smma

SMMA
1000 Massachusetts Ave.
Cambridge, MA 02138

Memorandum

To:	Mr. Greg Wands Chair, Ashland Conservation Commission	Project Number:	24142
From:	Will Park, PE	Date:	1/13/2025
Project Name:	61 Waverly Street – Notice of Intent		
RE:	Response to GCG Associates Stormwater Peer Review Comments		
Distribution:	Israel Lopez - The Gutierrez Company, Mark Arnold - Goddard Consulting, Luke Norton & Corinne Disenhof - Sanborn Head & Associates		

On behalf of the Applicant, The Gutierrez Company, SMMA, in collaboration with Sanborn Head & Associates (geotechnical engineer) and Goddard Consulting (wetland scientist), is submitting this memo with supporting documents to address comments from GCG Associates in their peer review letter dated December 17, 2025.

The project team held a working session video conference on January 12, 2026 with GCG and the Conservation Agent to discuss certain comments and present high level design revisions. The Applicant's project design team is in agreement with the majority of GCG's comments and recommendations regarding detailed changes to the drawings and revising the Hydrology Model. The team will submit a fully conformed set of drawings and stormwater calculations incorporating the changes along with individual responses to each comment raised by the Conservation Agent, DEP, and GCG Associates.

The purpose of this memorandum is to provide an initial set of responses to several high level GCG comments including site hydrology, hydrologic modeling, and on-site bedrock as it relates to stormwater system design. The memo also provides additional analysis from Sanborn Head regarding the geological fault lines present in the vicinity of the site as requested by the Commission.

Hydrology & Hydrologic Modeling

Background:

The project site and stormwater management system was designed with environmental responsibility to minimize disturbance, tree clearing, bedrock removal, and use of retaining walls. In particular, the proposed site entrance location along Waverly Street was the result of balancing these environmentally responsible design considerations. By locating the entrance at the highest possible elevation of the site along Waverly Street, the perimeter of the site can be largely preserved as natural wooded areas or disturbed areas that will naturalize, and the project's development pad could be constructed without the need for extensive rock removal or blasting. This strategic decision results in a small portion of the Waverly Street entrance driveway sitting below the nearest on-site detention basin.

Hydrology

Per GCG's comments, the soil classifications within the HydroCAD modeling were revised to replace the *Woods/Grass Combination Surface* to *Woods, in Good Condition*. Also, per GCG, the Project's Hydro Design Points (DPs) were revised such that there are now five DPs instead of the three DPs originally modeled (see Attachment 1 and 2 for the Existing and Proposed Hydrology Maps).

The Project's stormwater management design has also been updated. Specifically, the surface infiltration basin has been revised to a surface detention basin and the bioretention basin has been revised to a subsurface detention system. The stormwater system design is now maximized to infiltrate runoff from developed areas. The two subsurface infiltration systems cumulatively reduce the contributing runoff of 19.77 Cubic Feet per Second (CFS) from the developed area down to 0.00 CFS in the 10-year storm event.

The revised soil classifications and Design Points and stormwater system continue to support the Project's compliance with all Massachusetts Stormwater Management Standards, including Stormwater Standard No. 2, regarding pre and post development peak discharges. The Project's post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year storm events. There is only a negligible increase of flow the 100-year storm event associated with DP-1, DP-2, and DP-3. It is our professional opinion that these deminimus discharges will not materially alter peak rate, volume, velocity, or timing at the downstream resources or overburden existing infrastructure.

The below Peak Discharge Rate Summary table is updated to incorporate the Design Point comments from GCG to the hundredth of a decimal precision, consistent with DEP guidance documents. Notably, the design revisions result in no increase in discharge to the Waverly Street municipal drainage system (DP-1) and no increase in discharge to the Bordering Vegetated Wetland (DP-2) that both eventually discharge to the stone box culvert under Waverly Street.

