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April 30, 2026

Amesbury Zoning Board of Appeals
City of Amesbury
62 Friend Street
Amesbury, MA 01913

Re: 27 Kimball Road - Response to Public Comment Letters 1, 2, and 3

Dear Members of the Zoning Board of Appeals,

We appreciate the time and attention given by the Kimball Rd Safety Preservation Group and its representative, Rick Brunelle, in submitting written questions regarding the proposed development at 27 Kimball Road. This response is in reference to the Letters 1, 2, and 3 as further detailed below. We have included the question from each letter and have provided responses to each corresponding question.

We recognize that some of the responses address technical engineering, environmental, and regulatory matters. These responses have been prepared with input from the Project's professional consultants to ensure accuracy and completeness, and we expect that many of these topics will also be reviewed in detail by the Board's peer review consultants.

We appreciate the Board's continued review of the proposed Project and welcome any additional questions or requests for clarification. We look forward to ongoing coordination as the hearing process continues.

Letter 1 – Single Point of Access and Emergency Access

Received by the City of Amesbury on March 27, 2026, with a clerk stamp of April 14, 2026

Comments and Responses

1. What is the proposed curb-to-curb width of the internal loop roadway?

   Applicant Response: *In the Site Plan Set dated 01-26-2026, the curb-to-curb width of the roadway fluctuates throughout the development as the internal roadway includes both head end and parallel parking spaces. At the entrance to the Project, a boulevard design has been implemented with a 12' wide inbound and a 12' wide outbound lane with an 8' wide striped island in the center, 32' wide total.*

   The 8 'wide boulevard island gradually reduces to zero and the two 12' wide lanes merge before the loop road. At this location the curb-to-curb width reduces to the 24'. The drive aisle throughout the entire loop road and any side road has a width of 24'.

2. What minimum roadway width is required by the Amesbury Fire Department for fire apparatus access?

   Applicant Response: *Per Massachusetts Comprehensive Fire Safety Code, based on the 2021 edition of NFPA 1, Fire Code (527 CMR 1.00), section 18.2.3.5.1.1, fire department access roads shall have an unobstructed width of not less than 20 feet. Fire department*

access roads constructed in the boulevard-style shall be allowed where each lane is less than 20 feet but not less than 10 feet when they do not provide access to a building or structure. On the March 19, 2026 Technical Review Committee Meeting, Chief Serino noted that the largest apparatus has a width of 10' wide mirror to mirror.

3. What is the turning radius required for the largest fire apparatus serving the site?

   Applicant Response: *The Amesbury Ladder 4 – 2023 E-One Typhoon 100' RMA was utilized for the Fire Truck AutoTurn studies. This is the largest fire apparatus equipment.*

4. Have turning-movement simulations been conducted for ladder trucks and other large apparatus on all internal roadways, and will they be provided?

   Applicant Response: *Yes. Included in the submission to the Zoning Board of Appeals as part of our comprehensive permit, a Traffic Impact and Access Study (TIAS) dated January 23, 2026 was provided. Within the study is the turning-movement simulations that were conducted which took into consideration the largest fire apparatus equipment.*

5. With on-street parking, what clear travel width remains for emergency vehicles?

   Applicant Response*: As required by the Amesbury Zoning Bylaw, a drive-aisle of 24' is provided throughout the development.*

6. How will emergency vehicles pass parked vehicles or opposing traffic within the loop roadway?

   Applicant Response: *The drive aisle throughout the entire loop road and any side roads have a width of 24'. This width allows for the Amesbury Ladder truck to bypass around parked vehicles or vehicles traveling in the opposite direction. Corner areas where the fire apparatus needs more area to maneuver are no parking zones were opposing vehicles could move out of the way.*

7. Under winter conditions, what is the effective roadway width after snow accumulation and snowbanks?

   Applicant Response: *The Project will be required to maintain the roadway width during snow events. Snow will be stored on site in pre-approved locations. A Snow Storage Plan will be added in the next revision of the Project plans.*

8. What snow removal and roadway management plan will ensure emergency access is maintained at all times?

   Applicant Response: *The Project will have a full-time Property Manager who will be responsible for overseeing a private snow removal company. The Applicant would accept a condition in the approvals which requires that a snow removal and roadway management plan is required prior to a Certificate of Occupancy.*

9. If fire apparatus must stop to operate (e.g., hose deployment), how will continued access be maintained for other emergency vehicles?

Applicant Response: *The drive aisle throughout the entire loop road and any side roads have a width of 24'. This width allows for the Amesbury Ladder truck and another fire or emergency apparatus to bypass in the same or opposite direction. In the unlikely event it's parked in the middle of the driveway or has its outriggers fully deployed the secondary emergency apparatus would have to stage behind the first truck or go around the internal loop roadway in the opposite direction.*

10. How will ambulances reach all units if portions of the roadway are occupied by fire apparatus?

    Applicant Response: *See Response 9. As in any emergency situation, the staging of emergency apparatus will be conducted by professional emergency staff including the fire department and police department.*

11. In the event of a blocked roadway (e.g., disabled vehicle, accident, or emergency activity), what measures will ensure continued access to all units?

    Applicant Response: *Consistent with any event within the City, that includes a blocked roadway by a disabled vehicle, accident, or emergency activity the event will be handled by professional emergency staff including the fire department and police department. The Applicant will continue to work with emergency personnel within the City, including fire and police regarding safety.*

12. Given the scale of the project, what analysis supports the use of a single point of access rather than providing secondary access?

    Applicant Response: *The traffic study for the project includes analysis that supports the operations with a single boulevard style access. Based on the 2021 edition of NFPA 1, Fire Code (527 CMR 1.00), section 18.2.3.5.1.1, fire department access roads shall have an unobstructed width of not less than 20 feet. Fire department access roads constructed in the boulevard-style shall be allowed where each lane is less than 20 feet but not less than 10 feet when they do not provide access to a building or structure.*

13. Has the roadway system been evaluated for compliance with applicable MA Code, NFPA and IFC fire apparatus access standards, and can documentation be provided?

    Applicant Response: *Based on the 2021 edition of NFPA 1, Fire Code (527 CMR 1.00), section 18.2.3.5.1.1, fire department access roads shall have an unobstructed width of not less than 20 feet. Fire department access roads constructed in the boulevard-style shall be allowed where each lane is less than 20 feet but not less than 10 feet when they do not provide access to a building or structure.*

    As noted, the project provides at least 24-foot-wide paved roadway width that conform to the 20-foot fire access requirement and the Amsbury Zooning Bylaw. Specifically, at the entrance to the Project, a boulevard design has been implemented with an inbound and an outbound lane.

    Included in the submission to the Zoning Board of Appeals as part of our comprehensive permit, a Traffic Impact and Access Study (TIAS) dated January 23, 2026 was provided. Within the study is the turning-movement simulations that were conducted which took into consideration the largest apparatus.

The Applicant will continue to work with emergency personnel within the Town including the fire department with respect to emergency access requirements or additional safety considerations.

14. What is the maximum roadway distance from Kimball Road to the furthest unit, and how does this compare to applicable NFPA and IFC access distance guidance?

    Applicant Response: *The distance from Kimball Road to the internal loop roadway that provides dual means of access/egress for the units is 300± feet. While the maximum roadway distance is approximately 1,100 feet from Kimball Road to unit #20. The proposed roadway is not a dead-end; therefore, there is no prescriptive maximum length under the National Fire Protection Association standards. Provided the roadway meets applicable fire apparatus access requirements and all portions of the buildings are located within the required access distance, the overall roadway length is not, in itself, a limiting factor. There will also be fire hydrants within the development which will further limit the distances from a water source to a structure within the development.*

Letter 2 – Drainage and Stormwater

Received by the City of Amesbury on April 9, 2026, with a clerk stamp of April 14, 2026

Comments and Responses

1. The stormwater management system relies heavily on underground detention and infiltration structures, which the report itself acknowledges are inherently difficult to inspect and maintain. What information has been provided to support a finding that these systems will remain functional and effective throughout the life of the project?

   Applicant Response: *Included with the Comprehensive Permit Submission is a Drainage Report dated January 26, 2026. The Drainage report includes the operation and maintenance (O&M) plan which details the required maintenance of the systems to insure functionality over the life of the stormwater management systems. The O&M has been developed based on Stormwater Handbook, published by MassDEP, in accordance with 310 CMR 10.00, Wetlands Protection Act Regulations, as well as industry standards for the stormwater management systems proposed. The proposed underground system are common in New England, and many companies provide maintenance for these systems.*

2. The long-term operation and maintenance plan appears to depend substantially on private parties. What enforceable mechanisms will be in place to ensure ongoing compliance? Specifically, what authority will the City retain to monitor, compel, and, if necessary, remediate failures in maintenance?

   Applicant Response: *The Applicant would be supportive of a condition which required the Applicant to provide evidence, upon request that the maintenance has occurred.*

3. The design relies on assumed soil conditions and infiltration rates that appear to be based, at least in part, on generalized reference data and limited field testing. Given the variability

typically associated with subsurface conditions, what basis does the Board have to conclude that these assumptions are sufficiently representative of site-wide conditions to support the required findings?

Applicant Response: *According to the USDA NRCS Web Soil Survey, the site is predominantly comprised of two soil groups, Woodbridge fine sandy loam and Paxton fine sandy loam. Both soil groups identify a parent material (soil layer in which groundwater will infiltrate) as a gravely fine sandy loam. All but one of the test pits that were performed by Haley & Aldrich found the in-situ soil to be sandy loam. One test pit found the soil to be loamy sand, which is more permeable than sandy loam. All infiltration systems were designed to infiltrate utilizing the sandy loam and its associated infiltration rate, as dictated by Rawls Rate. A Technical Memorandum has been prepared by Haley & Aldrich which included discussion of their subsurface exploration, which included 15 test pits across the site, in-situ field infiltration testing, and geotechnical laboratory testing results to aid in the evaluation and design of stormwater infiltration systems. Soil Evaluation has been performed in accordance with the MassDEP Stormwater Handbook, Volume 3, Chapter 1, documenting compliance with the stormwater management standards, which is consistent with standard industry practices. The memorandum has been attached to this response.*

4. The report's conclusion that post-development runoff will not exceed existing conditions is based on computer modeling. Has this modeling been subject to independent or peer review? Additionally, how sensitive are the results to variations in key assumptions, and has any appropriate margin of safety been incorporated into the analysis?

   Applicant Response: *The Applicant expects and would support a third-party peer review of the Project's stormwater design. It is our understanding that on April 30, 2026, the board will designate a peer review consultant to commence this review. Further, the computer modeling software utilized was HydroCAD, created in 1986, and a common industry standard for stormwater modeling. The program applies methodologies from the U.S.D.A. Natural Resources Conservation Service, including Technical Releases 20 and 55 and the National Engineering Handbook, Section 4, Hydrology, to estimate peak runoff rates.*

5. The system is reportedly designed to accommodate a 100-year storm event without overtopping. In light of increasingly frequent and severe storm events, what consideration has been given to performance under conditions that may exceed historical benchmarks? How does the Board intend to evaluate whether the design is sufficiently protective of adjacent properties and public infrastructure under evolving conditions?

   Applicant Response: *The City of Amesbury requires stormwater design to comply with the Massachusetts Stormwater Handbook . The Handbook, as implemented through MS4 requirements, utilizes NOAA Atlas 14 precipitation data as the current basis for rainfall frequency estimates, replacing the older methodology from NOAA Technical Paper 40 (TP-40), published in 1961. Atlas 14 improves upon TP-40 by incorporating significantly more observed rainfall data, updated statistical methods for estimating extreme storm events, and higher-resolution regional analysis, resulting in more reliable and representative precipitation frequency estimates for engineering design.*

6. The proposed discharge of treated stormwater to adjacent wetlands also raises concerns. What analysis has been conducted to determine whether such discharge may alter wetland hydrology or adversely affect resource area functions over time, particularly given the scale of the proposed development?

Applicant Response: *The stormwater management facilities have been designed in accordance with the City of Amesbury Stormwater Policy and the Massachusetts DEP Stormwater Management Standards, which collectively require that stormwater discharges be properly treated prior to discharge, that post-development peak runoff rates be controlled, and that natural groundwater recharge be maintained to the maximum extent practicable. Compliance with these requirements is documented in the submitted drainage report, which is subject to independent review by a third-party peer review consultant selected by the Board.*

7. The report references limitations on infiltration in certain areas of the site, while still relying on infiltration-based systems to satisfy regulatory requirements. How has this apparent inconsistency been addressed, and what findings support the conclusion that the system will perform as intended across varying site conditions?

   Applicant Response: *As noted above, the site as a whole is required to comply with the City of Amesbury Stormwater Policy and the Massachusetts DEP Stormwater Management Standards. Accordingly, the stormwater management system has been designed to demonstrate compliance with all applicable standards. Where site constraints limited the feasibility of direct infiltration, subsurface detention systems have been incorporated to capture, temporarily store, and treat stormwater while attenuating peak discharge rates. Stormwater from these systems is ultimately conveyed to infiltration areas that have been carefully designed and located to ensure adequate separation to groundwater. In addition, the stormwater management design will be subject to independent third-party peer review, with written comments provided to the Board for consideration and response by the applicant.*

8. The materials provided do not appear to include a clear analysis of potential system failure scenarios. In the event of clogging, reduced infiltration capacity, or other underperformance, what contingency measures or fail-safes are in place to prevent flooding or downstream impacts to neighboring properties?

   Applicant Response: *As part of the Drainage Report, Section 2.0, details the operation and maintenance of the proposed stormwater system as required by Standard 9 of the Massachusetts Stormwater Handbook. The O&M identifies responsible parties, inspection frequency, required documentation, and maintenance requirements. The O&M, as part of the Drainage Report, will be peer reviewed by a third-party, and the Applicant would be supportive of a condition which required the Applicant to provide evidence, upon request that the maintenance has occurred.*

9. Snow Management — Where will snow be stored without encroaching upon required parking, emergency access routes, or sight lines?

   Applicant Response: *The Applicant will include the snow management locations in the next plan set. Snow will be managed so that it does not encroach on the parking, emergency access routes and sightlines.*

10. Snow Management — How will snow storage be managed to avoid obstruction of the site's entrance/exit and internal circulation, including access for emergency vehicles?

    Applicant Response: *The Project will have a full-time Property Manager who will be responsible for overseeing a private snow removal company. The Applicant would accept a*

condition in the approvals which requires that a snow removal and roadway management place is required prior to a Certificate of Occupancy.

11. Snow Management — What provisions are in place to ensure timely removal during extended or heavy snowfall events typical of this region?

    Applicant Response: *The Project will have a full-time Property Manager who will be responsible for overseeing a private snow removal company.*

12. Snow Management — Under what conditions will off-site snow hauling be required, and who will bear responsibility for its implementation?

    Applicant Response: *The Project will have a full-time Property Manager who will be responsible for overseeing a private snow removal company. In the event of excessive snow fall in any given calendar year, the Project will bear the responsibility for the implementation and cost of off-site snow removal as may be required.*

13. Snow Management — How will snow storage and resulting meltwater be managed to prevent runoff impacts to adjacent properties and public roadways?

    Applicant Response: *The Applicant would accept a condition in the approvals which requires that a snow removal and roadway management plan is required prior to a Certificate of Occupancy to address this concern.*

Letter 3 – Single Point of Access

Received by the City of Amesbury on April 14, 2026, with a clerk stamp of April 14, 2026

Comments and Responses

1. How would emergency apparatus access the site if the sole entrance were obstructed, even temporarily, by a vehicle, delivery activity, or weather-related conditions?

   Applicant Response: *Based on the 2021 edition of NFPA 1, Fire Code (527 CMR 1.00), section 18.2.3.5.1.1, fire department access roads shall have an unobstructed width of not less than 20 feet. Fire department access roads constructed in the boulevard-style shall be allowed where each lane is less than 20 feet but not less than 10 feet when they do not provide access to a building or structure. The entrance has been provided with (2) 12' lanes separated by an 8' striped island to comply with this requirement.*

2. What specific operational assumptions support the conclusion that inbound emergency vehicles can reliably navigate against outbound evacuation traffic from a 95-unit development?

   Applicant Response: *The Traffic Impact and Access Study (TIAS) dated January 23, 2026, that was provided included is the turning-movement simulations that were conducted which took into consideration the largest fire apparatus (Amesbury Ladder 4 – 2023 E-One*

Typhoon 100' RMA). The apparatus is able to enter the site via the boulevard style driveway without impact to outbound passenger vehicle traffic.

3. Does the existing roadway width and configuration demonstrably support simultaneous two-way passage under constrained emergency conditions, including during winter weather events?

   Applicant Response: *Yes, the drive aisle throughout the entire loop road and any side roads have a width of 24'. This width allows for the Amesbury Ladder truck to bypass around parked vehicles or vehicles traveling in the opposite direction. Corner areas where the fire apparatus needs more area to maneuver are no parking zones or the vehicle would move out of the way.*

   The Project will be required to maintain the roadway width during snow events. Snow will be stored on site in pre-approved locations which will be added in the next revision of the Project plans. The Project will have a full-time Property Manager who will be responsible for overseeing a private snow removal company. The Applicant would accept a condition in the approvals which requires that a snow removal and roadway management plan is required prior to a Certificate of Occupancy.

4. In the absence of any proximate staging area, where would fire, EMS, and mutual aid units be expected to stage if access is compromised?

   Applicant Response: *Based on the 2021 edition of NFPA 1, Fire Code (527 CMR 1.00), section 18.2.3.5.1.1, fire department access roads shall have an unobstructed width of not less than 20 feet. Fire department access roads constructed in the boulevard-style shall be allowed where each lane is less than 20 feet but not less than 10 feet when they do not provide access to a building or structure. The entrance has been provided with (2) 12' lanes separated by an 8' striped island to comply with this requirement. The Applicant will defer to emergency personnel within the Town including fire and police regarding safety with respect to atypical scenarios.*

5. How has the loss of the originally contemplated Haverhill Road access point been evaluated in the project's life safety analysis?

   Applicant Response: *The Project has never had access via Haverhill Road. The Project Design and Comprehensive Permit submission have always contemplated access via Kimball Road. The Traffic Impact and Access Study (TIAS) dated January 23, 2026, provides the supporting information for the site entrance and access.*

6. Regarding potential safeguards or design modifications — has the Applicant evaluated the feasibility of an emergency-only secondary access point (even if restricted or gated)?

