

February 5, 2024

Mr. Lou Petrozzi
Wall Street Development Corporation
2 Warthin Circle
Norwood, MA 02062

Re: The Residences at Darwin Commons Aquifer Impact Analysis - Walpole, Massachusetts

Dear Mr. Petrozzi:

Northeast Geoscience, Inc. (NGI) has prepared the following aquifer impact analysis of the proposed Residences at Darwin Commons proposed 40B development off Darwin Lane in Walpole, MA (see Figure 1 for Site Location). The proposed residential development is in the Town of Walpole Water Resources Protection District and is in close proximity to the Town of Walpole Washington Street Wells (PWSID No. 4307000-08G, 09G, 23G, 20G, 21G, 22G and 23G) along School Meadow Brook. These are also a number of other Town of Walpole Public Water Supply Wells in the Mine Brook Aquifer west and north of the Darwin Commons Site. Concerns have been raised about potential impacts to the Town of Walpole public water supply wells as a result of the proposed Residences at Darwin Commons project. NGI has been contracted to evaluate potential impacts to the wells from the proposed project, propose potential mitigation measures, and the results are presented herein.

NGI reviewed plans for the project prepared by Glossa Engineering dated August 13, 2021 and revised plans stamped on December 7, 2023, the Town of Walpole Zoning By-laws revised through May 2023, specifically Section 12 - Water Resources Protection Overlay District, along with the Town of Walpole Zoning Map. NGI also reviewed 310 CMR 22.21, the Massachusetts Public Drinking Water Supply protection regulations, the Massachusetts Stormwater Standards and Stormwater Handbook, and the Stormwater Report for the Residences at Darwin Commons dated August 28, 2023, revised December 7, 2023 prepared by Glossa Engineering of East Walpole, MA.

1.0 SITE DESCRIPTION

The property is located at the south end of Darwin Lane in the Town of Walpole, MA, and consists of two parcels of undeveloped land totaling approximately 3.45 acres, as shown on Walpole Assessor's Map 42, Parcels 240 and 227-13. Darwin Lane is a public way that intersects with Common Street and has a paved width of 26 feet with one sidewalk. Darwin lane is approximately 753 feet in length from the intersection with Common Street to the cul-de-sac at the end on the Lane. The site has frontage on the Darwin Lane cul-de-sac on, and access for the project will be from this cul-de-sac.

There are 13 existing single-family homes on Darwin Lane and five existing single-family homes on Victoria Lane, which intersects Darwin Lane. The Darwin Lane/Victoria Circle area is in the Town of Walpole Residential B Zoning District (RB). The drainage on Darwin Lane is directed to two existing infiltration basins located behind the houses at 27 and 31 Darwin Lane. Figure 2 is a site plan showing existing conditions at the site, and the proposed conditions site plan is presented on Figure 3.

The site is wooded and topography slopes to the southwest toward a regional set of power transmission lines and School Meadow Brook and associated wetlands. The soils on site are sandy and classified in the Merrimac Group. The topography is typical of glacial outwash deposits. There is an esker on the northern property boundary.

2.0 PROJECT DESCRIPTION

The proposed project consists of 28 residential townhouse units in six buildings to be served by Town water and Town sewer on 3.45 acres of currently undeveloped land. Dimensions of site features are presented on Table 1. The proposed development includes 33,831 ft² of pavement, 33,600 ft² of roof area, and 82,647 ft² of lawn and landscaped areas. The proposed conditions plan is presented on Figure 3.

Municipal sewer service currently serves the residences on Darwin Lane through an existing sewer main on Darwin Lane. The sewer main will be extended to provide sewer connections for the proposed residences, which will be connected to a proposed sewage lift station in the project. The existing 8-inch diameter ductile iron water main on Darwin Lane will be extended into the development to serve the proposed residential units with individual metered service connections.

3.0 REGULATORY CONTROLS

3.1 Drinking Water Protection

The proposed project is located within the Zone II Recharge Area of the Town of Walpole Public Water Supply Wells and the Town of Walpole Water Resource Protection Overlay Zoning District (WROPD). The Massachusetts Drinking Water Regulations, 310 CMR 22.00, require Towns with public water supplies to delineate and protect the Zone I and Zone II Recharge Areas for groundwater sources. The Zone II Recharge Area is the area of an aquifer that could potentially contribute water to the wells, and should be protected. 310 CMR 22.21 (2) Wellhead Protection and Zoning and Non-zoning Controls requires Towns with public water supplies to adopt an overlay zoning district restricting future land uses in Zone I and Zone II with the objective of protecting the quality and quantity of water derived from existing wells. The Town of Walpole adopted current Section 12 of the Walpole Zoning By-laws titled "Water Resources Protection Overlay District" (WROPD) in compliance with 310 CMR 22.21, had the bylaw reviewed and approved by the Massachusetts Department of Environmental Protection (MassDEP) and the Massachusetts Attorney General, and adopted an updated by-law by home rule at Town Meeting in 2023. The purpose of the By-law is to protect the quality and quantity of drinking water supplies in Walpole.

WROPD is an Overlay Zoning District including A - Uses Allowed by Right, B - Prohibited Uses, and C - Uses requiring Special Permit from the Zoning Board of Appeals or Planning Board. The proposed project is compliant with the by-law, but requires a special permit pursuant to Section 12 3. c. (5). This provision provides that a Special Permit is required for "Any residential use that will render impervious more than 15% or 2,500 ft² of the lot, whichever is greater". Special permits may be granted if the applicant can demonstrate that a system of artificial recharge will be provided that will not result in degradation of groundwater quality as certified by a qualified expert. Section 12.4 of the By-law established procedures for issuance of a special permit, including a list of materials that must be submitted in connection with the application which are listed as follows:

1. A complete list of all chemicals, pesticides, fuels, and other potentially toxic or hazardous materials to be used or stored on the premises in amounts greater than normal household quantities;

2. A description of measures proposed to protect all storage containers/facilities from vandalism, corrosion, and leakage, and to provide for control of spills;
3. A description of potentially toxic or hazardous wastes to be generated, indicating storage and disposal methods;
4. A plan showing the storage location and, where storage is indoors, approximate floor elevation of any storage facilities for toxic or hazardous materials, fertilizers and waste;
5. Where applicable, typical schematic profile for any storage facility or structure designed to contain potential spills;
6. Evidence of approval by the Massachusetts Department of Environmental Protection (DEP) of any industrial waste treatment or disposal system or any wastewater treatment system over fifteen thousand (15,000) gallons per day capacity;
7. For underground storage of toxic or hazardous materials, evidence of qualified professional supervision of system design and installation;
8. Where applicable, all necessary engineering reports that demonstrate compliance with the Massachusetts Stormwater Policy as amended;
9. Where applicable, a description of the phasing of earth removal and replacement;
10. Analysis by a technically qualified expert, such as a registered professional engineer, certifying that the integrity of the underlying groundwater resources will not be degraded.

The proposed project meets these criteria outlined for a Special Permit as follows: No chemical, fuels, pesticides or other oil or hazardous materials will be stored on site in quantities greater than those associated with normal household use, and no hazardous waste will be generated at the site (Provision 1-5 and 7), as it is a residential project with outside areas to be maintained by professional contract landscapers. The site will be served by Town sewer so Provision 6 of the Special Permit criteria is not applicable. Provision 8 has been met by the Glossa Engineering Stormwater Report and Tetra Tech, Inc. peer review and requested revisions. Provision 9 is not applicable as earth removal is not proposed as part of this project and any replacement of earth required will be scheduled accordingly.

Provision 10 requires analysis by a technically qualified expert certifying that the underlying groundwater resources will not be degraded. The purpose of this report is to meet this requirement. NGI, and Jay Billings specifically, qualify as a technical expert in wellhead protection as supported by the attached professional resume. Information included in this report and the Glossa Engineering Stormwater Report are presented in support of this analysis and certification.

3.2 Stormwater Management

Massachusetts first adopted stormwater management policy in 1996 and has revised and improved it as new stormwater treatment technologies have become available. The Massachusetts Stormwater Policy promotes direct infiltration of roof drainage, treatment of pavement drainage with best management practices to trap oil and grease and remove sediment, and infiltration of discharges of treated stormwater to promote aquifer recharge. The Massachusetts Stormwater Policy lists stormwater management standard (6) as follows:

6. Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook.

The Town of Walpole has adopted Chapter 499 of the Regulatory By-laws pertaining to Stormwater Management, which are as strict as, and more detailed than the Massachusetts Stormwater Standards. A stated objectives of Walpole's Stormwater Regulation is protection of drinking water supplies from contamination and promotion of aquifer recharge. In summary, the project is located in a sensitive area due to the proximity of the Town wells. The Applicant is aware of the sensitive nature of protecting the water supplies from contamination. As such, the stormwater management system proposed for the project has been designed with stormwater quality treatment groundwater protection and aquifer recharge as primary objectives. In addition, stormwater discharges in Zone II are regulated by the State and the Town

4.0 SITE GEOLOGY AND HYDROGEOLOGY

Figure 4 is a Bedrock Geologic Map of the site. The site is underlain by the Dedham Granite of Proterozoic Age. No bedrock outcrops are visible on site. Figure 5 is a Surficial Geologic Map of the site. The site is underlain by deposits mapped as sand and gravel of glacial outwash origin and Pleistocene Age. The deposits are overlain in some areas by more recent swamp deposits. These deposits are permeable and form a productive aquifer along School Meadow Brook, a tributary to the Neponset River which discharges to the Atlantic Ocean at Dorchester Bay south of Boston Harbor. The School Meadow Brook Aquifer is an important source of water for the Town of Walpole. The other major source of drinking water for the Town of Walpole is the Mine Brook Aquifer to the north which is also a tributary to the Neponset River.

5.0 CURRENT LAND USES AND ENVIRONMENTAL RECEPTORS NEAR THE PROJECT

Figure 6 is a Land Use Map showing current land use within ½ mile of the site. Land use within ½ mile of the site is 14.26% light residential development along Common Road, Washington Street and multiple other residential roads including Darwin Lane. The remaining land within ½ mile of the site is undeveloped forested land, grassland or water. The light development results in 9.91% impervious surface within ½ mile of the site. Figure 7 is an Environmental Resources Map of the Darwin Commons Site and surrounding area. School Meadow Brook and associated wetland areas are located west of the site and are considered to be sensitive receptors to the project. The Town of Walpole maintains at least six gravel packed public water supply wells, the Washington Street Wells, in the School Meadow Brook Aquifer west of the site. The School Meadow Brook Aquifer is a surficial sand and gravel unconfined valley aquifer formed from deposits of glacial outwash origin and Pleistocene Age that flows to the north toward the Neponset River. These public water supply wells are the most significant sensitive receptors to the proposed project, and one of the wells (Washington Well No. 5 - 08G) is within 400 feet of the closest boundary of the site.

These existing public water supply wells provide drinking water supply for the Town of Walpole and are treated for iron and manganese removal, corrosion control, fluoridation and disinfection. The wells produce water that meets current drinking water standards for regulated parameters and the system is currently in compliance with the Safe Drinking Water Act. The area that contributes water to the wells, the MassDEP approved Zone II Recharge Area, is protected by the Walpole Water Resources Protection Overlay Zoning District (WROPD). Allowed future land uses in the WROPD are limited to those that will not compromise the quantity and quality of water derived from the Town Wells. The proposed project and other types of residential development are allowed uses in the WROPD. As mentioned, Section 12 - WROPD lists land uses that require a special permit. This list includes residential uses that render impervious more than 15% or 2,500 ft² of a lot, whichever is greater. The proposed project is eligible to obtain a Special Permit under this provision. As a prerequisite for a Special Permit, the applicant must demonstrate compliance with the Massachusetts Stormwater Policy, as amended, and present an analysis by a technically qualified expert, such as a professional engineer, certifying that the underlying groundwater resources will not be degraded.

Figure 8 is a contributing watershed map for the site showing the 17.7-acre watershed for the site. The watershed is all underlain by glacial outwash, is in the Zone II Recharge Area of the Town of Walpole Wells and contains 25 existing residential single-family houses, lawns, gardens, driveways and public roads. The characteristics of the existing watershed are presented on Table 2. The Darwin Commons project will increase paved area by 4.6%, roof area by 4.4% and lawn and landscaped area by 10.4% in the watershed.

6.0 POTENTIAL WATER SUPPLY IMPACTS OF THE PROJECT AND PROPOSED MITIGATING MEASURES

A Stormwater Management Plan dated August 28, 2023, revised December 7, 2023, has been prepared by Glossa Engineering of East Walpole, MA in accordance with the Massachusetts Stormwater Management Standards. The stormwater management system design utilizes the permeable nature of the soils on site, and relies heavily on infiltration of stormwater. The stormwater collection and treatment system include deep sump catch basins designed to collect sediment with hooded outlets designed to trap grease and oil. These structures are designed to be maintained by regular removal of collected sediment, oil and grease. The stormwater management system also includes stormceptor water quality units designed to remove additional sediment, oil and grease using a low water velocity settling chamber that is designed to avoid sediment and oil remobilization during larger, high flow storm events. The stormceptor units are designed to be regularly maintained by removing trapped sediment, oil and grease from the units through access ports using a vacuum truck. The Stormwater Plan prepared by Glossa Engineering includes an Operation and Maintenance Plan and schedule for the system and information on the design and performance of the stormceptor units. Treated stormwater leaving the stormceptor units is directed to an infiltration trench designed to infiltrate all but the largest storm events. Roof drainage, which is considered clean, by-passes the stormwater treatment system and is routed directly to the infiltration trench, reducing flows in proposed treatment structures. It is important to note that infiltration of stormwater results in aquifer recharge and simulates undeveloped land infiltration to preserve aquifer yield. Wastewater will be exported from the site and discharged to the Walpole Sewer system. Town water will be imported to the site and some of it will be used for irrigation, and this water meets drinking water standards.

Stormwater from the site will be treated in accordance with the Town of Walpole Stormwater Regulations and the Massachusetts Stormwater Standards. These standards include specific requirements for percentage of total suspended solids that are removed and are intended to improve the quality of stormwater prior to discharge. These systems are not able to remove contaminants that are dissolved in the water unless they adsorb to sediment particles and are removed in that manner.

Most dissolved pollutants, such as sodium and chloride from road salt, are not removed by stormwater treatment structures and are included in the water infiltrated to the School Meadow Brook Aquifer. Stormwater often includes many other dissolved contaminants as well, that are spilled or left on impervious surfaces. Concentrations of these contaminants are typically low as they are mobilized during precipitation events. This type of non-point source contamination of dissolved constituents is an issue in all urban stormwater runoff. Fortunately, other than road salt, these contaminants are mostly contained in the first flush of runoff after a dry period, typically occur at low concentrations and experiences further dilution in detention structures, through assimilation with additional stormwater and during aquifer transport. Water from the Town of Walpole Wells is currently very clean.

According to the Town of Walpole 2022 Water Quality Report Low concentrations of Simazine, an herbicide and a good example of a non-point source contaminant, was detected at a maximum concentration of 0.15 ug/l and Total PFAS6 was detected at a maximum concentration of 16.1 ng/l, both of which are below applicable Maximum Contaminant Levels for drinking water.

The proposed project will be connected to the sewer system, so wastewater will be exported from the site and treated at a wastewater treatment plant. Town water will be imported to the site and used for landscape and lawn irrigation and this water meets drinking water standards.

Activities that result in deposition of substances on impervious surfaces including oil and grease from cars, road salt, animal waste and other materials from accidental spills. The Stormwater Report prepared by Glossa Engineering includes a Construction Period Pollution Plan and a Long-term Pollution Plan which outline mitigating measures to protect stormwater quality and reduce the pollutant loads on treatment structures primarily through good housekeeping and maintenance practices. Attached as Exhibits I and II are the Construction Period Pollution Plan and Long-term Pollution Plan.

The proposed project renders 45% of the site impervious, and generates stormwater. About half of this water is roof drainage (22%) which is considered clean water by MassDEP, by-passes the treatment system and is directly infiltrated to groundwater. Stormwater from paved areas is directed to the stormwater treatment system described in the Stormwater Report by Glossa Engineering. Stormwater treatment features of the system include deep sump catch basins with hooded outlets, and stormceptor units to remove sediment, oil and grease. Treated stormwater is infiltrated on site after treatment and prior to combination with the roof drainage as aquifer recharge.

Stormwater discharge and lawn maintenance practices are the two most obvious sources of potential water quality or quantity impact to the identified sensitive receptors. Landscaping practices can be a source of non-point source pollution of fertilizers, pesticides and herbicides as shown by the detection of Simazine in one of the Town wells. The Darwin Commons landscape plan will require the hiring of a professional landscape company with licensed pesticide applicators that file reports on products and volumes used in the Commonwealth and meet continuing education requirements as a license requirement. The remaining landscaped areas in the watershed are currently mostly managed by home owners.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based on this analysis, NGI derives the following conclusions:

1. The proposed Darwin Commons project is in the Zone II Recharge Area for the Town of Walpole Washington Street Wells, and is in close proximity to the wells.
2. The Washington Street Wells, School Meadow Brook and associated wetlands represent the most proximal sensitive receptors to the Darwin Commons Project.
3. The proposed Darwin Commons project is a permitted residential use within the Section 12 of the WRPOD with a Special Permit for impervious area over 15% of the lot area. The applicant has designed the project to promote treatment and infiltration of stormwater as required for a Special Permit under WRPOD.
4. The applicant's engineering team, Glossa Engineering, has designed the project to address stormwater management, treatment and recharge to the aquifer as a primary design parameter for wellhead and water resource protection. The design of the development and stormwater management system have been prepared to comply fully with the Massachusetts Stormwater Management Standards.
5. The continued performance of the stormwater treatment system will be dependent on timely and proper maintenance of the system as described in Exhibits I – Construction Period Construction Plan and Exhibit II – Long Term Pollution Plan attached as a part of this report.
6. NGI, hereby certifies that the proposed project will not degrade the quality of water in the aquifer, provided that is constructed and maintained as proposed. The project has been designed to include a stormwater management system including water treatment devices that meet Massachusetts and Town of Walpole Stormwater Policies. It is important to note that the drainage system will function as designed if it is maintained properly, the pollution prevention plan is implemented, and there are no major releases of oil or hazardous materials from accidents on or near the site.

If you require additional information, please do not hesitate to contact me.

Sincerely,
Northeast Geoscience, Inc.



Jay Billings
Hydrogeologist

cc: Mr. Lou Petrozzi - Wall Street Development Corporation
Mr. John Glossa - Glossa Engineering, Inc.
Jay Talerman, Esq. – Mead, Talerman & Costa LLC

List of Attachments

Table 1 - Site Feature Dimensions

Table 2 - Watershed Feature Dimensions

Figure 1 - Locus Map

Figure 2 - Site Plan with Existing Conditions

Figure 3 - Site Plan with Proposed Conditions

Figure 4 - Bedrock Geologic Map

Figure 5 - Surficial Geologic Map

Figure 6 - Land Use Map

Figure 7 - Environmental Resources Map

Figure 8 - Contributing Watershed Map

Exhibit 1 - Construction Period Pollution Prevention Plan

Exhibit 2 - Long Term Pollution Prevention Plan

References

Stone, Janet R and Stone, Byron D. 2018. Surficial Materials of the Medfield Quadrangle, Massachusetts, Scientific Investigations Map 3402, Quadrangle 106, Massachusetts Geological Survey, Amherst, MA

Table 1 - Site Feature Dimensions

Feature	ft2	acres
Total Lot Area	150,079	3.29
Pavement/Parking	33,831	0.74
Roof	33,600	0.74
Lawn/Landscape	82,647	1.81

Notes: ft2 - square feet

0.45

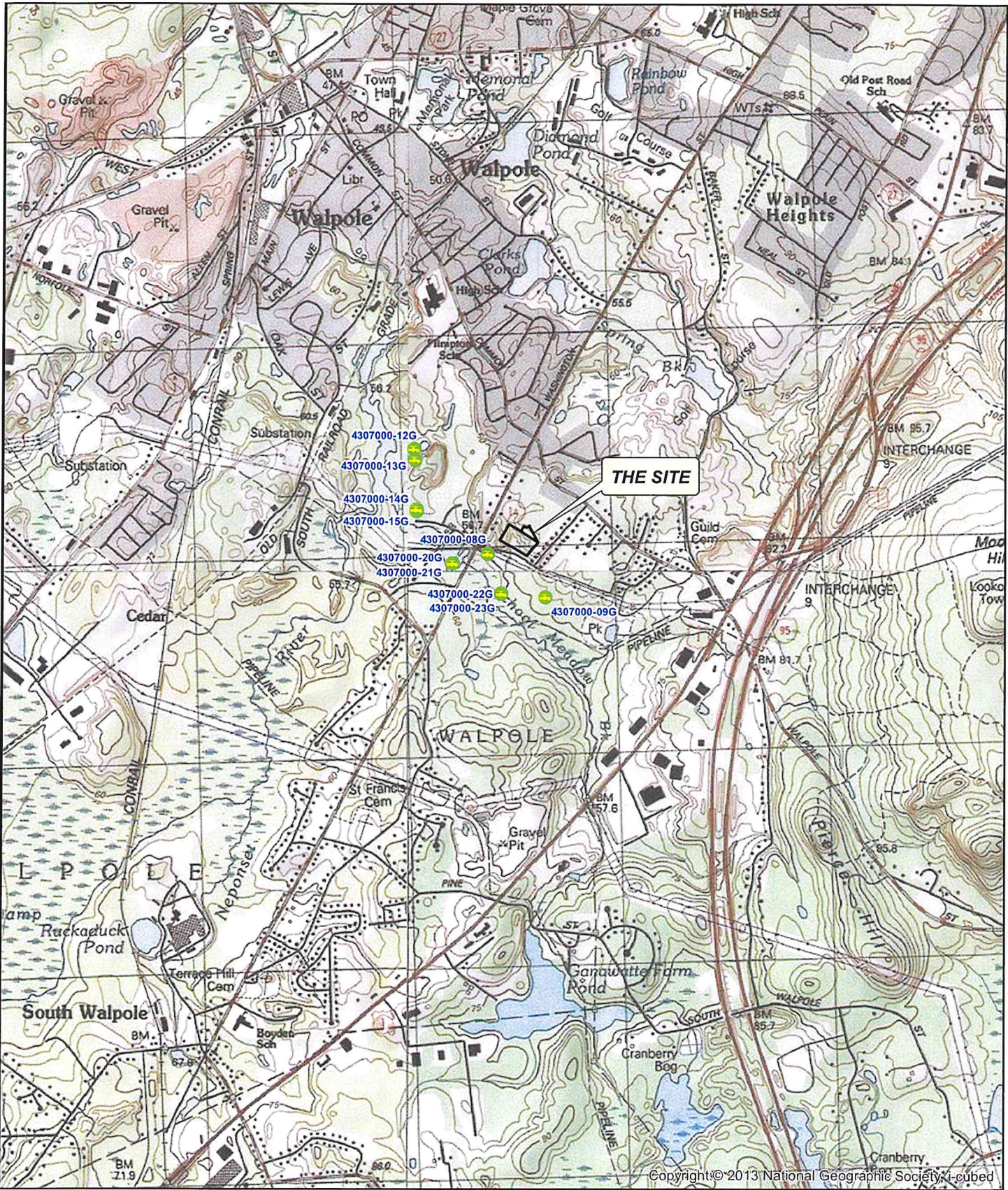
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**Table 2 - Watershed Dimensions
Darwin Commons - Walpole, Massachusetts**

Feature	Existing Conditions		Percentage		Proposed Conditions		Percentage		Percentage Increase
	ft2	acres	%	%	ft2	acres	%	%	
Total Watershed	771,012	17.70	100.00	100.00	771,012	17.7	100.00	100.00	0.00
Pavement/Parking	53,143	1.22	6.89	6.89	86,974	2.0	11.28	11.28	4.39
Roof	85,813	1.97	11.13	11.13	119,413	2.7	15.49	15.49	4.36
Lawn/Landscape	125,000	2.87	16.21	16.21	207,647	4.8	26.93	26.93	10.72

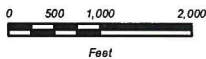
Notes: ft2 - square feet

Lawn/Landscape for existing houses estimates at 5,000 ft2/house



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 ASSESSOR PARCEL
 COMMUNITY PWS



LOCUS MAP
 THE RESIDENCES AT DARWIN COMMONS
 DARWIN LANE
 WALPOLE, MASSACHUSETTS

NGI REF: LocusMap_LetPort.mxd

Drafted By: JAF

Date: 08/18/2023

Source: MassGIS; ArcGIS.com



FIGURE 1

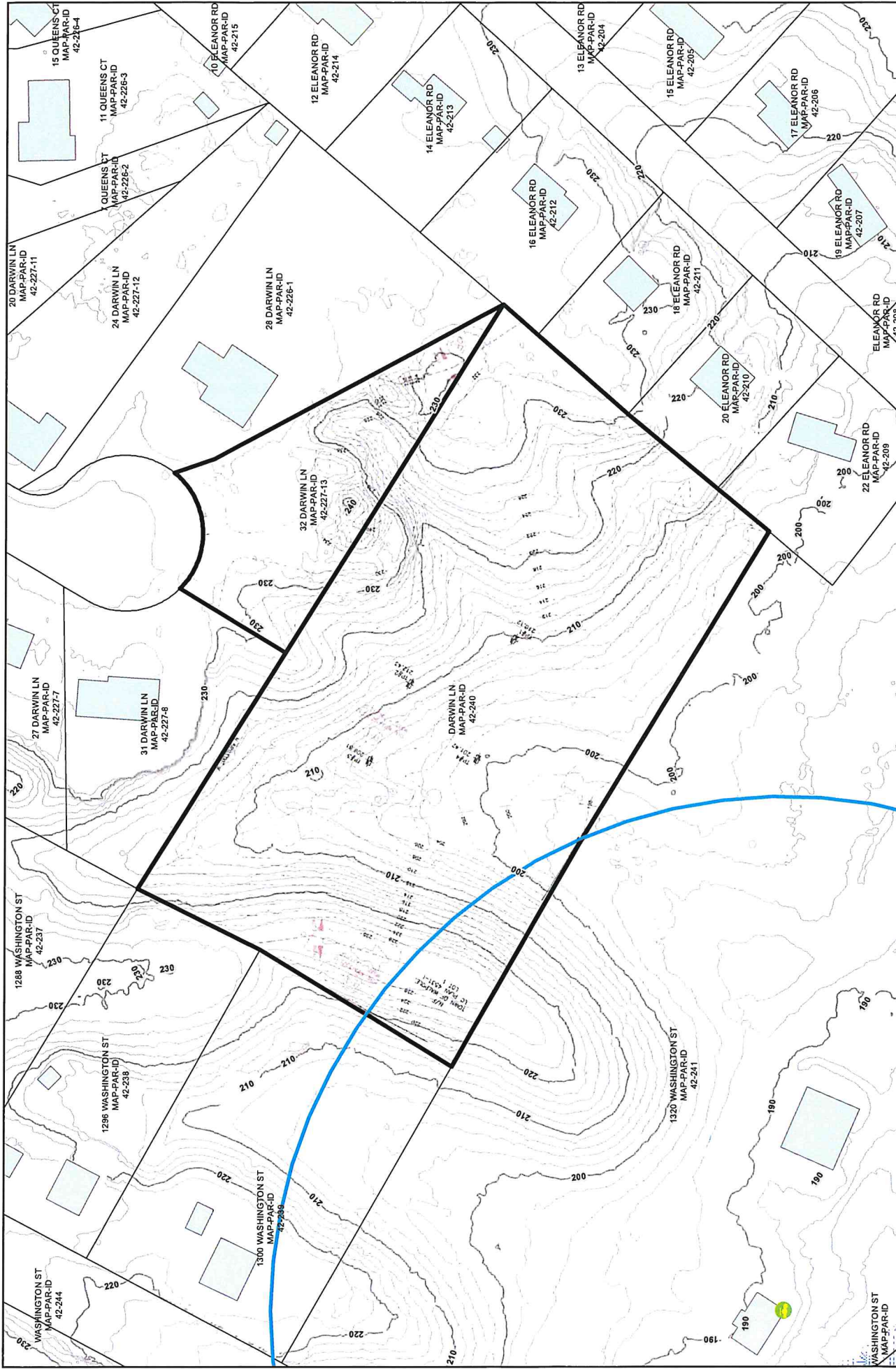
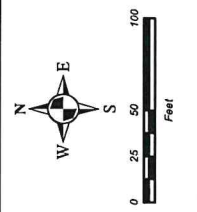


FIGURE 2

PRE-DEVELOPMENT SITE MAP
 THE RESIDENCES AT DARWIN COMMONS
 DARWIN LANE
 WALPOLE, MASSACHUSETTS

NGI REF: LocusMap.mxd
 Drafted By: JAF
 Date: 02/05/2024
 Source: MassGIS, ArcGIS.com



COMMUNITY PWS
 BUILDINGS
 ZONE I WELLHEAD PROTECTION AREA

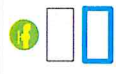
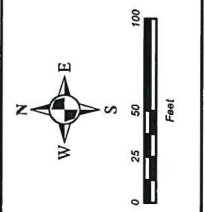




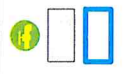
FIGURE 3

POST-DEVELOPMENT SITE MAP
 THE RESIDENCES AT DARWIN COMMONS
 DARWIN LANE
 WALPOLE, MASSACHUSETTS

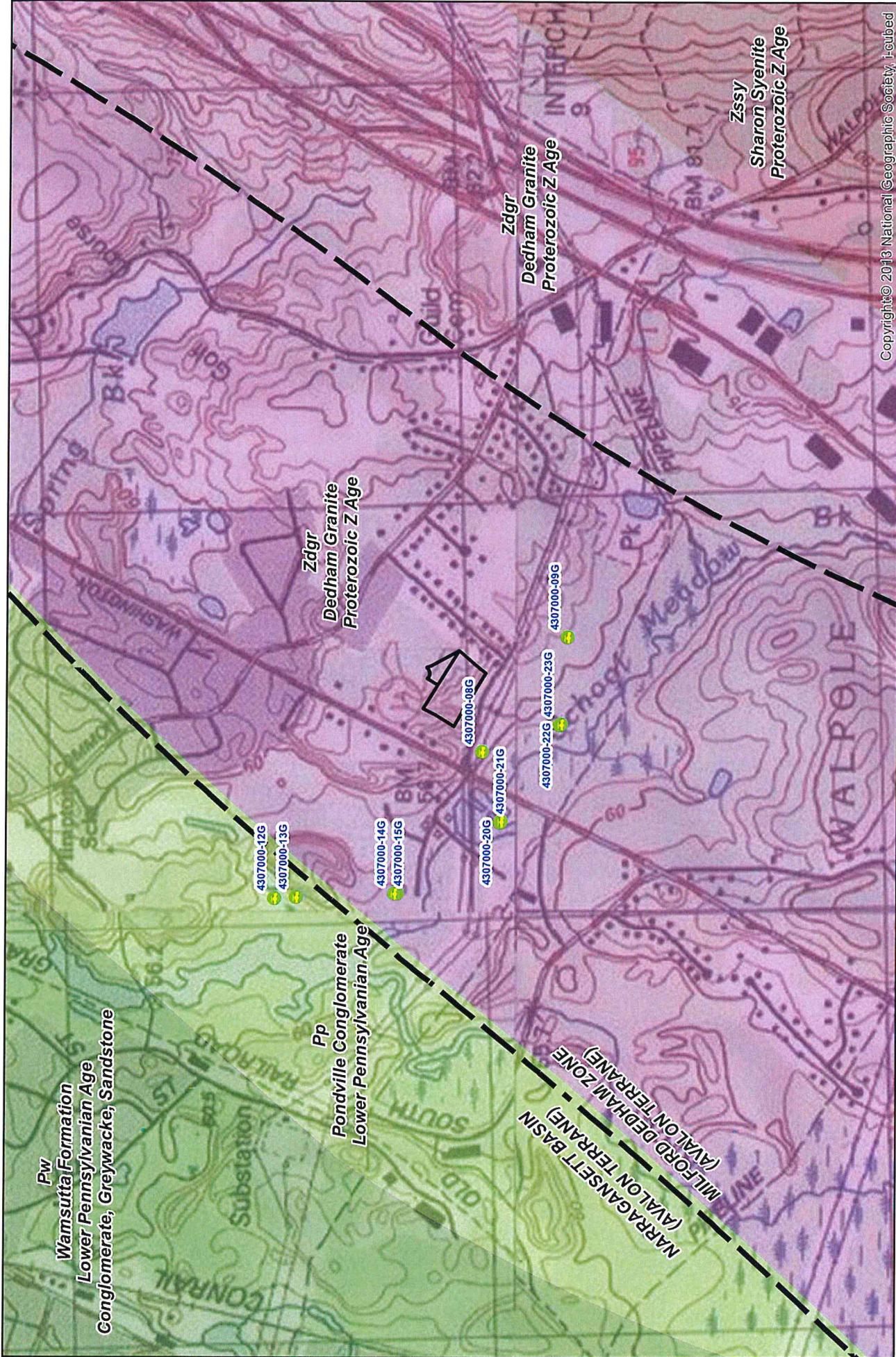
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 Drafted By: JAF
 Date: 02/05/2024
 Source: MassGIS; ArcGIS.com



COMMUNITY PWS
 BUILDINGS
 ZONE I WELLHEAD PROTECTION AREA

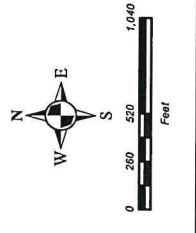


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 Water Supply & Environmental Consulting



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FIGURE 4	
BEDROCK GEOLOGIC MAP	
THE RESIDENCES AT DARWIN COMMONS	
DARWIN LANE	
WALPOLE, MASSACHUSETTS	
NGI REF: LocusMap.mxd	Date: 08/18/2023
Drafted By: JAF	Source: MassGIS; ArcGIS.com



Legend:

- COMMUNITY PWS
- BUILDINGS
- ZONE I WELL HEAD PROTECTION AREA
- ASSESSOR PARCELS
- MAPPED FAULT

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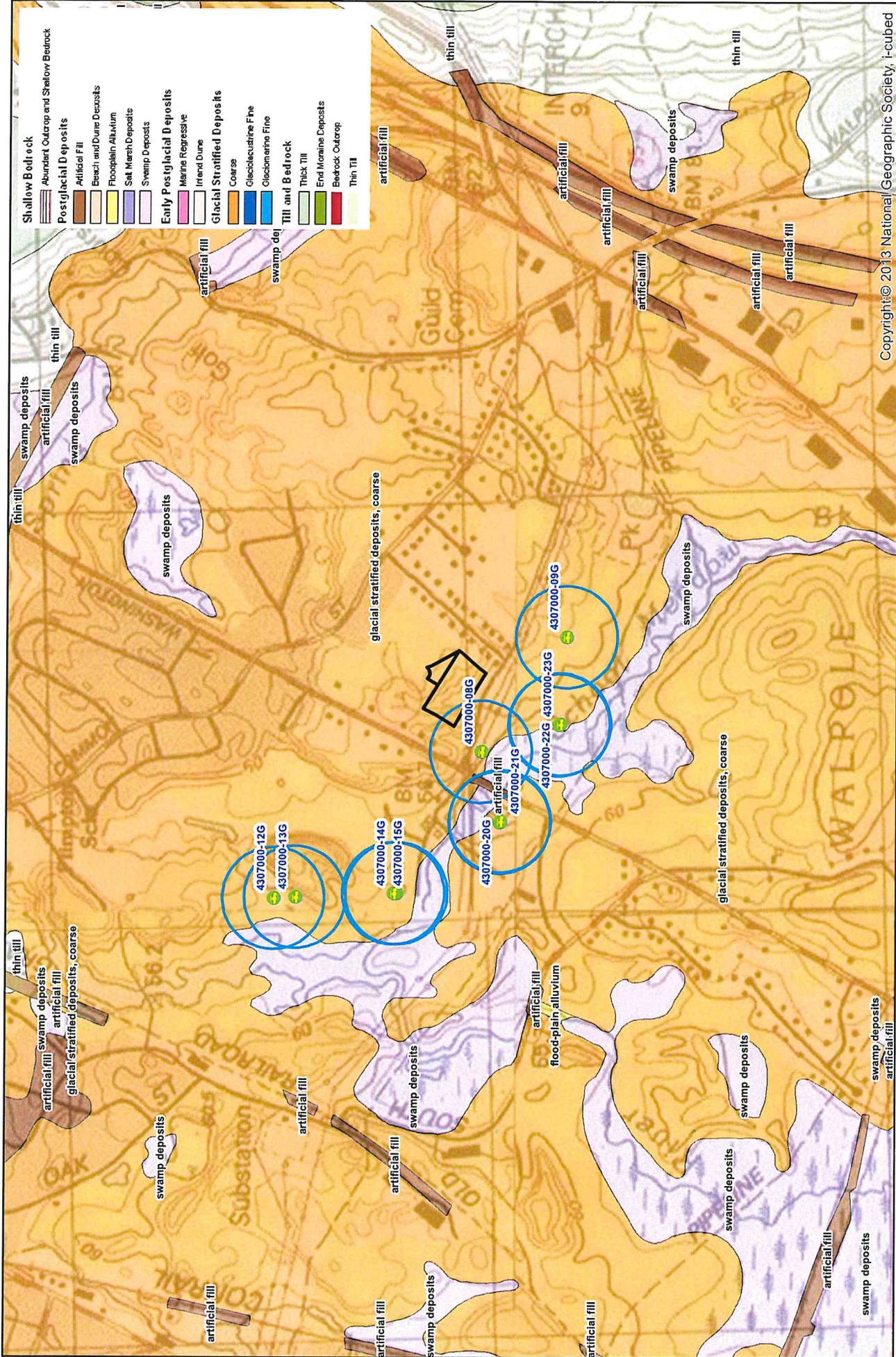
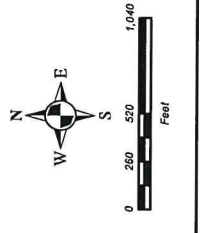


FIGURE 5

SURFICIAL GEOLOGIC MAP
THE RESIDENCES AT DARWIN COMMONS
 DARWIN LANE
 WALPOLE, MASSACHUSETTS

NGI REF: LocusMap.mxd
 Drafted By: JAF
 Date: 08/18/2023
 Source: MassGIS; ArcGIS.com



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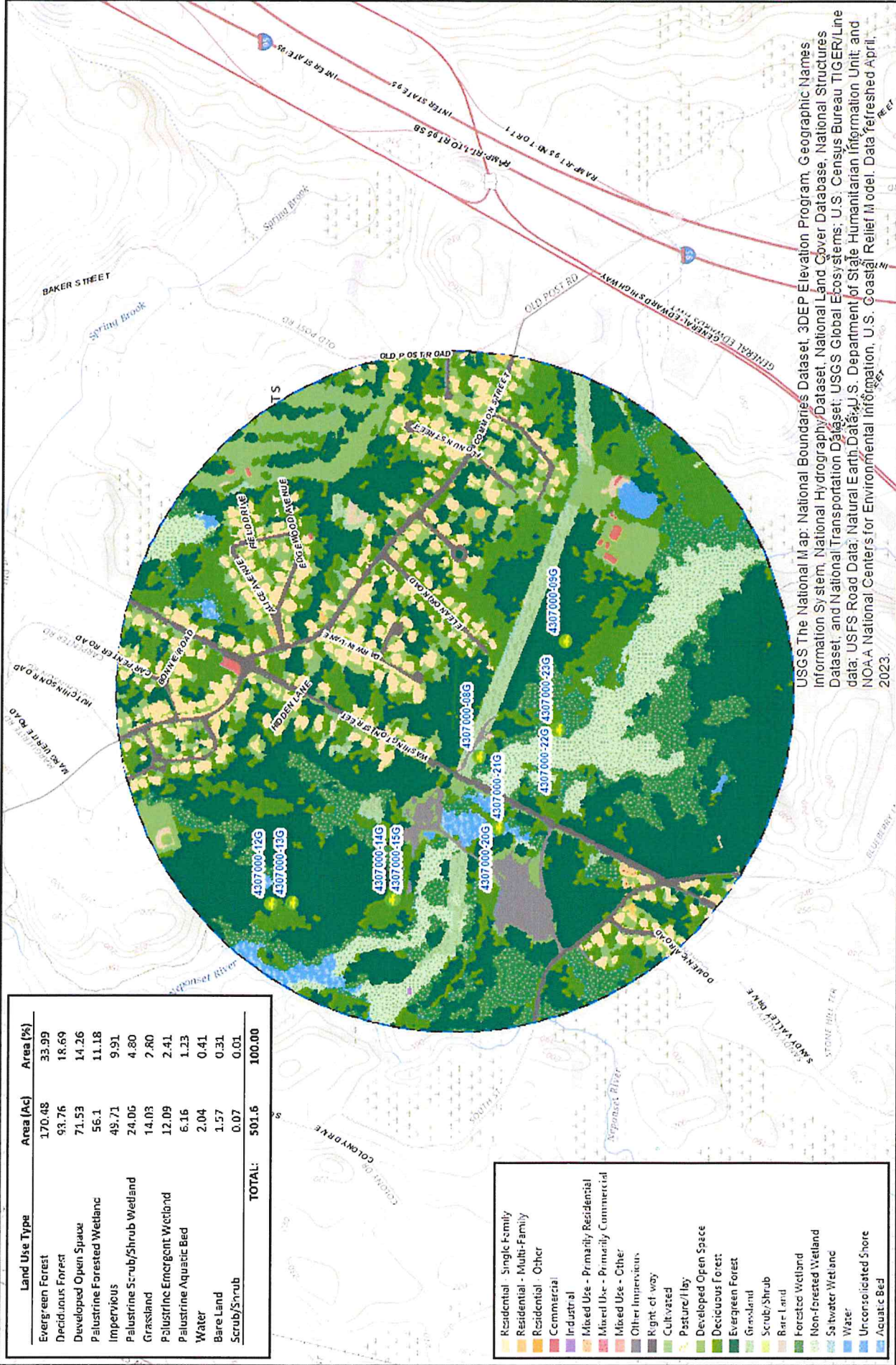
BUILDINGS

ZONE I WELLHEAD PROTECTION AREA

ASSESSOR PARCELS

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USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed April, 2023.

Land Use Type	Area (Ac)	Area (%)
Evergreen Forest	170.48	33.99
Deciduous Forest	93.76	18.69
Developed Open Space	71.53	14.26
Palustrine Forested Wetland	56.1	11.18
Impervious	49.71	9.91
Palustrine Scrub/Shrub Wetland	24.06	4.80
Grassland	14.03	2.80
Palustrine Emergent Wetland	12.09	2.41
Palustrine Aquatic Bed	6.16	1.23
Water	2.04	0.41
Bare Land	1.57	0.31
Scrub/Shrub	0.07	0.01
TOTAL:	501.6	100.00

- Residential - Single Family
- Residential - Multi-Family
- Residential - Other
- Commercial
- Industrial
- Mixed Use - Primarily Residential
- Mixed Use - Primarily Commercial
- Mixed Use - Other
- Other Impervious
- Right of way
- Cultivated
- Pasture/Hay
- Developed Open Space
- Deciduous Forest
- Evergreen Forest
- Grassland
- Scrub/Shrub
- Bare Land
- Forested Wetland
- Non-forested Wetland
- Saltwater Wetland
- Water
- Unclassified Shore
- Aquatic Bed

FIGURE 6

LAND USE MAP
THE RESIDENCES AT DARWIN COMMONS
DARWIN LANE
WALPOLE, MASSACHUSETTS

NGI REF: LandUseMap.mxd
Drafted By: JAF
Date: 08/19/2023
Source: MassGIS; ArcGIS.com

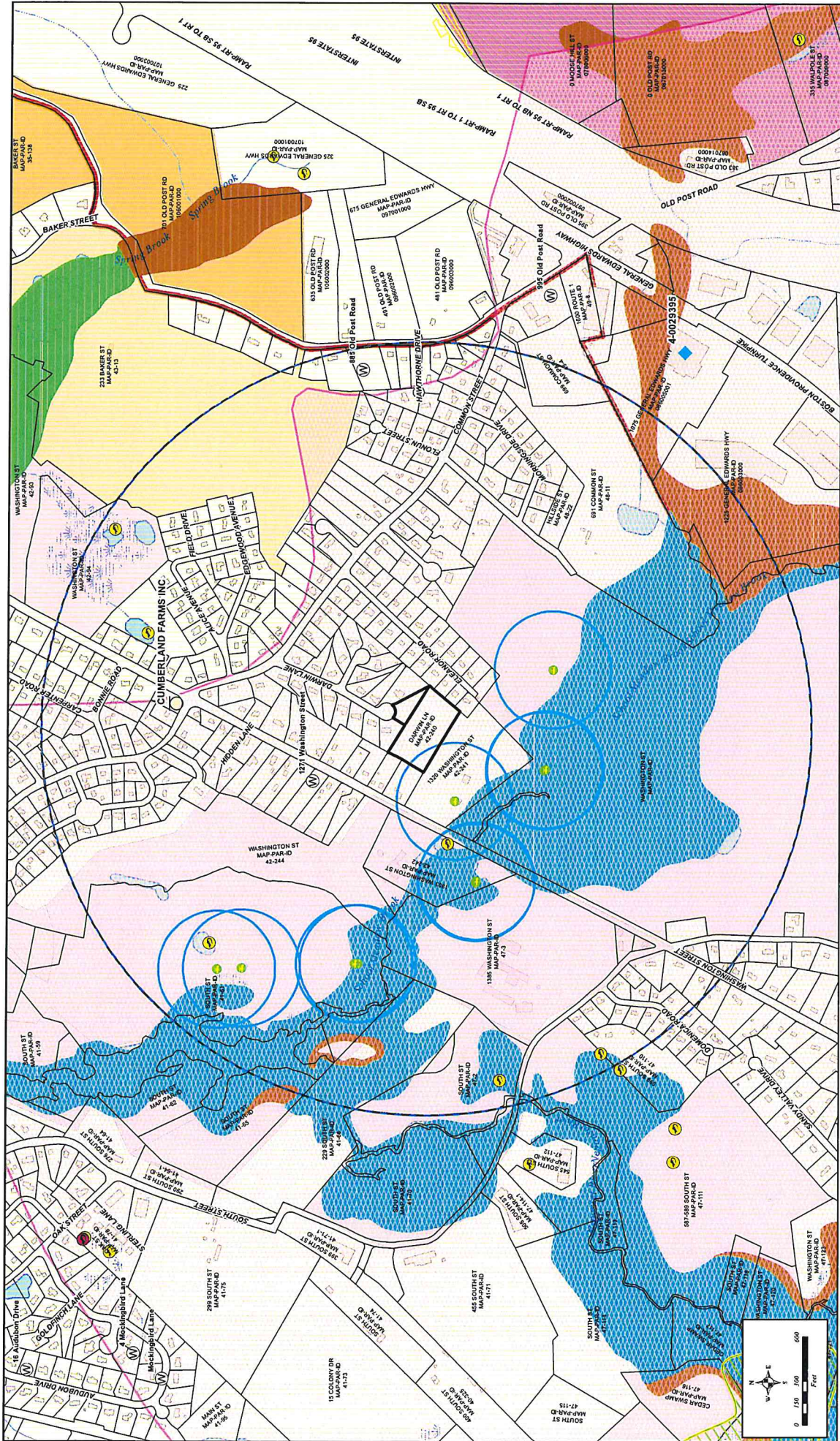
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COMMUNITY PWS

ZONE I WELLHEAD PROTECTION AREA

ASSESSOR PARCELS

NGI
NORTHEAST GEOSCIENCE INC
Waltham, MA



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 www.ngiinc.com

PROJECT PARCELS
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POTENTIAL VERNAL POOL
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EXISTING PRIVATE WELL
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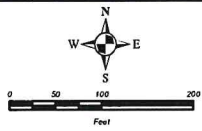
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 [Symbol] PRIVATE CONSERVATION LAND
 [Symbol] NON-PROFIT OPEN SPACE
 [Symbol] LAND TRUST OPEN SPACE

TIER ID SITE
 [Symbol] TIER ID SITE
 [Symbol] FEMA FLOOD ZONE AE (100 YR)
 [Symbol] FEMA FLOOD ZONE X500 (500 YR)
 [Symbol] EPA SOLE SOURCE AQUIFER

ENVIRONMENTAL RESOURCES MAP
 RESIDENCE COMMONS
 DARWIN LANE
 WALPOLE, MASSACHUSETTS
 NGI REF: EnvResMap_11x17
 Drawn By: JAF | Date: 08/21/2023
 Source: MassGIS.com

FIGURE 7



- PROJECT ASSESSOR PARCEL
- OTHER ASSESSOR PARCEL
- COMMUNITY PWS
- TOPO. CONTRIBUTING WATERSHED (~17.7 Ac)



**TOPOGRAPHIC CONTRIBUTING WATERSHED
THE RESIDENCES AT DARWIN COMMONS
DARWIN LANE
WALPOLE, MASSACHUSETTS**

NGI REF: *LocusMap_LetPort.mxd*
 Drafted By: JAF Date: 10/16/2023
 Source: MassGIS; ArcGIS.com

FIGURE 8

EXHIBIT I

CONSTRUCTION PERIOD POLLUTION PLAN

Given the proximity of the municipal drain system, care shall be taken to assure that eroded soil will not be deposited into the nearby drain system. Care shall be taken also to assure that eroded soil will not be deposited onto abutting properties.

Construction period pollution control measures shall include a siltation barrier (compost filled sock).

A designated materials stockpile area and a construction staging area have also been depicted on the plans. Construction sequencing shall be as follows:

1. The limit of work shall be clearly marked in the field by the design engineer.
2. Designate the material stockpile areas in the field.
3. Install siltation/erosion controls as shown on the plan.
4. Catch basins shall be protected from sediments at all times until construction is complete.
5. Install silt sacks in all existing and proposed catch basins.
6. The developer shall maintain erosion/sedimentation controls during construction and until the sale of the units.
7. Temporary sediment basins shall be used and maintained until all proposed paved areas are complete and swept of all debris.
8. Erosion/sedimentation controls shall be inspected bi-weekly and immediately after rainfall events greater than 1/2".
9. Install stabilized construction entrances.
10. Install silt sacks in all existing nearby catch basins.
11. Remove and stockpile top and sub soils from all areas to be disturbed.
12. Install temporary sedimentation areas.
13. Infiltration basins as shown shall not become operational until the site is finished and swept of all debris.
14. Install the infiltration basin.
15. Bring roadway to sub grade with bank gravel.
16. Install sewer, water and other underground utilities.
17. Use silt sacks for silt control, bring roadway to gravel grade and pave with binder course.
18. Construct buildings.
19. Install curbing, sidewalks and loam strips.
20. Install the infiltration trench.
21. Loam and seed all side slopes and other disturbed areas.
22. Install final pavement.
23. Remove siltation controls and clean up areas including catch basin sumps.

EXHIBIT II

LONG TERM POLLUTION PLAN

The use of the property and the responsibility of the owners to implement and carry out a Long Term Pollution Prevention Plan which shall include the following provisions:

1. Good housekeeping practices shall be implemented at all times. There shall be no debris of any kind including landscaping debris deposited within the site. Any debris found to be dumped or deposited within the site shall be immediately picked up and removed.
2. Storage of materials shall be done in a manner that will prevent the migration of loose soil, silt or clay or other unwanted material, in order to prevent such material from entering the storm water management system. There shall be no outdoor storage of waste products at that site at any time except as allowed by the permitting authorities for such storage.
3. Outdoor storage of materials shall be done in designated areas and storage bins as needed to prevent any unwanted materials from entering the storm water management system.
4. Routine inspections and maintenance of Storm water best management practices shall be carried out in compliance with the Operation and Maintenance plan.
5. Permitted lawns, gardens and other landscaped areas within the site shall be maintained by the Association.
6. There shall be no outdoor storage of fertilizers, herbicides, and/or pesticides at the site. Indoor storage of fertilizers, herbicides and/or pesticides shall be done in a safe and dry location. Any spill of these materials shall be cleaned up immediately. The use of fertilizers, herbicides, and pesticides at the site shall be limited to amounts allowed by regulations issued by the Walpole Zoning Board and / or other governing bodies. Pet waste deposited at the site shall be immediately picked up and removed. Pet waste to be disposed of through solid waste containers.
7. There shall be no on-site septic systems installed at the site unless allowed by other governing bodies.
8. Solid waste (trash) shall be stored in closed containers and removed by a licensed hauler at least once per week, any solid waste not in closed containers found at that site shall be removed immediately by the Association.
9. Snow shall be plowed in wind rows at the edge of the paved areas and deposited in the snow storage areas. Excess snow shall be removed from the site and deposited in approved snow farms
10. Road salt and sand shall be used in accordance with rules, regulations and laws in force at that time. There shall be no outdoor storage of sand or salt at the site except as may be allowed by other governing bodies.

11. There shall be no repairing of vehicles, construction equipment or otherwise at the site.
12. There shall be no illicit discharges to the storm water system.

The Owners shall become familiar with the rules and regulations and restrictions of this document.

JAY BILLINGS, P.G.

President/Senior Hydrogeologist

CREDENTIALS/CERTIFICATIONS

University of Montana, Missoula, MT 1992, M.S. in Geology
St. Lawrence University, Canton, NY 1987, B.S. in Geology
AIPG Certified Professional Geologist CPG#10612
Professional Geologist State of New Hampshire #348
Certified Drinking Water Operator in Massachusetts Grade 2T/2D
Professional Geologist in South Carolina #2517
Professional Geologist in Pennsylvania PG005128
Professional Geologist in New York PG001212

PROFESSIONAL AFFILIATIONS

American Institute of Professional Geologists
National Groundwater Association - Director on Scientists and Engineers Board
National Groundwater Association - Chairman of Remediation Site Resiliency Task Group
American Water Works Association
New England Water Works Association

FIELDS OF SPECIALIZATION

- Water resources investigations
- Public water supply development
- Remediation site characterization and remedy implementation
- Production well and recovery well design and construction supervision
- Environmental Permitting and Compliance
- Hydrogeologic studies and environmental site assessments
- Groundwater flow and solute transport modeling

EXPERIENCE SUMMARY

Mr. Billings is a hydrogeologist with over 30 years of experience working in the water resources and environmental industries in New England, New York, Pennsylvania, South Carolina and Montana. His project experience has focused on identifying, developing and protecting groundwater sources and spring water sources for public water suppliers, agricultural clients and industry. Mr. Billings has successfully worked with regulators, environmental organizations and stakeholders to permit water supply projects in a variety of challenging settings. His specialties include groundwater flow and solute transport modeling, aquifer safe yield estimation, evaluating the impacts of groundwater withdrawals on wetland resource areas, and gravel packed well design and maintenance. Recently, much of the project work has focused on yield enhancement of existing bedrock wells affected by drought through chemical treatments and hydrofrak methods.