Table 1 - Peak Discharge Rate Summary

Design Point	2-year		10-year		100-year	
	Existing	Proposed	Existing	Proposed	Existing	Proposed
DP-1 12" RCP in Waverly St	0.11	0.11	0.23	0.23	0.42	1.35
DP-2 Wetland (North)	0.00	0.00	0.01	0.01	0.48	1.19
DP-3 Existing culvert under Nikkie Terrace	0.00	0.00	0.00	0.00	0.12	0.20
DP-4 Sheet flow onto Waverly Street (North)	0.00	0.00	0.03	0.08	0.89	0.47
DP-5 Existing drainage system in Union Street	0.00	0.00	0.07	0.17	1.90	1.59

The deminimus combined increase of 0.15 CFS to DP-4 and DP-5 in the 10-year storm event is attributable to the narrow perimeter subcatchment areas that cannot be physically collected, detained, and treated[1] without causing significant and unnecessary disturbance to a major portion of the site that is intended to remain undisturbed. For illustration purposes only, we have modeled the area of disturbance that would need to be cleared in order to install another surface basin to force the HydroCAD model to output a 0.00 increase to these two DPs. Attachment 3 shows the project disturbance as currently proposed. As shown in Attachment 4, the entire wooded western portion of the site would need to be clear cut and, a drainage pipe would need to be blasted through the site for a length of over 800 linear feet to detain the 0.15 CFS. This level of disturbance is neither beneficial to the site nor in furtherance of any WPA interests.

Response to GCG comments C-101 #1, C-101 #2:

GCG comments C-101 and C-102 concern the boulders encountered at test pit locations near basin B-2B. GCG requested additional information to clarify any ledge and ESHGW concerns relative to the construction of that basin.

SH-TP-105 and SH-TP-106 were excavated to refusal on boulders at approximate depths of 5.5 and 7.5 feet, respectively. The determination of refusal as boulders (as opposed to ledge) at these two locations was based on the shallow depth relative to

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[1] There are also limitations of the HydroCAD modelling software and inputs. HydroCAD is intended for much larger catchment areas and flow.

SH-TP-8 and SH-TP-7, as well as the excavator response/interaction with the in-place soil, such as localized pitting of the excavation bottom and/or movement of the excavation bottom and sidewall. In general, surface and buried boulders can also be commonly found across the site as noted in the subsurface logs. In particular, a large surface boulder up to 6 feet in diameter can be found west of SH-TP-106. Sanborn Head excavated at the base of this boulder to confirm this was not a surface bedrock protrusion and encountered a soil subgrade – refer to the photographs in Attachment 5.

Refusal on bedrock was encountered to the west of the proposed basin B-2B at El. 225 feet in SH-TP-8. Bedrock is anticipated to climb in elevation as you move further west and toward the central ridge, and drop as you move east towards proposed basin B-2B.

Consistent with Sanborn Head's data report, SHA further notes that bedrock or large boulders encountered at the subgrade for the stormwater system at the time of construction will need to be removed to allow for installation of the system and to create a uniform, free-draining layer below the system for even distribution of the groundwater recharge. Based on the absence of groundwater observations and redoximorphic features in the explorations within and in the vicinity of proposed B-2B, ESHGW is anticipated to be at El. 225 feet, or lower.

The wetland in the north corner of the site appears to be a 'losing' system with respect to groundwater, meaning it *adds* to the groundwater rather than be fed by it. The wetland generally conveys surface runoff and discharge from the upgradient wetland system to an outlet stream to the north, with small amounts of water entering the ground below and at the fringe of the system as groundwater, and develops a dipping (or losing) gradient away from the wetland edge. Over time, fine sediments and plant detritus build up a low permeability layer along the bottom and edge of the wetland, limiting groundwater recharge and causing the wetland to be 'perched' on the landscape. This is seen by the redoximorphic features in SH-TP-102 and SH-TP-103, at approximately El. 225 feet, being 'downgradient' from the wetland edge at approximately El. 228 feet. Similarly, this would be the likely condition further south along the wetland edge when approaching proposed B-2B. This is further supported by the general lack of observed groundwater; the existing wetland cannot '*gain*' from groundwater when the groundwater is not consistently present above the bedrock. We therefore believe that extending the wetland surface elevation (of El. 228 feet) 100 or more feet to the west, is not consistent with the hydrogeologic conceptual site model.