   Applicant Response: *The Applicant has reviewed a single 24-foot-wide driveway, and the current driveway design that provides a boulevard style design near Kimball Road. The current design satisfies NFPA 1, Fire Code (527 CMR 1.00), section 18.2.3.5.1.1 for roadway width. The Applicant will continue to work with emergency personnel within the Town including fire and police regarding safety including sufficient hydrant locations and emergency plans.*

7. Regarding potential safeguards or design modifications — has the Applicant evaluated targeted roadway widening or geometric improvements along Kimball Road?

   Applicant Response: *The Traffic Impact and Access Study (TIAS) dated January 23, 2026, outlined that Kimball Road has adequate capacity and width to accommodate the project. The pavement was observed to be in excellent condition along Kimball Road within the study area. The TIAS has identified traffic calming measures (driver radar feedback signs) and off-site improvements to the Haverhill Road intersection with Kimball Road that will enhance operations in the area.*

8. Regarding potential safeguards or design modifications — has the Applicant evaluated designated turnout or pull-off areas to facilitate apparatus movement?

   Applicant Response: *The site design includes a loop roadway as well as several areas for emergency apparatus to turn around. The Applicant will continue to work with emergency personnel within the Town including fire and police regarding safety.*

9. Regarding potential safeguards or design modifications — has the Applicant evaluated restrictions or controls to prevent obstruction near the entrance?

   Applicant Response: *The driveway design provides a boulevard style entrance with geometry to allow for emergency apparatus to bypass other vehicles.*

10. Regarding potential safeguards or design modifications — has the Applicant evaluated the identification and formalization of a viable emergency staging strategy?

    Applicant Response: *The Applicant will continue to work with emergency personnel within the Town including fire and police regarding safety and would support a condition that requires an emergency staging strategy to be identified with the Town fire and police to address this concern.*

11. Regarding potential safeguards or design modifications — has the Applicant considered whether the proposed project density is appropriate for a site with a single constrained access point, and whether a reduction in the number of units may be necessary to mitigate identified public safety risks?

    Applicant Response: *The Traffic Impact and Access Study (TIAS) dated January 23, 2026, outlined that Kimball Road and the site driveway have adequate capacity and width to accommodate the project at 95 units.*

    As shown in Exhibit 1 (Intersection Sight Lines), with selective clearing and grading as part of the installation of the Site driveway the available sight lines will satisfy the recommended sight line requirements from AASHTO. New plantings (shrubs, bushes) and structures (walls, fences, etc.) shall be maintained at a height of 2 feet or less within the sight lines in vicinity of the Site Driveway intersection to Kimball Road to provide unobstructed sight lines. Snow windrows located within sight triangle areas that exceed 3.5 feet in height or that would otherwise inhibit sight lines shall be promptly removed.

    The TIAS included turning-movement simulations using the largest fire apparatus (Amesbury Ladder 4 – 2023 E-One Typhoon 100' RMA). As shown, the apparatus is able to

enter the site via the boulevard style driveway without impact to outbound passenger vehicle traffic and is able to circulate the site via the proposed loop roadway.

The Applicant appreciates the thoughtful questions submitted by the Kimball Rd Safety Preservation Group and is committed to providing transparent and complete responses to the Board throughout the review process.

Respectfully submitted,

MP Properties IV, LLC

Attachment: Haley & Aldrich Subsurface Technical Memorandum dated 22 December 2025

HALEY & ALDRICH, INC.
465 Medford St.
Suite 2200
Boston, MA 02129
617.886.7400

TECHNICAL MEMORANDUM

22 December 2025
File No. 0213708-001

TO: MP Properties IV, LLC
Andrew Mackin

C: Allen & Major Associates, Inc.
Carlton Quinn, Chirs Broyles

FROM: Haley & Aldrich, Inc.
Youhanna Bebawy, Staff Civil Engineer
Mark H. Balfe, Principal

SUBJECT: Subsurface Data Memorandum
Proposed Development
27 Kimball Road
Amesbury, Massachusetts

The purpose of this memorandum is to summarize the results of recent subsurface exploration program, in-situ field infiltration testing, and geotechnical lab testing conducted to aid in the evaluation and design of a stormwater infiltration system for the proposed development at 27 Kimball Rd, Amesbury, Massachusetts. The investigations and testing included herein were performed in accordance with our proposal dated 17 November 2025 and your subsequent authorization. The lab and field data included herein is intended to aid the civil engineer in the design of stormwater infiltration systems in accordance with the best management practices included in the Massachusetts Stormwater Handbook.

PROPOSED DEVELOPMENT

We understand that MP Properties IV, LLC is considering development of the 9.4-acre property at 27 Kimball Rd, Amesbury into 95 residential units. The development will be supported by municipal water and sewer and will include stormwater management and infiltration. Refer to Figure 1 – Project Locus for the location of the project site.

EXISTING SITE CONDITIONS

The Site is currently developed with an approximately 1,832 square foot (ft), single family home constructed in approximately 1982, with two detached garages and a shed. The house is reportedly heated by oil and likely has an above- or below-ground storage tank. The majority of the property is

undeveloped and wooded, with cleared areas surrounding and south of the residence, with grades rising to the southeast and a wetland to the southwest.

The property fronts on Kimball Road to the northeast, with a combination of residential properties and wooded lots to the north, east, west, and south. A Christmas tree farm is located along Haverhill Road to the South, with industrial properties further south beyond Haverhill Road/Route 110.

SUBSURFACE EXPLORATION PROGRAMS

A subsurface exploration program was recently conducted at the site in November 2025. The program consisted of fifteen (15) test pits (designated HA23-TP1 through HA23-TP15). The test pits were advanced to depths ranging from 6 to 8.8 feet below ground surface (ft bgs) by LDR Excavation from 21 to 25 November 2025 and were observed by Haley & Aldrich.

Generally, test pits were terminated when the limit of the excavator's reach was accomplished; however, test pit HA25-TP13 was terminated at 6 ft bgs when several large boulders were encountered and unable to be excavated. Boulders were also encountered in the Glacial Till soil at HA25-TP3, HA25-TP4, HA25-TP7, HA25-TP10, HA25-TP11, HA25-TP12, HA25-TP14, but did not interfere with test pit excavation.

Refer to Figure 2 – Site and Subsurface Exploration Location Plan for the designation and approximate location of test pit explorations. Logs of the test pits explorations are included in Appendix A – Exploration Logs. Approximate ground surface elevations were collected using a handheld, global navigation satellite system (GNSS) receiver.

SUBSURFACE SOIL CONDITIONS

The subsurface conditions encountered at the site generally consist of Topsoil overlying Loess and Glacial Till soils. A fill layer consisting of reworked Loess soils was encountered between two layers of Topsoil in two test pit locations, HA25-TP6 and HA25-TP8.

Soil Gradation Testing

Soil samples collected during the subsurface exploration program were submitted to GeoTesting Express of Acton, Massachusetts for laboratory testing.

Fifteen (15) grain size distribution analyses were done though both separation by mechanical sieve and timed sedimentation testing, hydrometer analysis, (ASTM D6913/ASTM D7928). The timed sedimentation testing quantifies the constitutive clay and silt fractions of a soil used in textural classification. A mechanical sieve test combines the constitutive silt and clay fractions as a percentage of total fines (fines passing the #200 sieve material). A summary of the samples submitted for grain size testing are included below Table 1: Summary of Laboratory Testing and the results are included in Appendix B – Geotechnical Lab Testing Results.

Table 1: Summary of Laboratory Testing Depths	
Exploration Designation	**Sample Depth (ft)**
HA22-TP1	3.0 – 6.3
HA22-TP2	3.0 – 7.0
HA22-TP3	3.0 – 7.0
HA22-TP4	3.0 – 7.5
HA22-TP5	4.3 – 4.8
HA22-TP6	3.0 – 8.0
HA22-TP7	3.0 – 7.0
HA22-TP8	5.5 – 6.0
HA22-TP9	4.0 – 5.0
HA22-TP10	3.0 – 7.0
HA22-TP11	3.0 – 8.0
HA22-TP12	3.0 – 8.0
HA23-TP13	3.0 – 6.0
HA23-TP14	3.0 – 6.5
HA23-TP15	3.0 – 8.0

Soil Texture

To assist stormwater design for the project, laboratory grain-size results were gravel corrected values for sand, silt, and clay, in accordance with U.S. Department of Agriculture (USDA) soil physical analyses and plotted on the National Resource Conservation Service (NRCS) soil textural triangle. Refer to Figure 3 – NCRS Soil Texture Triangle for the gravel corrected values. The soil fractions are classified as sandy loam and loamy sand.

Test Pit Groundwater Conditions

The only observable indicator of groundwater conditions encountered in the test pits were redoximorphic features (including mottling and oxidation). No water levels, seepage, or standing water were observed during test pit excavation.

Redoximorphic features, commonly referred to as soil mottling and oxidation of soil, indicate evidence of past groundwater levels, were observed in three of the completed test pits as indicated on the attached logs. Discontinuous and weak redoximorphic features were encountered in HA25-TP10 at 5 ft bgs (approx. El. 162.2[1]), in HA25-TP11 at 4.5 ft bgs (approx. El. 176.8), and in HA25-TP14 at 6.0 ft bgs (approx. El. 150.4).

In-Situ Permeability Testing

Five Guelph permeameter tests were performed by Haley & Aldrich at test pits HA25-TP1, HA25-TP5, HA25-TP8, HA25-TP12, and HA25-TP15 to determine in-situ hydraulic conductivity rates. The Guelph Permeameter test simulates a wetting front moving through the soil and provides measurement of field saturated hydraulic conductivity. This test is one of the acceptable test methods identified in the

[1] Elevations are in feet and referenced to the National Vertical Datum of 1988 (NAVD88).

Massachusetts Stormwater Handbook. Each test was run until steady state of recharge was established by the Guelph Permeameter at two different heads (5 cm and 10 cm of water within the test hole). The results of the infiltration testing are provided below in Table 2: Summary of Field Infiltration Testing.

This testing provides an order of magnitude estimate of hydraulic conductivity at the discrete test pit location and at the discrete elevation range tested. Hydraulic conductivity will vary, both laterally and vertically according to changes in density, grain size, and gradation. Infiltration rates will decline if soils become saturated above groundwater levels. In addition, infiltration rates in the area of storm water infiltration system may result in a reduction of hydraulic conductivity due to siltation caused by suspended solids in the infiltrating storm water, piping of fines by infiltrating precipitation, or a combination of these factors.

Table 2: Summary of Field Infiltration Testing

Test Pit ID	Approx. Ground Surface Elevation (ft, NAVD88)	Depth Range of Test (ft)	Elevation Range of Test (ft)	Tested Soil Stratum	Calculated Field Saturated Hydraulic Conductivity[1] (in./hr)
HA25-TP1	155.4	4.5 – 5	150.4 – 150.9	Glacial Till	21.33
HA25-TP5	178.9	4.3 – 4.8	174.1 – 174.6	Glacial Till	0.22
HA25-TP8	186.7	5.5 – 6	180.7 – 181.2	Glacial Till	1.95
HA25-TP12	183.4	5.5 – 6	177.4 – 177.9	Glacial Till	0.82
HA25-TP15	153.2	4.1 – 4.6	148.6 – 149.1	Glacial Till	0.41

Note:

1) Hydraulic conductivity values indicated are the measured field values and have not been reduced for stormwater design calculations, as detailed in the Massachusetts Stormwater Handbook.

GEOTECHNICAL GUIDANCE

We understand that the proposed redevelopment will include lightly loaded single story units. Based on the subsurface conditions observed, following removal of the vegetation, Topsoil/Loess. and any man-made structures, for planning purposes you should assume the new units can be supported on conventional reinforced concrete footings with an allowable bearing pressure of 4 kips per square foot (ksf). Footings should bear a minimum of 4 ft below grade (frost protection) or insulated to an equivalent R-value of 4 ft of soil. Ground floor slabs should be designed as conventional slab-on-grade.

We note that the fines content of the on-site materials is generally between 40 to 50 percent, which makes reuse (placement and compaction) challenging, especially during periods of inclement weather (rain/snow) or extended cold temperatures (Nov to Apr). Additionally, soil subgrades for foundations, utilities, driveways, etc. will need to be effectively managed (protected, covered, or other means) to prevent disturbance due to moisture or equipment during construction.

LIMITATIONS

This memorandum was prepared in accordance with our proposal dated 17 November 2025 and your subsequent authorization. This memorandum has been prepared for specific application to the proposed 27 Kimball Rd development in Amesbury, Massachusetts as described herein.

We appreciate the opportunity to provide services for this project and look forward to our continued association with you and the project team through completion of design and construction. Please contact us with any questions.

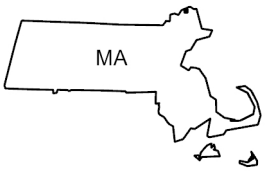
Attachments:

Figure 1	Project Locus
Figure 2	Site and Subsurface Exploration Plan
Figure 3	NCRS Soil Texture Triangle
Appendix A	Exploration Logs
Appendix B	Geotechnical Lab Test Results

https://haleyaldrich.sharepoint.com/sites/MarcusPartners/Shared Documents/0213708.27 Kimball Rd Amesbury/Deliverables/Infiltration TP Memo/2024-1222-HAI-27 Kimball Rd-Infiltration Subsurface Data Memo-F.docx

FIGURES

SITE COORDINATES: 42°50'45"N, 70°57'39"W



MAP SOURCE: USGS

HALEY ALDRICH

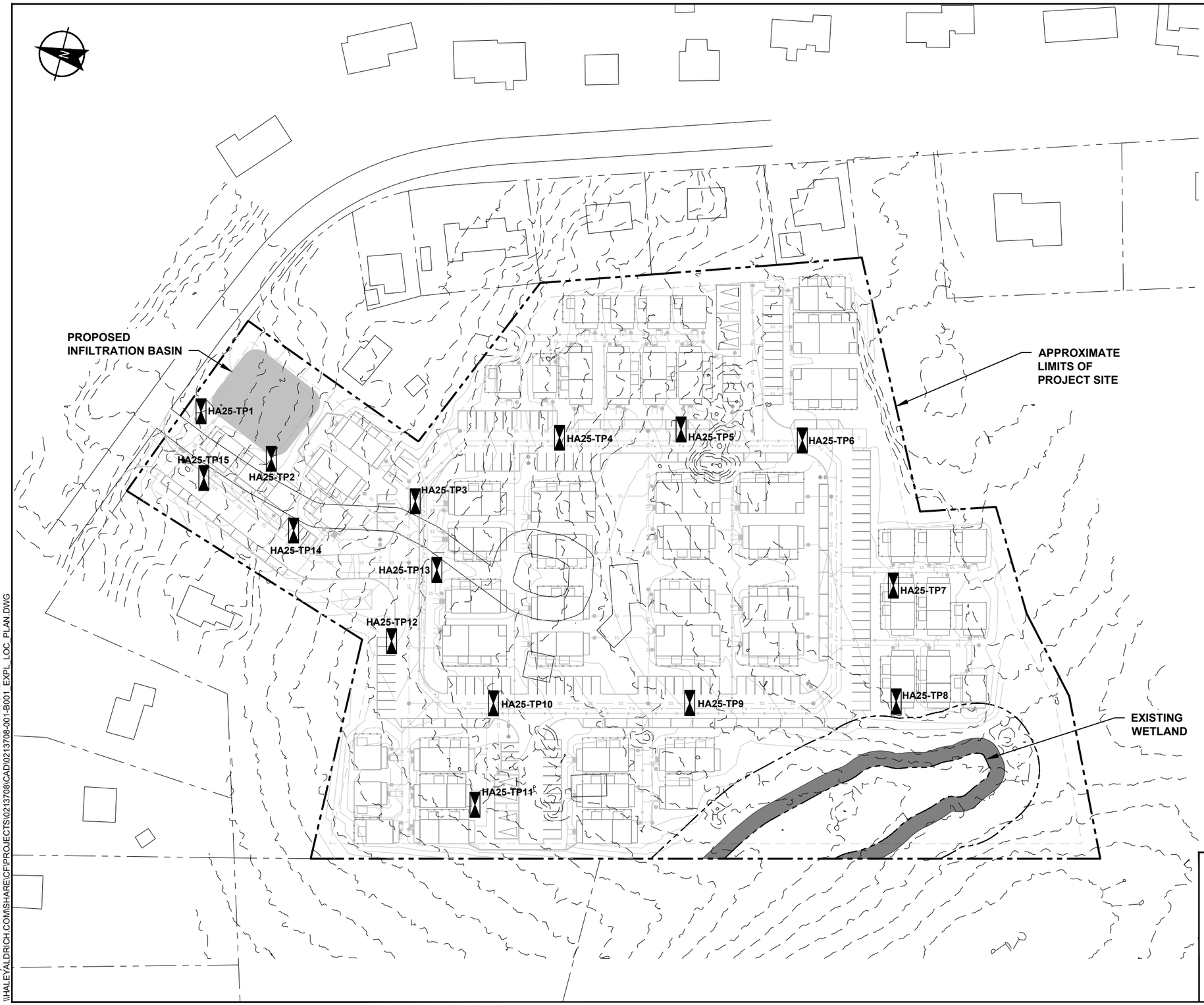
27 KIMBALL RD
27 KIMBALL ROAD
AMESBURY, MASSACHUSETTS

PROJECT LOCUS

APPROXIMATE SCALE: 1 INCH = 2,000 FEET
DECEMBER 2025

FIGURE 1

0213708_001_LOCUS HALEYALDRICHIYBEBAWY



LEGEND

HA25-TP1 — DESIGNATION AND APPROXIMATE LOCATION OF TEST PIT CONDUCTED BY LDR EXCAVATION BETWEEN 21 AND 25 NOVEMBER 2025 AND MONITORED BY HALEY & ALDRICH, INC.

NOTE

1. BASE PLAN CREATED FROM ELECTRONIC FILE TITLED "27 Kimball Rad-X-Site (3).dwg" PROVIDED BY MARCUS PARTNERS, LLC ON 12 NOVEMBER 2025.

