TOWN OF WELLESLEY MASSACHUSETTS

ZONING BOARD OF APPEALS
888 WORCESTER STREET • SUITE 160 • WELLESLEY, MA 02482

LENORE R. MAHONEY
Executive Secretary
Telephone
(781) 431-1019 Ext. 2208

ZBA 2025-65

Date: October 3, 2025

Petition for:	Residential Fee	Commercial & Municipal Fee
Variance	$200	
Special Permit	$200	$500
Special Permit/Findings	$200	
Special Permit Renewals	$150	
Signs		$300
Site Plan Approval without PSI	✓	$2,000 & Fire Department Consulting Fee
Site Plan Approval with PSI		$3,500
Appeals	$200	$300
Comprehensive Permit		$750
Publication & Mailing Fees/All Petitions	$25	$25
Petitioner assumes all costs for Peer Review		

RECEIVED
TOWN CLERK'S OFFICE
WELLESLEY, MA 02482
2025 OCT 15 AM 9:52

Property Location: 169 Great Plain Avenue, Wellesley, MA 02482 Zoning District: R20

Property located in a:

	Yes	No
Historic District	☐	☑
Wetlands Protection Area	☐	☑
Water Supply Protection District	☐	☑

Prior Zoning Decisions: Special Permit/Finding: N/A Variance: N/A

Applicable Section(s) of the Zoning Bylaw:

Explanation of Request:

Requested Relief: N/A

____	Lot Area	____	Front Yard Depth (Street Setback)
____	Lot Coverage	____	Side Yard Width (Side Line Setback)
____	Frontage	____	Rear Yard Depth (Rear Line Setback)
____	Front Yard Width	____	Other

OWNER OF PROPERTY/PETITIONER: Town of Wellesley

MAILING ADDRESS: 525 Washington St. 02482

PHONE: WORK: (781) 400-6721 HOME:

SIGNATURE OF OWNER:

AGENT FOR PETITIONER (PLEASE PRINT): Socotec AE (Architect) Maria Donovan

MAILING ADDRESS: 75 Hood Park Drive, Suite 300, Charlestown, MA 02129

PHONE: WORK: 617-464-6951 HOME:

EMAIL ADDRESS: maria.donovan@socotec.us

TOWN OF WELLESLEY MASSACHUSETTS

ZONING BOARD OF APPEALS

888 WORCESTER STREET • SUITE 160 • WELLESLEY, MA 02482

Special Permit Granting Authority
Wellesley Town Hall
Wellesley, MA 02482

Date: October 3, 2025

ZBA Number: _____

Pursuant to the provisions of Section _____, subparagraph _____, and Section _____ of the Zoning Bylaw, the undersigned hereby requests Site Plan Approval for the construction of Wellesley DPW-RDF Administration Building

Located at 169 Great Plain Avenue, Wellesley, MA 02482

Within a SR-20 District (s).

The following plans are submitted:

1. Existing Site Features Plan — Plan # 1 of 1A (Title Block Number)
2. Site Development Plan — Plan # C3-01
3. Plot Plan — Plan # 1 of 1B and C1-01
4. Grading & Drainage Plan — Plan # C3-01
5. Utilities Site Plan — Plan # C4-01
6. Landscaping/Parking Plan — Plan # C3-01
7. Architectural Plans — Plan # A1-00 through A3-10
8. Subsurface Conditions Plan — Plan # Geotechnical Report
9. Utilities Detail Plans — Plan # C5-01 through ---
   a. Structure Details — Plan # C5-01
   b. Plumbing Details — Plan # P1-00, P1-01
   c. Electric Details — Plan # E0-02, 8/E0-04

(Eleven full sized copies of each plan, six 11inch by 17 inch copies of each plan, a check in the amount of $0.00 payable to the Town of Wellesley, and a check in the amount of $0.00 payable to the Town of Wellesley Fire Department (for Site Plan Approval without PSI).

OWNER OF RECORD: Town of Wellesley
ADDRESS: 525 Washington St. 02482
TELEPHONE NUMBER: (781) 400-6721

PETITIONER: (If not Owner, relationship to owner) Socotec AE (Architect)

ADDRESS: 75 Hood Park Drive, Suite 300, Charlestown, MA 02129
TELEPHONE NUMBER: 617-464-6951

PROJECT CONTACT PERSON: Maria Fernandez-Donovan AIA
ADDRESS: 75 Hood Park Drive, Suite 300, Charlestown, MA
TELEPHONE NUMBER: 617-464-6951 FAX NUMBER: ----
EMAIL ADDRESS: Maria.Donovan@socotec.us

TOWN OF WELLESLEY

ZONING BOARD OF APPEALS

SITE PLAN APPROVAL REVIEW
PLANS AND SUBMITTAL CHECKLIST

Plans and submittals for site plan approval review are submitted to the Department of Public Works for its review and approval on behalf of the Zoning Board of Appeals shall contain the items listed in this checklist. Electric plans will be reviewed by representatives of the Wellesley Municipal Light Plant.

PLANS	CHECK
1. EXISTING SITE FEATURES PLAN	
a) Location, type, size or dimension of existing trees and rock masses	✓
b) Surface drainage and topography with one foot contours	✓
c) Property lines, zoning districts, adjacent roadways, historical or archeological features	✓
d) Rights of way and easements (temporary and permanent)	✓
e) Wetlands and floodplains	✓
f) Adjacent public, footpaths, trails and other natural or man-made features such as walls and fences	✓
g) Plan to be Scale 1" = 40' or larger	✓
h) Plan must be stamped, dated and signed by a Registered Land Surveyor in the Commonwealth of Massachusetts	✓
2. SITE PLAN DEVELOPMENT	
a) Building locations, finish floor elevations at basement and first floor	✓
b) Grading detail for entire site with existing and proposed contours	✓
c) Existing and proposed curb cuts, design as per Town Policy by Board of Selectmen dated 5/15/73	✓
d) Property lines and easement lines	✓
e) All elevations on the Town of Wellesley datum base	✓
f) North directional arrows shall be provided and point due north	✓
g) Plan must be stamped, dated and signed by a Registered Architect, Registered Land Surveyor or Professional Engineer in the Commonwealth of Massachusetts	✓
3. PLOT PLAN	
a) Existing buildings and structures	✓
b) Proposed structure(s) including all dimensions and distances from front, rear and side property lines	✓
c) Area of lot or lots included in the project	✓
d) Zoning district lines and portion of lot in different zoning district (if applicable)	✓
e) Names of all abutters as they appear on the most recent tax list	✓
f) The location of all permanent survey monuments	✓
g) Not less than 3 permanent benchmarks, preferably triangulated, shall be shown	✓
h) Plan must be stamped, dated and signed by a Registered Land Surveyor in the Commonwealth of Massachusetts	✓

4. GRADING AND DRAINAGE PLAN

a)	Existing and proposed contours in one foot intervals of elevation	✓
b)	Location of existing and proposed storm drainage structures	✓
c)	Profile showing proposed utilities in relation to the ground surface	✓
d)	Erosion control measures such as haybales and siltation fencing	✓
e)	Plan must be stamped, dated and signed by a Registered Professional Engineer in the Commonwealth of Massachusetts	✓

5. UTILITIES SITE PLAN

a)	Building location and elevations	✓
b)	Existing utilities on project site and in abutting street	✓
c)	Location, depth, size, (slope where applicable) and material of:	✓
	• Water service and hydrants	✓
	• Gas service	✓
	• Sanitary sewer connection (pipe to be SRD-35 PVC, green)	✓
	• Storm drain installations	✓
	• Electric service	✓
	• Fire alarm connection	✓
	• Telephone service	By Tel. Co.
d)	Number utility structures such as manholes and catch basins for identification purposes	✓
e)	Detail specifications for installation of all utilities including street pavement restoration as per current DPW standards	✓
f)	Flow direction arrows on drain and sewer lines	✓
g)	Plan must be stamped, dated and signed by a Registered Professional Engineer in the Commonwealth of Massachusetts	✓

6. LANDSCAPING/PARKING PLAN

a)	Proposed landscaping of property	✓
b)	Size, type and location of proposed plant materials with botanical names	✓
c)	Consider the impact for plantings at their maturity size as relates to sight distances	✓
d)	Landscaping plan shall be coordinated with the grading plan	✓
e)	Tree planting and shrub planting details	By DPW
f)	Hardscape details such as walkways and patios	✓
g)	See attached listing of undesirable plants as prepared by the Town Horticulturalist	✓
h)	Plan must be stamped, dated and signed by a Registered Landscape Architect in the Commonwealth of Massachusetts	By DPW
i)	No bushes or trees of any kind shall be planted within 10 feet in any direction of a Fire Department connection or a Master Fire Alarm box. Connections include hydrants, standpipes and sprinkler feeds on the outside of buildings.	✓
j)	Parking lot plans shall include dimensions of parking spaces, maneuvering aisles, islands, turning radii, percentage of landscaped open space, percentage of interior landscaping, appropriate number of handicapped parking spaces, and directional flow arrows. All parking spaces shall be numbered	✓ By DPW

7. ARCHITECTURAL PLANS — A1-00 - A3-10, August 27, 2025

a) Proposed floor plans ✓
b) Elevations of all sides of all buildings ✓
c) Sections identifying type and exterior finish of proposed buildings ✓
d) Plan must be stamped, dated and signed by a Registered Architect in the Commonwealth of Massachusetts ✓

8. SUBSURFACE CONDITIONS PLAN — Geotechnical Report, May 27, 2025

a) Boring location with boring numbers ✓
b) Boring logs ✓
c) Ledge encountered and depth ✓
d) Water encountered and depth ✓
e) Percolation test info (if applicable) N/A

9. UTILITIES DETAIL PLAN

a) Structure details ✓
- Sanitary sewer manholes ✓
- Drain manholes, detention structures, etc. ✓
- Catch basins (gas and oil separators required at parking lots) ✓
- Outside grease trap if restaurant is proposed N/A

b) Plumbing details ✓
- Water service size and entrance location ✓
- Water meter size, location and piping detail ✓
- Size and location of water service backflow protection devices (if applicable) ✓
- Sanitary sewer size and entrance location with elevations ✓
- Size and location of sanitary sewer check valves (if applicable) N/A
- Oil/water separators and MDC gas traps (if applicable) N/A
- Pumping equipment (if applicable) N/A

c) Electrical Details ✓
- Location service entrance ✓
- Size of Service ✓
- Meter location and switchgear arrangement ✓
- Provision for future expansion N/A
- Transformer size and facilities for pad or vault room ✓ EXISTING
- Data including load requirements ✓

GENERAL PLAN COMMENTS

a)	All plans must be stamped, signed and dated by a Registered Professional Engineer, or Architect in the Commonwealth of Massachusetts responsible for the particular plan's contents	✓
b)	Title Blocks shall provide the name of project, job site location, architects and engineer responsible for plan contents, date and plan scale	✓
c)	All plans must be numbered and titled	✓
d)	All dates of revisions shall be included	✓
e)	Provide retaining wall design details	N/A
f)	Provide locus plan drawn at a scale of 1" = 500' showing the relation of the project to adjoining properties within a radius of ¼ mile	✓
g)	The cover sheet shall provide the names, mailing addresses and phone numbers of the land owner, building owner, architects and engineers and project contact person, and Table of Contents	✓
h)	Location of all mechanical systems must be shown	✓

SUBMITTALS

a)	Drain calculations showing capacities of the existing and proposed drain systems	N/A
b)	Runoff calculations for the 10, 25 and 100 year storm event for storm drains, leaching basins or holding areas	✓
c)	Post development rate of peak runoff less than pre-development rate of peak runoff	✓
d)	Information showing that the DEP Stormwater Management Standards will be met	✓
e)	Operation and maintenance plan for drainage system	Town of Wellesley
f)	Evaluation of existing municipal systems capacities	Town of Wellesley
g)	Quantification and documentation of infiltration/inflow reduction measures	No Change
h)	Quantification and documentation of water conservation measures	✓
i)	Written statement from a Registered Professional Engineer in the Commonwealth of Massachusetts regarding the adequacy of the water flow for the fire protection system	N/A
j)	Construction area to be fenced	✓ C4-01
k)	Traffic Management Plan during construction period	No Change
l)	Area of construction worker and equipment parking	✓ C4-01
m)	Materials staging area	✓ C4-01

TOWN OF WELLESLEY MASSACHUSETTS

ZONING BOARD OF APPEALS

888 WORCESTER STREET • SUITE 160 • WELLESLEY, MA 02482

OFFICIAL DEVELOPMENT PROSPECTUS

Applicable to Major Construction Projects
Submitted Under Section 16A of the Zoning Bylaw
And Comprehensive Permit Projects Submitted Under Chapter 40B

Date: October 3, 2025

Year/Number: 2025

I. IDENTIFICATION

Petitioner: Socotec AE (Architect), Maria Fernandez-Donovan AIA

Address: 75 Hood Park Drive, Suite 300, Charlestown, MA 02129

Telephone: 617-464-6951

Land Owner of Record: Town of Wellesley

Location of Property: 169 Great Pain Ave, Wellesley, MA

Proposed Use of Property: Existing Recycling & Disposal Facility Administration Building

Zoning Districts: (Including all overlay districts) SR-20

Are any other special permits or variances, other than Site Plan Approval required for this project? Yes _____ No ✓

If yes, what is required? _____

II. DESCRIPTION

Describe in detail the plan to be executed under the appropriate categories below

