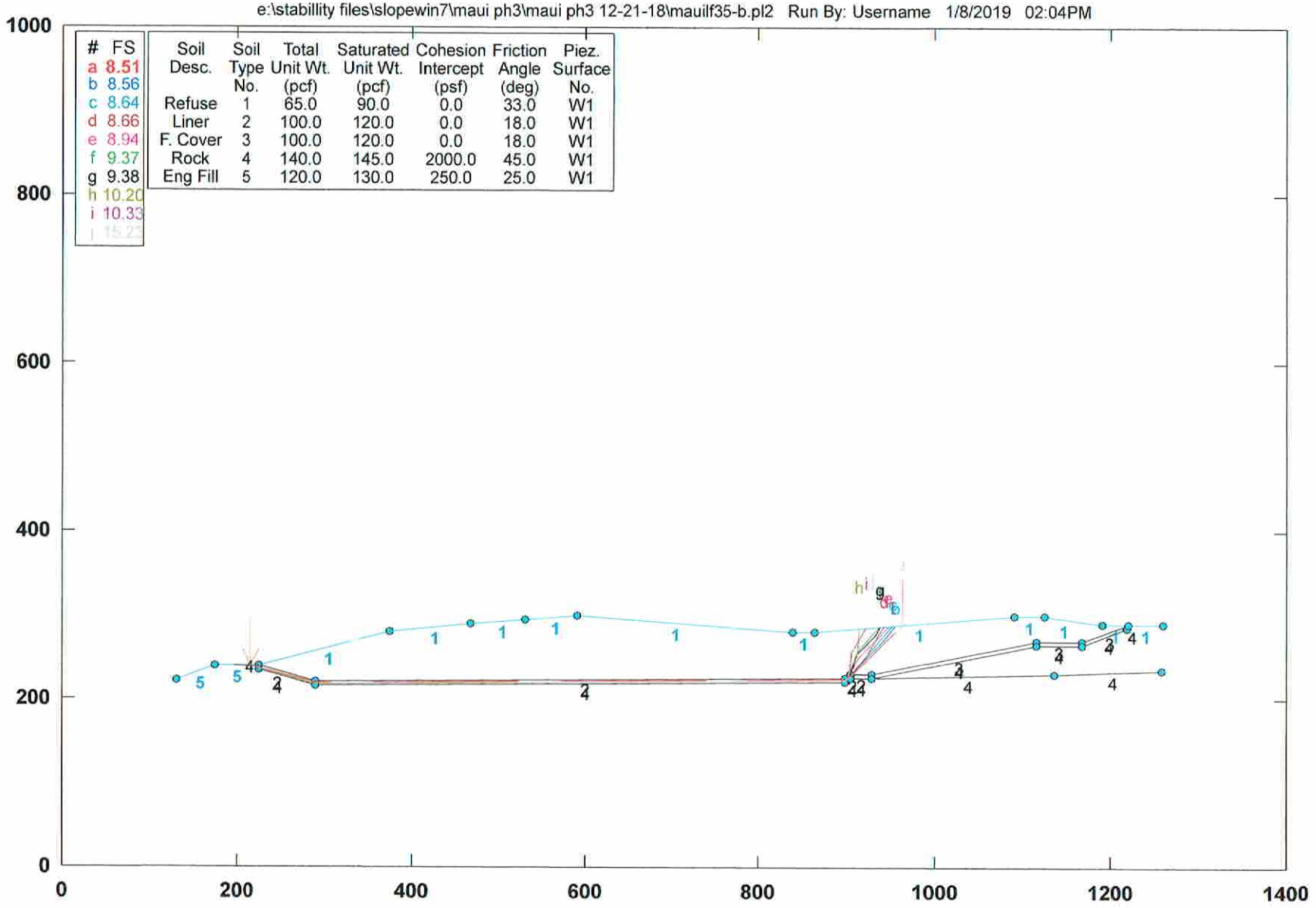


CML - ph III Slope Stab. Section III-S3 Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 12-21-18\mauilf35-b.pl2 Run By: Username 1/8/2019 02:04PM

#	FS
a	8.51
b	8.56
c	8.64
d	8.66
e	8.94
f	9.37
g	9.38
h	10.20
i	10.33
j	15.23

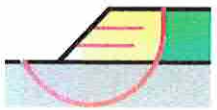
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=8.51

Safety Factors Are Calculated By The Modified Janbu Method

STED

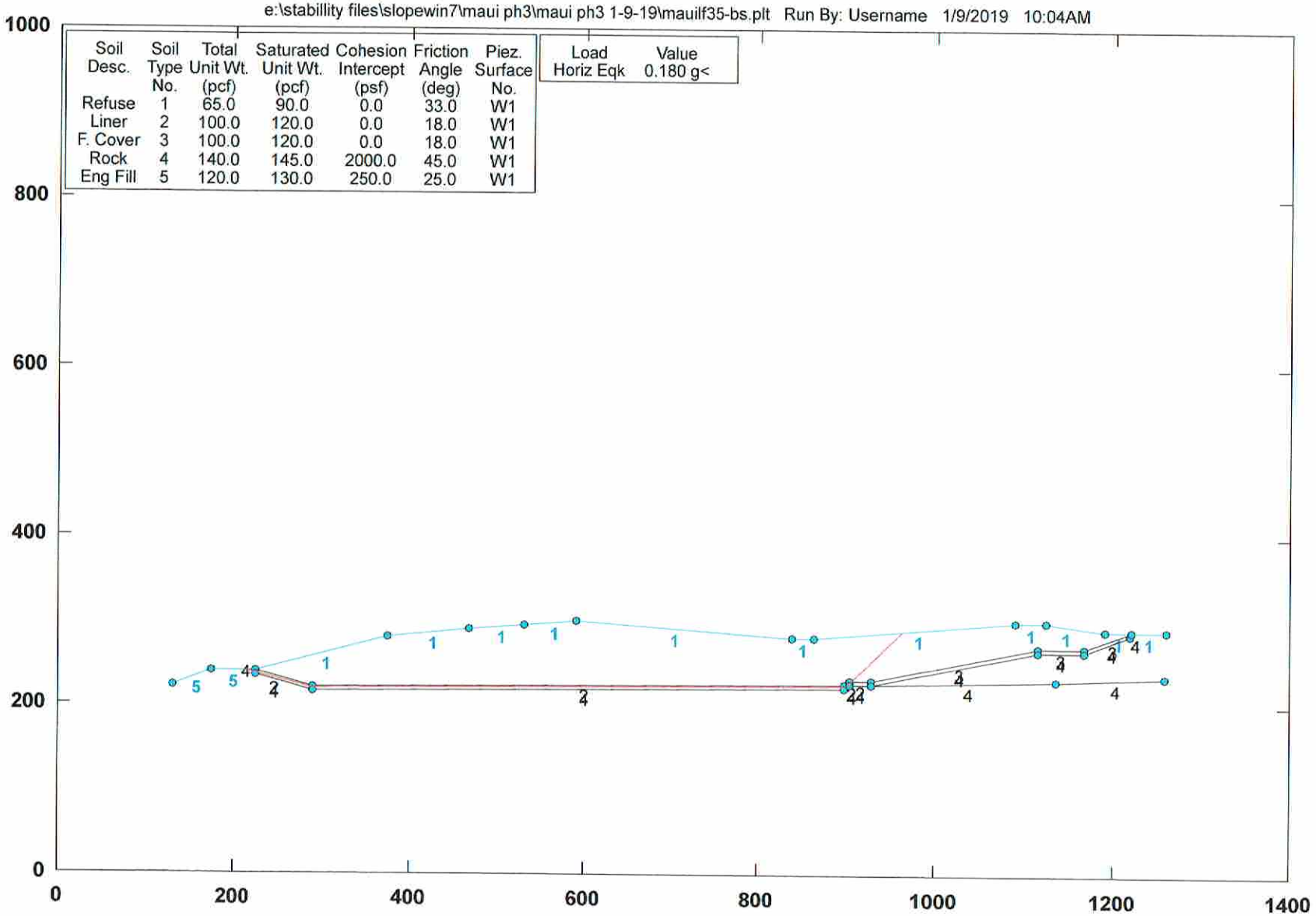


CML - ph III Slope Stab. Section III-S3 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf35-bs.plt Run By: Username 1/9/2019 10:04AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

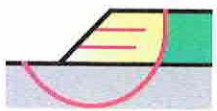
Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.58

Factors of Safety Calculated by Janbu Method

STED

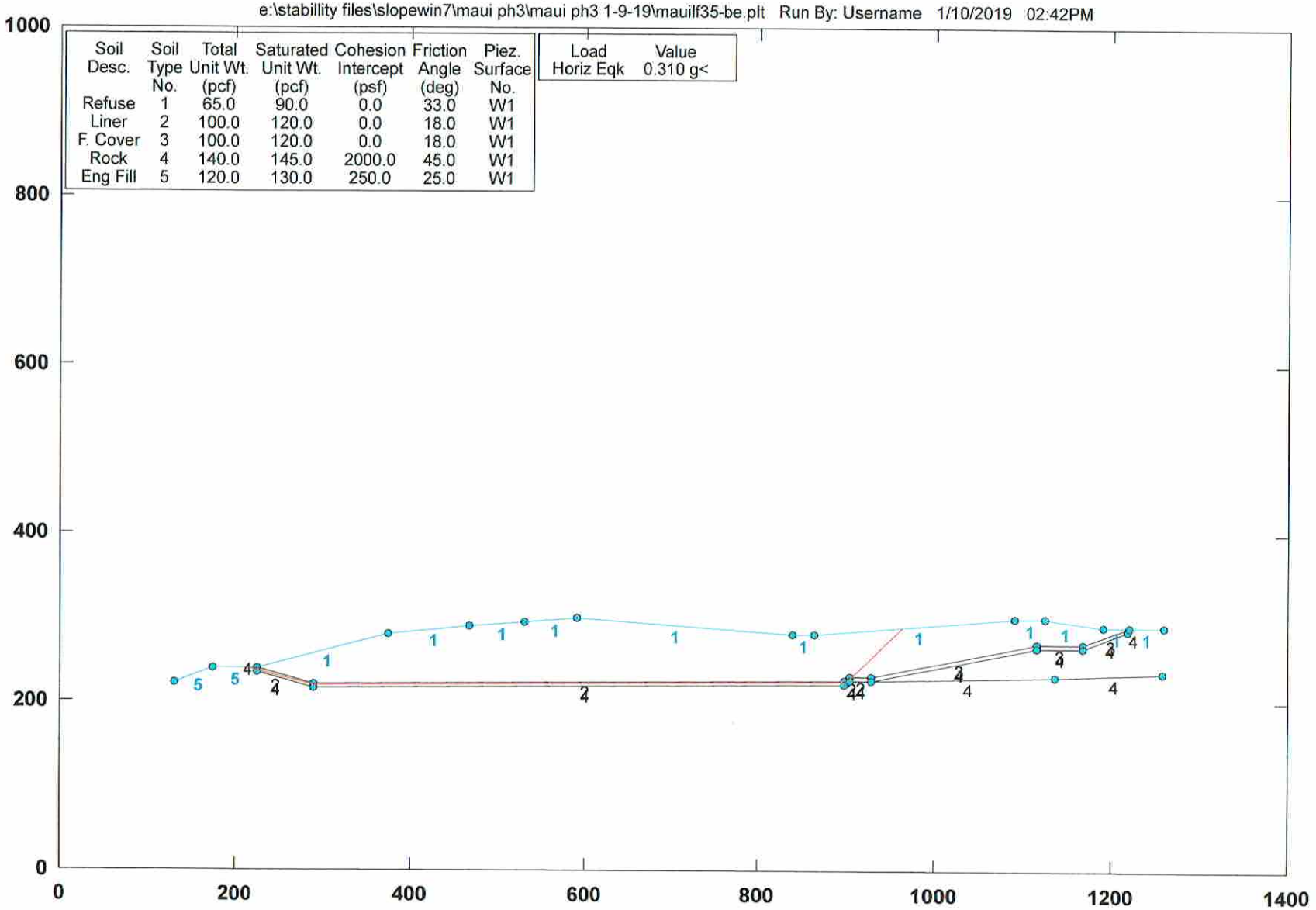


CML - ph III Slope Stab. Section III-S3 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf35-be.plt Run By: Username 1/10/2019 02:42PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