0 100 200
SCALE IN FEET

HALEY ALDRICH

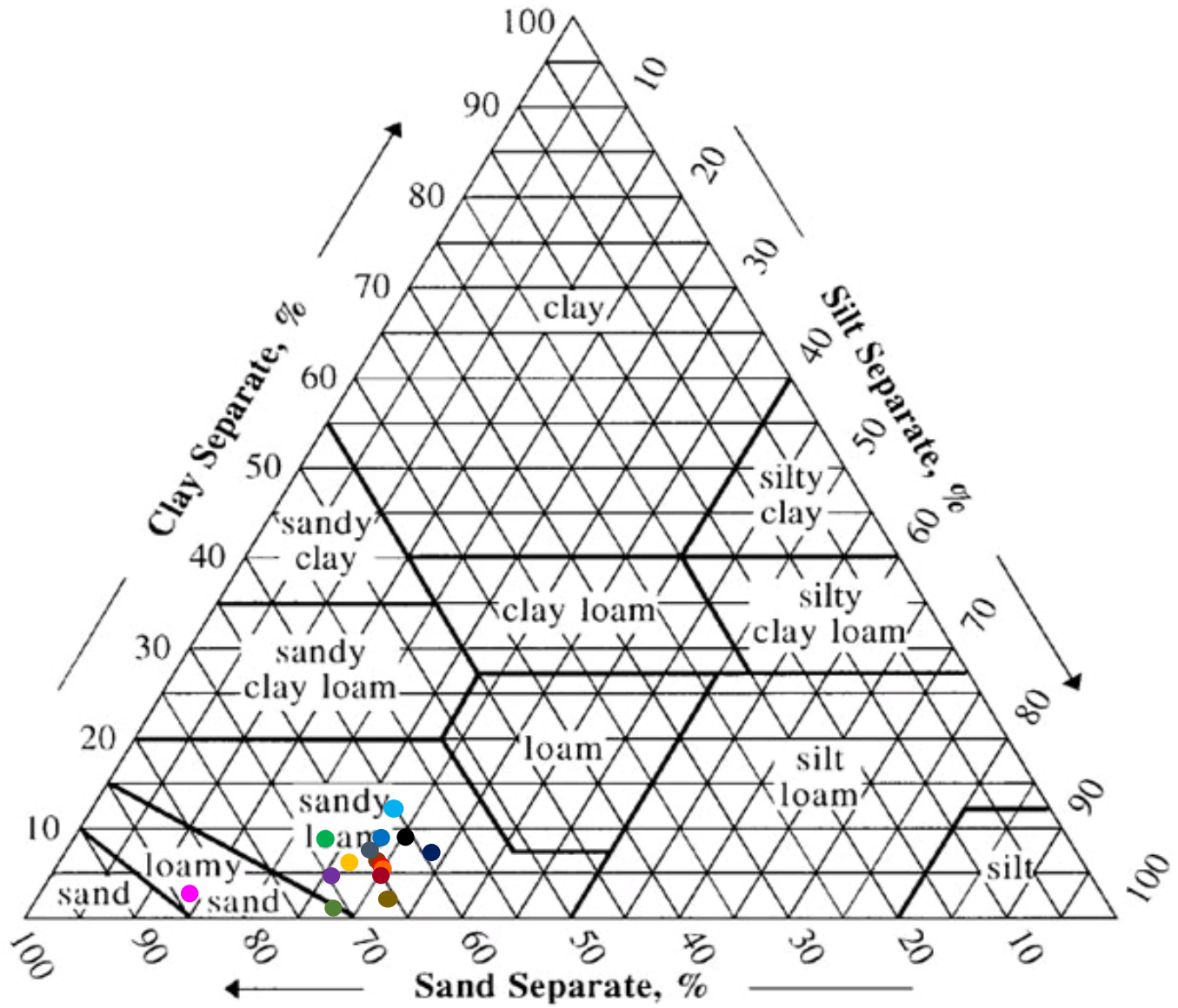
PROPOSED DEVELOPMENT
27 KIMBALL ROAD
AMESBURY, MASSACHUSETTS

SITE AND SUBSURFACE EXPLORATION LOCATION PLAN

SCALE: AS SHOWN
DECEMBER 2025

FIGURE 2

Saved by: DTE Printed: 12/5/2025 10:23 AM Sheet: EXPL LOC PLAN
\\HALEYALDRICH.COM\SHARE\CF\PROJECTS\0213708\CAD\0213708-001-B001- EXPL_LOC_PLAN.DWG



Sample Legend	Sample I.D.	NCRS Classification
	HA25-TP1_3.0-6.3	Sandy Loam
	HA25-TP2_3.0-7.0	Sandy Loam
	HA25-TP3_3.0-7.0	Sandy Loam
	HA25-TP4_3.0-7.5	Sandy Loam
	HA25-TP5_4.3-4.8	Sandy Loam
	HA25-TP6_3.0-8.0	Sandy Loam
	HA25-TP7_3.0-7.0	Sandy Loam
	HA25-TP8_5.5-6.0	Loamy Sand

Sample Legend	Sample I.D.	NCRS Classification
	HA25-TP9_4.0-5.0	Loamy Sand
	HA25-TP10_3.0-7.0	Sandy Loam
	HA25-TP11_3.0-8.0	Sandy Loam
	HA25-TP12_3.0-8.0	Sandy Loam
	HA25-TP13_3.0-6.0	Sandy Loam
	HA25-TP14_3.0-6.5	Sandy Loam
	HA25-TP15_3.0-8.0	Sandy Loam

Notes:

1. Guidance Document: USDA, 2022 National Soil Survey Handbook, Section 618.87 (Texture Class, Texture Modifier, and Terms Used in Lieu of Texture.)
2. Composite sample depth range detailed in "Sample I.D."

HALEY ALDRICH

Proposed Development
27 Kimball Rd
Amesbury, Massachusetts

FIGURE 3
NRCS SOIL TEXTURE TRIANGLE

UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS

FILE NO. 0213708-001 December 2025

APPENDIX A
Exploration Logs

IDENTIFICATION AND DESCRIPTION OF SUBSURFACE MATERIALS

SOIL

Soil description on logs of subsurface explorations are based on Standard Penetration Test results, visual-manual examination of exposed soil and soil samples, and the results of laboratory tests on selected samples. The criteria, descriptive terms and definitions are as follows:

DENSITY OR CONSISTENCY

Density of Cohesionless Soils	Penetration Resistance (Blows per ft.)	Consistency of Cohesive Soils	Penetration Resistance (Blows per ft.)
Very Loose	0-4	Very Soft	0-2
Loose	5-10	Soft	3-4
Medium	11-30	Medium	5-8
Dense	31-50	Stiff	9-15
Very Dense	over 50	Very Stiff	16-30
		Hard	over 30

PENETRATION RESISTANCE

Standard Penetration Test (ASTM D-1586) - Number of blows required to drive a standard 2 in. O.D. split spoon sampler 1 ft. with a 140 lb. weight falling freely through 30 in.

COLOR: Basic colors and combinations: black, brown, gray, yellow-brown, etc.

SUPPLEMENTAL SOIL TERMINOLOGY:

Laminae	- 0 to 1/16 in. thick (cohesive)
Parting	- 0 to 1/16 in. thick (granular)
Seam	- 1/16 to 1/2 in. thick
Layer	- 1/2 to 12 in. thick
Stratum	- > 12 in. thick
Pocket	- Small, erratic deposit less than 12 in. size
Lens	- Lenticular deposit larger than a pocket
Occasional	- One or less per 12 in. of thickness
Frequent	- More than one per 12 in. of thickness
Interbedded	- Alternating soil layers of differing composition
Varved	- Alternating thin seams of silt and clay
Mottled	- Variation of color

GEOLOGIC INTERPRETATION

Deposit type - GLACIAL TILL, ALLUVIUM, FILL.....

The natural soils are identified by criteria of Unified Soil Classification System (USCS), with appropriate group symbol in parenthesis for each soil description. Fill materials may not be classified by USCS criteria.

U.S. Standard Series Seive — Clear Square Sieve Openings

12"	3"	3/4"	4	10	40	200
Boulders	Cobbles	Gravel: Coarse / Fine		Sand: Coarse / Medium / Fine		Silts and Clays
305 mm	76 mm	19 mm	4.75 mm	2.00 mm	0.43 mm	0.074 mm

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			Group Symbol	Graphic Symbol	TYPICAL NAMES
Coarse grained soils: more than half is larger than number 200 sieve	Gravels: More than half of coarse fraction is larger than number 4 sieve	Gravels with little or no fines	GW		Well graded gravels, gravel-sand mixtures
			GP		Poorly graded gravels, gravel-sand mixtures
		Gravels with over 12% fines	GM		Silty gravels, poorly graded gravel-sand-silt mixtures
			GC		Clayey gravels, poorly graded gravel-sand-clay mixtures
	Sands: More than half of coarse fraction is smaller than number 4 sieve	Sands with little or no fines	SW		Well graded sands, gravelly sands
			SP		Poorly graded sands, gravelly sands
		Sands with over 12% fines	SM		Silty sands, poorly graded sand-silt mixtures
			SC		Clayey sands, poorly graded sand-clay mixtures
Fined-grained soils: more than half smaller than number 200 sieve	Silts and Clays: Liquid limit 50% or less		ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL		Organic clays and organic silty clays of low plasticity
	Silts and Clays: Liquid limit greater than 50%		MH		Inorganic silty, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH		Inorganic clays of high plasticity, fat clays
			OH		Organic clays of medium to high plasticity, organic silts
Highly organic soils			PT		Peat and other highly organic soils

GENERAL NOTES

1. Logs of subsurface explorations depict soil, rock and groundwater conditions only at the locations specified on the dates indicated. Subsurface conditions may vary at other locations and at other times.
2. Water levels noted on the logs were measured at the times and under the conditions indicated. During test borings, these water levels could have been affected by the introduction of water into the borehole, extraction of tools on other procedures and thus may not reflect actual groundwater level at the test boring location. Groundwater level fluctuations may also occur as a result of variations in precipitation, temperature, season, tides, adjacent construction activities and pumping of water supply wells and construction dewatering systems.

ROCK

Rock descriptions noted on logs of subsurface explorations are based on visual-manual examination of exposed rock outcrops and core samples. The criteria, descriptive terms and definitions used are as follows:

FIELD HARDNESS: A measure of resistance to scratching.

Very Hard	Cannot be scratched with a knife point or sharp pick.
Hard	Can be scratched with a knife point or sharp pick, only with difficulty.
Moderately Hard	Can be readily scratched with a knife point or pick.
Medium Hard	Can be grooved or gouged 1/16 in. deep with firm pressure on a knife point or sharp pick.
Soft	Can be grooved or gouged easily with a knife point or pick.
Very Soft	Can be carved with a knife and excavated with a pick point.

WEATHERING: The action of organic and inorganic and chemical and physical processes resulting in alteration of color, texture and composition.

Fresh-FR	No visible sign of alteration, except perhaps slight discoloration on major discontinuity surfaces.
Slight-SL	Discoloration of rock material and discontinuity surfaces. All rock may be discolored and/or somewhat weaker than in its fresh condition.
Moderate-MOD	Less than half the rock material is decomposed and/or disintegrated to a soil. Some fresh or discolored rock is present as either a continuous framework or as corestones.
High-HIGH	More than half the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present as either a discontinuous framework or as corestones.
Complete-COMP	All rock material is decomposed and/or disintegrated to soil. The original mass structure is largely intact.
Residual Soil	All rock material is converted to soil. The mass structure and material fabric are destroyed. There has been a large change of volume, but the material has not been significantly transported.

COLOR: Basic colors and combinations: gray, light gray, brown, red-brown.

TEXTURE: Size, shape and arrangements of constituents.

Term	Size: Igneous	Size: Sedimentary
Coarse-grained	> 5 mm	> 2 mm
Medium-grained	1 - 5 mm	0.625 - 2 mm
Fine-grained	< 1 mm	< 0.625 mm
Aphanitic	Individual grains invisible to the unaided eye.	

LITHOLOGY: Rock classification and modifiers; accepted formation names.

DISCONTINUITIES:

Type	Definition
Joint	A natural fracture along which no displacement has occurred. May occur in parallel groups called sets.
Shear	A natural fracture along which displacement has occurred. Surface may be slickensided or striated.
Fault	A natural fracture along which displacement has occurred. Usually lined with gouge and slickensides.
Shear or Fault Zone	Zone of fractured rock and gouge bordering the displacement plane.

ORIENTATION/ATTITUDE:

Term	Angle (degrees)
Horizontal	0-5
Low Angle	6-35
Moderately Dipping	36-55
High Angle	56-85
Vertical	86-100

SPACING:

Discontinuity Term	Bedding Term	Inches
Extremely Close	Extremely Thin	< 3/4
Very Close	Very Thin	3/4 - 2.5
Close	Thin	2.5 - 8
Moderate	Medium	8 - 24
Wide	Thick	24 - 80
Very Wide	Very Thick	80 - 240
Extremely Wide	Extremely Thick	> 240

PERSISTENCE/CONTINUITY:

Term	Feet
Very Low	0-3
Low	3-10
Medium	10-35
High	35-65
Very High	> 65

APERTURE/GAP:

Term	Distance
Very Tight	< 0.1mm
Tight	0.1mm-0.25mm
Partly Open	0.25mm-0.5mm
Open	0.5mm-2.5mm
Moderately Wide	2.5mm-1cm
Wide	> 1cm
Very Wide	1cm-10cm
Extremely Wide	10cm-1m
Cavernous	> 1m

POROSITY:

Type

Primary:
Pre-depositional and depositional inter- and intra- granular, particle, or crystalline pores.

Secondary:
Solution features including pits, vugs, caverns, molds, and channels.
Fracture features including joints, shears, faults, shrinkage and breccia fabrics.

Term	Size
Micro	< 0.0625 mm
Meso	0.0625-4.0 mm
Mega	4.0-256 mm

HALEY ALDRICH

SUBSURFACE EXPLORATION KEY

J:\GRAPHICS\TEMP\MCELENEY-TI\FIELD SERVICES\SUBSURFACE EXPLORATION LOG KEY\HA-SUBSURFACE EXPLORATION KEY2016-0804.DWG

HALEY ALDRICH

TEST PIT LOG

Test Pit No. HA25-TP1

Project	27 KIMBALL RD	**File No.**	0213708-001
Location	AMESBURY, MA	**H&A Rep**	A. Balogh
Client	MP PROPERTIES IV, LLC	**Date**	11/24/2025
Contractor	LDR EXCAVATION	**Weather**	Cloudy, 30s-40s
Equipment Used	DEERE 35G TRACK-MOUNTED EXCAVATOR		

Ground El.: 155.4 ft
El. Datum: NAVD88
Location: See Plan
Groundwater depths/entry rates (in./min.): Not encountered

Depth (ft)	Sample Data / PID Readings (ppm)	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests: Dilatancy	Toughness	Plasticity	Strength
0	0.0	154.9	OL/ OH	Brown sandy ORGANIC SOIL (OL/OH), organic odor, moist, 25% roots -TOPSOIL-	0	5	10	15	35	35				
		0.5	SM	Loose light brown to brown silty SAND with gravel (SM), no odor, moist, 10% cobbles, 10% roots -LOESS-	10	5	10	10	40	25				
1	0.0													
		153.6												
		1.8	SM	Medium dense to dense tan to light brown silty SAND with gravel (SM), bonded, no odor, moist, 15% cobbles -GLACIAL TILL-	10	5	10	15	45	15				
2														
3	0.0													
4														
5	0.0													
6														
		149.1												
		6.3		BOTTOM OF EXPLORATION AT 6.3 FT Note: Test pit backfilled with excavated soil.										

Obstructions: Not encountered

Remarks: In-situ permeability test performed from 4.5 to 5.0 ft below ground surface.

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

Standing Water in Completed Pit

at depth Not encountered ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12 to 24		=
over 24		=

Test Pit Dimensions (ft)

Pit Length x Width (ft) 5 x 9
Pit Depth (ft) 6.3

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

HALEY ALDRICH

TEST PIT LOG

Test Pit No. HA25-TP2

Project	27 KIMBALL RD	**File No.**	0213708-001
Location	AMESBURY, MA	**H&A Rep**	A. Balogh
Client	MP PROPERTIES IV, LLC	**Date**	11/24/2025
Contractor	LDR EXCAVATION	**Weather**	Cloudy, 30s-40s
Equipment Used	DEERE 35G TRACK-MOUNTED EXCAVATOR		

Ground El.: 166.2 **El. Datum:** NAVD88 | **Location:** See Plan | **Groundwater depths/entry rates (in./min.):** Not encountered

Depth (ft)	Sample Data / PID Readings (ppm)	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests Dilatancy	Toughness	Plasticity	Strength
0	0.0	165.7	OL/ OH	Loose brown sandy ORGANIC SOIL (OL/OH), organic odor, moist, 25% roots -TOPSOIL-	0	5	10	15	35	35				
1	0.0	0.5 / 164.7	SM	Loose light brown to brown silty SAND with gravel (SM), no odor, moist, 10%, roots -LOESS-	10	5	10	10	40	25				
2		1.5	SM	Medium dense to dense tan to light brown silty SAND with gravel (SM), bonded, no odor, moist, 15% cobbles -GLACIAL TILL-	10	5	10	10	50	15				
3	0.0													
4														
5	0.0													
6														
7	0.0	159.2 / 7.0		BOTTOM OF EXPLORATION AT 7.0 FT Note: Test pit backfilled with excavated soil.										

Obstructions: Not encountered

Remarks:

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

Standing Water in Completed Pit

at depth Not encountered ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12 to 24		=
over 24		=

Test Pit Dimensions (ft)

Pit Length x Width (ft) 8 x 2.5
Pit Depth (ft) 7.0

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

TEST PIT LOG

Test Pit No. HA25-TP3

Project	27 KIMBALL RD	**File No.**	0213708-001
Location	AMESBURY, MA	**H&A Rep**	A. Balogh
Client	MP PROPERTIES IV, LLC	**Date**	11/24/2025
Contractor	LDR EXCAVATION	**Weather**	Cloudy, 30s-40s
Equipment Used	DEERE 35G TRACK-MOUNTED EXCAVATOR		

Ground El.: 169.9 **El. Datum:** NAVD88 **Location:** See Plan **Groundwater depths/entry rates (in./min.):** Not encountered

Depth (ft)	Sample Data / PID Readings (ppm)	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests Dilatancy	Toughness	Plasticity	Strength
0	0.0	169.3	OL/ OH	Brown sandy ORGANIC SOIL (OL/OH), organic odor, moist, 25% roots -TOPSOIL-	0	5	10	15	35	35				
1	0.0	0.6 / 168.5	SM	Loose light brown to brown silty SAND with gravel (SM), no odor, moist, 10% cobbles, 10% roots -LOESS-	10	5	10	10	35	30				
2		1.4	SM	Medium dense tan to light brown silty SAND with gravel (SM), bonded, no odor, moist, 15% cobbles, trace cobbles -GLACIAL TILL-	10	5	10	15	40	20				
3	0.0													
4			SM	Similar to above, except 10% cobbles, trace boulders, visible stratification on sidewalls of test pit	10	5	10	15	25	35				
5	0.0													
6														
7		162.9 / 7.0		BOTTOM OF EXPLORATION AT 7.0 FT Note: Test pit backfilled with excavated soil.										