1. Land Area: Lot: 76.09 Acres

2. Square footage of proposed construction footprint: 3,350 SF

3. Square footage of existing building footprint: 1,200 SF +500 SF = 1,700 SF
(demo) (remain) (total existing)

4. Square footage of total structure footprint: 3,350 SF + 500 SF = 3,850 SF
(proposed) (remain) (total)

5. Total floor area of existing building: 1,075 SF + 466 SF = 1,541 SF
(demo) (remain) (total existing)

6. Total floor area of proposed construction: 2,887 SF

7. Total floor area after proposed construction completed: 3,353 SF

8. Floor area ratio: (Commercial) 2,887 SF + 466 SF =3,353 SF
(Proposed) (remain) (total)

9. Number of Buildings: 1

10. Number of Stories of each Building: 1

11. Height of each Building: 19'1" Proposed / 16'-0" Existing

12. Number of Parking Spaces: (Existing/Proposed)

Standard 0 / 0 Compact 0 / 0 Handicapped 1 / 1

Covered 0 / 0 Open 5 / 7 EV Charging 0 / 2

Total (Existing and proposed) 6 / 10

Total Number Required 6

13. Number of handicapped sidewalk curb cuts provided: 1

14. Lot coverage in square feet (%)

	Before	After
1) Buildings	(1.1%)	(1.2%)
2) Drives & Parking	(10%)	(10.1%)
3) Other uses (identify uses and coverage)	(0)	(0)

15. Open Space

1) Landscaped area	(2%)	(2%)
2) Natural (i.e. woods, fields)	(88%)	(88%)
3) Recreational	(0)	(0)

A. Residential Construction

1. Number of Dwelling Units
   Efficiency 0 One Bedroom 0 Two Bedroom 0
   Three Bedroom 0 Other 0

2. How many units will be provided with handicapped access to bathrooms, toilets, entrances, egresses, etc.? _____

3. Density in square feet of land per dwelling unit.
   Existing _____ Proposed _____

4. Density in square feet of land per person:
   Existing _____ Proposed _____

III. TRAFFIC IMPACT ANALYSIS AND DATA
(Explain basis for data entered)

If, as a result of the proposed construction, the following conditions will exist, Questions 1-5 must be answered:

a. If the floor area of the building exceeds 10,000 sf; or NO

b. If 50 or more vehicle trips will be generated by the completed project in any single hour of the day. NO

1. Projected traffic generation of proposed new development:

a. Peak Day	In	Out	Total
24-Hour	_____	_____	_____
Am Peak Hour	_____	_____	_____
PM Peak Hour	_____	_____	_____

b. Typical or Average Day

24-Hour	_____	_____	_____
Am Peak Hour	_____	_____	_____
PM Peak Hour	_____	_____	_____

2. Current two-way traffic flows on frontage street(s):

	24 Hour	AM Peak Hour	PM Peak Hour
Street _____	_____	_____	_____
Street _____	_____	_____	_____

3. Data compiled by: _____

4. Date of data compilation: _____

5. Comment on adequacy of drive entrances & exits with respect to sight distance and other traffic operations considerations on frontage street(s)

Locations through which 30 or more vehicles approach from a single direc in any single hour of the day.
(List intersections and operational problems):

List possible hazardous pedestrian and bicycle crossings:

6. Has a separate Traffic Study been submitted? Yes_____ No__X___

IV. PUBLIC UTILITIES - (Quantitative, state basis for data entered)

A. Estimated water consumption ____253____gal/day

B. Number of Fire Hydrants - existing within 200 ft ____1____ Proposed____1____

C. Estimated discharge to sewer system _____253____gal/day

D. Sewer Disposal - will any proposed on-site individual sewage disposal systems be designed to receive more than 110 gallons of sewage per quarter acre per day? Yes_____ No__X__

E. Refuse disposal _____15_____lbs. or tons/day

1. Proposed method of handlinc By RDF/DPW

2. What provisions will be made to facilitate the recycling of solid waste? By RDF/DPW

F. Service Voltage ____277/480V____Service Amperage ___175 A_____

1. Estimated peak electrical consumption ____90____kw

a. Heating Season ____35____kw b. Cooling Season ____23____kw

2. Estimated annual electric energy consumption ____TBD____kw

3. Three Phase Service ____X_____ Single Phase Service _____

G. Are energy efficient appliances to be used? ____YES____

H. What R-Factors will be used in insulation and glazing for walls and ceilings? Roof: R-30
Walls: R-20 insulation in studs plus R-15 rigid insulation outside of studs
Windows: U factor 0.14

I. What energy source will be used for heating water?
Electric____X____ Gas_____ Fuel Oil_____ Other_____

J. Will electric resistance heating or heat pumps be used? Yes__X__ No____

K. Will the facility include an emergency electric generator?

Yes____No__X__

If YES, would you be willing to run it to reduce your peak load?

Yes____No____

V. FIRE PROTECTION

A. *Fire flow presently available at site N/A

B. *Total floor area of building (Largest single building if more than one building) 3,350 SF

C. Type of Building Construction 5B - Non sprinklered

D. *Required fire flow for building (Maximum required for a single building if more than one building) 0

E. *If required fire flow (D) exceeds available fire flow (A), describe plans to provide required fire flow (D)

N/A

F. Describe access for fire apparatus to building (s)

Access available all around the building

*Written statement indicating these figures signed by a registered professional engineer must accompany submittal.

VI. ENVIRONMENTAL IMPACT

A. What percentage of the property is Wetlands 78%
Floodplains 63%

Will either be altered as a result of the project? NO

B. Will the proposed development contribute in any way to pollution of groundwater, surface water, or waterway: Yes____No__X__

Oil____ Salt____ Chemicals____ Other____

Explain

Describe proposed measures to eliminate or minimize such pollution:

C. Does the proposed development involve storage of any of the following materials above or below the ground? NO

_____ deicing chemicals or other related materials
_____ commercial fertilizers and other related materials
_____ hazardous materials
_____ liquid petroleum products

If YES to any of the above, list specific materials to be stored:

D. Impact on surface drainage

1a. Current rate of peak runoff By DPW cubic ft/second
b. Current volume of runoff By DPW cubic feet or acre-feet

2a. Post-development rate of peak runoff By DPW cfs
b. Post-development volume of runoff By DPW cubic feet or acre-feet

(Design storm and rainfall intensity should be cited for #1 & #2)

3. Describe measures to eliminate or minimize any increase in rate of runoff Runoff rate has not increased on site because the impervious/pervious ratio has not changed or has been improved.

4. Might the project result in significant changes in existing drainage patterns? Will any abutting or other property be adversely affected by the changes?

Existing drainage pattern is minimally improved.
No other property is adversely affected by the changes.

E. Does the proposed structure include installation of floor drains?
Yes____ No____ If YES, how many? ____

F. Will the project affect the condition, use, or access to any existing public open space or recreation area? If so, how?

NO

G. Does the proposed development involve outside lighting? Yes X No____
if YES, state height of lighting fixtures 9'

Will the outside lighting shine directly on abutting premises?
Yes____No X

If YES, explain

Describe proposed steps to minimize this impact _____

H. Might any site or structure of historic or archeological significance be affected? Yes____No X

Describe _____

I. Will the project require the removal of any street trees protected under M.G.L. Ch. 87? Yes____No X
If YES, how many?_____

J. Will the project involve blasting or pile driving? Yes____No X

1. What is the approximate volume of the material to be removed?

15,000 SF

Where will this material be disposed? TBD

K. Is an Environmental Notification Form required to be filed under M.G.L. Ch. 30, Section 61-62H, the Mass. Environmental Policy Act?
Yes____No X

VII. IMPACT OF WATER SUPPLY

A. Will the project result in an increase of 10,000 square feet or more of impervious area within a Water Supply Protection District defined by Section XIVE of the Zoning Bylaw? Yes____No X

If so, does it satisfy the design and operation standards of Section XIVE? Yes____No____

B. Will the project result in finished exterior grades lower than the existing grade and less than 5 feet of soil overburden above the maximum ground water elevation within a Water Supply Protection District? Yes____No X

C. Will catch basins be installed? Yes_X_No____
If so, how many? _____1_____

Do catch basins presently exist? Yes____No_X_
If so, how many? _____

Are catch basins fitted with oil and grease traps? Yes____No_X_
How many? Existing ____0_____ Proposed ____1_____

D. Will water saving appliances be used or water conservation devices be used in all plumbing? Yes_X_No____

VIII. FINANCIAL IMPACT

A. Estimated Building Permit Valuation $3.9M

B. Estimated assessed value $3.9M

LGCI
Lahlaf Geotechnical Consulting, Inc.

May 27, 2025

Mr. Wayne Lawson, P.E., SECB, MCPPO
Principal
SOCOTEC AE Consulting, LLC
75 Hood Park Drive, Suite 300
Charlestown, MA 02129
Phone: (617) 464-6937
Mobile: (617) 823-2553
E-mail: Wayne.Lawson@socotec.us

Re: **Geotechnical Report**
Proposed Recycling and Disposal Facility Building
Wellesley, Massachusetts
LGCI Project No. 2516

Dear Mr. Lawson:

Lahlaf Geotechnical Consulting, Inc. (LGCI) has completed a geotechnical study for the proposed Recycling and Disposal Facility Building in Wellesley, Massachusetts. We are submitting our geotechnical report electronically.

The soil samples from our explorations are currently stored at LGCI for further analysis, if requested. Unless notified otherwise, we will dispose of the soil samples after three (3) months.

Thank you for choosing LGCI as your geotechnical engineer.

Very truly yours,

Lahlaf Geotechnical Consulting, Inc.

Abdelmadjid M. Lahlaf, Ph.D., P.E.
Principal Engineer

LGCI
Lahlaf Geotechnical Consulting, Inc.

GEOTECHNICAL REPORT
PROPOSED RECYCLING AND DISPOSAL FACILITY BUILDING
WELLESLEY, MASSACHUSETTS

LGCI Project No. 2516
May 27, 2025

Prepared for:

SOCOTEC AE Consulting, LLC
75 Hood Park Drive
Suite 300
Charlestown, MA 02129
Phone: (617) 464-6937

GEOTECHNICAL REPORT
PROPOSED RECYCLING AND DISPOSAL FACILITY BUILDING
WELLESLEY, MASSACHUSETTS
LGCI Project No. 2516
May 27, 2025

Prepared for:

SOCOTEC AE Consulting, LLC
75 Hood Park Drive
Suite 300
Charlestown, MA 02129
Phone: (617) 464-6937

Prepared by:

LAHLAF GEOTECHNICAL CONSULTING, INC.
100 Chelmsford Road, Suite 2
Billerica, Massachusetts 01862
Phone: (978) 330-5912
Fax: (978) 330-5056

Abdelmadjid M. Lahlaf, Ph.D., P.E.
Principal Engineer

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1. PROJECT INFORMATION

1.1 Project Authorization

This geotechnical report presents the results of the subsurface explorations and a geotechnical evaluation performed by Lahlaf Geotechnical Consulting, Inc. (LGCI) for the proposed Recycling and Disposal Facility (RDF) Building in Wellesley, Massachusetts. We performed our services in general accordance with our proposal No. 24132 dated January 15, 2025, and in accordance with the terms and conditions of the Subconsultant Agreement between SOCOTEC AE Consulting, LLC (SOCOTEC) and LGCI dated March 3, 2025. Our services were authorized by Mr. Wayne Lawson of SOCOTEC by signing the Subconsultant Agreement.

1.2 Purpose and Scope of Services

The purpose of our geotechnical services was to perform subsurface explorations at the site of the proposed RDF Building, and to provide foundation design and construction recommendations. LGCI performed the following services:

- Reviewed available surficial and bedrock geologic maps of the site.
- Coordinated our exploration locations with SOCOTEC.
- Marked the exploration locations at the site and notified Dig Safe System, Inc. (Dig Safe) and the Town of Wellesley for utility clearance.
- Engaged a drilling subcontractor for one (1) day to advance four (4) soil borings at the site.
- Provided an LGCI geotechnical field representative at the site to coordinate and observe the borings, collect and describe the soil samples, and prepare field logs.
- Submitted four (4) soil samples collected from the borings for laboratory testing.
- Prepared this geotechnical report containing the results of our subsurface explorations and our recommendations for foundation design and construction.

Our scope does not include preparing specifications, reviewing contract documents, or preparing construction services. LGCI would be pleased to perform these services when needed. Recommendations for stormwater management, erosion control, pavement design, slope stability analyses, site specific seismic and liquefaction analyses, pile analysis and design, FEMA 100-year flood elevation, historic uses of site, contaminated soil and groundwater treatment and disposal requirements and techniques, and cost or quantity estimates are not included in our scope of work.

LGCI's scope of services does not include an environmental assessment for the presence or absence of wetlands or analytical testing for hazardous or toxic materials in the soil, surface water, groundwater, or air, on or below or around this site, or mold in the soil or in any structure at the site. Any statements regarding odors, colors, or unusual or suspicious items or conditions are strictly for the information of the client.

1.3 Site Description

Our understanding of the site is based on our field observations, our discussions with SOCOTEC, and on the following document:

- Drawing C3-01 titled: "Site Plan, 169 Great Plain Avenue," (Existing Conditions Plan) prepared by Williams & Sparages, dated April 25, 2025, and provided to LGCI by SOCOTEC via email on May 7, 2025.

The site is located at the existing recycling and disposal facility (RDF) at 169 Great Plain Avenue (on the southern side) near the Needham/Wellesley line as shown in Figure 1. The site is accessible by a long driveway located on the southern side of Great Plain Avenue. The site is bordered by Great Plain Avenue on the northern side, and by wooded areas on the southern, western, and eastern sides. The site is currently occupied by the existing RDF buildings and its associated parking lots and driveways (paved areas).