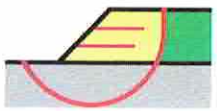
Load	Value
Horiz Eqk	0.310 g<



PCSTABL5M/si FSmin=0.98

Factors of Safety Calculated by Janbu Method

STED

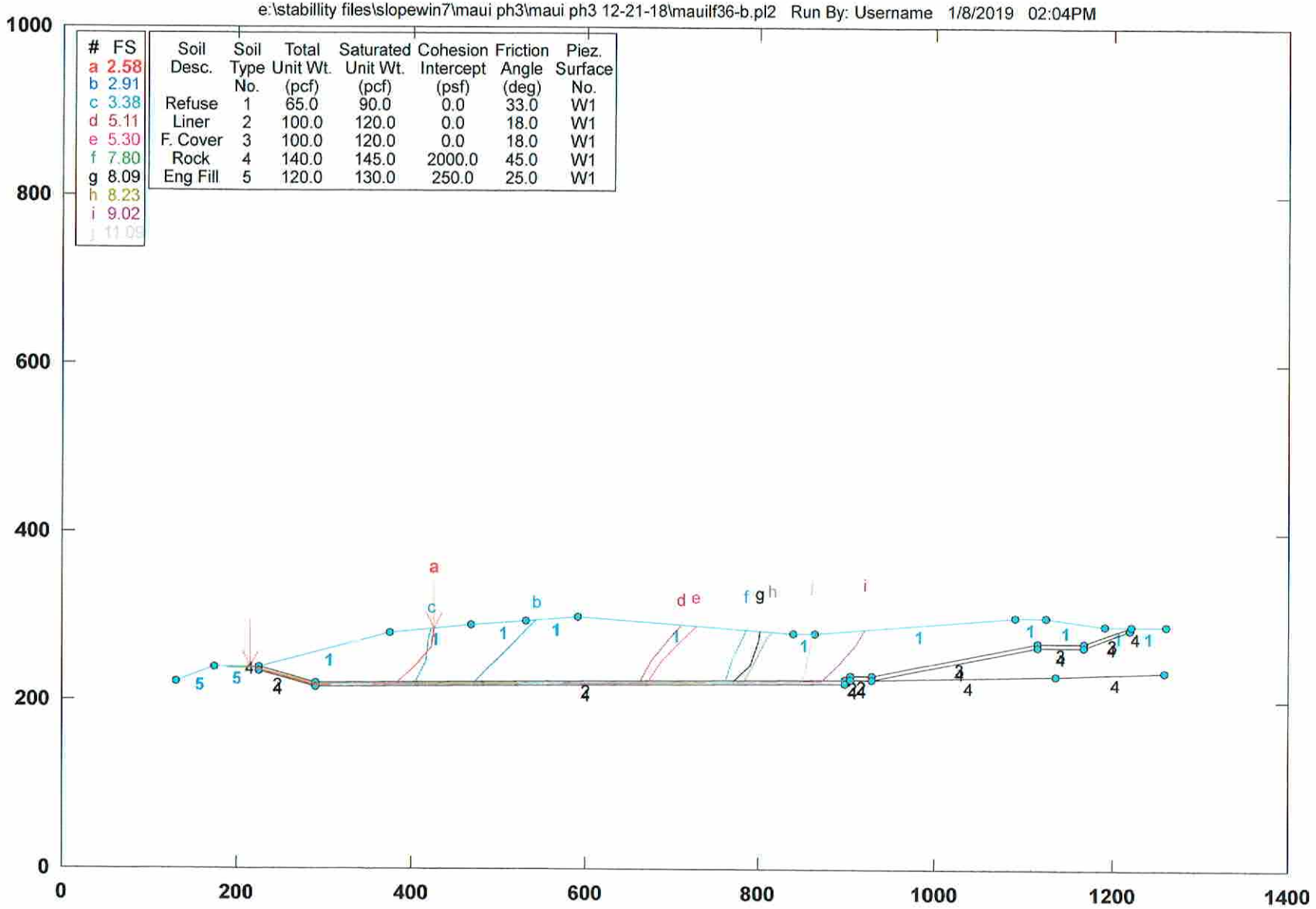


CML - ph III Slope Stab. Section III-S3 Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 12-21-18\mauilf36-b.pl2 Run By: Username 1/8/2019 02:04PM

#	FS
a	2.58
b	2.91
c	3.38
d	5.11
e	5.30
f	7.80
g	8.09
h	8.23
i	9.02
j	11.09

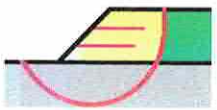
Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1