Obstructions: Not encountered

Remarks:

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

Standing Water in Completed Pit

at depth Not encountered ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12 to 24		=
over 24		=

Test Pit Dimensions (ft)

Pit Length x Width (ft) 8.5 x 2.5
Pit Depth (ft) 7.0

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

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TEST PIT LOG

Test Pit No. HA25-TP4

Project	27 KIMBALL RD	**File No.**	0213708-001
Location	AMESBURY, MA	**H&A Rep**	A. Balogh
Client	MP PROPERTIES IV, LLC	**Date**	11/24/2025
Contractor	LDR EXCAVATION	**Weather**	Cloudy, 30s-40s
Equipment Used	DEERE 35G TRACK-MOUNTED EXCAVATOR		

Ground El.: 180.0 **El. Datum:** NAVD88 | **Location:** See Plan | **Groundwater depths/entry rates (in./min.):** Not encountered

Depth (ft)	Sample Data / PID Readings (ppm)	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests Dilatancy	Toughness	Plasticity	Strength
0	0.0	179.4 0.6	OL/OH	Loose brown sandy ORGANIC SOIL (OL/OH), organic odor, moist, 25% roots -TOPSOIL-	5	5	10	15	35	30				
			SM	Loose light-brown to brown silty SAND with gravel (SM), no odor, moist, 15% cobbles, 10% roots -LOESS-	10	5	10	10	40	25				
2	0.0	178.0 2.0	SM	Medium dense yellow-brown to light-brown silty SAND with gravel (SM), bonded, no odor, moist, 15% cobbles -GLACIAL TILL-	15	10	10	10	35	20				
	0.0													
4	0.0		SM	Similar to above, except dense, trace boulders	15	10	10	10	30	25				
6	0.0													
		172.5 7.5		BOTTOM OF EXPLORATION AT 7.5 FT Note: Test pit backfilled with excavated soil.										

Obstructions: Not encountered

Remarks:

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

Standing Water in Completed Pit

at depth Not encountered ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12 to 24		=
over 24		=

Test Pit Dimensions (ft)

Pit Length x Width (ft) 3 x 10
Pit Depth (ft) 7.5

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

HALEY ALDRICH

TEST PIT LOG

Test Pit No. HA25-TP5

Project	27 KIMBALL RD	**File No.**	0213708-001
Location	AMESBURY, MA	**H&A Rep**	M. Dodson
Client	MP PROPERTIES IV, LLC	**Date**	11/21/2025
Contractor	LDR EXCAVATION	**Weather**	Cloudy, 20s-40s
Equipment Used	DEERE 35G TRACK-MOUNTED EXCAVATOR		

Ground El.: 178.9 **El. Datum:** NAVD88 | **Location:** See Plan | **Groundwater depths/entry rates (in./min.):** Not encountered

Depth (ft)	Sample Data / PID Readings (ppm)	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests: Dilatancy	Toughness	Plasticity	Strength
0	0.0	178.3 0.6	OL/OH	Black to dark brown sandy ORGANIC SOIL (OL/OH), no structure, organic odor, moist, 35% roots -TOPSOIL-	5	0	5	10	15	65				
		177.4 1.5	SM	Yellow to yellow-brown silty SAND (SM), no structure, no odor, moist, 10% roots -LOESS-	0	5	5	5	40	45				
2	0.0		SM	Yellow to light brown silty SAND (SM), no structure, no odor, moist, 5% cobbles, weakly to unbonded, variable silt content in weak layers, 15-30% silt content -GLACIAL TILL-	5	5	10	10	45	25				
	0.0													
4	0.0													
	0.0		SM	Similar to above, except trace gravel, yellow to yellow-brown, moderately bonded, 20-40% silt content	5	5	5	5	50	30				
6	0.0													
	0.0													
8		170.1 8.8		BOTTOM OF EXPLORATION AT 8.8 FT Note: Test pit backfilled with excavated soil.										

Obstructions: Not encountered

Remarks: In-situ permeability test performed from 4.3 to 4.8 ft below ground surface.

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

Standing Water in Completed Pit

at depth Not encountered ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12 to 24		=
over 24		=

Test Pit Dimensions (ft)

Pit Length x Width (ft)
Pit Depth (ft) 8.8

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

HALEY ALDRICH

TEST PIT LOG

Test Pit No. HA25-TP6

Project	27 KIMBALL RD	**File No.**	0213708-001
Location	AMESBURY, MA	**H&A Rep**	M. Dodson
Client	MP PROPERTIES IV, LLC	**Date**	11/21/2025
Contractor	LDR EXCAVATION	**Weather**	Cloudy, 20s-40s
Equipment Used	DEERE 35G TRACK-MOUNTED EXCAVATOR		

Ground El.: 180.9 **El. Datum:** NAVD88 | **Location:** See Plan | **Groundwater depths/entry rates (in./min.):** Not encountered

Depth (ft)	Sample Data / PID Readings (ppm)	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests Dilatancy	Toughness	Plasticity	Strength
0		180.5	OL/OH	Brown to light-brown sandy ORGANIC SOIL (OL/OH), no structure, organic odor, moist, 35% roots	5	0	5	10	15	65				
		0.4		-TOPSOIL-										
		180.1	SM	Yellow-brown to brown silty SAND (SM), intermixed, no odor, moist, 10% pockets of former subsoil, likely reworked loess	5	5	10	10	45	25				
	0.0	0.8	SM	-FILL-	5	0	10	15	45	25				
				Yellow to tan silty SAND (SM), no structure, no odor, moist, 5% cobbles, no boulders, weakly to unbonded										
				-GLACIAL TILL-										
2	0.0													
	0.0													
4	0.0													
			SM	Yellow to yellow-brown silty SAND with gravel (SM), no structure, no odor, moist, 15% cobbles, no boulders, moderately bonded	10	5	5	5	35	40				
	0.0													
6	0.0													
	0.0													
8		172.9												
		8.0		BOTTOM OF EXPLORATION AT 8.0 FT										
				Note: Test pit backfilled with excavated soil.										

Obstructions: Not encountered

Remarks:

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

Standing Water in Completed Pit

at depth Not encountered ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12 to 24		=
over 24		=

Test Pit Dimensions (ft)

Pit Length x Width (ft)
Pit Depth (ft) 8.0

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

HALEY ALDRICH

TEST PIT LOG

Test Pit No. HA25-TP7

Project	27 KIMBALL RD	**File No.**	0213708-001
Location	AMESBURY, MA	**H&A Rep**	A. Balogh
Client	MP PROPERTIES IV, LLC	**Date**	11/24/2025
Contractor	LDR EXCAVATION	**Weather**	Cloudy, 30s-40s
Equipment Used	DEERE 35G TRACK-MOUNTED EXCAVATOR		

Ground El.: 179.8 **El. Datum:** NAVD88 | **Location:** See Plan | **Groundwater depths/entry rates (in./min.):** Not encountered

Depth (ft)	Sample Data / PID Readings (ppm)	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests Dilatancy	Toughness	Plasticity	Strength
0			SM	Loose brown silty SAND (SM), organic odor, moist, 25% roots -TOPSOIL-	5	5	10	15	40	25				
		179.2 0.6												
1	0.0		SM	Loose light brown to brown silty SAND with gravel (SM), no odor, moist, 10% cobbles, 10% roots -LOESS-	10	5	10	10	40	25				
		178.3 1.5												
2	0.0		SM	Medium dense yellow-brown to light brown silty SAND with gravel (SM), bonded, no odor, moist, 15% cobbles -GLACIAL TILL-	10	5	10	10	45	20				
3	0.0													
4	0.0		SM	Similar to above, except trace boulders and cobbles	15	10	10	10	40	15				
5														
6	0.0													
7		172.8 7.0		BOTTOM OF EXPLORATION AT 7.0 FT										
				Note: Test pit backfilled with excavated soil.										

Obstructions: Not encountered

Remarks:

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

Standing Water in Completed Pit

at depth Not encountered ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12 to 24		=
over 24		=

Test Pit Dimensions (ft)

Pit Length x Width (ft) 2.5 x 9
Pit Depth (ft) 7.0

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

TEST PIT LOG

Test Pit No. HA25-TP8

Project	27 KIMBALL RD	**File No.**	0213708-001
Location	AMESBURY, MA	**H&A Rep**	M. Dodson
Client	MP PROPERTIES IV, LLC	**Date**	11/21/2025
Contractor	LDR EXCAVATION	**Weather**	Cloudy, 20s-40s
Equipment Used	DEERE 35G TRACK-MOUNTED EXCAVATOR		

Ground El.: 186.7 | **Location:** See Plan | **Groundwater depths/entry rates (in./min.):** Not encountered

El. Datum: NAVD88

Depth (ft)	Sample Data / PID Readings (ppm)	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests: Dilatancy	Toughness	Plasticity	Strength
0		186.4	OL/OH	Dark brown sandy ORGANIC SOIL (OL/OH), no structure, organic odor, moist, 35% roots	5	0	5	10	15	65				
		0.3	SM	-TOPSOIL-	5	0	10	5	45	35				
	0.0			Yellow-brown brown silty SAND (SM), intermixed, no odor, moist, contains lenses and layers of former topsoil and subsoil, likely reworked loess -FILL-										
2	0.0													
	0.0													
		183.1												
		3.6	OL/OH	Black to dark brown sandy ORGANIC SOIL (OL/OH), no structure, organic odor, moist, 35% roots -TOPSOIL-	5	0	5	10	15	65				
4	0.0													
		181.8												
	0.0	4.9	SM	Yellow to yellow-brown silty SAND (SM), no structure, no odor, moist, 10% roots -LOESS-	0	5	5	5	40	45				
		181.3												
		5.4	SM	Yellow to yellow-brown silty SAND with gravel (SM), no structure, no odor, moist, slightly bonded -GLACIAL TILL-	10	10	10	5	40	25				
6	0.0													
	0.0		SM	Similar to above, except moderately bonded	10	10	10	5	40	25				
8														
		178.4												
		8.3		BOTTOM OF EXPLORATION AT 8.3 FT										
				Note: Test pit backfilled with excavated soil.										

Obstructions: Not encountered

Remarks: In-situ permeability test performed from 5.5 to 6.0 ft below ground surface.

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

Standing Water in Completed Pit

at depth Not encountered ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12 to 24		=
over 24		=

Test Pit Dimensions (ft)

Pit Length x Width (ft)
Pit Depth (ft) 8.3

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

HALEY ALDRICH

TEST PIT LOG

Test Pit No. HA25-TP9

Project	27 KIMBALL RD	**File No.**	0213708-001
Location	AMESBURY, MA	**H&A Rep**	M. Dodson
Client	MP PROPERTIES IV, LLC	**Date**	11/21/2025
Contractor	LDR EXCAVATION	**Weather**	Cloudy, 20s-40s
Equipment Used	DEERE 35G TRACK-MOUNTED EXCAVATOR		

Ground El.: 179.5 **El. Datum:** NAVD88 | **Location:** See Plan | **Groundwater depths/entry rates (in./min.):** Not encountered

Depth (ft)	Sample Data / PID Readings (ppm)	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests: Dilatancy	Toughness	Plasticity	Strength
0		178.8	OL/OH	Black to dark brown sandy ORGANIC SOIL (OL/OH), no structure, organic odor, moist, 35% roots -TOPSOIL-	5	0	5	10	15	65				
	0.0	0.7 / 178.1	SM	Yellow to yellow-brown silty SAND (SM), no structure, no odor, moist, 10% roots -LOESS-	0	5	5	5	40	45				
2	0.0	1.4	SM	Yellow to tan silty SAND (SM), no structure, no odor, moist, weakly to unbonded -GLACIAL TILL-	5	0	10	5	50	30				
	0.0													
4	0.0													
	0.0		SM	Yellow to yellow-brown silty SAND with gravel (SM), no structure, no odor, moist, moderately bonded	10	10	10	5	40	25				
6	0.0													
	0.0													
8		170.7												
		8.8		BOTTOM OF EXPLORATION AT 8.8 FT Note: Test pit backfilled with excavated soil.										

Obstructions: Not encountered

Remarks:

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

Standing Water in Completed Pit

at depth Not encountered ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12 to 24		=
over 24		=

Test Pit Dimensions (ft)

Pit Length x Width (ft)
Pit Depth (ft) 8.8

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

HALEY ALDRICH

TEST PIT LOG

Test Pit No. HA25-TP10

Project	**27 KIMBALL RD**	**File No.**	0213708-001
Location	AMESBURY, MA	**H&A Rep**	A. Balogh
Client	MP PROPERTIES IV, LLC	**Date**	11/25/2025
Contractor	LDR EXCAVATION	**Weather**	Cloudy, 30s-40s
Equipment Used	DEERE 35G TRACK-MOUNTED EXCAVATOR		

Ground El.: 167.2 **El. Datum:** NAVD88 | **Location:** See Plan | **Groundwater depths/entry rates (in./min.):** Not encountered

Depth (ft)	Sample Data / PID Readings (ppm)	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests: Dilatancy	Toughness	Plasticity	Strength
0	0.0	166.5	OL/OH	Loose brown sandy ORGANIC SOIL (OL/OH), organic odor, moist, 25% roots -TOPSOIL-	0	5	10	15	45	25				
1	0.0	0.7 165.5	SM	Loose light-brown to brown silty SAND (SM), no structure, no odor, moist, 20% roots -LOESS-	5	5	10	10	40	30				
2		1.7	SM	Medium dense tan to light-brown silty SAND with gravel (SM), stratified, no odor, moist, 10% cobbles, visible stratification on pit sidewall -GLACIAL TILL-	5	10	10	15	35	25				
3	0.0													
4														
5	0.0		SM	Dense brown to light-brown mottled silty SAND (SM), bonded, no odor, moist, 15% cobbles, trace boulders Note: Mottling observed at 5.0 ft.	5	5	10	10	35	35				
6														
7	0.0	160.2 7.0		BOTTOM OF EXPLORATION AT 7.0 FT Note: Test pit backfilled with excavated soil.										

Obstructions: Not encountered

Remarks:

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

Standing Water in Completed Pit

at depth Not encountered ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12 to 24		=
over 24		=

Test Pit Dimensions (ft)

Pit Length x Width (ft) 3 x 9
Pit Depth (ft) 7.0

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

HALEY ALDRICH

TEST PIT LOG

Test Pit No. HA25-TP11

Project	**27 KIMBALL RD**	**File No.**	0213708-001
Location	AMESBURY, MA	**H&A Rep**	A. Balogh
Client	MP PROPERTIES IV, LLC	**Date**	11/25/2025
Contractor	LDR EXCAVATION	**Weather**	Cloudy, 30s-40s
Equipment Used	DEERE 35G TRACK-MOUNTED EXCAVATOR		

Ground El.: 184.3 **El. Datum:** NAVD88 | **Location:** See Plan | **Groundwater depths/entry rates (in./min.):** Not encountered

Depth (ft)	Sample Data PID Readings (ppm)	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests Dilatancy	Toughness	Plasticity	Strength
0	0.0		OL/OH	Loose brown sandy ORGANIC SOIL (OL/OH), organic odor, moist, 25% roots -TOPSOIL-	0	5	5	10	40	40				
		183.6 0.7	SM	Loose light-brown to brown silty SAND (SM), no structure, no odor, moist, 20% roots, trace cobbles -LOESS-	5	5	10	5	40	35				
	0.0													
		182.4 1.9	SM	Medium dense to dense tan to light-brown silty SAND with gravel (SM), weakly to moderately bonded, no odor, moist, 15% cobbles, 5% boulders -GLACIAL TILL-	5	10	10	10	35	30				
2														
	0.0													
4														
	0.0													
6														
	0.0			Note: Mottling observed at 7.5 ft.										
		176.3 8.0		BOTTOM OF EXPLORATION AT 8.0 FT Note: Test pit backfilled with excavated soil.										
8														

Obstructions: Not encountered

Remarks:

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

Standing Water in Completed Pit

at depth Not encountered ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12 to 24		=
over 24		=

Test Pit Dimensions (ft)

Pit Length x Width (ft) 3 x 9
Pit Depth (ft) 8.0

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

HALEY ALDRICH

TEST PIT LOG

Test Pit No. HA25-TP12

Project	**27 KIMBALL RD**	**File No.**	0213708-001
Location	AMESBURY, MA	**H&A Rep**	A. Balogh
Client	MP PROPERTIES IV, LLC	**Date**	11/25/2025
Contractor	LDR EXCAVATION	**Weather**	Cloudy, 30s-40s
Equipment Used	DEERE 35G TRACK-MOUNTED EXCAVATOR		

Ground El.: 183.3 **El. Datum:** NAVD88 | **Location:** See Plan | **Groundwater depths/entry rates (in./min.):** Not encountered

Depth (ft)	Sample Data / PID Readings (ppm)	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests: Dilatancy	Toughness	Plasticity	Strength
0	0.0		OL/OH	Loose brown sandy ORGANIC SOIL (OL/OH), organic odor, moist, 25% roots -TOPSOIL-	0	5	10	15	35	35				
	0.0	182.3 1.0	SM	Loose light-brown to brown silty SAND (SM), no structure, no odor, moist, 20% roots -LOESS-	5	5	10	10	35	35				
		181.6 1.7	SM	Medium dense tan to light-brown silty SAND with gravel (SM), bonded, no odor, moist, 15% cobbles, 5% boulders -GLACIAL TILL-	5	10	10	15	40	20				
2	0.0													
4	0.0													
6	0.0													
8		175.3 8.0		BOTTOM OF EXPLORATION AT 8.0 FT Note: Test pit backfilled with excavated soil.										

Obstructions: Not encountered

Remarks: In-situ permeability test performed from 5.5 to 6.0 ft below ground surface.