Based on the Existing Conditions Plan, the grades at the site generally range from El. 154 feet near the northern portion of the site and El. 170 feet near the southern portion of the site. The existing grades within the footprint of the proposed building generally range between El. 162 feet and El. 164 feet.

1.4 Project Description

Our understanding of the proposed construction is based on our discussions with SOCOTEC, the document listed in Section 1.3, and the following document:

- Drawing A1-01 titled: "First Floor Plan, Wellesley DPW/RDF Administration Building," (First Floor Plan) prepared by SOCOTEC, dated April 28, 2025, and provided to LGCI by SOCOTEC via e-mail on May 7, 2025.

We understand that the Town of Wellesley is planning a new administration building at the existing RDF. We understand that the proposed building will be located to the north of the existing transfer station building in an area that is currently paved and partially landscaped. We understand that the proposed building will have one story and will have a footprint of about 32 feet by 105 feet, i.e., 3,660 square feet. The first finished floor elevation (FFE) of the proposed building will be similar to the existing grades in the area, i.e., at El. 166 feet; thus, requiring minor cuts and fills to achieve the proposed grade of the proposed building.

1.5 Elevation Datum

We understand that the elevations provided in the Existing Conditions Plan are in reference to the Town of Wellesley Base Benchmark System.

2. SITE AND SUBSURFACE CONDITIONS

2.1 Surficial Geology

LGCI reviewed a surficial geologic map titled: "Surficial Materials Map of the Natick Quadrangle, Massachusetts," prepared by Stone, B.D., and Stone, J.R., Scientific Investigation Map 3402, Quadrangle 105 – Natick, 2018.

The surficial geologic map, shown in Figure 2, of the site indicates that the natural soils in the general vicinity of the site consist of coarse deposits, thin till, and thick till.

The coarse deposits consist of sand, sand and gravel, and gravel deposits as described below.

Sand Deposits – The sand deposits are comprised mostly of fine to coarse sand. Coarser layers may contain up to 25 percent gravel. Finer layers may contain very fine sand, silt, and clay.

Sand and Gravel Deposits –The sand and gravel deposits occur as a mixture of gravel and sand within individual layers and as alternating layers of sand and gravel. The sand and gravel layers range between 25 to 50 percent gravel and 50 to 75 percent sand.

Gravel Deposits – The gravel deposits are comprised of at least 50 percent gravel, cobbles, and boulders. Sand occurs within gravel beds and as separate layers within the gravel.

The thin till is described as a non-sorted, non-stratified matrix of sand, some silt, and little clay that contains scattered pebble, cobble, and boulder clasts. The thin till is generally less than 10 to 15 feet thick. The thick till is similar in composition to the thin till but is commonly more than 100 feet thick.

The Surficial Geologic Map shows rock outcrops about one city block away from the site. The surficial geologic map also indicates the presence of swamp deposits within the vicinity of the site. The swamp deposits consist of organic muck and peat that contain minor amounts of sand, silt, and clay, are stratified and poorly sorted, and occur in swamps and freshwater marshes, in kettle depressions, or in poorly drained areas.

2.2 LGCI's Explorations

2.2.1 General

LGCI coordinated our exploration locations with SOCOTEC and marked the exploration locations in the field. LGCI notified Dig Safe and the Town of Wellesley for utility clearance prior to starting our explorations at the site.

Unless notified otherwise, we will dispose of the soil samples obtained during our explorations after three (3) months.

2.2.2 LGCI's Soil Borings

LGCI engaged Soil X, Corp. (Soil X) of Leominster, Massachusetts to advance four (4) soil borings (B-1 to B-4) at the site on May 13, 2025. The borings were advanced with a Diedrich D-70 Turbo ATV drill rig using 4-¼-inch inner-diameter hollow stem augers. The borings extended to depths ranging between 20.4 and 23.9 feet beneath the ground surface. Upon completion, the boreholes were backfilled with the drill cuttings. The ground surface was restored with asphalt cold patch in paved areas.

Soil X performed Standard Penetration Tests (SPT) and obtained split spoon samples with an automatic hammer at typical depth intervals of 2 feet or 5 feet as noted on the boring logs in general accordance with ASTM D-1586.

An LGCI geotechnical field representative observed and logged the borings in the field.

2.2.3 Exploration Logs and Locations

The boring locations are shown in Figure 3. Appendix A contains LGCI's boring logs and Table 1 includes a summary of LGCI's borings.

2.3 Subsurface Conditions

The subsurface description in this report is based on a limited number of borings and is intended to highlight the major soil strata encountered during our explorations. The subsurface conditions are known only at the actual boring locations. Variations may occur and should be expected between boring locations. The boring logs represent conditions that we observed at the time of our explorations and were edited, as appropriate, based on the results of the laboratory test data and inspection of the soil samples in the laboratory. The strata boundaries shown in our boring logs are based on our interpretations and the actual transitions may be gradual. Graphic soil symbols are for illustration only.

The soil strata encountered in LGCI's borings were as follows, starting at the ground surface.

Topsoil – A layer of surficial organic topsoil was encountered at the ground surface in borings B-2 and B-3, and the thickness of the topsoil was approximately 1.0 foot and 0.5 foot, respectively.

Asphalt – A layer of surficial asphalt was encountered at the ground surface in borings B-1 and B-4, and the thickness of the asphalt was approximately 0.3 foot.

Fill – A layer of fill was encountered beneath the topsoil or asphalt in all borings. The fill extended to depths ranging between 14.0 and 21.0 feet beneath the ground surface. The samples in this layer were described as silty sand, poorly graded sand, and well graded sand. The fines content in the fill ranged between 0 and 35 percent, and the gravel content ranged between 0 and 50 percent. The fill layer contained traces of organic soil, roots, brick, glass, asphalt, trash, paper,

and plastic. One (1) sample contained traces of coal ash, and one (1) sample contained traces of metal.

The SPT N-values in this layer ranged between 6 blows per foot (bpf) and refusal, with most values lower than 29 bpf, indicating mostly loose to medium dense material. Please note that the high SPT N-values recorded in the fill may be due to obstructions such as cobbles and boulders present in the fill and may not represent the true density of the fill.

Sand and Gravel – A layer of sand and gravel was encountered beneath the fill in all borings. The sand and gravel extended to the termination depths of the borings ranging between 20.4 and 23.9 feet beneath the ground surface. The samples in this layer were described as silty sand. The fines content in this layer ranged between 15 and 25 percent, and the gravel content ranged between 5 and 20 percent.

The SPT N-values in this layer ranged between 37 bpf and refusal, indicating dense to very dense material. Please note that the high SPT N-values recorded in the sand and gravel may be due to obstructions such as cobbles and boulders present in the sand and gravel and may not represent the true density of the sand and gravel.

2.4 Groundwater

Groundwater was encountered in all borings, except in boring B-3, at depths ranging between 13.0 feet and 17.8 feet beneath the ground surface, as shown in Table 1 and in the boring logs.

The groundwater information reported in our boring logs is based on observations made during or shortly after the completion of drilling. Therefore, the reported groundwater levels in our boring logs may not represent the actual groundwater conditions, as additional time may be required for the groundwater levels to stabilize. The groundwater information presented in this report only represents the conditions encountered at the time and location of the explorations. Seasonal fluctuation should be anticipated.

2.5 Laboratory Test Data

LGCI submitted four (4) soil samples collected from the borings for grain-size analysis. The results of the grain-size analyses are provided in the test data sheets included in Appendix B and are summarized in the table below:

Grain-Size Analysis Test Results

Boring No.	Sample No.	Stratum	Sample Depth (ft.)	Percent Gravel	Percent Sand	Percent Fines
B-1	S1	Fill	1.0 – 3.0	45.1	47.9	7.0
B-2	S3	Fill	4.0 – 6.0	22.2	45.9	31.9
B-3	S2	Fill	2.0 – 4.0	41.8	50.7	7.5
B-4	S1	Fill	1.0 – 3.0	46.3	49.0	4.7

3. EVALUATION AND RECOMMENDATIONS

3.1 Evaluation

3.1.1 General

Based on our understanding of the proposed construction, our observation of our borings, and the results of our laboratory testing, there are a few issues that we would like to highlight for consideration and discussion.

3.1.2 Asphalt, Surficial Topsoil, and Existing Fill

- Asphalt, surficial topsoil, and existing fill were encountered in the borings. These materials are not suitable to support foundations.

- The asphalt and topsoil should be removed from within the entire construction area, including the proposed building's footprint and the proposed driveways.

- The existing fill was observed to be variable in composition and density. In addition, the existing fill contained traces of organic soil, roots, brick, glass, asphalt, trash, paper, and plastic. Existing fill that was not placed with strict moisture, density, and gradation control presents risk of unpredictable settlement that may result in poor performance of floor slabs and foundations. Due to these risks, the existing fill should be improved by means of aggregate piers (APs) or rigid inclusions (RIs). Our recommendations for APs and RIs are presented in Section 3.2.

- LGCI considered the option of entirely removing and replacing the existing fill. However, we dismissed this option due to the large extent of removal, the potential for disruption to the site operations, and the possible need for groundwater control during removal.

- The subgrade of footings should be prepared in accordance with the recommendations in Section 4.1.

- Within paved areas, the existing fill should be removed to the top of the natural sand and gravel or to a depth of 18 inches beneath the bottom of the proposed pavement, whichever occurs first. Where soft or organic soil are exposed, the soft or organic soil should be removed. Where existing fill is exposed, the existing fill deeper than 18 inches beneath the bottom of the proposed pavement can remain in place provided these materials are firm and unyielding following proofrolling as described in Section 4.1.

3.1.3 Shallow Footings and Slabs-on-Grade

Based on the results of the borings, the subsurface conditions are suitable to support shallow spread and continuous footings bearing on 12 inches of Structural Fill placed directly on top of the AP- or RI-improved ground after entirely removing the asphalt and the topsoil. The

proposed slab may be designed as a slab-on-grade. Our recommendation for net allowable bearing capacity in the sand and gravel is presented in Section 3.3.1. Our recommendations for slabs-on-grade are presented in Section 3.4.1. Section 4.1 provides recommendations for preparation of subgrades.

3.1.4 Protection of Adjacent Buildings

Excavations for the proposed footings and utilities should not extend deeper than a line extending from the bottom outer edge of adjacent building's foundations, inclined at 45 degrees (45-degree line), and extending outward and upward. If excavations must extend deeper than the 45-degree line, the excavation should be shored or the adjacent building's footings should be underpinned. Also, vibration should be monitored during the installation of the APs or RIs.

3.2 Aggregate Pier Option/Rigid Inclusions Option

3.2.1 General

The types of ground improvement we have considered are APs and RIs.

The ground improvement technologies are patented, and the design is performed by the specialty contractors. We recommend that the project plans and specifications for ground improvement be performance-based, allowing a variety of ground improvement contractors the opportunity to bid the work. Specifications should indicate the required allowable bearing pressure for footings and slabs, and the allowable total and differential settlements for the structure, including static and earthquake induced settlement. In addition, we recommend that the specifications require that the supporting design calculations be available for review by the design team. Ground improvement contractors should also be provided with grading plans and subsurface information associated with the proposed structure for use in preparing their bids.

The layout and length of the proposed ground improvements will be designed by the ground improvement specialty installer. We anticipate that the length of the ground improvements will vary across the length of the proposed building. For cost estimating purposes, we recommend assuming ground improvements extending to an average depth of 22 feet beneath the ground surface.

After the ground is improved using APs or RIs, the proposed building may be supported on shallow foundations.

3.2.2 Aggregate Piers (APs)

APs are typically relatively short, stiff elements of compacted aggregate which improve the existing fill. These elements are typically installed by augering holes ranging from 20 inches to 36 inches in diameter. Aggregate (new crushed stone, recycled concrete, or other granular

material) is then introduced into the hole and is generally compacted in one-foot lifts by repeated penetrations with the vibrator, which can be mounted to a crane or tracked carrier. The vibratory or ramming energy densifies the aggregate in the element; thus, producing high modulus aggregate piers. The installation of APs also densifies the surrounding soil depending on the type of soil. These high modulus elements reinforce the treatment zone and increase the composite friction angle and stiffness of the reinforced soil mass. The design of APs is typically verified with a modulus load test.

Where the subsurface conditions include a layer of organic soil and/or peat, the aggregate piers should be grouted in order to reduce the potential for bulging of the AP elements in the soft organic material or peat.

The work of the specialty contractor installing the APs should be coordinated with that of the site contractor who should perform pre-trenching for possible boulders, abandoned foundations, metal pipes, or other obstructions before the installation of the APs.

While the AP installation generates little spoils, where it is not desired to generate spoils during the improvement process, vertical displacement APs could be used. These are installed by driving a mandrel and hammer to the design depth, feeding the backfill material through the hollow mandrel, and compacting the backfill in one-foot lifts using the hammer; thus, generating no spoils. Vertical displacement APs are typically installed with diameters ranging between 12 and 16 inches to typical depths ranging between 15 and 35 feet, and to depths of up to 60 feet where needed.

3.2.3 Rigid Inclusions (RIs)

We have prepared this report assuming the ground improvements will consist of APs. However, and based on our experience, the specialty ground improvement contractors may propose rigid inclusions (RIs) in lieu of the APs. LGCI does not object to such a change if proposed by the specialty contractor, provided that the RIs fulfill the design requirements of the project.