PCSTABL5M/si FSmin=2.58

Safety Factors Are Calculated By The Modified Janbu Method

STED

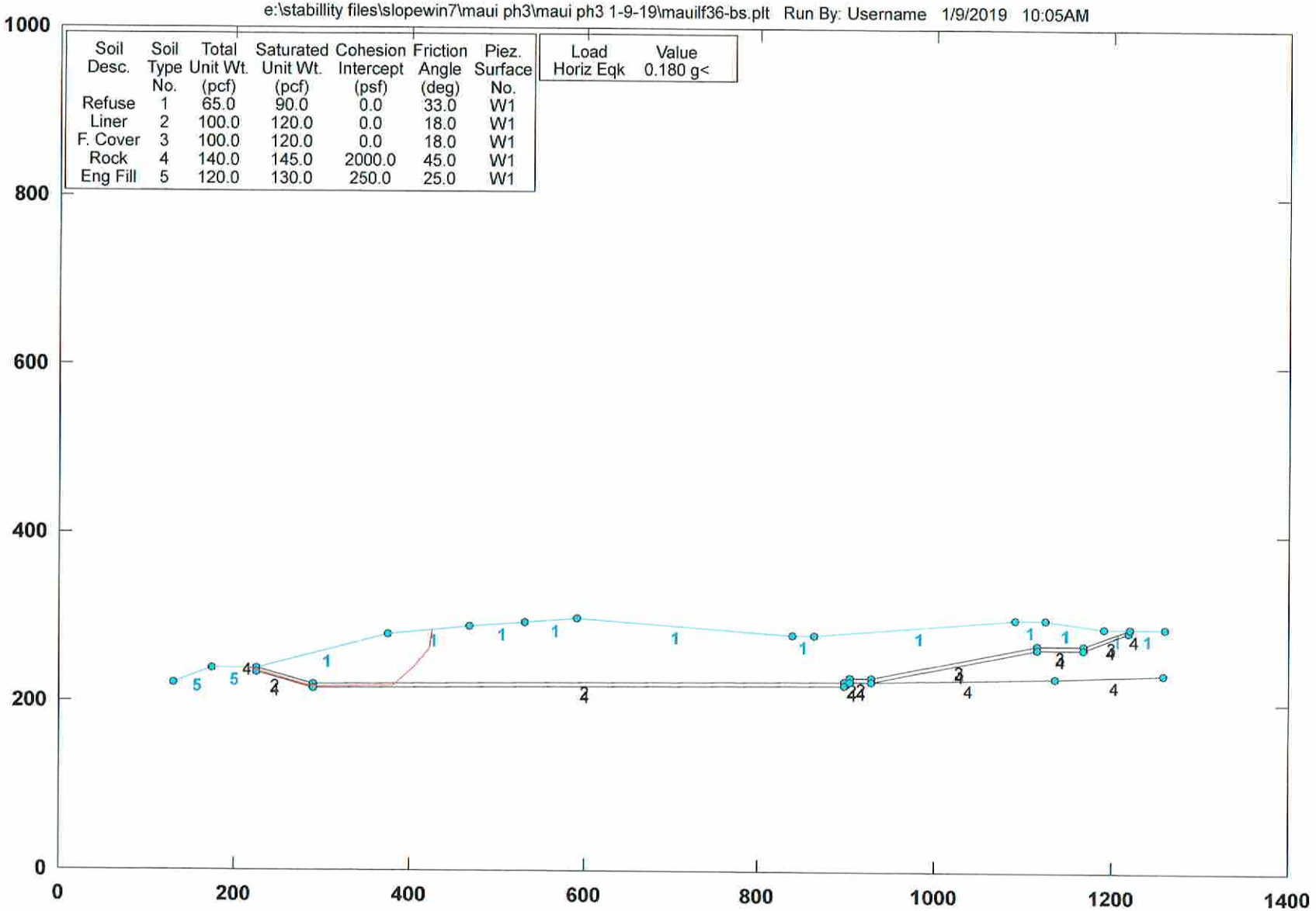


CML - ph III Slope Stab. Section III-S3 Pseudo-Static

e:\stabillity files\slopewin7\maui ph3\maui ph3 1-9-19\mauilf36-bs.plt Run By: Username 1/9/2019 10:05AM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Refuse	1	65.0	90.0	0.0	33.0	W1
Liner	2	100.0	120.0	0.0	18.0	W1
F. Cover	3	100.0	120.0	0.0	18.0	W1
Rock	4	140.0	145.0	2000.0	45.0	W1
Eng Fill	5	120.0	130.0	250.0	25.0	W1

Load	Value
Horiz Eqk	0.180 g<



PCSTABL5M/si FSmin=1.25

Factors of Safety Calculated by Janbu Method

STED