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

Standing Water in Completed Pit

at depth Not encountered ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12 to 24		=
over 24		=

Test Pit Dimensions (ft)

Pit Length x Width (ft) 5 x 15
Pit Depth (ft) 8.0

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

HALEY ALDRICH

TEST PIT LOG

Test Pit No. HA25-TP13

Project	**27 KIMBALL RD**	**File No.**	0213708-001
Location	AMESBURY, MA	**H&A Rep**	A. Balogh
Client	MP PROPERTIES IV, LLC	**Date**	11/24/2025
Contractor	LDR EXCAVATION	**Weather**	Cloudy, 30s-40s
Equipment Used	DEERE 35G TRACK-MOUNTED EXCAVATOR		

Ground El.: 169.1 **El. Datum:** NAVD88 | **Location:** See Plan | **Groundwater depths/entry rates (in./min.):** Not encountered

Depth (ft)	Sample Data / PID Readings (ppm)	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests: Dilatancy	Toughness	Plasticity	Strength
0	0.0	168.7 0.4	SM	Loose brown silty SAND (SM), organic odor, moist, 25% roots -TOPSOIL-	0	5	10	15	35	35				
			SM	Loose light brown to brown silty SAND with gravel (SM), no structure, no odor, moist, 10% cobbles, 10% roots -LOESS-	10	5	10	10	35	30				
1	0.0	168.1 1.0	SM	Medium dense tan to light brown silty SAND with gravel (SM), bonded, no odor, moist, 15% cobbles -GLACIAL TILL-	5	10	5	15	35	30				
2														
3	0.0													
4			SM	Similar to above, except dense, brown to light brown, 10% cobbles, 20% boulders	10	5	10	10	30	35				
5	0.0			Note: Several large boulders at 6 ft. Unable to excavate further.										
6		163.1 6.0		BOTTOM OF EXPLORATION AT 6.0 FT Note: Test pit backfilled with excavated soil.										

Obstructions: Boulders encountered at 6 ft below ground surface.

Remarks:

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

Standing Water in Completed Pit

at depth Not encountered ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12 to 24		=
over 24		=

Test Pit Dimensions (ft)

Pit Length x Width (ft) 3 x 11
Pit Depth (ft) 6.0

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

HALEY ALDRICH

TEST PIT LOG

Test Pit No. HA25-TP14

Project	27 KIMBALL RD	**File No.**	0213708-001
Location	AMESBURY, MA	**H&A Rep**	A. Balogh
Client	MP PROPERTIES IV, LLC	**Date**	11/24/2025
Contractor	LDR EXCAVATION	**Weather**	Cloudy, 30s-40s
Equipment Used	DEERE 35G TRACK-MOUNTED EXCAVATOR		

Ground El.: 156.4 **El. Datum:** NAVD88 | **Location:** See Plan | **Groundwater depths/entry rates (in./min.):** Not encountered

Depth (ft)	Sample Data / PID Readings (ppm)	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests: Dilatancy	Toughness	Plasticity	Strength
0	0.0		SM	Loose brown silty SAND (SM), organic odor, moist, 25% roots -TOPSOIL-	0	5	10	15	35	35				
		155.6 0.8												
1	0.0		SM	Loose light brown to brown silty SAND with gravel (SM), no odor, moist, 10% cobbles, 10% roots -LOESS-	10	5	10	10	40	25				
		154.5 1.9												
2			SM	Medium dense tan to light brown silty SAND with gravel (SM), bonded, no odor, moist, 15% cobbles -GLACIAL TILL-	10	5	10	10	45	20				
3	0.0													
4			SM	Similar to above, except dense, brown to light brown, trace boulders	10	5	10	10	35	30				
5	0.0													
6				Note: Mottling observed at 6 ft.										
		149.9 6.5		BOTTOM OF EXPLORATION AT 6.5 FT Note: Test pit backfilled with excavated soil.										

Obstructions: Not encountered

Remarks:

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

Standing Water in Completed Pit

at depth Not encountered ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12 to 24		=
over 24		=

Test Pit Dimensions (ft)

Pit Length x Width (ft)
Pit Depth (ft) 6.5

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

HALEY ALDRICH

TEST PIT LOG

Test Pit No. HA25-TP15

Project	27 KIMBALL RD	**File No.**	0213708-001
Location	AMESBURY, MA	**H&A Rep**	A. Balogh
Client	MP PROPERTIES IV, LLC	**Date**	11/24/2025
Contractor	LDR EXCAVATION	**Weather**	Cloudy, 30s-40s
Equipment Used	DEERE 35G TRACK-MOUNTED EXCAVATOR		

Ground El.: 153.2 ft
El. Datum: NAVD88
Location: See Plan
Groundwater depths/entry rates (in./min.): Not encountered

Depth (ft)	Sample Data / PID Readings (ppm)	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests: Dilatancy	Toughness	Plasticity	Strength
0	0.0		SM	Brown silty SAND (SM), organic odor, moist, 25% roots -TOPSOIL-	0	5	10	15	35	35				
	0.0	152.2 1.0	SM	Light brown to brown silty SAND with gravel (SM), no odor, moist, 10% cobbles, 10% roots -LOESS-	10	5	10	10	40	25				
2		151.2 2.0	SM	Tan to light brown silty SAND with gravel (SM), bonded, no odor, moist, 15% cobbles, variable silt content -GLACIAL TILL-	10	5	10	15	35	25				
	0.0													
4			SM	Dense tan to light brown silty SAND (SM), bonded, no odor, moist, 15% cobbles	5	5	10	10	35	35				
	0.0													
6														
	0.0													
8		145.2 8.0		BOTTOM OF EXPLORATION AT 8.0 FT Note: Test pit backfilled with excavated soil.										

Obstructions: Not encountered

Remarks: In-situ permeability test performed from 4.1 to 4.6 ft below ground surface.

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

Standing Water in Completed Pit

at depth Not encountered ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12 to 24		=
over 24		=

Test Pit Dimensions (ft)

Pit Length x Width (ft)
Pit Depth (ft) 8.0

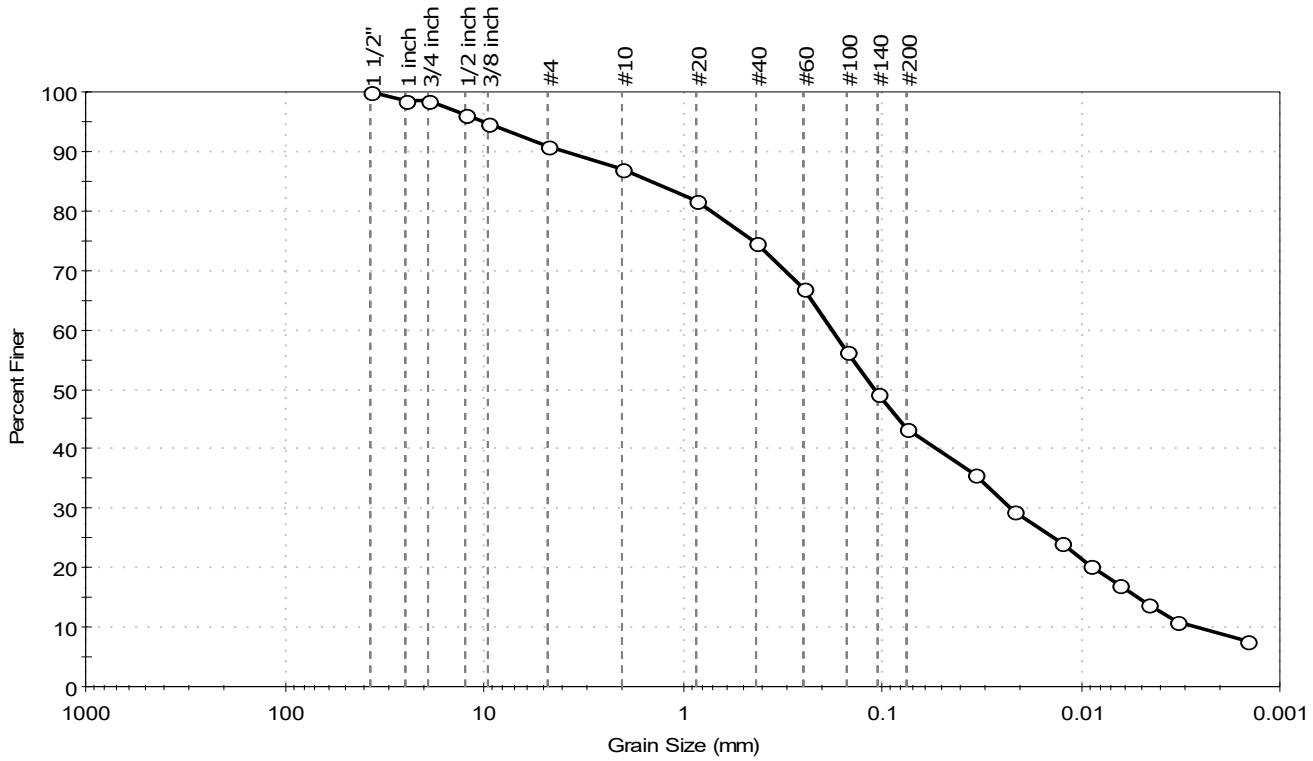
NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

APPENDIX B
Geotechnical Lab Test Results

GeoTesting EXPRESS
A Sercel Business

Client:	Haley & Aldrich, Inc.				
Project:	27 Kimball Rd				
Location:	Amesbury			Project No:	GTX-322317
Boring ID:	---	Sample Type:	Bag	Tested By:	ajl
Sample ID:	HA25-TP1_3.0-6.3	Test Date:	12/16/25	Checked By:	ank
Depth :	3-6.3	Test Id:	847393		
Test Comment:	---				
Visual Description:	Moist, yellowish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	9.0	47.5	43.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 1/2"	37.50	100		
1 inch	25.00	98		
3/4 inch	19.00	98		
1/2 inch	12.50	96		
3/8 inch	9.50	95		
#4	4.75	91		
#10	2.00	87		
#20	0.85	82		
#40	0.42	75		
#60	0.25	67		
#100	0.15	56		
#140	0.11	49		
#200	0.075	43		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0339	36		
---	0.0216	30		
---	0.0127	24		
---	0.0091	20		
---	0.0065	17		
---	0.0046	14		
---	0.0033	11		
---	0.0015	8		

Coefficients

D_{85} = 1.4433 mm
D_{30} = 0.0223 mm
D_{60} = 0.1781 mm
D_{15} = 0.0052 mm
D_{50} = 0.1096 mm
D_{10} = 0.0026 mm
C_u = 68.500
C_c = 1.074

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

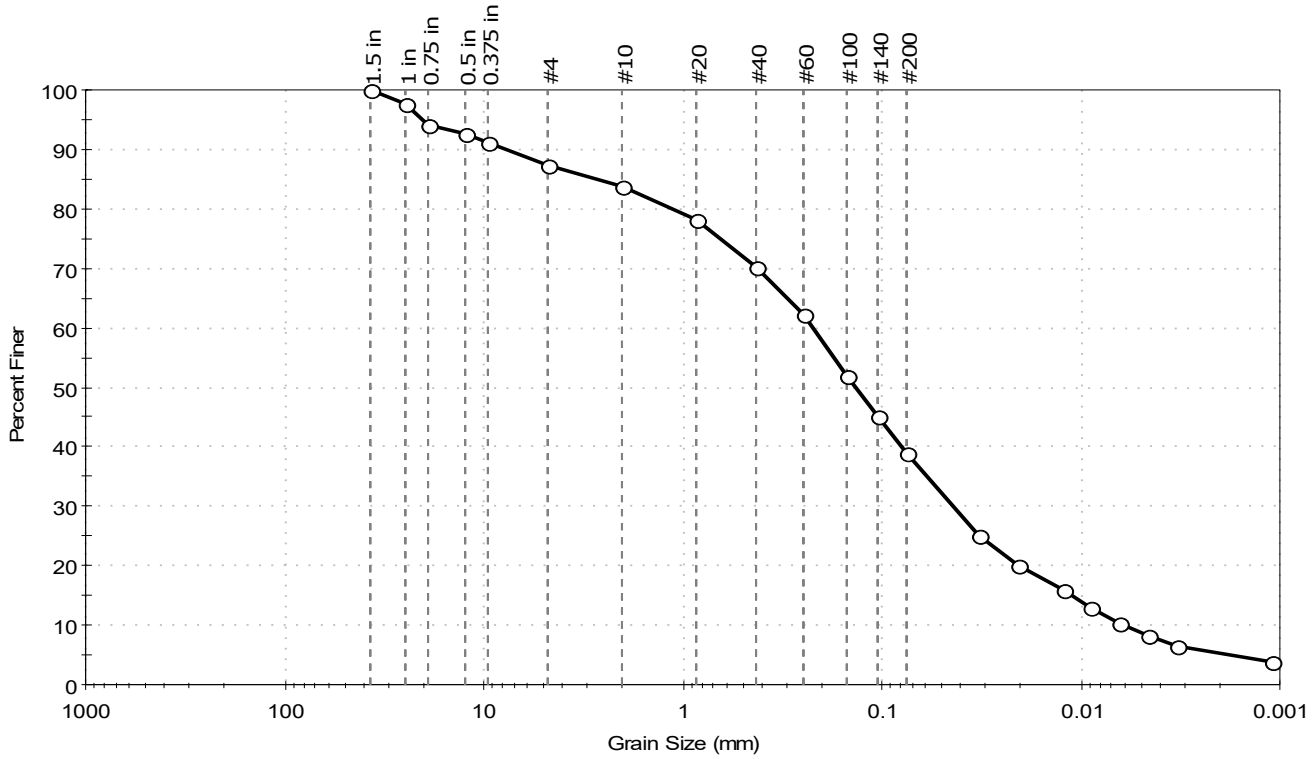
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

GeoTesting EXPRESS
A Sercel Business

Client:	Haley & Aldrich, Inc.				
Project:	27 Kimball Rd				
Location:	Amesbury			Project No:	GTX-322317
Boring ID:	---	Sample Type:	Bag	Tested By:	ajl
Sample ID:	HA25-TP2_3.0-7.0	Test Date:	12/15/25	Checked By:	ank
Depth :	3-7	Test Id:	847392		
Test Comment:	---				
Visual Description:	Moist, yellowish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	12.6	48.3	39.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	98		
0.75 in	19.00	94		
0.5 in	12.50	93		
0.375 in	9.50	91		
#4	4.75	87		
#10	2.00	84		
#20	0.85	78		
#40	0.42	70		
#60	0.25	62		
#100	0.15	52		
#140	0.11	45		
#200	0.075	39		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0325	25		
---	0.0207	20		
---	0.0124	16		
---	0.0089	13		
---	0.0064	10		
---	0.0046	8		
---	0.0033	7		
---	0.0011	4		

Coefficients

D_{85} = 2.7293 mm
D_{60} = 0.2222 mm
D_{50} = 0.1354 mm
C_u = 35.839
D_{30} = 0.0436 mm
D_{15} = 0.0113 mm
D_{10} = 0.0062 mm
C_c = 1.380

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

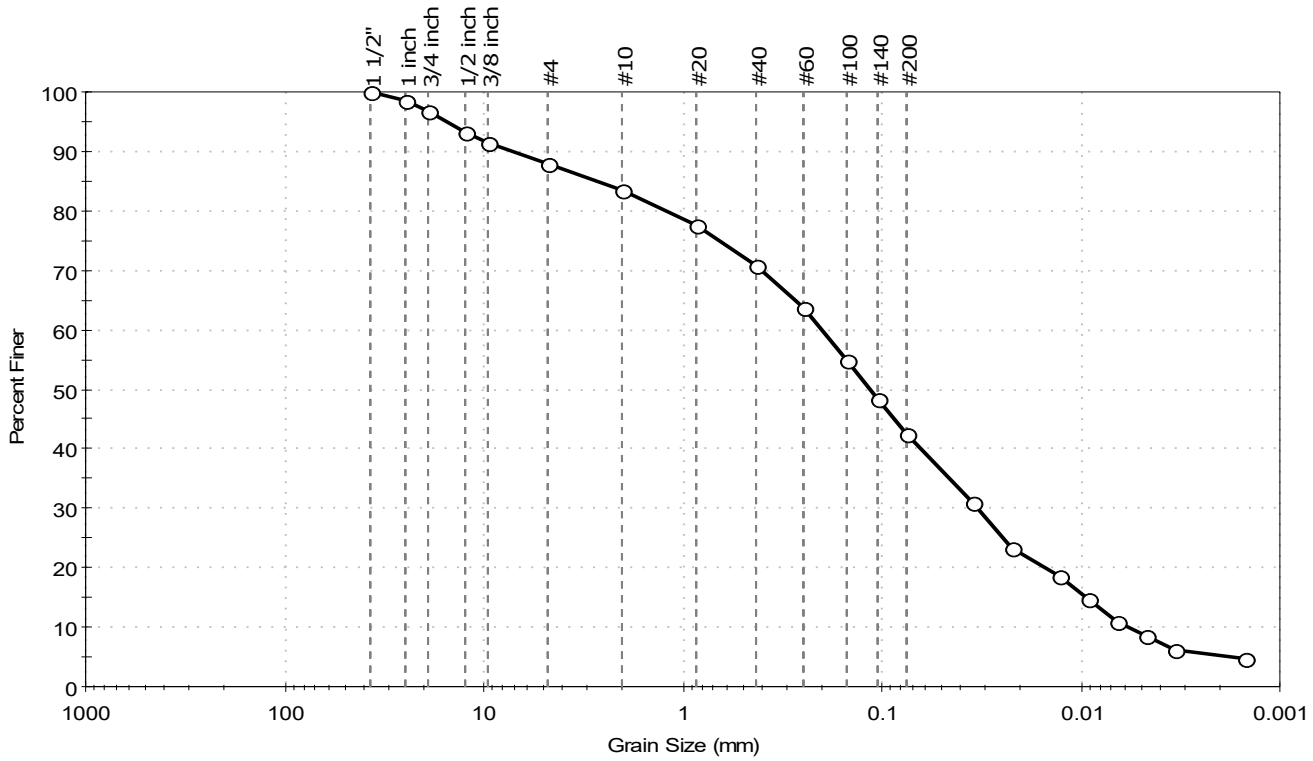
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