RIs are a ground improvement technique whereby rigid, cylindrical concrete elements are installed through a soil that is not suitable to support shallow foundations, such as the existing fill. The concrete is installed using a bottom feed from a mandrel as the mandrel is extracted from the ground. Rigid inclusions generally generate little spoils.

The work of the specialty contractor installing the RIs should be coordinated with that of the site contractor who should perform pre-trenching for possible boulders, abandoned foundations, metal pipes, or other obstructions before the installation of the RIs

3.3 Foundation Recommendations

3.3.1 Footing Design

- For footings supported on a minimum of 12 inches of Structural Fill placed directly over ground improved with APs or RIs, we recommend a net allowable bearing pressure of 4 kips per square foot (ksf).

- Footing subgrades should be prepared in accordance with the recommendations in Section 4.1.

- All foundations should be designed in accordance with *The Commonwealth of Massachusetts State Building Code 780 CMR, Tenth Edition* (MSBC 10^{h} Edition).

- Exterior footings and footings in unheated areas should be placed at a minimum depth of 4 feet below the final exterior grade to provide adequate frost protection. Interior footings in heated areas may be designed and constructed at a minimum depth of 2 feet below finished floor grades.

- Wall footings should be designed and constructed with continuous, longitudinal steel reinforcement for greater bending strength to span across small areas of loose or soft soils that may go undetected during construction.

- A representative of LGCI should be engaged to observe that the subgrade has been prepared in accordance with our recommendations.

3.3.2 Settlement Estimate

For footings designed using the net allowable bearing pressure of 4 ksf, we anticipate that the settlement will be about 1 inch and that the differential settlement of the footings will be 3/4 inch or less, over 25 feet. Total and differential settlements of these magnitudes are usually considered tolerable for the anticipated construction. The tolerance of the proposed structure to the predicted total and differential settlements should be assessed by the structural engineer.

The design of the ground improvements should consider the settlement threshold established by LGCI.

3.4 Concrete Slab Considerations

3.4.1 Slabs-on-Grade

- The proposed slabs should be designed as a slabs-on-grade supported on a minimum of 12 inches of Structural Fill placed on ground improved with APs or RIs.

- The subgrade of the proposed slabs should be prepared as described in Section 4.1.

- To reduce the potential for dampness in the proposed floor slabs, the project architect may consider placing a vapor barrier beneath the floor slabs. The vapor barrier should be protected from puncture during construction of the slabs.

- For the design of the proposed floor slabs bearing on the materials described above, we recommend using a modulus of subgrade reaction, k_{s1}, of 100 tons per cubic foot (tcf). Please note that the values of k_{s1} are for a 1 x 1 square foot area. These values should be adjusted for larger areas using the following expression:

$$Modulus\ of\ Subgrade\ \mathrm{Re}action\ (k_s) = k_{s1} * \left(\frac{B+1}{2B}\right)^2$$

where:

k_s = Coefficient of vertical subgrade reaction for loaded area;
k_{s1} = Coefficient of vertical subgrade reaction for a 1 x 1 square foot area; and
B = Width of area loaded, in feet.

Please note that cracking of slabs-on-grade can occur as a result of heaving or compression of the underlying soil, but also as a result of concrete curing stresses. To reduce the potential for cracking, the precautions listed below should be closely followed during the construction of all slabs-on-grade:

- Construction joints should be provided between the floor slab and the walls and columns in accordance with the American Concrete Institute (ACI) requirements, or other applicable code.

- The backfill in interior utility trenches should be properly compacted.

- In order for the movement of exterior slabs not to be transmitted to foundations or superstructures, exterior slabs, such as approach slabs and sidewalks, should be isolated from the superstructure.

3.4.2 Under-slab Drains and Waterproofing

Based on the proposed FFE, we believe that an under-slab drainage system is not required under the proposed building's slab.

If the proposed building includes an elevator pit, the elevator pit or other structure that extends beneath the FFE, should be designed to be waterproof.

3.5 Seismic Design

In accordance with Section 1604 of MSBC 10th Edition and International Building Code of 2021 (IBC 2021), and based on the SPT data from the borings, the seismic criteria for the site are as follows:

- Site Class (IBC 2021, Section 1613.2.2): D
- Spectral Response Acceleration at short period (S_S) (MSBC 10th Ed., Table 1604.11): 0250g
- Spectral Response Acceleration at 1 sec. (S_1) (MSBC 10th Ed., Table 1604.11): 0.063g
- Site Coefficient F_a (IBC 2021, Table 1613.2.3(1)): 1.6
- Site Coefficient F_v (IBC 2021, Table 1613.2.3(2): 2.4
- Adjusted Spectral Response S_{MS} (IBC 2021, Eq. 16-20): 0.400g
- Adjusted Spectral Response S_{M1} (IBC 2021, Eq. 16-21): 0.151g

Based on the SPT data from the borings and in accordance with Section 1806.4 of MSBC 10th Edition, the site soils are not susceptible to liquefaction.

3.6 Parking Lots, Driveways, and Sidewalks

3.6.1 General

The subsurface conditions encountered at the site are generally suitable to support the proposed driveways, parking lots, and sidewalks after preparation of the subgrade as described in Section 4.1.

- We recommend entirely removing the asphalt and topsoil from within the footprint of the proposed driveways and parking lots.

- The existing fill should be improved in accordance with the recommendations in Section 4.1.

- Cobbles and boulders should be removed to at least 18 inches below the bottom of the pavement.

3.6.2 Sidewalks

- Sidewalks should be placed on a minimum of 12 inches of Structural Fill with less than 5 percent fines.

- To reduce the potential for heave caused by surface water penetrating under the sidewalk, the joints between sidewalk concrete sections should be sealed with a waterproof compound. The sidewalks should be sloped away from the building or other vertical surfaces to promote flow of water. To the extent possible, roof leaders should not discharge onto sidewalk surfaces.

3.6.3 Pavement Sections

A typical, minimum, standard-duty pavement section that could be used for parking areas is as follows:

1.5" Asphalt "Top Course"
2.0" Asphalt "Base Course"
8" Processed Gravel for Sub-Base (MassDOT M1.03.1)

A typical, minimum, heavy-duty pavement section that could be used for areas of heavy truck traffic is as follows:

2.0" Asphalt "Top Course"
2.5" Asphalt "Base Course"
12" Processed Gravel for Sub-Base (MassDOT M1.03.1)

The pavement sections shown above represent minimum thicknesses representative of typical local construction practices for similar use. Periodic maintenance should be anticipated.

Pavement material types and construction procedures should conform to specifications of the “Standard Specifications for Highways and Bridges,” prepared by the Commonwealth of Massachusetts Department of Transportation dated 2025.

Areas to receive relatively highly concentrated, sustained loads such as dumpsters, loading areas, and storage bins are typically installed over a rigid pavement section to distribute concentrated loads and reduce the possibility of high stress concentrations on the subgrade. Typical rigid pavement sections consist of 6 inches of concrete placed over a minimum of 12 inches of subbase material.

3.7 Underground Utilities

Boulders at the bottom of utility trenches should be removed to at least 12 inches below the pipe invert and the resulting excavation should be backfilled with suitable backfill. Utilities should be placed on suitable bedding material in accordance with the manufacturer’s recommendations. “Cushion” material should be placed, by hand, above the utility pipe in maximum 6-inch lifts. The lift should be compacted by hand to avoid damage to the utility. Where the bedding/cushion material consists of crushed stone, it should be wrapped in a geotextile fabric.

Compaction of fill in utility trenches should be in accordance with our recommendations in Section 4.3. To reduce the potential for damage to utilities, placement and compaction of fill immediately above the utilities should be performed in accordance with the manufacturer’s recommendations.

4. CONSTRUCTION CONSIDERATIONS

4.1 Subgrade Preparation

- Asphalt, topsoil, subsoil, surficial and buried organic materials, existing fill, abandoned utilities, buried foundations, and other below-ground structures should be entirely removed from within the footprint of the proposed building and site structures before the start of foundation work.

- Tree stumps, root balls, and roots larger than ½ inch in diameter should be removed and the cavities filled with suitable material and compacted per Section 4.3 of this report.

- Cobbles and boulders should be removed at least 6 inches from beneath footings and 18 inches beneath the bottom of slabs and paved areas. The resulting excavations should be backfilled with compacted Structural Fill under the building and with Ordinary Fill under the subbase of paved areas.

- APs or RIs that are damaged as a result of excavation for footings should be repaired in accordance with the requirements of the specialty contractor installing the APs or RIs.

- Before fill is placed under footings or to raise the grades, the aggregate piers should be exposed, and the subgrade should be compacted to a firm and unyielding conditions.

- If RIs are used, they should be cut off at the minimum depth required to install the recommended 12 inches of Structural fill under footings and under the proposed slab. The RIs could be installed a few feet higher than the proposed cutoff elevation and the excess concrete cutoff using an auger before the concrete sets.

- Care should be exercised not to mix soil with the concrete for the RIs during placement of the concrete or during augering to the proposed cutoff elevation.

- An LGCI geotechnical representative should observe the installation of the APs or RIs and the modulus test. An LGCI geotechnical representative should also observe the exposed subgrades prior to fill and concrete placement to verify that the APs or RIs are properly exposed.

- After the surficial materials are removed to a depth of 18 inches within the proposed paved areas and walkways in accordance with the recommendations in Section 3.1, the exposed existing fill deeper than 18 inches beneath the bottom of the proposed pavement should be improved by compacting the exposed surface with at least six (6) passes of a vibratory roller compactor imparting a dynamic effort of at least 40 kips. Where soft zones of soil are observed, the soft soil should be removed, and the grade should be restored using Ordinary Fill to the bottom of the proposed subbase layer. If pumping of the existing fill deeper than 18 inches beneath the bottom of the proposed pavement is observed, the soft and/or pumping material should be removed and replaced.

- Materials that become soft as result of exposure to surface runoff or as a result of inadequate groundwater control should be removed and replaced with suitable material.

- Fill placed within the footprint of the proposed building should meet the gradation and compaction requirements of Structural Fill, shown in Section 4.3.1.

- Fill placed under the subbase of paved areas should meet the gradation and compaction requirements of Ordinary Fill, shown in Section 4.3.2.

- Fill placed in the top 12 inches beneath sidewalks should consist of Structural Fill with less than 5 percent fines.

- Loose or soft soils identified during the compaction of the footing or floor slab subgrades should be excavated to a suitable bearing stratum, as determined by the representative of LGCI. Grades should be restored by backfilling with Structural Fill or crushed stone.

- When crushed stone is required in the drawings or is used for the convenience of the contractor, it should be wrapped in a geotextile fabric for separation except where introduction of the geotextile fabric promotes sliding. A geotextile fabric should not be placed between the bottoms of the footings and the crushed stone.

4.2 Subgrade Protection

The onsite fill and natural sand and gravel are frost susceptible. If construction takes place during freezing weather, special measures should be taken to prevent the subgrade from freezing. Such measures should include the use of heat blankets or excavating the final 6 inches of soil just before pouring the concrete. Footings should be backfilled as soon as possible after footing construction. Soil used as backfill should be free of frozen material, as should the ground on which it is placed. Filling operations should be halted during freezing weather.

Materials with high fines contents are typically difficult to handle when wet, as they are sensitive to moisture content variations. Subgrade support capacities may deteriorate when such soils become wet and/or disturbed. The contractor should keep exposed subgrades properly drained and free of ponded water. Subgrades should be protected from machine and foot traffic to reduce disturbance.

4.3 Fill Materials

Structural Fill and Ordinary Fill should consist of inert, hard, durable sand and gravel free from organic matter, clay, surface coatings, and deleterious materials, and should conform to the gradation requirements shown below.

4.3.1 Structural Fill

The Structural Fill should have a plasticity index of less than 6 and should meet the gradation requirements shown below. Structural Fill should be compacted in maximum 9-inch loose lifts to at least 95 percent of the Modified Proctor maximum dry density (ASTM D1557), with moisture contents within ±2 percentage points of the optimum moisture content.

Sieve Size Percent	Passing by Weight
3 inches	100
1 ½ inch	80-100
½ inch	50-100
No. 4	30-85
No. 20	15-60
No. 60	5-35
No. 200*	0-10

* 0 – 5 for the top 12 inches under sidewalks, exterior slabs, pads, and walkways

4.3.2 Ordinary Fill

Ordinary Fill should have a plasticity index of less than 6 and should meet the gradation requirements shown below. Ordinary Fill should be compacted in maximum 9-inch loose lifts to at least 95 percent of the Modified Proctor maximum dry density (ASTM D1557), with moisture contents within ±2 percentage points of the optimum moisture content.

Sieve Size Percent	Passing by Weight
6 inches	100
1 inch	50-100
No. 4	20-100
No. 20	10-70
No. 60	5-45
No. 200	0-20

4.4 Reuse of Onsite Materials

Based on our field observations and the results of the grain-size analyses, the existing fill free of organic matter and trash may be used as used as Ordinary Fill.

The contractor should avoid mixing the reusable soils with fine-grained and/or organic soils. The soils to be reused should be excavated and stockpiled separately for compliance testing. Soils with 20 percent or greater fines contents are generally very sensitive to moisture content variations and are susceptible to frost. Such soils are very difficult to compact at moisture contents that are much higher or much lower than the optimum moisture content determined from the laboratory compaction test. Therefore, strict moisture control should be implemented

during the compaction of onsite soils with fines contents of 20 percent or greater. The contractor should be prepared to remove and replace such soils if pumping occurs.

If needed, the onsite material could be blended with imported rock and processed in a crusher to produce fill meeting the gradation requirements of the materials in Section 4.3. Suitable imported material and amended/improved materials should be stockpiled separately from unimproved onsite soils.

