Former Mt. Tom Station Power Plant
200 Northampton Street
Holyoke, Massachusetts

Initial Safety Factor Assessment Bottom Ash Basin A

Mt. Tom Generating Company LLC
Houston, Texas

May 2026

Certification

CCR Unit: Mt. Tom Generating Company LLC; former Mt. Tom Generating Station; Bottom Ash Basin A

I hereby certify, to the best of my knowledge, information, and belief:

1) That the information contained in this certification is prepared in general accordance with the accepted practice of engineering; and
2) That the initial safety factor assessment of the Mt. Tom Generating Station Bottom Ash Basin A meets the requirements specified in 40 CFR § 257.73(e)(1).

Printed Name DANIEL E. GNATEK

Date 5/7/2026

Table of Contents

SECTION 1 | Introduction 1-1

1.1 Background 1-1

1.2 Purpose 1-1

1.3 Rule Requirements 1-1

1.4 Scope of Work 1-2

1.5 LSI Description 1-3

1.5.1 Location 1-3

1.5.2 Owner/Operator 1-3

1.5.3 Purpose of the LSI 1-3

1.5.4 Description of the LSI and Appurtenances 1-3

SECTION 2 | Subsurface Conditions 2-5

2.1 Local Geology 2-5

2.2 Previous Subsurface Exploration Programs 2-5

2.2.1 Borings 2-5

2.2.2 Laboratory Testing 2-6

2.3 Recent Subsurface Exploration Program 2-6

2.3.1 Borings 2-6

2.3.2 Laboratory Testing 2-6

2.4 Summary of Subsurface Conditions 2-6

2.4.1 Embankment 2-6

2.4.2 West of Embankment 2-7

2.5 Seismic Site Class 2-8

SECTION 3 | Stability Analysis 3-1

3.1 Liquefaction Evaluation 3-1

3.2 Development of Cross Section 3-1

3.3 Global Stability Evaluation 3-2

3.3.1 Stability Results (Existing Conditions) 3-3

3.3.2 Stability Conclusions 3-3

SECTION 4 | Record Keeping 4-4

Tables

TABLE 2-1 Description of Subsurface Conditions Encountered (Embankment) 2-7
TABLE 2-2 Description of Subsurface Conditions Encountered (West of Embankment) 2-8
TABLE 3-1 Material Parameters for Stability Analysis 3-2
TABLE 3-2 Description of Subsurface Conditions Encountered 3-3

Figures

Figure 1: Site Location
Figure 2: Surficial Materials
Figure 3: Bedrock Lithology
Figure 4: Subsurface Exploration Plan

Appendices

Appendix A: Previous Exploration Logs
Appendix B: Recent Exploration Logs
Appendix C: Lab Testing Results
Appendix D: Stability Analysis Output

SECTION 1 | Introduction

1.1 Background

Mt. Tom Station is a former coal-fired electrical generating plant located at 200 Northampton Street (US-5) in Holyoke, Massachusetts (the "site"). The site is approximately 143 acres in size and is abutted by the Connecticut River to the east, residential properties to the south, US-5 and an active railroad corridor to the west, and undeveloped, forested properties to the north. Historical key site features included the former electrical generation plant buildings on the northern portion of the site, a former coal storage location with runoff control area, three former wastewater basins and associated treatment facility located south of the former generation plant building, and several former coal combustion residuals management units ("CCRMUs").

In accordance with the 2018 Massachusetts Department of Environmental Protection (MassDEP) Administrative Consent Order (ACO-00002589) ("ACO") and corresponding regulatory approvals, the power plant and associated infrastructure and appurtenances have been demolished or abandoned in place. Ash from the combustion of coal and fuel oil has historically been deposited throughout portions of the site, generally south and west of the former generation facility infrastructure. Two traditional solid waste landfills are located at the site; a former municipal landfill that received solid waste from the City of Holyoke, and a former plant dump/landfill that received refuse and solid waste generated on-site. The only remaining structure is an active electrical substation located to the east of the former generation plant building, which is owned and operated by Eversource Energy. Transmission lines run both north and south of the substation and run along the eastern portion of the site.

The southernmost portion of the site property was historically used for agriculture but was developed as a photovoltaic solar and battery storage facility in 2016. This portion of the property is improved with multiple solar panels, battery storage, electrical distribution infrastructure and three electrical transformers.

1.2 Purpose

On behalf of Mt. Tom Generating Company LLC ("MTGC"), a wholly owned indirect subsidiary of ENGIE North America, Inc., Tighe & Bond, Inc. (Tighe & Bond) has prepared this Initial Safety Factor Assessment report in accordance with the requirements of the Environmental Protection Agency (EPA) Coal Combustion Residuals ("CCR") Legacy Surface Impoundments ("LSI") and CCRMU Final Rule, published at 40 CFR § 257, Subpart D-*Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments*, in tandem with Amendment 89 FR 39099, finalized May 8, 2024 ("CCR Final Rule").

1.3 Rule Requirements

According to § 257.73(b) of the CCR Final Rule, compilation of an Initial Safety Factor Assessment is required for each LSI that meets the following conditions:

1. *Has a height of 5 feet or more and a storage volume of 20 acre-feet or more; or*
2. *Has a height of 20 feet or more.*

Based on a review of available information, the LSI identified as Bottom Ash Basin A is the only structure on-site that meets the applicable conditions at § 257.73(b), with an embankment height greater than 5 feet and a maximum storage volume of approximately 29.3 acre-feet.

According to § 257.73(e) of the CCR Final Rule:

(1) The owner or operator must conduct an initial and periodic safety factor assessments for each CCR unit and document whether the calculated factors of safety for each CCR unit achieve the minimum safety factors specified in paragraphs (e)(1)(i) through (iv) of this section for the critical cross section of the embankment. The critical cross section is the cross section anticipated to be the most susceptible of all cross sections to structural failure based on appropriate engineering considerations, including loading conditions. The safety factor assessments must be supported by appropriate engineering calculations.

(i) The calculated static factor of safety under the long-term, maximum storage pool loading condition must equal or exceed 1.50.

(ii) The calculated static factor of safety under the maximum surcharge pool loading condition must equal or exceed 1.40.

(iii) The calculated seismic factor of safety must equal or exceed 1.00.

(iv) For dikes constructed of soils that have susceptibility to liquefaction, the calculated liquefaction factor of safety must equal or exceed 1.20.

(2) The owner or operator of the CCR unit must obtain a certification from a qualified professional engineer stating that the initial assessment and each subsequent periodic assessment specified in paragraph (e)(1) of this section meets the requirements of this section.

1.4 Scope of Work

Tighe & Bond performed the following tasks to prepare this report:

Review of Existing Information

- Available information on the LSI was provided by the MTGC. This information was used for the engineering effort involved in the evaluations and studies. The documents reviewed included:
    - Mt. Tom Generating Station Coal Reconversion, Hydrogeologic Study Preconversion Report, prepared by Gibbs & Hill, Inc., dated June 9, 1981
    - Report on Comprehensive Site Assessment for the Unlined Basins and Associated Inactive Landfill Areas in Support of ACO-WE-01-4002-A, Mount Tom Generating Station, Holyoke, Massachusetts, prepared by Haley & Aldrich, Inc., dated January 2003.

Subsurface Explorations

- A soil boring was drilled from the crest of the eastern embankment of Bottom Ash Basin A to evaluate subsurface conditions within the embankment and its foundation. Recovered soil samples were logged for soil type and density/consistency. Four mechanical Particle Size Analysis tests (American Society for Testing and Materials - ASTM D6913) were performed on soil samples collected during the exploration. A groundwater monitoring well was installed in the borehole to monitor water levels in the embankment.

Embankment Stability Analysis

- A stability analysis was conducted to evaluate the global stability of the embankment (not due to specific defects) and identify the general need for remedial measures. Input parameters were based on "Plan of Land in Holyoke & Easthampton, MA" prepared by Sherman & Frydryk, dated September 18, 2018, LiDAR topographic information accessed via the National Oceanic and Atmospheric Administration ("NOAA") Digital Coast Data Access View, conditions observed during the subsurface explorations, results from laboratory testing, and other existing information made available. The stability analysis was performed using the computer program Slide2 v9.023 by RocScience.

1.5 LSI Description

1.5.1 Location

Bottom Ash Basin A is located within the Mt. Tom Station property in Holyoke, Massachusetts, as shown on Figure 1. The LSI is located at the coordinates 42.277122°, -72.602565°. The LSI is accessed via a gravel road with a gated entrance off Northampton Street (US-5).

1.5.2 Owner/Operator

Current owner/operator data (contact information) is provided here:

Owner Name:	Mt. Tom Generating Company LLC
Owner Address:	1360 Post Oak Boulevard, Suite 400
Owner Town:	Houston, TX 77056
Owner Phone:	731-636-0000

1.5.3 Purpose of the LSI

Bottom Ash Basin A is an inactive LSI. The basin previously functioned as part of the Mt. Tom facility's industrial wastewater treatment plant, receiving bottom ash and boiler slag from the 1980s through plant closure in 2014.

The only current input is precipitation on its surface area and a fringe of upland around it. Discharge piping and unit measurement devices have been plugged and removed from the LSI, respectively.

1.5.4 Description of the LSI and Appurtenances

Bottom Ash Basin A was constructed as an unlined basin circa 1985, in the approximate location of an area historically used for municipal solid waste landfilling. This basin was lined in 2003, at the behest of the MassDEP via an ACO. Subsequently, and pursuant to the MassDEP 2018 ACO, the double liner system at Bottom Ash Basin A was removed in March 2020. This was completed for the purposes of achieving regulatory closure under the 2018 ACO and the Massachusetts Contingency Plan ("MCP").

Bottom Ash Basin A is approximately rectangular in shape. The western and southern sides of Bottom Ash Basin A are incised approximately 12 feet below the adjacent grades (with a maximum depth of approximately 15 feet, and a maximum structural height , compared to the elevation at the downstream toe, of approximately 12.5 feet) and sloped at approximately 3 horizontal units to 1 vertical unit (3H:1V). The northern side of the impoundment is partially incised, sharing an embankment with the historical Coal Pile Sump Area and the Special Basin. The shared embankment has a crest width of approximately 50 feet. The Bottom Ash Basin A side of the embankment has a total height of approximately 14 feet, and is sloped at approximately 3H:1V. The northern side of the embankment is 4 to 10 feet in height and is also sloped at approximately 3H:1V. The eastern

embankment, which separates Bottom Ash Basin A and the Connecticut River, is approximately 14 feet in height and has a crest width of approximately 12 feet. The impoundment side is sloped at approximately 3H:1V which became vegetated following the removal of the liner system in 2020, and was recently hydroseeded (along with the other slopes) and mulched during Fall 2025 to further promote vegetation growth. The river side of the embankment is sloped at approximately 2H:1V and is vegetated with grasses, brush, and mature trees.

As detailed in Tighe & Bond's Initial Hazard Classification Report, dated May 2026, Bottom Ash Basin A is classified as a low hazard impoundment as defined in 40 CFR 257.53.

SECTION 2 | Subsurface Conditions

The generalized subsurface conditions described in the text below summarize trends observed in the explorations. The boundaries between soil strata are approximate and are based on interpretations of widely spaced explorations and samples. Actual conditions could be more variable.

2.1 Local Geology

Based on information from the United States Geological Survey ("USGS") Soil Survey, surficial geology is mapped as floodplain alluvium overlying glacial outwash (sand and gravel), glacial till, and bedrock, which is mapped as East Berlin Formation (sandstone, siltstone, and shale) or Holyoke Basalt. The depth to bedrock is estimated to be approximately 40 feet to 120 feet below the impoundment mound crest elevation based on previous subsurface explorations. Excerpts of USGS mapping for surficial geology and bedrock lithology are included as Figures 2 and 3.

2.2 Previous Subsurface Exploration Programs

Previous subsurface explorations and laboratory testing were performed at the former Mt. Tom Power Plant for Gibbs and Hill's site geohydrologic study in 1981 and Haley & Aldrich's comprehensive site assessment in 2003. The locations of previously performed explorations relevant to Bottom Ash Basin A are shown on Figure 4. Previous exploration logs are included in Appendix A.

2.2.1 Borings

GIBBS & HILL, INC. (1981)

Within the vicinity of Bottom Ash Basin A, four geotechnical borings (OW-7 through OW-10) were drilled by Raymond International Builders, Inc. of New York, New York from September 9 to November 25, 1980. As shown on Figure 4, boring OW-10 was drilled near the midpoint of the eastern embankment of Bottom Ash Basin A. Borings OW-7 through OW-9 were drilled along a transect approximately 100 feet north of Bottom Ash Basin A, with OW-7 and OW-8 drilled within the Coal Pile Sump Area, and OW-9 drilled within the eastern embankment of the Special Basin.

Borings were advanced using 3-inch and 4-inch inside-diameter flush-joint casing and drive-and-wash methods to depths ranging from 38 feet to 188 feet below ground surface (bgs). Split-spoon sampling and Standard Penetration Tests ("SPTs") were conducted at 5-foot to 20-foot intervals. Upon casing refusal in borings OW-7, OW-9, and OW-10, bedrock coring was performed using an NX-sized diamond-bit core barrel. Groundwater observation wells were installed in each boring at the completion of drilling.

HALEY & ALDRICH, INC. (2003)

Within the vicinity of Bottom Ash Basin A, one geotechnical boring (OW-107) was drilled by Seaboard Drilling Services, Inc. of Chicopee, Massachusetts on November 13, 2002. As shown on Figure 4, boring OW-107 was drilled within Bottom Ash Basin A.

The boring was advanced using 4-inch inside-diameter flush-joint casing and drive-and-wash methods to a depth of 29 feet bgs. Split-spoon sampling and SPTs were conducted at 5-foot intervals. Upon encountering casing refusal at a depth of 26 feet bgs, the roller bit was advanced to a depth of 29 feet bgs in probable bedrock. An observation well was installed in the boring at the completion of drilling.

2.2.2 Laboratory Testing

Gibbs & Hill, Inc. performed various laboratory tests on recovered soil samples. These included dry density, moisture content, Atterberg limit, grain size, specific gravity, and permeability tests. The Soil Laboratory Testing and Rated Parameters report also contains rated parameters based on correlations obtained from "Symposium of Field Testing of Soils, Special Technical Publication No. 322" published by ASTM. Applicable portions of Gibbs & Hill's Soil Laboratory Testing and Rated Parameters report are included in Appendix A.

2.3 Recent Subsurface Exploration Program

This section summarizes the recently performed subsurface explorations, laboratory testing, and observed subsurface conditions within the eastern embankment of Bottom Ash Basin A at the former Mt. Tom Powerplant site.

2.3.1 Borings

One geotechnical boring (B-201) was drilled by Seaboard Drilling, LLC of Springfield, Massachusetts on January 9, 2026. The boring, drilled from the crest of the eastern embankment of Bottom Ash Basin A, was advanced using 4-inch inside-diameter flush-joint casing and drive-and-wash methods to a depth of 62 feet bgs. Split-spoon sampling and SPTs were conducted continuously from the ground surface to a depth of 16 feet bgs, and at 5-foot intervals thereafter. The boring terminated in native soils.

A groundwater observation well was installed in boring B-201 at the completion of drilling. The well consisted of a 2-inch diameter solid PVC section from the ground surface to 50 feet bgs, and a 2-inch diameter PVC screened section from 50 feet to 60 feet bgs. The screened section was backfilled with filter sand to 2 feet above the screened section, followed by 1 foot of bentonite chips, and then cuttings to backfill to ground surface. The well was finished with a flush-mounted steel cover. The soil boring and well completion log for B-201 is included in Appendix B.

2.3.2 Laboratory Testing

Laboratory tests were performed to aid in soil classifications and evaluate liquefaction potential. Four mechanical Particle Size Analysis tests (ASTM D6913) were performed on soil samples taken during the explorations. Laboratory test results are included in Appendix C.

2.4 Summary of Subsurface Conditions

2.4.1 Embankment

Subsurface conditions observed in borings that were drilled from the crest of the eastern embankments of Bottom Ash Basin A (B-201 and OW-10) and The Special Basin (OW-9), generally consisted of up to 2 feet of very dense granular fill, overlying 8 to 10 feet of loose to very dense coal combustion residuals ("CCR"), overlying 10 to 18 feet of loose to medium dense fill, overlying native soils (B-201 and OW-9) or bedrock (OW-10). Native soils in borings B-201 and OW-9 generally consisted of 10 to 14 feet of loose to medium dense floodplain alluvium (fine sand and silt), overlying up to 128 feet of glacial outwash (fine to coarse sand or gravel) overlying bedrock. The bedrock profile along the eastern embankments slopes steeply from approximate elevation +89 feet in boring OW-10 to approximate elevation -42 feet in OW-9. Bedrock was not encountered within 62 feet bgs in boring B-201.

Table 2-1 below presents the general stratigraphy encountered within the eastern embankment during the previous and recent subsurface exploration programs in descending depth from the ground surface.

TABLE 2-1 Description of Subsurface Conditions Encountered (Embankment)

Strata (In Descending Depth)	General Description[1]
Sand/Gravel Fill[2]	Very dense, brown, fine to coarse SAND, some Gravel, trace Silt
CCR	Loose to dense, gray to dark gray, CCR (Particle size varied from fine SAND and SILT to fine to medium SAND, some Silt, trace Gravel)
Fill	Loose to medium dense, brown to dark brown, fine to medium SAND and SILT, trace Gravel, trace to little Miscellaneous Debris (Glass, Wood, Brick, Ash/Cinders, Slag); varying to loose to medium dense, gray to brown, GRAVEL and fine to coarse SAND, trace Silt, trace to some Miscellaneous Debris; varying to medium dense, fine to medium SAND, trace to some Silt, trace Gravel, trace to little Miscellaneous Debris
Floodplain Alluvium[3]	Loose to medium dense, gray to gray/brown, fine SAND and SILT
Glacial Outwash[3]	Medium dense to very dense, gray to red/brown, fine to coarse SAND, trace to little Gravel, trace to little Silt; varying to medium dense to dense, brown GRAVEL, little to some fine to coarse Sand, trace to little Silt
Bedrock[4]	Gray silty sandstone (Portland Formation) REC[5]: 92%; RQD[6]: 92% to 96% -varying to- Dark gray diabase (Holyoke Diabase) REC[5]: 59% to 100%; RQD[6]: 0% to 47%

1. Definition of Soil Description Terms: "trace" = 0-10%, "little" = 10-20%, "some" = 20-35%, "and" = 35-50%, by weight
2. Layer encountered in B-201 only
3. Layer not encountered in OW-10
4. Layer not encountered in B-201
5. Rock core recovery (REC) is defined as the length of all core pieces recovered divided by the total core run length
6. Rock Quality Designation (RQD) is defined as the sum of all recovered sound rock pieces measuring 4 inches or more in length (for type NX, NQ, or PQ cores) divided by the total core run length. RQD is a relative indicator of rock quality.

Groundwater was measured in the observation wells at depths ranging from 15 feet to 18 feet bgs, which corresponds to elevations 101 feet to 103 feet. Groundwater elevations can fluctuate due to several factors which may include: precipitation, adjacent Connecticut river elevation fluctuations, and nearby construction or other below grade activities, such as excavation, dewatering, wells, infiltration basins, etc.

2.4.2 West of Embankment

Subsurface conditions observed in OW-107, which was drilled within Bottom Ash Basin A, consisted of 15 feet of loose to medium dense CCR, overlying 4 inches of buried organics, overlying 10 feet of floodplain alluvium, overlying probable bedrock, which was encountered at a depth of 26 feet bgs (elevation 88 feet). Subsurface conditions observed in explorations performed to the north of Bottom Ash Basin A (OW-7 and OW-8), generally consisted of up to 5 feet of medium dense CCR, overlying 20 to 25 feet of floodplain alluvium, overlying up to 146 feet of medium dense to very dense glacial outwash, overlying bedrock, which was

encountered at a depth of 176 feet (elevation -59 feet) in OW-7. Bedrock was not encountered within 122 feet bgs in OW-8.

Table 2-2 below presents the general stratigraphy encountered west of the embankment, based on a review of previous exploration programs in descending depth from the ground surface.

TABLE 2-2 Description of Subsurface Conditions Encountered (West of Embankment)

Strata (In Descending Depth)	General Description[1]
CCR[2]	Loose to medium dense, gray to black CCR (Particle size = fine SAND and SILT)
Buried Organics[3]	Dark gray, Organic SILT, trace to little Organics (Root Material, Plant Fibers)
Floodplain Alluvium[4]	Medium dense, fine SAND, little to some Silt; varying to loose to medium dense, SILT, some fine Sand
Glacial Outwash[4]	Medium dense to very dense, fine to coarse SAND, trace to little Gravel, trace to little Silt; varying to medium dense to dense, GRAVEL, little to some fine to coarse Sand, trace to little Silt
Bedrock[5]	Gray sandstone (Portland Formation) REC[6]: 87%; RQD[7]: 0%

1. Definition of Soil Description Terms: "trace" = 0-10%, "little" = 10-20%, "some" = 20-35%, "and" = 35-50%, by weight
2. Layer not encountered in OW-8
3. Layer only encountered in OW-107
4. Layer not encountered in OW-107
5. Layer not encountered in OW-8; layer not cored in OW-107
6. Rock core recovery (REC) is defined as the length of all core pieces recovered divided by the total core run length
7. Rock Quality Designation (RQD) is defined as the sum of all recovered sound rock pieces measuring 4 inches or more in length (for type NX, NQ, or PQ cores) divided by the total core run length. RQD is a relative indicator of rock quality.

Groundwater was measured in the observation wells at depths ranging from 12 feet to 17 feet bgs, which corresponds to elevations 98 feet to 101 feet. As previously mentioned, groundwater elevations can fluctuate due to several factors which may include: precipitation, adjacent Connecticut river elevation fluctuations, and nearby construction or other below grade activities, such as excavation, dewatering, wells, infiltration basins, etc.

2.5 Seismic Site Class

Based on data from the explorations, the site is assigned to Site Class D in accordance with the American Society of Civil Engineers ("ASCE") ASCE 7-16 *Minimum Design Loads for Buildings and Other Structures*. The design spectral response accelerations at short periods ("S_{DS}") and at 1-second period ("S_{D1}") are 0.177g and 0.088g, respectively, where "g" is the acceleration due to gravity. These values were calculated based on mapped spectral response accelerations and the appropriate magnification factors for Site Class D.

SECTION 3 | Stability Analysis

3.1 Liquefaction Evaluation

Per 40 CFR 257.53, the design seismic event is an earthquake with a 2% probability of exceedance in 50 years (average return period of 2,475 years). ASCE 7-16 design seismic ground motion parameters were obtained using the USGS Seismic Design Web Service. Using the website, the peak ground acceleration ("PGA") was determined to be 0.086g for the design seismic event.

The subsurface conditions were evaluated for potential for liquefaction during the design seismic event. The liquefaction triggering parameters used for the liquefaction evaluation were a peak ground acceleration modified for site effects ("PGA_m") of 0.138g and an earthquake magnitude (M_w) of 5.86 based on the Unified Hazards Tool for a return period of 2,475 years and Seismic Site Class D. The results of the liquefaction evaluation indicated that the factors of safety against liquefaction for the soils evaluated were greater than 1.5. Therefore, the site is considered not liquefiable during the design seismic event.

3.2 Development of Cross Section

One cross section through the eastern embankment was evaluated. Cross Section A-A' was taken through the eastern embankment of Bottom Ash Basin A near the tallest embankment section, proximate to where the recent subsurface exploration was performed. The location of Section A-A' is shown on Figure 4. The cross-sectional geometry was developed based on existing conditions shown on "Plan of Land in Holyoke & Easthampton, MA" prepared by Sherman & Frydryk, dated September 18, 2018, LiDAR topographic information accessed via the NOAA Digital Coast Data Access View, historical drawings and exploration logs, and information collected during the recent subsurface exploration program.

Unit weight and strength properties of the soil materials were based on correlations of $(N_1)_{60}$ corrected blow counts from the SPTs presented in the California Department of Transportation (Caltrans) Geotechnical Manual, after Bowles (1977), typical properties of compacted fill presented in the Naval Facilities Engineering Systems Command ("NAVFAC") Design Manual 7.02 (1986), and engineering judgement. Material permeability values were based on correlations with grain size distributions, $(N_1)_{60}$ corrected blow counts from the SPTs, typical properties of compacted fill presented in the NAVFAC Design Manual 7.02 (1986), and engineering judgement.

Table 3-1 below presents the soil parameters used for the global stability analyses of Section A-A'.

TABLE 3-1 Material Parameters for Stability Analysis

Material	Total Unit Weight (pcf)[1]	Cohesion (psf)[2]	Internal Friction Angle (degrees)	Permeability[4] (cm/s)[3]
Gravel	115	0	32	1e-3
Vegetated Topsoil	105	50	30	1e-4
CCR	105	0	32	3e-3
Fill	115	0	32	1e-3
Floodplain Alluvium	115	0	32	3.5e-3
Glacial Outwash	125	0	36	1e-2

1. pcf = pounds per cubic foot
2. psf = pounds per square foot
3. cm/s = centimeters per second
4. Values represent vertical permeability (kh). kh/kv = 0.1 in model

3.3 Global Stability Evaluation

A stability analysis was performed in general accordance with the United States Army Corps of Engineers ("USACE") *Guidelines for Safety Inspections of Dams* (ER 1110-2-106).

The stability analysis was performed for two conditions:

- **Steady State –** Assumes that the impoundment elevation, in this case at the normal and design flood pools, remains at that elevation for a sufficient amount of time for seepage to reach equilibrium.
- **Seismic –** Examines the stability of the embankment during an earthquake event. Maximum pool is not considered during this analysis as it is recognized that the probability of a flood and earthquake occurring at the same time is extremely low.

Following the closure of Bottom Ash Basin A, the impoundment is empty under the normal conditions. Therefore, a steady state analysis was evaluated using the groundwater elevations measured in the monitoring wells, and the normal river elevation (elevation 103.5 feet). Per the Inflow Design Flood Control System Plan, prepared by Tighe & Bond, dated May 2026, the water level within Bottom Ash Basin A is elevation 109.6 feet during the inflow design flood (IDF), which is equal to the 100-year recurrence storm. When evaluating the stability of the embankment during the IDF, the water level of the Connecticut River was modeled using transient boundary conditions. The impoundment side of the embankment was evaluated during the rising of the river level and the river side of the embankment was evaluated during the receding of the river level.

A rapid drawdown evaluation, which evaluates the stability of the embankment if there is a rapid loss of water in the impoundment while leaving the embankment saturated, was not performed for Bottom Ash Basin A as the outlets have been removed or plugged and there is no means to rapidly dewater the impoundment.

The Slide model was used to perform the slope stability analyses utilizing the Spencer Method, which satisfies both force and moment equilibrium. The analyses evaluated circular failure planes using an auto-refine search and optimization of the critical surface. These features help to estimate the minimum factor of safety ("FS") by manipulating the failure surface geometry to its more critical state. The model was used to analyze the loading conditions listed above and to determine the FS against a global failure.

Using the USGS Seismic Design Web Service, a PGA of 0.086g was selected for the design seismic event, an earthquake with a 2% probability of exceedance in 50 years (average return period of 2,475 years).

3.3.1 Stability Results (Existing Conditions)

Table 3-2 below presents the results of our stability analysis for Sections A-A' under the existing conditions and compares them to the minimum recommended factors of safety as presented in 40 CFR 257.73. Graphical output illustrating the potential failure planes is included in Appendix D.

TABLE 3-2 Description of Subsurface Conditions Encountered

Location and Scenario	Steady State		Seismic	
	Min. Req. FS	Calc. FS	Min. Req. FS	Calc. FS
Impoundment Side (Normal Pool)	1.5	2.4	1.0	1.8
Impoundment Side (100-year Flood)*	1.4	1.8	N/A	-
River Side (Normal Pool)	1.5	2.4	1.0	1.9
River Side (100-year Flood)*	1.4	1.4	N/A	-

* Indicates stability analysis modeled using transient conditions for Connecticut River

3.3.2 Stability Conclusions

Section A-A' through the eastern embankment of Bottom Ash Basin A meets the recommended factors of safety for the loading conditions required by 40 CFR 257.73. Modifications to the embankment are not recommended for stability purposes.

SECTION 4 | Record Keeping

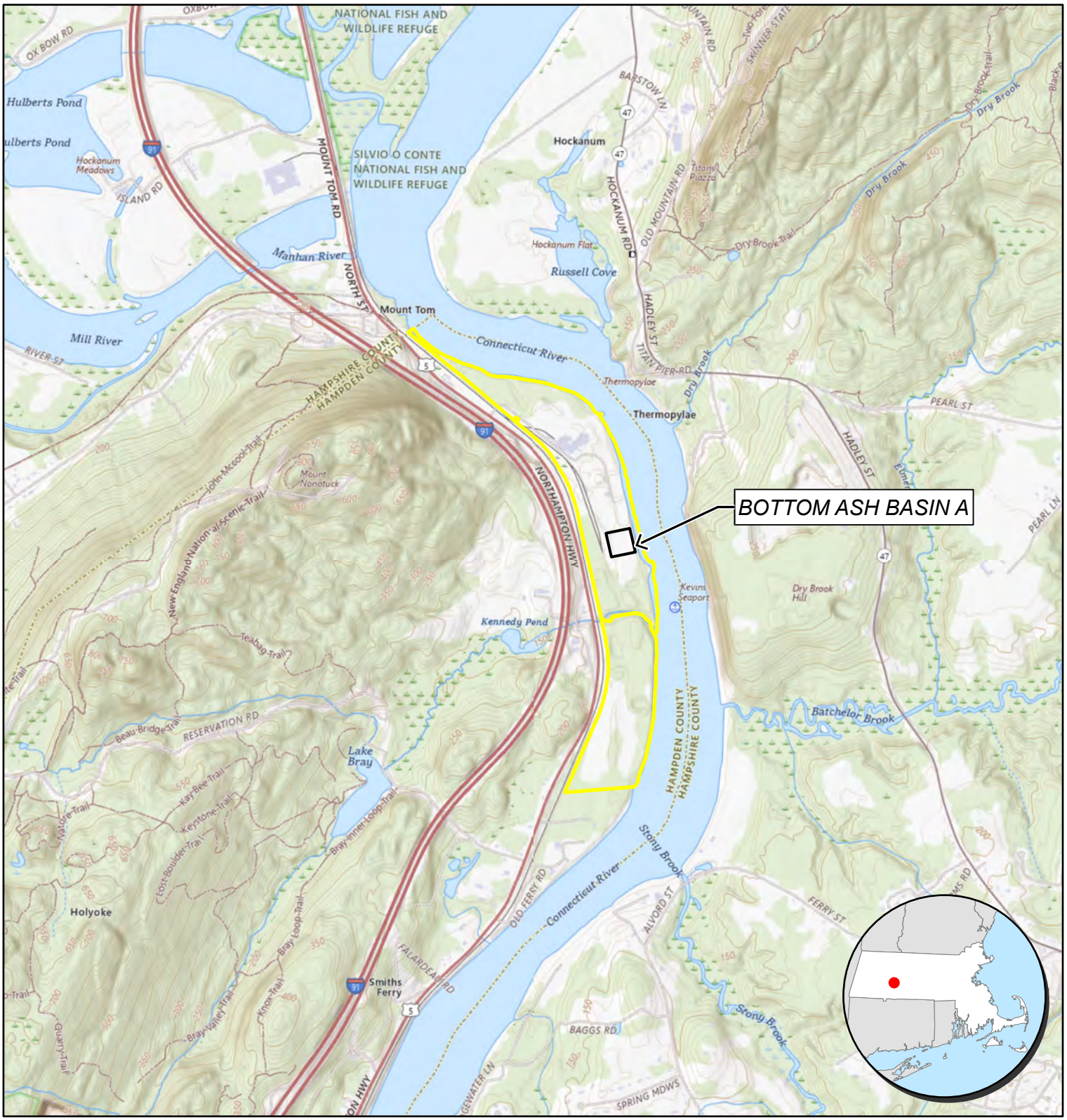
In accordance with 40 CFR 257.73, the owner or operator is required to conduct periodic safety factor assessments every five years, to be placed in the facility's operating record as required by 40 CFR 257.105(f)(5), (10), and (12). The completion date of the initial assessment is the basis for establishing the deadline to complete the first subsequent assessment.

Tighe & Bond

Figures

Former Mt. Tom Station Power Plant
200 Northampton Street
Holyoke, Massachusetts

FIGURE 1
SITE LOCATION
April 2026



Bottom Ash Basin A
Subject Property

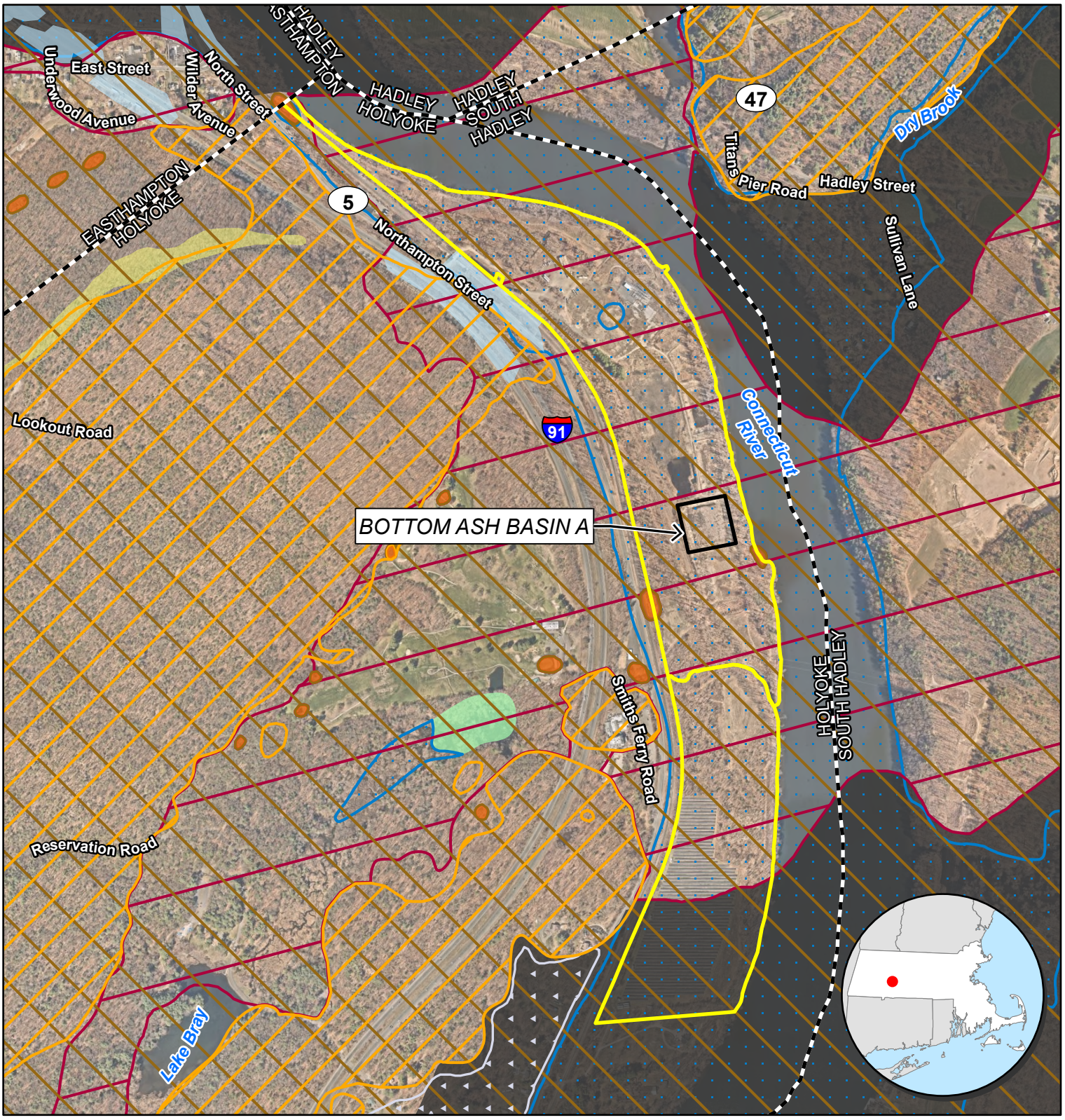
N
1:24,000
0 1,000 2,000
Feet

Based on USGS The National Map Topo Basemap.
Contour Interval Equals 10 Feet.
Parcel Boundary is courtesy of MassGIS and is approximate.

Tighe & Bond

Former Mt. Tom Station Power Plant
200 Northampton Street
Holyoke, Massachusetts

FIGURE 2
SURFICIAL MATERIALS
April 2026



- Municipal Boundary
- Bottom Ash Basin A
- Subject Property

Surficial Geology

- Artificial Fill
- Bedrock Outcrops
- Areas of Abundant Outcrop or Shallow Bedrock
- Flood-plain Alluvium
- Thin Till
- Stream-terrace Deposits
- Coarse Glacial Stratified Deposits
- Fine Glacial Stratified Deposits
- Swamp Deposits
- Talus Deposits

N

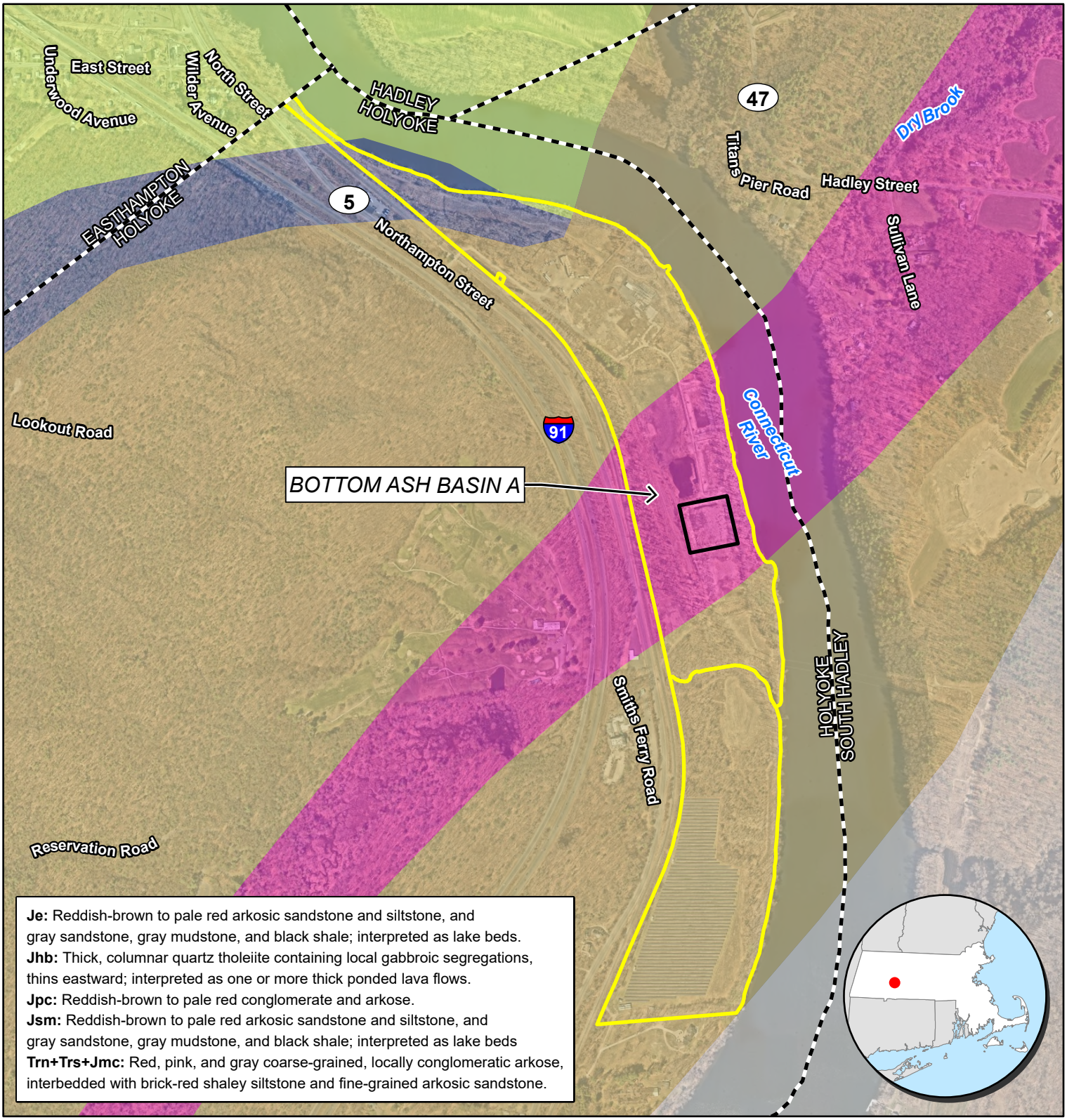
1:12,000
0 500 1,000
Feet

Based on Nearmap Imagery (April 2025).
Surficial Materials data was derived from the U.S Geological Survey courtesy of MassGIS.
Parcel Boundary is courtesy of MassGIS and is approximate.

Tighe & Bond

Former Mt. Tom Station Power Plant
200 Northampton Street
Holyoke, Massachusetts

FIGURE 3
BEDROCK LITHOLOGY
April 2026



- Municipal Boundary
- Bottom Ash Basin A
- Subject Property

Bedrock Lithology

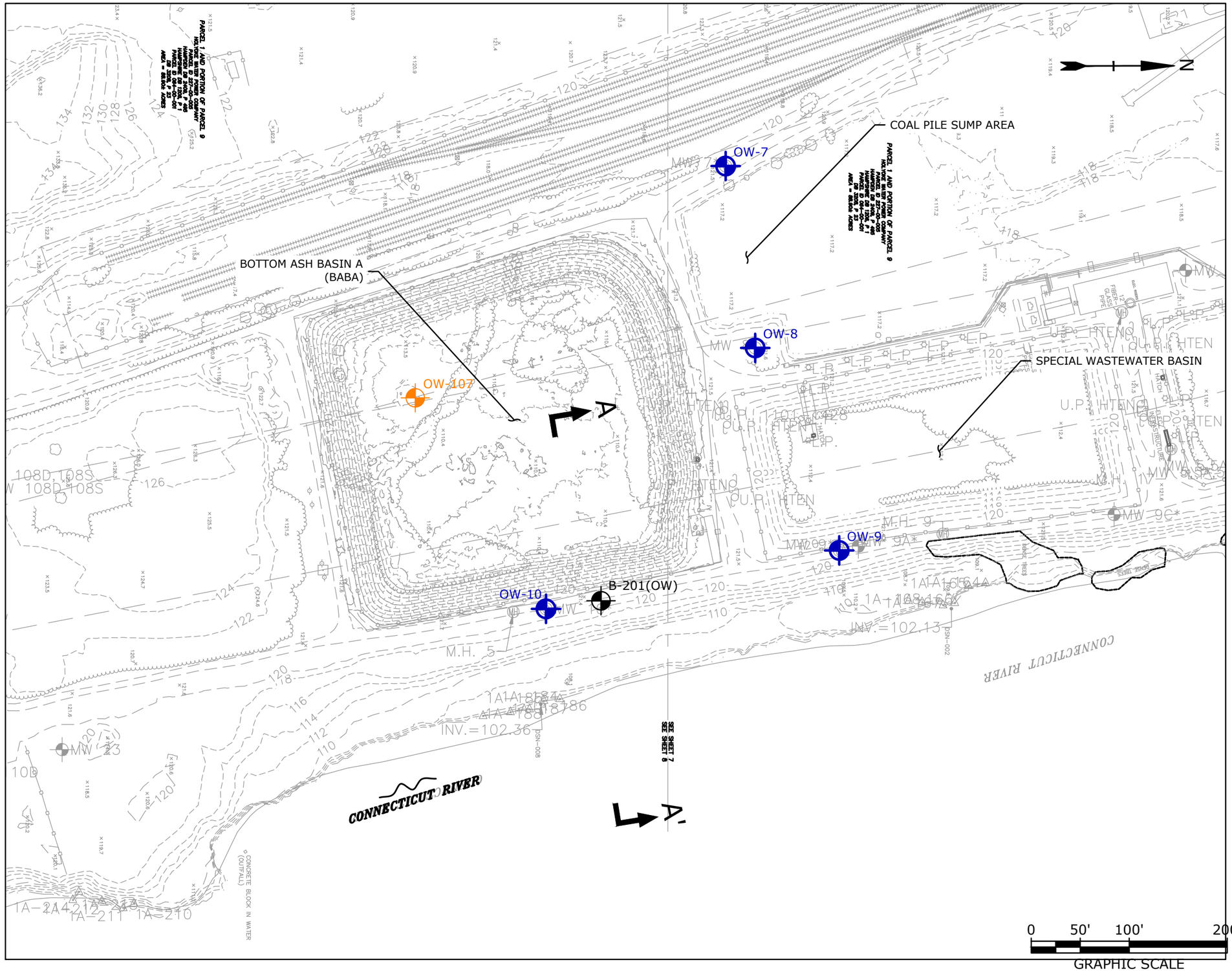
- Je - East Berlin Formation (Lower Jursassic)
- Jhb - Holyoke Basalt (Lower Jurassic)
- Jpc - Portland Formation
- Jsm - Shuttle Meadow Formation (Lower Jurassic)
- Trn+Trs+Jmc - Mesozoic Basin Sedimentary

N

1:12,000
0 500 1,000
Feet

Based on Nearmap Imagery (April 2025).
Bedrock Lithology data was derived from the U.S Geological Survey courtesy of MassGIS.
Parcel Boundary is courtesy of MassGIS and is approximate.

Tighe & Bond



GENERAL NOTES:

1. EXISTING CONDITIONS SHOWN BASED ON EXISTING CONDITIONS PLAN ENTITLED "PLAN OF LAND IN HOLYOKE & EASTHAMPTON, MA" PREPARED BY SHERMAN & FRYDRYK., DATED SEPTEMBER 18, 2018.
2. CONTOURS WITHIN BOTTOM ASH BASIN A (BABA) BASED ON 2024 USGS LiDAR DEM: WESTERN MA, CREATED BY OCM PARTNERS, UPDATED NOVEMBER 28, 2025
3. ELEVATIONS SHOWN HEREIN REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
4. OW-7 THROUGH OW-10 WERE DRILLED BY RAYMOND INTERNATIONAL FOR GIBBS & HILL, INC. BETWEEN SEPTEMBER 9 AND NOVEMBER 25, 1980.
5. OW-107 WAS DRILLED BY SEABOARD GEOTECHNICAL AND ENVIRONMENTAL DRILLING SERVICES FOR HALEY & ALDRICH ON NOVEMBER 13, 2002.
6. BORING B-201 WAS LAID OUT BY TIGHE & BOND REPRESENTATIVES BY MEASURING OFF OF EXISTING SITE FEATURES. LOCATIONS SHOULD BE CONSIDERED APPROXIMATE.
7. BORING B-201 WAS DRILLED BY SEABOARD DRILLING, LLC OF SPRINGFIELD, MA ON JANUARY 9, 2026.
8. DISTURBED SOIL SAMPLES WERE OBTAINED USING A STANDARD SPLIT-SPOON SAMPLER ADVANCED BY A 140-POUND HAMMER FREE FALLING FROM A HEIGHT OF 30 INCHES.
9. REFER TO BORING LOGS FOR DETAILED INFORMATION.

LEGEND:

B-#	BORING (T&B, 2026)
B-#	BORING (H&A, 2003)
B-#	BORING (G&H, 1981)

FORMER MT TOM POWER PLANT
HOLYOKE, MA

SUBSURFACE EXPLORATION PLAN

DATE:	02/18/2026
SCALE:	1" = 100'
FIGURE:	4

Tighe & Bond

Appendix A: Previous Exploration Logs

Gibbs & Hill, Inc.
ENGINEERS DESIGNERS CONSTRUCTORS

Job No.: 11-2937-004
Boring: OW-7

Summary of Drilling and Sampling Information

Client: NUSCO
Project: Mt. Tom Hydrogeologic Study
Rig: Mobil Drill B-61
Site: Holyoke, Mass.
Contractor: Raymond Int.
Driller: John Farrell

Drilling Method:

Cased Hole	0 ft. to 176 ft.	Dia. 4	in.
Roller bit Bedrock	176 ft. to 183 ft.	Dia.	in.
Cored	183 ft. to 188 ft.	Dia. BX	in.

Drilling Fluid Used: x Yes ___ No Type: Water

Sampler Hammer: Weight 140 lbs. Drop 30 in.

Casing Hammer: Weight 300 lbs. Drop 30 in.

Rock Core Diameter 1.675 in. Type core barrel/bit: BX

Date/Time Drilling Started: 9/15/80 Completed: 9/24/80

Down Time: 5 hrs. Cause(s) General repairs

Log Summary: Soil: 0-20' fine sand & silt, 20-60' coarse sand and gravel, 60-176' coarse-fine sand, trace silt

Rock: Portland Sandstone

No. Samples: Split Spoon 21 Other: -

Undisturbed: 1

No. Permeability Tests: Constant Head 2 Pressure -

Falling Head 8 Other: -

No. and Type of Other Tests: -

Piezometer Installation:

Pipe: Type: PVC - Sched. 40 Dia. 2" Depth: From 0 ft. to 55 ft.

Screen: Type: Slot 10 PVC Dia. 2" Depth: From 55 ft. to 60 ft.

Filter Material: Type: Coarse Sand Depth: From 4 ft. to 62 ft.

Seal Material: Type: Concrete Depth: From 0 ft. to 2 ft.

Bentonite Depth: From 2 ft. to 4 ft.

Bentonite Depth: From 176 ft. to 188 ft.

Remarks: In-situ material allowed to collapse and fill boring as casing was removed from 176 to 62'

Inspector R. Barbour

BORING LOG

Sheet 1 of 5

PROJECT: Mt. Tom Geohydrologic Study | PROJECT NO. 11-2937-002 | BORING NO. OW-7

Location: Holyoke, Mass. | Coord: | Ground Elev: 117.1

Contractor: Raymond Inter. | Date Started: 9/15/80 | G.W.L. 16.7' | Hour: 7:30 am | Date: 9/22/80

Inspector: R. Barbour | Date Completed: 9/24/80 | G.W.L. | Hour: | Date:

Notes: Observation Well Screened from 55-60'

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
0		SS-1			3	6				SM	Coal Dust and very fine sand and silt.
					8	16	17%				
5		SS-2			7	9				SP	Very fine sand with some silt (10%)
					8	7	37%				
10		SS-3			6	8				SP	Fine sand with traces of silt (10%)
					9	9	37%				
15		SS-4			7	6				SP	Fine sand with some silt (15%)
					7	7	33%				
20		SS-5	CH -1 FH -1		5	4				SM	Fine sand with mixtures of silt (15%) and clay (20%)
					8	11	75%				
25		SS-6	CH-2 FH-2		7	9				GP	Poorly graded gravel and sand no silt, no water return
					4	13	25%				
30					9	15				GP	Ident. from washings, little water return.
					12	12	0"				
35		SS-7	FH-3		11	-				SW	Mixture of sand (coarse to fine) with traces of silt (3%) and gravel
					8	9	0				
		SS-8			17	15				SW	Poorly graded sands (coarse to fine) w/ traces of silt (3%)
40					13	12	56%				

				Material Notations
I.D. Casing	4"	Wgt. Hammer on Casing	300 lbs.	FH-Falling Head Permeability Test
I.D. Spoon	1 3/8"	Wgt. Hammer on Spoon	140 lbs.	CH-Constant " " "
Type Core Drill	BX	Drop Hammer on Casing	30 in.	
Core Dia.	1.375	Drop Hammer on Spoon	30 in.	
Sample & Test Notations				

Gibbs & Hill, Inc.

BORING LOG

PROJECT:	Mt. Tom Geohydrologic Study	PROJECT NO. 11-2937-002		BORING NO.	OW-7
Location:	Holyoke, Mass.	Coord:		Ground Elev:	117.1
Contractor:	Raymond Inter.	Date Started: 9/15/80	G.W.L.	Hour:	Date:
Inspector:	R. Barbour	Date Completed: 9/24/80	G.W.L.	Hour:	Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
40										SW	Poorly graded sands (coarse-med.) w/ traces of silt (3%) and gravel
					8	8					
45		SS-9			10	10	8%			GP	Gravel with sand mixture (coarse to fine) with traces of silt (3%)
					29	31					
50		SS-10			17	16	8%			GP	Gravel with sand mixture (coarse to fine) with traces of silt (3%)
					12	17					
55		SS-11	FH-4		16	18	17%			GP	Gravel with sand mixtures (coarse to fine)with traces of silt
60										GP	Gravel and sand mixtures with some silt. Identification from washings
					16	22					
65		SS-12			25	31	75%			SP	Well sorted fine sand with traces of silt (10%)
70			FH-5							SW/ SP	Identfication from washings. Fine sand and traces of silt
					32	40					
75		SS-13			40	46	58%			SW	Mixtures of sand (medium to very fine) with traces of silt (15%)
80											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

Gibbs & Hill, Inc.

BORING LOG

PROJECT: Mt. Tom Geohydrologic Study | PROJECT NO. 11-2937-002 | BORING NO. OW-7

Location: Holyoke, Mass. | Coord: | Ground Elev: 117.8

Contractor: Raymond Inter. | Date Started: 9/15/80 | G.W.L. | Hour: | Date:

Inspector: R. Barbour | Date Completed: 9/24/80 | G.W.L. | Hour: | Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
80										SW	Info. from washings
					78	81				SW	Mixtures of sand (medium to
85		SS-14			65	66	50%				very fine) with traces of silt
											(3%) and clay (3%)
90											
					38	47				SP	SW-Well sorted very fine sand
95		SS-15			47	64	58%				with little silt (18%)
100			FH-6								
										SW	Mixtures of sand (medium to
105		SS-16					87%				fine) with little silt (15%)
110										SW	Info. from washings
										SW	Info from washings
115											
120											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

Gibbs & Hill, Inc.

BORING LOG

Sheet 4 of 5

PROJECT: Mt. Tom | PROJECT NO. 11-2937-002 | BORING NO. OW-7

Location: Holyoke, Mass. | Coord: | Ground Elev: 117.8

Contractor: Raymond Inter. | Date Started: 9/15/80 | G.W.L. | Hour: | Date:

Inspector: R. Barbour | Date Completed: 9/24/80 | G.W.L. | Hour: | Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
120		*SS-17			-	-	100%			SW	Mixtures of sand (medium-fine) and silt. App. 10% of silt.
					-	-					
125											
130		SS-18	FH-7		21	28	58%			SW	Mixtures of sand (medium to fine) and silt. App. 15% silt.
					36	45					
135											
140		SS-19	FH-8		28	34	50%			SP	Well sorted very fine sand with traces of silt(app15%)
					43	47					
145											
150		SS-20								SW	Mixtures of sand (coarse to fine) with traces of silt (15) and gravel
155											
160											

I.D. Casing	Wgt. Hammer on Casing	Material Notations * backed up into casing: pushed sampler into sed.
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

Gibbs & Hill, Inc.

BORING LOG

Sheet 5 of 5

PROJECT: Mt. Tom Geohydrolic Study | PROJECT NO.11-2937-002 | BORING NO. OW-7

Location: Holoyke, Mass. | Coord: | Ground Elev: 117.8

Contractor: Raymond Inter. | Date Started: 9/15/80 | G.W.L. | Hour: | Date:

Inspector: R. Barbour | Date Completed: 9/24/80 | G.W.L. | Hour: | Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
160		SS-21			48	100	100%			SW	Mixtures of sand (medium-fine) with traces of silt(3%)
					-	-					
165											
170		SS-22			38	57	72%			SW	Mixtures of sand (coarse to fine) with traces of silt(~ 3%). Bedrock at 176'
					100/	2"					
175											Top of Bedrock at 176'
		Roller bit									
180											
185		BX					87	0			Fine gray micaceous sandstone (Portland)
190											Bottom of Hole at 188'
195											
200											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

Gibbs & Hill, Inc.

Gibbs & Hill, Inc.
ENGINEERS DESIGNERS CONSTRUCTORS

Job No.: 11-2937-004
Boring: OW-8

Summary of Drilling and Sampling Information

Client: NUSCO
Project: Mt. Tom Hydrogeologic Study
Rig: CME-75
Site: Holyoke, Mass.
Contractor: Raymond Int.
Driller: B. McKivett

Drilling Method:

Cased Hole	0 ft. to 70 ft.	Dia. 4 in.
Cased Hole	70 ft. to 122 ft.	Dia. 3 in.
	ft. to ft.	Dia. in.

Drilling Fluid Used: x Yes ___ No Type: Water

Sampler Hammer: Weight 140 lbs. Drop 30 in.
Casing Hammer: Weight 300 lbs. Drop 30 in.

Rock Core Diameter - in. Type core barrel/bit: -

Date/Time Drilling Started: 9/25/80 Completed: 9/30/80

Down Time: 0 hrs. Cause(s)

Log Summary: Soil: 0-40' medium to fine sand and silt,
40-122' coarse to fine sand, trace gravel and silt

Rock: -

No. Samples: Split Spoon 17 Other: -
Undisturbed: 1

No. Permeability Tests: Constant Head - Pressure -
Falling Head 6 Other: -

No. and Type of Other Tests: -

Piezometer Installation:

Pipe: Type: PVC - Sched. 40 Dia. 2" Depth: From 0 ft. to 95 ft.
Screen: Type: Slot 10 PVC Dia. 2" Depth: From 95 ft. to 100 ft.
Filter Material: Type: Coarse Sand Depth: From 4 ft. to 100 ft.
Seal Material: Type: Concrete Depth: From 0 ft. to 2 ft.
Bentonite Depth: From 2 ft. to 4 ft.
Depth: From ft. to ft.

Remarks: In-situ materials allowed to collapse and fill boring as casing was removed from 100 to 122'.

Inspector J. Arcoleo

BORING LOG

Sheet 1 of 4

PROJECT: Mt. Tom - NUSCO | PROJECT NO. 11-2937-002 | BORING NO. OW-8

Location: Holyoke, Mass. | Coord: | Ground Elev: 113.5'

Contractor: Raymond Int. | Date Started: 9/25/80 | G.W.L. 12.3' | Hour: 5"30 | Date: 10/1/80

Inspector: J. Arcoleo | Date Completed: 9/30/80 | G.W.L. | Hour: | Date:

Notes: Observation Well Screened from 95-100'

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
0		US-1		*						ML	Undisturbed sample taken with shelby tube. Yellowish silt w/ some clay (20%) and trace very fine sand (5%)
		SS-1	FH-1	*			71%				
				*							
				*							
				*							
5		SS-2		*	3	4				ML	Silt w/ some very fine sand (20%) and trace clay (5%). Loose, pH = 6.5
				*	4	4	29%				
				*							
				*							
				*							
10		SS-3		*	X	X				SM	Very fine sand and silt w/trace clay (5%). Gley conditions in lower 6" section of sample material. pH=7.0
				*	4	6	50%				
			FH2	*							
				*							
				*							
15		SS-4		*	2	5				SW	Very fine sand w/trace silt (10%). Mottling and gley, loose material
				*	6	4	12%				
				*							
				*							
				*							
20		SS-5		*	5	7				SW	Fine sand with little silt and clay (15%).
				*	8	8	58%				
				*							
				*							
				*							
25		SS-6	FH-3	*	15	14				SW	well-graded medium sand. Moderately loose
				*	14	13	46%				
				*							
				*							
				*							
30		SS-7		*	15	14				SW	Well-graded medium sand. Rounded quartzite pebble recovered. Moderately loose material
				*	11	13	12%				
				*							
				*							
				*							
35		SS-8		*	12	19				SW	Well-graded medium to fine sand + trace silt (2%). Moderately loose material.
				*	16	21	21%				
				*							
				*							
				*							
40											

I.D. Casing 4" + 3"	Wgt. Hammer on Casing 300 lbs	Material Notations	
I.D. Spoon 1 3/8"	Wgt. Hammer on Spoon 140 lbs	*Drilling with Casing Advance	
Type Core Drill --	Drop Hammer on Casing 24"		
Core Dia. --	Drop Hammer on Spoon 30"		
Sample & Test Notations	FH=Falling Head, CH=Constant Head (Gravity Tests); SS= Split Spoon		

X=Penetration because of Rod drop

Gibbs & Hill, Inc.

BORING LOG

PROJECT: Mt. Tom - NUSCO | PROJECT NO. 11-2937-002 | BORING NO. OW-8

Location: Holyoke, Mass | Coord: | Ground Elev: 113.5'

Contractor: Raymond Int. | Date Started: 9/25/80 | G.W.L. | Hour: | Date:

Inspector: J. Arcoleo | Date Completed: 9/30/80 | G.W.L. | Hour: | Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
40				*	13	15					
		SS-9	FH-4	*	16	19	46%			SW	Well-graded medium to coarse sand. Moderately loose material
				*							
				*							
				*							
45				*	14	14					
		SS-10		*	15	17	29%			SW	Well-graded coarse sand w/trace silt (2%). Moderately loose material. Conglomerate boulder cored (1' diam.) from 48 to 50'.
				*							
				*							
50				*							
				*							
				*							
				*							
				*							
55				*	46	57					
		SS-11		*	68	81	25%			SW	Well-graded med. sand w/some silt (20%) Dense material. Fine mica fragments.
				*							
				*							
				*							
60				*	35	42					
		SS-12		*	48	59	21%			SM	Poorly graded fine sand and silt. (silty sand). Silt (40%). Dense material. Fine mica/ gradual transition
				*							
				*							
65				*							
				*							
				*							
				*							
				*							
70					17	30					
		SS-13	FH-5		62	46	75%			SW	Well-graded coarse to medium sand.
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

Gibbs & Hill, Inc.

BORING LOG

PROJECT: Mt. Tom - NUSCO | PROJECT NO. 11-2937-002 | BORING NO. OW-8

Location: Holyoke, Mass. | Coord: | Ground Elev: 113.5'

Contractor: Raymond Int. | Date Started: 9/25/80 G.W.I. | Hour: 5:15PM Date:

Inspector: J. Arcoleo | Date Completed: 9/30/80 G.W.I. | Hour: 7:30AM Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
80											
85											
90					11	9				SW	sample taken inside 3" casing. well-graded med. to coarse sand w/coarse gravel (½"x½") recovered. Moderately loose material
		SS-14			12	32	25%				
95											
100				80	28	52				SW	Well-graded med. sand w/trace silt(1%). Dense material
		SS-15	FH-6	80	53	65	20%				
				80							
				137							
				184							
105				175							
				157							
				149							
				160							
				170							
110				162	31	36				SW	Well-graded m. to f. sand + slight trace silt (5%). Dense material.
		SS16		149	40	39	33%				
				137							
				130							
115				130							
				136							
				147							
				150							
				149							
120				156							

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill ---	Drop Hammer on Casing	
Core Dia. ----	Drop Hammer on Spoon	
Sample & Test Notations		

Gibbs & Hill, Inc.

BORING LOG

Sheet 4 of 4

PROJECT: Mt. Tom - NUSCO | PROJECT NO 11-2937-002 | BORING NO. OW-8

Location: Holyoke, Mass. | Coord: | Ground Elev: 113.5'

Contractor: Raymond Int. | Date Started: 9/25/80 | G.W.L. | Hour: | Date:

Inspector: J. Arcoleo | Date Completed: 9/30/80 | G.W.L. | Hour: | Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
120		SS-17			44	33	46%			SW	Fine to medium sand w/little silt (10%). well-graded dense material
					40	45					Bottom of Bore Hole at 122'
125											
130											
5											
0											
5											
0											
5											
0											

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

Gibbs & Hill, Inc.

Gibbs & Hill, Inc.
ENGINEERS DESIGNERS CONSTRUCTORS

Job No.: 11-2937-004
Boring: OW-9

Summary of Drilling and Sampling Information

Client: NUSCO
Project: Mt. Tom Hydrogeologic Study
Site: Holyoke, Mass.
Rig: CME-75
Contractor: Raymond Int.
Driller: B. McKivett

Drilling Method:

Cased Hole	0 ft. to 158 ft.	Dia. 4	in.
Cored	158 ft. to 168 ft.	Dia. NX	in.
	___ ft. to ___ ft.	Dia. ___	in.

Drilling Fluid Used: x Yes ___ No Type: Water

Sampler Hammer: Weight 140 lbs. Drop 30 in.

Casing Hammer: Weight 300 lbs. Drop 30 in.

Rock Core Diameter 2.125 in. Type core barrel/bit: NX

Date/Time Drilling Started: 9/9/80 Completed: 9/16/80

Down Time: 8½ hrs. Cause(s) Repair & maintenance of equipment. Waited for additional 4" casing.

Log Summary: Soil: 0-40' fine sand & silt, 40-120' fine gravel and sand mixtures, 120-158' sand mixtures with trace silt & gravel

Rock: Portland Sandstone

No. Samples: Split Spoon 28 Other: -

Undisturbed: - ___

No. Permeability Tests: Constant Head 5 Pressure 1

Falling Head 10 Other: -

No. and Type of Other Tests: ___

Piezometer Installation:

Pipe: Type: PVC - Sched. 40 Dia. 2" Depth: From 0 ft. to 62 ft.

Screen: Type: Slot 10 PVC Dia. 2" Depth: From 62 ft. to 67 ft.

Filter Material: Type: Coarse Sand Depth: From 4 ft. to 70 ft.

Seal Material: Type: Concrete Depth: From 0 ft. to 2 ft.

Bentonite Depth: From 2 ft. to 4 ft.

Bentonite Depth: From 158 ft. to 168 ft.

Remarks: In-situ materials allowed to collapse and fill boring as casing was removed from 70 to 158'.

Inspector J. Arcoleo

BORING LOG

Sheet 1 of 5

PROJECT: Mt. Tom - NUSCO | PROJECT NO. 11-2937-002 | BORING NO. OW-9

Location: Holyoke, Mass. | Coord: | Ground Elev: 116.6 ft.

Contractor: Raymond Int'l. | Date Started: 9/9/80 | G.W.L. 14.9' | Hour 7:30 | Date: 9/17/80

Inspector: J. Arcoleo | Date Completed: 9/11/80 | G.W.L. | Hour: | Date:

Notes: Observation Well Screened from 62-67'

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	Drilling Rate Mn./Ft.	Graphic Symbol	Description and Remarks
0		SS-1		2	1	1				SP	Loose fine to med. gray sand. (Old fly ash)
				3	4	5					
				22							
				20							
				23							
5		SS-2		16	10	18				SM	No recovery of Osterburg sample. Loose fine gray sand and silt (40%) misc. fill (glass) + old fly ash pH=7.0
				30	15	16	54%				
				28							
				24							
				24							
10		SS-3		19	17	10				SM	Loose fine gray sand + silt (50%), fill (glass, rock fragments of shale
				19	5	6	33%				
				25							
				20							
				16							
15		SS-4		16	5	5	0%			SW	Well graded gray fine sand + silt (50%). Fragments of metal + glass. (fine to very fine sand)
				26	7	7					
				26							
				29							
				25							
20		SS-5		12	3	7				SM	Fine sand and silt (50%)
				36	6	7	38%				
				36							
				39							
				40							
25		SS-6		25	6	4	0%			SM	No recovery. Indicated gray well-graded fine sand + silt (50%) Info. from washings
				26	6	7					
				34							
				31							
				35							
30		SS-7		37	8	10				SP	Fine poorly-graded sand w/fragment of metal. pH=4.5
				50	3	4	29%				
				60							
				87							
				113							
35		SS-8		31	28	20	0%			SP	No recovery-probably rock or cobble obstruction. Fine poorly-graded brown sand.
				42	18	20					
				69							
				80							
40				60							

I.D. Casing	4"	Wgt. Hammer on Casing	300 lbs.
I.D. Spoon	1-3/8"	Wgt. Hammer on Spoon	140 lbs.
Type Core Drill		Drop Hammer on Casing	24"
Core Dia.	NX	Drop Hammer on Spoon	30"

Material Notations

Sample & Test Notations: No permeability nor unidst. samples taken 9/9. SS=Split Spoon Sample.

FH=Falling head "K" test; CH=Constant Head "K" test
X=Penetration by rod drop

Gibbs & Hill, Inc.

BORING LOG

PROJECT: Mt. Tom - NUSCO | PROJECT NO. 11-2937-002 | BORING NO. OW-9

Location: Holyoke, Mass. | Coord: | Ground Elev: 116.6'

Contractor: Raymond Int'l. | Date Started: 9/9/80 | G.W.L. - | Hour | Date

Inspector: J. Arcoleo | Date Completed: 9/17/80 | G.W.L | Hour | Date

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
40		SS-9		53	13	16				GM	Poorly graded fine gravel + silt (50%) including fine to med. sand. Stones 1"xl" dia. recovered.
				105	30	20	29%				
				92							
				89							
45				99							
		SS-10		70	24	27				SP	Fine to med. poorly graded sand w/ trace of silt. (10%)
				58	27	27	25%				
				59							
				63							
50				66							
		SS-11	FH-1	70	20	31				GM	Base, fine, poorly graded sand, gravel + silt (50%) w/few shale fragments.
			CH-1	170	27	27	25%				
				109							
				96							
55				100							
		SS-12	FH-2	82	29	28				GM	Indications of stones. poorly graded sandy gravel angular fragments with stones (½"x½") and silt (50%)
			CH-2	82	26	30	38%				
				98							
				124							
60				110							
		SS-13	FH-3	100	30	39				GM	Coarse poorly graded sandy gravel (angular) and silt (45%)
			CH-3	103	34	44	29%				
				110							
				110							
65				103							
		SS-14	FH-4	112	22	20				GW	Loose fine gravel + little fine sand (20%). Very high H20 perm.
				128	19	22	25%				
				108							
				127							
70				113							
		SS-15	FH-5	78	16	11				SW	Well-graded coarse sand. (very permeable) with trace silt (10%)
				95	14	22	33%				
				105							
				110							
75				127							
		SS-16	FH-6	115	17	22				SW	Well-graded coarse loose sand w/ trace silt (10%).
				117	25	32	33%				
				116							
				136							
80				108							

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Dro,. Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations	FH=Falling Head Test (Gravity) CH= Constant Head Gravity	

Gibbs & Hill, Inc.

BORING LOG

PROJECT: Mt. Tom - NUSCO | PROJECT NO. 11-2937-002 | BORING NO. OW-9

Location: Holyoke, Mass. | Coord: | Ground Elev: 116.6'

Contractor: Raymond Int'l. | Date Started: 9/9/80 | G.W.L. | Hour: | Date:

Inspector: J. Arcoleo | Date Completed: 9/17/80 | G.W.L. | Hour: | Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
80		SS-17		108	23	23				SW	Well-graded coarse sand w/trace silt (10%) permeability = FH-6
				103	20	20	33%				
				111							
				112							
85				100							
		SS-18	FH-7 CH-4	105	15	41				SW	Well-graded coarse sand w/trace silt (10%)
				104	32	24	29%				
				100							
				117							
90				120							
		SS-19		104	29	34				SW	Well-graded coarse sand w/trace gravel (5%) + little silt (20%) pH=7.0
				140	27	33	38%				
				131							
				134							
				142							
95		SS-20	FH-8 CH-5	130	8	8				SW	Well-graded coarse sand
				130	9	16	17%				
				147							
				144							
				144							
100		SS-21		125	3	9				GW	Gravel(quartz, basalt). Medium well-graded gravel w/fine to med. sand trace (10%)
				128	14	24	17%				
				140							
				136							
				148							
105		SS-22	FH-9	124	23	24				GW	Well-graded fine gravel w/med-fine sand trace (10%) w/little silt(10%)
				140	25	28	33%				
				180							
				164							
				159							
110		SS-23		158	22	19				GW	Well-graded fine gravel w/little med-fine sand (20%) w/trace silt (10%)
				140	22	39	42%				
				153							
				162							
				177							
115				115	21	18	0%			SM	No recovery probably poorly graded fine sand.
				145	20	32					
				174							Info. from Washings
				187							
120				202							

I.D. Casing	4"	Wgt. Hammer on Casing	300 lbs.	Material Notations
I.D. Spoon		Wgt. Hammer on Spoon	140 lbs.	
Type Core Drill		Drop Hammer on Casing	24	
Core Dia.		Drop Hammer on Spoon	30	
Sample & Test Notations				

Gibbs & Hill, Inc.

BORING LOG

PROJECT: Mt. Tom - NUSCO | PROJECT NO. 11-2937-002 | BORING NO. OW-9

Location: Holyoke, Mass. | Coord: | Ground Elev: 116.6'

Contractor: Raymond Int'l. | Date Started: 9/9/80 | G.W.L. 17' 3" | Hour: 8:15 AM | Date: 9/15

Inspector: J. Arcoleo | Date Completed: 9/17/80 | G.W.L. 14' 10" | Hour: 7:30 AM | Date: 9/17

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
120		SS-24		111	36	36	50%			SW	Well-graded fine sand with trace silt + gravel (2% each)
				154	42	40					
				224							
				270							
				220							
125		SS-25		122	24	31				SW	Compacted med, well-graded sand w/ trace fine gravel (5%) w/trace silt (2%)
				168	32	50	79%				
				133							
				245							
				272							
130		SS-26		152	16	26				SP	Poorly graded coarse sand with stones (1"x1") w/fine gravel, trace (5%)
				192	35	36	33%				
				188							
				186							
				215							
135				160	14	10	0%			SP	Hole is washed before driving casing - poorly-graded medium sand
				170	12	25					
				202							
		WS-1		198							No SS sample taken. Wash sample indicates medium sand
				104							
140				170							
				180						SP	
				193							
				196							
				222							
145		SS-27	FH-10	156	18	10				SW	This SS sample driven with 15 blows with heavy hammer well-graded med-coarse sand w/trace silt (1%)
				160	17	56	75%				
				182							
				227							
				206							
150				151						SW	No sample-well-graded med sand Info. from washings
				161							
				178							
				228							
				347							
155		SS-28		203	29	36				SW	Well-graded med. sand w/trace silt (5%)
				231	36	38	54%				
				713							Top of Bedrock at 158'
160		NX					92	100	6		

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations	WS=Wash Sample	

Gibbs & Hill, Inc.

BORING LOG

PROJECT: Mt. Tom - NUSCO | PROJECT NO. 11-2937-002 | BORING NO. OW-9

Location: Holyoke, Mass. | Coord: | Ground Elev: 116.6'

Contractor: Raymond Int'l. | Date Started: 9/9/80 | G.W.L. | Hour: | Date:

Inspector: J. Arcoleo | Date Completed: 9/17/80 | G.W.L. | Hour: | Date:

Notes:

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
160		NX	PT-1			Run #1	92	92%	6		Silty sandstone (Portland Formation).
165		NX				Run #2	92	96%			
											Bottom of Hole at 168'

I.D. Casing	Wgt. Hammer on Casing	Material Notations
I.D. Spoon	Wgt. Hammer on Spoon	
Type Core Drill	Drop Hammer on Casing	
Core Dia.	Drop Hammer on Spoon	
Sample & Test Notations		

Gibbs & Hill, Inc.

Gibbs & Hill, Inc.
ENGINEERS DESIGNERS CONSTRUCTORS

Job No.: 11-2937-004
Boring: OW-10

Summary of Drilling and Sampling Information

Client: NUSCO
Project: Mt. Tom Hydrogeologic Study
Site: Holyoke, Mass.
Rig: CME-75
Driller: B. McKevitt
Contractor: Raymond Int.

Drilling Method:

Cased Hole	0 ft. to 28 ft.	Dia. 4	in.
Cored	28 ft. to 38 ft.	Dia. NX	in.
	___ ft. to ___ ft.	Dia. ___	in.

Drilling Fluid Used: x Yes ___ No Type: Water

Sampler Hammer: Weight 140 lbs. Drop 30 in.

Casing Hammer: Weight - lbs. Drop - in.

Rock Core Diameter 2.125 in. Type core barrel/bit: NQ wireline

Date/Time Drilling Started: 11/21/80 Completed: 11/25/80

Down Time: 6 hrs. Cause(s) Bad weather - heavy rain

Log Summary: Soil: 0-28' mixtures of sand, gravel and trace silt

Rock: Holyoke Diabase

No. Samples: Split Spoon 6 Other: -

Undisturbed: 1

No. Permeability Tests: Constant Head 2 Pressure 1

Falling Head 3 Other: -

No. and Type of Other Tests:

Piezometer Installation:

Pipe: Type: PVC - Sched. 40	Dia. 2"	Depth: From 0 ft. to	20 ft.
Screen: Type: Slot 10 PVC	Dia. 2"	Depth: From 20 ft. to	25 ft.
Filter Material: Type: Coarse Sand		Depth: From 12 ft. to	27 ft.
Seal Material: Type: Cement		Depth: From 0 ft. to	2 ft.
Bentonite		Depth: From 2 ft. to	4 ft.
Bentonite		Depth: From 10 ft. to	12 ft.
Bentonite		Depth: From 28 ft. to	38 ft.

Remarks: In-situ materials allowed to collapse and fill boring as casing was removed from 28-27.

Inspector R. Barbour

BORING LOG

Sheet 1 of 1

PROJECT: Mt. Tom Geohydrologic Study PROJECT NO. 11-2937-002 BORING NO. OW-10

Location: Holyoke, Mass. Coord: Ground Elev: 117.2

Contractor: Raymond Int. Date Started: 11/21/80 G.W.L. 15'5" Hour: 7:30 Date: 11/26/80

Inspector: R. Barbour Date Completed: 11/25/80 G.W.L. Hour: Date:

Notes: Observation Well Screened from 25-20'

Depth Ft.	Elev. Ft.	Sample Type & No.	Test Type & No.	Blows Casing Per Ft.	Blows Sampler 6"	Blows Sampler 6"	Recovery %	RQD %	Drilling Rate Min./Ft.	Graphic Symbol	Description and Remarks
0		SS-1			1	1				SW	Mixtures of sand size sediment (fine to coarse) with traces of fine gravel.
					2	3	29%				
											FLYASH
5		SS-2			2	5				SP	Well sorted fine sand size sediment.
					6	10	29%				
											FLYASH
10		SS-3	FH-1 CH-1		1	2				GP	Mixtures of fine gravel and coarse sand size sediment. Cinders, glass, and porcelain-Fill material)
					2	3	8%				
15		SS-4	FH-2 CH-2		8	10				GP	Mixtures of fine gravel and coarse sand sed. (cinders, glass and procelain-Fill material)
					11	14	25%				
20		SS-5			2	4				SW	Mixtures of sand (fine to medium) and traces of fine gravel (glass, cinders)
					7	7	8%				
25		*OSS-1 SS-6	FH-3		11	12				SW	Mixtures of sand (coarse to fine) with traces of silt (10%) and glass
					11	13	100%				
											Top of bedrock at 28'
30		Nx			Run	1	59	0	5		Dark gray diabase (Holyoke Diabase)
35		Nx	PT-1		Run	2	100	47	5		
40											Bottom of Hole at 38'

I.D. Casing 4"	Wgt. Hammer on Casing Drilled	Material Notations *Oversize S.S.,	
I.D. Spoon 1½"	Wgt. Hammer on Spoon 140	hammered down	
Type Core Drill NQ	Drop Hammer on Casing -	FH=Falling Head Permeability Test	
Core Dia. 1185"	Drop Hammer on Spoon 30 inches	CH=Constant Head Permeability Test	
Sample & Test Notations	Bedrock pressure tested - PT		

Gibbs & Hill, Inc.

SUMMARY OF LABORATORY TESTS

Table of Contents

1. Undisturbed Site Soil Samples

Sample	Number	Page
OW-1	US-1	1
OW-2	US-1,US-2	1
OW-3	US-1	1
OW-4	US-1	1
OW-5	US-1	1
OW-6	US-1,US-2,US-3	1
OW-7	US-1	1
OW-8	US-1	1
OW-10	US-1	3
OW-11	US-1	1
	US-2	2
OW-12	US-1	2
OW-14	US-1,US-2	2
OW-15	US-1	2
OW-20	US-1	3
OW-21	US-1	3
OW-22	US-1	2

2. Split Spoon Soil Samples

OW-1	SS-1,SS-12,SS-18	5
OW-2	SS-1,SS-8	5
OW-3	SS-1,SS-2,SS-9,SS-11,SS-14,SS-17,SS-21	5
	SS-4	8
OW-4	SS-3,SS-5,SS-9,SS-14	8
OW-4	SS-16	5
OW-5	SS-5	8
	SS-15,SS-17	5
	SS-23	6
OW-6	SS-3,SS-5	8
	SS-7,SS-15,SS-21	6
OW-7	SS-3,SS-5,SS-11,SS-19	9
OW-8	SS-2,SS-3,SS-6,SS-9,SS-12,SS-15	9
OW-9	SS-1,SS-2,SS-5,SS-7,SS-12	8
	SS-16,SS-19,SS-22,SS-24,SS-26	9
OW-11	SS-2,SS-6,SS-12	7
OW-12	SS-3,SS-5	8
	SS-9,SS-14	7
OW-13	SS-5,SS-8,SS-15,SS-18	7
OW-14	SS-2,SS-5,SS-7,SS-9,SS-10	10

SUMMARY OF LABORATORY TESTS

Table of Contents

2. Split Spoon Soil Samples (continued)

Sample	Number	Page
OW-15	SS-4,SS-11,SS-13.SS-15	10
OW-16	SS-4,SS-7,SS-9,SS-11,SS-14,SS-16	10
OW-17	SS-3,SS-7,SS-10,SS-13	11
OW-18	SS-5,SS-7,SS-12,SS-16,SS-18	11
OW-19	SS-2,SS-7,SS-11	11

3. River Bottom Samples

ES-1	C-2	4
ES-2	C-4	4
ES-3	C-1	4
ES-5	C-2	4
ES-6	Surface	4

SUMMARY OF LABORATORY TESTS

GEO-TECH LABORATORIES

DATE: February 9, 1981
PROJECT: Mt.Tom Hydrogeologic Study, Holyoke, Ma.
CLIENT: Chemtech Consulting Group Inc.

SAMPLE DESCRIPTION				SOIL CHARACTERISTICS								PERFORMANCE		
BORING NO.	SAMPLE NO.	DEPTH (FT)	IDENTIFICATION	CLASSIF.	DRY DENSITY (PCF)	MOIST. CONT. (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	GRAIN SIZE	SPEC. GRAV.	LOG OF TUBE	POROSITY (n)	PERMEABILITY γ_d PCF	PERMEABILITY K(cm/sec)
OW-1	US-1	0.0-2.5	Tan SILT, l.(+)cf Sand w/roots			13.6		N.P.	**	2.52	*	.45	90.5	6.71×10^{-4}
OW-2	US-1	110.0-112.0	a) Red-Brn. SILT, a. mf Sand		101.2	20.7		N.P.		2.71		.35	107.3	5.66×10^{-5}
			b) Brn. f GRAVEL,a.(-)c Sand,t.(-)Silt			7.0		N.P.						
OW-2	US-2	-0.0-2.0	Gray-Brn. SILT, s. mf Sand,w/roots			24.9		N.P.		2.66		.34	108.9	9.29×10^{-5}
OW-3	US-1	7.0-9.0	Gray-Brn. SILT, a. f Sand			24.8		N.P.	↓	2.66	↓	.40	98.2	1.82×10^{-4}
OW-4	US-1	0.0-2.5	FILL: MISC. SOIL, glass, cinders, wire											
OW-5	US-1	0.0-2.5	Dk. Gray SILT, a. cf Sand			21.2		N.P.	**	2.18	*	.49	84.0	1.31×10^{-4}
OW-6	US-1	0.0-2.8	Dk. Gray SILT, a. cf Sand, w/coal(Fly Ash)			18.9		N.P.		2.17		.45	90.5	2.11×10^{-4}
	US-2	5.0-7.0	Dk. Gray f SAND, a. Silt (Fly Ash)			37.9		N.P.		2.17		.45	90.0	2.25×10^{-4}
	US-3	22.0-24.5	Gray-Brn. mf SAND, a. Silt		89.7	28.8		N.P.		2.65		.44	91.6	7.84×10^{-4}
OW-7	US-1	1.0-2.0	a) Brn. mf SAND, a.(+) Silt			16.2		N.P.		2.74		.40	98.6	9.40×10^{-4}
		0.0-1.0	b) Dk. Gray cf SAND, s. Silt w/coal(Fly Ash)			12.5		N.P.		2.16		.40	97.9	3.01×10^{-4}
OW-8	US-1	0.0-3.0	Brn. SILT, l. f Sand w/roots		88.4	24.5		N.P.		2.79		.44	92.0	6.67×10^{-4}
OW-11	US-1	33.0-35.0	a) Gray mf SAND, a. Silt		97.1	27.3		N.P.	↓	2.56	↓	.29	117.8	1.74×10^{-3}
			b) Gray SILT, s. f Sand w/wood, org.odor			39.5		N.P.						

* See Attached Sheets

80-263

SUMMARY OF LABORATORY TESTS

GEO-TECH LABORATORIES

DATE: February 9, 1981
PROJECT: Mt. Tom Hydrogeologic Study, Holyoke, Ma.
CLIENT: Chemtech Consulting Group Inc.

SAMPLE DESCRIPTION				SOIL CHARACTERISTICS								PERFORMANCE		
BORING NO.	SAMPLE NO.	DEPTH (FT)	IDENTIFICATION	CLASSIF.	DRY DENSITY (PCF)	MOIST. CONT. (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	GRAIN SIZE	SPEC. GRAV.	LOG OF TUBE	POROSITY (n)	PERMEABILITY γ_d PCF	PERMEABILITY K(cm/sec)
OW-10	US-1	0.0-2.0	Gray SILT, s. cf Sand, t(-) f Gravel,w/roots		93.3	40.5			**	2.18	*	.40	99.6	1.62×10^{-4}
OW-21	US-1	20.0-22.0	Red-Gray Varved SILT		93.1	34.2			**	2.78	*	.40	98.6	1.39×10^{-5}
OW-20	US-1	0.0-2.0	Tan SILT, s. mf Sand, w/roots			19.0			**	2.68	*	.42	95.6	1.93×10^{-4}

* See Attached Sheets

80-263

SUMMARY OF LABORATORY TESTS

GEO-TECH LABORATORIES

DATE: February 9, 1981
PROJECT: Mt. Tom Hydrogeologic Study, Holyoke, Ma.
CLIENT: Chemtech Consulting Group Inc.

SAMPLE DESCRIPTION				SOIL CHARACTERISTICS								PERFORMANCE		
BORING NO.	SAMPLE NO.	DEPTH (FT)	IDENTIFICATION	CLASSIF.	DRY DENSITY (PCF)	MOIST. CONT. (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	GRAIN SIZE	SPEC. GRAV.	LOG OF TUBE	POROSITY (n)	PERMEABILITY γ_d PCF	PERMEABILITY K(cm/sec)
ES-1	C-2	Top	Tan cm SAND, l. f Gravel						*		*			
ES-1	C-2	Bottom	Tan cm SAND, l. f Gravel						*					
ES-2	C-4	Top	Brn. f SAND, s. Silt						*		*			
ES-2	C-4	Bottom	Brn. mf SAND, s,(-) Silt						*					
ES-3	C-1	Top	Tan cm SAND, l. f Gravel						*		*			
ES-3	C-1	Bottom	Tan cm SAND, l. f Gravel						*					
ES-5	C-2	Top	Tan cm SAND, t. f Gravel						*		*			
ES-5	C-2	Bottom	Tan f SAND, a. Silt						*					
ES-6	Surface	/	Brn. cf SAND, a. Silt, l. mf Gravel						*		*			

* See Attached Sheets

80-263

SUMMARY OF LABORATORY TESTS

GEO-TECH LABORATORIES

DATE: February 9, 1981
PROJECT: Mt.Tom Hydrogeologic Study, Holyoke, Ma.
CLIENT: Chemtech Consulting Group Inc.

SAMPLE DESCRIPTION				SOIL CHARACTERISTICS								PERFORMANCE		
BORING NO.	SAMPLE NO.	DEPTH (FT)	IDENTIFICATION	CLASSIF.	DRY DENSITY (PCF)	MOIST. CONT. (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	GRAIN SIZE	SPEC. GRAV.	LOG OF TUBE	POROSITY (n)	PERMEABILITY γ_d PCF	PERMEABILITY K(cm/sec)
OW-3	SS-4	20-22	Tan mf SAND, a. Silt			25.0			*					
OW-4	SS-3	15-17	Gray cf SAND, s. (+) Silt, l.(+)f Gravel			25.3			*					
OW-4	SS-5	25-27	Gray cf SAND, s. mf Gravel, l. Silt			11.4			*					
OW-4	SS-9	50-52	Tan cf SAND, t. f Gravel, t. Silt			13.7			*					
OW-4	SS-14	100-102	Brown f SAND, a. Silt			19.3			*					
OW-5	SS-5	20-22	Tan mf SAND, l. Silt			24.3			*					
OW-6	SS-3	10-12	Gray cf SAND, a. Silt, t. f Gravel			25.1			*					
OW-6	SS-5	20-22	Tan SILT, s. mf Sand			25.6			*					
OW-9	SS-1	0-2	Gray SILT, a. cf Sand, t.(-)fine Gravel			27.8			*					
OW-9	SS-2	5-7	Brown cf SAND, s. Silt, l. f Gravel w/glass, steel			27.7			*					
OW-9	SS-5	20-22	Tan cf SAND, s. Silt, l.(-) f Gravel w/glass, steel			23.7			*			.45	90.7	1.09×10^{-4}
OW-9	SS-7	30-32	Tan cf SAND, l. cf Gravel, t. Silt			20.4			*					
OW-9	SS-12	55-57	Brown mf GRAVEL, l. cf Sand, t. Silt			14.2			*					
OW-12	SS-3	10-12	Gray SILT, s.(+) f Sand			40.2			*					
OW-12	SS-5	20-22	Tan mf SAND, a. Silt			20.7			*			.38	102.6	1.14×10^{-4}

* See Attached Sheets

80-263

SUMMARY OF LABORATORY TESTS

GEO-TECH LABORATORIES

DATE: February 9, 1981
PROJECT: Mt.Tom Hydrogeologic Study, Holyoke, Ma.
CLIENT: Chemtech Consulting Group Inc.

SAMPLE DESCRIPTION				SOIL CHARACTERISTICS								PERFORMANCE		
BORING NO.	SAMPLE NO.	DEPTH (FT)	IDENTIFICATION	CLASSIF.	DRY DENSITY (PCF)	MOIST. CONT. (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	GRAIN SIZE	SPEC. GRAV.	LOG OF TUBE	POROSITY (n)	PERMEABILITY γ_d PCF	PERMEABILITY K(cm/sec)
OW-7	SS-3	8-10	Lt.Brn. mf SAND, and Silt						*	2.60		.41	98.0	3.6×10^{-4}
OW-7	SS-5	18-20	Lt.Brn. SILT and f Sand						*	2.59				
OW-7	SS-11	55-57	Brn. mf GRAVEL, s. cf Sand, t. Silt						*	3.08				
OW-7	SS-19	140-142	Brn. mf SAND, s. Silt						*	2.67				
OW-8	SS-2	5-7	Lt. Brn. SILT, t. f Sand						*	2.44		.43	93.2	1.8×10^{-4}
OW-8	SS-3	10-12	Lt.Brn. SILT, t. f Sand						*	2.30		.42	96.2	6.7×10^{-5}
OW-8	SS-6	25-27	Brn. cf SAND, s. Silt			10.5			*	2.75				
OW-8	SS-9	40-42	Grey cf SAND, t. Silt						*	2.69				Turbulent Flow
OW-8	SS-12	60-62	Brn. mf SAND, and Silt			55.2			*	2.58		.44	91.5	6.6×10^{-5}
OW-8	SS-15	100-102	Brn. mf SAND, l. Silt						*	2.72				
OW-9	SS-16	75-77	Brn. cf SAND, t. Silt			6.8			*	2.77				
OW-9	SS-19	90-92	Lt.Brn. cf SAND, s. f Gravel, t. Silt						*	2.65				
OW-9	SS-22	105-107	Brn. cf SAND, s. f Gravel, t. Silt						*					
OW-9	SS-24	120-124	Brn. cf SAND, l. f Gravel, l. Silt			14.8			*	2.75				
OW-9	SS-26	130-132	Brn. cf SAND, t. f Gravel, t. Silt						*					

* See attached sheets.

80-263

Logs of Thin Wall Tube Samples

Table of Contents

Sample Number		Page
OW-1	US-1	12
OW-2	US-1	13
	US-2	14
OW-3	US-1	15
OW-4	US-1	16
OW-5	US-1	17
OW-6	US-1	18
	US-2	19
	US-3	20
OW-7	US-1	21
OW-8	US-1	22
OW-10	US-1	30
OW-11	US-1	23
	US-2	24
OW-12	US-1	25
OW-14	US-1	26
	US-2	27
OW-15	US-1	29
OW-20	US-1	32
OW-21	US-1	31
OW-22	US-1	27
ES-1	C-2	33-34
ES-2	C-4	35-36
ES-3	C-1	37-38
ES-5	C-2	39-41
ES-6	Surface	42

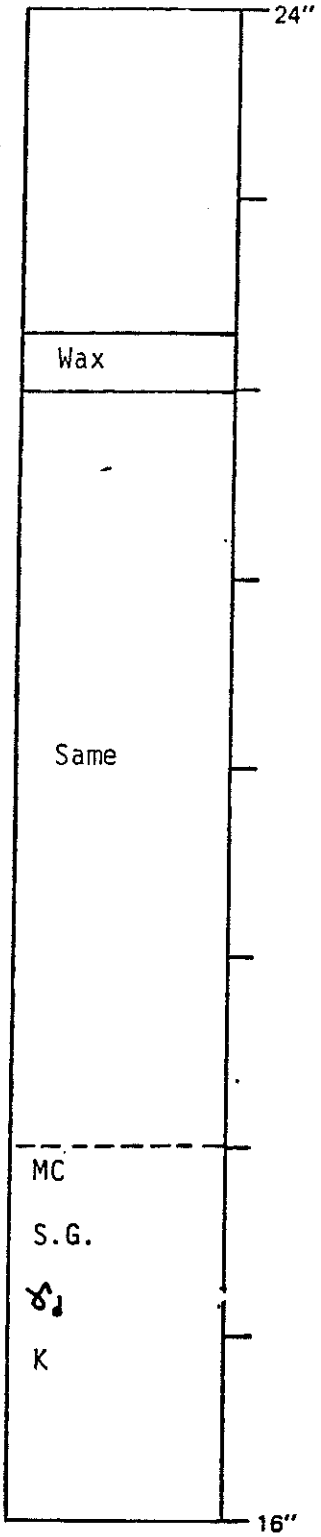
Geo-Tech Laboratories
43 SOUTH AVENUE, P.O. BOX 129
FANWOOD, NEW JERSEY 07023
(201) 232-2008

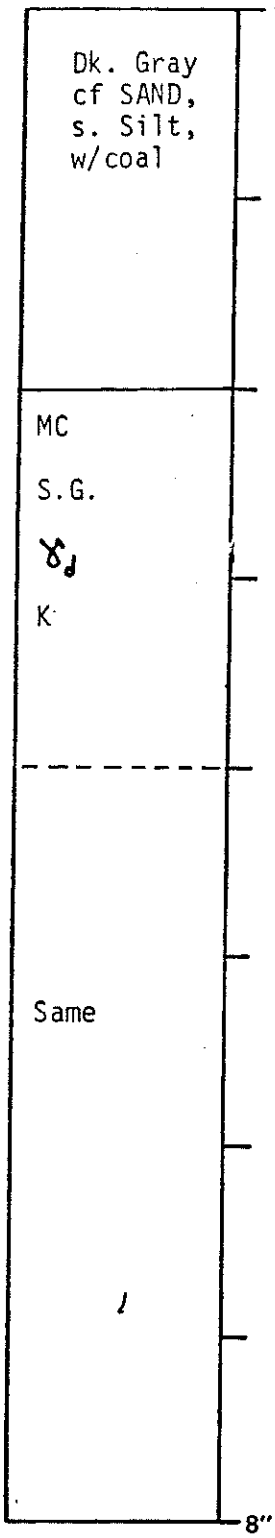
LOG OF THIN WALL TUBE SAMPLE

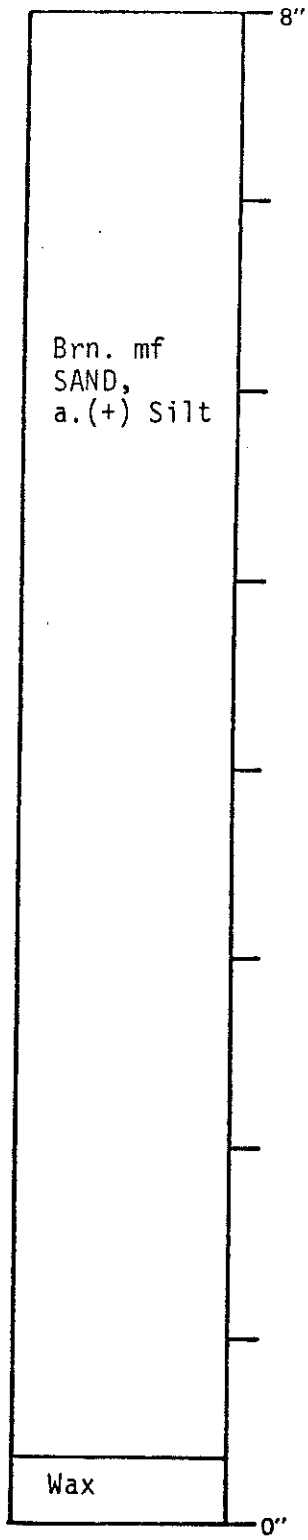
Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring & Sample No.: OW - 7 US - 1 Depth:

Description: Rec. 22"







80-263

Geo-Tech Laboratories

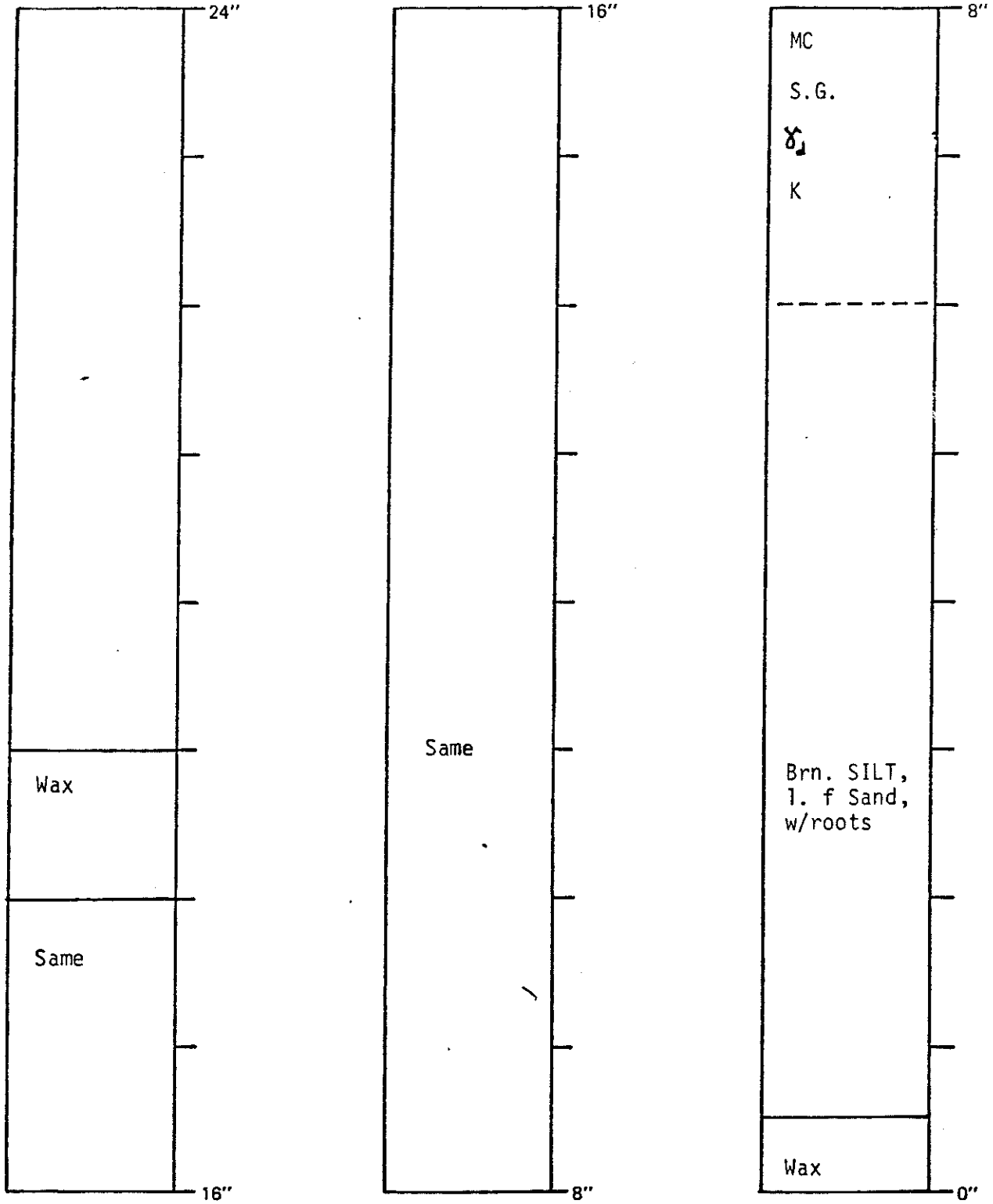
43 SOUTH AVENUE, P.O. BOX 129
FANWOOD, NEW JERSEY 07023
(201) 232-2008

LOG OF THIN WALL TUBE SAMPLE

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring & Sample No.: OW - 8 US - 1 Depth: 0' - 3'

Description: Rec. 18"



80-263

Geo-Tech Laboratories

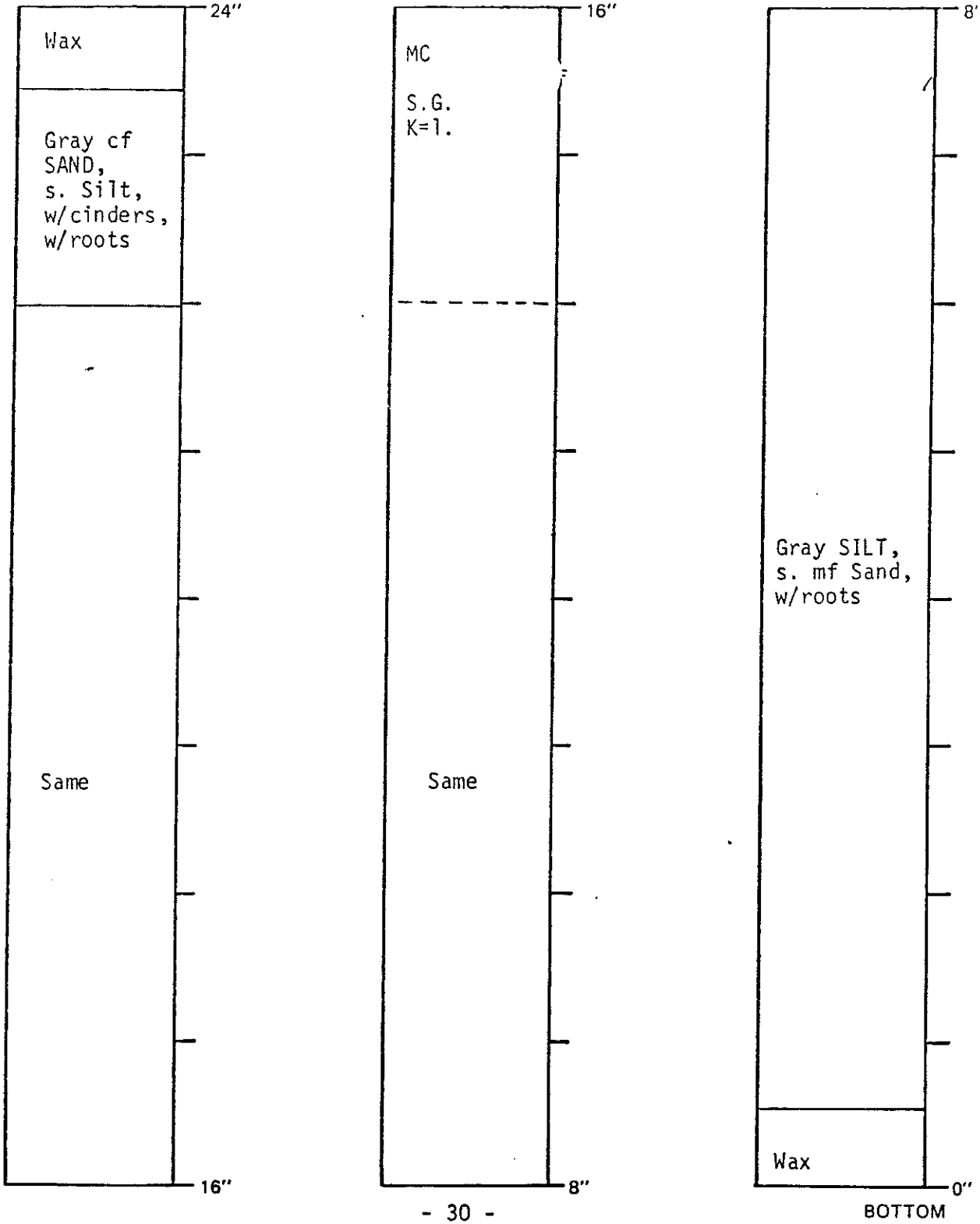
43 SOUTH AVENUE, P.O. BOX 129
FANWOOD, NEW JERSEY 07023
(201) 232-2008

LOG OF THIN WALL TUBE SAMPLE

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring & Sample No.: OW - 10 US-1 Depth:

Description:



80-263

Geo-Tech Laboratories
43 SOUTH AVENUE, P.O. BOX 129
FANWOOD, NEW JERSEY 07023
(201) 232-2008

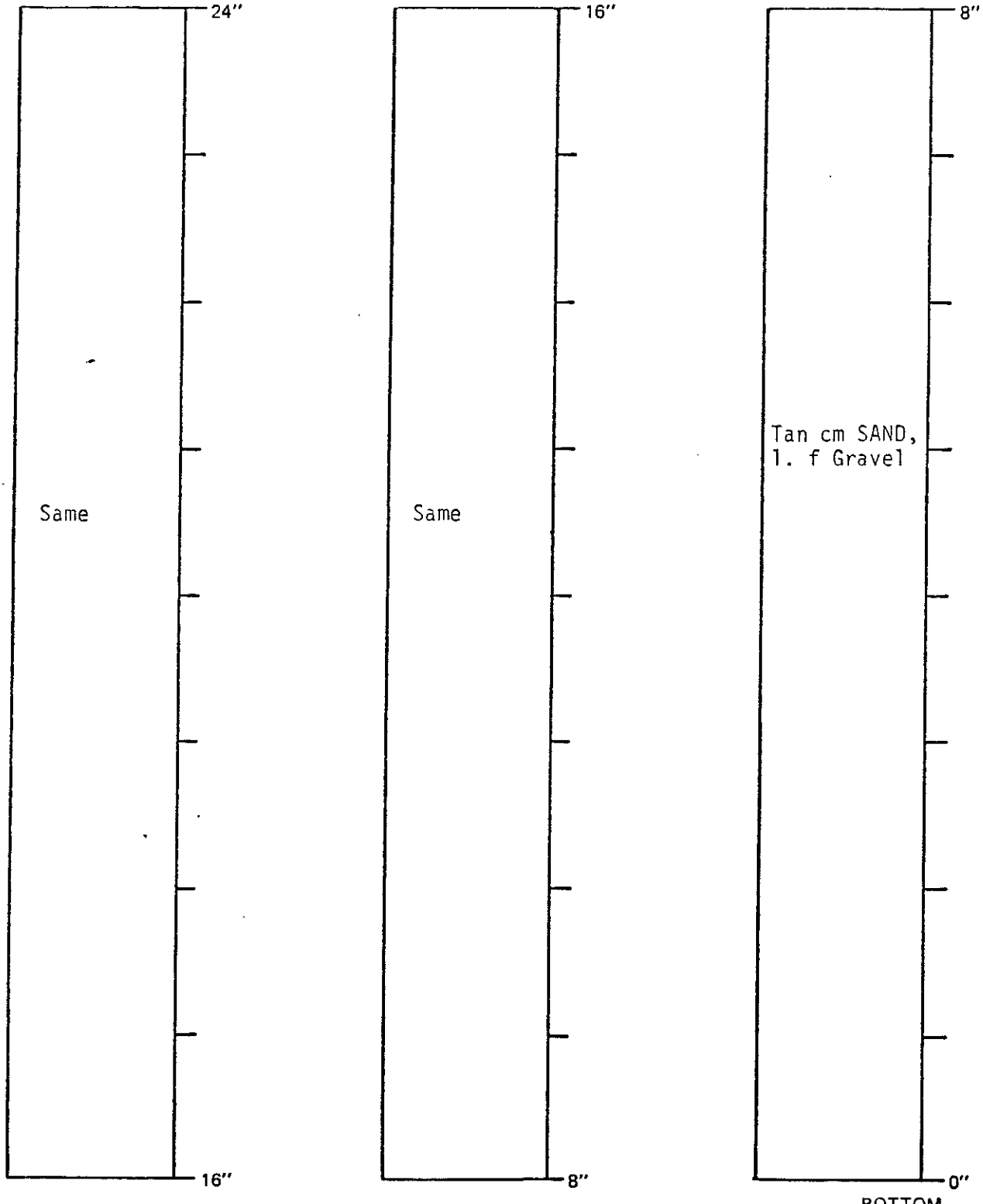
80-263

LOG OF THIN WALL TUBE SAMPLE

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring & Sample No.: ES-1 C-2 Depth:

Description: Tan cm SAND, l. f Gravel



Geo-Tech Laboratories
43 SOUTH AVENUE, P.O. BOX 129
FANWOOD, NEW JERSEY 07023
(201) 232-2008

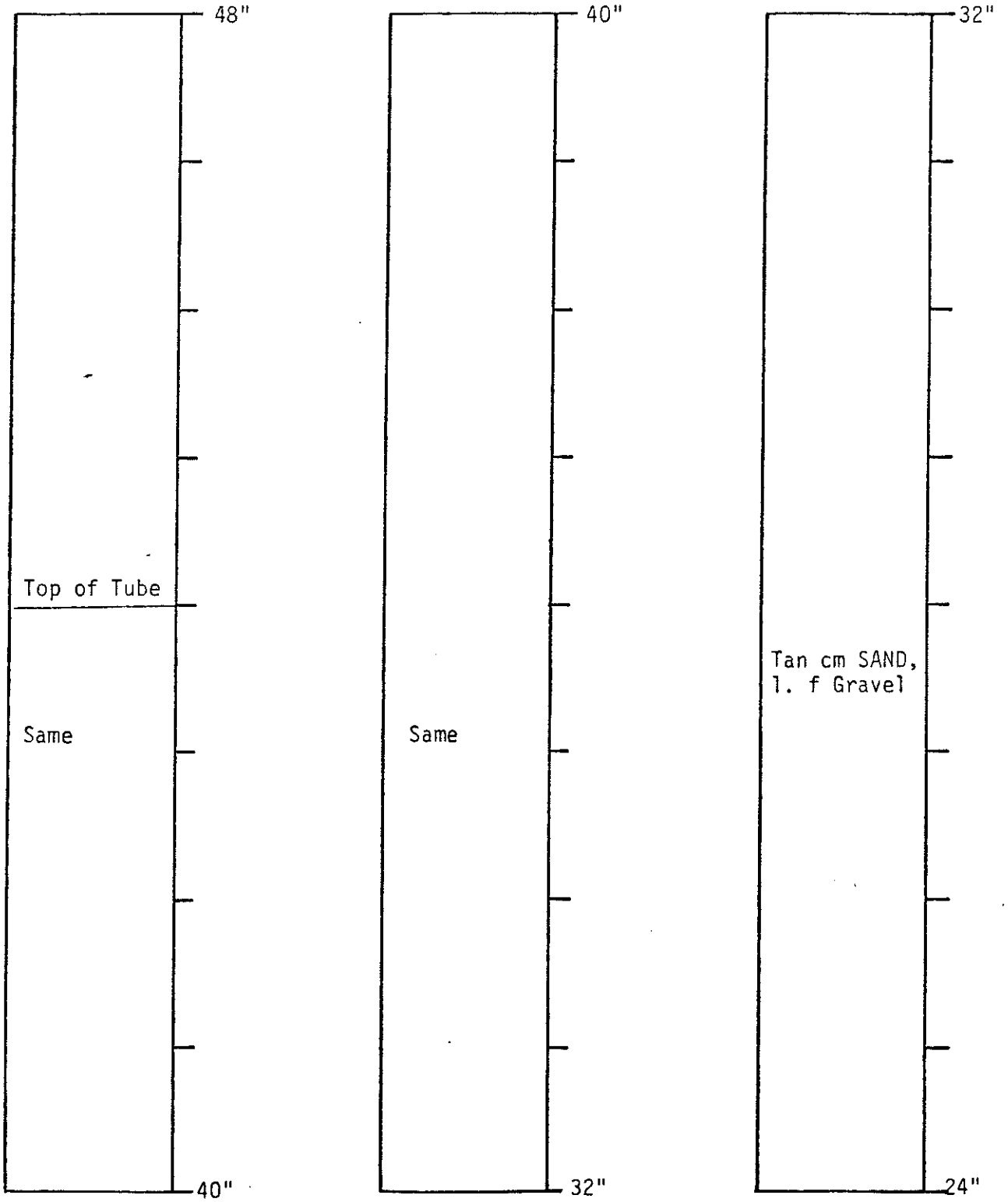
80-263

LOG OF THIN WALL TUBE SAMPLE

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring & Sample No.: ES-1 C-2 Depth:

Description: Tan cm SAND, l. f Gravel



Geo-Tech Laboratories

43 SOUTH AVENUE, P.O. BOX 129
FANWOOD, NEW JERSEY 07023
(201) 232-2008

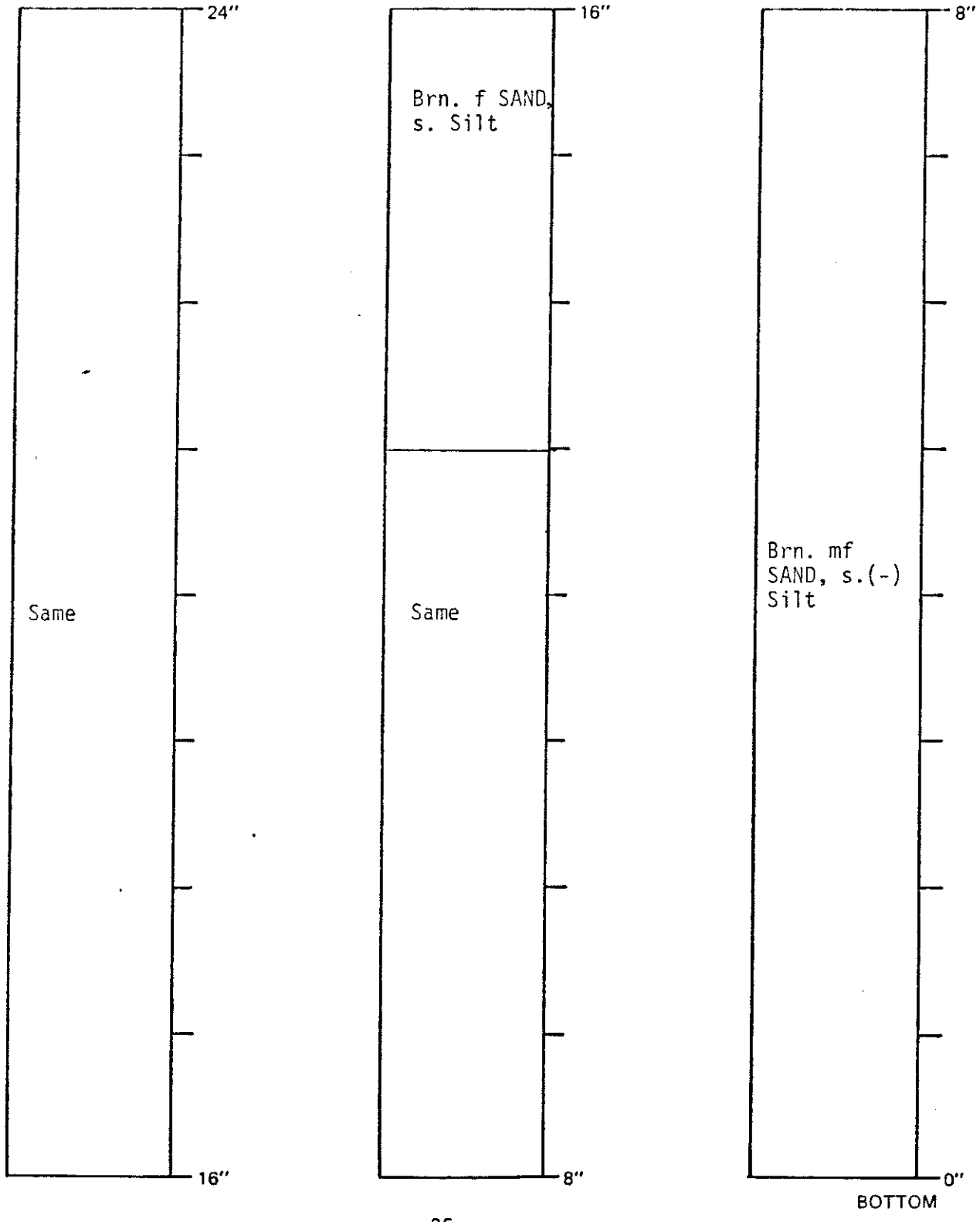
80-263

LOG OF THIN WALL TUBE SAMPLE

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring & Sample No.: ES-2 C-4 Depth:

Description: Brn. mf SAND, s. (-) Silt



Geo-Tech Laboratories
43 SOUTH AVENUE, P.O. BOX 129
FANWOOD, NEW JERSEY 07023
(201) 232-2008

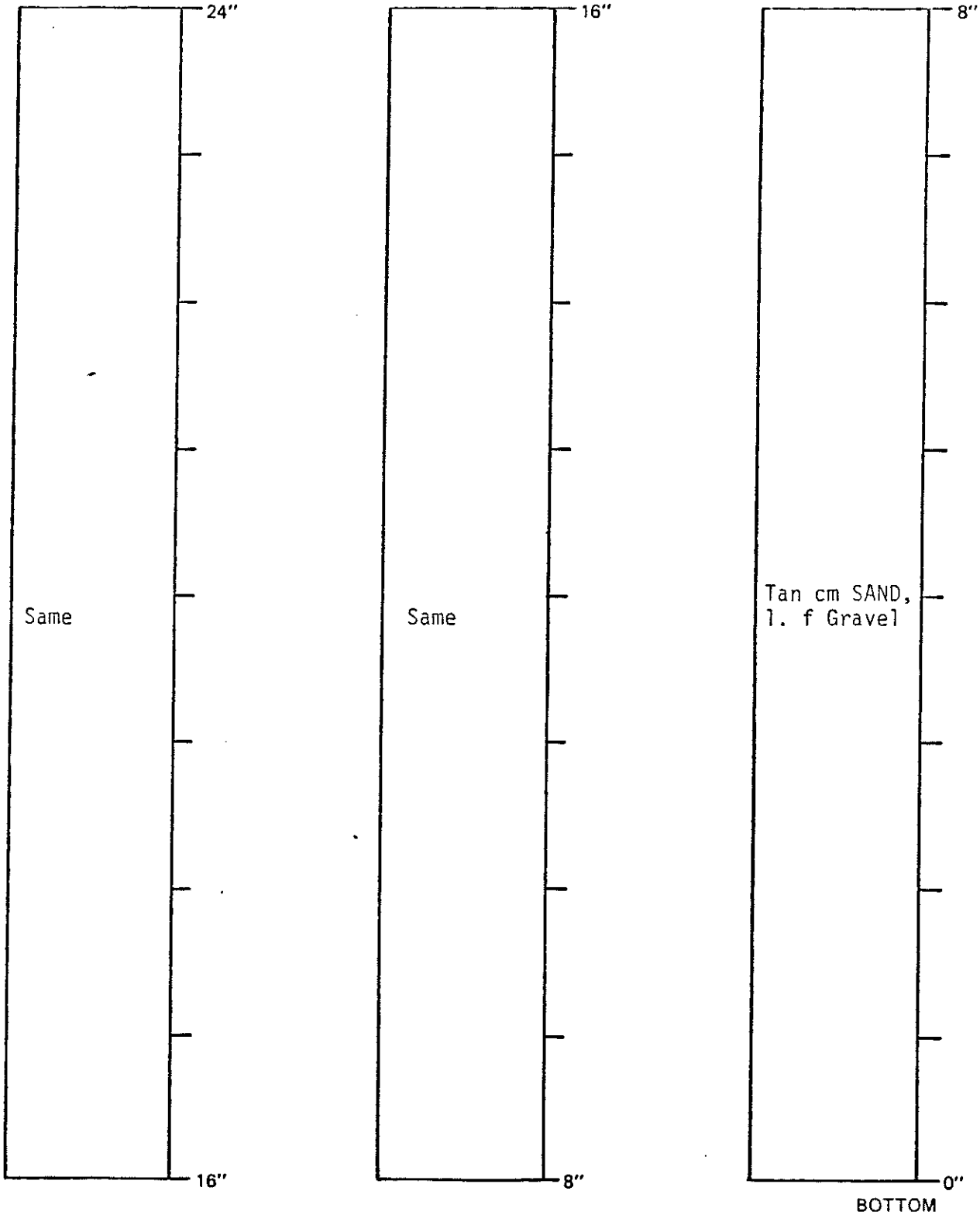
80-263

LOG OF THIN WALL TUBE SAMPLE

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring & Sample No.: ES-3 C-1 Depth:

Description: Tan cm SAND, l. f Gravel



Geo-Tech Laboratories
43 SOUTH AVENUE, P.O. BOX 129
FANWOOD, NEW JERSEY 07023
(201) 232-2008

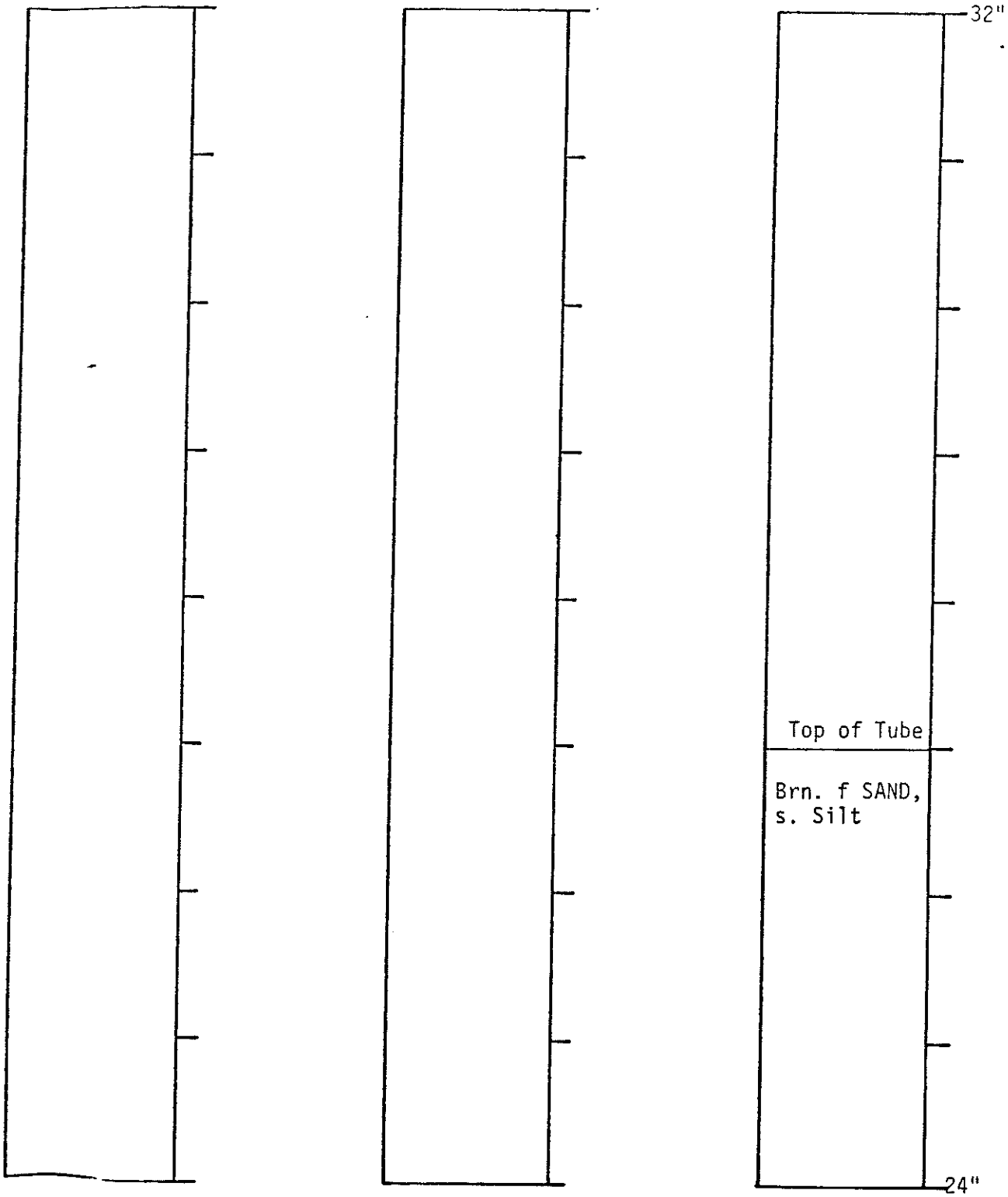
80-263

LOG OF THIN WALL TUBE SAMPLE

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring & Sample No.: ES-2 C-4 Depth:

Description: Brn. f SAND, s. Silt



Geo-Tech Laboratories
43 SOUTH AVENUE, P.O. BOX 129
FANWOOD, NEW JERSEY 07023
(201) 232-2008

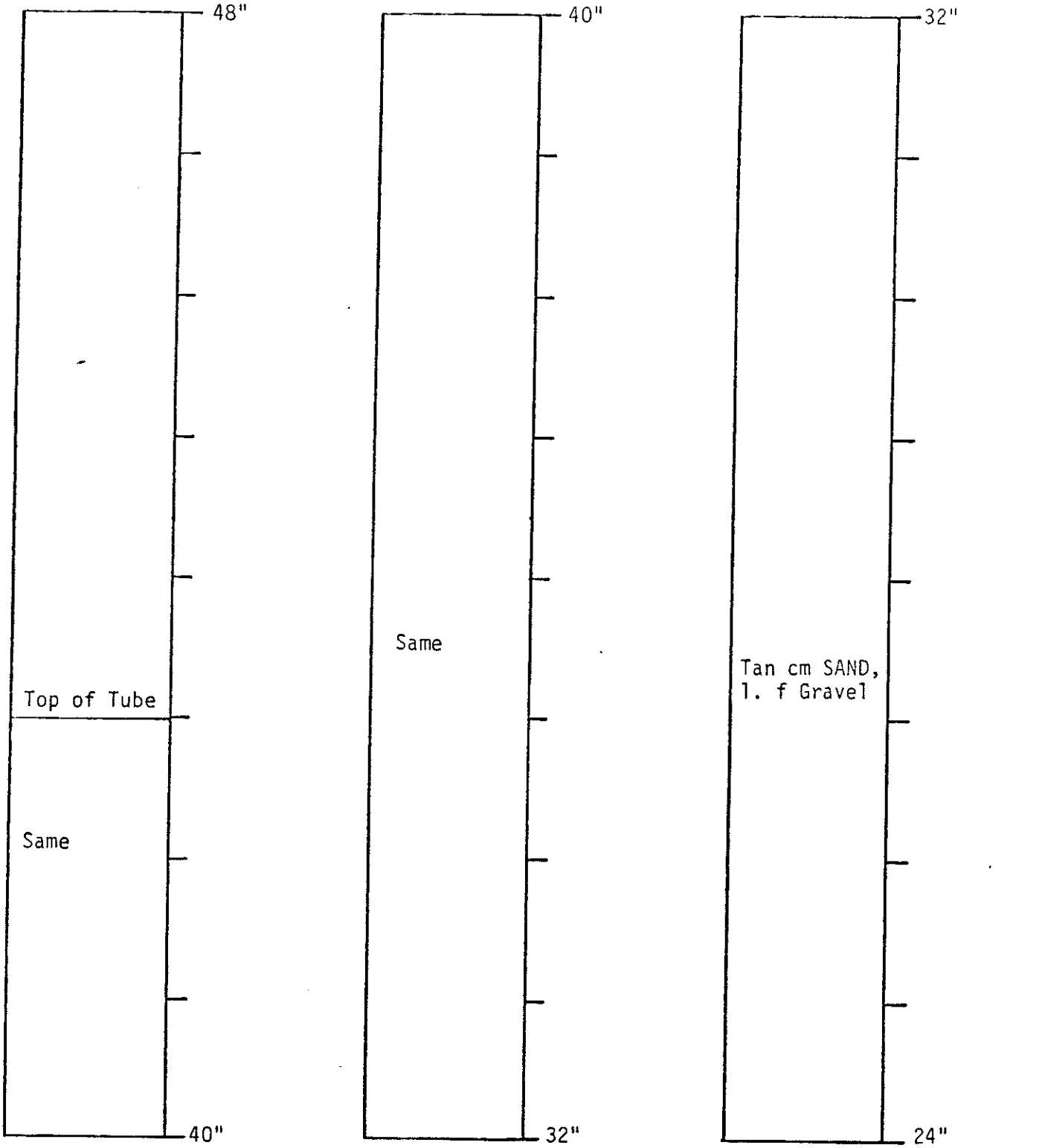
80-263

LOG OF THIN WALL TUBE SAMPLE

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring & Sample No.: ES-3 C-1 Depth:

Description: Tan cm SAND, l. f Gravel



Geo-Tech Laboratories
43 SOUTH AVENUE, P.O. BOX 129
FANWOOD, NEW JERSEY 07023
(201) 232-2008

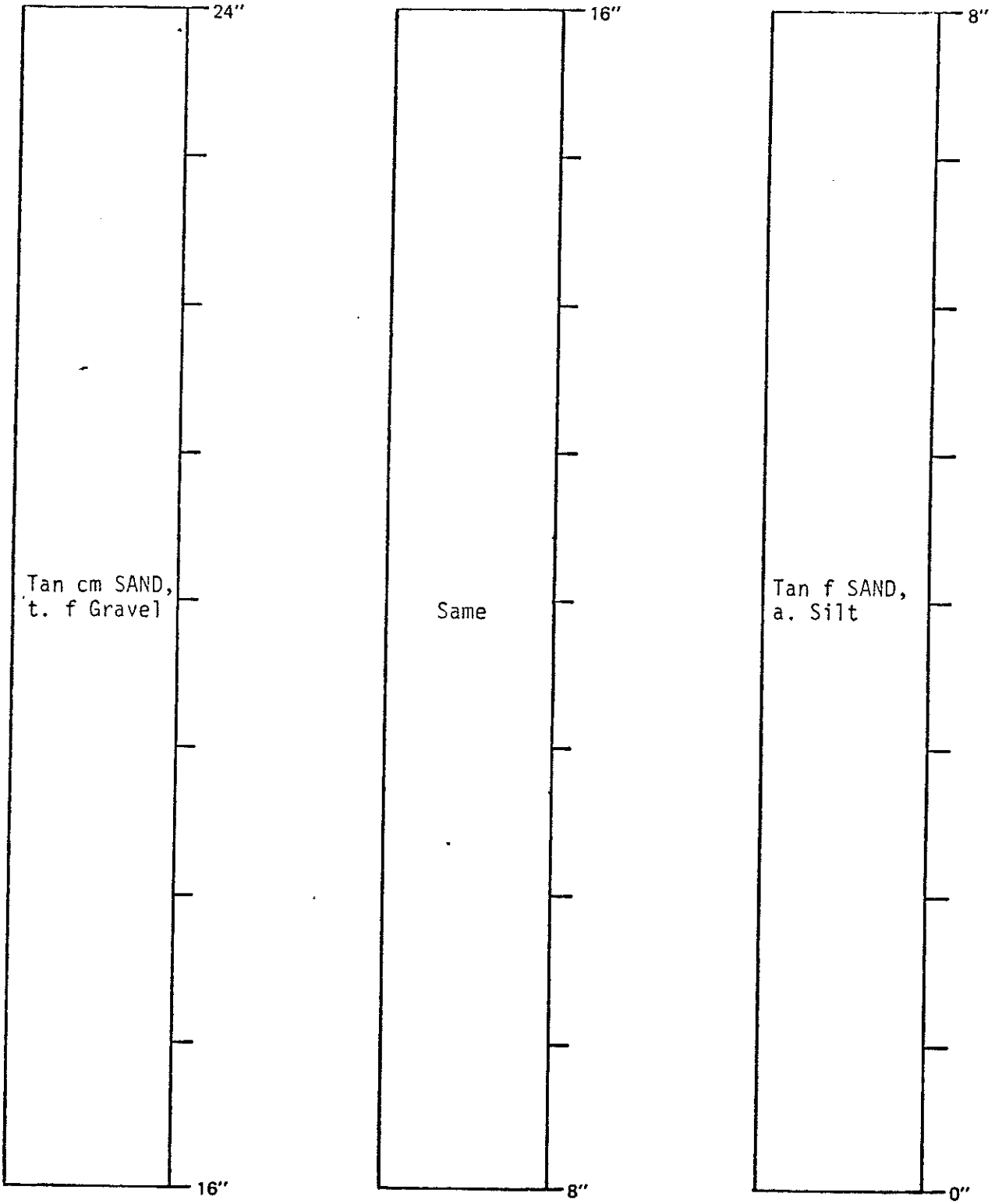
80-263

LOG OF THIN WALL TUBE SAMPLE

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring & Sample No.: ES-5 C-2 Depth:

Description: Tan f. SAND, a. Silt



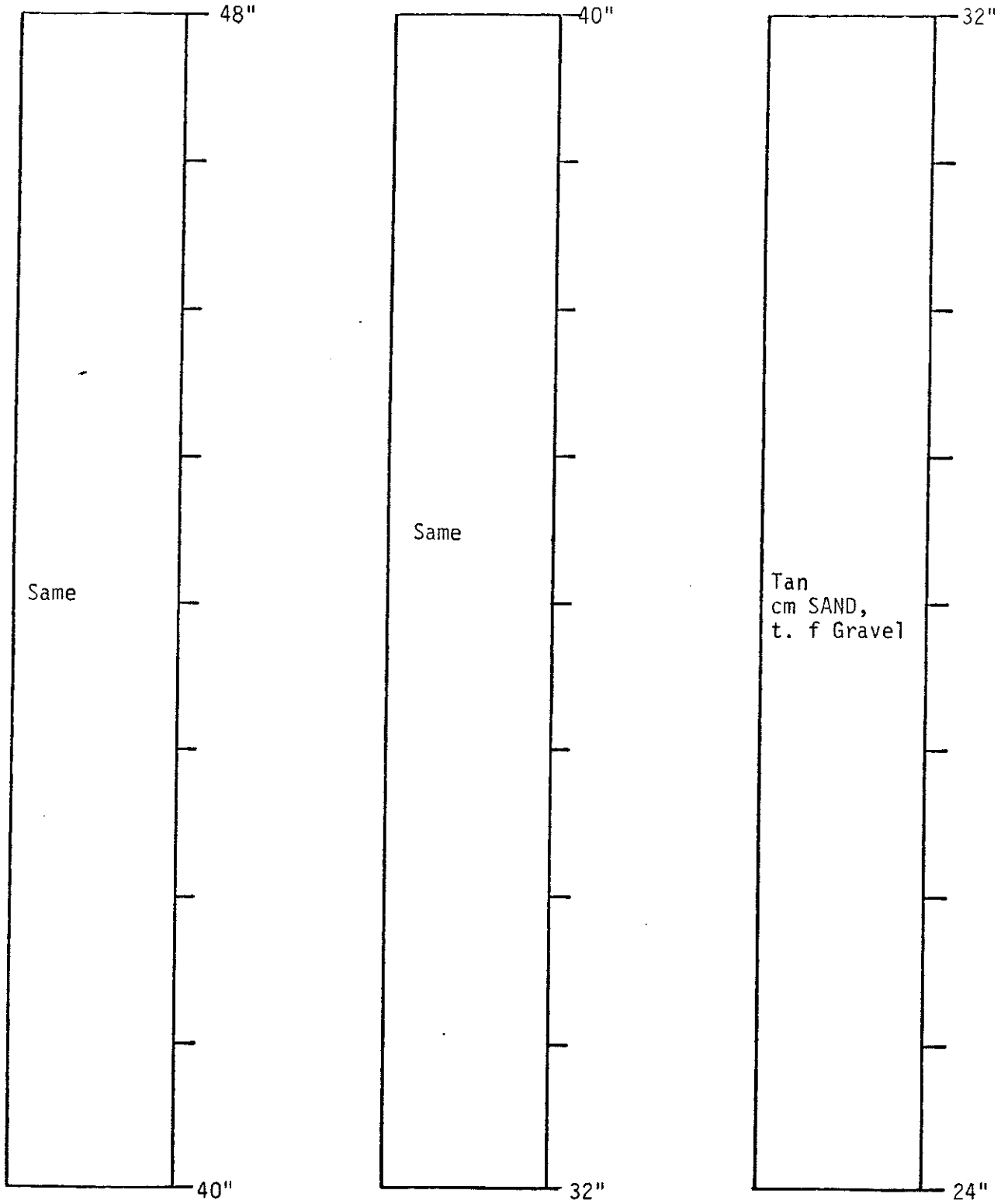
Geo-Tech Laboratories
43 SOUTH AVENUE, P.O. BOX 129
FANWOOD, NEW JERSEY 07023
(201) 232-2008 80-263

LOG OF THIN WALL TUBE SAMPLE

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring & Sample No.: ES-5 C-2 Depth:

Description: Tan cm SAND, t. f Gravel



Geo-Tech Laboratories

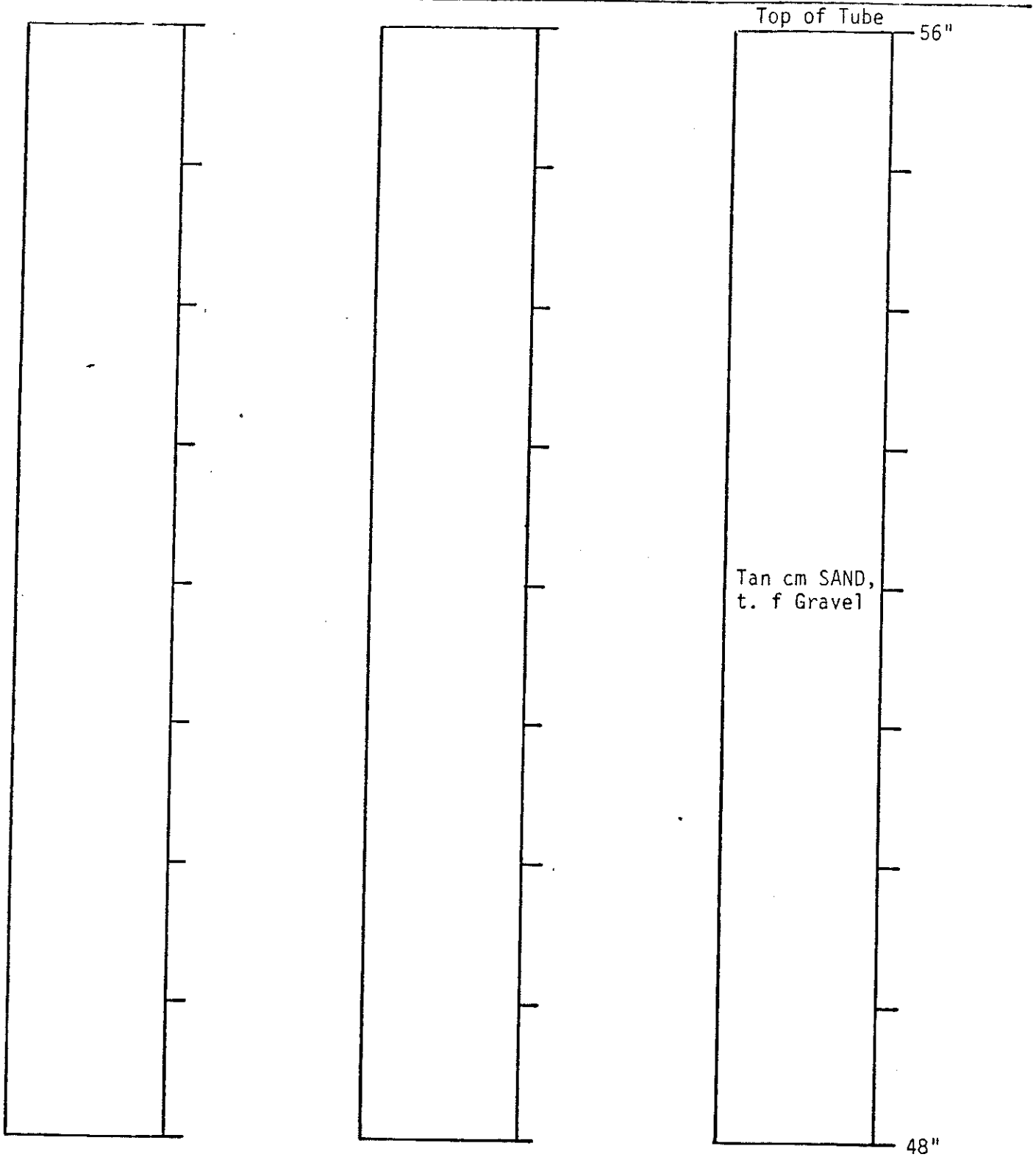
43 SOUTH AVENUE, P.O. BOX 129
FANWOOD, NEW JERSEY 07023
(201) 232-2008 80-263

LOG OF THIN WALL TUBE SAMPLE

Project: Mt. Tom Hydrogeologic Study, Holyoke,Ma.

Boring & Sample No. ES-5 C-2 Depth:

Description: Tan cm SAND, t. f Gravel



Geo-Tech Laboratories
43 SOUTH AVENUE, P.O. BOX 129
FANWOOD, NEW JERSEY 07023
(201) 232-2008

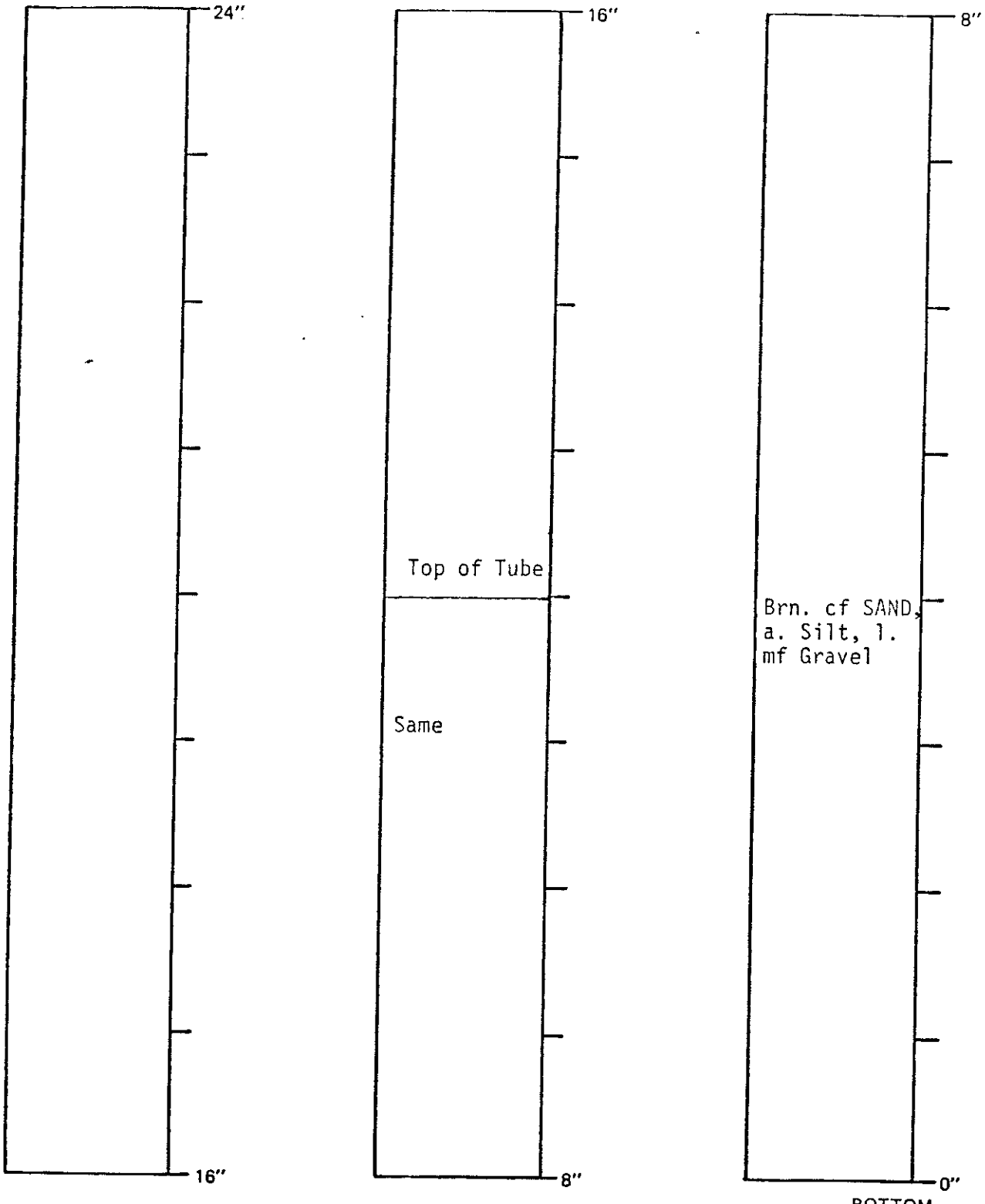
80-263

LOG OF THIN WALL TUBE SAMPLE

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring & Sample No.: ES-6 Surface Depth:

Description: Brn. cf SAND, a. Silt, l. mf Gravel



GRAIN SIZE ANALYSIS

Table of Contents

Note: Grain size analysis of flyash and bottom ash are presented in the next section.

1. Undisturbed Site Soil Samples

Sample	Number	Page
OW-1	US-1	43
OW-2	US-1 (a,b)	44
OW-2	US-2	45
OW-3	US-1	46
OW-5	US-1	47
OW-6	US-1	48
OW-6	US-2	49
OW-6	US-3	50
OW-7	US-1 (a,b)	51
OW-8	US-1	52
OW-10	US-1	60
OW-11	US-1 (a,b)	53
OW-11	US-2	54
OW-12	US-1	55
OW-14	US-1	56
OW-14	US-2	57
OW-15	US-1	58
OW-20	US-1	62
OW-21	US-1	61
OW-22	US-1 (a,b)	59

2. Split Spoon Soil Samples

OW-1	SS-1	68
	SS-12	69
	SS-18	70
OW-2	SS-1	71
	SS-8	72
OW-3	SS-1	73
	SS-2	74
	SS-4	96
	SS-9	75
	SS-11	76
	SS-14	77
	SS-17	78
	SS-21	79
OW-4	SS-3	97
	SS-5	98

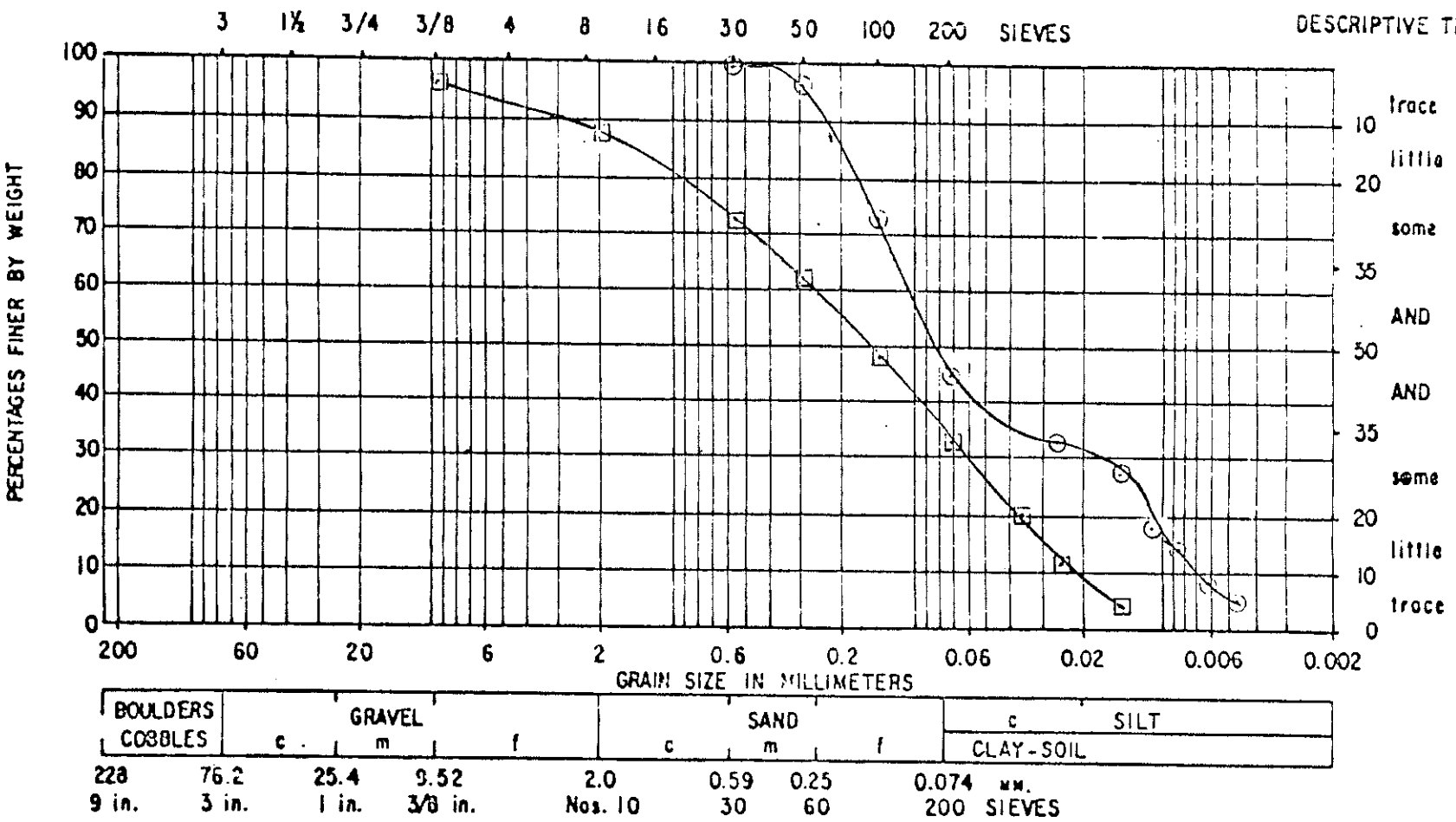
GRAIN SIZE ANALYSIS

Table of Contents

2. Split Spoon Soil Samples (continued)

Sample	Number	Page
OW-4	SS-9	99
	SS-14	100
	SS-16	80
OW-5	SS-5	101
	SS-15	81
	SS-17	82
	SS-23	83
OW-6	SS-3	102
	SS-5	103
	SS-7	84
	SS-15	85
	SS-21	86
OW-7	SS-3	111
	SS-5	112
	SS-11	113
	SS-19	114
OW-8	SS-2	115
	SS-3	116
	SS-6	117
	SS-9	118
	SS-12	119
	SS-15	120
OW-9	SS-1	104
	SS-2	105
	SS-5	106
	SS-7	107
	SS-12	108
	SS-16	121
	SS-19	122
	SS-22	123
	SS-24	124
	SS-26	125
OW-11	SS-2	87
	SS-6	88
	SS-12	89
OW-12	SS-3	109
	SS-5	110
	SS-9	90
	SS-14	91
OW-13	SS-5	92
	SS-8	93

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

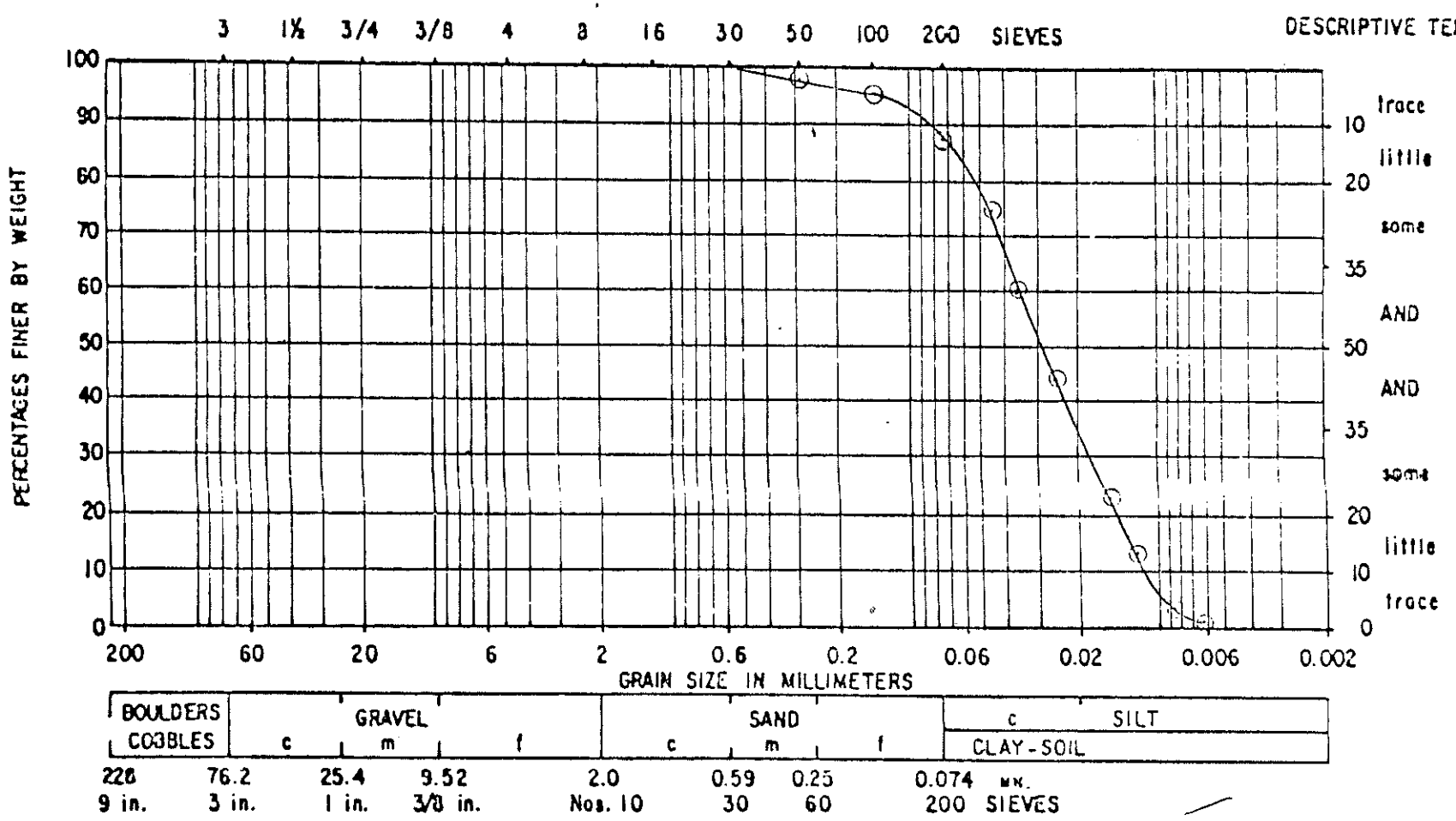
Boring #: OW-7 Sample #: US-1(a)

Description: Brown medium-fine SAND, and (+) Silt

Boring #: OW-7 Sample #: US-1(b)

Description: Dark Gray coarse-fine SAND, some Silt with coal

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

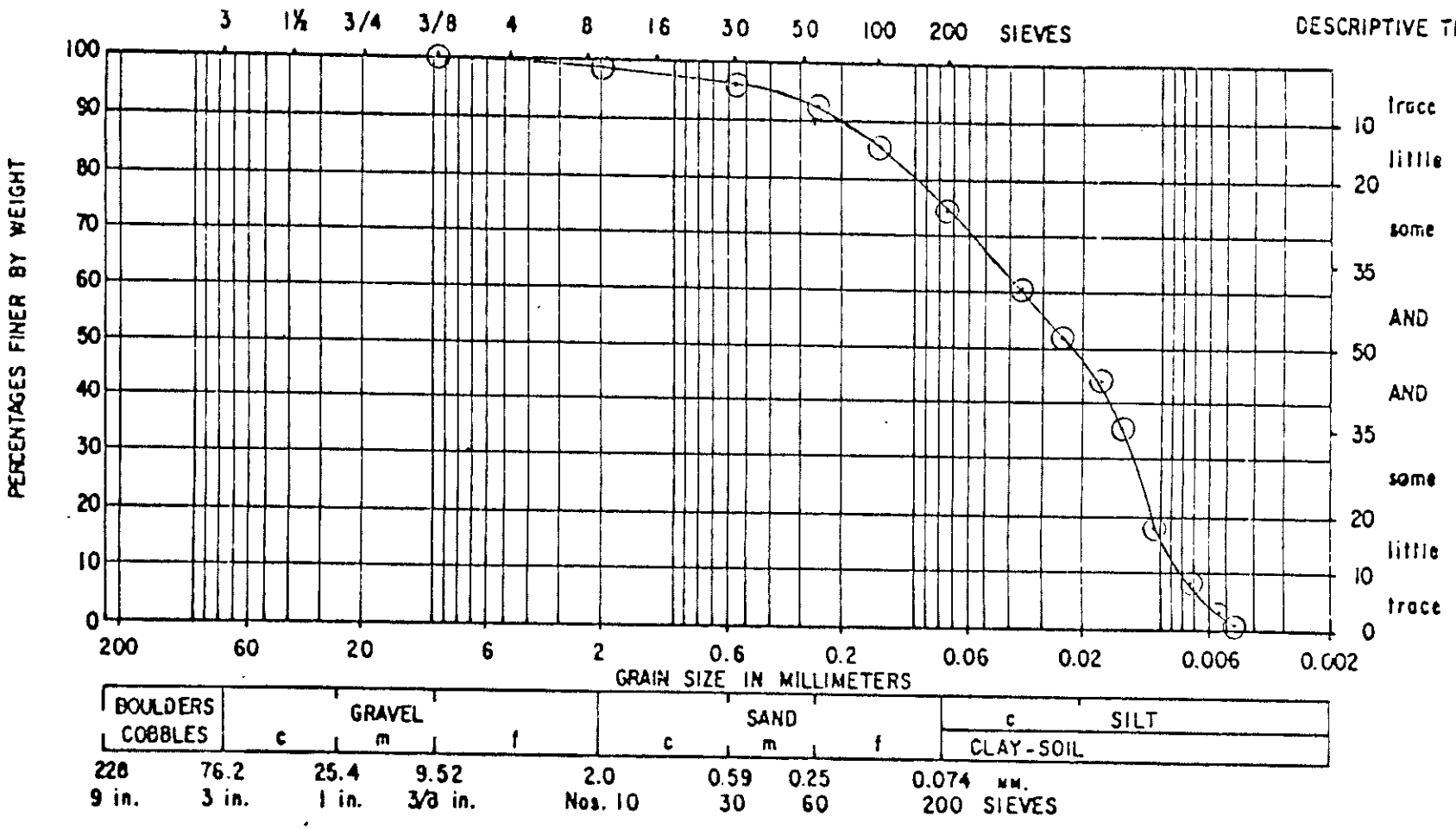
Boring #: OW-8 Sample #: US-1

Description: Brown SILT, little fine Sand, with roots

Geo-Tech Laboratories

80-263

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring #: OW-10 Sample #: US-1

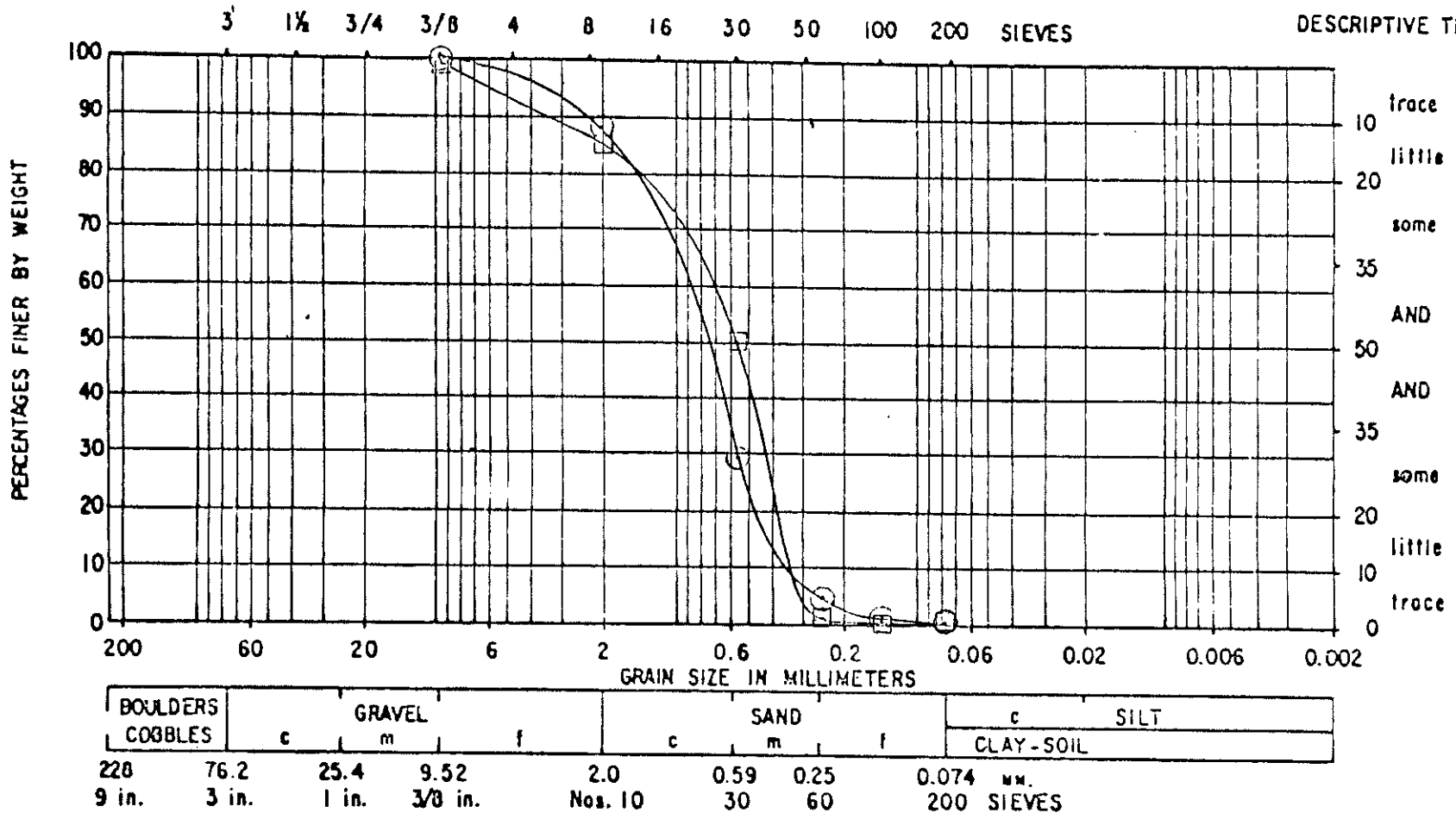
Description: Gray SILT, some coarse-fine Sand, trace (-) fine Gravel, with roots

- 09 -

Geo-Tech Laboratories

80-263

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

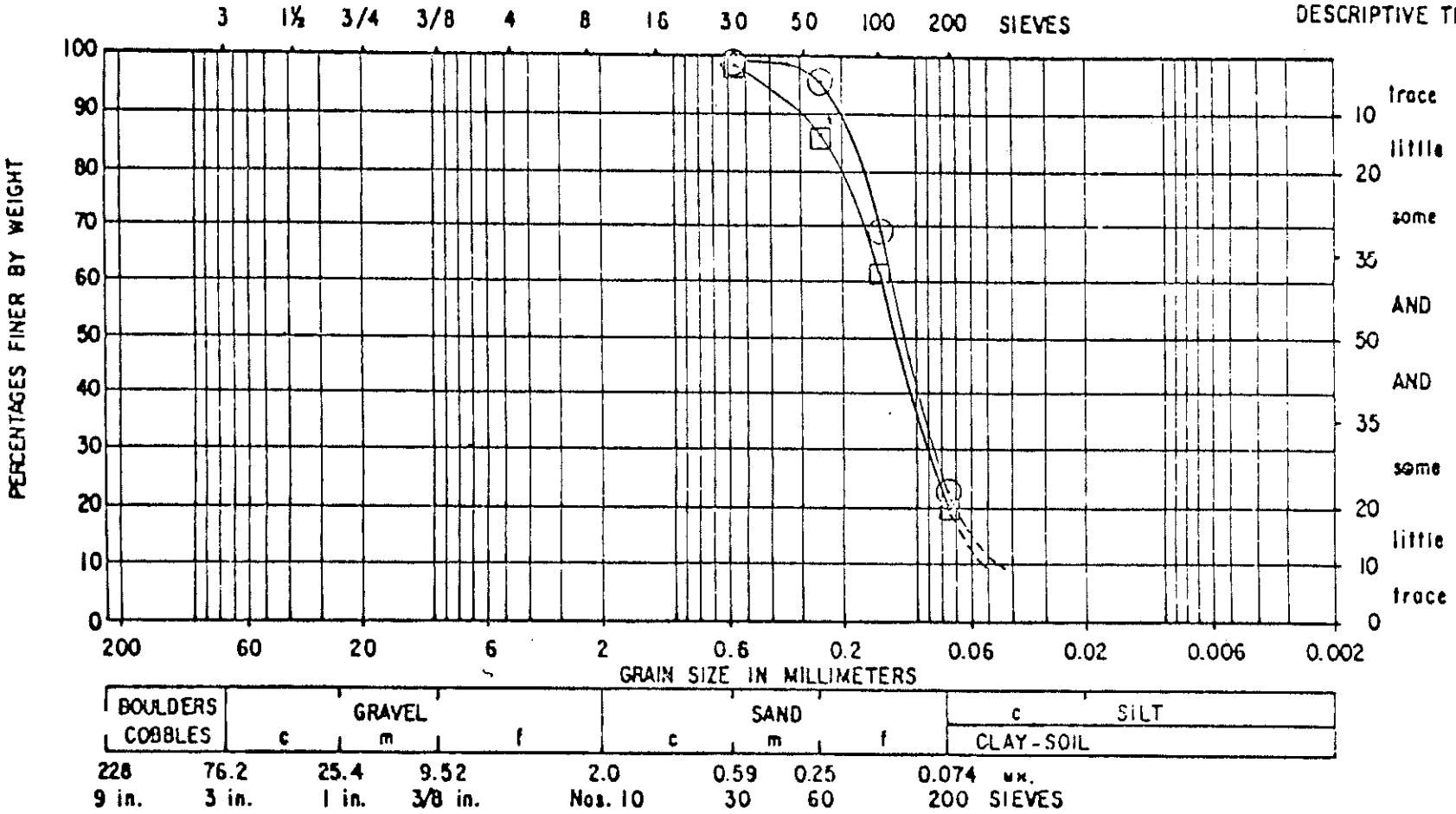
Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

				Symbol
Boring #:	ES-1	Sample # C-2 (a)	Top	⊙
Description:	Tan coarse-medium SAND, little fine Gravel			
Boring #:	ES-1	Sample # C-2 (b)	Bottom	⊡
Description:	Tan coarse-medium SAND, little fine Gravel			

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

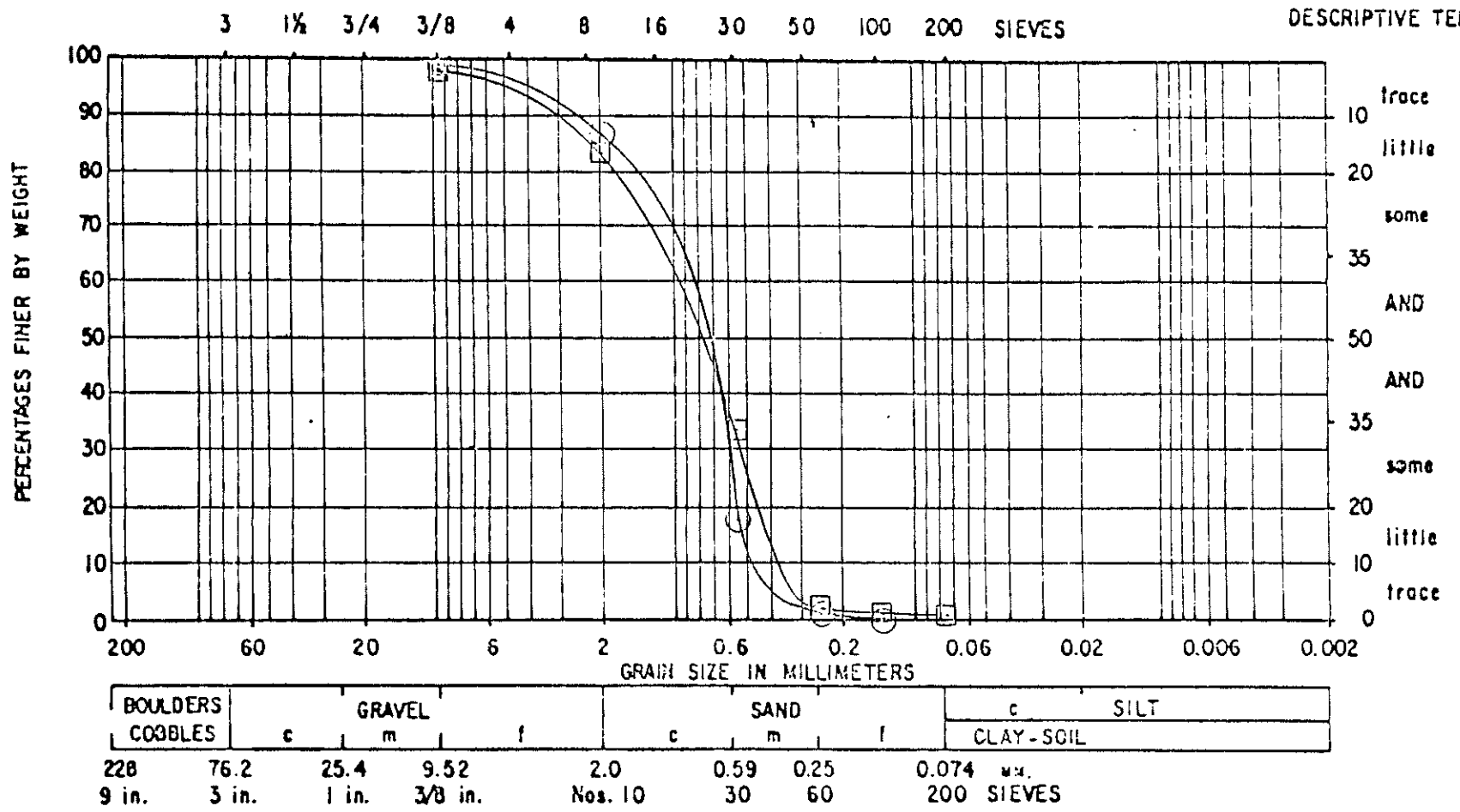
Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

				Symbol
Boring #:	ES-2	Sample # C-4 (a)	Top	⊙
Description:	Brown fine SAND, some Silt			
Boring #:	ES-2	Sample # C-4 (b)	Bottom	⊡
Description:	Brown medium-fine SAND, some (-) Silt			

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

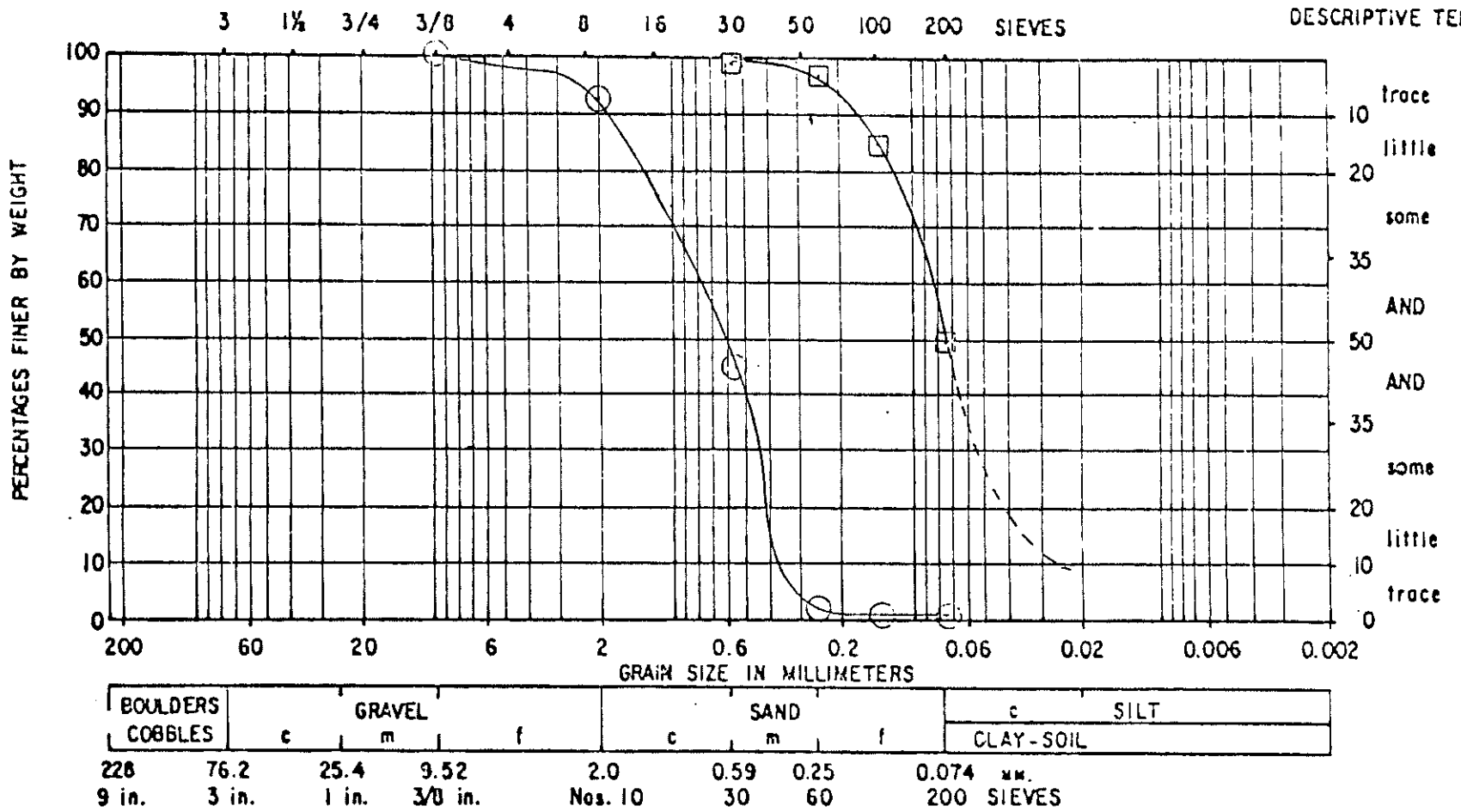
Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

				Symbol
Boring #:	ES-3	Sample # C-1 (a)	Top	⊙
Description:	Tan coarse-medium SAND, little fine Gravel			
Boring #:	ES-3	Sample # C-1 (b)	Bottom	⊡
Description:	Tan coarse-medium SAND, little fine Gravel			

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

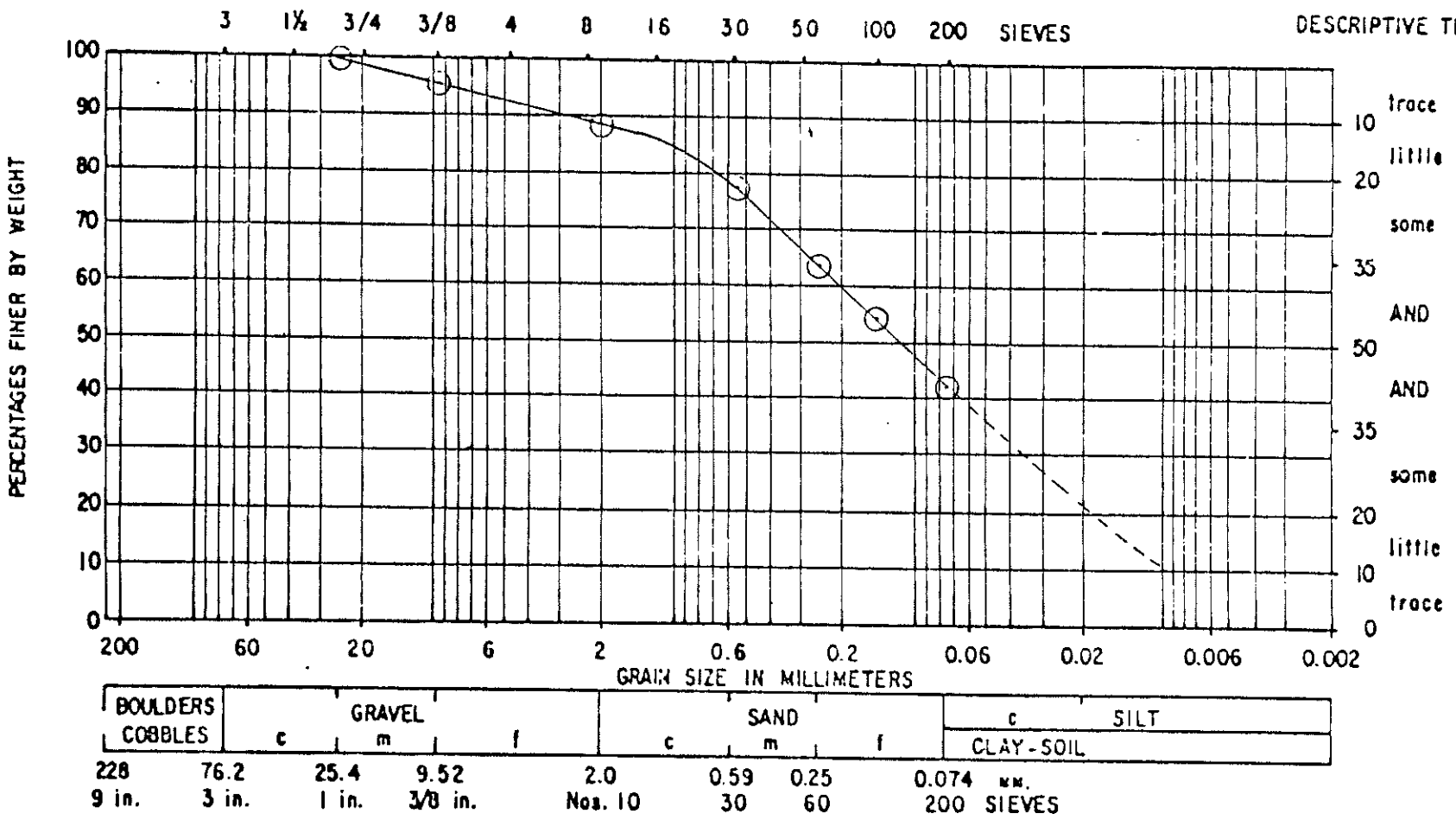
Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

			Symbol
Boring #:	ES-5	Sample # C-2 (a) Top	⊙
Description:	Tan coarse-medium SAND, trace fine Gravel		
Boring #:	ES-5	Sample # C-2 (b) Bottom	⊡
Description:	Tan fine SAND, and Silt		

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

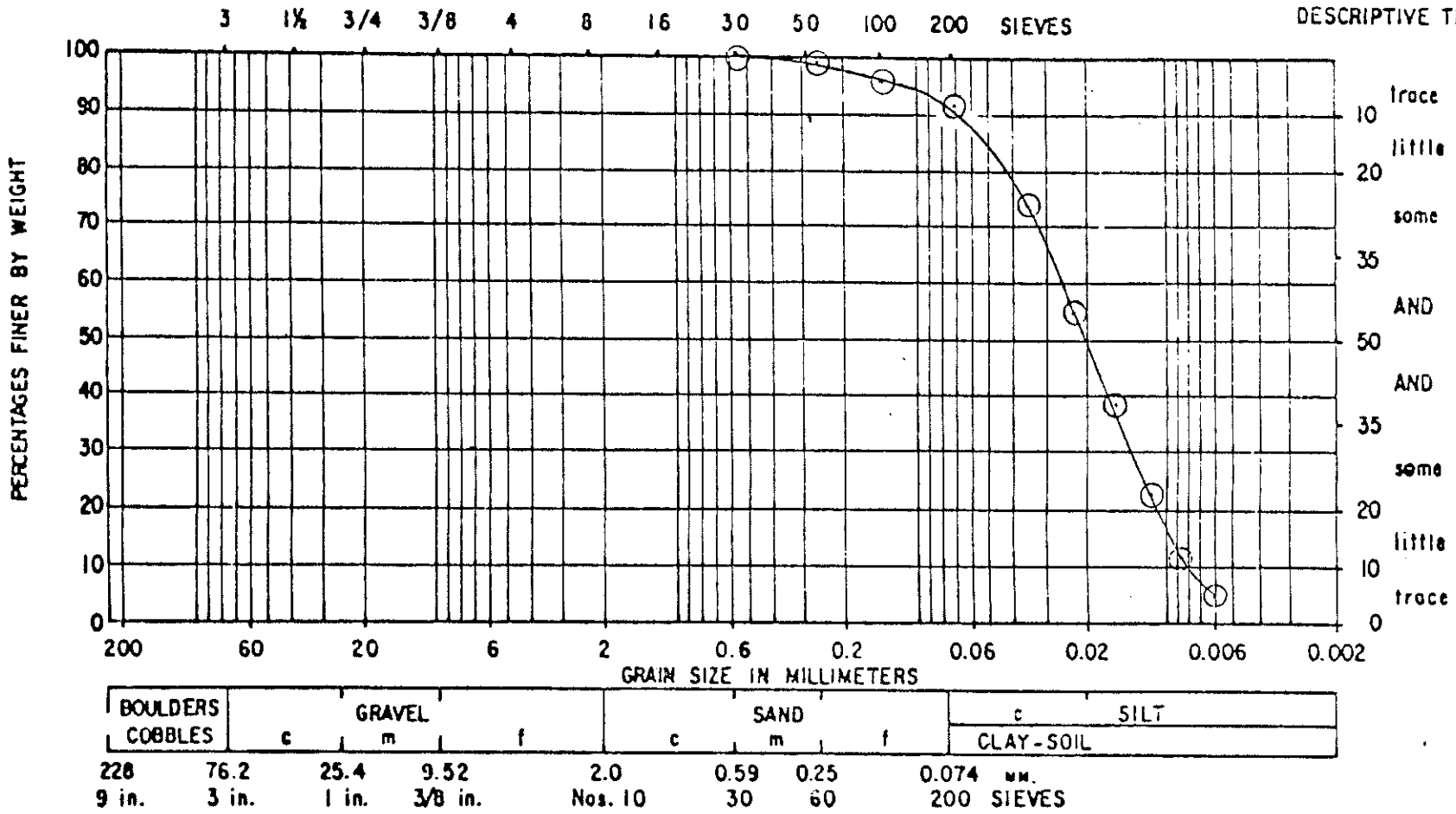
Boring #: ES-6 Sample # Surface

Description: Brown coarse-fine SAND, and Silt, little medium-fine Gravel

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

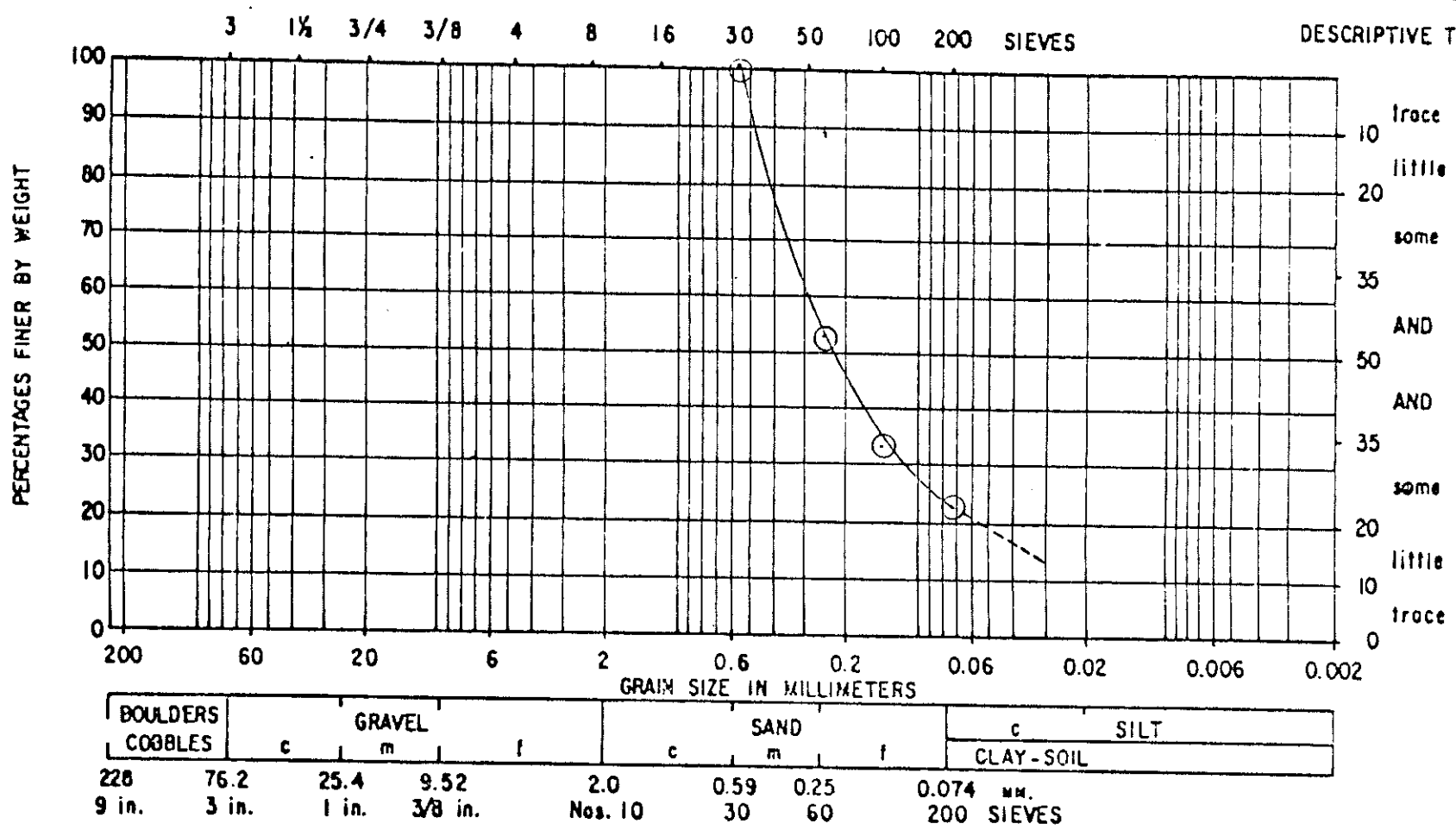
Boring #: OW-5 Sample # SS-15

Description: Tan SILT, trace medium-fine Sand

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

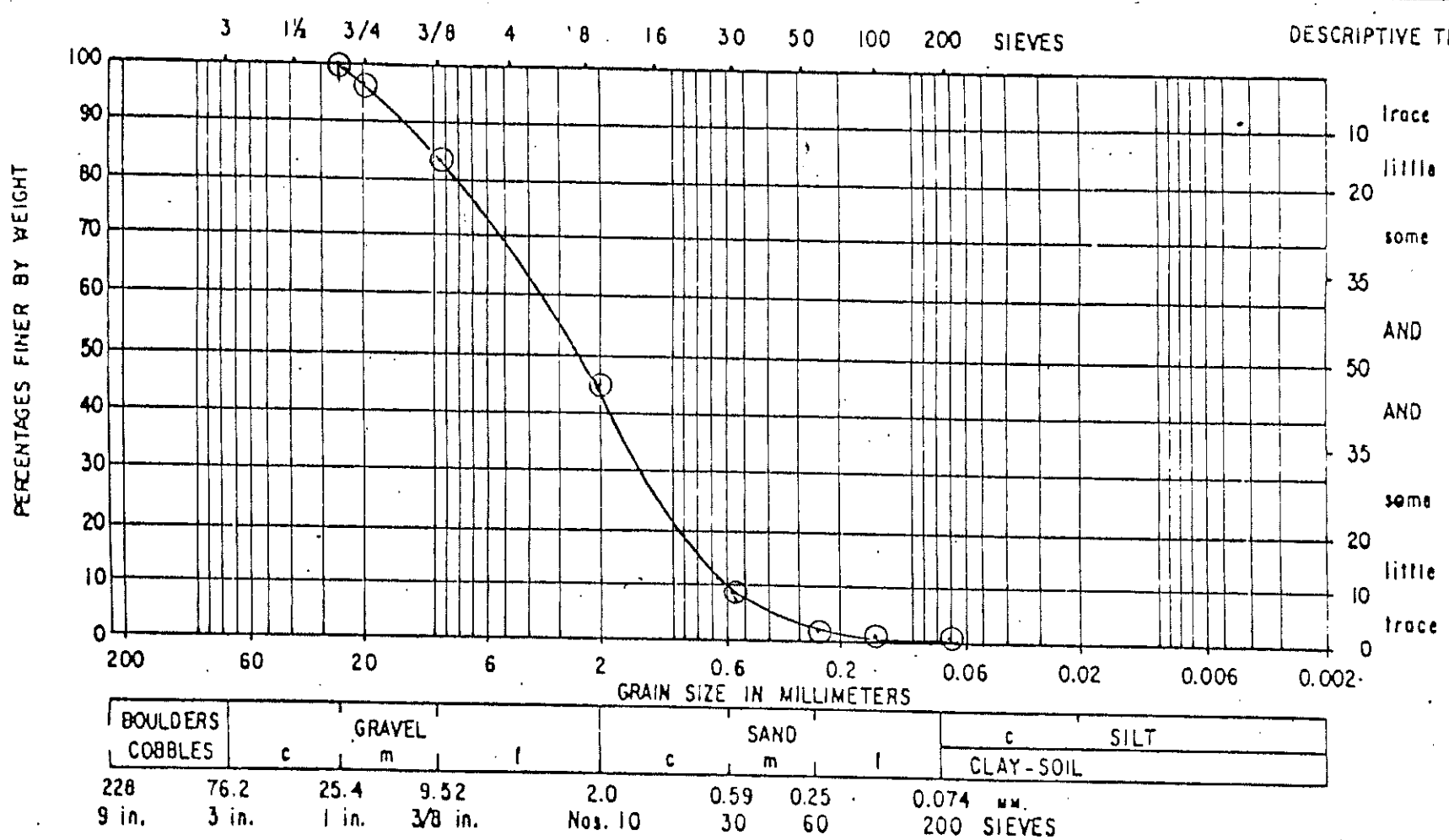
Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring #: OW-5 Sample # SS-17

Description: Brown medium-fine SAND, some Silt

80-263

Geo-Tech Laboratories



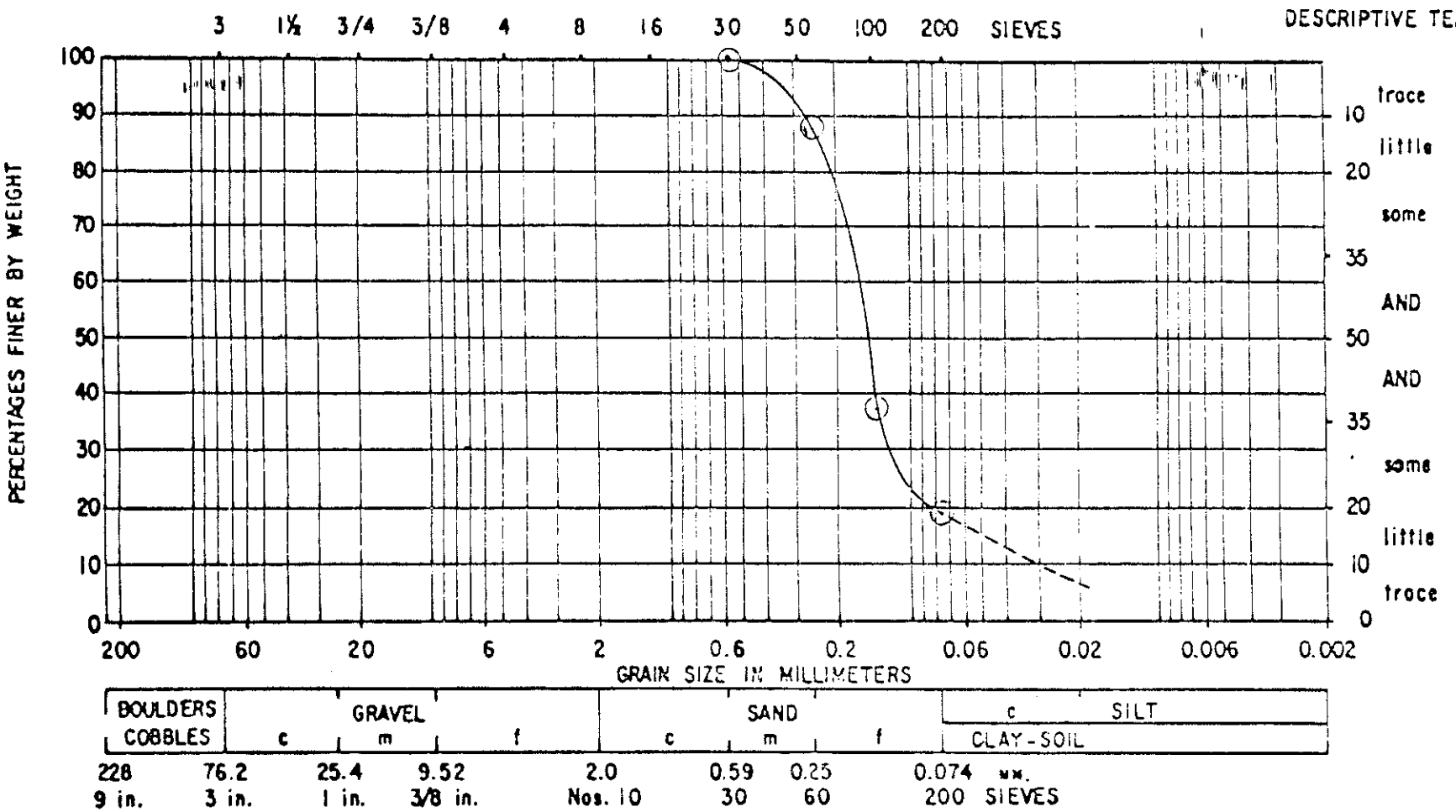
Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring #: OW-5 Sample # SS-23

Description: Brown medium-fine GRAVEL, and coarse-fine Sand, trace Silt

80-263



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

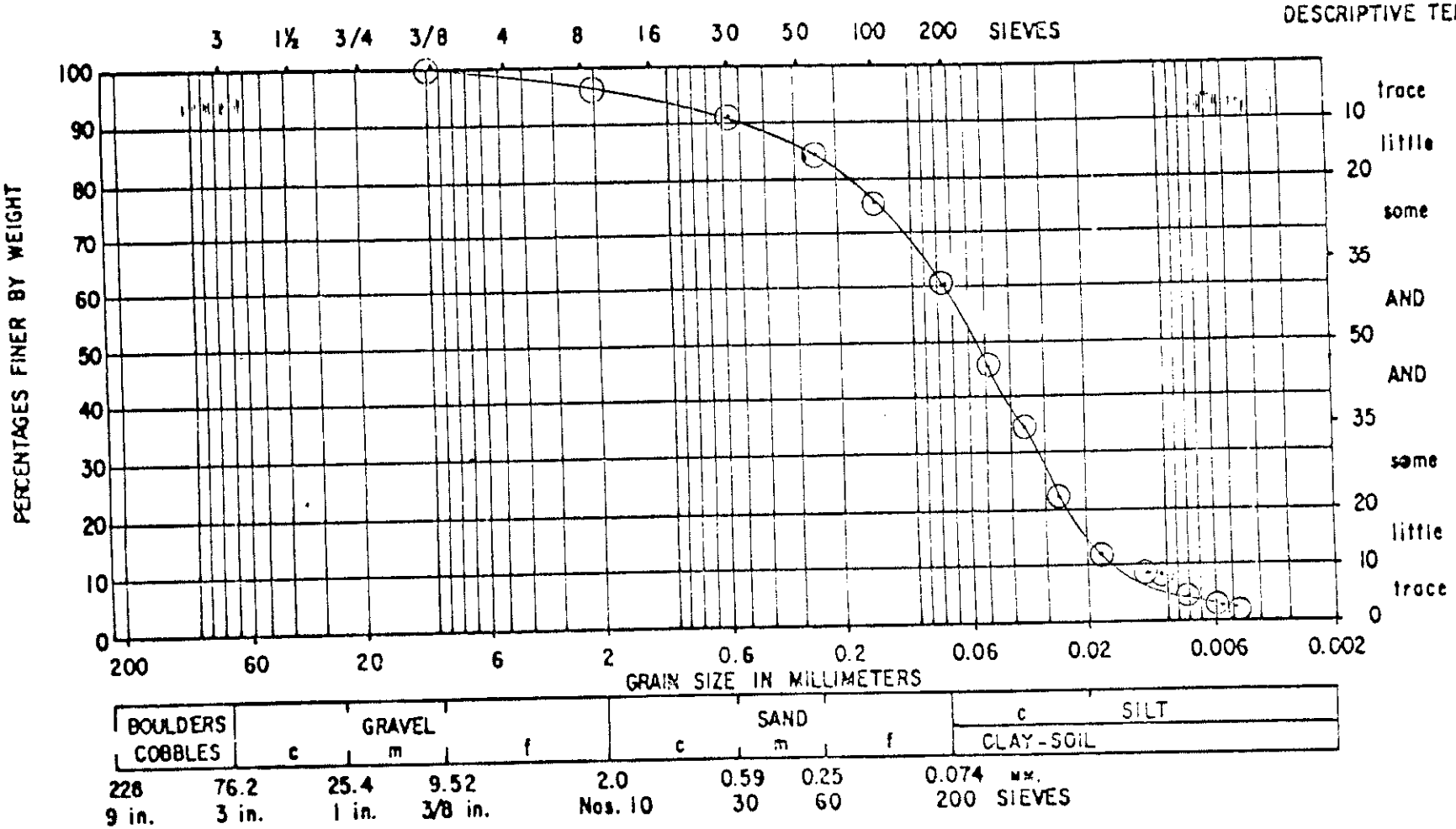
Boring #: OW-5 Sample # SS-5

Description: Tan medium-fine SAND, little Silt

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

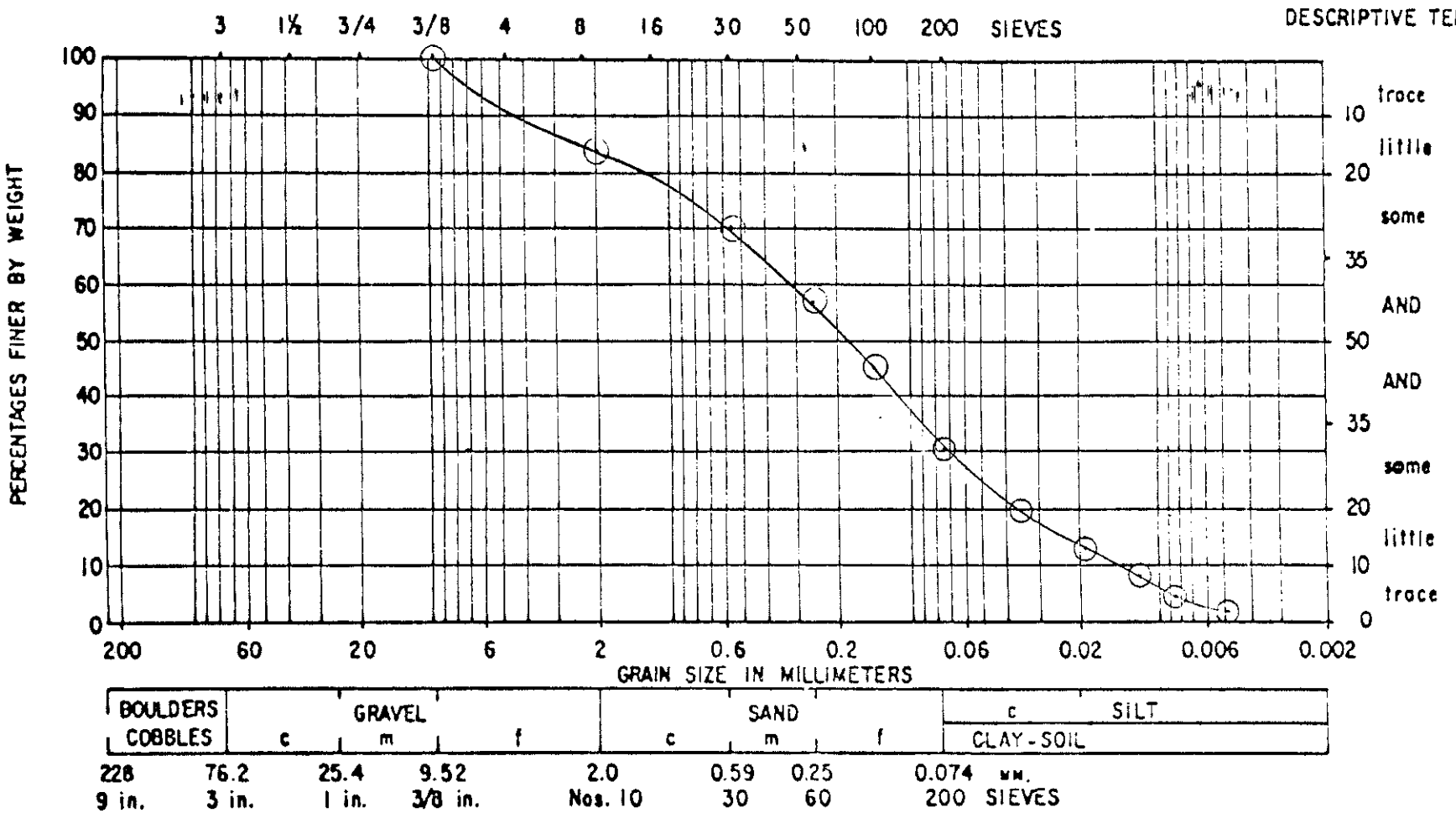
Boring #: OW-9 Sample # SS-1

Description: Gray SILT, and coarse-fine Sand, trace (-) fine Gravel

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

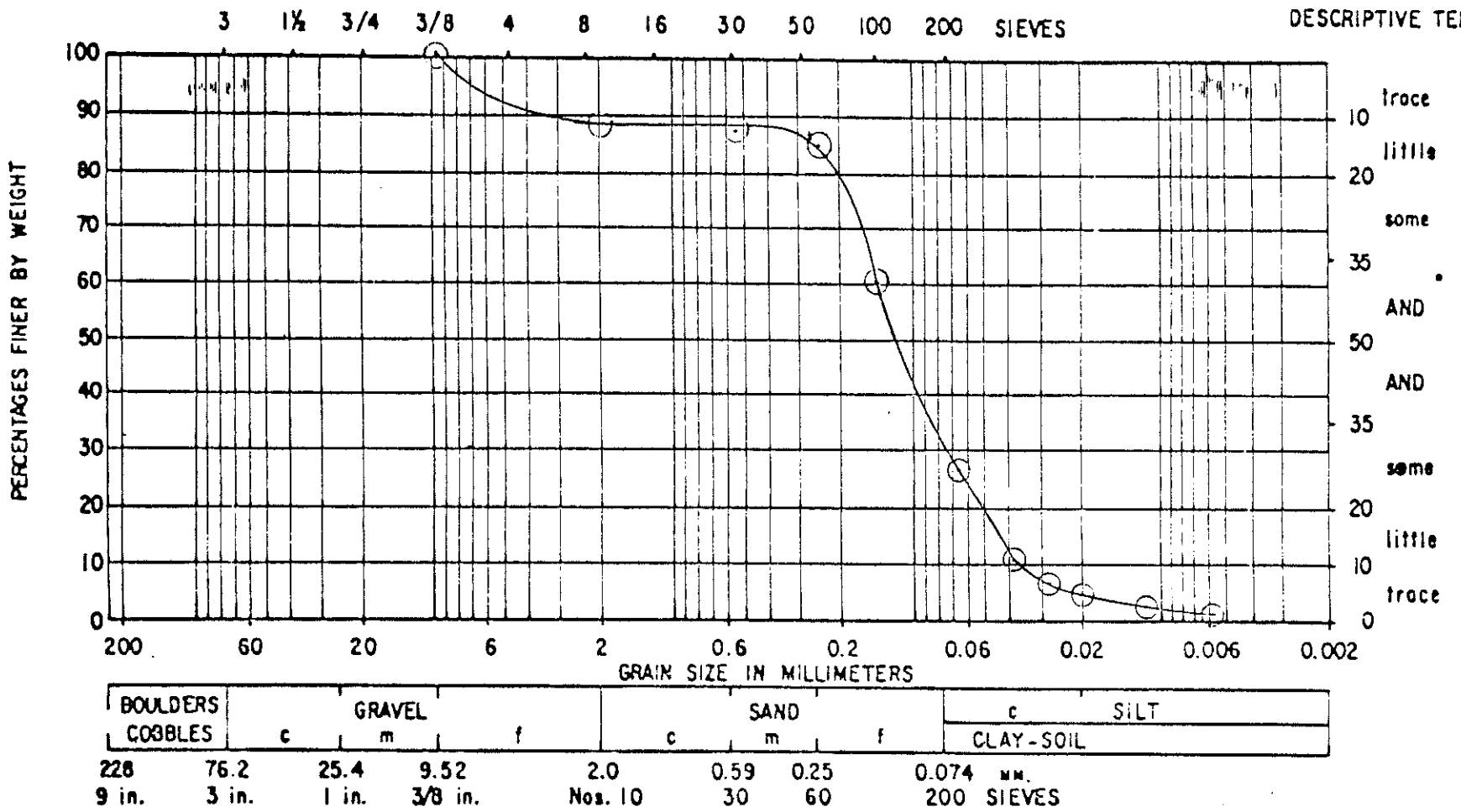
Boring #: OW-9 Sample # SS-2

Description: Brown coarse-fine SAND, some Silt, little fine Gravel with glass, steel

80-263

Geo-Tech Laboratories

AI SI A LY S



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

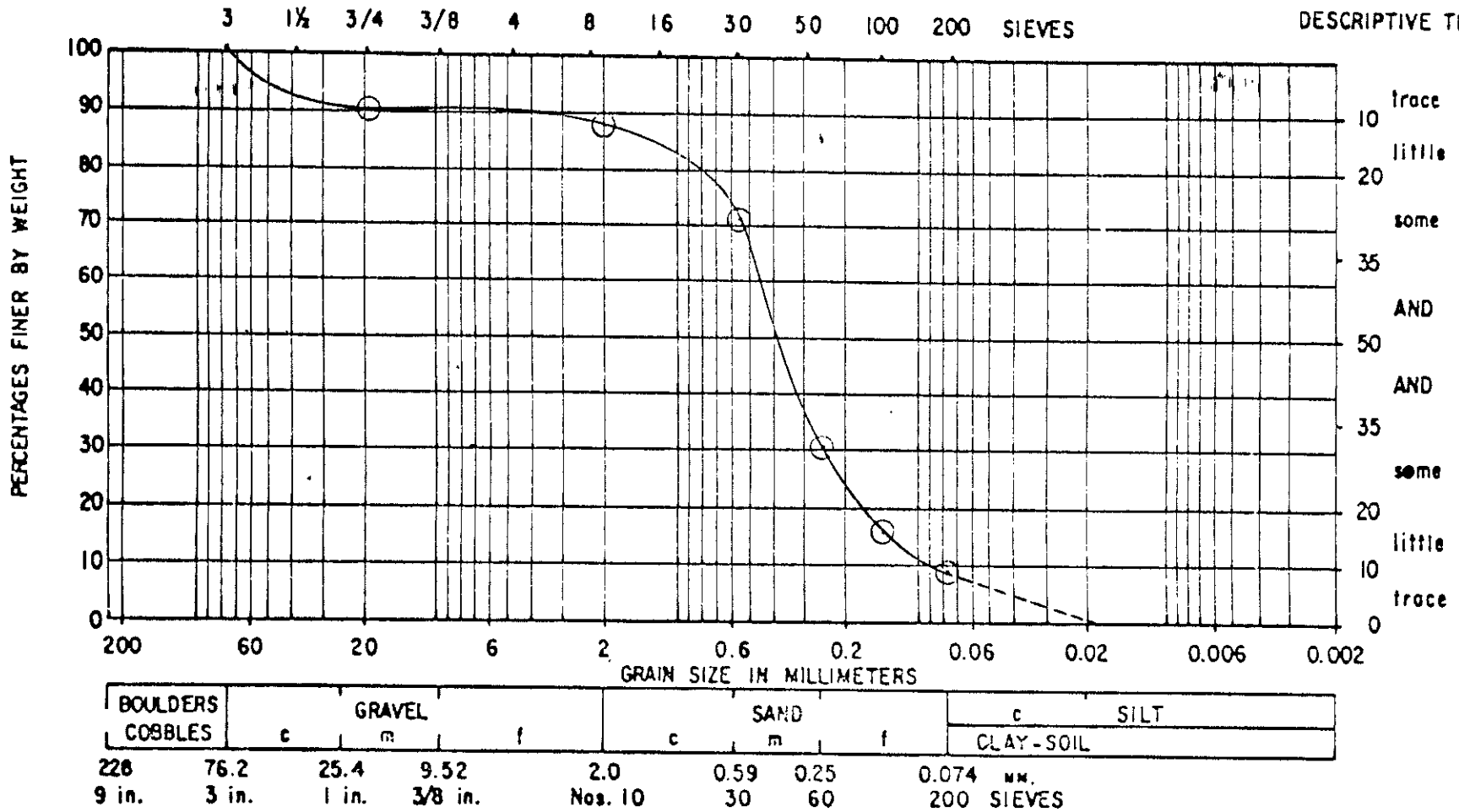
Boring #: OW-9 Sample # SS-5

Description: Tan coarse-fine SAND, some Silt, little (-) fine Gravel with glass, steel

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

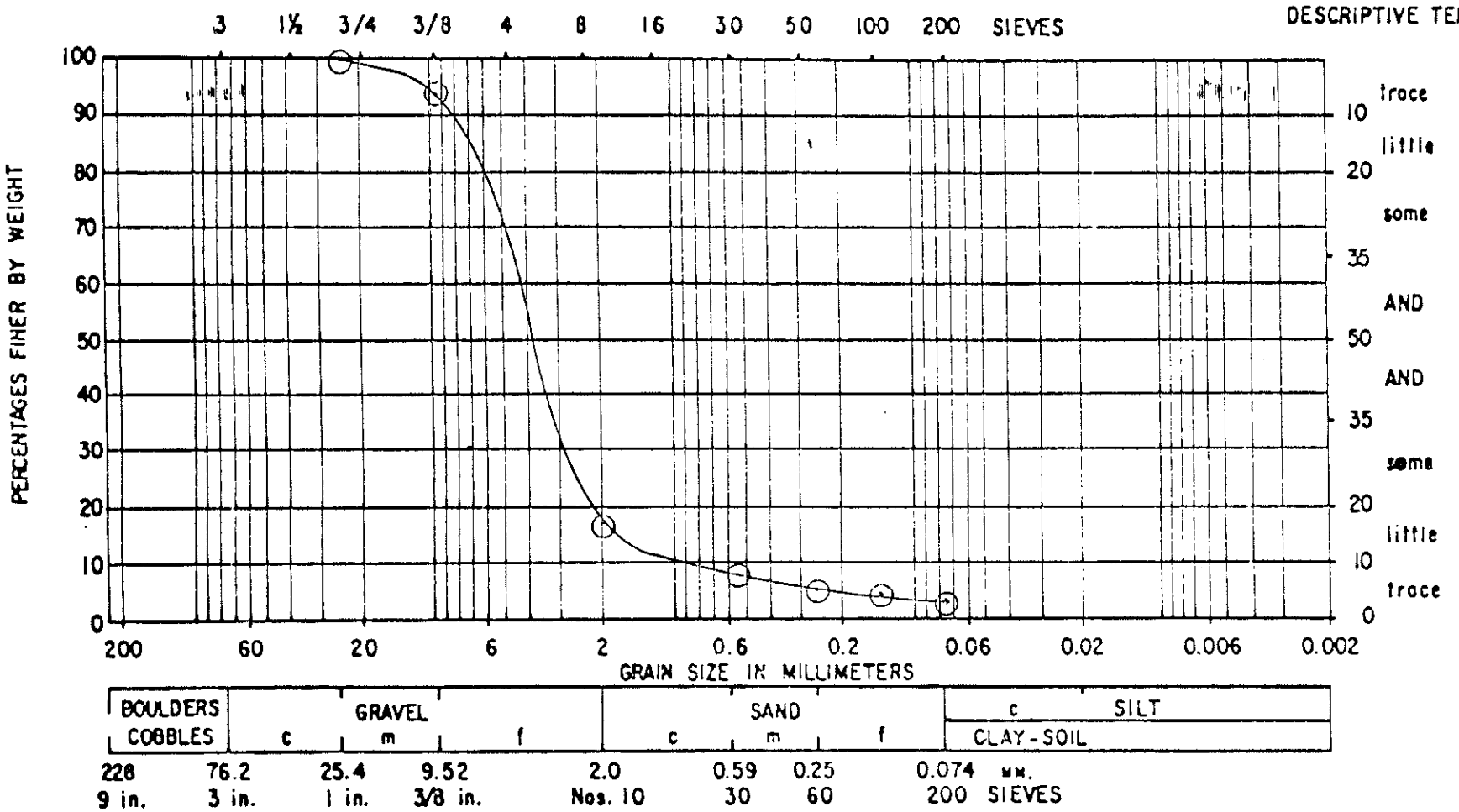
Boring #: OW-9 Sample # SS-7

Description: Tan coarse-fine SAND, little coarse-fine Gravel, trace Silt

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

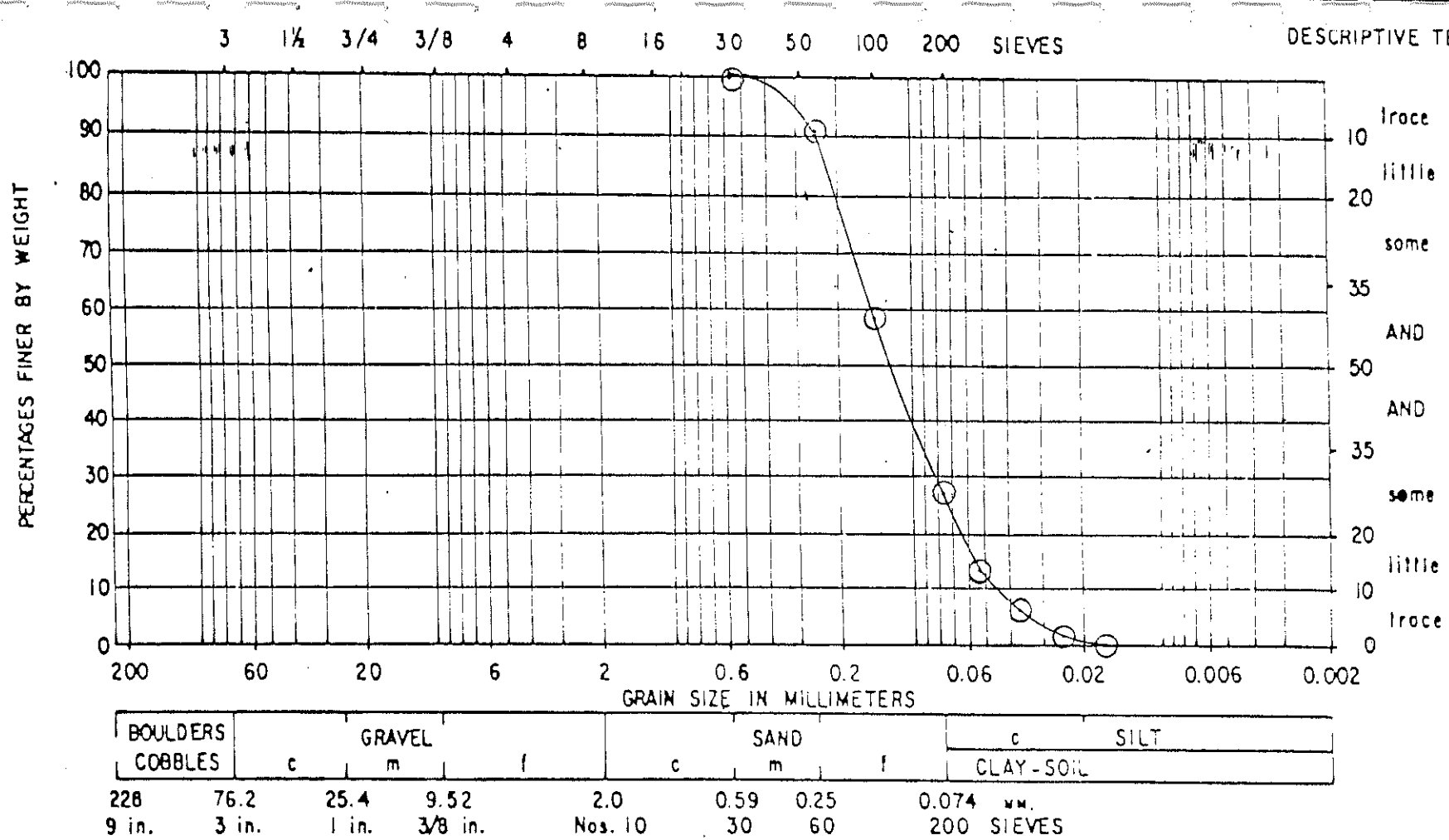
Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring #: OW-9 Sample # SS-12

Description: Brown medium-fine GRAVEL, little coarse-fine Sand, trace Silt

80-263

Geo-Tech Laboratories



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

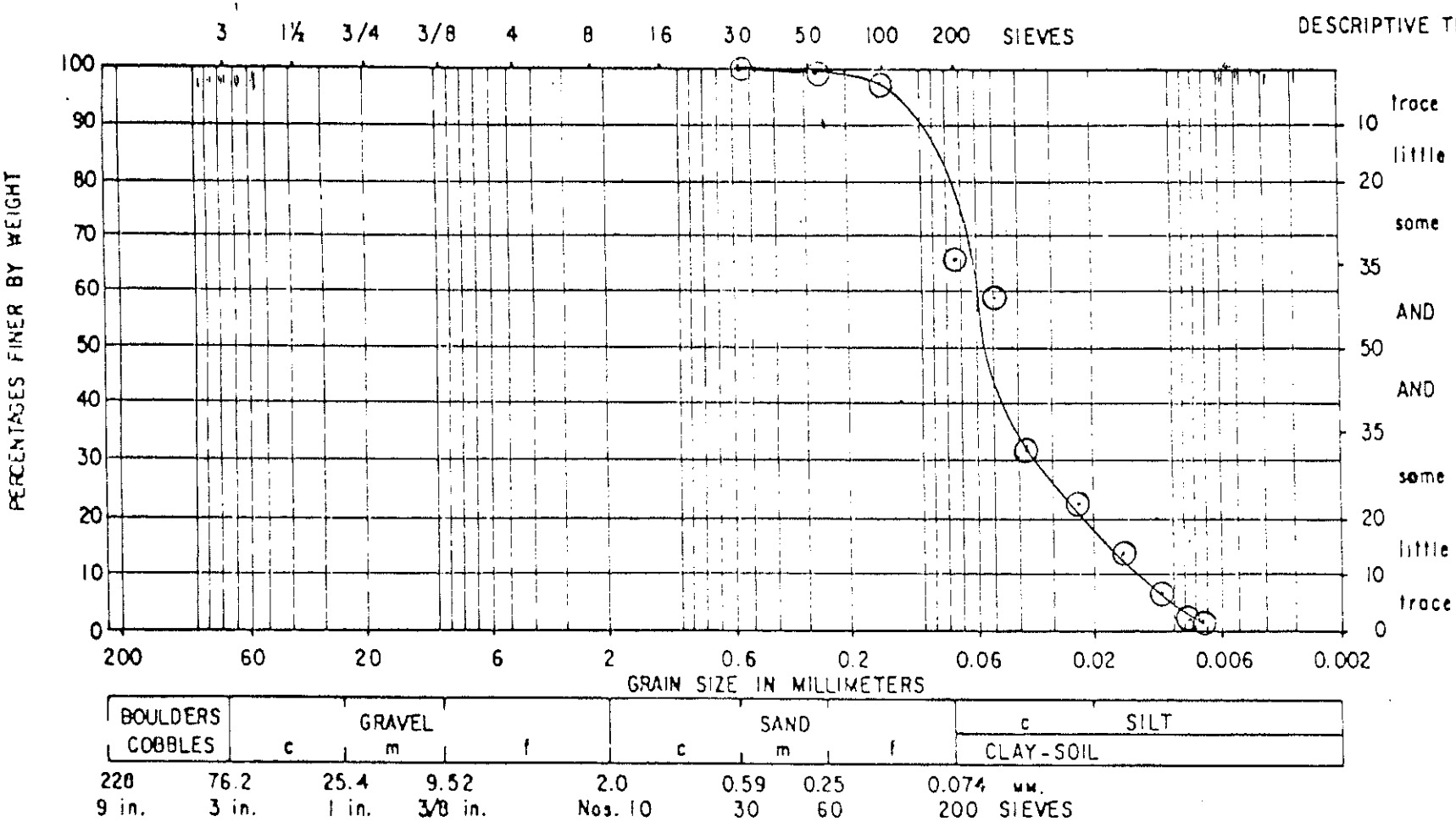
Boring # OW-7 Sample # SS-3

Description: Light Brown medium to fine SAND, and Silt

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

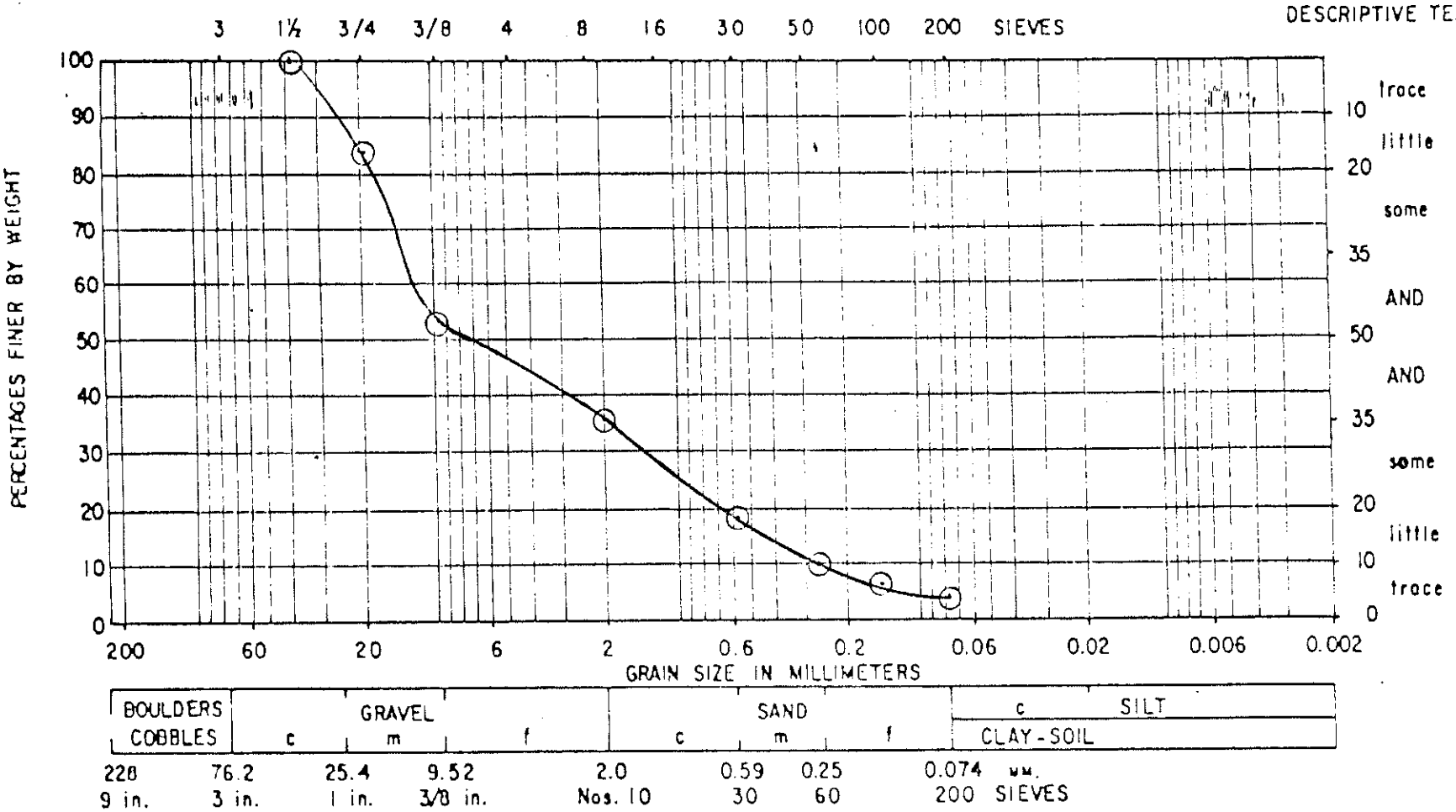
Boring # OW-7 Sample # SS-5

Description: Light Brown SILT and f Sand

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

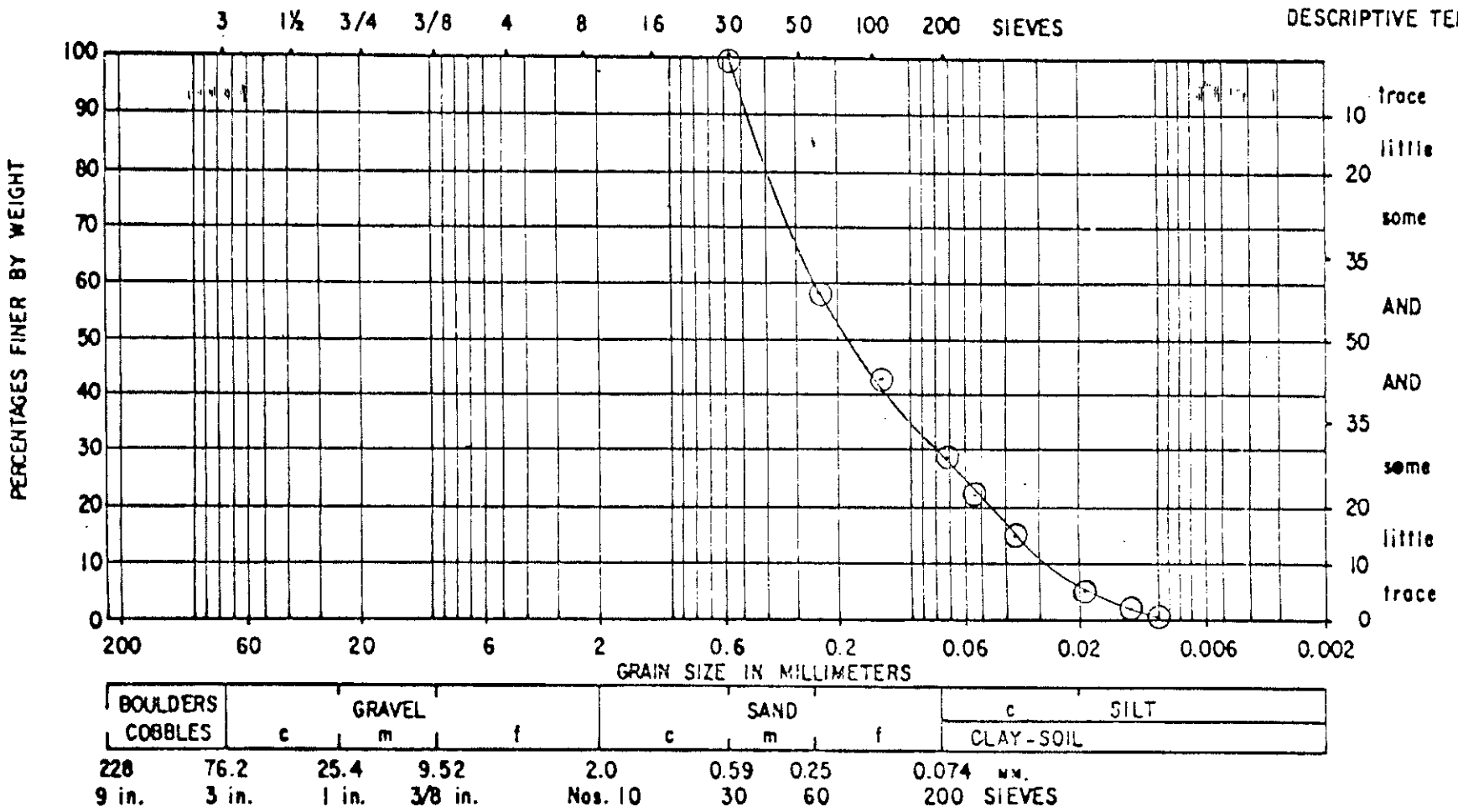
Boring # OW-7 Sample # SS-11

Description: Brown medium to fine GRAVEL, some coarse to fine Sand, trace Silt

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

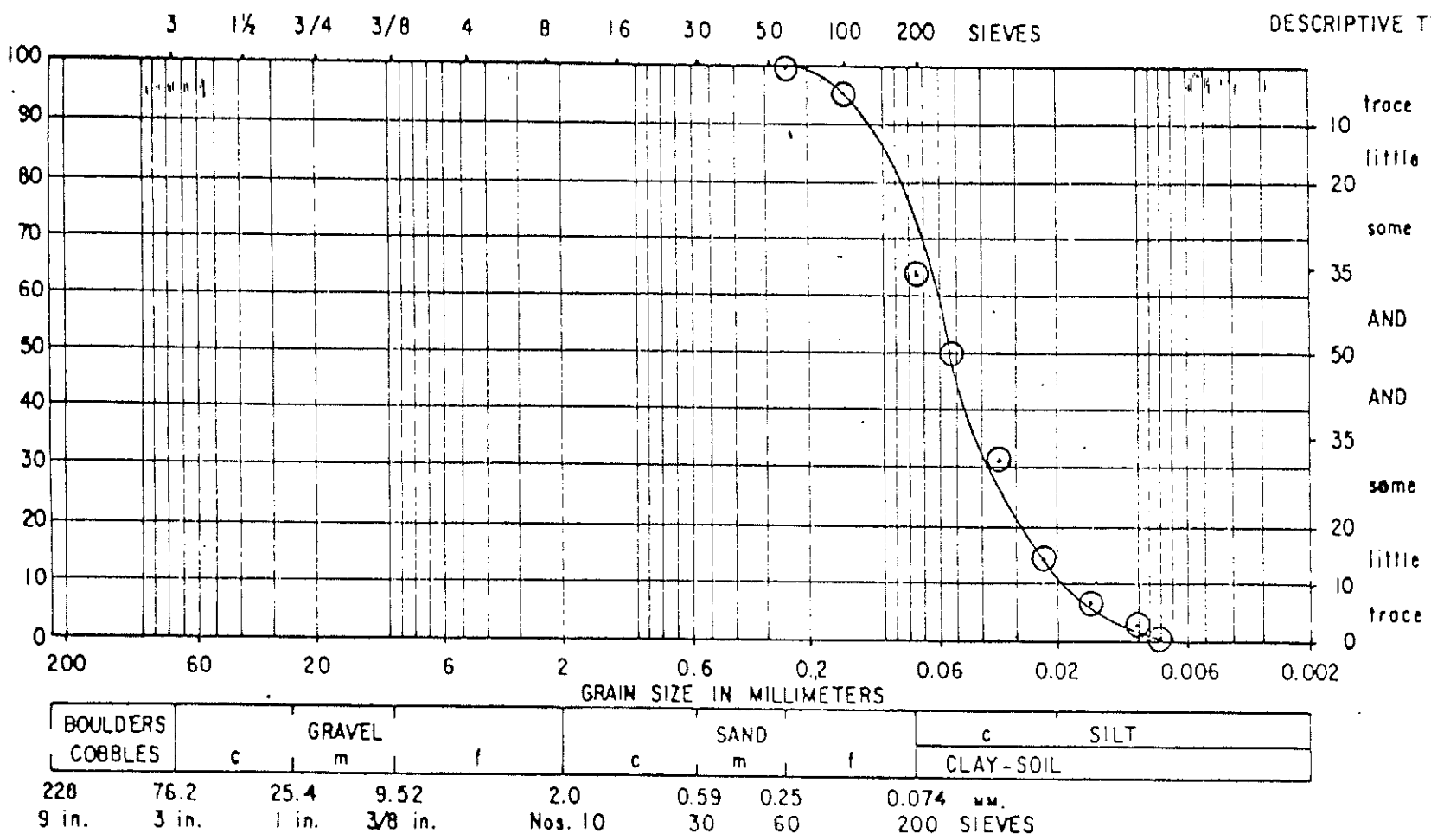
Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring # OW-7 Sample # SS-19

Description: Brown medium to fine SAND, some Silt

80-263

Geo-Tech Laboratories



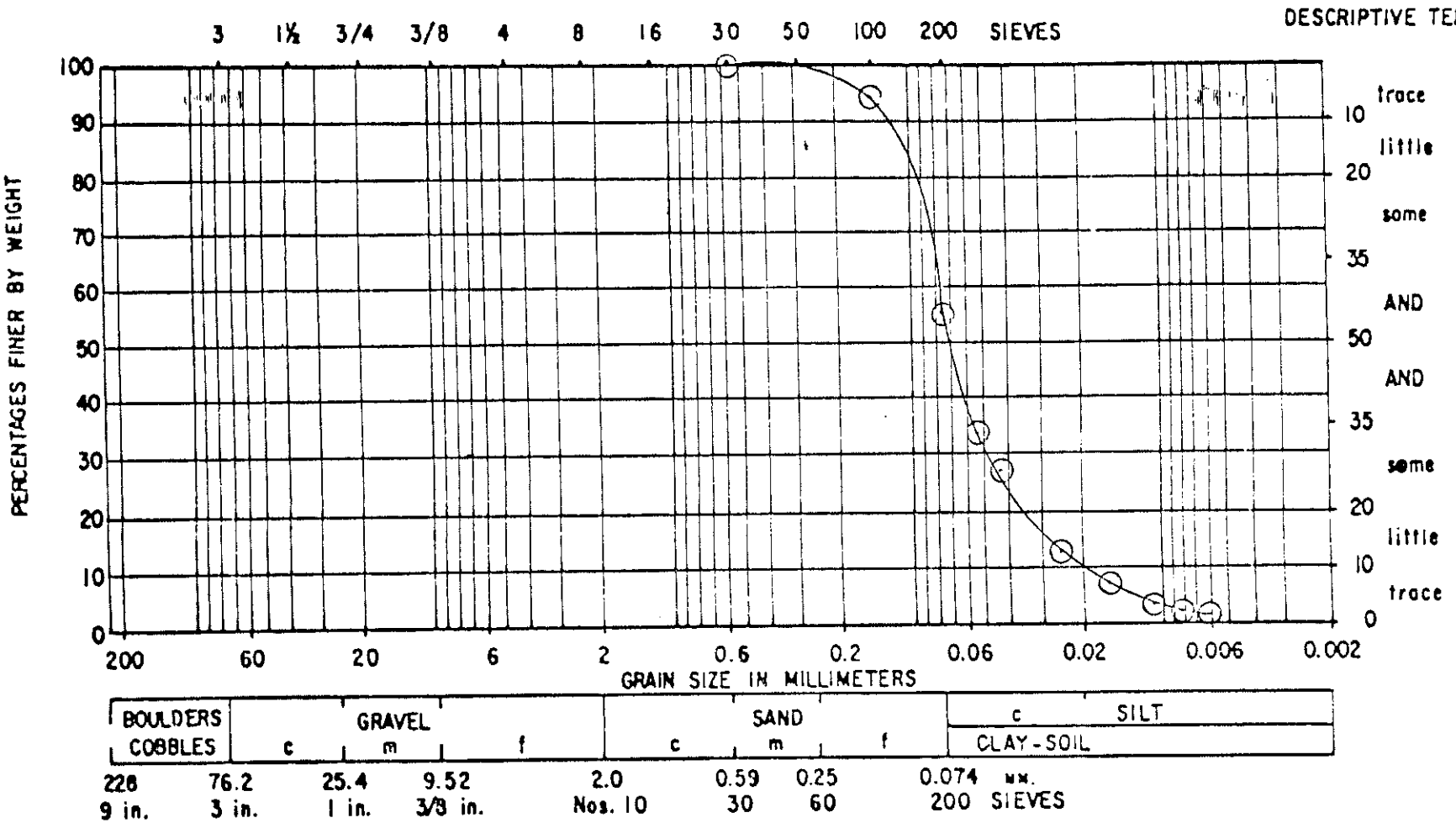
Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring # OW-8 Sample # SS-2

Description: Light Brown SILT, trace fine Sand

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

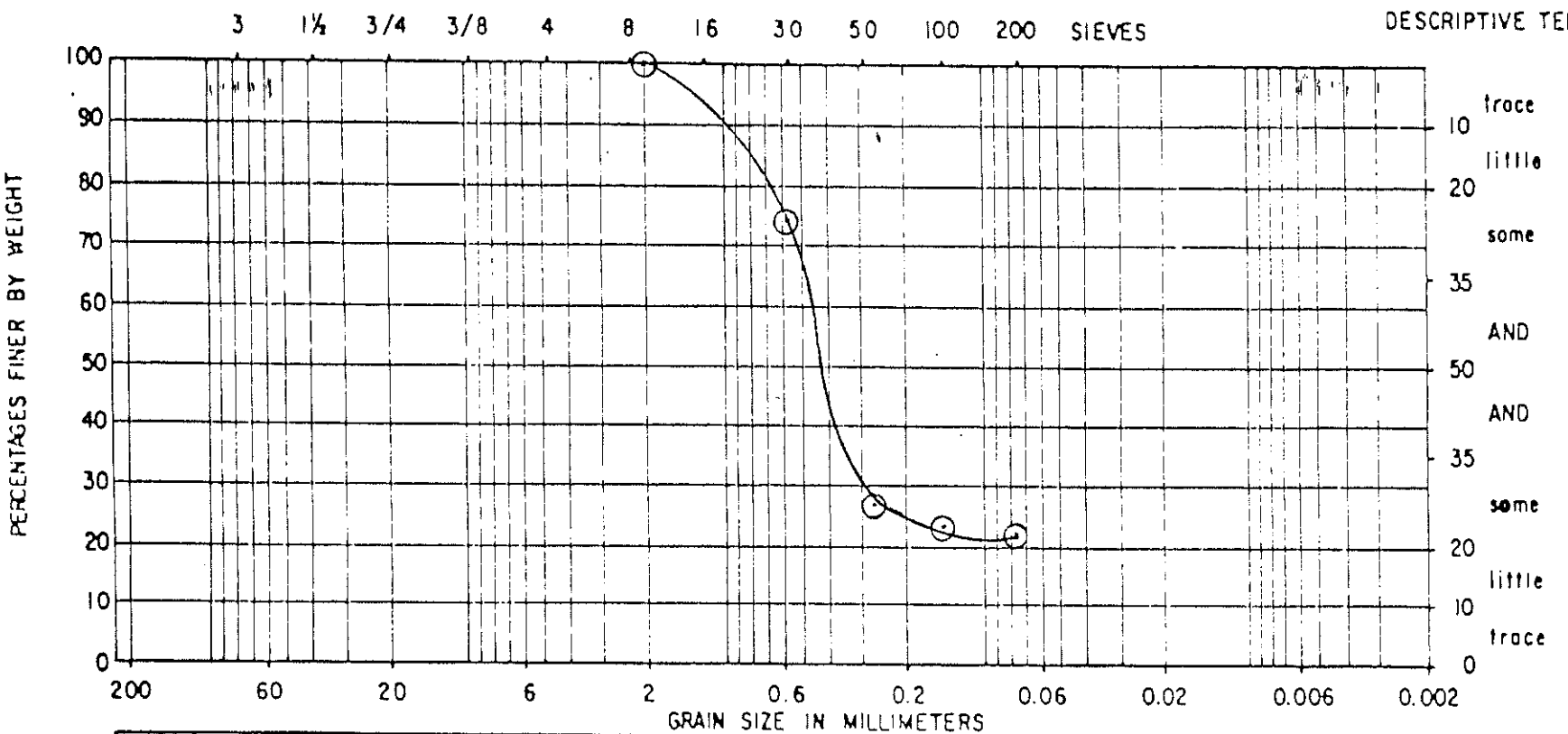
Boring # OW-8 Sample # SS-3

Description: Light Brown SILT, trace fine Sand

80-263

Geo-Tech Laboratories

...AIL SIZE A...LYSIS



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

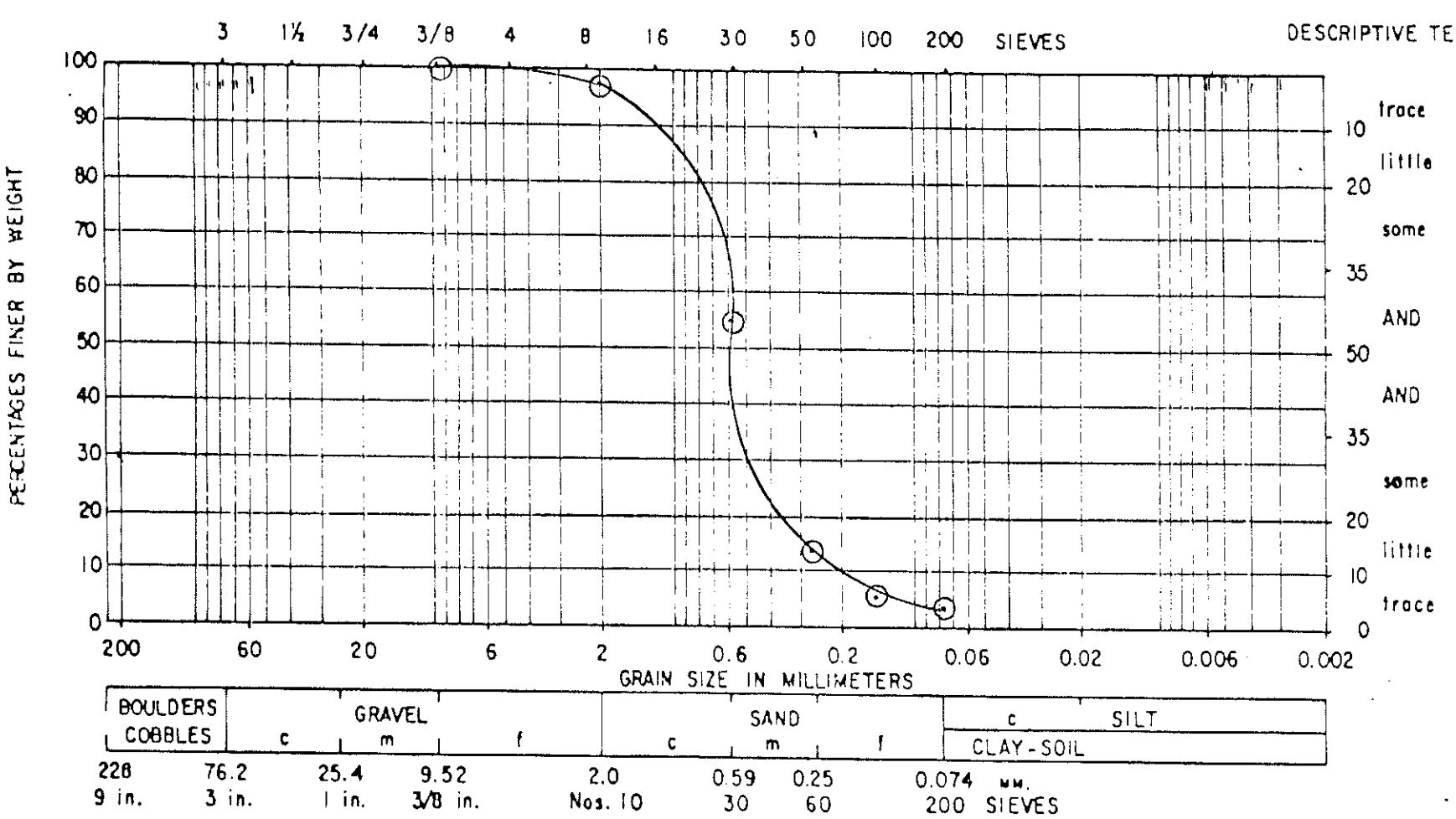
Boring # OW-8 Sample # SS-6

Description: Brown coarse to fine SAND, some Silt

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

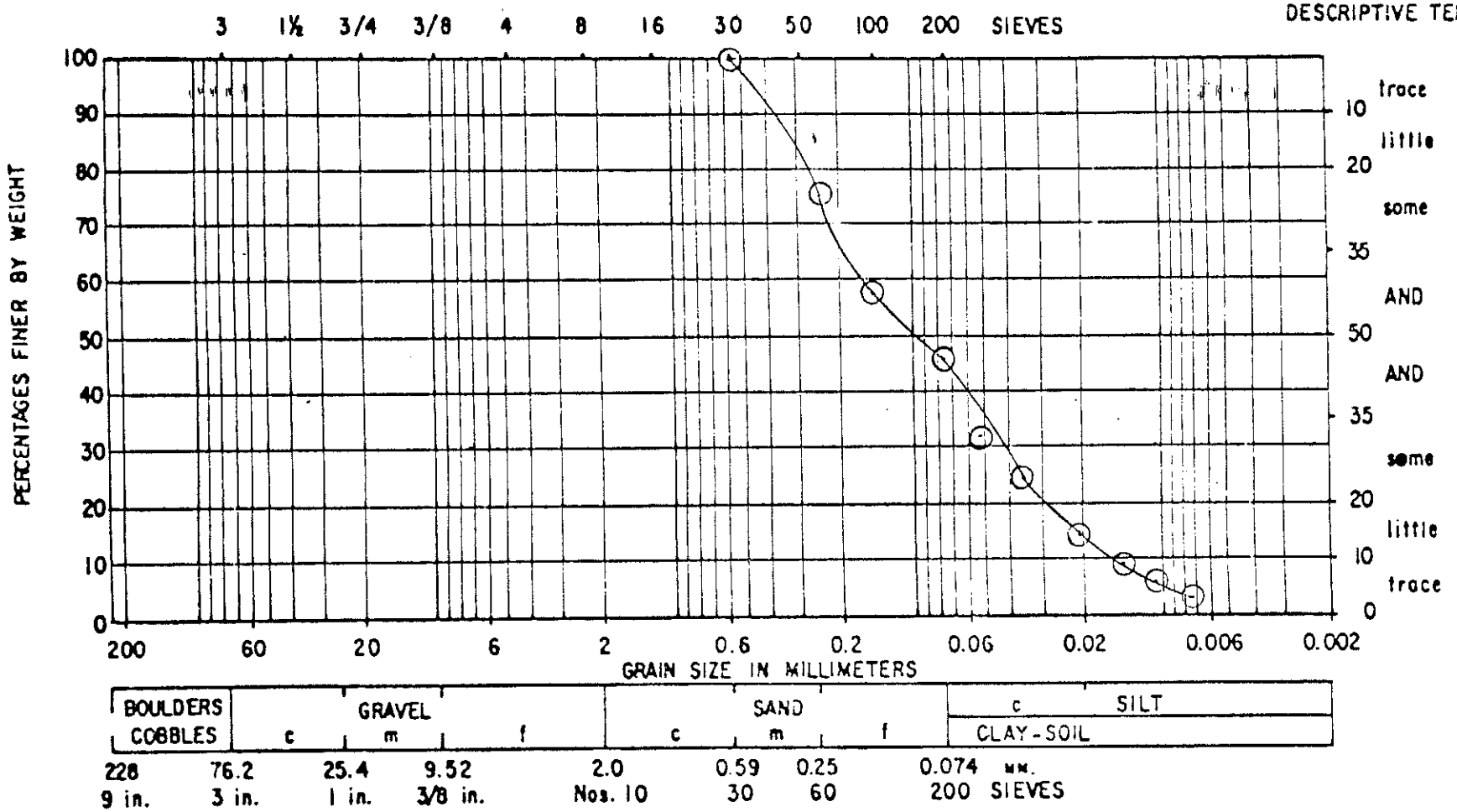
Boring # OW-8 Sample # SS-9

Description: Grey coarse to fine SAND, trace Silt

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

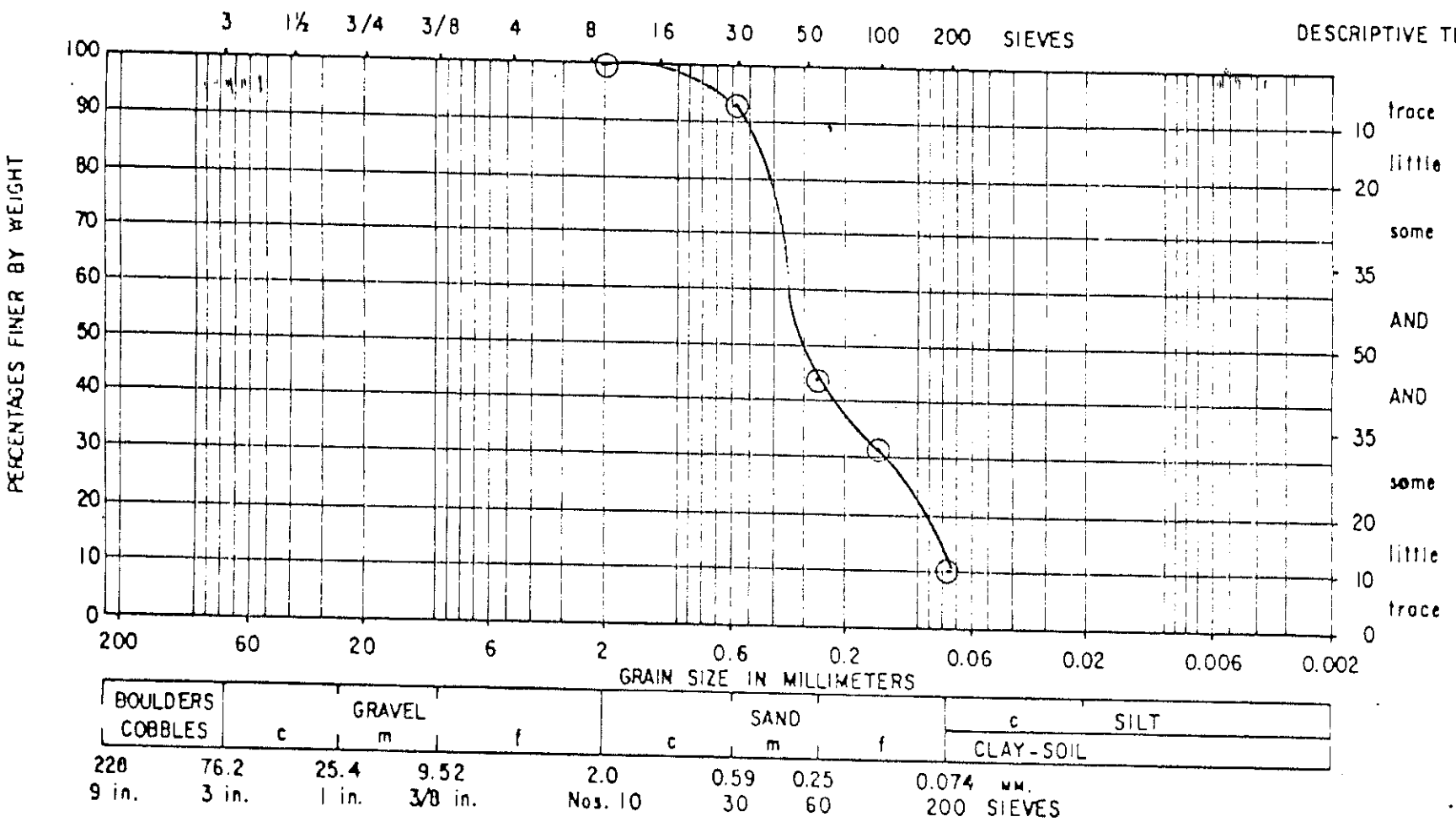
Boring # OW-8 Sample # SS-12

Description: Brown medium to fine SAND, and Silt

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

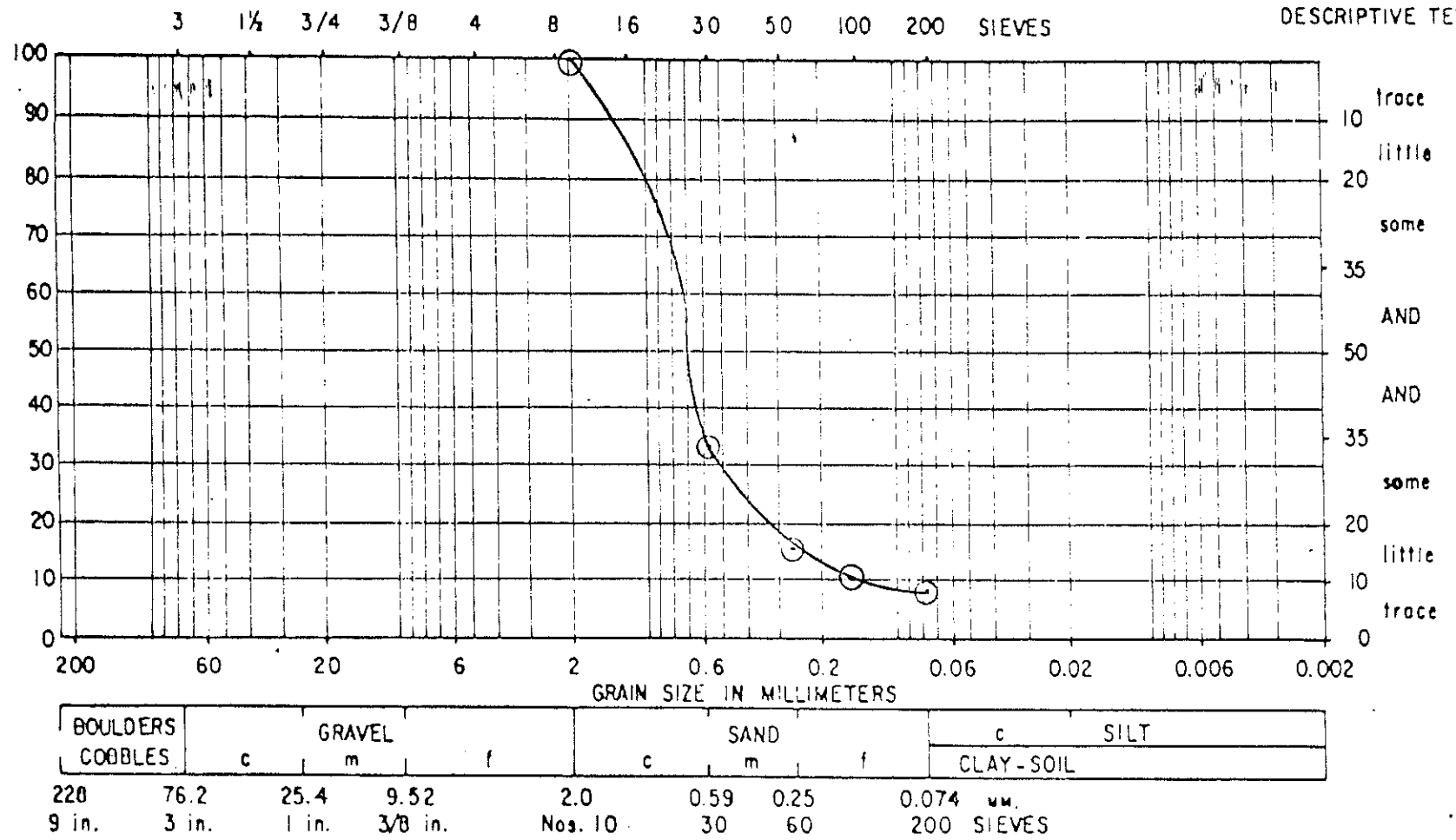
Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring # OW-8 Sample # SS-15

Description: Brown medium to fine SAND, little Silt

80-263

Geo-Tech Laboratories



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

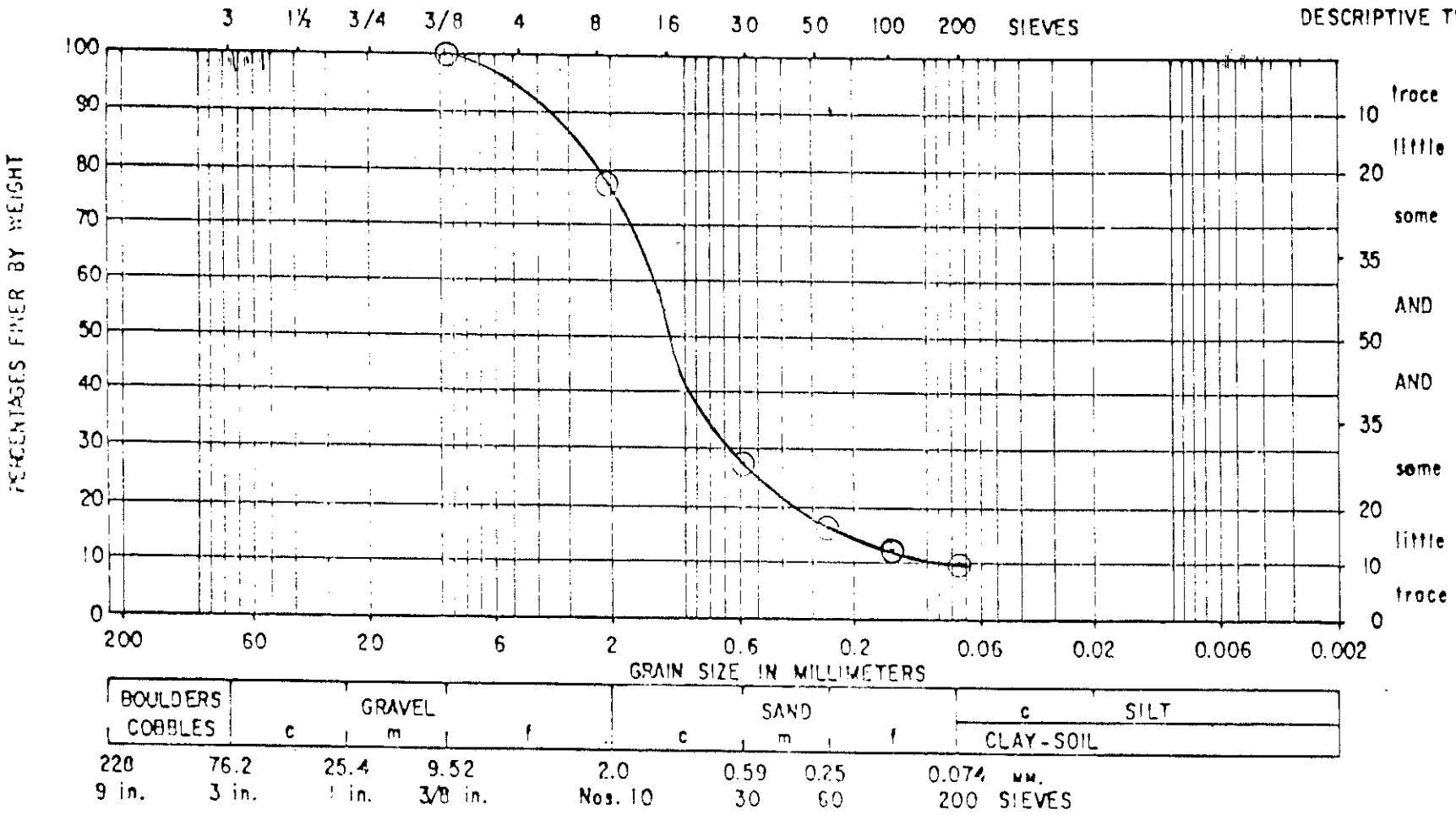
Boring # OW-9 Sample # SS-16

Description: Brown coarse to fine SAND, trace Silt

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

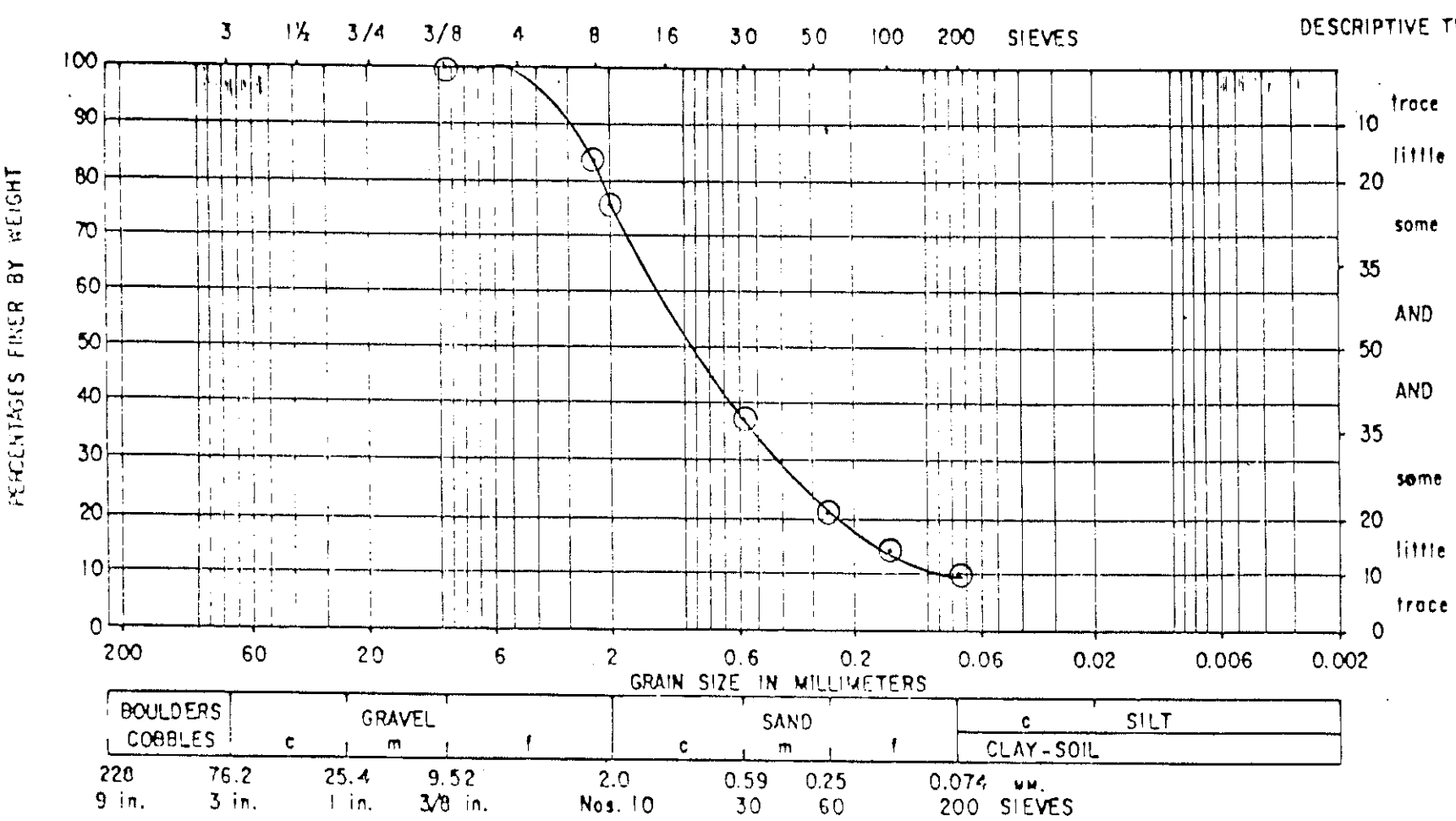
Boring # OW-9 Sample # SS-19

Description: Light Brown coarse to fine SAND, some fine Gravel, t. Silt

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

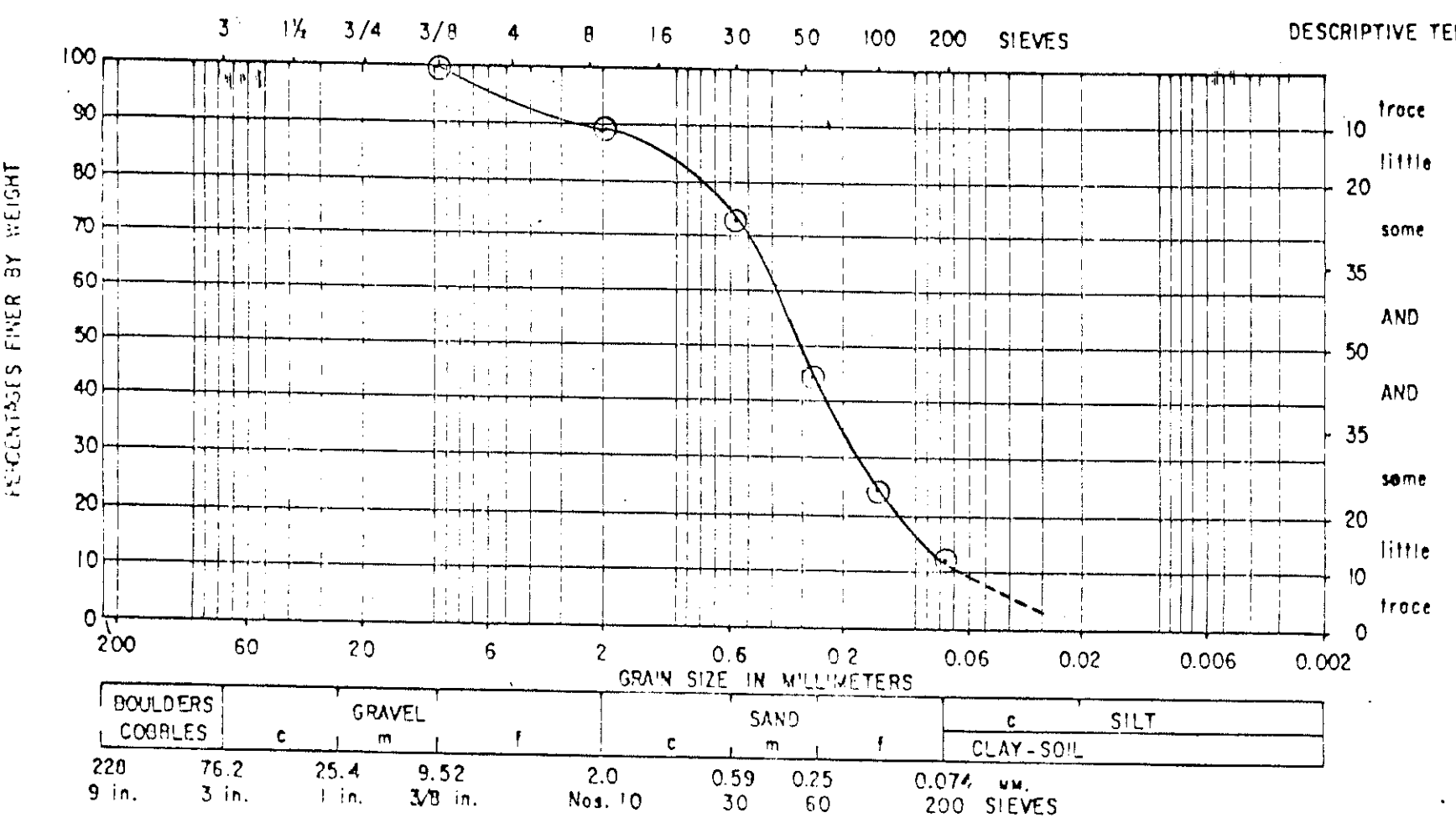
Boring # OW-9 Sample # SS-22

Description: Brown coarse to fine SAND, some fine Gravel, trace Silt

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

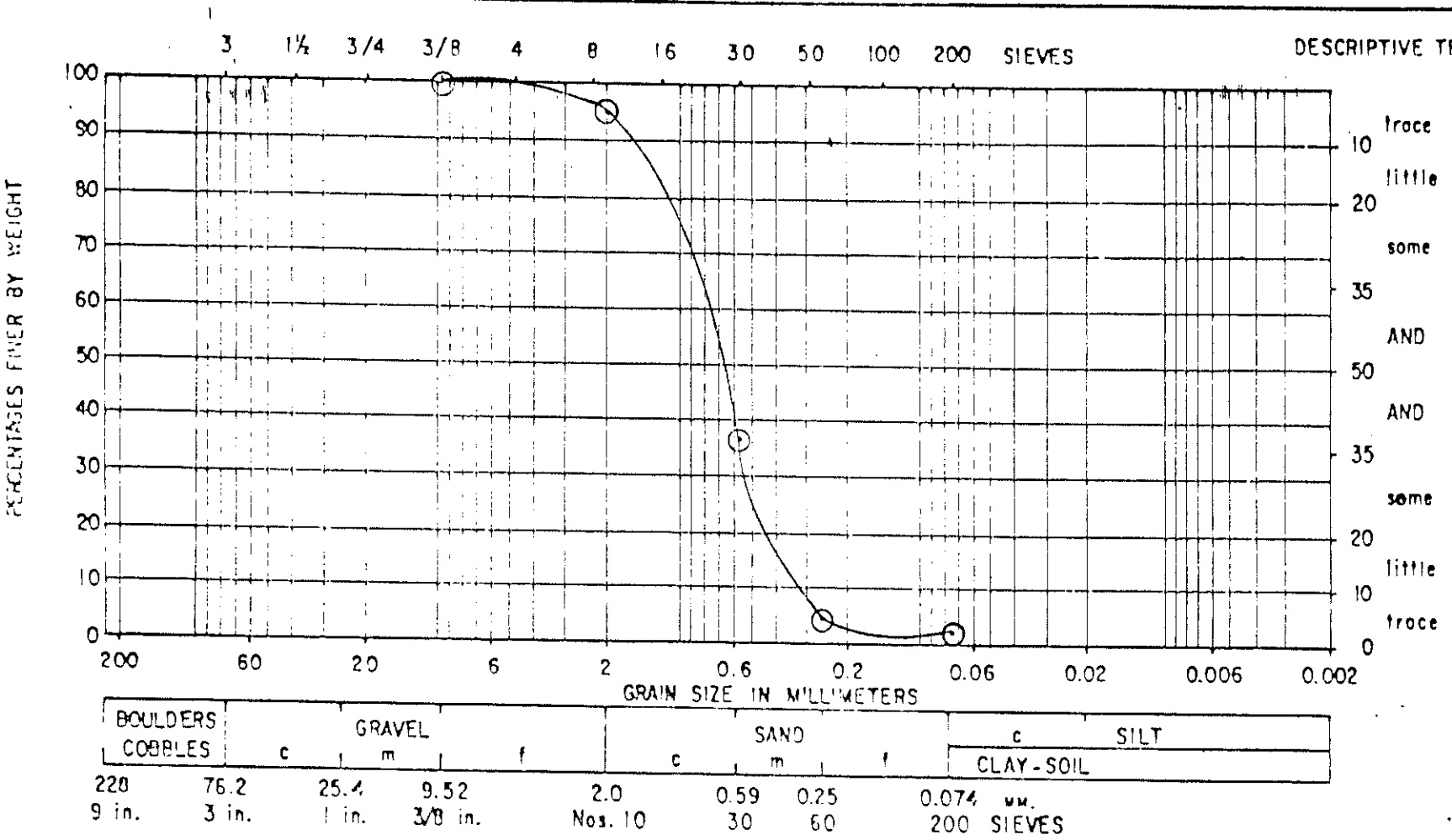
Boring # OW-9 Sample # SS-24

Description: Brown coarse to fine SAND, little fine Gravel, little Silt

80-263

Geo-Tech Laboratories

GRAIN SIZE ANALYSIS



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Boring # OW-9 Sample # SS-26

Description: Brown coarse to fine SAND, trace fine Gravel, trace Silt

80-263

Geo-Tech Laboratories

SUMMARY

SOIL GRAIN SIZE CHARACTERISTICS

AND

RATED PARAMETERS

Table of Contents

Note: Flyash and Bottom ash Rated Parameters and Grain Size Distribution are presented on pages 164, 165 and 166.

1. Undisturbed Site Soil Samples

Sample	Number	Page
OW-1	US-1	153
OW-2	US-1,US-2	"
OW-3	US-1	"
OW-4	US-1	"
OW-5	US-1	"
OW-6	US-1,US-2,US-3	"
OW-7	US-1	"
OW-8	US-1	"
OW-10	US-1	155
OW-11	US-1	154
OW-11	US-2	"
OW-12	US-1	"
OW-14	US-2	"
OW-15	US-1	"
OW-20	US-1	155
OW-21	US-1	"
OW-22	US-1	154

2. Split Spoon Soil Samples

OW-1	SS-1,SS-12,SS-18	157
OW-2	SS-1,SS-8	"
OW-3	SS-1,SS-2	
	SS-4	160
	SS-9,SS-11,SS-14,SS-17,SS-21	157
OW-4	SS-3,SS-5,SS-9,SS-14	160
	SS-16	157
OW-5	SS-5,SS-15,SS-17	"
OW-6	SS-3,SS-5	160
	SS-7,SS-21	158
OW-7	SS-3,SS-5,SS-11,SS-19	161

SUMMARY

SOIL GRAIN SIZE CHARACTERISTICS

AND

RATED PARAMETERS

Table of Contents

2. Split Spoon Soil Samples (Continued)

Sample	Number	Page
OW-8	SS-2,SS-3,SS-6,SS-9,SS-12,SS-15	161
OW-9	SS-1,SS-2,SS-5,SS-7,SS-12	160
OW-9	SS-16,SS-19,SS-22,SS-24,SS-26	161
OW-11	SS-2,SS-6,SS-12	159
OW-12	SS-3,SS-5	160
OW-12	SS-9,SS-14	159
OW-13	SS-5,SS-8,SS-15,SS-18	"
OW-14	SS-2,SS-5,SS-7,SS-9,SS-10	162
OW-15	SS-4,SS-11,SS-13,SS-15	"
OW-16	SS-4,SS-7,SS-9,SS-11,SS-14,SS-16	"
OW-17	SS-3,SS-7,SS-10,SS-13	163
OW-18	SS-5,SS-7,SS-12,SS-16,SS-18	"
OW-19	SS-2,SS-7,SS-11	"

3. River Bottom Samples

ES-1	C-2	156
ES-2	C-4	"
ES-3	C-1	"
ES-5	C-2	"
ES-6	Surface	"

SUMMARY OF LABORATORY TESTS

RATED PARAMETERS

GEO-TECH LABORATORIES

DATE: February 9, 1981

PROJECT: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

CLIENT: Chemtech Consulting Group Inc.

SAMPLE DESCRIPTION				SOIL GRAIN SIZE CHARACTERISTICS AND RATED PARAMETERS										
BORING NO.	SAMPLE NO.	DEPTH (FT)	IDENTIFICATION	Type	n	C_R	D_{10}	D_{50}	$\gamma_{MIN.}$	$\gamma_{MAX.}$	N/2	D_R	γ	K
OW-1	US-1	0.0-2.5	Tan SILT, l.(+)cf Sand w/roots	S	.33	3.1	.013	.045	93.0	120.0	-	70	110.0	.0001
OW-2	US-1		a) Red-Brn. SILT, a. mf Sand	S	.32	3.6	.013	.06	92.0	123.0	-	70	112.0	.0001
			b) Brn. f GRAVEL, a.(-)c Sand, t.(-)Silt											
OW-2	US-2		Gray-Brn. SILT, s. mf Sand, w/roots	S	.32	3.7	.015	.04	92.0	123.0	-	70	112.0	.00015
OW-3	US-1	7.0-9.0	Gray-Brn. SILT, a. f Sand	S	.31	4.0	.0065	.048	93.0	125.0	-	70	114.0	.00005
OW-4	US-1	0.0-2.5	FILL: MISC. SOIL, glass, cinders, wire											
OW-5	US-1	0.0-2.5	Dk. Gray SILT, a. cf Sand	S	.31	4.0	.0085	.04	92.0	125.0	-	70	113.0	.00007
OW-6	US-1	0.0-2.8	Dk. Gray SILT, a. cf Sand, w/coal	S	.30	5.2	.005	.03	91.0	129.0	-	70	115.0	.00003
	US-2	5.0-7.0	Dk. Gray f SAND, a. Silt	S	.31	4.0	.006	.08	93.0	125.0	-	70	114.0	.00005
	US-3	22.0-24.5	Gray-Brn. mf SAND, a. Silt	S	.33	2.9	.018	.07	93.0	119.0	-	70	110.0	.00025
OW-7	US-1		a) Brn. mf SAND, a.(+) Silt	S	.31	4.0	.007	.08	93.0	125.0	-	70	114.0	.00006
			b) Dk. Gray cf SAND, s. Silt w/coal	S	.30	5.3	.02	.16	94.0	129.0	-	70	116.0	.00035
OW-8	US-1	0.0-3.0	Brn. SILT, l. f Sand w/roots	S	.35	2.5	.012	.03	90.0	115.0	-	70	106.0	.00008
OW-11	US-1	33.0-35.0	a) Gray mf SAND, a. Silt	S	.33	3.1	.016	.09	93.0	120.0	-	70	110.0	.00015
			b) Gray SILT, s. f Sand w/wood, org.odor	S	.34	2.9	.009	.033	91.0	119.0	-	70	109.0	.00007

SUMMARY OF LABORATORY TESTS

RATED PARAMETERS

GEO-TECH LABORATORIES

DATE: February 9, 1981

PROJECT: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

CLIENT: Chemtech Consulting Group Inc.

SAMPLE DESCRIPTION				SOIL GRAIN SIZE CHARACTERISTICS AND RATED PARAMETERS									
BORING NO.	SAMPLE NO.	DEPTH (FT)	IDENTIFICATION	Type	n	C_R	D_{10}	D_{50}	$\gamma_{MIN.}$	$\gamma_{MAX.}$	N/2	D_R	γ	K
OW-10	US-1	0.0-2.0	Gray SILT, s. cf Sand, t(-) f Gravel w/ro	S.	35	4.5	.008	.022	92.0	126.0	-	50	107.0	.0002
OW-21	US-1	20.0-22.0	Red-Gray Varved SILT	S.	37	2.2	.0065	.016	93.0	113.0	-	55	103.0	.00012
OW-20	US-1		Tan SILT, s. mf Sand, w/roots	S.	35	3.3	.0095	.035	91.0	122.0	-	60	107.5	.00015

80-263

SUMMARY OF LABORATORY TESTS

RATED PARAMETERS

GEO-TECH LABORATORIES

DATE: February 9, 1981

PROJECT: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

CLIENT: Chemtech Consulting Group Inc.

SAMPLE DESCRIPTION				SOIL GRAIN SIZE CHARACTERISTICS AND RATED PARAMETERS										
BORING NO.	SAMPLE NO.	DEPTH (FT)	IDENTIFICATION	Type	n	C_R	D_{10}	D_{50}	$\gamma_{MIN.}$	$\gamma_{MAX.}$	N/2	D_R	γ	K
ES-1	C-2	Top	Tan cm SAND, l. f Gravel	S.	35	2.3	.35	.71	96.0	113.0	-	70	107.0	.15
ES-1	C-2	Bottom	Tan cm SAND, l. f Gravel	S.	34	2.6	.35	.56	96.0	116.0	-	70	109.0	.15
ES-2	C-4	Top	Brn. f SAND, s. Silt	S.	37	1.9	.046	.11	90.0	111.0	-	70	104.0	.0025
ES-2	C-4	Bottom	Brn. mf SAND, s,(-) Silt	S.	36	2.1	.055	.13	92.0	113.0	-	70	106.0	.003
ES-3	C-1	Top	Tan cm SAND, l. f Gravel	S.	32	3.0	.49	.70	98.0	119.0	-	70	112.0	.3
ES-3	C-1	Bottom	Tan cm SAND, l. f Gravel	S.	32	2.9	.38	.78	99.0	118.0	-	70	112.0	.18
ES-5	C-2	Top	Tan cm SAND, t. f Gravel	S.	34	2.6	.38	.60	97.0	117.0	-	70	108.0	.16
ES-5	C-2	Bottom	Tan f SAND, a. Silt	S.	34	2.7	.016	.075	91.0	117.0	-	70	108.0	.00018
ES-6	Sur-face		Brn. cf SAND, a. Silt, l. mf Gravel	S.	29	6.2	.01	.12	93.0	131.0	-	70	117.0	.00008

80-263

SUMMARY OF LABORATORY TESTS

RATED PARAMETERS
GEO-TECH LABORATORIES

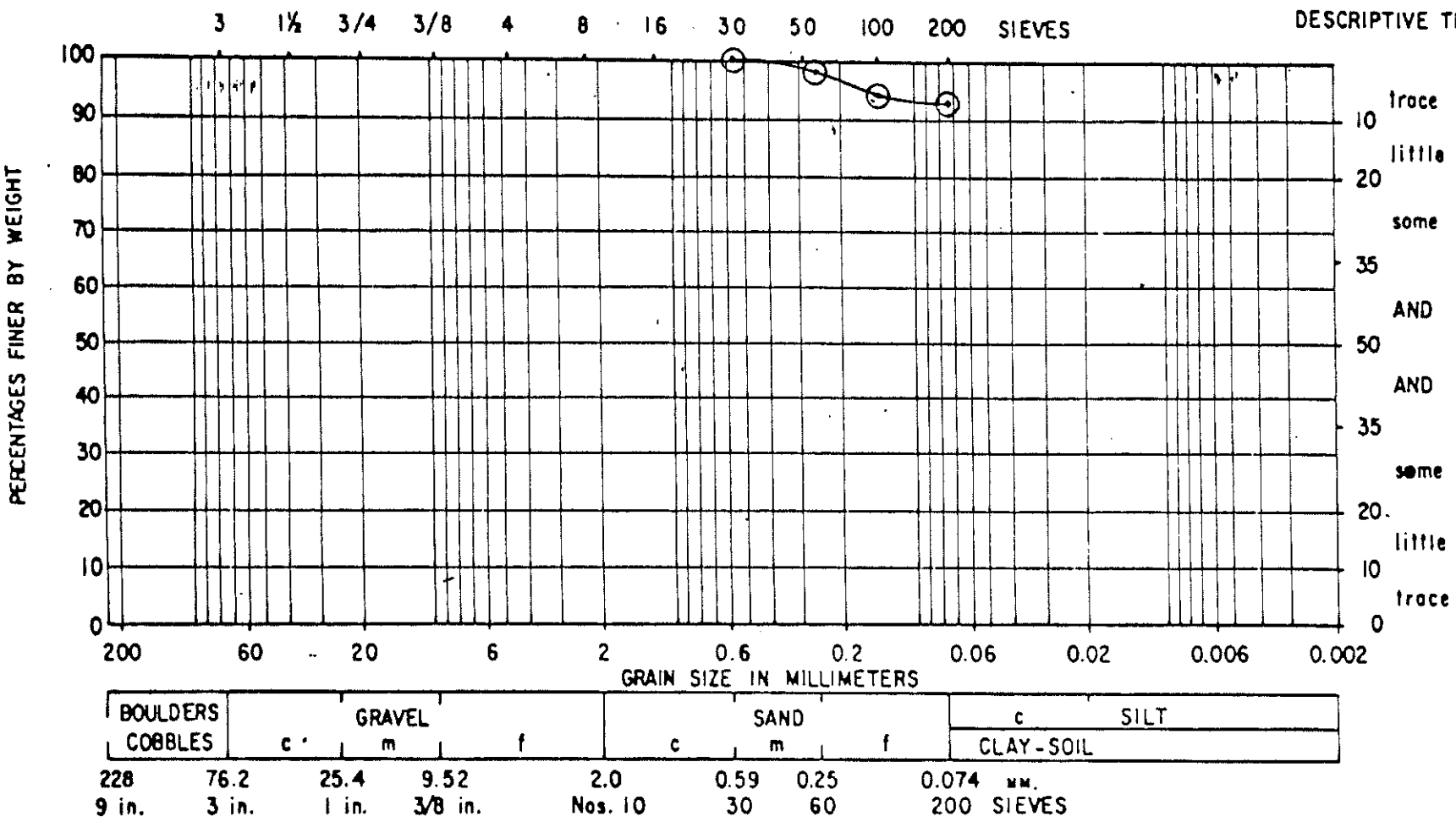
DATE: February 9, 1981
PROJECT: Mt. Tom Hydrogeologic Study, Holyoke, Ma.
CLIENT: Chemtech Consulting Group Inc.

SAMPLE DESCRIPTION				SOIL GRAIN SIZE CHARACTERISTICS AND RATED PARAMETERS										
BORING NO.	SAMPLE NO.	DEPTH (FT)	IDENTIFICATION	Type	n	C_R	D_{10}	D_{50}	δ MIN.	δ MAX.	N/2	D_R	ϕ	K
OW-3	SS-4		Tan mf SAND, a. Silt	S	.34	3.8	.008	.086	93.0	124.0	9	60	109	.00012
OW-4	SS-3		Gray cf SAND, s. (+) Silt, l.(+)f Gravel	S	.37	4.8	.026	.012	93.0	127.0	9	44	104	.006
OW-4	SS-5		Gray cf SAND, s. mf Gravel, l. Silt	S	.37	5.2	.04	.20	95.0	128.0	12	30	103.0	.009
OW-4	SS-9		Tan cf SAND, t. f Gravel, t. Silt	S	.34	3.3	.12	.55	96.0	122.0	15	55	109.0	.03
OW-4	SS-14		Brown f SAND, a. Silt	S	.27	3.0	.013	.09	93.0	121.0	56	100	121	.00001
OW-5	SS-5		Tan mf SAND, l. Silt	S	.37	3.0	.031	.16	94.0	120.0	8	45	104.0	.006
OW-6	SS-3		Gray cf SAND, a. Silt, t. f Gravel	S	.34	5.1	.012	.062	92.0	128.0	8	52	108.0	.0003
OW-6	SS-5		Tan SILT, s. mf Sand	S	.37	3.3	.009	.032	91.0	122.0	6	45	103.0	.0002
OW-9	SS-1		Gray SILT, a. cf Sand, t.(-)fine Gravel	S	.37	4.1	.016	.076	93.0	125.0	3	38	103.0	.00035
OW-9	SS-2		Brown cf SAND, s. Silt, l. f Gravel w/glass, steel	S	.31	5.9	.014	.18	94.0	131.0	16	58	113	.0002
OW-9	SS-5		Tan cf SAND, s. Silt, l.(-) f Gravel w/glass, steel	S	.40	5.0	.032	.10	93.0	128.0	6	24	98.5	.015
OW-9	SS-7		Tan cf SAND, l. cf Gravel, t. Silt	S	.38	6.8	.09	.40	96.0	133.0	6	20	102.0	.015
OW-9	SS-12		Brown mf GRAVEL, l. cf Sand, t. Silt	S	.37	6.0	.90	3.9	106.0	131.0	27	55	103.0	.65
OW-12	SS-3		Gray SILT, s.(+) f Sand	S	.37	3.2	.009	.037	92.0	121.0	5	45	103.0	.0002
OW-12	SS-5		Tan mf SAND, a. Silt	S	.33	3.8	.016	.08	93.0	124.0	10	62	110.0	.00022

SUMMARY OF LABORATORY TESTS
RATED PARAMETERS
GEO-TECH LABORATORIES

DATE: February 9, 1981
PROJECT: Mt. Tom Hydrogeologic Study, Holyoke, Ma
CLIENT: Chemtech Consulting Group Inc.

SAMPLE DESCRIPTION				SOIL GRAIN SIZE CHARACTERISTICS AND RATED PARAMETERS										
BORING NO.	SAMPLE NO.	DEPTH (FT)	IDENTIFICATION	Type	n	C_R	D_{10}	D_{50}	$\gamma_{MIN.}$	$\gamma_{MAX.}$	N/2	D_R	γ	K
OW-7	SS-3	8-10	Lt.Brn. mf SAND, and Silt	S	.35	3.0	.045	.11	94.0	120.0	7	55	107.0	.005
OW-7	SS-5	18-20	Lt.Brn. SILT and f Sand	S	.35	3.2	.013	.060	93.0	121.0	6	50	106.0	.0003
OW-7	SS-11	55-57	Brn. mf GRAVEL, s. cf Sand, t. Silt	S	.35	6.0	.28	7.0	108.0	131.0	16	30	106.0	.19
OW-7	SS-19	140-142	Brn. mf SAND, s. Silt	C	.24	3.2	.028	.19	91.0	125.0	39	100	125.0	.0004
OW-8	SS-2	5-7	Lt. Brn. SILT, t. f Sand	S	.38	2.8	.02	.055	92.0	118.0	4	45	102.0	.0005
OW-8	SS-3	10-12	Lt.Brn. SILT, t. f Sand	S	.39	2.0	.02	.07	91.0	112.0	5	47	100.0	.00018
OW-8	SS-6	25-27	Brn. cf SAND, s. Silt								14			
OW-8	SS-9	40-42	Grey cf SAND, t. Silt	S	.34	3.2	.20	.60	97.0	120.0	15	55	108.0	.04
OW-8	SS-12	60-62	Brn. mf SAND, and Silt	S	.25	3.8	.016	.10	93.0	124.0	45	100	124.0	.00006
OW-8	SS-15	100-102	Brn. mf SAND, l. Silt	S	.31	2.1	.073	.30	94.0	113.0	52	100	113.0	.0007
OW-9	SS-16	75-77	Brn. cf SAND, t. Silt	S	.33	2.8	.17	.70	97.0	118.0	23	69	110.0	.013
OW-9	SS-19	90-92	Lt.Brn. cf SAND, s. f Gravel, t. Silt	S	.31	4.0	.075	1.20	100.0	125.0	30	55	113.0	.006
OW-9	SS-22	105-107	Brn. cf SAND, s. f Gravel, t. Silt	S	.32	4.3	.075	.95	100.0	127.0	24	50	112.0	.007
OW-9	SS-24	120-124	Brn. cf SAND, l. f Gravel, l. Silt	S	.27	4.5	.068	.30	96.0	127.0	39	85	121.0	.0013
OW-9	SS-26	130-132	Brn. cf SAND, t. f Gravel, t. Silt	S	.30	3.7	.32	.67	97.0	124.0	30	75	116.0	.13



Client: Chemtech Consulting Group Inc.

Project: Mt. Tom Hydrogeologic Study, Holyoke, Ma.

Test No.: 1

Description: Gray SILT, trace medium-fine Sand (Fly Ash)

80-263

Geo-Tech Laboratories

HALEY & ALDRICH

TEST BORING REPORT

Boring No. OW-107

Project Mt. Tom Comprehensive Site Assessment Holyoke, MA
Client Northeast Utilities
Contractor Seaboard Geotechnical & Environmental Drilling Services

File No. 28911-020
Sheet No. 1 of 2
Start November 13, 2002
Finish November 13, 2002
Driller R. Ingraham
H&A Rep. S. Carter
Elevation 123.1
Datum Site
Location N 3,886 W Abs(-6112.91)

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HW	S	--	Rig Make & Model: ATV, CME-550
Inside Diameter (in.)	4.0	2.375	--	Bit Type: Roller Bit
Hammer Weight (lb.)	300	300	-	Drill Mud: None
Hammer Fall (in.)	24	24	-	Casing: driven
				Hoist/Hammer: Cat-Head / Automatic Hammer

Depth (ft.)	SPT[1]	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	1/12"* 1* 2*	S1* 14	0.0 2.0				Black BOTTOM ASH, mps = 6 mm, no structure, no odor, dry PID = 0.0 ppm	0	0	5	35	50	10				
5	1* 2* 1* 2*	S2* 14	5.0 7.0				Black BOTTOM ASH, mps = 6 mm, no structure, no odor, dry PID = 0.0 ppm	0	0	5	35	50	10				
10	1* 2* 1* 2*	S3* 14	10.0 12.0				Black BOTTOM ASH, mps = 6 mm, no structure, no odor, dry PID = 0.0 ppm	0	0	5	35	50	10				
15	Not Rec.	S4*	15.0 17.0		107.8 15.3 107.4 15.7	OL/ OH ML	Black BOTTOM ASH, mps = 6 mm, no structure, no odor, dry to moist PID = 0.0 ppm -BOTTOM ASH FILL- Dark gray ORGANIC SOIL (OL/ OH), mps = 0.4 mm, with root material and plant fibers, organic odor, moist PID = 0.0 ppm	0 0 0	0 0 0	15 0 0	65 0 0	35 5 30	5 95 70				
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft.) to: Bottom of Casing	Bottom of Hole	Water

Sample Identification

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon
G Geoprobe

Well Diagram

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary

Overburden (lin. ft.) 26
Rock Cored (lin. ft.)
Samples S1-S6

Boring No. OW-107

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None
Toughness: L-Low, M-Medium, H-High
Plasticity: N-Nonplastic, L-Low, M-Medium, H-High
Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size (in millimeters).

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

*** Indicates the use of a 3" sampler and 300 lb hammer**

USCS TB3B USCS1IB5.GLB USCSTC3A.GDT G:\- PROJECTS\28-28911\GINT\28911TB.GPJ Jan 14, 03

HALEY & ALDRICH

TEST BORING REPORT

Boring No. OW-107
File No. 28911-020
Sheet No. 2 of 2

Depth (ft.)	SPT[1]	Sample No. & Rec. (in.)	Sample Depth (ft.)	Well Diagram	Elev./Depth (ft.)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, max. particle size[2], structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	Not Rec.	S5*	20.0 - 22.0			ML	-ORGANIC DEPOSITS-	0	0	0	0	15	85				
						ML	Gray-brown sandy SILT (ML), mps = 0.4 mm, no structure, no odor, moist										
							PID = 0.0 ppm										
							Gray-brown sandy SILT (ML), mps = 0.4 mm, no structure, no odor, moist										
							PID = 0.0 ppm										
25	Not Rec.	S6*	25.0 - 27.0			ML	Gray poorly-graded SILT (ML), mps = 0.4 mm, no structure, no odor, wet	0	0	0	0	0	100				
					97.1												
					26.0		PID = 0.0 ppm										
							-ALLUVIAL DEPOSITS-										
							Top of Probable Bedrock at 26.0 ft										
							Note: advanced rollerbit from 26.0 to 29.0 ft. in rock.										
					94.1		-PROBABLE BEDROCK-										
					29.0		Bottom of Exploration at 29.0 ft.										
							Monitoring well installed in borehole upon completion.										
							See Monitoring Well Installation Report OW-107 for details.										

[1]SPT = Sampler blows per 6 in. [2]Maximum particle size (mm) is determined by direct observation within the limitations of sampler size.

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. OW-107

* Indicates the use of a 3" sampler and 300 lb hammer

Tighe & Bond

Appendix B: Recent Exploration Logs

Tighe & Bond

Boring No. **B-201**

Page 1 of 2

File No. G-0682-037A

Checked by: D. Gnatek

Project: Mt. Tom Post Closure and Compliance

Location: Former Mt. Tom Powerplant, Holyoke, MA'

Client: Engie Development, LLC

Drilling Co. Seaboard Drilling, LLC

Foreman: N. Demarest

T&B Rep.: R. Ciliberto

Date Start: 01/09/26 End: 01/09/26

Location See Exploration Location Plan

GS. Elev. 121'± (NAVD88)

	Casing	Sampler
Type	FJ	Split Spoon
I.D./O.D.	4"/4-1/2"	1-3/8"/2"
Hammer Wt.	140#	140#
Hammer Fall	30"	30"
Rig Make/Model	Diedrich D50 (auto hmmr)	

Groundwater Readings

Date	Time	Depth	Casing	Sta. Time
9-Jan	16:30	21.6'	58.5'	0.5 hrs
23-Mar	9:00	18.1'	58.0'	2.5 months

Depth (ft.)	Casing Blows Per Ft.	Sample No. / Rec.(in)	Sample Depth (ft.)	Blows Per 6"	PID Reading (ppm)	Sample Description	General Stratigraphy	Notes	Well Construction
	50	S-1 / 18	0-2	25-25	-	Very dense, brown, fine to coarse SAND, some Gravel, trace Silt, dry	**SAND**		2" PVC Riser
	50			25-25			2'		
	46	S-2 / 18	2-4	20-26	-	Very dense, dark gray, CCR (particle size = fine SAND, little Silt), dry			
	58			28-30					
5	15	S-3 / 16	4-6	5-6	-	Medium dense, dark gray, CCR (particle size = SILT, some fine Sand, trace Gravel), dry	**COAL COMBUSTION RESIDUALS (CCR)**		
	18			5-6					
	20	S-4 / 13	6-8	5-5	-	Medium dense, dark gray, CCR (particle size = fine SAND and SILT), dry			
	18			5-8					
	8	S-5 / 13	8-10	4-4	-	Loose, dark gray, CCR (particle size = fine to medium SAND, some Silt), moist			
	8			4-4					
10	6	S-6 / 8	10-12	3-3	-	4" Dark gray, CCR, over loose, dark brown, fine to medium SAND and SILT, little Glass, trace Gravel, trace Wood, moist	10.3'		
	6			3-3					
	10	S-7 / 19	12-14	5-5	-	Medium dense, brown, fine to medium SAND and SILT, trace Gravel, trace Brick, trace Glass, trace Ash, moist			
	11			6-5					
	14	S-8 / 10	14-16	7-7	-	Medium dense, gray/brown, fine to coarse SAND, some Silt, some Gravel, little Ash, trace Slag, moist			
15	9			6-3			**FILL**		
	11								
	11								
	12								
	11								
20	19	S-9 / 14	20-22	10-9	-	12" Brown, fine to medium SAND and SILT, little Metal, trace Gravel, trace Glass, over medium dense, gray/brown, fine SAND and SILT, wet	21'		
	19			9-10					
	21								
	23								
	31								
25	7	S-10 / 23	25-27	3-4	-	Loose, gray/brown, fine SAND and SILT, wet	**f SAND and SILT**		
	7			4-3					
	NR								
	3								
30	8								

Cuttings

Notes:

Proportions Used

TRACE (TR.)	0 - <10%
LITTLE (LI.)	10 - <20%
SOME (SO.)	20 - <35%
AND	35 - <50%

Density/Consistency

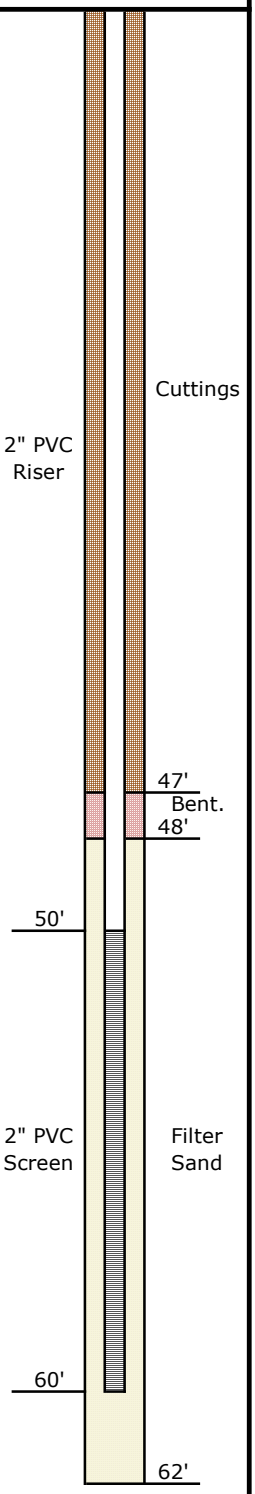
VERY LOOSE	0-4	VERY SOFT	<2
LOOSE	4-10	SOFT	2-4
MEDIUM DENSE	10-30	MEDIUM	4-8
DENSE	30-50	STIFF	8-15
VERY DENSE	>50	VERY STIFF	15-30
		HARD	>30

Tighe & Bond

Project: Mt. Tom Post Closure and Compliance
Location: Former Mt. Tom Powerplant, Holyoke, MA'
Client: Engie Development, LLC

Boring No. **B-201**
Page 2 of 2
File No. G-0682-037A
Checked by: D. Gnatek

Depth (ft.)	Casing Blows Per Ft.	Sample No. / Rec.(in)	Sample Depth (ft.)	Blows Per 6"	PID Reading (ppm)	Sample Description	General Stratigraphy	Notes
	NR	S-11 / 15	30-32	1-2	-	Medium, gray, Clayey SILT, some fine Sand, wet	**f SAND and SILT**	
	NR			4-4				
	NR							
	10						34'	1
	18							
35	NR	S-12 / 9	35-37	4-6		Medium dense, gray, fine to coarse SAND, trace Gravel, trace Silt, wet		
	NR			8-10				
	NR							
	36							
	8							
40	NR	S-13 / 12	40-42	20-16		Medium dense, red/brown, fine to coarse SAND, little Gravel, trace Silt, wet		
	NR			3-5				
	NR							
	34							
	21							
45	NR	S-14 / 11	45-47	17-17		Medium dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet		
	NR			8-13				
	NR						**f-c SAND**	
	22							
	23							
50	NR	S-15 / 11	50-52	10-12		Medium dense, brown, fine to coarse SAND, trace Gravel, trace Silt, wet		
	NR			13-10				
	NR							
	24							
	25							
55	NR	S-16 / 13	55-57	11-13		Medium dense, brown, fine to coarse SAND, little Gravel, trace Silt, wet		
	NR			13-12				
	NR							
	28							
	25							
60		S-17 / 0	60-62	15-16	-	No Recovery		
				13-12				
						End of Boring at 62'		
65								



Notes:
1) Strata change estimated at 34' based on casing blows.

Tighe & Bond

Appendix C:
Lab Testing Results

Thielsch
DIVISION OF THE RISE GROUP

195 Frances Avenue
Cranston RI, 02910
Phone: (401)-467-6454
Fax: (401)-467-2398
cts.thielsch.com
Let's Build a Solid Foundation

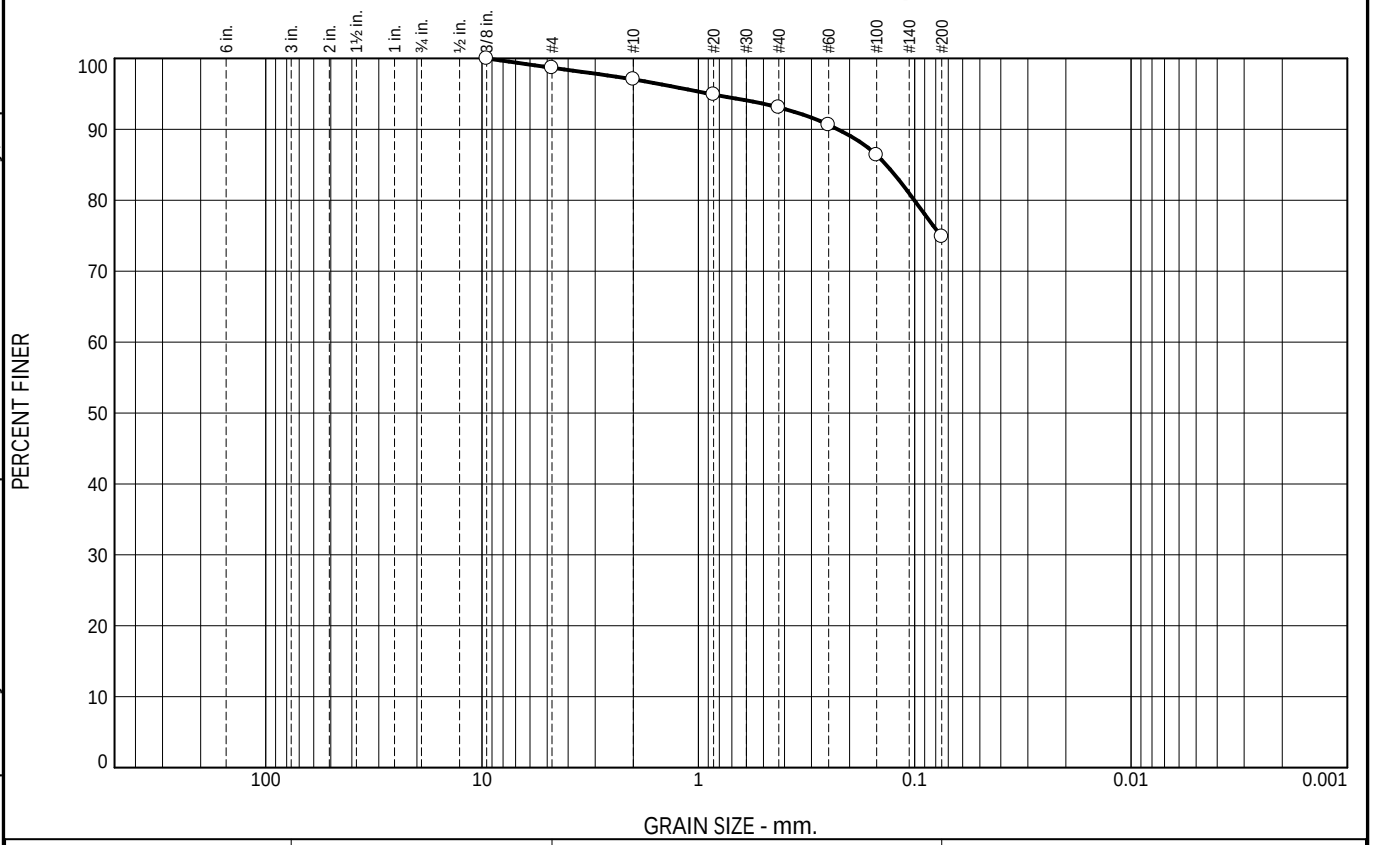
Client Information:		Project Information:	
Tighe & Bond		**Mt. Tom Post Closure Compliance & CCR Support**	
Westfield, MA		**Holyoke, MA**	
(413) 562-1600		Project Number:	G-0682-037A
Project Contact:	Dan Gnatek	Summary Page:	1 of 1
Collected By:	R. Ciliberto	Report Date:	3/30/2026

LABORATORY TESTING DATA SHEET, Report No.: 26C167

Boring No.	Sample ID	Depth (ft)	Laboratory No.	Identification Tests									Compaction / CBR / Permeability Tests								Laboratory Log and Soil Description
				As Rcvd Moisture Content %	LL %	PL %	OD LL	Gravel %	Sand %	Fines %	Org. %	pH	g_d MAX (pcf) W_{opt} (%)	g_d MAX (pcf) W_{opt} (%) (Corr.)	Dry unit wt. (pcf)	Test Moisture Content %	Target Test Setup as % of Proctor	CBR @ 0.1"	CBR @ 0.2"	Permeability cm/sec	
				D2216	D4318			D6913			D2974	D4792	D698/D1557		D1883					D2434/D5084	
B-201	S-3	4-6	26-S-728					1.3	23.8	74.9											Brown Clayey SILT, some f-m Sand, trace fine Gravel
B-201	S-8	14-16	26-S-729					27.9	40.8	31.3											Brown f-c SAND, some Clayey Silt, some f-c Gravel
B-201	S-11	30-32	26-S-730					0.0	32.3	67.7											Brown Clayey SILT, some fine Sand
B-201	S-13	40-42	26-S-731					12.3	81.3	6.4											Red-Brown f-c SAND, little fine Gravel, trace Silt

Date Received: **3/23/2026** Reviewed By: Date Reviewed: **3/30/2026**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.3	1.6	4.0	18.2	74.9	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
#4	98.7		
#10	97.1		
#20	94.9		
#40	93.1		
#60	90.6		
#100	86.4		
#200	74.9		

* (no specification provided)

Soil Description

Brown Clayey SILT, some f-m Sand, trace fine Gravel

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 0.2269 D_{85}= 0.1355 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= ML AASHTO= A-4(0)

Remarks

Sample visually classified as plastic. Sample rolled to 1/4".

Source of Sample: Boring Depth: 4-6'
Sample Number: B-201, S-3

Date: 03-25-26

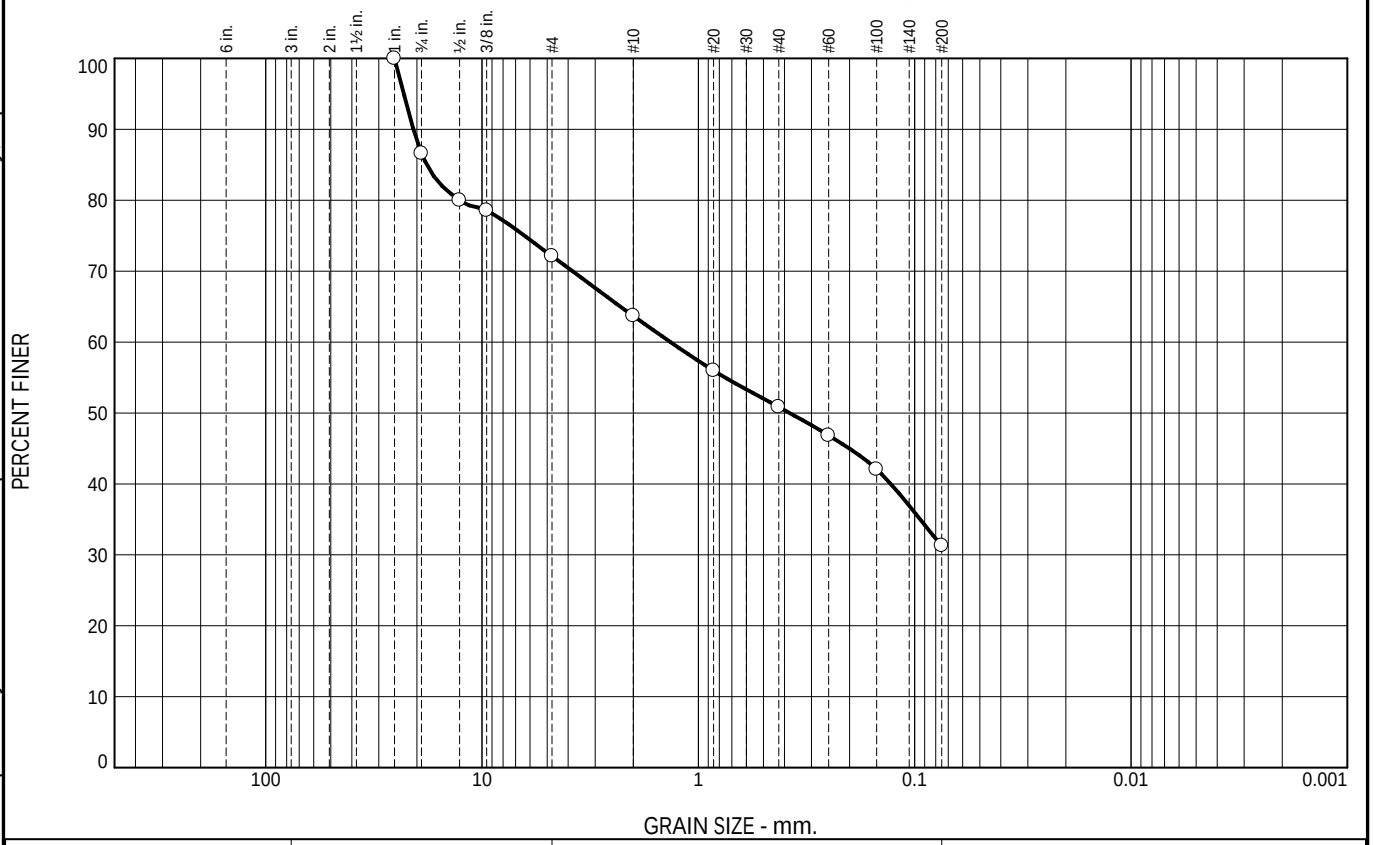
Thielsch Engineering Inc.

Cranston, RI

Client: Tighe & Bond
Project: Mt. Tom Post Closure Compliance & CCR Support
Holyoke, MA
Project No: G-0682-037A Figure S-728

Tested By: SBR/SF Checked By: Andrew Vanasse

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	13.4	14.5	8.4	12.9	19.5	31.3	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	86.6		
1/2"	80.0		
3/8"	78.6		
#4	72.1		
#10	63.7		
#20	56.0		
#40	50.8		
#60	46.8		
#100	42.1		
#200	31.3		

* (no specification provided)

Soil Description

Brown f-c SAND, some Clayey Silt, some f-c Gravel

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 20.7743 D_{85}= 17.9965 D_{60}= 1.3459
D_{50}= 0.3791 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Sample visually classified as plastic. Sample rolled to 1/4".

Source of Sample: Boring Depth: 14-16'
Sample Number: B-201, S-8

Date: 03-25-26

Thielsch Engineering Inc.

Cranston, RI

Client: Tighe & Bond
Project: Mt. Tom Post Closure Compliance & CCR Support
Holyoke, MA
Project No: G-0682-037A Figure S-729

Tested By: SBR/SF Checked By: Andrew Vanasse

Particle Size Distribution Report

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.3	0.6	31.4	67.7	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.7		
#20	99.5		
#40	99.1		
#60	98.5		
#100	93.3		
#200	67.7		

* (no specification provided)

Soil Description

Brown Clayey SILT, some fine Sand

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 0.1333 D_{85}= 0.1155 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= ML AASHTO= A-4(0)

Remarks

Sample visually classified as plastic. Sample rolled to 1/4".

Source of Sample: Boring Depth: 30-32'
Sample Number: B-201, S-11

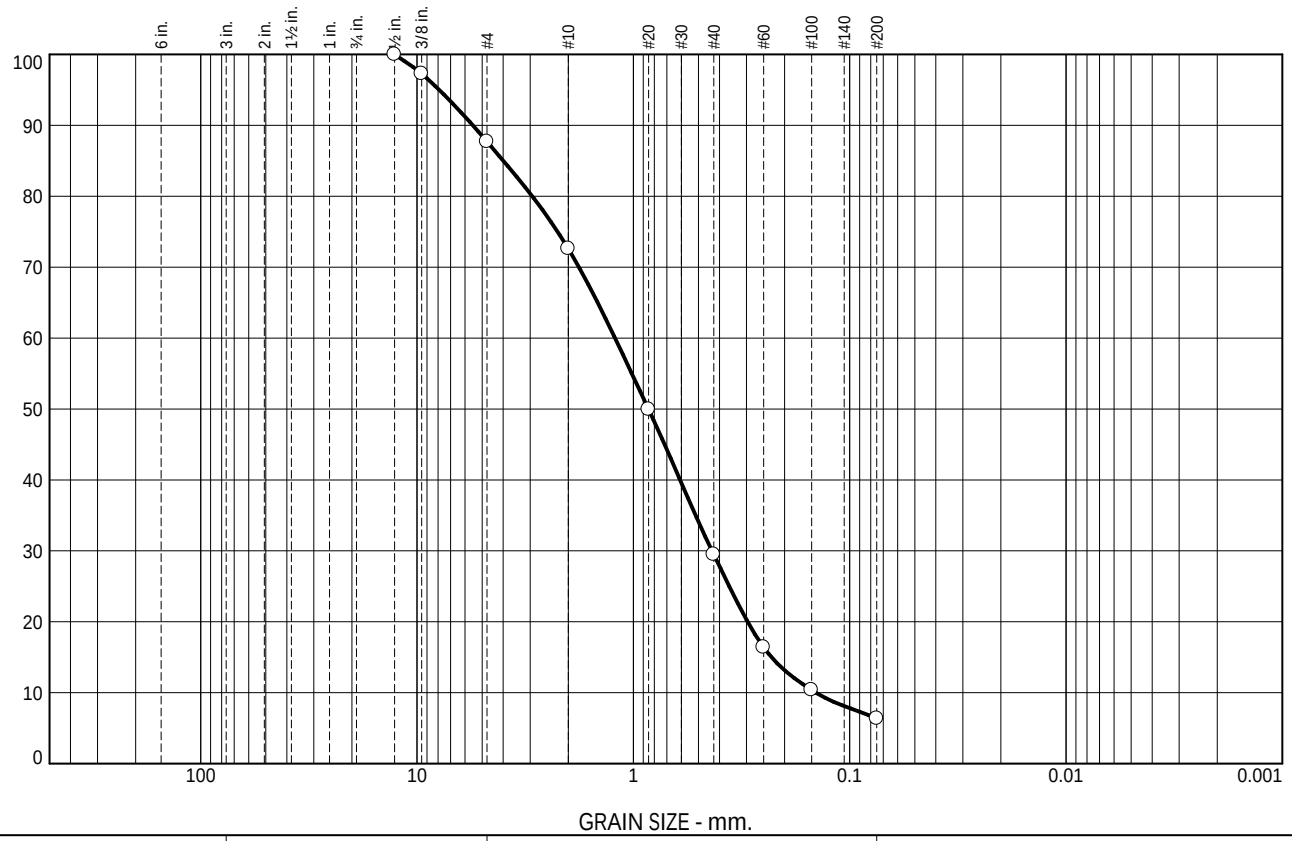
Date: 03-27-26

Thielsch Engineering Inc.
Cranston, RI

Client: Tighe & Bond
Project: Mt. Tom Post Closure Compliance & CCR Support
Holyoke, MA
Project No: G-0682-037A Figure S-730

Tested By: AB/SBR/SF Checked By: Andrew Vanasse

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	12.3	15.1	43.1	23.1	6.4	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2"	100.0		
3/8"	97.3		
#4	87.7		
#10	72.6		
#20	49.9		
#40	29.5		
#60	16.4		
#100	10.4		
#200	6.4		

* (no specification provided)

Soil Description

Red-Brown f-c SAND, little fine Gravel, trace Silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 5.5217 D_{85}= 3.9926 D_{60}= 1.2157
D_{50}= 0.8517 D_{30}= 0.4332 D_{15}= 0.2300
D_{10}= 0.1434 C_u= 8.48 C_c= 1.08

Classification

USCS= SW-SM AASHTO= A-1-b

Remarks

Source of Sample: Boring Depth: 40-42'
Sample Number: B-201, S-13

Date: 03-25-26

Thielsch Engineering Inc.

Cranston, RI

Client: Tighe & Bond
Project: Mt. Tom Post Closure Compliance & CCR Support
Holyoke, MA
Project No: G-0682-037A Figure S-731

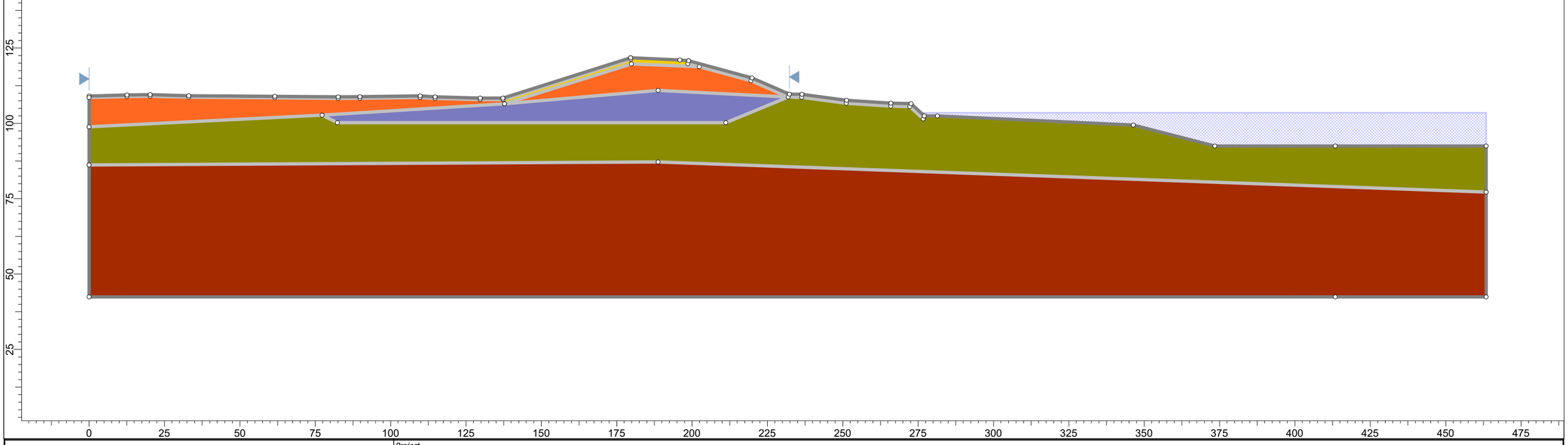
Tested By: SBR/SF Checked By: Andrew Vanasse

Tighe & Bond

Appendix D: Stability Analysis Output

Material Name	Color	Unit Weight (lbs/ft3)	Cohesion (psf)	Phi (°)
Gravel		115	0	32
Vegetated Topsoil		105	50	30
CCR		105	0	32
Urban Fill		115	0	32
Floodplain Alluvium		115	0	32
Glacial Outwash		125	0	36

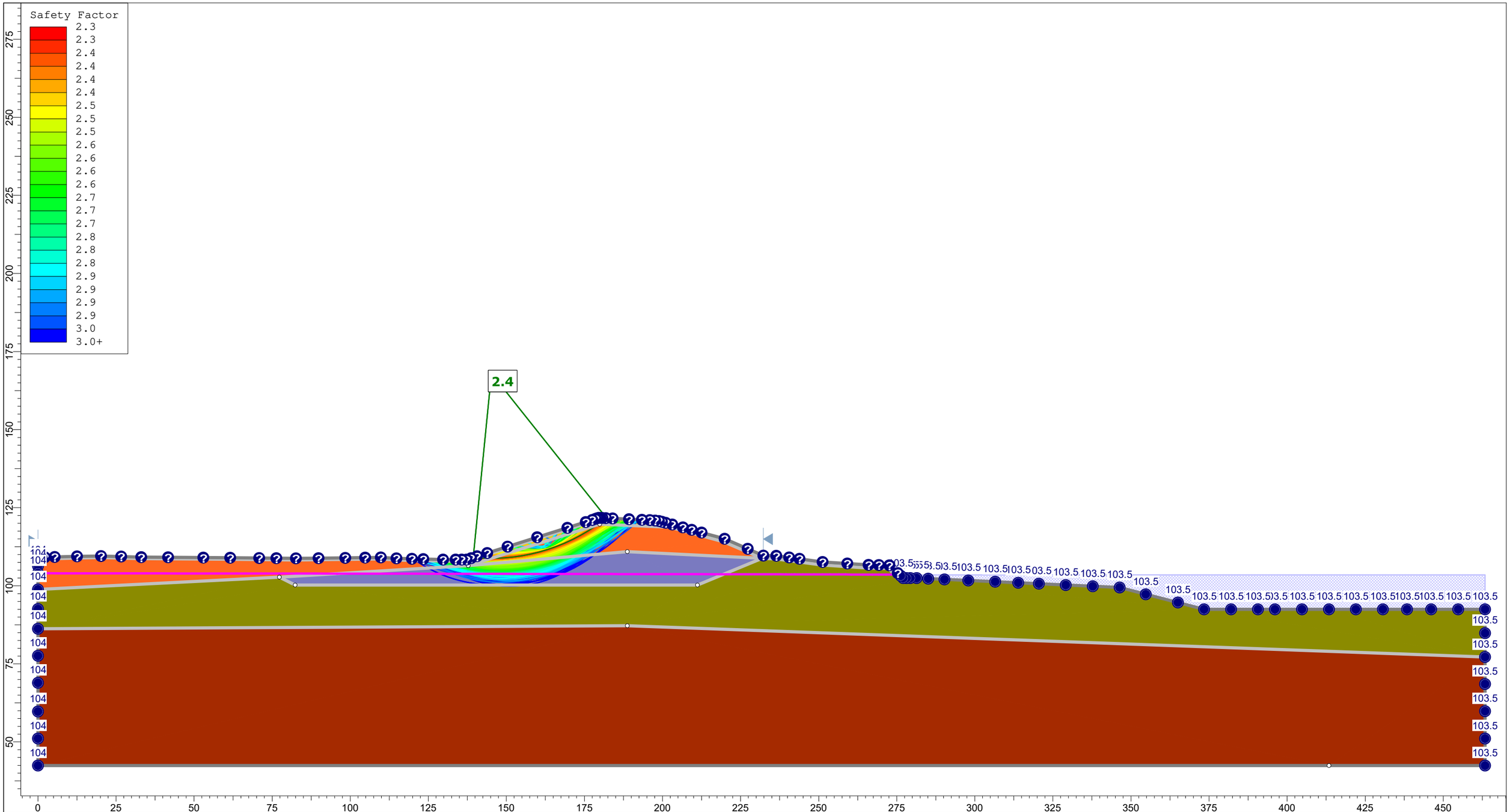
Material Name	Color	KS (cm/s)	K2/K1	K1 Angle (deg)
Gravel		0.001	0.1	0
Vegetated Topsoil		0.0001	0.1	0
CCR		0.003	0.1	0
Urban Fill		0.001	0.1	0
Floodplain Alluvium		0.0035	0.1	0
Glacial Outwash		0.01	0.1	0



Tighe & Bond

Project	G-0682-037A Former Mt Tom Site		
Analysis Description	Section A-A' (Existing) - Material Properties		
Drawn By: D. Gnatek		Scale: 1:377	Company:
Date: 4/22/2026			File Name: G-0682-037A.slmd

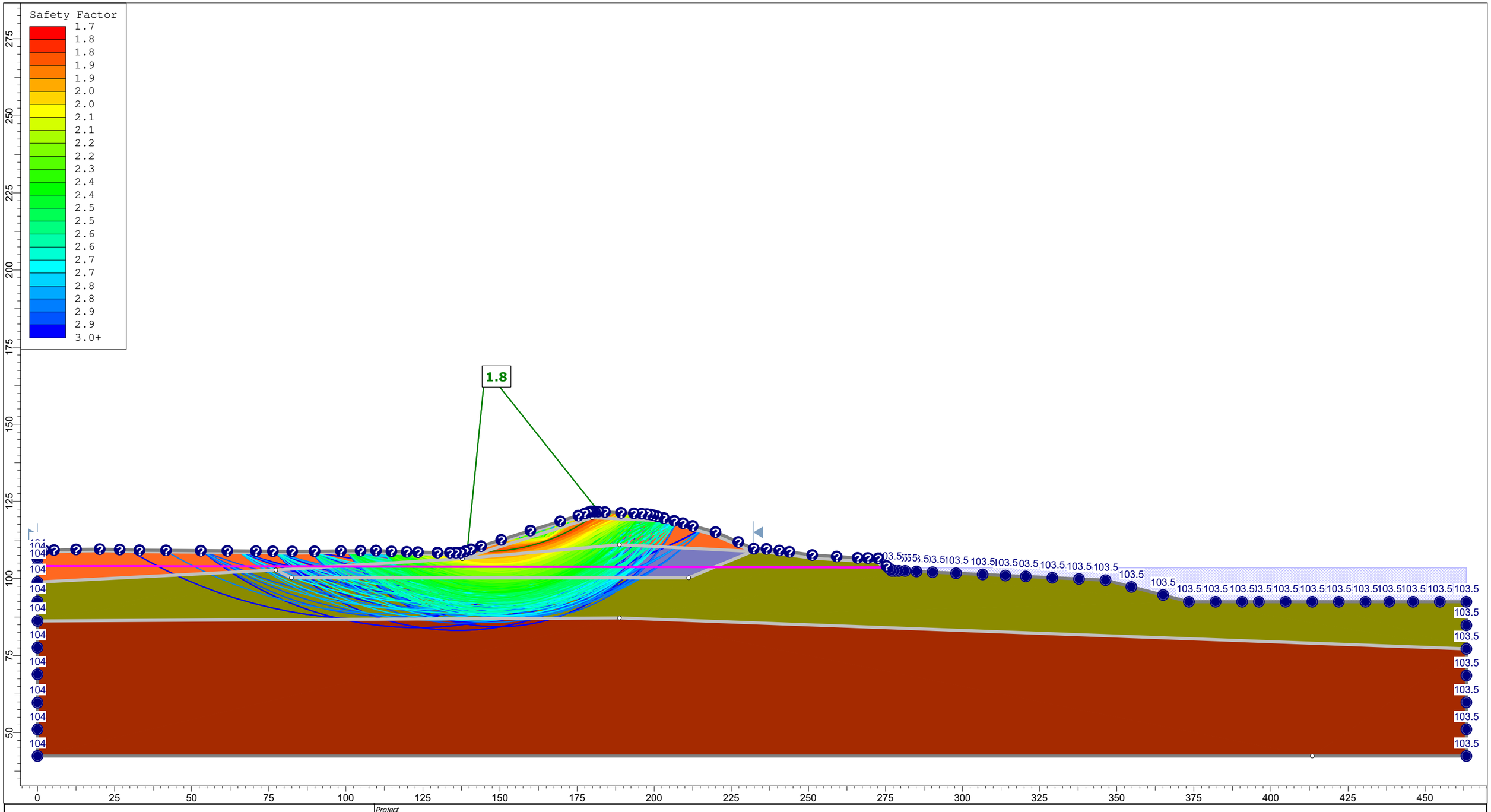
SLIDE 9.041



Tighe & Bond

Project	G-0682-037A Former Mt Tom Site		
Analysis Description	Section A-A' (Existing) - Impoundment Side - NP		
Drawn By D. Gnatek	*Scale* 1:350	*Company*	
Date 4/24/2026		*File Name* G-0682-037A.slmd	

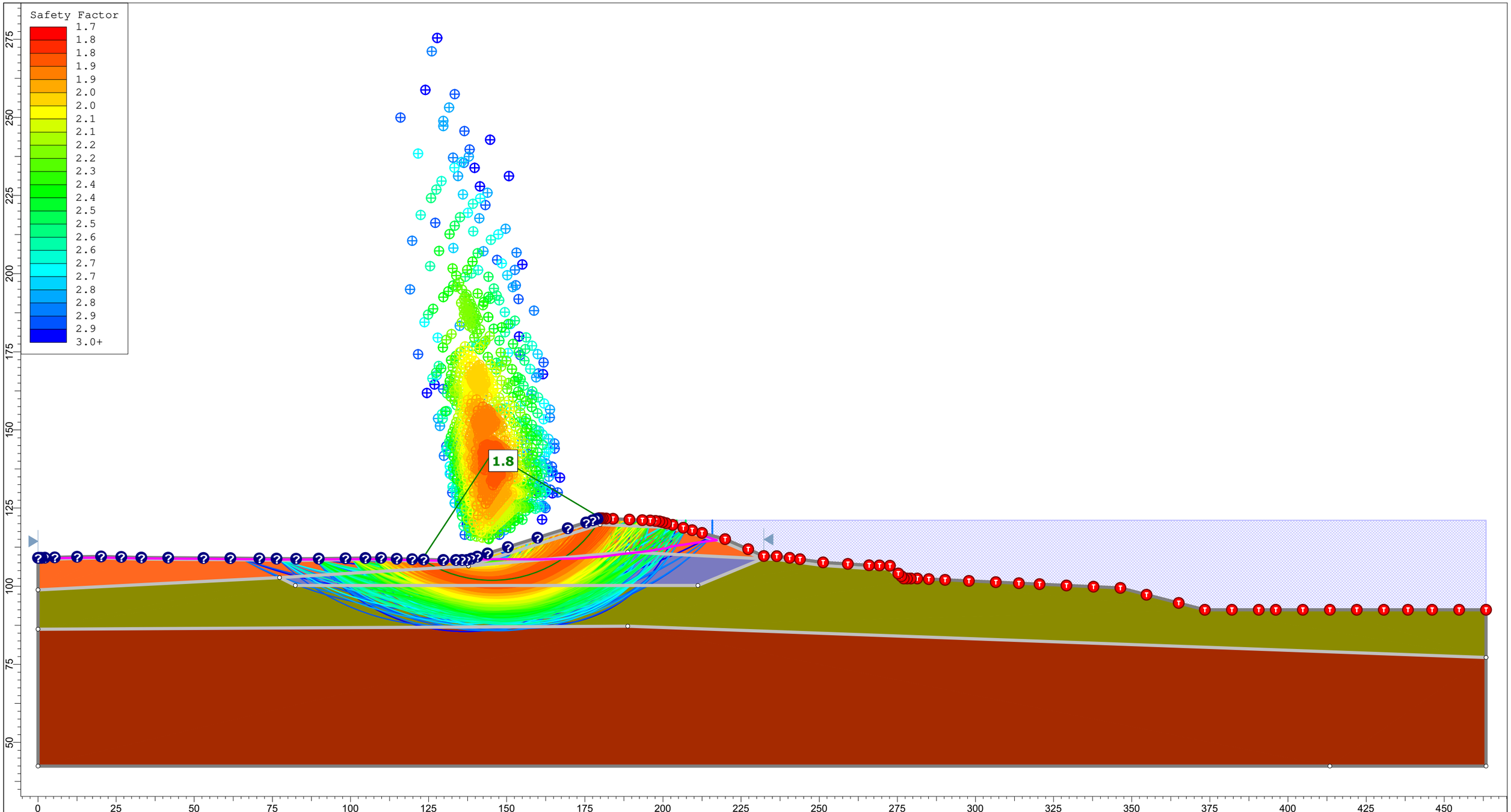
SLIDEINTERPRET 9.041



Tighe & Bond

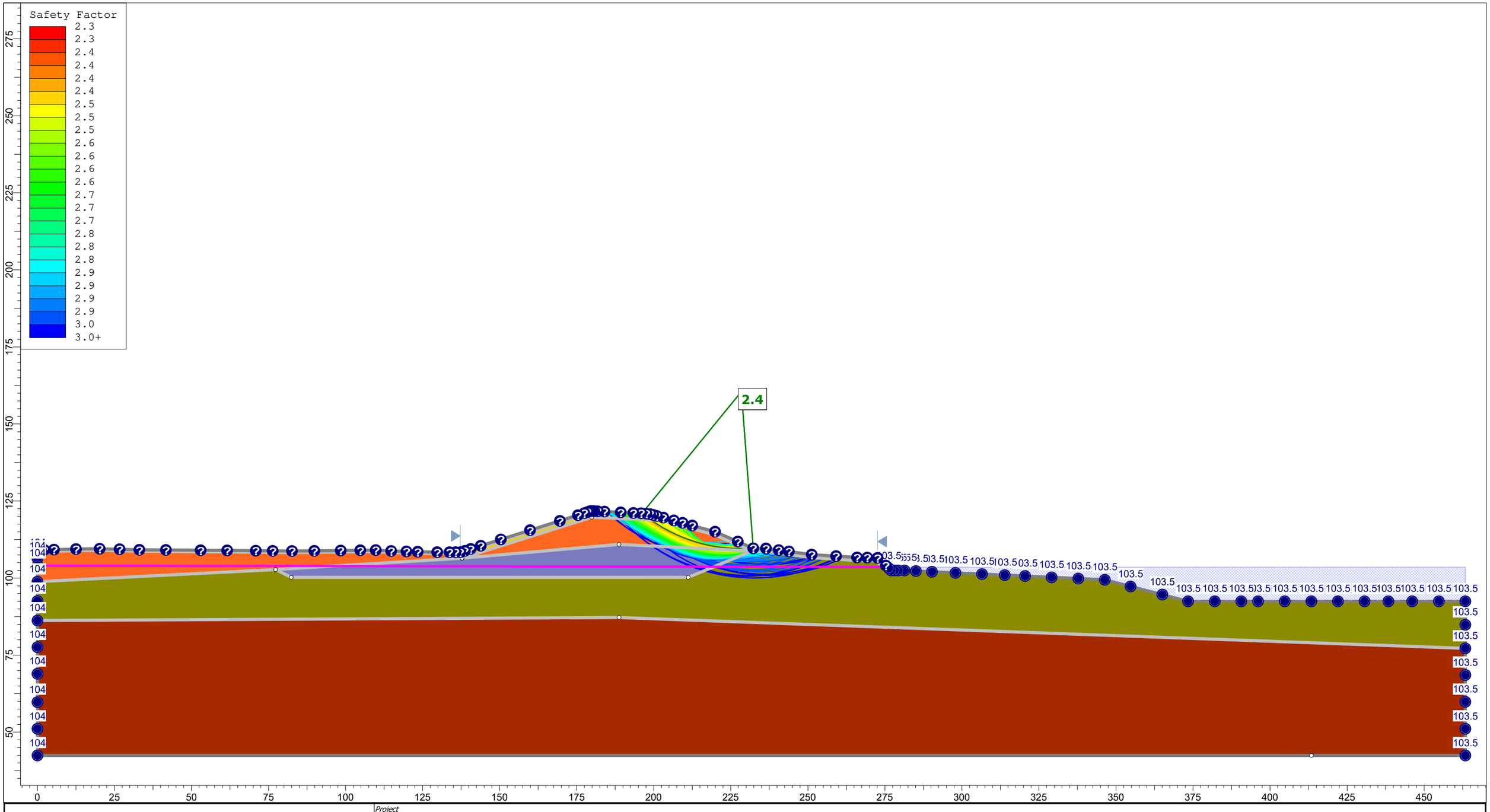
Project	G-0682-037A Former Mt Tom Site		
Analysis Description	Section A-A' (Existing) - Impoundment Side - NP (Seismic)		
Drawn By D. Gnatek	*Scale* 1:350	*Company*	
Date 4/24/2026		*File Name* G-0682-037A.slmd	

SLIDEINTERPRET 9.041



Tighe & Bond	Project	G-0682-037A Former Mt Tom Site		
	Analysis Description	Section A-A' (Existing) - Impoundment Side - 100-yr Flood (T)		
	Drawn By: D. Gnatek	Scale: 1:350	Company:	
	Date: 4/24/2026		File Name: G-0682-037A.slmd	

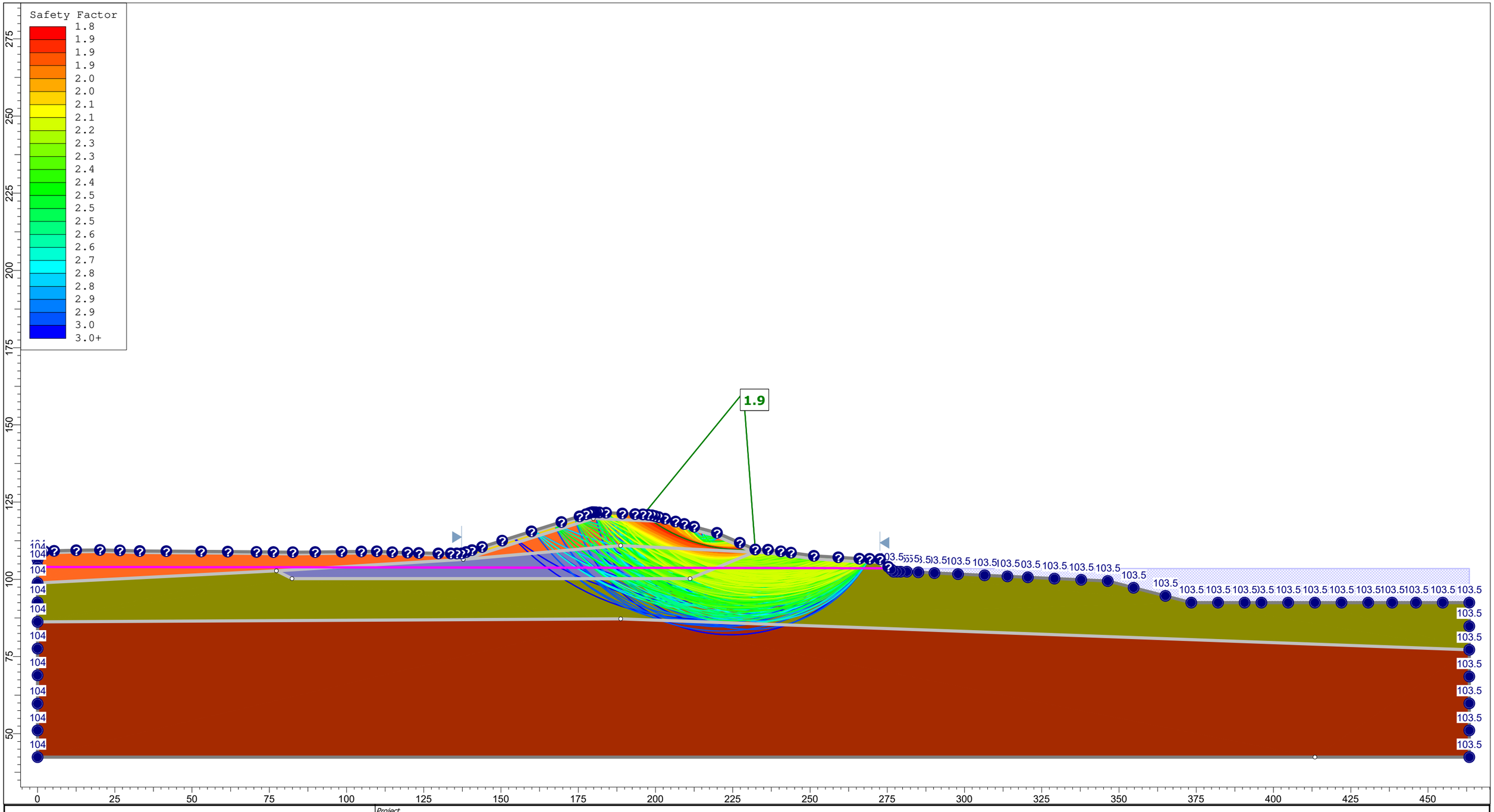
SLIDEINTERPRET 9.041



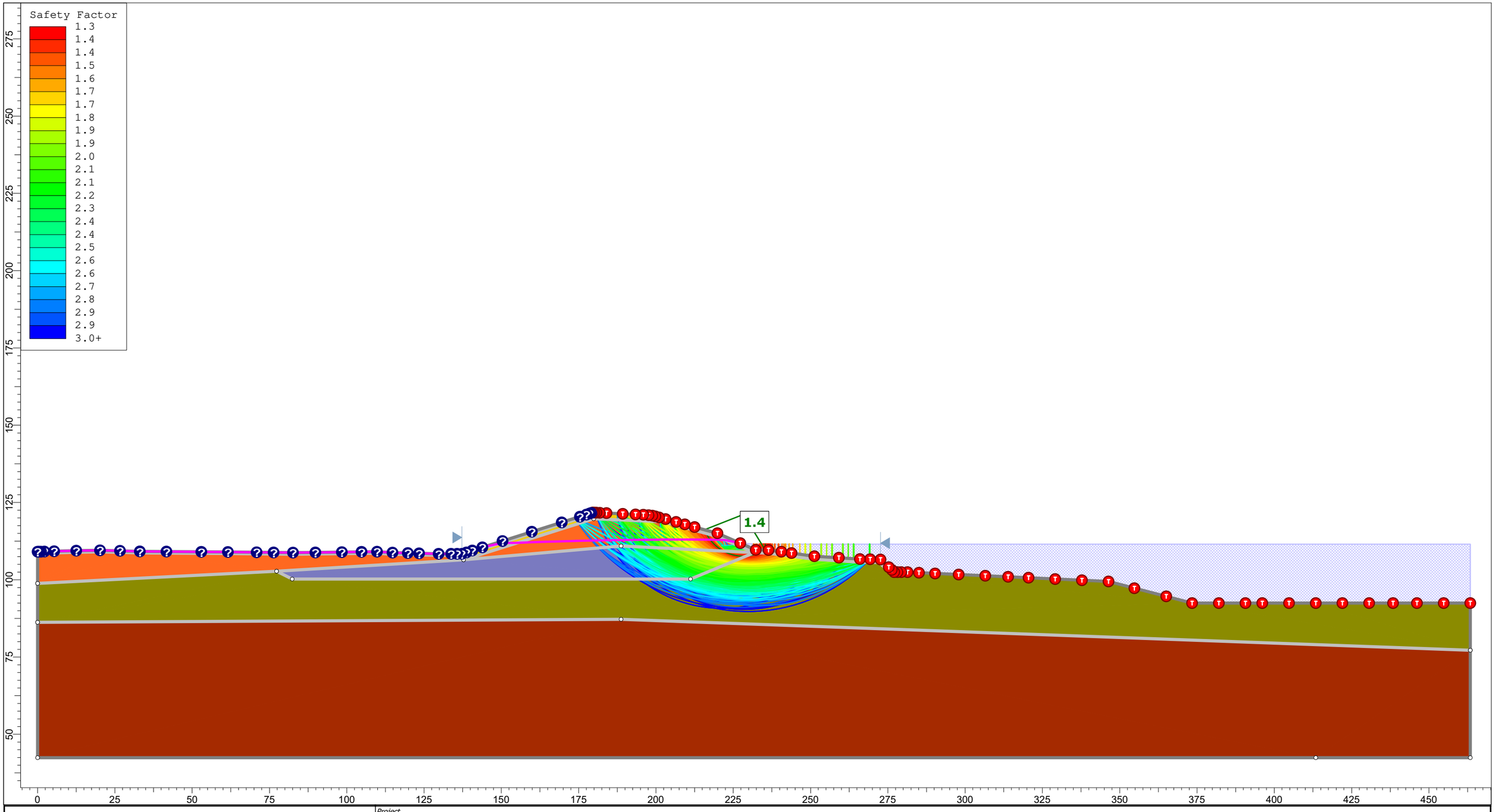
Tighe & Bond

Project	G-0682-037A Former Mt Tom Site		
Analysis Description	Section A-A' (Existing) - River Side - NP		
Drawn By D. Gnatek	*Scale* 1:350	*Company*	
Date 4/24/2026		*File Name* G-0682-037A.slmd	

SLIDEINTERPRET 9.041



Tighe & Bond	*Project*	G-0682-037A Former Mt Tom Site		
	Analysis Description	Section A-A' (Existing) - River Side - NP (Seismic)		
	Drawn By D. Gnatek	*Scale* 1:350	*Company*	
SLIDEINTERPRET 9.041	*Date* 4/24/2026		*File Name* G-0682-037A.slmd	



Tighe & Bond

Project	G-0682-037A Former Mt Tom Site		
Analysis Description	Section A-A' (Existing) - River Side - 100-yr Flood (T)		
Drawn By D. Gnatek	*Scale* 1:350	*Company*	
Date 4/24/2026		*File Name* G-0682-037A.slmd	

SLIDEINTERPRET 9.041