GeoTesting EXPRESS
A Sercel Business

Client:	Haley & Aldrich, Inc.				
Project:	27 Kimball Rd				
Location:	Amesbury			Project No:	GTX-322317
Boring ID:	---	Sample Type:	Bag	Tested By:	ajl
Sample ID:	HA25-TP3_3.0-7.0	Test Date:	12/16/25	Checked By:	ank
Depth :	3-7	Test Id:	847391		
Test Comment:	---				
Visual Description:	Moist, yellowish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	12.1	45.3	42.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 1/2"	37.50	100		
1 inch	25.00	98		
3/4 inch	19.00	97		
1/2 inch	12.50	93		
3/8 inch	9.50	91		
#4	4.75	88		
#10	2.00	84		
#20	0.85	78		
#40	0.42	71		
#60	0.25	64		
#100	0.15	55		
#140	0.11	48		
#200	0.075	43		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0348	31		
---	0.0221	23		
---	0.0129	19		
---	0.0093	15		
---	0.0066	11		
---	0.0047	9		
---	0.0034	6		
---	0.0015	5		

Coefficients

D_{85} = 2.6681 mm D_{30} = 0.0329 mm
D_{60} = 0.2015 mm D_{15} = 0.0095 mm
D_{50} = 0.1154 mm D_{10} = 0.0059 mm
C_u = 34.153 C_c = 0.910

Classification

ASTM N/A

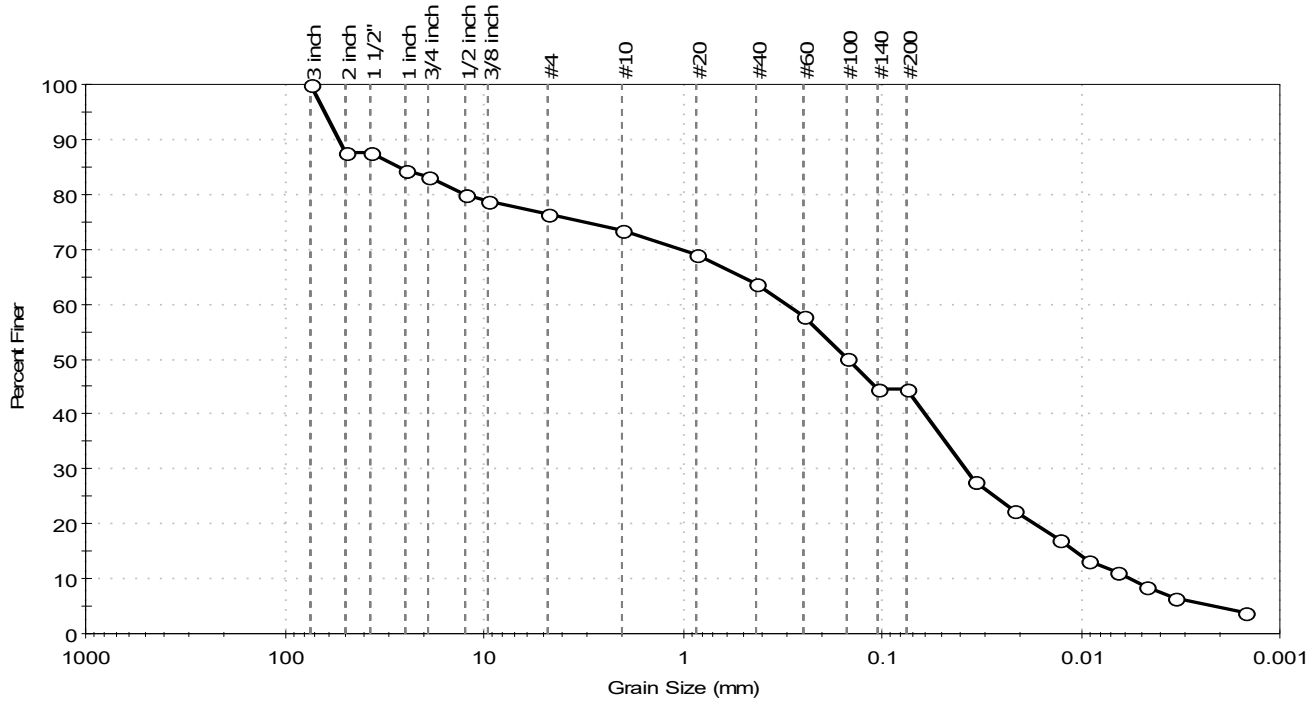
AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

Client:	Haley & Aldrich, Inc.				
Project:	27 Kimball Rd				
Location:	Amesbury			Project No:	GTX-322317
Boring ID:	---	Sample Type:	Bag	Tested By:	ajl
Sample ID:	HA25-TP4_3.0-7.5	Test Date:	12/16/25	Checked By:	ank
Depth :	3-7.5	Test Id:	847390		
Test Comment:	---				
Visual Description:	Moist, yellowish brown silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	23.7	31.8	44.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3 inch	75.00	100		
2 inch	50.00	88		
1 1/2"	37.50	88		
1 inch	25.00	85		
3/4 inch	19.00	83		
1/2 inch	12.50	80		
3/8 inch	9.50	79		
#4	4.75	76		
#10	2.00	73		
#20	0.85	69		
#40	0.42	64		
#60	0.25	58		
#100	0.15	50		
#140	0.11	45		
#200	0.075	44		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0344	28		
---	0.0216	22		
---	0.0128	17		
---	0.0092	13		
---	0.0066	11		
---	0.0047	9		
---	0.0033	7		
---	0.0015	4		

Coefficients

D_{85} = 26.6927 mm	D_{30} = 0.0383 mm
D_{60} = 0.3026 mm	D_{15} = 0.0107 mm
D_{50} = 0.1486 mm	D_{10} = 0.0056 mm
C_u = 54.036	C_c = 0.866

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

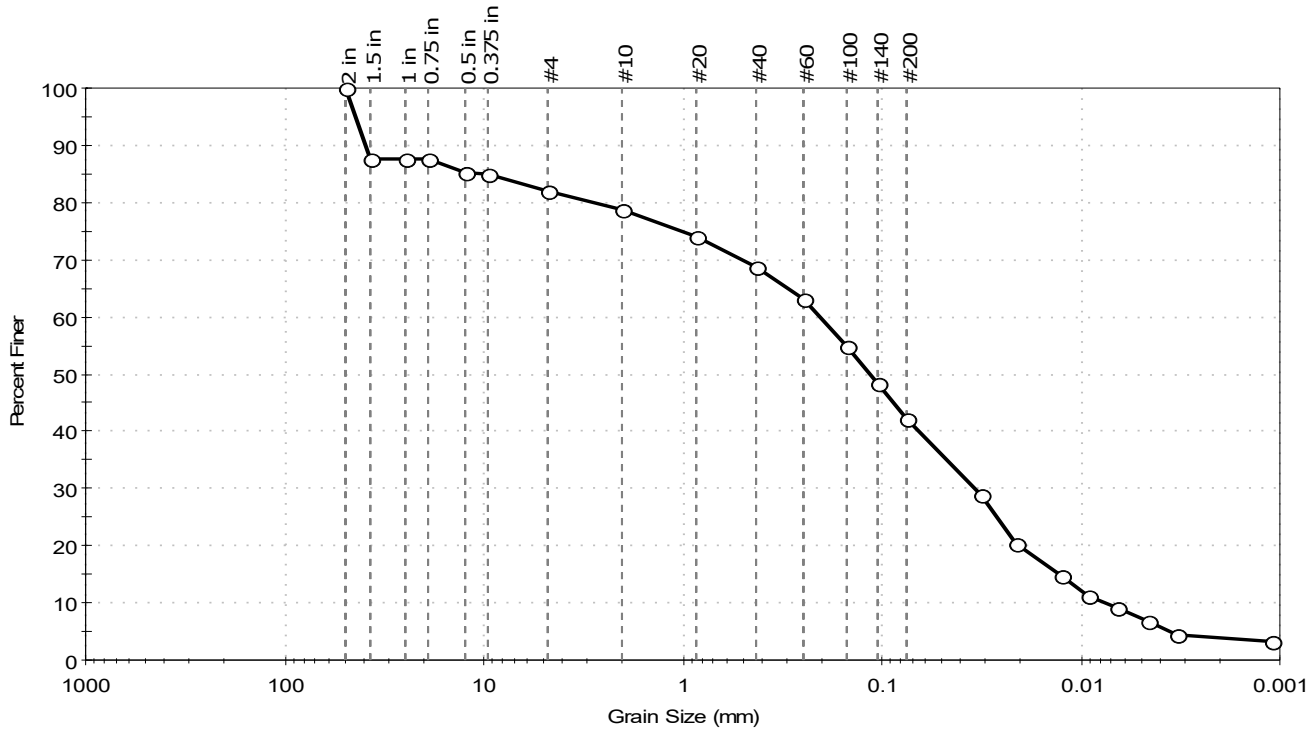
Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

GeoTesting EXPRESS
A Sercel Business

Client:	Haley & Aldrich, Inc.				
Project:	27 Kimball Rd				
Location:	Amesbury			Project No:	GTX-322317
Boring ID:	---	Sample Type:	Bag	Tested By:	ajl
Sample ID:	HA25-TP5_4.3-4.8	Test Date:	12/15/25	Checked By:	ank
Depth :	4.3-4.8	Test Id:	847389		
Test Comment:	---				
Visual Description:	Moist, yellowish brown silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	18.1	39.6	42.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
2 in	50.00	100		
1.5 in	37.50	88		
1 in	25.00	88		
0.75 in	19.00	88		
0.5 in	12.50	85		
0.375 in	9.50	85		
#4	4.75	82		
#10	2.00	79		
#20	0.85	74		
#40	0.42	69		
#60	0.25	63		
#100	0.15	55		
#140	0.11	48		
#200	0.075	42		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0321	29		
---	0.0214	20		
---	0.0127	15		
---	0.0091	11		
---	0.0065	9		
---	0.0047	7		
---	0.0033	5		
---	0.0011	3		

Coefficients

D_{85} = 10.2275 mm D_{30} = 0.0346 mm
D_{60} = 0.2071 mm D_{15} = 0.0131 mm
D_{50} = 0.1164 mm D_{10} = 0.0075 mm
C_u = 27.613 C_c = 0.771

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

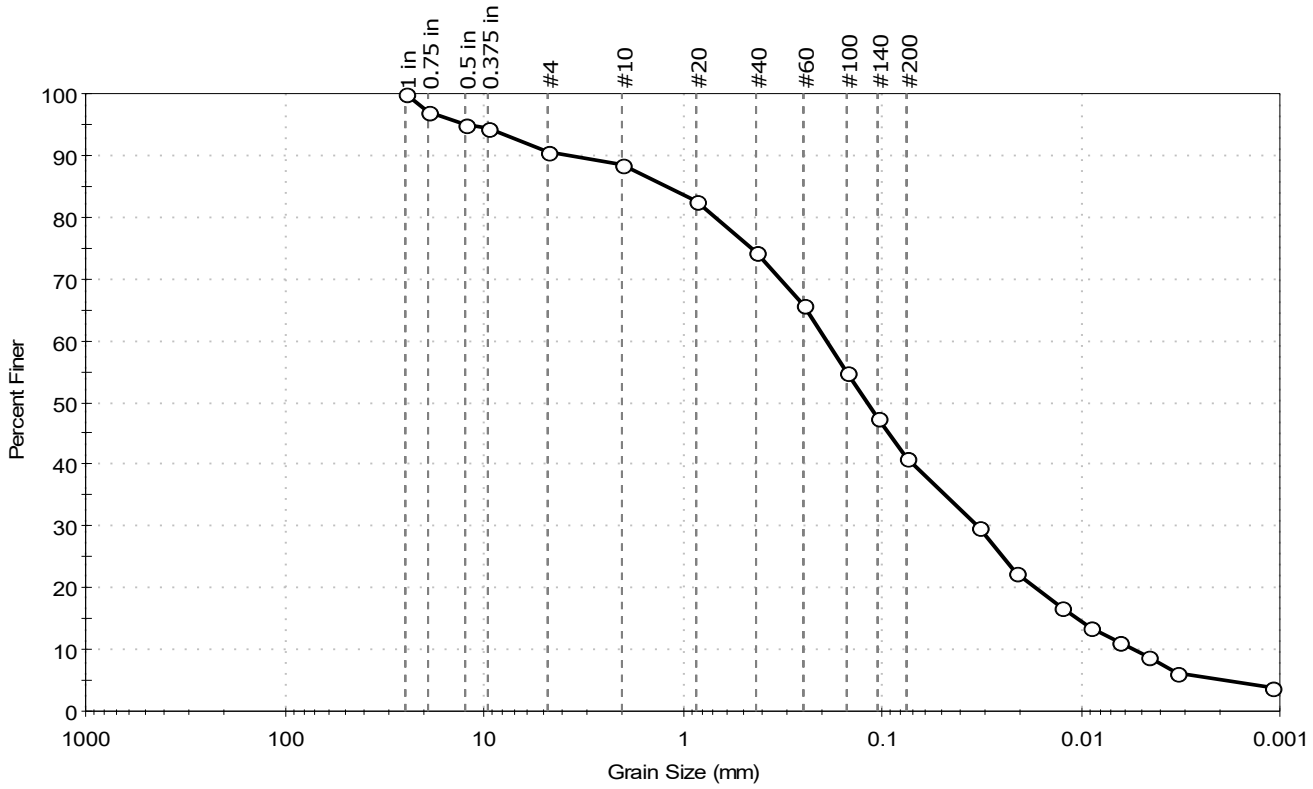
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

GeoTesting EXPRESS
A Sercel Business

Client:	Haley & Aldrich, Inc.				
Project:	27 Kimball Rd				
Location:	Amesbury			Project No:	GTX-322317
Boring ID:	---	Sample Type:	Bag	Tested By:	ajl
Sample ID:	HA25-TP6_3.0-8.0	Test Date:	12/15/25	Checked By:	ank
Depth :	3-8	Test Id:	847388		
Test Comment:	---				
Visual Description:	Moist, yellowish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	9.4	49.6	41.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	97		
0.5 in	12.50	95		
0.375 in	9.50	94		
#4	4.75	91		
#10	2.00	89		
#20	0.85	83		
#40	0.42	74		
#60	0.25	66		
#100	0.15	55		
#140	0.11	47		
#200	0.075	41		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0328	30		
---	0.0215	22		
---	0.0127	17		
---	0.0091	14		
---	0.0065	11		
---	0.0046	9		
---	0.0033	6		
---	0.0011	4		

Coefficients

D_{85} = 1.2077 mm	D_{30} = 0.0331 mm
D_{60} = 0.1902 mm	D_{15} = 0.0104 mm
D_{50} = 0.1193 mm	D_{10} = 0.0055 mm
C_u = 34.582	C_c = 1.047

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

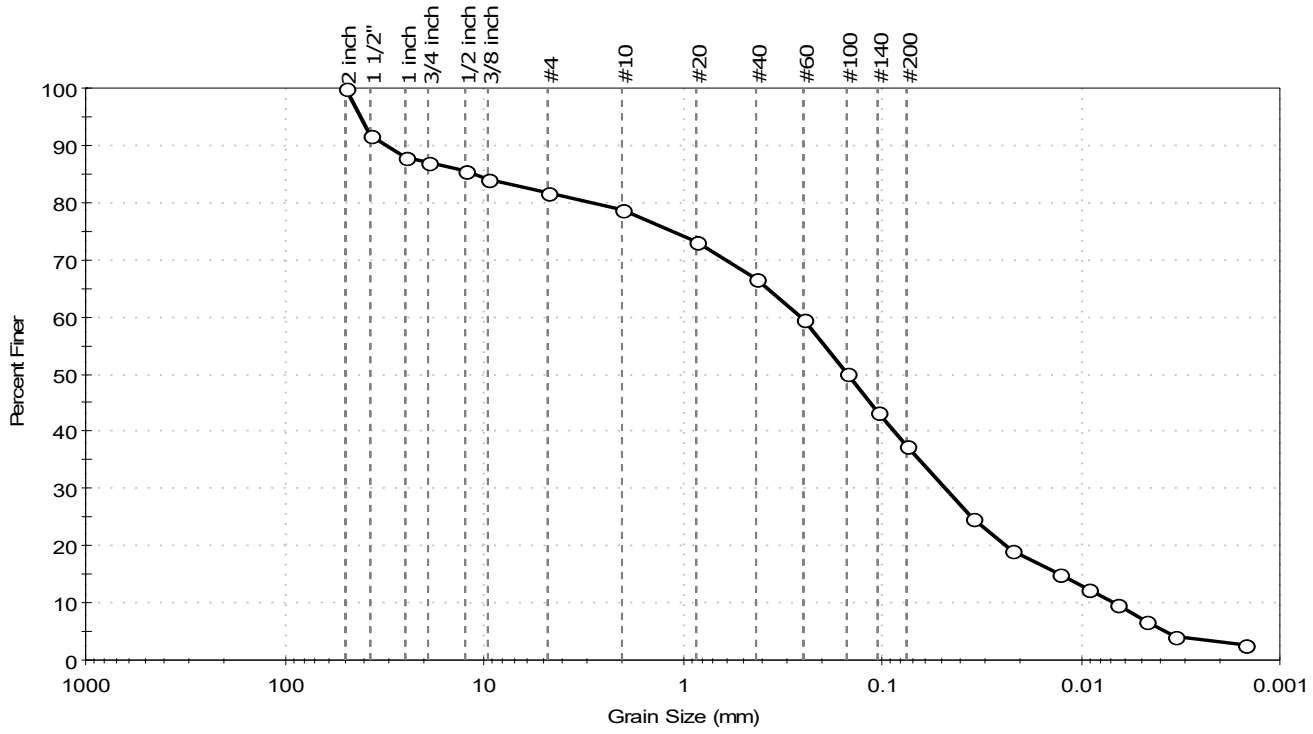
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	Haley & Aldrich, Inc.				
Project:	27 Kimball Rd				
Location:	Amesbury			Project No:	GTX-322317
Boring ID:	---	Sample Type:	Bag	Tested By:	ajl
Sample ID:	HA25-TP7_3.0-7.0	Test Date:	12/16/25	Checked By:	ank
Depth :	3-7	Test Id:	847387		
Test Comment:	---				
Visual Description:	Moist, yellowish brown silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	18.2	44.3	37.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
2 inch	50.00	100		
1 1/2"	37.50	92		
1 inch	25.00	88		
3/4 inch	19.00	87		
1/2 inch	12.50	85		
3/8 inch	9.50	84		
#4	4.75	82		
#10	2.00	79		
#20	0.85	73		
#40	0.42	67		
#60	0.25	60		
#100	0.15	50		
#140	0.11	43		
#200	0.075	37		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0351	25		
---	0.0221	19		
---	0.0130	15		
---	0.0093	12		
---	0.0066	10		
---	0.0047	7		
---	0.0034	4		
---	0.0015	3		