Materials to be used as fill should first be tested for compliance with the applicable gradation specifications.

4.5 Groundwater Control Procedures

Based on the groundwater levels measured in our borings, we anticipate that major groundwater control procedures will not be needed during construction. We anticipate that filtered sump pumps installed in a series of sump pump pits located at least 3 feet below the bottom of planned excavations may be sufficient to handle groundwater and surface runoff that may enter the excavation during wet weather. The contractor should be prepared to use multiple sump pumps to maintain a dry excavation during the removal of the existing fill.

The contractor should be permitted to employ whatever commonly accepted means and practices are necessary to maintain the groundwater level below the bottom of the excavation and to maintain a dry excavation during wet weather. Groundwater levels should be maintained at a minimum of 1 foot below the bottom of the excavations during construction. The placement of reinforcing steel or concrete in standing water should not be permitted.

To reduce the potential for sinkholes developing over sump pump pits after the sump pumps are removed, the crushed stone placed in the sump pump pits should be wrapped in a geotextile fabric. Alternatively, the crushed stone should be entirely removed after the sump pump is no longer in use, and the sump pump pit should be restored with suitable backfill.

4.6 Temporary Excavations

All excavations to receive human traffic should be constructed in accordance with OSHA guidelines.

The site soils should generally be considered Type “C” and should have a maximum allowable slope of 1.5 Horizontal to 1 Vertical (1.5H:1V) for excavations less than 20 feet deep. Deeper excavations, if needed, should have shoring designed by a professional engineer.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain the stability of the excavation sides and bottom.

5. RECOMMENDATIONS FOR FUTURE WORK

We recommend engaging LGCI to perform the following services:

- Review the foundations drawings and prepare earth moving and ground improvement specifications;
- Review contractor submittals and Request for Information (RFIs);
- Provide a field representative during construction to observe the removal of the unsuitable soil, and to observe the subgrade of footings and slabs.

6. REPORT LIMITATIONS

Our analyses and recommendations are based on project information provided to us at the time of this report. If changes to the type, size, and location of the proposed structures or to the site grading are made, the recommendations contained in this report shall not be considered valid unless the changes are reviewed, and the conclusions and recommendations modified in writing by LGCI. LGCI cannot accept responsibility for designs based on our recommendations unless we are engaged to review the final plans and specifications to determine whether any changes in the project affect the validity of our recommendations, and whether our recommendations have been properly implemented in the design.

It is not part of our scope to perform a more detailed site history; therefore, we have not explored for or researched the locations of buried utilities or other structures in the area of the proposed construction. Our scope did not include environmental services or services related to moisture, mold, or other biological contaminants in or around the site.

The recommendations in this report are based in part on the data obtained from the subsurface explorations. The nature and extent of variations between explorations may not become evident until construction. If variations from anticipated conditions are encountered, it may be necessary to revise the recommendations in this report. We cannot accept responsibility for designs based on recommendations in this report unless we are engaged to 1) make site visits during construction to check that the subsurface conditions exposed during construction are in general conformance with our design assumptions and 2) ascertain that, in general, the work is being performed in compliance with the contract documents.

Our report has been prepared in accordance with generally accepted engineering practices and in accordance with the terms and conditions set forth in our agreement. No other warranty, expressed or implied, is made. This report has been prepared for the exclusive use of SOCOTEC AE Consulting, LLC for the Proposed Recycling and Disposal Facility Building in Wellesley, Massachusetts as conceived at this time.

7. REFERENCES

In addition to the references included in the text of the report, we used the following references:

American Society of Civil Engineers, "Minimum Design Loads and Associated Criteria for Buildings and Other Structures," ASCE/SEI 7-16, 2017.

The Commonwealth of Massachusetts (2024), "The Massachusetts State Building Code, Ninth (10th) Edition."

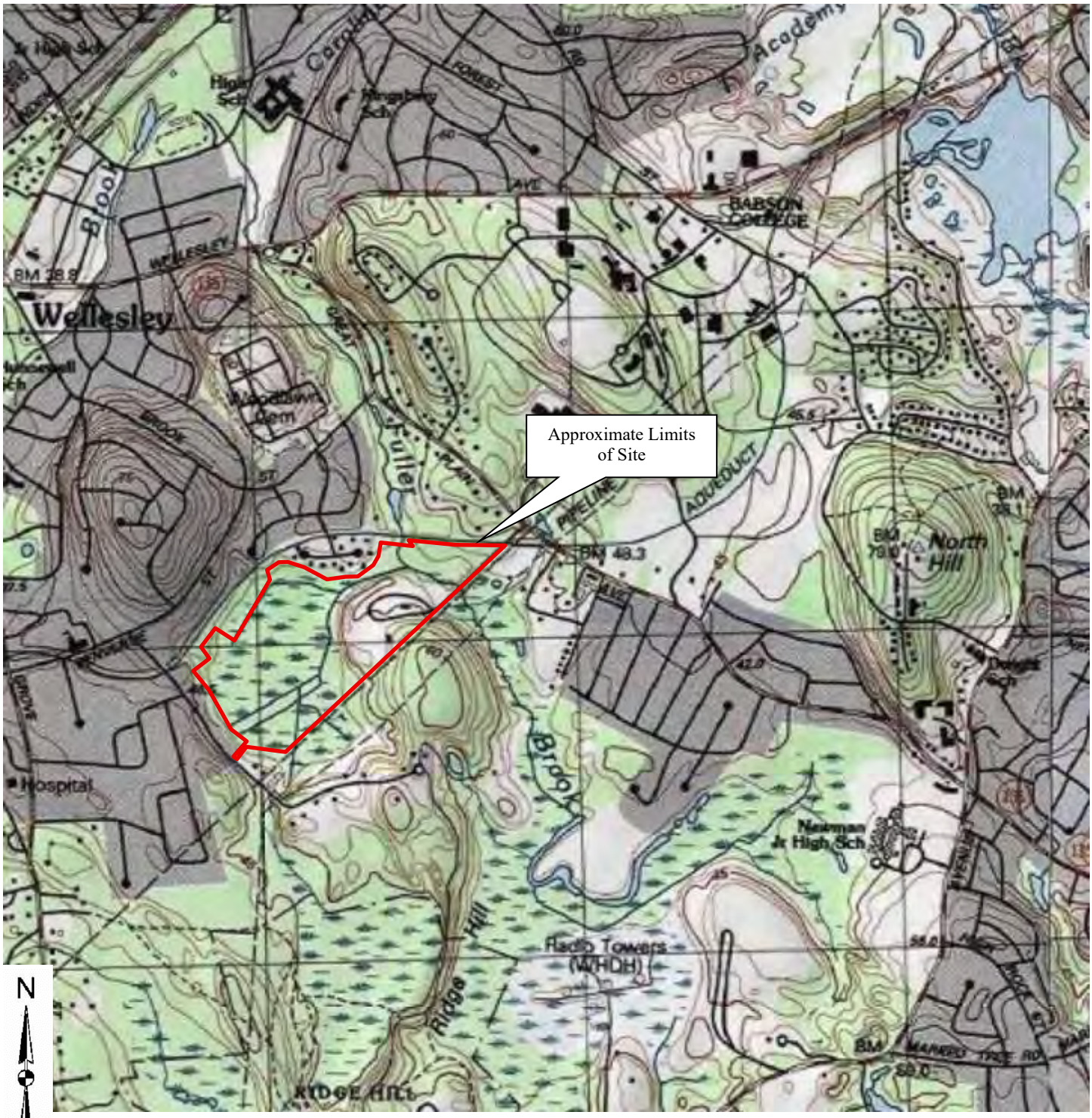
The Department of Labor, Occupational Safety and Health Administration (1989), "Occupational Safety and Health Standards - Excavations; Final Rule," 20 CFR Part 1926, Subpart P.

USGS Wellesley, MA topographic map from http://mapserver.mytopo.com.

Table 1 - Summary of LGCI's Borings
Proposed Recycling and Disposal Facility Building
Wellesley, MA
LGCI Project No. 2516

Boring No.	Ground Surface Elevation (ft.)[1]	Groundwater[2] Depth / El. (ft.)	Bottom of **Asphalt**/ Topsoil Depth / El. (ft.)	Bottom of Fill Depth / El. (ft.)	Bottom of Sand and Gravel Depth / El. (ft.)	Bottom of Boring Depth / El. (ft.)
B-1	162.0	17.0 / **145.0**	**0.3** / **161.7**	17.0 / **145.0**	20.4 / **141.6**	20.4 [3]/ **141.6**
B-2	164.0	17.8 / **146.2**	1.0 / **163.0**	14.0 / **150.0**	21.0 / **143.0**	21.0 [3]/ **143.0**
B-3	164.0	- / **-**	0.5 / **163.5**	18.0 / **146.0**	22.0 / **142.0**	22.0 [3]/ **142.0**
B-4	163.0	13.0 / **150.0**	**0.3** / **162.7**	21.0 / **142.0**	23.9 / **139.1**	23.9 [3]/ **139.1**

1. The ground surface elevation was interpolated to the nearest foot from drawing C3-01 titled: "Site Plan, 169 Great Plain Avenue," prepared by Williams & Sparages, dated April 25, 2025, and provided to LGCI by SOCOTEC AE Consulting, LLC via e-mail on May 7, 2025.
2. Groundwater was measured during drilling, at the end of drilling, or based on sample moisture, whichever is shallower.
3. Boring terminated in the sand and gravel layer.
4. "-" means groundwater or layer was not encountered.

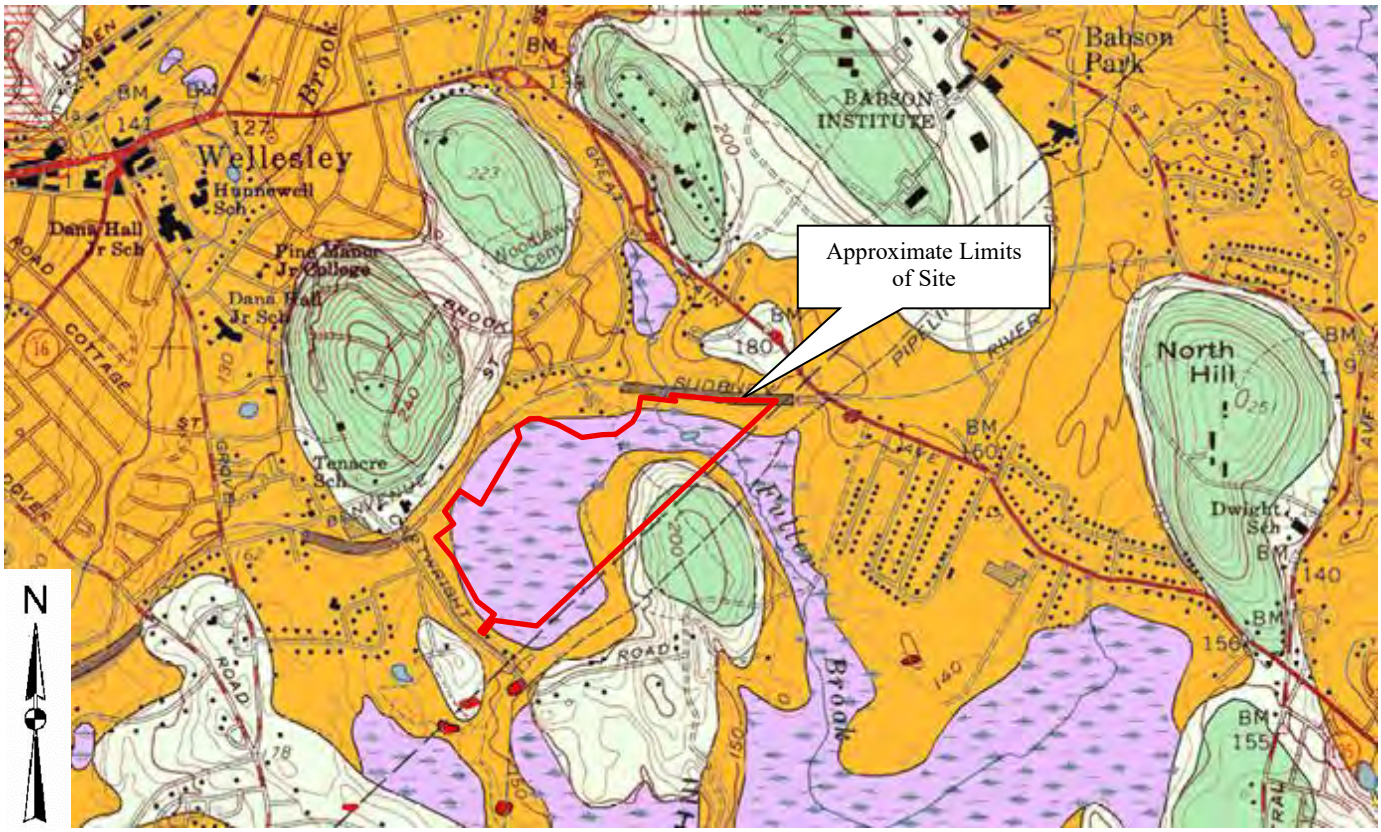


Contour Intervals: 3 meters

1000 meters

Note: Figure based on USA topographic map of Wellesley, MA obtained from https://apps.nationalmap.gov/downloader/

Client:	Project:		
SOCOTEC AE Consulting, LLC	Proposed Recycling and Disposal Facility Building	Figure 1 – Site Location Map	
LGCI Lahlaf Geotechnical Consulting, Inc.	Project Location: Wellesley, MA	LGCI Project No.: 2516	Date: May 2025



Swamp deposits—Organic muck and peat that contain minor amounts of sand, silt, and clay, are stratified and poorly sorted, and occur in swamps and freshwater marshes, in kettle depressions, or in poorly drained areas. Unit is shown only where deposits are estimated to be at least 3 ft thick; most deposits are less than 10 ft thick. Swamp deposits overlie glacial deposits or bedrock. They locally overlie glacial till even where they occur within thin glacial meltwater deposits

Coarse deposits consist of *gravel deposits*, *sand and gravel deposits*, and *sand deposits*, not differentiated in this report. *Gravel deposits* are composed of at least 50 percent gravel-size clasts; cobbles and boulders predominate; minor amounts of sand occur within gravel beds, and sand comprises a few separate layers. Gravel layers generally are poorly sorted, and bedding commonly is distorted and faulted due to postdepositional collapse related to melting of ice. *Sand and gravel deposits* occur as mixtures of gravel and sand within individual layers and as layers of sand alternating with layers of gravel. Sand and gravel layers generally range between 25 and 50 percent gravel particles and between 50 and 75 percent sand particles. Layers are well sorted to poorly sorted; bedding may be distorted and faulted due to postdepositional collapse. *Sand deposits* are composed mainly of very coarse to fine sand, commonly in well-sorted layers. Coarser layers may contain up to 25 percent gravel particles, generally granules and pebbles; finer layers may contain some very fine sand, silt, and clay

Thin till—Nonsorted, nonstratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts; large surface boulders are common; unit was mapped where till is generally less than 10 to 15 ft thick including areas of shallow bedrock. Predominantly consists of upper till of the last glaciation; loose to moderately compact, generally sandy, commonly stony. Two facies are present in some places: a looser, coarser grained ablation facies, melted out from supraglacial position; and an underlying more compact, finer grained lodgement facies deposited subglacially. In general, both ablation and lodgement facies of upper till derived from fine-grained bedrock are finer grained, more compact, less stony and have fewer surface boulders than upper till derived from coarse-grained crystalline rocks. Across Massachusetts, fine-grained bedrock sources include the red Mesozoic sedimentary rocks of the Connecticut Valley lowland, marble in the western river valleys, and fine-grained schists in upland areas

Thick till—Nonsorted, nonstratified matrix of sand, some silt, and little clay containing scattered pebbles, cobbles, and boulders in the shallow subsurface; at greater depths consists of compact, nonsorted matrix of silt, very fine sand, and some clay containing scattered small gravel clasts. Mapped in areas where till is greater than 10 to 15 ft thick, mostly in drumlin landforms in which till thickness commonly exceeds 100 ft (maximum recorded thickness is 230 ft). Although upper till of late Wisconsinan age is the surface deposit, lower till of probable Illinoian age constitutes the bulk of the material in thick-till areas. Lower till is moderately to very compact and is commonly finer grained and less stony than upper till. An oxidized zone, the lower part of a soil profile formed during a period of interglacial weathering, is generally present in the upper part of the lower till. This zone commonly shows closely spaced joints that are stained with iron and manganese oxides

Note: Figure based on map titled: “Surficial Materials Map of the Natick Quadrangle, Massachusetts,” prepared by Stone, Janet R. and Stone, Byron D., for U.S. Geological Survey, Scientific Investigations Map 3402, Quadrangle 105 – Natick, 2018.

Client:	Project:	Figure 2 – Surficial Geologic Map	
SOCOTEC AE Consulting, LLC	Proposed Recycling and Disposal Facility Building		
LGCI Lahlaf Geotechnical Consulting, Inc.	Project Location: Wellesley, MA	LGCI Project No.: 2516	Date: May 2025

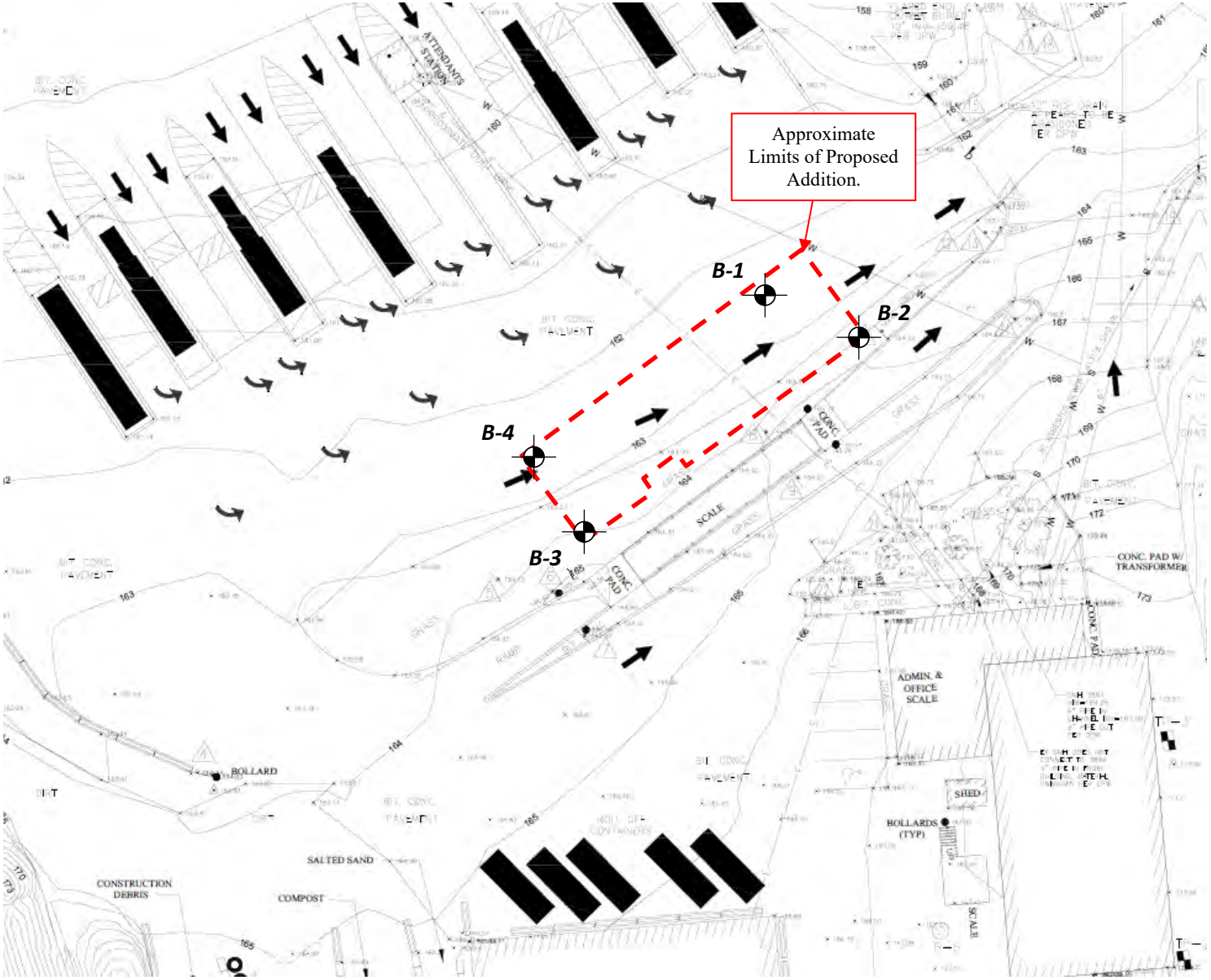
Legend

Approximate location of borings advanced by Soil X, Corp. (Soil X) of Leominster, Massachusetts on May 13, 2025, and observed by Lahlaf Geotechnical Consulting, Inc. (LGCI).

RHODE ISLAND STATE PLANE COORDINATE SYSTEM, ZONE 3800, NAD 83

Approximate Scale (ft.)

20 0 20 40



Note

Figure based on drawing C3-01 titled: "Site Plan, 169 Great Plain Avenue," prepared by Williams & Sparages, dated April 25, 2025, and provided to LGCI by SOCOTEC AE Consulting, LLC (SOCOTEC) via e-mail on May 7, 2025.

Client: SOCOTEC AE Consulting, LLC	Project: Proposed Recycling and Disposal Facility Building	Figure 3 – Boring Location Plan	
LGCI Lahlaf Geotechnical Consulting, Inc.	Project Location: Wellesley, MA	LGCI Project No.: 2516	Date: May 2025

Appendix A – LGCI's Boring Logs

LGCI
Lahlaf Geotechnical Consulting, Inc.

BORING LOG

B-1
PAGE 1 OF 1

CLIENT: SOCOTEC AE Consulting, LLC
PROJECT NAME: Proposed Recycling and Disposal Facility Building
LGCI PROJECT NUMBER: 2516
PROJECT LOCATION: Wellesley, MA

DATE STARTED: 5/13/25 **DATE COMPLETED:** 5/13/25
BORING LOCATION: Near NE corner of prop. building
COORDINATES: NA
SURFACE El.: 162 ft. (see note 1) **TOTAL DEPTH:** 20.4 ft.
WEATHER: 70's / Sunny
GROUNDWATER LEVELS:
DURING DRILLING: 17.0 ft. / El. 145.0 ft. Based on sample moisture
AT END OF DRILLING: 18.2 ft. / El. 143.8 ft.
OTHER: -

DRILLING SUBCONTRACTOR: Soil X, Corp.
DRILLING FOREMAN: Edwin Fajardo
DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)
DRILL RIG TYPE/MODEL: Diedrich D-70 Turbo ATV
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb. **HAMMER DROP:** 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: BH **CHECKED BY:** AS

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Material Description
							Asphalt (Depth 0.3 / El. 161.7)	4" Asphalt
	160.0	1	S1	21-21-18-18 (39)	24/17		Fill	S1 - Poorly Graded SAND with Silt and Gravel (SP-SM), fine to coarse, 7.0% fines, 45.1% mostly fine subangular gravel, trace of asphalt, brown, moist (sieve performed)
		3	S2	10-14-8-5 (22)	24/11			S2 - Poorly Graded SAND with Silt (SP-SM), fine to medium, 10-15% fines, 5-10% fine subangular gravel, trace of brick, trace of glass, brown, moist
5		5	S3	5-4-4-5 (8)	24/22			S3 - Silty SAND (SM), fine to coarse, 20-25% fines, 5-10% fine to coarse subangular gravel, trace of organic soil, trace of roots, trace of asphalt, trace of brick, trace of glass, trace of trash, black, moist
	155.0	7	S4	12-12-9-9 (21)	24/0			S4 - No recovery
		9	S5	3-5-4-3 (9)	24/7			S5 - Poorly Graded SAND with Silt (SP-SM), fine to medium, 5-10% fines, 5-10% fine to coarse subangular gravel, trace of glass, trace of trash, gray, moist
10		11	S6	6-7-4-8 (11)	24/9			S6 - Silty SAND (SM), fine to coarse, 15-20% fines, 5-10% fine to coarse subangular gravel, trace of wood, trace of organic soil, trace of glass, trace of brick, gray, moist
	150.0	13	S7	11-8-7-6 (15)	24/7			S7 - Trash and wood
15		15	S8	10-6-9-13 (15)	24/7			S8 - Silty SAND (SM), fine to coarse, 15-20% fines, 5-10% fine to coarse subangular gravel, trace of plastic, gray, moist
	145.0	17	S9	18-16-27-23 (43)	24/18		▽ 17.0 / 145.0 Sand and Gravel	S9 - Silty SAND (SM), fine to coarse, 15-20% fines, 5-10% fine to coarse subrounded gravel, gray, wet
20		19	S10	25-51-73/5" (124/11")	17/7			S10 - Similar to S9
		20.4				1	20.4	REMARK 1: Split spoon refusal encountered at depth of 20.4 feet on possible rock or large boulder. Boring terminated.
	140.0							Bottom of borehole at 20.4 feet. Borehole backfilled with drill cuttings. Ground surface restored with asphalt cold patch.
25								

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot from drawing C3-01 titled: "Site Plan, 169 Great Plain Avenue," prepared by Williams & Sparages, dated April 25, 2025, and provided to LGCI by SOCOTEC AE Consulting, LLC via e-mail on May 7, 2025.

LGCI
Lahlaf Geotechnical Consulting, Inc.

BORING LOG

B-2
PAGE 1 OF 1

CLIENT: SOCOTEC AE Consulting, LLC
PROJECT NAME: Proposed Recycling and Disposal Facility Building
LGCI PROJECT NUMBER: 2516
PROJECT LOCATION: Wellesley, MA

DATE STARTED: 5/13/25 **DATE COMPLETED:** 5/13/25
BORING LOCATION: Near SE corner of prop. building
COORDINATES: NA
SURFACE El.: 164 ft. (see note 1) **TOTAL DEPTH:** 21 ft.
WEATHER: 70's / Sunny
GROUNDWATER LEVELS:
DURING DRILLING: 19.0 ft. / El. 145.0 ft. Based on sample moisture
AT END OF DRILLING: 17.8 ft. / El. 146.2 ft.
OTHER: -

DRILLING SUBCONTRACTOR: Soil X, Corp.
DRILLING FOREMAN: Edwin Fajardo
DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)
DRILL RIG TYPE/MODEL: Diedrich D-70 Turbo ATV
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb. **HAMMER DROP:** 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: BH **CHECKED BY:** AS

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
		0	S1	1-7-27-26 (34)	24/8		Topsoil	1.0	S1 - Topsoil
		2	S2	20-15-14-11 (29)	24/0		Fill	163.0	S2 - No recovery (rock stuck in split spoon)
	160.0	4	S3	3-11-12-8 (23)	24/20				S3 - Silty SAND with Gravel (SM), mostly fine to medium, 31.9% fines, 22.2% fine to coarse subangular gravel, gray, moist (sieve performed)
5		6	S4	6-8-13-7 (21)	24/18				S4 - Silty SAND (SM), fine to medium, 15-20% fines, 5-10% fine to coarse subangular gravel, trace of organic soil, trace of roots, gray to brown, moist
	155.0	8	S5	12-10-9-9 (19)	24/15				S5 - Similar to S4, trace of asphalt
10		10	S6	4-5-5-5 (10)	24/16				S6 - Similar to S4
		12	S7	5-13-13-20 (26)	24/7				S7 - Poorly Graded SAND with Silt (SP-SM), fine to medium, trace coarse, 10-15% fines, 5-10% fine subangular gravel, gray, moist (appears reworked)
	150.0	14	S8	19-18-42-56 (60)	24/22			14.0	
15		16					Sand and Gravel	150.0	S8 - Silty SAND (SM), fine to medium, 15-20% fines, ~10% fine to coarse subangular gravel, gray, moist
	145.0	19	S9	24-35-33-35 (68)	24/4				S9 - Similar to S8, wet
20		21						21.0	Bottom of borehole at 21.0 feet. Borehole backfilled with drill cuttings.
	140.0								
25									

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot from drawing C3-01 titled: "Site Plan, 169 Great Plain Avenue," prepared by Williams & Sparages, dated April 25, 2025, and provided to LGCI by SOCOTEC AE Consulting, LLC via e-mail on May 7, 2025.

LGCI
Lahlaf Geotechnical Consulting, Inc.

BORING LOG

B-3
PAGE 1 OF 1

CLIENT: SOCOTEC AE Consulting, LLC
PROJECT NAME: Proposed Recycling and Disposal Facility Building
LGCI PROJECT NUMBER: 2516
PROJECT LOCATION: Wellesley, MA

DATE STARTED: 5/13/25 **DATE COMPLETED:** 5/13/25
BORING LOCATION: Near SW corner of prop. building
COORDINATES: NA
SURFACE El.: 164 ft. (see note 1) **TOTAL DEPTH:** 22 ft.
WEATHER: 70's / Sunny
GROUNDWATER LEVELS:
DURING DRILLING: Not Encountered
AT END OF DRILLING: Not Encountered
OTHER: -

DRILLING SUBCONTRACTOR: Soil X, Corp.
DRILLING FOREMAN: Edwin Fajardo
DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)
DRILL RIG TYPE/MODEL: Diedrich D-70 Turbo ATV
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb. **HAMMER DROP:** 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: BH **CHECKED BY:** AS

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
		0					Topsoil	0.5	S1 - Top 6": Topsoil
			S1	1-1-7-6 (8)	24/12			163.5	Bot. 6": Silty SAND with Gravel (SM), fine to coarse, 15-20% fines, 15-20% fine to coarse subangular gravel, trace of organic soil, trace of roots, trace of brick, trace of glass, trace of asphalt, dark brown, moist
		2	S2	5-5-14-10 (19)	24/5				S2 - Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, 7.5% fines, 41.8% mostly fine subangular gravel, trace of asphalt, trace of coal ash, brown, moist (sieve performed)
	160.0	4	S3	6-4-6-5 (10)	24/14				S3 - Silty SAND with Gravel (SM), fine to coarse, 15-20% fines, 15-20% fine to coarse subangular gravel, trace of organic soil, trace of roots, trace of brick, trace of glass, trace of asphalt, dark brown, moist
5		6	S4	4-9-15-8 (24)	24/6				S4 - Similar to S3
	155.0	8	S5	4-4-6-6 (10)	24/18		Fill		S5 - Poorly Graded SAND with Silt (SP-SM), fine to medium, 10-15% fines, 0-5% fine to coarse subangular gravel, trace of paper, trace or brick, trace of plastic, gray, moist
10		10	S6	2-9-10-10 (19)	24/7				S6 - Similar to S5
	150.0	12	S7	4-4-7-3 (11)	24/7				S7 - Silty SAND (SM), fine to coarse, 15-20% fines, 5-10% fine to coarse subangular gravel, trace of organic soil, trace of roots, trace of asphalt, trace of brick, trace of glass, black, moist
15		14	S8	3-2-6-15 (8)	24/8				S8 - Poorly Graded SAND with Silt and Gravel (SP-SM), fine to medium, 10-15% fines, 15-20% fine to coarse subangular gravel, trace of roots, trace of organic soil, trace of glass, gray, moist
		16	S9	58-50/3" (50/3")	9/5				S9 - Similar to S8
		16.8						18.0	
	145.0	18	S10	13-18-22-17 (40)	24/19		Sand and Gravel	146.0	S10 - Silty SAND with Gravel (SM), fine to coarse, ~20% fines, 15-20% fine to coarse subrounded gravel, gray, moist
20		20	S11	16-17-20-16 (37)	24/14				S11 - Similar to S10
		22						22.0	Bottom of borehole at 22.0 feet. Borehole backfilled with drill cuttings.
	140.0								
25									

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot from drawing C3-01 titled: "Site Plan, 169 Great Plain Avenue," prepared by Williams & Sparages, dated April 25, 2025, and provided to LGCI by SOCOTEC AE Consulting, LLC via e-mail on May 7, 2025.

BORING LOG

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PAGE 1 OF 1

LGCI Lahlaf Geotechnical Consulting, Inc.

CLIENT: SOCOTEC AE Consulting, LLC
PROJECT NAME: Proposed Recycling and Disposal Facility Building
LGCI PROJECT NUMBER: 2516
PROJECT LOCATION: Wellesley, MA

DATE STARTED: 5/13/25 **DATE COMPLETED:** 5/13/25
BORING LOCATION: Near NW corner of prop. building
COORDINATES: NA
SURFACE El.: 163 ft. (see note 1) **TOTAL DEPTH:** 23.9 ft.
WEATHER: 70's / Sunny
GROUNDWATER LEVELS:
DURING DRILLING: 13.0 ft. / El. 150.0 ft. Based on sample moisture
AT END OF DRILLING: Not Encountered
OTHER: -

DRILLING SUBCONTRACTOR: Soil X, Corp.
DRILLING FOREMAN: Edwin Fajardo
DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)
DRILL RIG TYPE/MODEL: Diedrich D-70 Turbo ATV
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb. **HAMMER DROP:** 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: BH **CHECKED BY:** AS

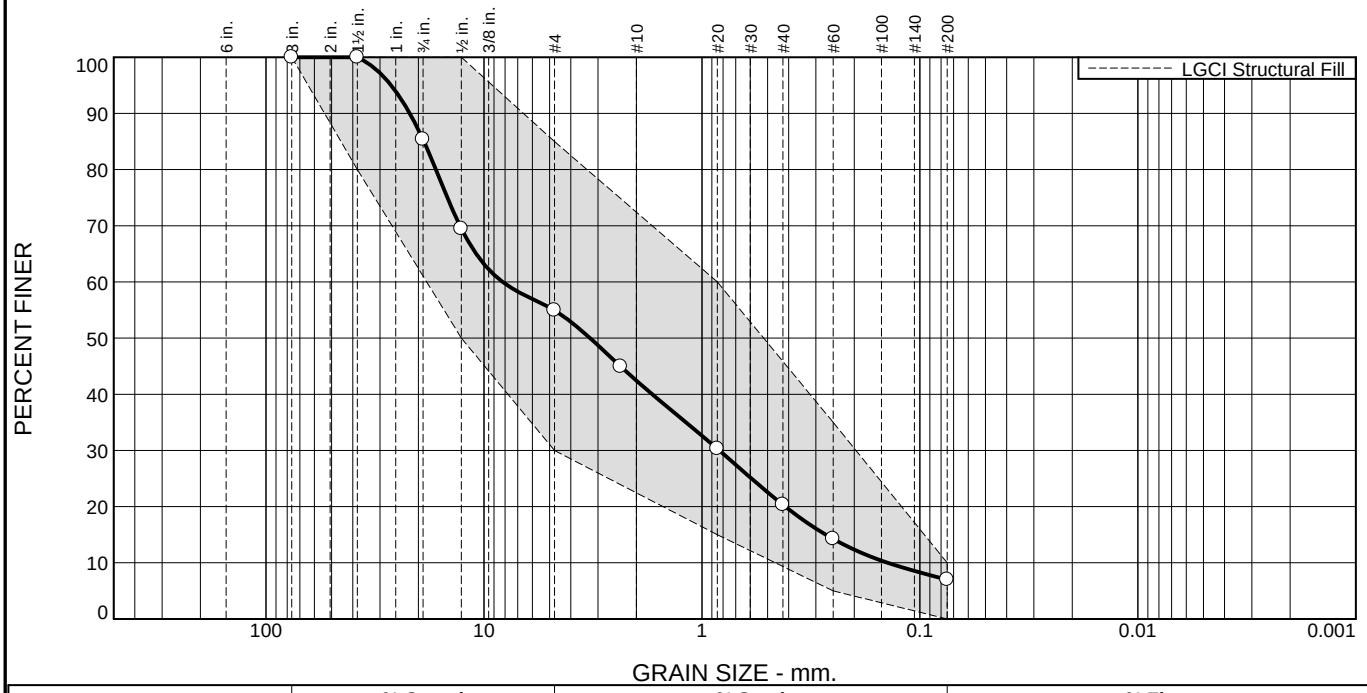
Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
							Asphalt	0.3 / 162.7	4" Asphalt
	160.0	1 – 3	S1	29-23-20-11 (43)	24/19		Fill		S1 - Well Graded SAND with Gravel (SW), fine to coarse, 4.7% fines, 46.3% mostly fine subangular gravel, trace of asphalt, trace of brick, trace of glass, gray, moist (sieve performed)
5		3 – 5	S2	18-31-27-10 (58)	24/5				S2 - Well Graded SAND with Gravel (SW), fine to coarse, 0-5% fines, 45-50% mostly fine subangular gravel, trace of asphalt, trace of brick, trace of glass, gray, moist
		5 – 7	S3	6-6-22-21 (28)	24/7				S3 - Similar to S2
	155.0	7 – 9	S4	28-28-11-7 (39)	24/12				S4 - Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, ~10% fines, 15-20% fine to coarse subangular gravel, trace of organic soil, trace of roots, trace of glass, trace of trash, trace of asphalt, trace of brick, dark brown, moist
10		9 – 11	S5	8-4-4-7 (8)	24/4				S5 - Silty SAND (SM), fine to medium, 20-25% fines, 0-5% fine subangular gravel, trace of organic soil, trace of asphalt, trace of roots, trace of brick, trace of trash, dark brown, moist
		11 – 13	S6	2-2-5-5 (7)	24/0				S6 - No recovery (outside of split spoon stained black)
	150.0	13 – 15	S7	2-2-7-10 (9)	24/1				▽ S7 - Similar to S5, wet
15		15 – 17	S8	4-3-3-2 (6)	24/5				S8 - Silty SAND (SM), fine to coarse, 15-20% fines, 5-10% fine to coarse subangular gravel, trace of organic soil, trace of roots, trace of brick, trace of glass, trace of trash, gray, wet
	145.0	17 – 19	S9	3-4-2-3 (6)	24/7				S9 - Similar to S8
20		19 – 21	S10	19-39-6-22 (45)	24/4	1			S10 - Silty SAND (SM), fine to coarse, 15-20% fines, 10-15% fine to coarse subrounded gravel, trace of metal, gray, wet (appears reworked) REMARK 1: Split spoon bouncing on possible obstruction during sampling of S10.
		21 – 22.5	S11	49-37-72 (109)	18/18		Sand and Gravel	21.0 / 142.0	S11 - Silty SAND (SM), fine to medium, trace coarse, 20-25% fines, 10-15% fine to coarse subrounded gravel, gray to brown, wet
	140.0	23 – 23.9	S12	46-63/5" (63/5")	11/11			23.9	S12 - Similar to S11
25									Bottom of borehole at 23.9 feet. Borehole backfilled with drill cuttings. Ground surface restored with asphalt cold patch.

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot from drawing C3-01 titled: "Site Plan, 169 Great Plain Avenue," prepared by Williams & Sparages, dated April 25, 2025, and provided to LGCI by SOCOTEC AE Consulting, LLC via e-mail on May 7, 2025.

Appendix B – Laboratory Test Results

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	14.6	30.5	12.5	22.1	13.3	7.0	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0	100.0	
1.5"	100.0	80.0 - 100.0	
0.75"	85.4		
0.5"	69.5	50.0 - 100.0	
#4	54.9	30.0 - 85.0	
#8	44.9		
#20	30.3	15.0 - 60.0	
#40	20.3		
#60	14.2	5.0 - 35.0	
#200	7.0	0.0 - 10.0	

* LGCI Structural Fill

Material Description

ASTM (D 2488) Classification: Poorly Graded SAND with Silt and Gravel (SP-SM), fine to coarse, 7.0% fines, 45.1% mostly fine subangular gravel, trace of asphalt, brown

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= SP-SM **AASHTO (M 145)=**

Coefficients

D_{90}= 21.9002 D_{85}= 18.8660 D_{60}= 8.2132
D_{50}= 3.2625 D_{30}= 0.8325 D_{15}= 0.2703
D_{10}= 0.1404 C_u= 58.48 C_c= 0.60

Remarks

Fill sample.

Date Received: 5/13/25 **Date Tested:** 5/21/25

Tested By: NP

Checked By: SG

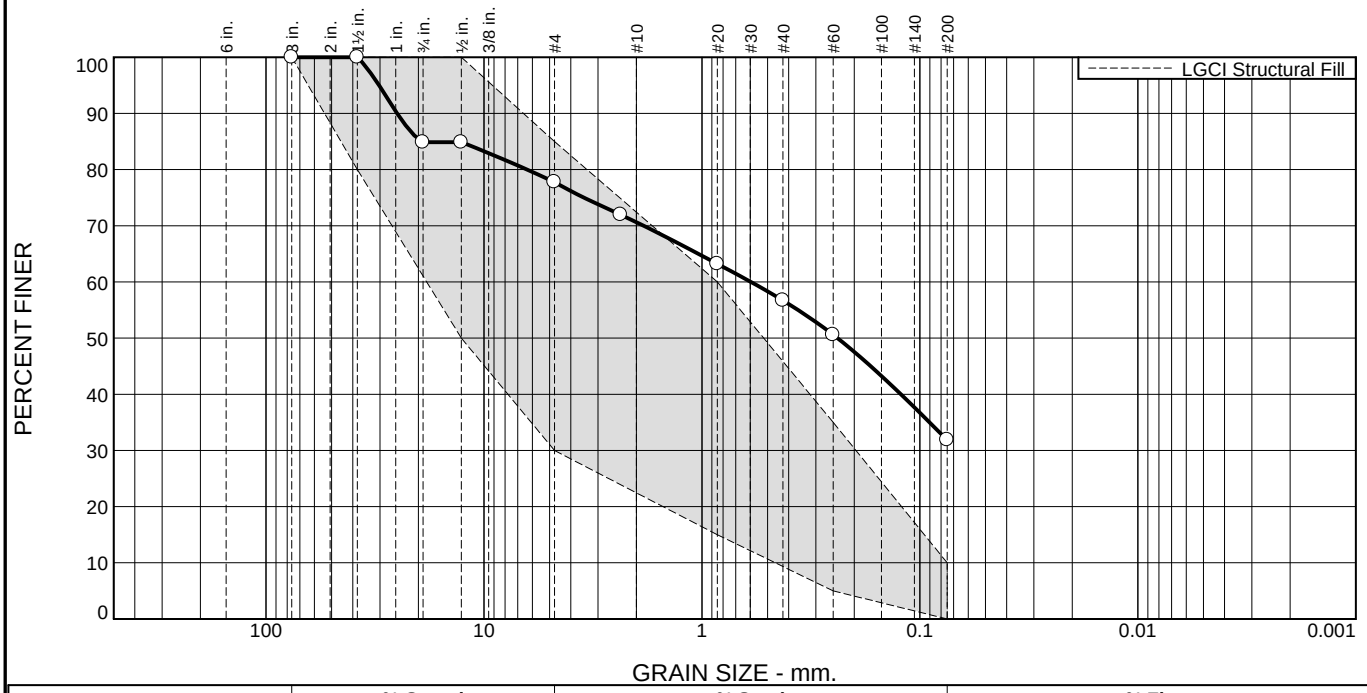
Location: Boring B-1
Sample Number: S1 **Depth:** 1.0' - 3.0'

Date Sampled: 5/13/25

LGCI
Lahlaf Geotechnical Consulting, Inc.

Client: SOCOTEC AE Consulting, LLC
Project: Proposed Recycling and Disposal Facility
Wellesley, MA
Project No: 2516 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	15.1	7.1	7.2	13.9	24.8	31.9	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0	100.0	
1.5"	100.0	80.0 - 100.0	
0.75"	84.9		
0.5"	84.9	50.0 - 100.0	
#4	77.8	30.0 - 85.0	
#8	72.0		
#20	63.2	15.0 - 60.0	X
#40	56.7		
#60	50.6	5.0 - 35.0	X
#200	31.9	0.0 - 10.0	X

* LGCI Structural Fill

Material Description

ASTM (D 2488) Classification: Silty SAND with Gravel (SM), mostly fine to medium, 31.9% fines, 22.2% fine to coarse subangular gravel, gray

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= SM **AASHTO (M 145)=**

Coefficients

D_{90}= 25.0358 D_{85}= 19.2937 D_{60}= 0.5967
D_{50}= 0.2390 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Fill sample.

Date Received: 5/13/25 **Date Tested:** 5/21/25

Tested By: NP

Checked By: SG

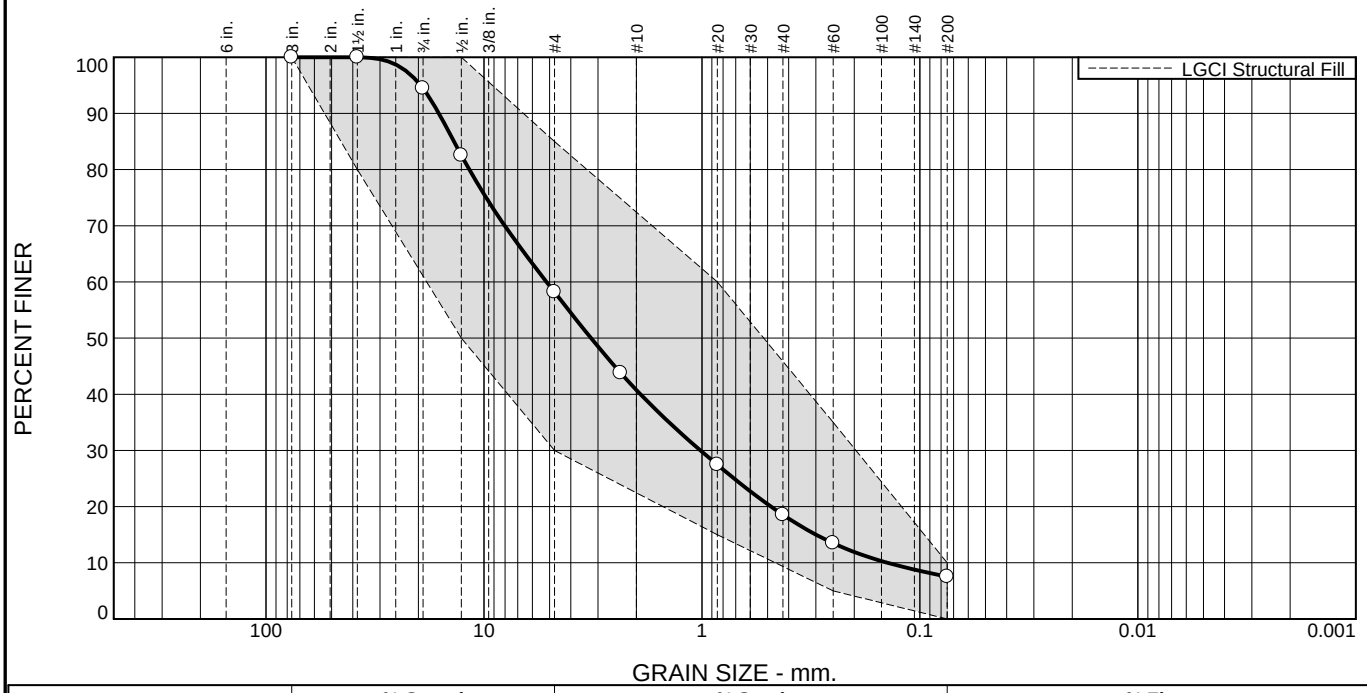
Location: Boring B-2
Sample Number: S3 **Depth:** 4.0' - 6.0'

Date Sampled: 5/13/25

LGCI
Lahlaf Geotechnical Consulting, Inc.

Client: SOCOTEC AE Consulting, LLC
Project: Proposed Recycling and Disposal Facility
Wellesley, MA
Project No: 2516 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.5	36.3	17.4	22.3	11.0	7.5	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0	100.0	
1.5"	100.0	80.0 - 100.0	
0.75"	94.5		
0.5"	82.5	50.0 - 100.0	
#4	58.2	30.0 - 85.0	
#8	43.8		
#20	27.5	15.0 - 60.0	
#40	18.5		
#60	13.5	5.0 - 35.0	
#200	7.5	0.0 - 10.0	

* LGCI Structural Fill

Material Description

ASTM (D 2488) Classification: Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, 7.5% fines, 41.8% mostly fine subangular gravel, trace of asphalt, trace of coal ash, brown

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= SW-SM **AASHTO (M 145)=**

Coefficients

D_{90}= 16.1081 D_{85}= 13.7314 D_{60}= 5.1648
D_{50}= 3.2277 D_{30}= 1.0158 D_{15}= 0.2995
D_{10}= 0.1407 C_u= 36.72 C_c= 1.42

Remarks

Fill sample.

Date Received: 5/13/25 **Date Tested:** 5/21/25

Tested By: NP

Checked By: SG

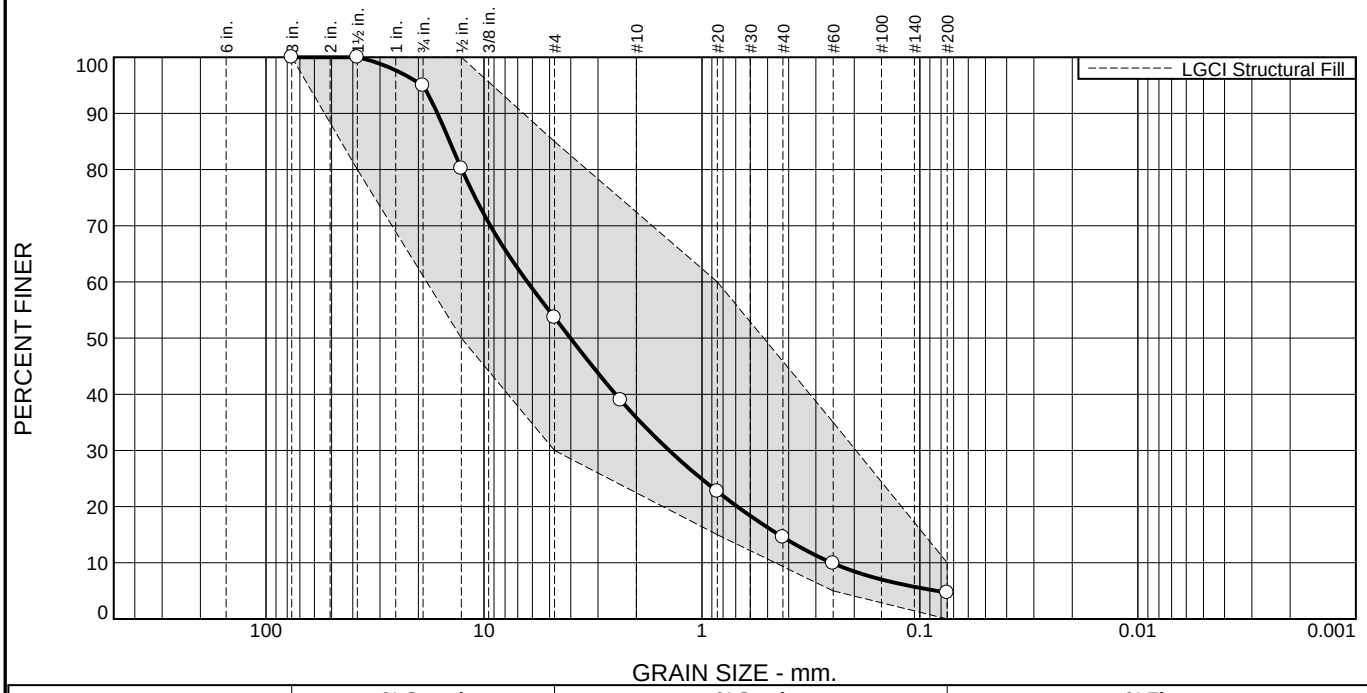
Location: Boring B-3
Sample Number: S2 **Depth:** 2.0' - 4.0'

Date Sampled: 5/13/25

LGCI
Lahlaf Geotechnical Consulting, Inc.

Client: SOCOTEC AE Consulting, LLC
Project: Proposed Recycling and Disposal Facility
Wellesley, MA
Project No: 2516 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.0	41.3	17.9	21.2	9.9	4.7	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0	100.0	
1.5"	100.0	80.0 - 100.0	
0.75"	95.0		
0.5"	80.2	50.0 - 100.0	
#4	53.7	30.0 - 85.0	
#8	38.9		
#20	22.7	15.0 - 60.0	
#40	14.6		
#60	9.9	5.0 - 35.0	
#200	4.7	0.0 - 10.0	

* LGCI Structural Fill

Material Description

ASTM (D 2488) Classification: Well Graded SAND with Gravel (SW), fine to coarse, 4.7% fines, 46.3% mostly fine subangular gravel, trace of asphalt, trace of brick, trace of glass, gray

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= SW **AASHTO (M 145)=**

Coefficients

D_{90}= 16.3420 D_{85}= 14.3596 D_{60}= 6.3226
D_{50}= 4.0129 D_{30}= 1.4133 D_{15}= 0.4434
D_{10}= 0.2540 C_u= 24.89 C_c= 1.24

Remarks

Fill sample.

Date Received: 5/13/25 **Date Tested:** 5/21/25

Tested By: NP

Checked By: SG

Location: Boring B-4
Sample Number: S1 **Depth:** 1.0' - 3.0'

Date Sampled: 5/13/25

LGCI
Lahlaf Geotechnical Consulting, Inc.

Client: SOCOTEC AE Consulting, LLC
Project: Proposed Recycling and Disposal Facility
Wellesley, MA
Project No: 2516 **Figure**