Fault Lines Adjacent to Site:

Based on a review of MassGIS's interactive MassMapper portal, including the Bedrock Lithology Geologic Provinces layer, the Site is located within the Avalon Belt with a predominant rock type of Avalon Granite, a biotite granite, and corresponding with a Massachusetts Bedrock Geology Map Unit of 'Zgr'. Additionally, the MassMapper portal shows two fault lines in the vicinity of the Site: (i) to the immediate west of the Site running north-south along Waverly Street; and (ii) approximately 400 feet to the east of the Site running north-south. According to the

Dept. of the Interior, Geological Survey Bulletin 1410, Structural Dislocations in Eastern Massachusetts (1976), the two minor fault lines adjacent to the Site are loosely grouped with the major Lake Char Fault that runs from Connecticut (Quinebaug River basin) up through Douglas, MA and Marlborough, MA with activity projected to have occurred throughout the Paleozoic Era (200M to 500M years ago). These are not considered seismologically active faults. As highlighted in the Town of Ashland, Hazard Mitigation Plan (2025 Update), "… Massachusetts as a whole is considered to have a low risk of earthquakes compared to the rest of the country." and "There have been no recorded earthquake epicenters within Ashland.". Further, "There are five seismological faults in Massachusetts, but there is no discernable pattern of previous earthquakes along these fault lines." We note that these five seismological faults in MA are not located in or near Ashland.

Putting the low risk of seismic activity aside, the presence of the adjacent fault lines also does not directly impact the localized areas of proposed bedrock removal. In general, blasting is designed for the efficient breakage of rock within a limited radius of the blasting borehole and does not propagate large fissures or fractures, nor re-activate existing fault lines. We also note that there have been no observations of water-bearing fractures in the upland portion of the Site where blasting is proposed – explorations have not encountered groundwater and there has been no evidence of springs. As discussed within the context of the groundwater conceptual site model, the on-Site wetlands are generally considered to be perched and fed from surface runoff. The limited removal of bedrock at a higher elevation than the wetlands is not anticipated to impact the groundwater conditions at the Site.

Attachments:

Attachment 1: Existing Hydrology Map

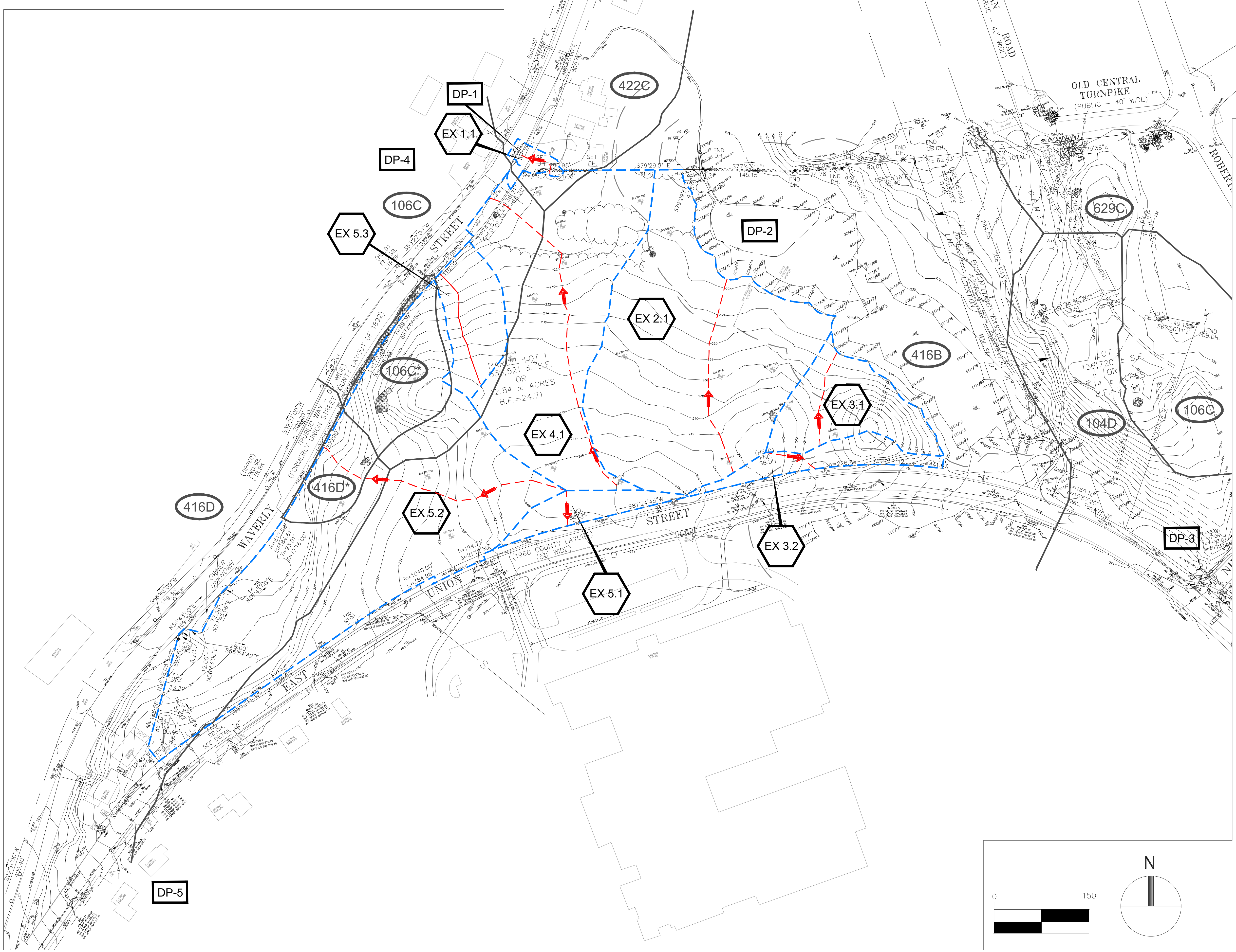
Attachment 2: Proposed Hydrology Map

Attachment 3: Proposed Project Site Disturbance

Attachment 4: Proposed Project Site Disturbance - Alternative Scenario

Attachment 5: Surface Boulder Photos

EXISTING HYDROLOGY MAP

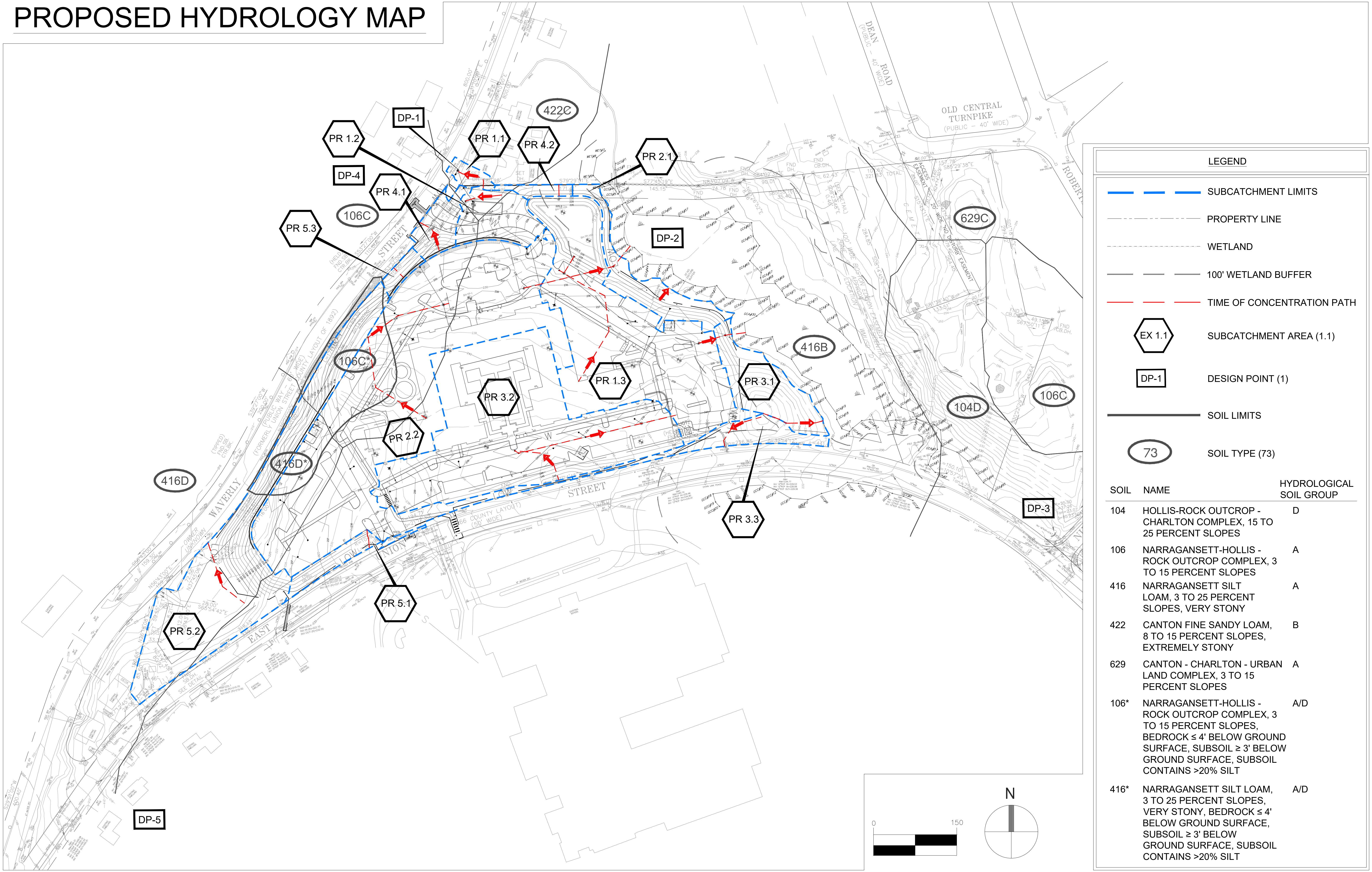


LEGEND

- SUBCATCHMENT LIMITS
- PROPERTY LINE
- WETLAND
- 100' WETLAND BUFFER
- TIME OF CONCENTRATION PATH
- EX 1.1 — SUBCATCHMENT AREA (1.1)
- DP-1 — DESIGN POINT (1)
- SOIL LIMITS
- 73 — SOIL TYPE (73)

SOIL	NAME	HYDROLOGICAL SOIL GROUP
104	HOLLIS-ROCK OUTCROP - CHARLTON COMPLEX, 15 TO 25 PERCENT SLOPES	D
106	NARRAGANSETT-HOLLIS - ROCK OUTCROP COMPLEX, 3 TO 15 PERCENT SLOPES	A
416	NARRAGANSETT SILT LOAM, 3 TO 25 PERCENT SLOPES, VERY STONY	A
422	CANTON FINE SANDY LOAM, 8 TO 15 PERCENT SLOPES, EXTREMELY STONY	B
629	CANTON - CHARLTON - URBAN LAND COMPLEX, 3 TO 15 PERCENT SLOPES	A
106*	NARRAGANSETT-HOLLIS - ROCK OUTCROP COMPLEX, 3 TO 15 PERCENT SLOPES, BEDROCK ≤ 4' BELOW GROUND SURFACE, SUBSOIL ≥ 3' BELOW GROUND SURFACE, SUBSOIL CONTAINS >20% SILT	A/D
416*	NARRAGANSETT SILT LOAM, 3 TO 25 PERCENT SLOPES, VERY STONY, BEDROCK ≤ 4' BELOW GROUND SURFACE, SUBSOIL ≥ 3' BELOW GROUND SURFACE, SUBSOIL CONTAINS >20% SILT	A/D

PROPOSED HYDROLOGY MAP



LEGEND

SUBCATCHMENT LIMITS

PROPERTY LINE

WETLAND

100' WETLAND BUFFER

TIME OF CONCENTRATION PATH

EX 1.1 SUBCATCHMENT AREA (1.1)

DP-1 DESIGN POINT (1)

SOIL LIMITS

73 SOIL TYPE (73)

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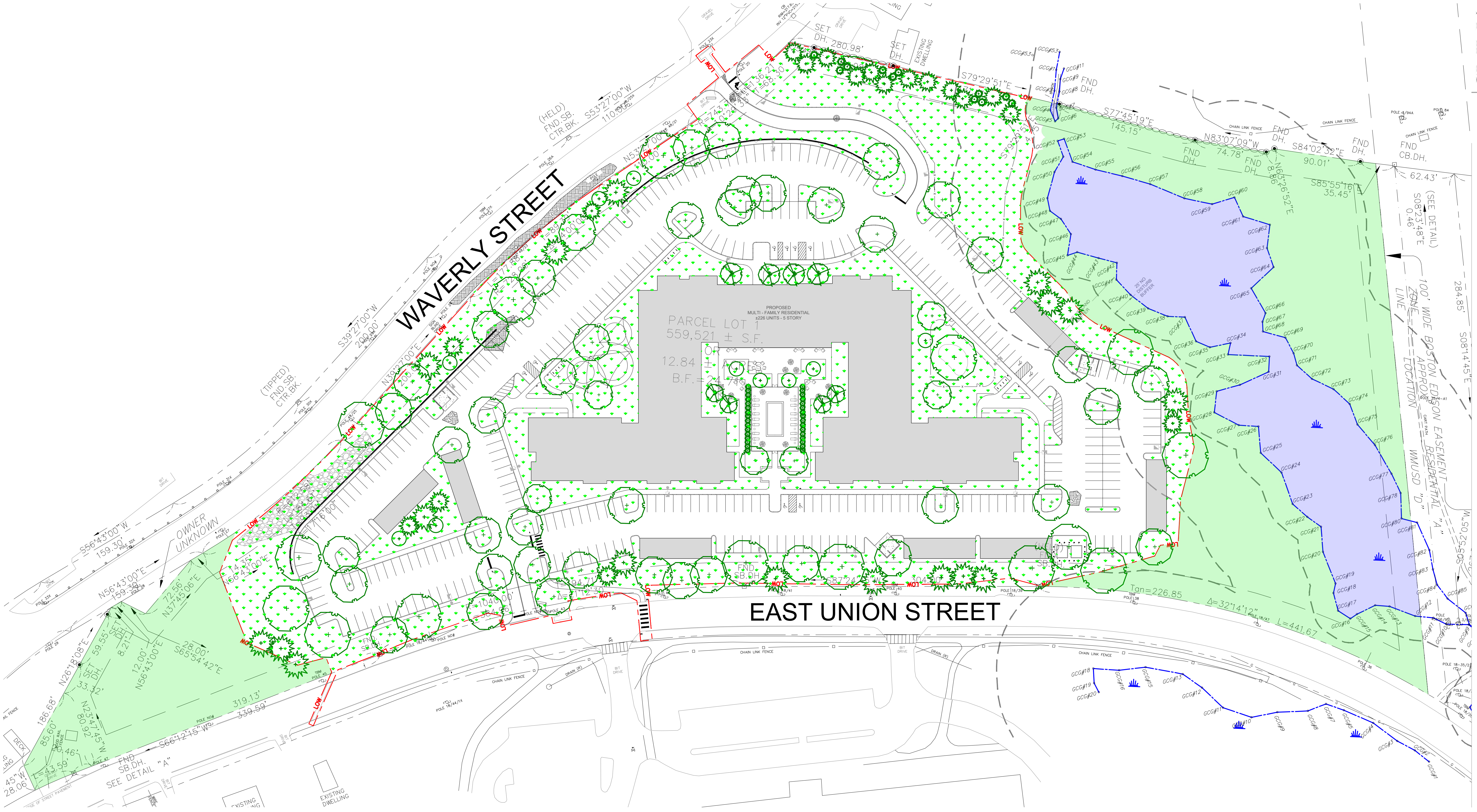


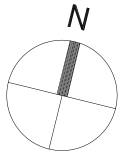
NOTES:

1. THE PROPERTY LINES SHOWN ON THIS PLAN ARE BASED UPON AN ACTUAL ALTA/NSPS LAND TITLE SURVEY CONDUCTED IN THE FIELD BY GLM ENGINEERING CONSULTANTS, INC. IN JULY 2014.

2. THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE COMPILED FROM THE SURVEY NOTED ABOVE, IN ADDITION TO INFORMATION FROM DEEDS AND PLANS OF RECORD.

3. HORIZONTAL DATUM IS BASED ON MASS GRID SYSTEM, STATE PLANE NAD 1983. ELEVATIONS SHOWN ON THIS PLAN REFER TO THE VERTICAL DATUM NGVD OF 1929.

4. ANY WETLAND FLAGS SHOWN ON THIS PLAN WERE DELINEATED AND FIELD LOCATED BY GODDARD CONSULTING IN NOVEMBER 2024.



TOTAL LOT AREA= 12.84 ACRES

🟩 EXISTING WOODED AREA TO REMAIN= 2.93 ACRES (22.9%)

🟦 WETLAND AREA= 1.23 ACRES (9.6%)

▨ PROPOSED OPEN SPACE= 3.60 ACRES (28.1%)

⬜ PROPOSED BUILDING=1.53 ACRES (11.9%)

PROPOSED IMPERVIOUS AREA= 3.55 ACRES (27.6%)

—·— LIMIT OF WORK

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THE RESIDENCES AT ASHLAND

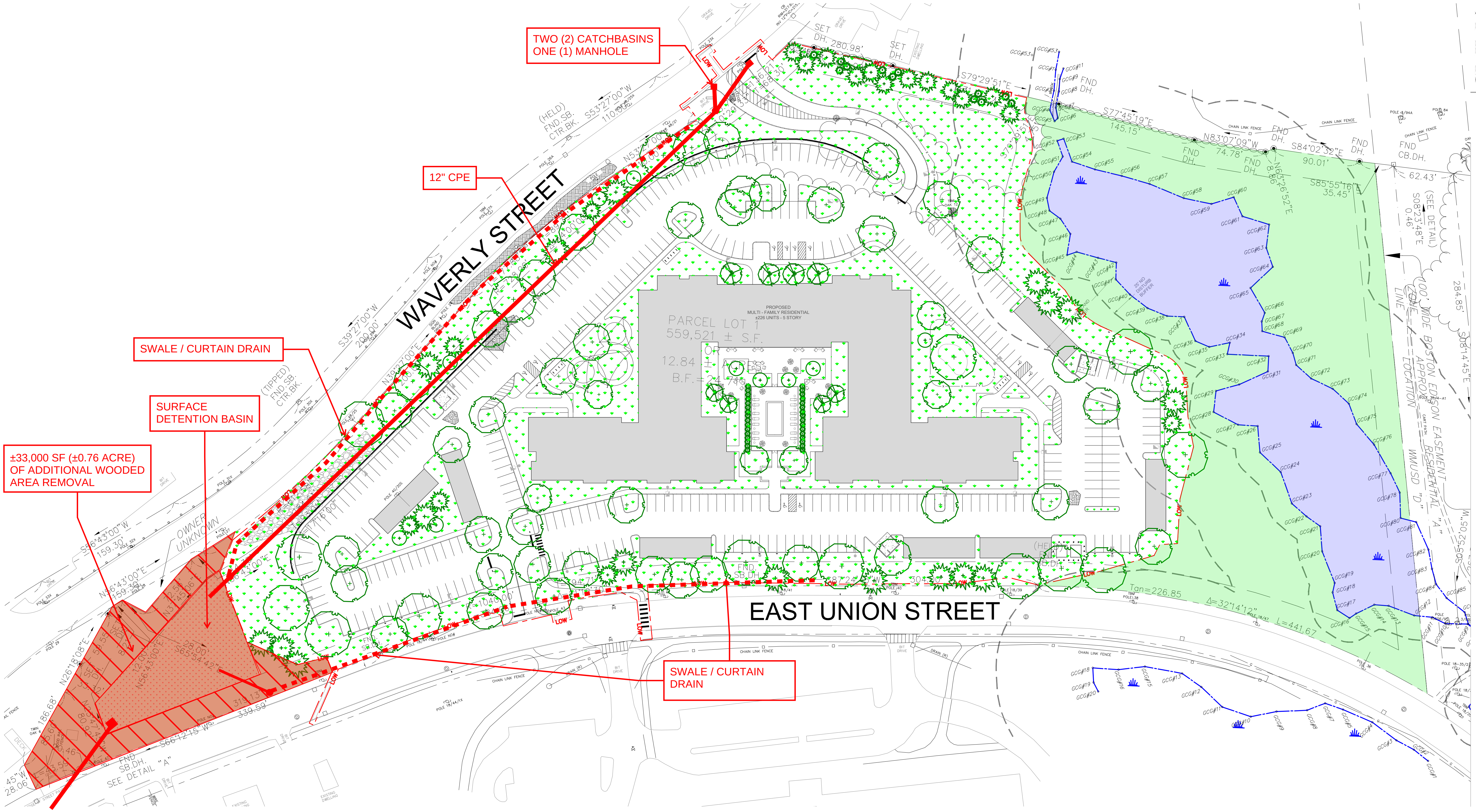
61 WAVERLY STREET
ASHLAND, MA

JOB NO.: 24142

DATE:	05/16/2025
ISSUE:	
SCALE:	1"=100'
REF:	
DR BY:	KIC
CK BY:	WWP

Figure

LIMIT OF DISTURBANCE



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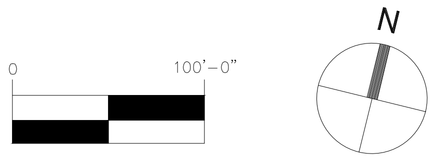

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🟦	WETLAND AREA= 1.23 ACRES (9.6%)
▨	PROPOSED OPEN SPACE= 3.57 ACRES (27.8%)
▭	PROPOSED BUILDING=1.53 ACRES (11.9%)
	PROPOSED IMPERVIOUS AREA= 3.58 ACRES (27.9%)
-·-·-	LIMIT OF WORK

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THE RESIDENCES AT ASHLAND

61 WAVERLY STREET
ASHLAND, MA

JOB NO.: 24142

DATE: 06/17/2025
ISSUE:
SCALE: 1"=100'
REF:
DR BY: KIC
CK BY: WWP

Figure

LIMIT OF DISTURBANCE

Photo 1 - Large Surface Boulder West of SH-TP-106 (January 2026)

Photo 2 - Large Surface Boulder West of SH-TP-106 – Subsurface Exploration (May 2025)