Coefficients

D_{85} = 11.3583 mm	D_{30} = 0.0480 mm
D_{60} = 0.2587 mm	D_{15} = 0.0128 mm
D_{50} = 0.1497 mm	D_{10} = 0.0069 mm
C_u = 37.493	C_c = 1.291

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

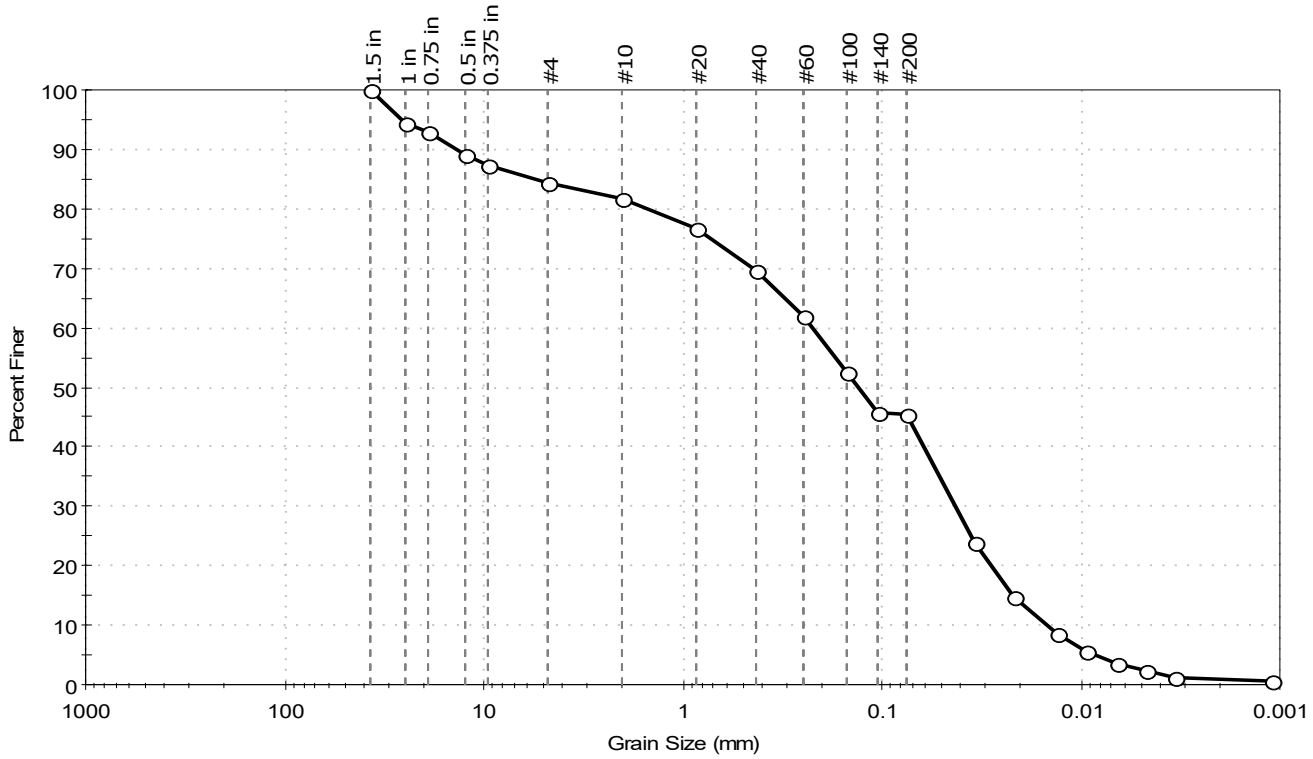
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	Haley & Aldrich, Inc.				
Project:	27 Kimball Rd				
Location:	Amesbury			Project No:	GTX-322317
Boring ID:	---	Sample Type:	Bag	Tested By:	ajl
Sample ID:	HA25-TP8_5.5-6.0	Test Date:	12/15/25	Checked By:	ank
Depth :	5.5-6	Test Id:	847386		
Test Comment:	---				
Visual Description:	Moist, yellowish brown silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	15.5	39.1	45.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	95		
0.75 in	19.00	93		
0.5 in	12.50	89		
0.375 in	9.50	87		
#4	4.75	84		
#10	2.00	82		
#20	0.85	77		
#40	0.42	70		
#60	0.25	62		
#100	0.15	52		
#140	0.11	46		
#200	0.075	45		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0339	24		
---	0.0220	15		
---	0.0131	9		
---	0.0094	6		
---	0.0067	3		
---	0.0048	2		
---	0.0034	1		
---	0.0011	1		

Coefficients

D_{85} = 5.3595 mm
D_{30} = 0.0424 mm
D_{60} = 0.2239 mm
D_{15} = 0.0221 mm
D_{50} = 0.1321 mm
D_{10} = 0.0148 mm
C_u = 15.128
C_c = 0.543

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

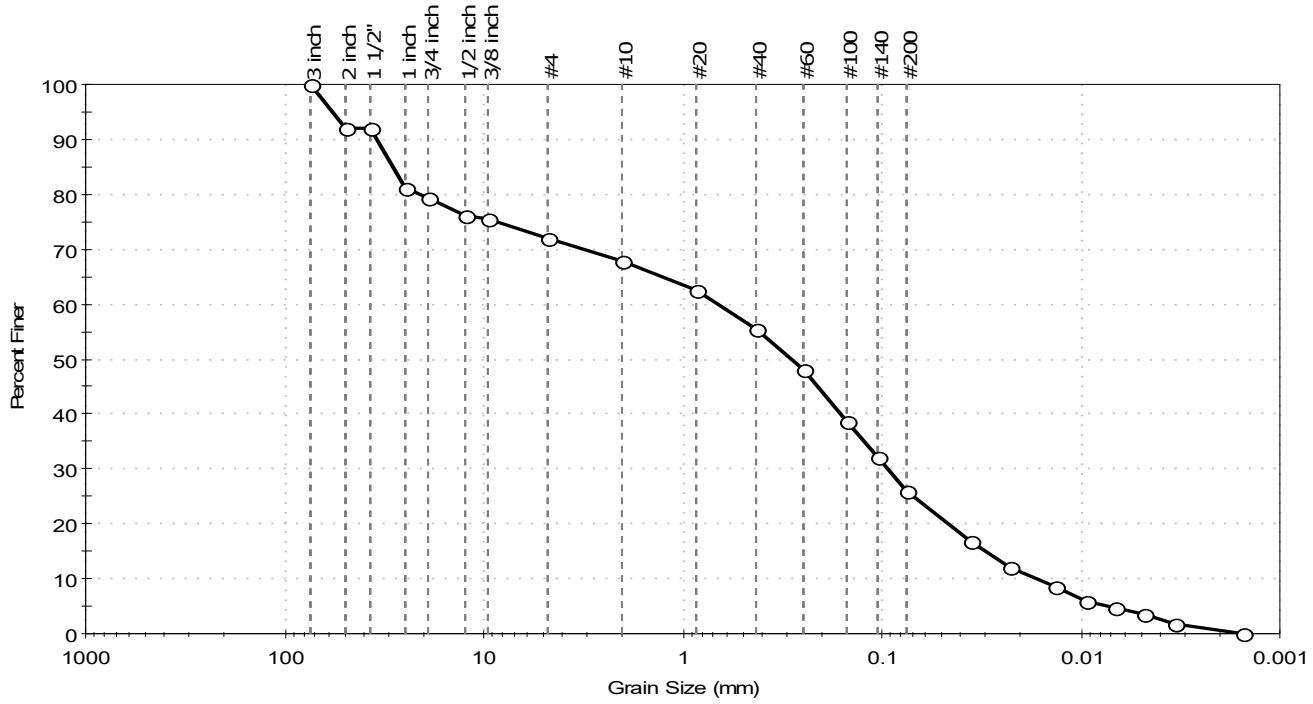
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

GeoTesting EXPRESS
A Sercel Business

Client:	Haley & Aldrich, Inc.				
Project:	27 Kimball Rd				
Location:	Amesbury			Project No:	GTX-322317
Boring ID:	---	Sample Type:	Bag	Tested By:	ajl
Sample ID:	HA25-TP9_4.0-5.0	Test Date:	12/16/25	Checked By:	ank
Depth :	4-5	Test Id:	847385		
Test Comment:	---				
Visual Description:	Moist, yellowish brown silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	28.1	45.9	26.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3 inch	75.00	100		
2 inch	50.00	92		
1 1/2"	37.50	92		
1 inch	25.00	81		
3/4 inch	19.00	79		
1/2 inch	12.50	76		
3/8 inch	9.50	76		
#4	4.75	72		
#10	2.00	68		
#20	0.85	62		
#40	0.42	56		
#60	0.25	48		
#100	0.15	39		
#140	0.11	32		
#200	0.075	26		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0360	17		
---	0.0229	12		
---	0.0133	8		
---	0.0095	6		
---	0.0067	5		
---	0.0048	4		
---	0.0034	2		
---	0.0015	0		

Coefficients

D_{85} = 28.8813 mm D_{30} = 0.0935 mm
D_{60} = 0.6672 mm D_{15} = 0.0302 mm
D_{50} = 0.2868 mm D_{10} = 0.0168 mm
C_u = 39.714 C_c = 0.780

Classification

ASTM N/A

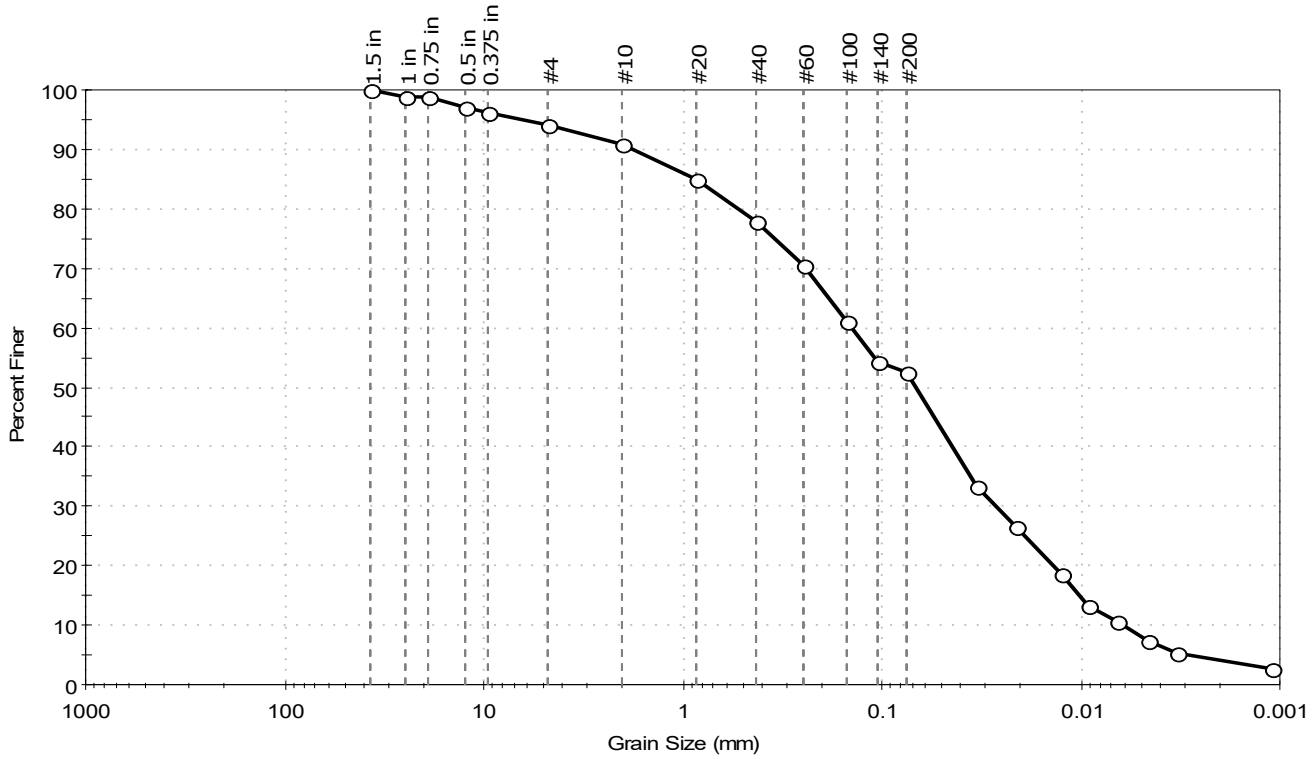
AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

Client:	Haley & Aldrich, Inc.				
Project:	27 Kimball Rd				
Location:	Amesbury			Project No:	GTX-322317
Boring ID:	---	Sample Type:	Bag	Tested By:	ajl
Sample ID:	HA25-TP10_3.0-7.0	Test Date:	12/15/25	Checked By:	ank
Depth :	3-7	Test Id:	847384		
Test Comment:	---				
Visual Description:	Moist, yellowish brown sandy silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	5.9	41.7	52.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	99		
0.75 in	19.00	99		
0.5 in	12.50	97		
0.375 in	9.50	96		
#4	4.75	94		
#10	2.00	91		
#20	0.85	85		
#40	0.42	78		
#60	0.25	71		
#100	0.15	61		
#140	0.11	54		
#200	0.075	52		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0332	33		
---	0.0212	27		
---	0.0126	19		
---	0.0091	13		
---	0.0065	11		
---	0.0047	7		
---	0.0033	5		
---	0.0011	3		

Coefficients

D_{85} = 0.8441 mm
D_{30} = 0.0267 mm
D_{60} = 0.1416 mm
D_{15} = 0.0101 mm
D_{50} = 0.0677 mm
D_{10} = 0.0061 mm
C_u = 23.213
C_c = 0.825

Classification

ASTM N/A

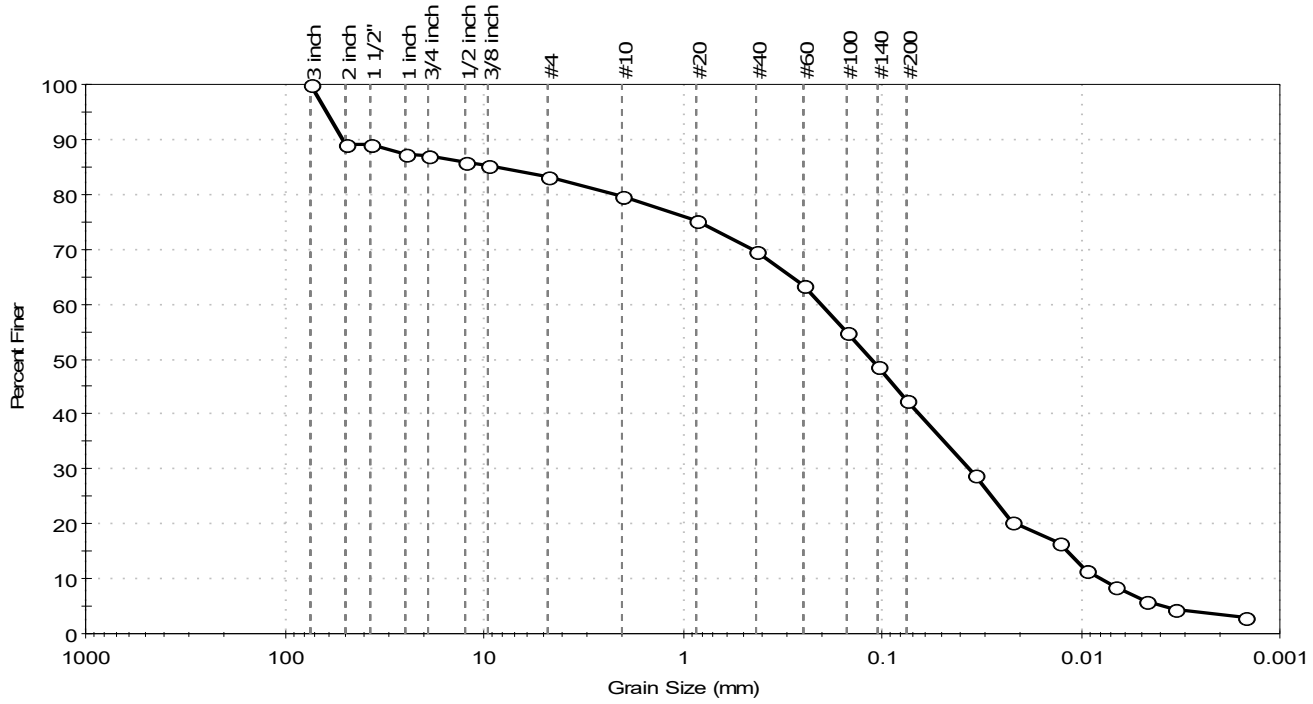
AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

Client:	Haley & Aldrich, Inc.				
Project:	27 Kimball Rd				
Location:	Amesbury			Project No:	GTX-322317
Boring ID:	---	Sample Type:	Bag	Tested By:	ajl
Sample ID:	HA25-TP11_3.0-8.0	Test Date:	12/16/25	Checked By:	ank
Depth :	3-8	Test Id:	847383		
Test Comment:	---				
Visual Description:	Moist, yellowish brown silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	16.9	40.6	42.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3 inch	75.00	100		
2 inch	50.00	89		
1 1/2"	37.50	89		
1 inch	25.00	87		
3/4 inch	19.00	87		
1/2 inch	12.50	86		
3/8 inch	9.50	85		
#4	4.75	83		
#10	2.00	80		
#20	0.85	75		
#40	0.42	70		
#60	0.25	63		
#100	0.15	55		
#140	0.11	49		
#200	0.075	43		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0345	29		
---	0.0223	20		
---	0.0130	17		
---	0.0093	12		
---	0.0067	9		
---	0.0048	6		
---	0.0034	4		
---	0.0015	3		

Coefficients

D_{85} = 8.4388 mm D_{30} = 0.0368 mm
D_{60} = 0.2041 mm D_{15} = 0.0117 mm
D_{50} = 0.1133 mm D_{10} = 0.0078 mm
C_u = 26.167 C_c = 0.851

Classification

ASTM N/A

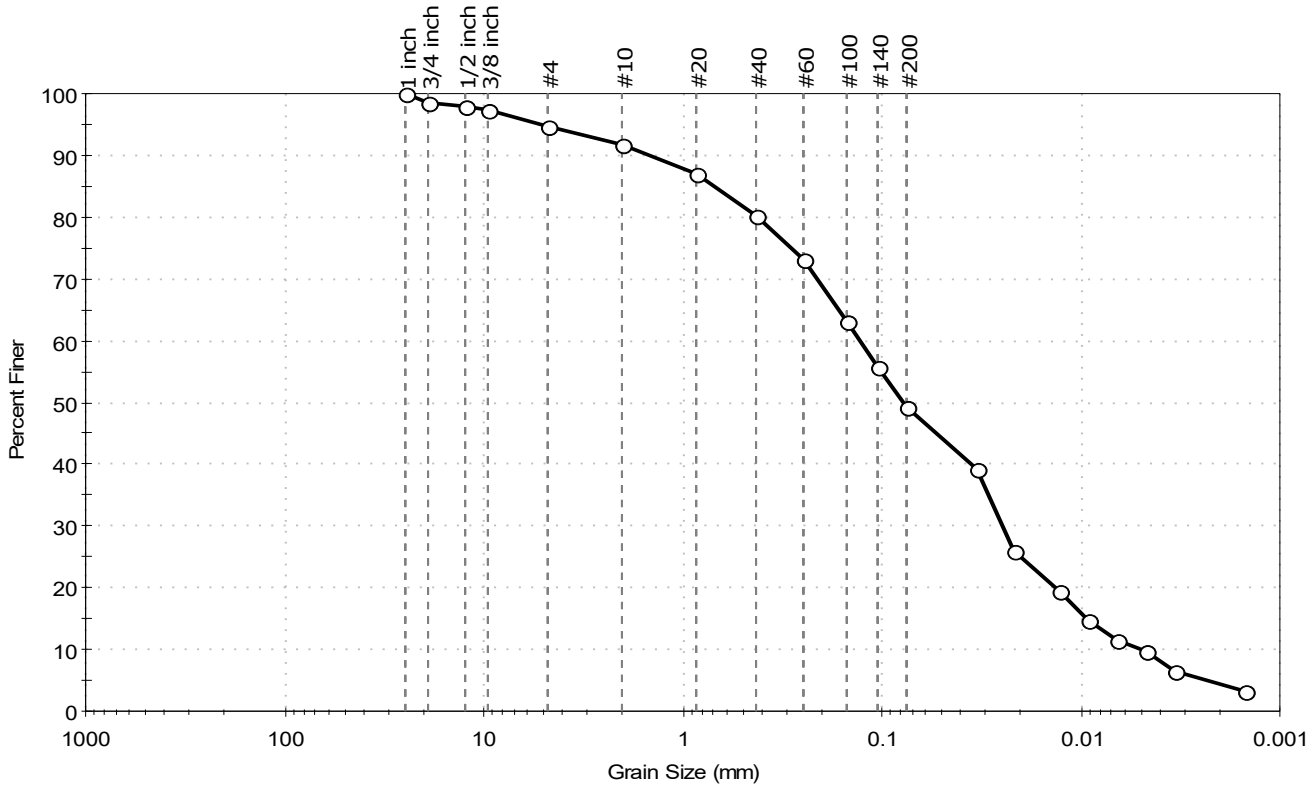
AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

Client:	Haley & Aldrich, Inc.				
Project:	27 Kimball Rd				
Location:	Amesbury			Project No:	GTX-322317
Boring ID:	---	Sample Type:	Bag	Tested By:	ajl
Sample ID:	HA25-TP12_3.0-8.0	Test Date:	12/16/25	Checked By:	ank
Depth :	3-8	Test Id:	847382		
Test Comment:	---				
Visual Description:	Moist, yellowish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	5.3	45.5	49.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 inch	25.00	100		
3/4 inch	19.00	99		
1/2 inch	12.50	98		
3/8 inch	9.50	97		
#4	4.75	95		
#10	2.00	92		
#20	0.85	87		
#40	0.42	80		
#60	0.25	73		
#100	0.15	63		
#140	0.11	56		
#200	0.075	49		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0332	39		
---	0.0218	26		
---	0.0129	20		
---	0.0093	15		
---	0.0066	11		
---	0.0047	10		
---	0.0034	7		
---	0.0015	3		

Coefficients

D_{85} = 0.6966 mm	D_{30} = 0.0248 mm
D_{60} = 0.1299 mm	D_{15} = 0.0095 mm
D_{50} = 0.0783 mm	D_{10} = 0.0049 mm
C_u = 26.510	C_c = 0.966

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

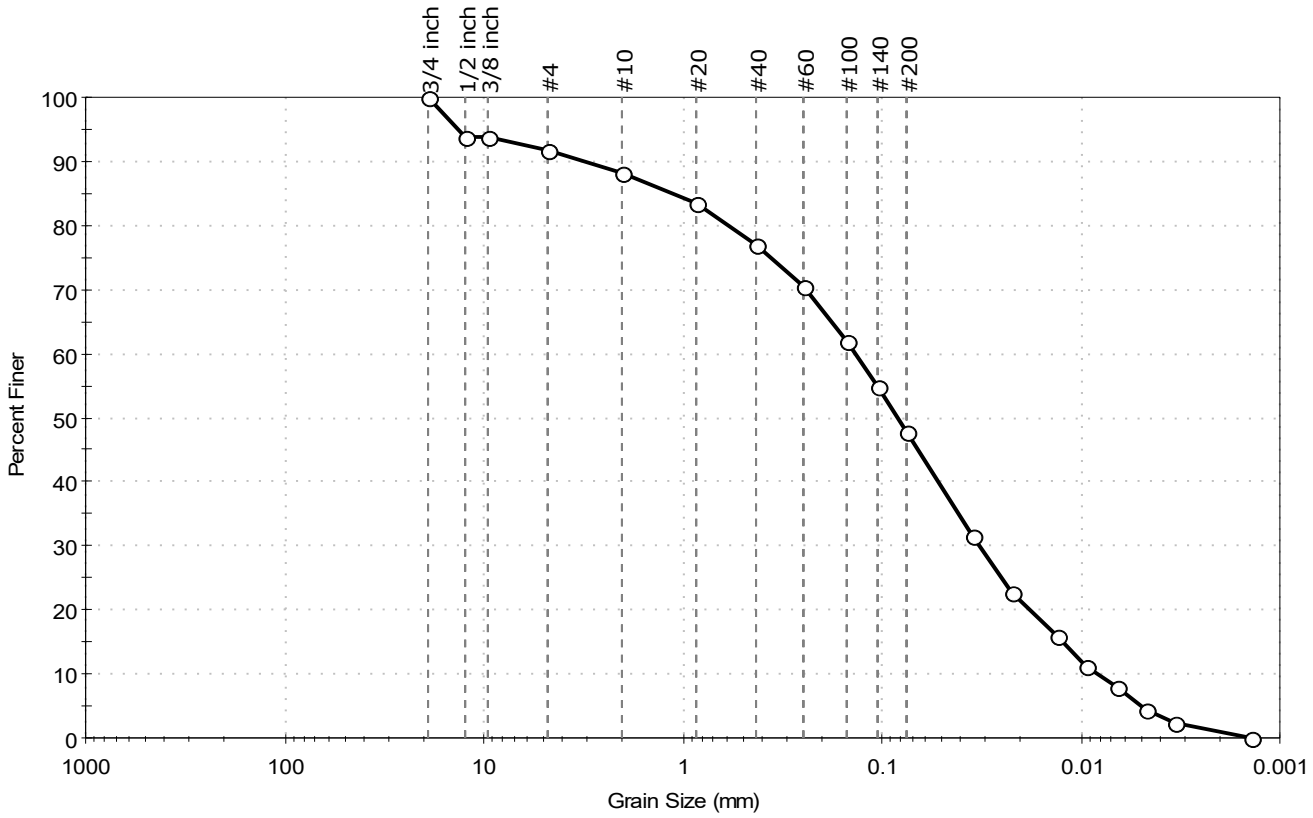
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	Haley & Aldrich, Inc.				
Project:	27 Kimball Rd				
Location:	Amesbury			Project No:	GTX-322317
Boring ID:	---	Sample Type:	Bag	Tested By:	ajl
Sample ID:	HA25-TP13_3.0-6.0	Test Date:	12/12/25	Checked By:	ank
Depth :	3-6	Test Id:	847381		
Test Comment:	---				
Visual Description:	Moist, yellowish brown sandy silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
–	8.1	44.0	47.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/4 inch	19.00	100		
1/2 inch	12.50	94		
3/8 inch	9.50	94		
#4	4.75	92		
#10	2.00	88		
#20	0.85	83		
#40	0.42	77		
#60	0.25	70		
#100	0.15	62		
#140	0.11	55		
#200	0.075	48		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0349	32		
---	0.0224	23		
---	0.0131	16		
---	0.0093	11		
---	0.0066	8		
---	0.0047	5		
---	0.0034	2		
---	0.0014	0		

Coefficients

D_{85} = 1.1312 mm	D_{30} = 0.0322 mm
D_{60} = 0.1367 mm	D_{15} = 0.0123 mm
D_{50} = 0.0831 mm	D_{10} = 0.0082 mm
C_u = 16.671	C_c = 0.925

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

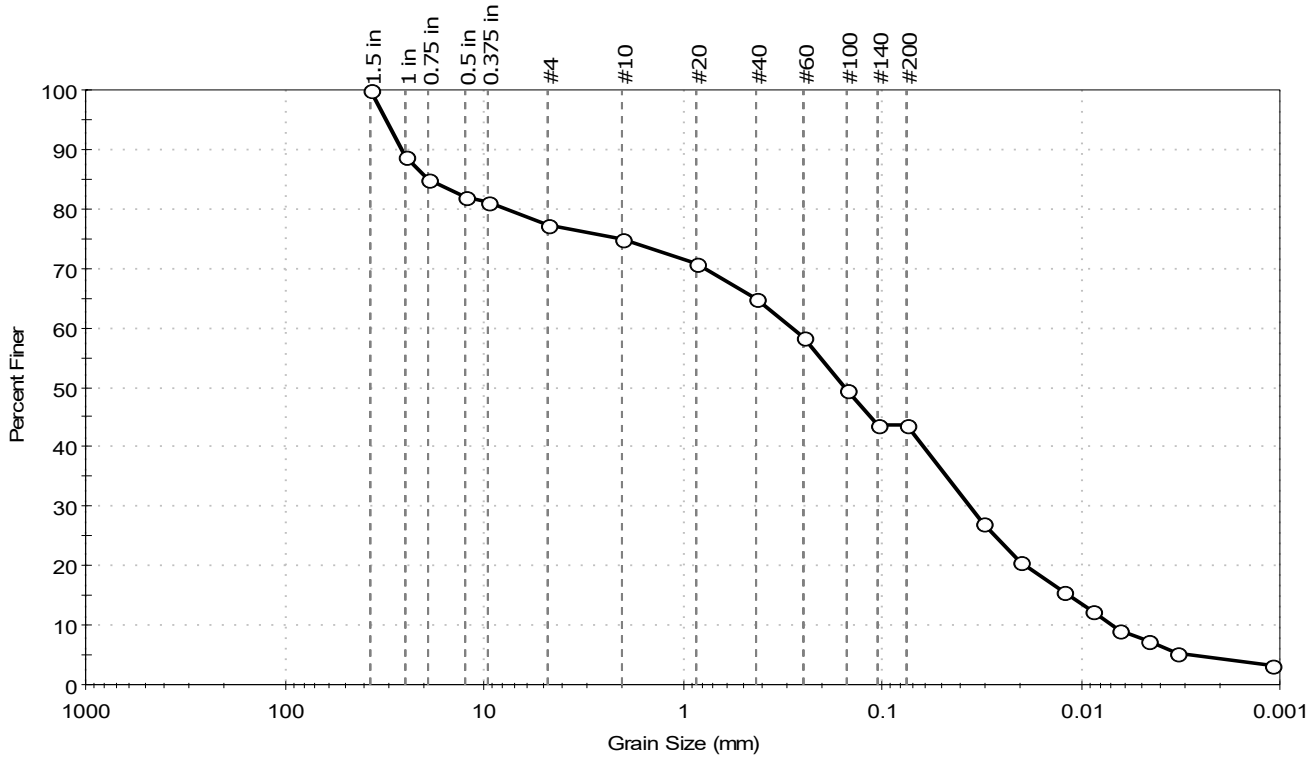
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	Haley & Aldrich, Inc.				
Project:	27 Kimball Rd				
Location:	Amesbury			Project No:	GTX-322317
Boring ID:	---	Sample Type:	Bag	Tested By:	ajl
Sample ID:	HA25-TP14_3.0-6.5	Test Date:	12/15/25	Checked By:	ank
Depth :	3-6.5	Test Id:	847380		
Test Comment:	---				
Visual Description:	Moist, dark yellowish brown silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	22.6	33.7	43.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	89		
0.75 in	19.00	85		
0.5 in	12.50	82		
0.375 in	9.50	81		
#4	4.75	77		
#10	2.00	75		
#20	0.85	71		
#40	0.42	65		
#60	0.25	58		
#100	0.15	50		
#140	0.11	44		
#200	0.075	44		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0310	27		
---	0.0201	21		
---	0.0122	16		
---	0.0088	12		
---	0.0064	9		
---	0.0046	7		
---	0.0033	5		
---	0.0011	3		

Coefficients

D_{85} = 19.1630 mm D_{30} = 0.0362 mm
D_{60} = 0.2829 mm D_{15} = 0.0115 mm
D_{50} = 0.1541 mm D_{10} = 0.0070 mm
C_u = 40.414 C_c = 0.662

Classification

ASTM N/A

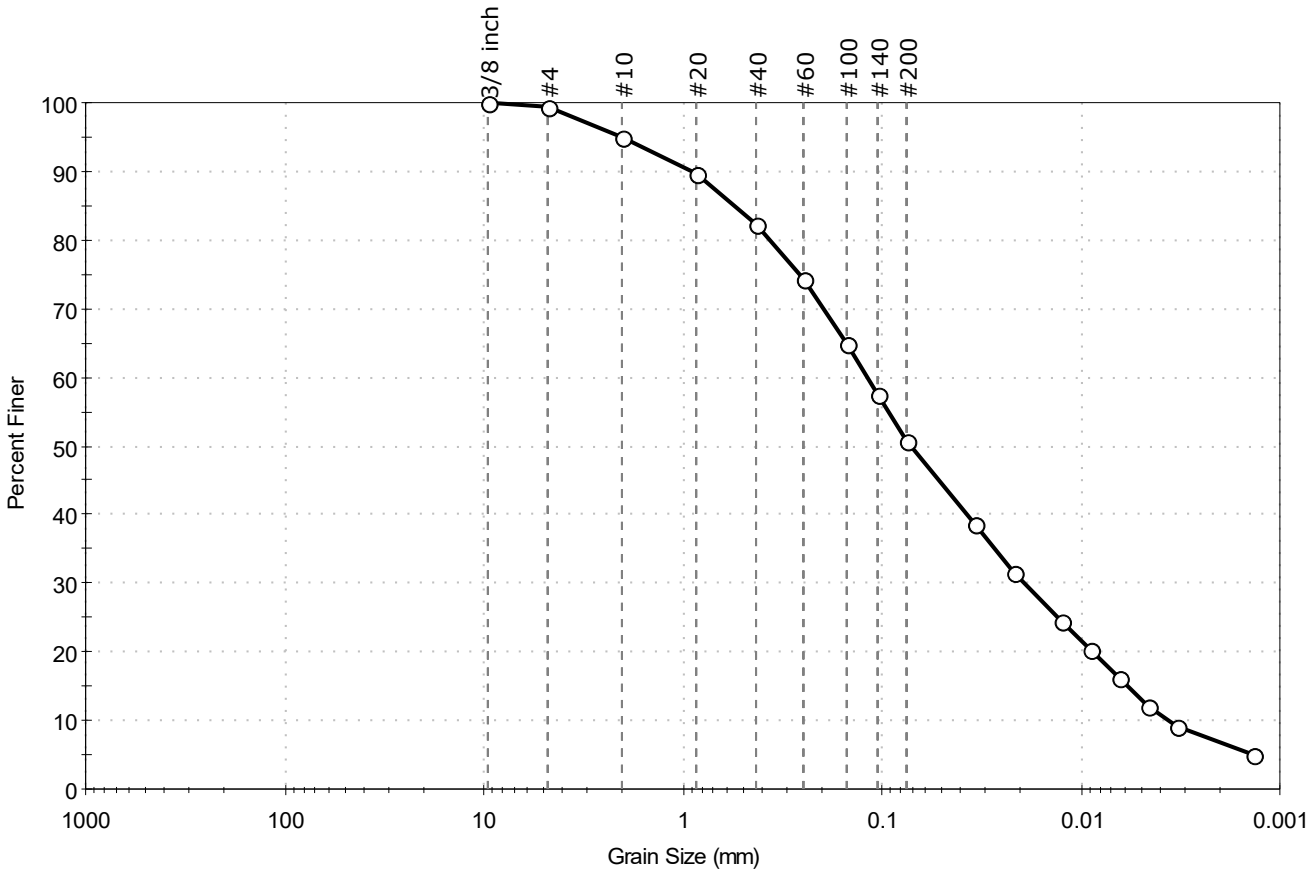
AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

Client:	Haley & Aldrich, Inc.				
Project:	27 Kimball Rd				
Location:	Amesbury			Project No:	GTX-322317
Boring ID:	---	Sample Type:	Bag	Tested By:	ajl
Sample ID:	HA25-TP15_3.0-8.0	Test Date:	12/12/25	Checked By:	ank
Depth :	3-8	Test Id:	847379		
Test Comment:	---				
Visual Description:	Moist, yellowish brown sandy silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.6	48.5	50.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/8 inch	9.50	100		
#4	4.75	99		
#10	2.00	95		
#20	0.85	90		
#40	0.42	82		
#60	0.25	74		
#100	0.15	65		
#140	0.11	58		
#200	0.075	51		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0341	39		
---	0.0215	32		
---	0.0127	24		
---	0.0091	20		
---	0.0065	16		
---	0.0046	12		
---	0.0033	9		
---	0.0014	5		

Coefficients

D_{85} =0.5450 mm	D_{30} =0.0192 mm
D_{60} =0.1188 mm	D_{15} =0.0058 mm
D_{50} =0.0710 mm	D_{10} =0.0036 mm
C_u =33.000	C_c =0.862

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve