Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

June 29, 2022

Rick Chellman, Chair
Portsmouth Planning Board
1 Junkins Ave, 3rd Floor
Portsmouth, NH 03801

RE: 70 Pleasant Point Drive – Submittal Rev 2
70 Pleasant Point Drive – Katara, LLC – Tax Map 207 Lot 15
Project #47307.01

Dear Mr. Chellman,

On behalf of our client, Katara, LLC, please find a Wetland Conditional Use Permit submission relative to the above-referenced project. The application, LU-22-112, was presented to the Portsmouth Conservation Commission on June 8, 2022 and this submittal is in response to concerns raised at that meeting. The following materials are included in this submission:

- **Invasive Removal Report, prepared by Terrain Planning & Design LLC;**
- **Drainage Analysis (1 copy);**
- **NHDES Wetland Impact Plan, Shoreland Impact Plan, and Dock Plans; and**
- **Site Development Plans entitled "Site Development Plans, Tax Map 207 Lot 15, Site Renovation Plans, 70 Pleasant Point Drive, Portsmouth, New Hampshire", prepared by TFMoran, Inc., dated May 25, 2022, Last Revised on June 27, 2022 (1 copy at 22"x34").**

Project Description

The project includes the development of a two-story, 2,306 SF, single family dwelling at 70 Pleasant Point Drive. The existing Tax Map 207 Lot 15 is approximately .642 acres and currently contains a single-story residence with a shed and water access. The site is within the Single Residence B (SRB) Zone, partially located within the extended flood hazard area, and is adjacent to the Piscataqua River.

The proposed project is to construct a two-story residential dwelling. Associated improvements include but are not limited to access, grading, utilities, stormwater management system, and landscaping. The project proposes a 2,605 SF building footprint and total 3,642 SF of impervious area upon the property and approximately 20,582 SF of disturbance to facilitate the development.

The development is proposed outside the Wetland but within the 100' Wetland Buffer located south of the development. The project will be undergoing additional review by Portsmouth Conservation Commission, and the New Hampshire Department of Environmental Services, for both Wetland and Shoreland Impacts. We have included a copy of the plans submitted to NHDES detailing impacts within the 100’ Wetland Buffer and the 250’ Shoreland Buffer as well as information related to the proposed tidal dock.

We appreciate your consideration of these matters and look forward to presenting this project to you in the near future.

We respectfully request that we be placed on the upcoming agenda for the Conservation Commission on July 13, 2022

If you have any questions or concerns, please do not hesitate to contact us.

Respectfully,
TFMoran, Inc.

Jason Cook
Civil Project Engineer

JKC/jcc

cc: Katara, LLC
Joshua Butkus, Maugel Destefano Architects (via jbutkus@maugel.com)
Marcos Cintra, Auger Building Company (via marcos@augerbuildingcompany.com)
Eric Buck, Terrain Planning & Design (via eric@terrainplanning.com)

Letter of Authorization

I, Rebecca Rowe, of Katara, LLC, 274 Miller Avenue, Portsmouth, NH, hereby authorize TFMoran, Inc., 170 Commerce Way, Suite 102, Portsmouth, NH, to act on my behalf concerning property owned by Katara, LLC, located on 70 Pleasant Point Drive, Portsmouth, NH, known as Tax Map 207, Lot 15.

I hereby appoint TFMoran, Inc. as my agent to act on my behalf in the review process, to include any required signatures.

Rebecca J. Rowe — 5/24/2022

Client Name — Date

__________ — __________

Witness — Date

May 19, 2022

Peter Britz
Environmental Planner/Sustainability Coordinator
City of Portsmouth NH

Re: 70 Pleasant Point Drive Portsmouth NH

Dear Peter:

This letter is intended to address recommendations for invasive species removal and native plant restoration along the shorefront of 70 Pleasant Point Drive. The site is .65 acres with an existing, non-conforming, single family residence that is planned to be torn down and rebuilt. Accompanying the house construction project is the conversion of existing impervious driveway and hardscape surfaces into new permeable driveway and outdoor patio spaces. The project also includes introduction of native plantings along the shoreline and around the home, as well as the transition of a large lawn area into a native, low maintenance grass and ground cover mix mix.

The property sits on the Piscataqua River with almost 336 feet of frontage. A majority of the site is a level plateau that perches above the shoreline. A majority of the site sits within the 100ft buffer and the 250ft NH DES Shoreland protection zone. There is a drastic slope along the southerly shore frontage from the relatively flat part of the site to the tide line. This slope is covered in a mix of ornamental, native and invasive plantings.

Acting as good stewards the owners have asked that we put together an invasive species analysis and plan for removal and replacement. Enclosed is an outline of our findings as well as recommendations for new native plants to be installed.

Respectfully Submitted,

Eric R. Buck

Eric R. Buck, PLA, ASLA
Owner/ Landscape Architect
Terrain Planning & Design LLC

Our list of existing invasive plant species can be found below. We propose removing invasive species by low-impact manual hand pulling methods whenever possible. During our inventory a majority of the invasives we found had stems less than 1" in diameter. This means they likely have minimal root mass in the slope. However, should larger plants be discovered during the removal process, we recommend a cut & dab herbicide application by licensed applicators. This method of removal for larger specimens will greatly reduce the chance of erosion along the shoreline. All existing erosion shall be stabilized and any soil disturbed during planting will be seeded with native conservation/ wetlands mix.

Likely Invasive species identified:

- *Celastrus orbiculatus,* Asiatic Bittersweet
- *Fallopia japonica,* Japanese Knotweed
- *Rosa multiflora,* Multiflora Rose
- *Deutzia scabra*, Fuzzy Deutzia

Recommended Native Plantings:

- *Amelanchier laevis* Shadblow Serviceberry
- *Clethra alnifolia* Summersweet
- *Cornus amonum* Silky Dogwood
- *Cornus racemosa* Gray Dogwood
- *Ilex vertilicillata* Winterberry
- *Rosa virginiana* Virginia Rose

Whenever possible native plantings should be installed via a live staking method, rather than as field grown plant material with a root ball. This will avoid added erosion on the slope caused by excavation of the soil to place the plants. Should the existing slope not have sufficient soil for live staking method to take place, erosion control tubes filled with growing medium are to be staked to the slope and live staking should be placed into the soil socks. Enclosed are specifications for recommended soil medium and erosion sock type and method.

Below are images of the area that was inventoried.

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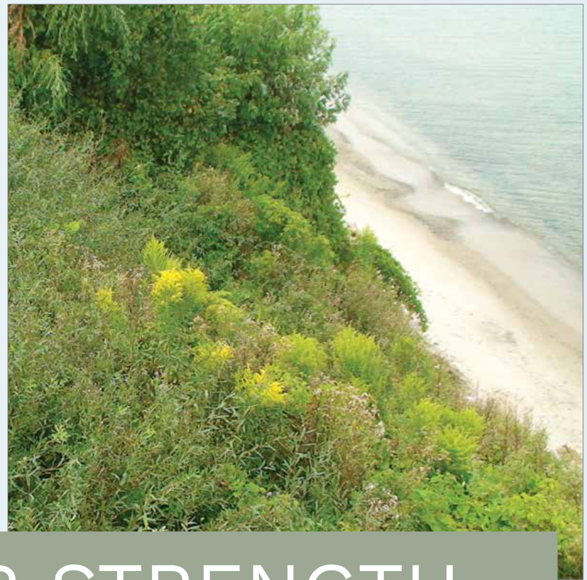
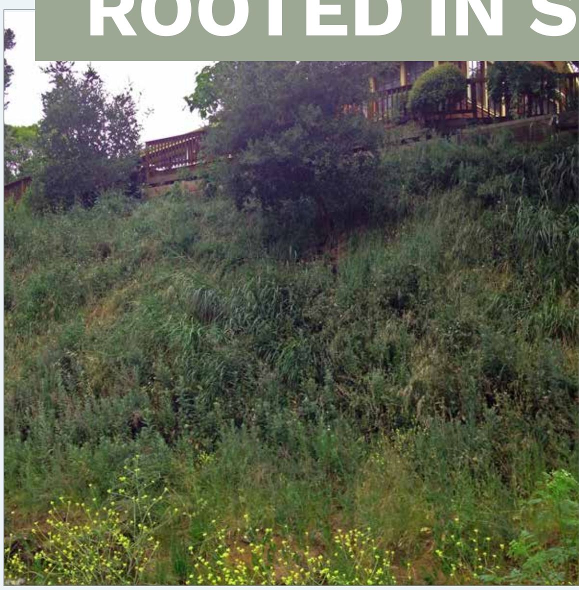
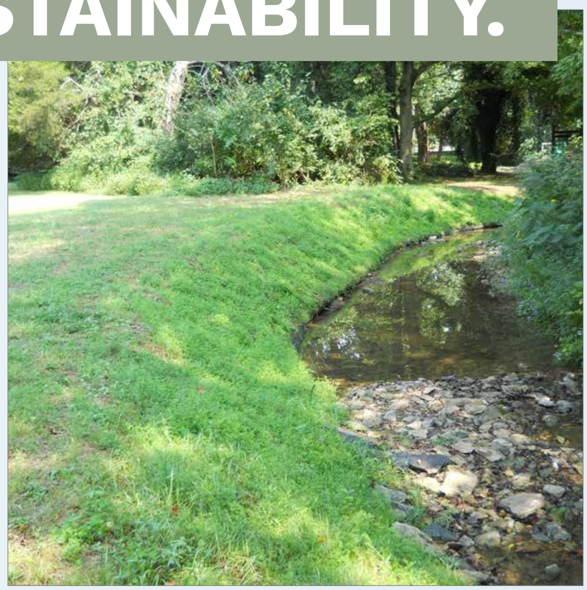
GREENLOXX®

VEGETATED WALL & SLOPE SYSTEMS



DESIGNED FOR STRENGTH.
ROOTED IN SUSTAINABILITY.





GreenLoxx® vegetated systems allow for the restoration of eroded or damaged slopes, riparian waterways, shoreline banks, and more.

Create attractive, naturally vegetated landscapes without the use of hard concrete materials on your restoration projects.

GREENLOXX SYSTEM COMPARISON

System Name	MSE	Slope Degree	Anchors	FLW Geogrid	GroSoxx® Size	Purpose
GreenLoxx VSF Vegetated Slope Facing	No	up to 60°	Yes	Yes	8″x3′	Protect slope surface from erosion
GreenLoxx MSE Mechanically Stabilized Earth	Yes	70° - 90°	No	Yes	12″x2′	Gain back land
GreenLoxx MSE - RSS Reinforced Soil Slope	Yes	50° - 70°	No	Yes	12″x2′	Gain back land

GREENLOXX COMPONENTS

GroSoxx: Durable mesh is filled with Certified GrowingMedia™ as the basis to quickly establish vegetation.

FLW Geogrid: Used to wrap layers of GroSoxx. Biaxial pattern provides strength and features a 2″x2″ opening to eliminate cutting the grid for planting.

Soil Anchors: Used in GreenLoxx VSF to secure layers of geogrid and GroSoxx.

Vegetation: Options include pre-seeded GroSoxx, live staking, broadcast seeding, or plugs.

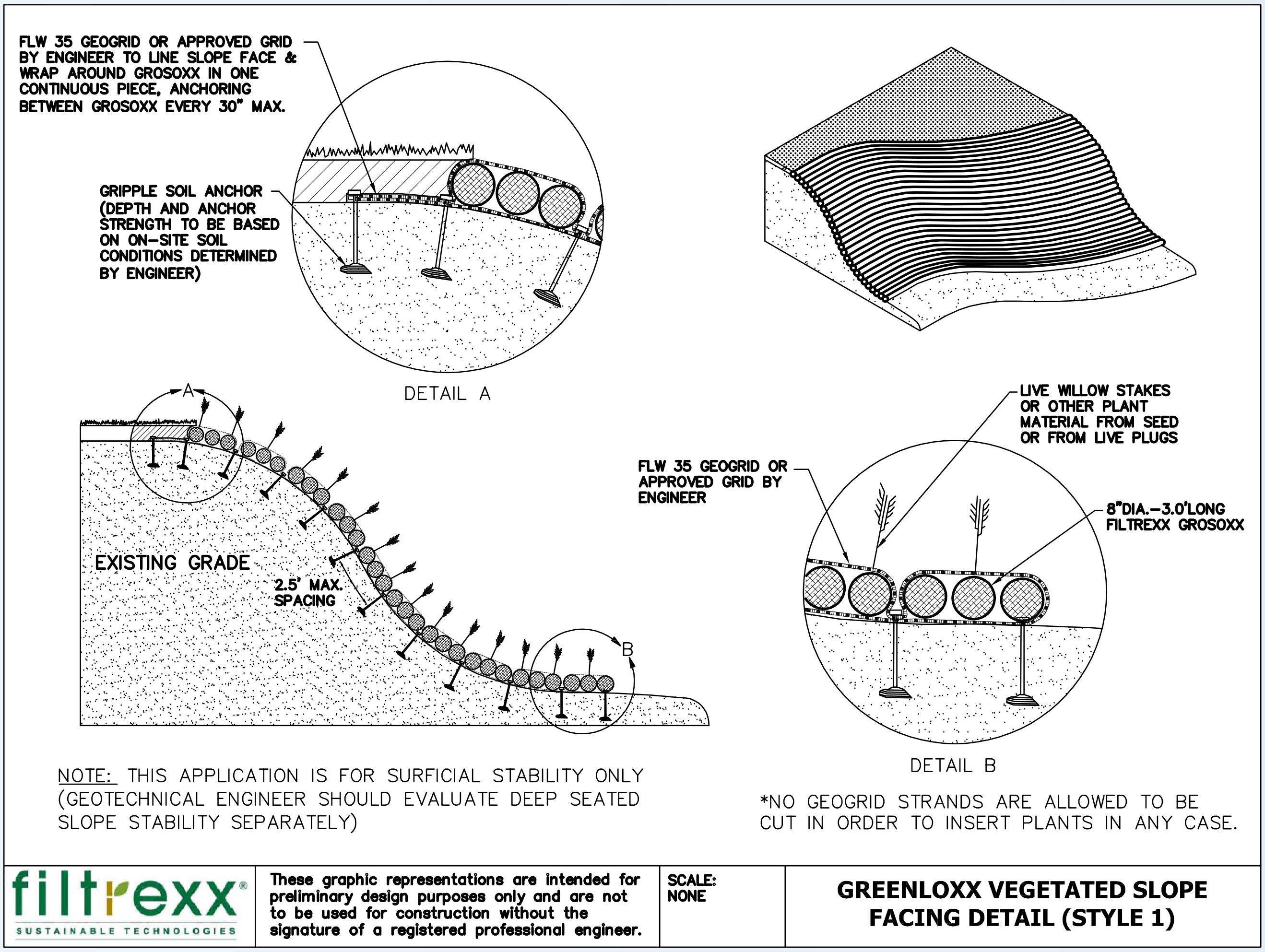
GroSoxx is the basis of GreenLoxx systems for quickly establishing vegetation on shorelines, banks, walls, and slopes. GroSoxx uses Durable mesh, filled with certified, composted GrowingMedia™ to provide a stable and fertile environment for plant growth. The use of GroSoxx for wall infill speeds construction, eliminates waste, prevents weeds from taking root, and offers a safer installation process. Available pre-seeded throughout, or plant after construction is complete. GroSoxx provides the highest amount of facial growing material in each application, maximizing environmental benefits.

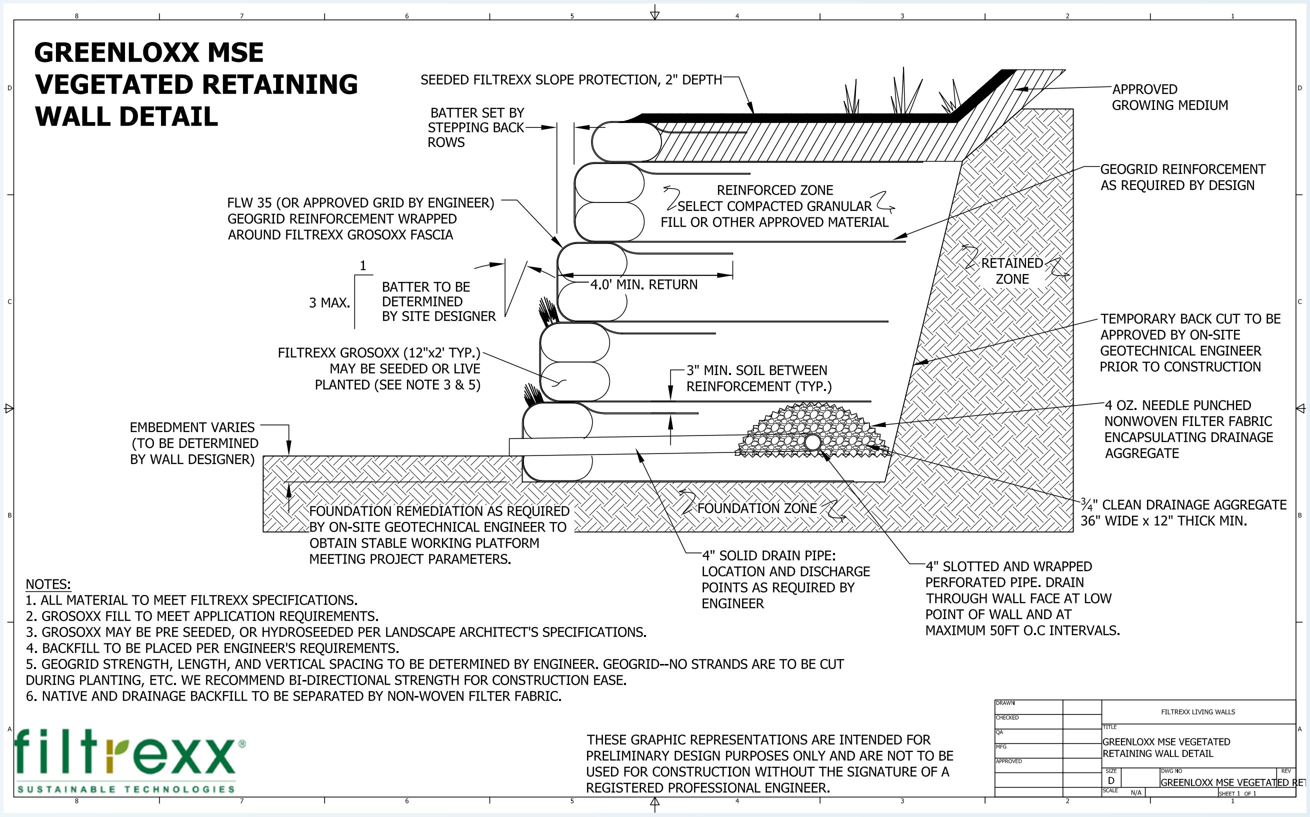
Vegetation Options

- Grasses, including natives
- Vines and ground cover
- Wildflowers
- Perennials and annuals
- Woody vegetation from live stakes or pots (2″ diameter or less so that grids are not cut in planting)

DESIGN DRAWINGS

Refer to Design Specifications and CADs for complete application, design, installation, and maintenance documentation at **www.filtrexx.com/specs**





GREENLOXX VEGETATED SLOPE FACING (VSF)


BEFORE

GreenLoxx VSF is typically used to protect the face of the slope or bank from erosion. Requires minimal base preparation/excavation, and no backfill. FLW Geogrid is wrapped over the GroSoxx and secured with soil anchors.

- Lightweight components
- Immediate protection from toe cutting & sloughing
- Establish and reinforce vegetation under intense hydraulic pressure
- Drains freely, less hydrostatic pressure

Project location: Lake Erie shoreline, Rocky River, OH


INSTALLATION


AFTER, 4 MONTHS


AFTER, 1 YEAR

GREENLOXX MECHANICALLY STABILIZED EARTH (MSE)

BEFORE

GreenLoxx MSE is typically used to build a more vertical, structural wall. GroSoxx are stacked in courses wrapped in FLW Geogrid and tied back into the compacted fill behind the face of the wall.

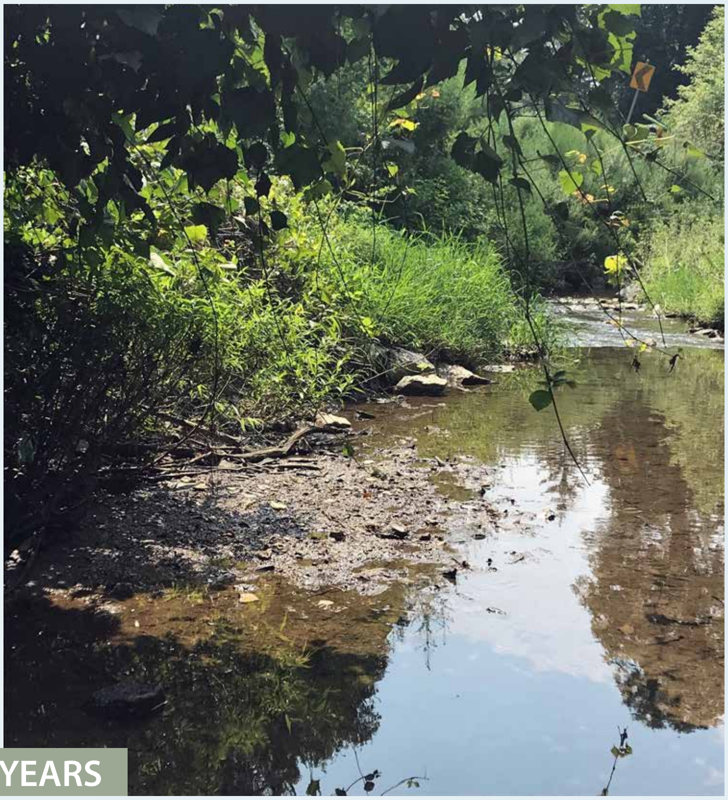
Note: For slopes from 50° - 70°, the GreenLoxx MSE Vegetated Retaining Wall - Reinforced Soil Slope (RSS) alternate design is used.

- Lightweight components
- Withstands high flow velocities—ideal for sensitive riparian areas
- Safer & more flexible installation than block walls

Project location: Roadway along Spring Creek, Harrisburg, PA

INSTALLATION

AFTER, 2 MONTHS



AFTER, 3 YEARS

SUSTAINABILITY BENEFITS

Our compost-based GreenLoxx systems are designed for environmental benefits and can have a significant impact on your project's sustainability.

Vegetated Wall & Slope Benefits[1]

- Reduction of the Urban Heat Island Effect
- Improved Exterior Air Quality
- Noise Reduction
- Increased Green Space, Biodiversity and Habitat
- Forage for Native Pollinators
- Urban Agriculture
- On-Site Wastewater Treatment
- Improved Health and Well-Being
- Aesthetic Improvements
- Local Job Creation

Carbon Footprint Reduction[2]

There are three key ways in which compost-based GreenLoxx systems can significantly lower a site's carbon footprint:

- Methane avoidance resulting from diverting organics from landfills
- Carbon sequestration by permanent vegetation
- Carbon sequestration by storing carbon in the soil

This GreenLoxx MSE project on the Chattahoochee River has the following impact:

- 656,000 lbs of Organics Diverted from Landfills
- 1,148,000 lbs of CO_2e Methane Avoidance
- 205 lbs of CO_2 Sequestered in Vegetation
- 110,700 lbs of CO_2 Sequestered in Soil

This is the equivalent of offsetting the greenhouse gas emissions of 121 passenger vehicles driven for one year.[2]

© Don Bishop Photography

Treating Stormwater Runoff[2]

With approximately 50% organic matter, a high porosity, and high relative surface area, compost has the ability to absorb significant volumes of water.

This GreenLoxx MSE project, restoring a bluff on Lake Michigan, not only provides habitat and beauty, it can also absorb significant amounts of stormwater. Each linear ft of 12-in GroSoxx (1 square foot) can absorb up to 4 gallons of water. Utilizing 2,000 ft of 12-in GroSoxx, this wall has the potential to absorb up to 8,000 gallons of rainfall per event.[2]

In other applications, replacing a traditional concrete block wall with a permeable GreenLoxx system on a site with a stormwater retention basin or bioretention system, may allow engineering and construction of a smaller stormwater retention basin or bioretention system, and/or increased absorption of area rainfall, and may also contribute to LEED Green Building Credits.

Filtrexx Environmental Sustainability Benefits

Filtrexx GroSoxx® uses **locally recycled organic materials** inside of photodegradable or biodegradable mesh. Diverting these organic materials from landfills and applying them to the soil means a reduction in greenhouse gas emissions. **For every 1,000' of 12" GroSoxx used, 160,000 lbs of organic materials are diverted and your carbon footprint is reduced by 307,000 lbs CO_2e.** This is the equivalent of offsetting the greenhouse gas emissions of **29 passenger vehicles** driven for one year. In addition, the potential water absorption equals up to **4,000 gallons, per rainfall event**.[2]

Sources: [1]Green Roofs for Healthy Cities, "About Green Walls". [2]Filtrexx TechLink Research Summary #3335.

PROJECT PROFILE: STREAMBANK RESTORATION

Columbia, SC

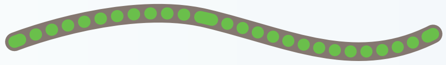
A Richland County stream had heavily eroded banks, and residents had begun voicing concerns to the County about the loss of land. Richland County took on the project in order to restore the lost real estate. The engineer originally proposed using turf reinforcement mats, but that would have meant taking away even more land to create the necessary slope angle. "The County was looking for a design that would allow for the streambanks to be built back up quickly, almost vertically in some locations, and a design that would also look very natural," said Allison Steele, Stormwater Engineer for Richland County. "The whole point of the project was to give them their yards back." Engineering firm CDM Smith decided to use the GreenLoxx system, not only for its verticality, but also for its ease of installation in a forested environment. The GroSoxx used in the GreenLoxx system mold to fit around trees, eliminating the need to clear cut. Filtrexx® Certified℠ Installers Eco-FX, Inc. (Charlotte, NC) and Coogler Construction, Inc. (Ballentine, SC) teamed up for the custom installation. Together they installed approximately 600 feet of streambank, and the work was completed in about two weeks. GreenLoxx can be installed with or without mechanical reinforcement—this project used both. The GroSoxx were pre-seeded with an annual cover crop. The team returned in spring to plant several hundred native plants for permanent stabilization.

BEFORE

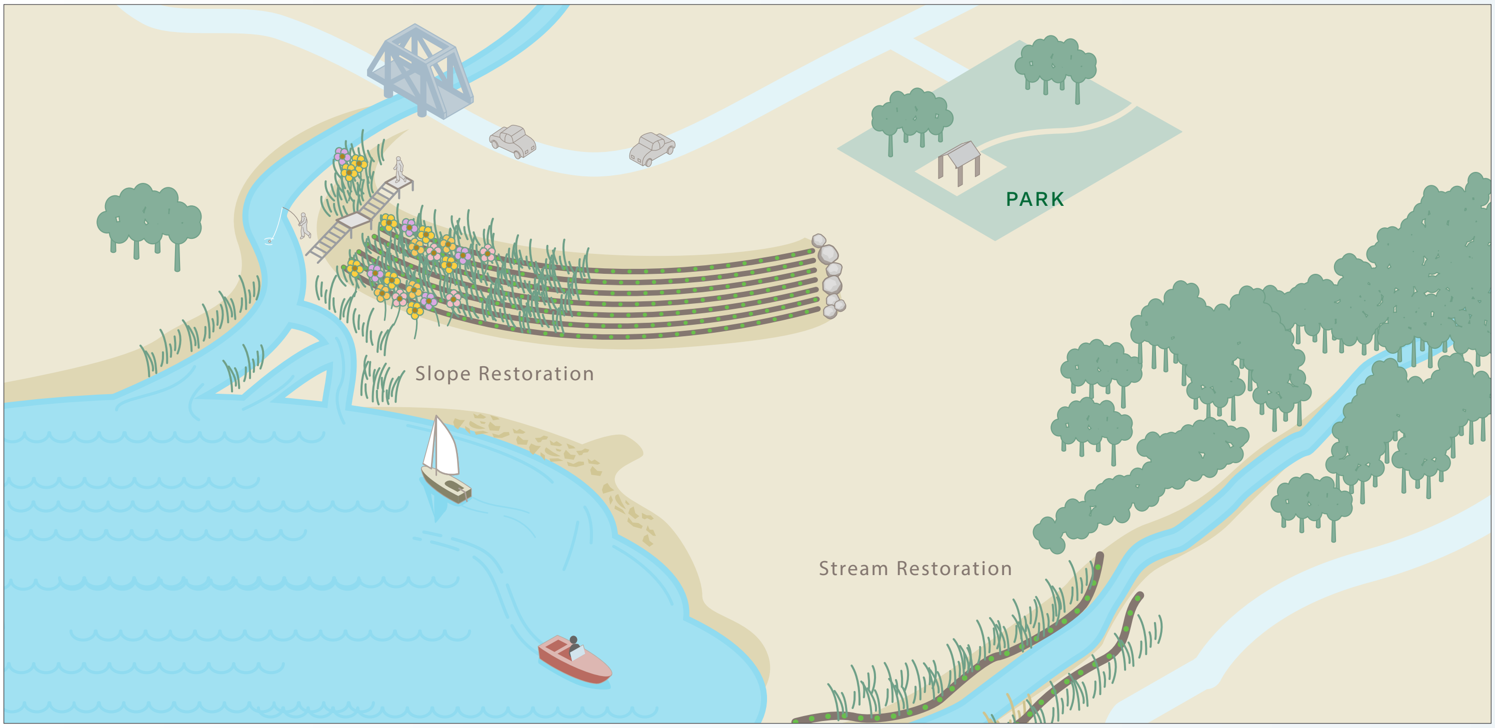
INSTALLATION

AFTER

Use GreenLoxx Systems for a variety of applications and industries



PROMOTES GROWTH



APPLICATIONS

- STREAMBANKS
- STEEP SLOPES
- SHORELINES
- RETAINING WALLS
- ROADSIDE SLOPES

INDUSTRIES

- MUNICIPALITIES
- RESIDENTIAL/HOA
- LANDSCAPING
- CONSERVATION DISTRICTS

Contact Filtrexx for availability and system packages.

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DESIGN SPECIFICATION

5.2 GrowingMedia™

filtrexx® SUSTAINABLE TECHNOLOGIES

PURPOSE & DESCRIPTION

Composted products used for Filtrexx **GrowingMedia™** shall be weed free and derived from a well-decomposed source of organic matter. The composted products shall be produced using an aerobic composting process meeting USEPA CFR 503 regulations (In Canada: M.O.E. 101, C.C.M.E. Type "A" and Type "AA" regulations), including time and temperature data indicating effective weed seed, pathogen and insect larvae kill. The composted products shall be free of any refuse, contaminants or other materials toxic to plant growth. Non-composted products will not be accepted. Test methods for the items below should follow USCC TMECC guidelines for laboratory procedures:

Section

A. PH – 5.0-8.0 in accordance with TMECC 04.11-A, "Electrometric pH Determinations for Compost"

B. Moisture content of less than 60% in accordance with standardized test methods for moisture determination.

C. GrowingMedia to be used with Filtrexx® Soxx™ where seeding and/or live stakes are specified; on low grade slopes where vegetation establishment is the priority; or where rainwater absorption, water holding capacity, runoff reduction and infiltration are the priority shall meet the following particle size distribution. Examples include Soxx for Runoff Diversion, Channel Protection, Bank Stabilization, Severe Slope Stabilization, Vegetated Retaining Walls, Vegetated Gabion, Filtration System, Compost Vegetated Cover, Compost Erosion Control Blanket™, Compost Storm Water Blanket™, Compost Engineered Soil, Compost Bioretention System, Green Roof GrowingMedia.

Particle Sizes - 100% passing a 2 in (50mm) sieve, 99% passing a 1 in (25mm) sieve, minimum of 60% passing a ½ in (12.5mm) sieve in accordance with TMECC 02.02-B, "Sample Sieving for Aggregate Size Classification".

D. Material shall be relatively free (<1% by dry weight) of inert or foreign man made materials.

E. Material feedstocks shall not contain wood materials that have been treated or painted, contain preservatives or adhesives, or are composed of engineered wood products.

F. A sample shall be submitted to the Engineer for approval prior to being used and must comply with all local, state and federal regulations.

Option A: Erosion Control
For vegetated non Soxx applications where slope grades are greater than 3:1, where sheet runoff rate or velocity may be high, or rainfall rate/intensity may be high.

Substitution for Section C. Particle Size of GrowingMedia shall use the following particle size distribution specification: 99% passing a 1 in (25mm) sieve, maximum of 50% passing a 1/2 in (12.5mm) sieve.

Option B: Non-vegetated Temporary Erosion Control
For non-vegetated non Soxx applications where slope grades are greater than 3:1, where sheet runoff rate or velocity may be high, or rainfall rate/intensity may be high.

Substitution for Section C. Particle Size of GrowingMedia shall use the following particle size distribution specification: 99% passing a 3 in (75mm) sieve and a maximum of 30% passing a 1/2 in (12.5mm) sieve.

Rationale for Options: Research conducted at The University of Georgia and Auburn University (Faucette et al, 2006; Faucette, 2006) to evaluate the performance of particle sizes in compost erosion control blankets found that distributions with predominantly small particles absorbed more rainfall, reduced a greater volume of runoff, increased the delay of runoff commencement, and exhibited greater vegetation growth, relative to compost erosion control blankets with large particle sizes. However, compost erosion control blankets with distributions of predominantly large particles slowed runoff rate and reduced soil loss prior to vegetation establishment over compost erosion control blankets with smaller particles sizes.

FIELD APPLICATION PHOTO REFERENCES

GrowingMedia Sample

ADDITIONAL INFORMATION

For other references on this topic, including additional research reports and trade magazine and press coverage, visit the Filtrexx website at filtrexx.com

Filtrexx International, Technical Support
877-542-7699 | www.filtrexx.com | info@filtrexx.com
Call for complete list of international installers and distributors.

REFERENCES CITED & ADDITIONAL RESOURCES

Demars, K.R. and R.P. Long, 1998. Field evaluation of source separated compost and Coneg model procurement specifications for Connecticut DOT projects. University of Connecticut and Connecticut Department of Transportation. December, 1998. JHR 98-264.

Faucette, L.B., J. Governo, C.F. Jordan, B.G. Lockaby, H.F. Carino, and R. Governo. 2006. Storm water quality, C factors, and particle size specifications for compost and mulch blankets relative to straw blankets with PAM used for erosion control. Currently Under Peer Review by Journal of Soil and Water Conservation. In: Filtrexx Library #706

Faucette, B. 2006. How Important is Particle Size in Specifications for Compost Erosion Control Blankets? In: Filtrexx Tech Link #3310; and Filtrexx Standard Specifications and Design Manual 5.0, Appendix 5.9.

Faucette B, C. Jordan, M. Risse, M. Cabrera, D. Coleman, and L. West. 2005. Evaluation of storm water from compost and conventional erosion control practices in construction activities. Journal of Soil and Water Conservation. 60:6:288-297.

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Persyn, R.A., T.D. Glanville, T.L. Richard, J.M. Laflen, and P.M. Dixon. 2004. Environmental effects of applying composted organics to new highway impacts: Part 1. Interrill runoff and erosion. Transactions of the American Society of Agricultural and Biological Engineers. 47:2:463-469.

Project #47307.01

DRAINAGE ANALYSIS REPORT

F O R

Site Renovation Plans

70 Pleasant Point Drive
Portsmouth, New Hampshire
Rockingham County

Tax Map 207, Lot 15

Owned by and Prepared
for Katara, LLC

May 25, 2022

Prepared By:

TFM® Since 1968
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

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Contents

Table of Figures

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1.0 - SUMMARY & PROJECT DESCRIPTION

The project includes the development of a single-family residential house on 70 Pleasant Point Drive. The existing lot is approximately 0.642 acres and currently contains a single-family residence. The site is within the Single Residence B Zone and Flood Plain Overlay District and is adjacent to the Piscataqua River on both the southeast and southwest side.

The project proposes to remove the existing dwelling and replace with a new modern 2-story dwelling. Associated improvements include, but are not limited to access, grading, utilities, stormwater management system, lighting, and landscaping. The project proposes a 2,605 SF building footprint and total of 3,546 SF of impervious area within the property lines and approximately 19,907 SF of disturbance to facilitate the development.

This analysis has been completed to verify the project will not pose adverse stormwater effects on-site and off-site. Compared to the pre-development conditions, the post-development stormwater management system has been designed to reduce peak runoff rates, reduce runoff volume, reduce the risk of erosion and sedimentation, and improve stormwater runoff quality. In addition, Best Management Practices are employed to formulate a plan that assures stormwater quality both during and after construction. The following summarizes the findings from the study.

2.0 - CALCULATION METHODS

The design storms analyzed in this study are the 2-year, 10-year, 25 year, and 50-year 24-hour storm events. The software program, HydroCAD version 10.00[1] was utilized to calculate the peak runoff rates from these storm events. The program estimates the peak rates using the TR-20 method. A Type III storm pattern was used in the model. Rainfall frequencies for the analyzed region were also incorporated into the model. Rainfall frequencies from the higher of the Extreme Precipitation Rates from Cornell University's Northeast Regional Climate Center (see Appendix A, Table 1). Due to the project's location within the Coastal/Great Bay Region community, the design rainfall increases the Cornell rates by 15% to address projected storm surge, sea level rise, and precipitation events per Env-Wq 1503.08(l). Design standards were taken from the New Hampshire Stormwater Manual, December 2008[2].

	24-HOUR RAINFALL RATES	
Storm-Event (year)	Northeast Regional Climate Center Extreme Precipitation (in)	Design Rainfall (in)
2	3.21	3.69
10	4.86	5.59
25	6.17	7.10
50	7.38	8.49

Table 1 – 24-Hour Rainfall Rates

Time of Concentration is the time it takes for water to flow from the hydraulically most remote point in the watershed (with the longest travel time) to the watershed outlet. This time is

[1] HydroCAD version 10.00, HydroCAD Software Solutions LLC, Chocorua, NH, 2013.
[2] New Hampshire Stormwater Manual: Volume One - Stormwater and Antidegradation, December 2008; Volume Two - Post-Construction Best Management Practices Selection and Design, December 2008; Volume Three - Erosion and Sediment Controls During Construction, December 2008.

determined by calculating the time it takes runoff to travel this route under one of three hydrologic conditions: sheet flow, shallow concentrated flow, or channel flow. Because the Intensity-Duration-Frequency (IDF) curve is steep with short TC's, estimating the actual intensity is subject to error and overestimates actual runoff. Due to this, the TC's are adjusted to a minimum of 6 minutes.

3.0 – EXISTING SITE CONDITIONS

The soils within the proposed area of disturbance are identified per the NRCS Web Soil (see Appendix B for detail and soil locations). The soils are composed of Urban land – canton complex (HSG A). These soils are classified as well-drained.

Three test pits and infiltration tests were conducted. In nearly all test pit locations, loam was discovered. Infiltration tests were determined per Ksat testing using a Compact Constant Head Permeameter (Amoozemeter) per Env-Wq 1504.14(d). The highest Estimated Seasonal High-Water Table (ESWT) observed was at: elevation 10.17' at the location of the proposed bioretention system.

4.0 - PRE-DEVELOPMENT CONDITIONS

The pre-development condition is characterized by four subcatchments composing two watersheds, which flows towards the Piscataqua River. Pre-development subcatchment areas are depicted on the attached plan entitled "Pre-Development Drainage Map," Sheet DRAIN-01 in Appendix H.

Stormwater runoff from the site primarily infiltrates into the well-drained soils on-site. The remaining stormwater runoff discharges primarily towards the Piscataqua River (EPR) while the remaining runoff is directed to the neighboring properties to the north of the site (POI-1).

In the pre-development condition, the total impervious area is 3,642 SF over a total drainage analysis area of 27,965 SF.

5.0 - POST-DEVELOPMENT CONDITIONS

The post-development condition is characterized by two watersheds divided into many subcatchment areas. Post-development subcatchment areas are depicted on the attached plan entitled "Post-Development Drainage Map," sheet DRAIN-02 in Appendix I.

In the post-development condition, the total impervious area is 3,561 SF over a total drainage analysis area of 27,965 SF. The total impervious area decreases from the existing amount. Impervious area from the project consists of a 2,605 SF footprint residential building and associated improvements. One rain garden is proposed to treat and mitigate the stormwater runoff from the impact of the new impervious area from the proposed development.

Table 2 summarizes the pre- and post-development peak runoff rates for the 2-year, 10-year, 25 year, and 50-year 24-hour Type III storm events for all discharge. Table 3 summarizes the pre- and post-development peak runoff volumes for the 2-year 24-hour Type III storm events for all discharge.

	TABLE 2 – SURFACE WATER PEAK RUNOFF RATE COMPARISON (CFS)				
POINT OF INTEREST		DESIGN STORM			
		2-year	10-year	25-year	50-year
POI-1	**Pre**	0.0	0.1	0.2	0.3
	Post	0.0	0.1	0.1	0.2
Piscataqua River	**Pre**	0.3	1.1	1.8	2.5
	Post	0.3	0.9	1.6	2.3

Table 2 - Pre- and Post- Development Peak Runoff Rate Comparison

TABLE 3 – SURFACE WATER PEAK RUNOFF VOLUME COMPARISON (CF)		
POINT OF INTEREST		DESIGN STORM
		2-year
POI-1	**Pre**	87
	Post	87
Piscataqua River	**Pre**	1,437
	Post	1,220

Table 3 - Pre- and Post- Development Peak Runoff Volume Comparison

The proposed project reduces peak rates of runoff compared to existing conditions for all storm events, in accordance with AoT regulations and Portsmouth stormwater regulations. Additionally, per NHDES, the 2-year 24-hour storm does not result in an increased peak flow rate and reduces volume within the limits of Env-Wq 1507.05(b)(1) from the pre-development to post-development condition. There will be no adverse effects on the abutting properties from the proposed stormwater management system.

Appendices D and F summarize all 24-hour storm events for pre- and post-development drainage calculations using HydroCAD analysis. Appendices E and G provide a full summary of the 10-year, 24-hour storm for the pre- and post-development drainage calculations using HydroCAD analysis.

There were three warning messages for the 10-year storm event related to the proposed rain garden:

- *[87] Warning: Pond ST Oscillations may require smaller dt or Finer Routing (severity=114)*
- *[87] Warning: Pond ST2 Oscillations may require smaller dt or Finer Routing (severity=88)*
- *[87] Warning: Pond ST3: Oscillations may require smaller dt or Finer Routing (severity=156)*

There was one warning message for the 10-year storm event related to the proposed pervious patio and:

- *[87] Warning: Pond PVP Oscillations may require smaller dt or Finer Routing (severity=282)*

Warning 87 is related to the dt and fine routing were adjusted to minimize the severity of this occurrence. The oscillation occurs as the water drains down to the surface of the subsurface infiltration basins (See Figure 1). Oscillation warnings less than 100 are considered minor. All oscillation errors occur outside of the peak runoff and therefore are not a significant factor in the calculations.

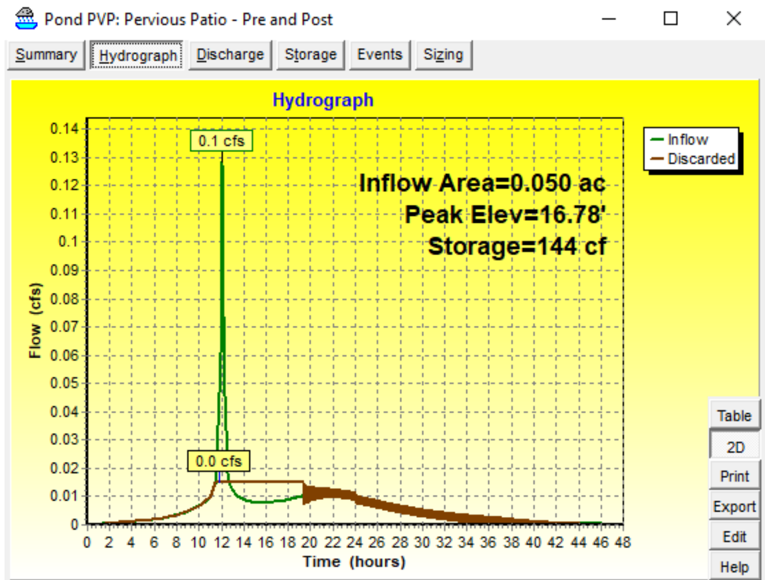

Figure 1: View of the Hydrographs with Oscillation Warning

6.0 – REGULATORY COMPLIANCE

The project meets the stricter of the stormwater standards identified in the New Hampshire Department of Environmental Services (DES) Env-Wq 1500 Alteration of Terrain Regulations and Portsmouth stormwater management regulations.

6.1 – PORTSMOUTH STORMWATER MANAGEMENT STANDARDS

The following regulatory requirements are provided to show project conformance to the applicable criteria of Portsmouth Stormwater Management Performance Standards defined in the Portsmouth Zoning Ordinance Section 10.1018.10. All regulations are met.

All construction activities and uses of buildings, structures, and land within wetlands and wetland buffers shall be carried out so as to minimize the volume and rate of stormwater runoff, the amount of erosion, and the export of sediment from the site. All such activities shall be conducted in accordance with Best Management Practices for stormwater management including but not limited to:

1. New Hampshire Stormwater Manual, NHDES, current version.
2. Best Management Practices to Control Non-point Source Pollution: A Guide for Citizens and City Officials, NHDES, January 2004.

7.0 – BEST MANAGEMENT PRACTICES

Best Management Practices will be developed in accordance with the New Hampshire Stormwater Manual, Volumes Two and Three, December 2008[3] to formulate a plan that assures stormwater quality both during and after construction. The intent of the outlined measures is to minimize erosion and sedimentation during construction, stabilize and protect the site from erosion after construction is complete and mitigate any adverse impacts to stormwater quality resulting from development. Best Management Practices for this project include:

- Temporary practices to be implemented during construction.

- Permanent practices to be implemented after construction.

7.1 – TEMPORARY PRACTICES

1. Erosion, sediment, and stormwater detention measures must be installed as directed by the engineer.
2. All disturbed areas, as well as loam stockpiles, shall be seeded and contained by a silt barrier.
3. Silt barriers must be installed prior to any construction commencing. All erosion control devices including silt barriers and storm drain inlet filters shall be inspected at least once per week and following any rainfall. All necessary maintenance shall be completed within twenty-four (24) hours.
4. Any silt barriers found to be failing must be replaced immediately. Sediment is to be removed from behind the silt barrier if found to be one-third the height of the silt barrier or greater.
5. Any area of the site, which has been disturbed and where construction activity will not occur for more than twenty-one (21) days, shall be temporarily stabilized by mulching and seeding.
6. No construction materials shall be buried on-site.
7. After all areas have been stabilized, temporary practices are to be removed, and the area they are removed from must be smoothed and revegetated.
8. Areas must be temporarily stabilized within 14 days of disturbance or seeded and mulched within 3 days of final stabilization.
9. After November 15th, incomplete driveways or parking areas must be protected with a minimum of 3” of crushed gravel, meeting the standards of NHDOT item 304.3.
10. An area shall be considered stable if one of the following has occurred:
    a) Base course gravels are installed in areas to be paved.
    b) A minimum of 85% vegetated growth has been established.
    c) A minimum of 3" of non-erosive material such as stone or rip rap has been installed.
    d) Erosion control blankets have been properly installed.

[3] New Hampshire Stormwater Manual: Volume One - Stormwater and Antidegradation, December 2008; Volume Two - Post-Construction Best Management Practices Selection and Design, December 2008; Volume Three - Erosion and Sediment Controls During Construction, December 2008.

7.2 – PERMANENT PRACTICES

The objectives for developing permanent Best Management Practices for this site include the following:

1. Maintain existing runoff flow characteristics.
   a) Drainage is structured to minimize any offsite increase in runoff

2. Treatment BMP's are established to ensure the water quality.

3. Maintenance schedules are set to safeguard the long-term working of the stormwater BMP's.

7.3 – BEST MANAGEMENT PRACTICE EFFICIENCIES

Appendix E of Volume 2 of the New Hampshire Stormwater [4] lists the pollutant removal efficiencies of various BMP's. All proposed BMP's meet all state and Portsmouth requirements for total suspended solids (TSS) and pollutant removal, Total Nitrogen (TN), and Total Phosphorous (TP).

Bioretention Systems have a 90% TSS removal efficiency, 65% TN removal efficiency, and 65% TP efficiency.

8.0 – GENERAL CONSTRUCTION SEQUENCING

To minimize erosion and sedimentation due to construction, construction shall follow this general construction sequence.

Modifications to the sequence necessary due to the contractor's schedule shall include appropriate temporary and permanent erosion and sedimentation control measures.

The contractor shall schedule work such that any construction area is stabilized within 45 days of initial disturbance except as noted below. No more than 5 acres of disturbed land shall be unstabilized at any one time.

The project shall be managed so that it meets the requirements and intent of RSA 430:53 and chapter ARG 3800 relative to invasive species.

Do not traffic exposed soil surface of infiltration systems with construction equipment. If feasible, perform excavations with equipment positioned outside the limits of the infiltration components of the system.

Do not discharge sediment-laden waters from construction activities (runoff, water from excavations) to stormwater bmp's. Stormwater runoff must be directed to temporary practices until stormwater bmp's are stabilized.

Do not place stormwater bmp's into service until the contributing areas have been fully stabilized.

[4] New Hampshire Stormwater Manual: Volume One - Stormwater and Antidegradation, December 2008; Volume Two - Post-Construction Best Management Practices Selection and Design, December 2008; Volume Three - Erosion and Sediment Controls During Construction, December 2008.

After the infiltration system is excavated to the final design elevation, the floor should be deeply tilled with a rotary tiller or disc harrow to restore the infiltration rates, followed by a pass with a leveling drag.

1. Notify easement owners prior to commencement of work.
2. Install all perimeter erosion protection measures as indicated on the plans prior to the commencement of construction.
3. Stormwater treatment ponds and swales shall be installed before rough grading the site.
4. During construction every effort shall be made to manage surface runoff quality.
5. Daily, or as required, construct temporary berms, drains, ditches, silt barriers, sediment traps, etc. Mulch and seed as required. (temporary seed mixture of winter rye applied at a rate of 2.5 lbs/1000 sf shall be used).
6. Conduct major earthwork, including clearing and grubbing, within the limits of work. All cut and fill slopes shall be seeded within 72 hours after grading.
7. All stripped topsoil and other earth materials shall be stockpiled outside the immediate work and 100' buffer. A silt barrier shall be constructed around these piles in a manner to provide access and avoid sediment outside of the work area.
8. Construct building pad and commence new building construction.
9. Construct temporary diversions as required.
10. Begin permanent and temporary installation of seed and mulch.
11. Perform earthwork necessary to establish rough grading around driveway. Manage exposed soil surfaces to avoid transporting sediments into wetlands.
12. Install subsurface utilities (water, sewer, gas, electric, communications, drainage, drainage facilities, etc.).
13. Construct proposed driveway, rain gardens, gravel wetlands and drainage swales. All ditches, swales, and gravel wetlands shall be fully stabilized prior to directing flow to them.
14. Complete building and all off-site improvements.
15. Complete seeding and mulching. Seed to be applied with broadcast spreader or by hydro-seeding, then rolled, raked, or dragged to assure seed/soil contact.
16. Remove temporary erosion control measures after seeded areas have become firmly established and site improvements are complete.
17. During the course of the work and upon completion, the contractor shall remove all sediment deposits, either on or off site, including catch basins, and sumps, drain pipes and ditches, curb lines, along silt barriers, etc. Resulting from soil and/or construction operations.
18. See winter construction sequence for work conducted after October 15th.

9.0 – CONCLUSION

The proposed stormwater management system will treat, infiltrate, and mitigate the runoff generated from the proposed development and provide protection of groundwater and surface waters as required through the Alteration of Terrain Bureau and Portsmouth stormwater management regulations. Further, the surface water peak runoff rate is reduced in the 2-year, 10-year, 25-year, and 50-year storm. The project has been designed in accordance with NHDES and Portsmouth regulations. There is little change in the flow characteristics of the site. The proposed project has been designed to pose no adverse effects on surrounding properties.

Respectfully,
TFMoran, Inc. Seacoast Division

Jason Cook
Civil Project Engineer

JKC/jcc

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APPENDIX A – EXTREME PRECIPITATION RATES

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Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	
Location	
Longitude	70.746 degrees West
Latitude	43.068 degrees North
Elevation	0 feet
Date/Time	Mon, 18 Apr 2022 11:32:07 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.04	**1yr**	0.70	0.98	1.21	1.56	2.03	2.66	2.92	**1yr**	2.35	2.81	3.22	3.94	4.55	**1yr**
2yr	0.32	0.50	0.62	0.81	1.02	1.30	**2yr**	0.88	1.18	1.52	1.94	2.49	3.21	3.57	**2yr**	2.84	3.43	3.94	4.68	5.33	**2yr**
5yr	0.37	0.58	0.73	0.98	1.25	1.61	**5yr**	1.08	1.47	1.89	2.43	3.14	4.07	4.58	**5yr**	3.60	4.40	5.04	5.94	6.70	**5yr**
10yr	0.41	0.65	0.82	1.12	1.45	1.89	**10yr**	1.25	1.73	2.23	2.90	3.75	4.86	5.53	**10yr**	4.30	5.32	6.09	7.11	7.98	**10yr**
25yr	0.48	0.76	0.97	1.34	1.78	2.34	**25yr**	1.54	2.15	2.78	3.64	4.74	6.17	7.10	**25yr**	5.46	6.83	7.81	9.02	10.05	**25yr**
50yr	0.54	0.86	1.10	1.54	2.08	2.77	**50yr**	1.79	2.53	3.30	4.33	5.67	7.38	8.58	**50yr**	6.54	8.25	9.43	10.81	11.97	**50yr**
100yr	0.60	0.97	1.25	1.78	2.43	3.27	**100yr**	2.09	2.99	3.92	5.17	6.77	8.85	10.37	**100yr**	7.83	9.98	11.39	12.96	14.26	**100yr**
200yr	0.68	1.11	1.43	2.05	2.84	3.85	**200yr**	2.45	3.53	4.63	6.14	8.09	10.60	12.54	**200yr**	9.38	12.06	13.76	15.54	17.00	**200yr**
500yr	0.80	1.32	1.72	2.50	3.50	4.79	**500yr**	3.02	4.40	5.79	7.72	10.23	13.47	16.13	**500yr**	11.92	15.51	17.68	19.77	21.47	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.72	0.88	**1yr**	0.62	0.86	0.93	1.33	1.69	2.25	2.48	**1yr**	1.99	2.38	2.87	3.20	3.91	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.33	3.06	3.45	**2yr**	2.71	3.32	3.82	4.55	5.09	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.11	2.73	3.78	4.18	**5yr**	3.35	4.02	4.72	5.53	6.23	**5yr**
10yr	0.39	0.59	0.73	1.03	1.33	1.60	**10yr**	1.14	1.56	1.80	2.38	3.05	4.36	4.85	**10yr**	3.86	4.66	5.43	6.40	7.18	**10yr**
25yr	0.44	0.67	0.83	1.19	1.56	1.90	**25yr**	1.35	1.86	2.10	2.75	3.52	4.74	5.87	**25yr**	4.20	5.64	6.62	7.77	8.66	**25yr**
50yr	0.48	0.73	0.91	1.31	1.76	2.16	**50yr**	1.52	2.12	2.34	3.06	3.91	5.36	6.76	**50yr**	4.75	6.50	7.69	9.01	9.99	**50yr**
100yr	0.53	0.81	1.01	1.46	2.01	2.46	**100yr**	1.73	2.41	2.62	3.40	4.32	6.03	7.80	**100yr**	5.34	7.50	8.92	10.47	11.53	**100yr**
200yr	0.59	0.89	1.13	1.63	2.27	2.81	**200yr**	1.96	2.75	2.93	3.76	4.76	6.77	8.99	**200yr**	5.99	8.64	10.34	12.17	13.33	**200yr**
500yr	0.68	1.02	1.31	1.90	2.70	3.36	**500yr**	2.33	3.28	3.41	4.28	5.40	7.89	10.84	**500yr**	6.99	10.43	12.56	14.89	16.15	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.44	0.54	0.72	0.89	1.09	**1yr**	0.77	1.06	1.26	1.74	2.20	2.97	3.17	**1yr**	2.63	3.05	3.58	4.37	5.04	**1yr**
2yr	0.34	0.52	0.64	0.87	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.52	3.42	3.71	**2yr**	3.03	3.57	4.10	4.84	5.62	**2yr**
5yr	0.40	0.62	0.77	1.05	1.34	1.62	**5yr**	1.15	1.59	1.89	2.54	3.26	4.34	4.97	**5yr**	3.84	4.78	5.38	6.39	7.17	**5yr**
10yr	0.47	0.72	0.89	1.25	1.61	1.98	**10yr**	1.39	1.94	2.29	3.11	3.97	5.34	6.22	**10yr**	4.72	5.98	6.84	7.86	8.77	**10yr**
25yr	0.58	0.88	1.09	1.56	2.05	2.58	**25yr**	1.77	2.52	2.96	4.08	5.17	7.74	8.37	**25yr**	6.85	8.05	9.20	10.36	11.43	**25yr**
50yr	0.67	1.03	1.28	1.84	2.47	3.14	**50yr**	2.13	3.07	3.61	5.02	6.35	9.69	10.50	**50yr**	8.57	10.10	11.51	12.76	13.99	**50yr**
100yr	0.79	1.20	1.50	2.17	2.98	3.83	**100yr**	2.57	3.74	4.39	6.18	7.81	12.11	13.17	**100yr**	10.72	12.66	14.41	15.74	17.13	**100yr**
200yr	0.93	1.40	1.77	2.57	3.58	4.68	**200yr**	3.09	4.57	5.36	7.61	9.61	15.19	16.53	**200yr**	13.44	15.89	18.08	19.41	20.97	**200yr**
500yr	1.16	1.72	2.21	3.21	4.57	6.07	**500yr**	3.94	5.94	6.96	10.07	12.67	20.50	22.33	**500yr**	18.14	21.48	24.39	25.60	27.40	**500yr**

Powered by ACIS
Northeast Regional Climate Center

APPENDIX B – SITE-SPECIFIC SOIL SURVEY & NRCS WEB SOIL REPORT

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United States Department of Agriculture

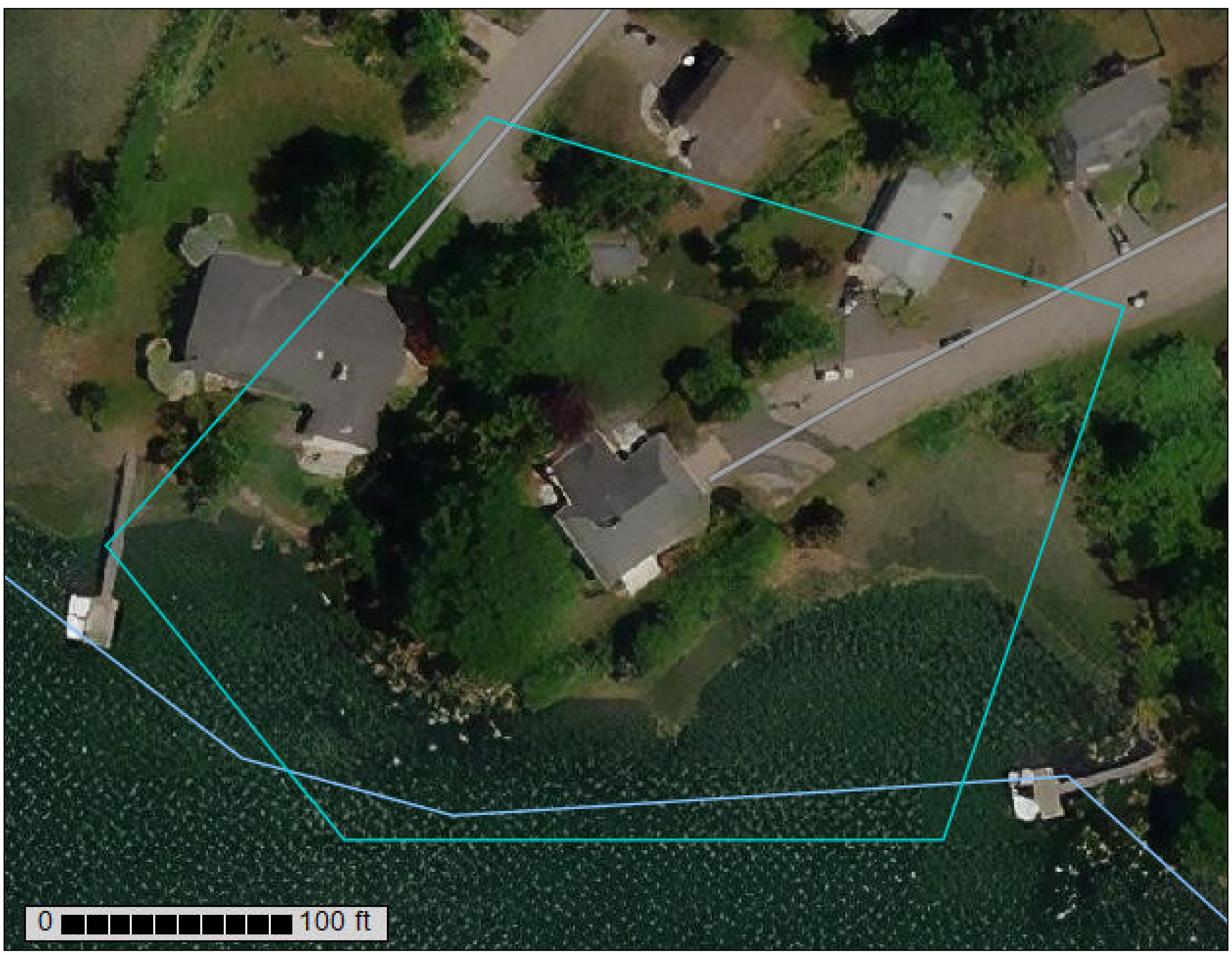
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Rockingham County, New Hampshire



March 14, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

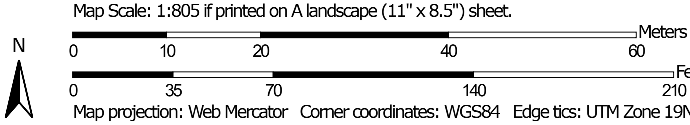
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map

Map Scale: 1:805 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 24, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Jun 14, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
799	Urban land-Canton complex, 3 to 15 percent slopes	1.3	59.0%
W	Water	0.9	41.0%
Totals for Area of Interest		**2.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Rockingham County, New Hampshire

799—Urban land-Canton complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9cq0
Elevation: 0 to 1,000 feet
Mean annual precipitation: 42 to 46 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 55 percent
Canton and similar soils: 20 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Parent material: Till

Typical profile

H1 - 0 to 5 inches: gravelly fine sandy loam
H2 - 5 to 21 inches: gravelly fine sandy loam
H3 - 21 to 60 inches: loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Udorthents

Percent of map unit: 5 percent
Hydric soil rating: No

Squamscott and scitico

Percent of map unit: 4 percent
Landform: Marine terraces

Hydric soil rating: Yes

Walpole

Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

Chatfield

Percent of map unit: 4 percent
Hydric soil rating: No

Scituate and newfields

Percent of map unit: 4 percent
Hydric soil rating: No

Boxford and eldridge

Percent of map unit: 4 percent
Hydric soil rating: No

W—Water

Map Unit Setting

National map unit symbol: 9cq3
Elevation: 200 to 2,610 feet
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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APPENDIX C – TEST PIT LOGS & INFILTRATION TEST DATA

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Test Pit Report

For

70 Pleasant Point Drive,

Portsmouth, NH

Prepared For

Katara, LLC

47307.01

PREPARED BY

TFMoran, Inc.

48 Constitution Drive

Bedford, NH 03110

April 6th, 2022

Test Pit # 1 April 6th, 2022

0 – 8 10YR 3/4 Dark Yellowish Brown, Loam, High Organic Concentration, Blocky, Friable,

8 – 21 10YR 5/8 Yellowish Brown, Silt Loam, > 15% Angular Rock Fragments, Friable, Homogeneous, Granular

21 – 28 10YR 6/8 Brownish Yellow, Sandy Loam, > 15% Rounded Cobbles, Friable, Blocky

28 – 37 10YR 6/4 Light Yellowish Brown, Fine Sand, Single Grained, Homogenous

37 – 48 10YR 7/3 Very Pale Brown, Very Fine Sand, Single Grained, Homogenous

48 – 61 2.5Y 5/4 Light Olive Brown, Sandy Clay Loam, > 50% Angular Rock Fragments, Decaying Bedrock

REDOX OBS: 57 – 61 10R 4/8 Red (Oxidization of Iron)

<u>Soil Series:</u> Canton

OBSWT: > 61” Below Grade

ESHWT: 57” Below Grade

Roots: 0 – 23” Below Grade

Ledge: 33” Below Grade & 61” below Grade

Test Pit # 2 April 6th, 2022

0 – 9 10YR 3/3 Dark Brown, Loam, Organic Horizon, Friable, Blocky

9 – 19 2.5Y 4/3 Olive Brown, Loamy Sand, Friable, Common Gravels, Granular

19 – 36 10YR 5/6 Yellowish Brown, Loamy Sand, Common Gravels, Heterogeneous, Massive

36 – 58 2.5Y 6/4 Light Yellowish Brown, Sandy Loam, Blocky, Medium Grain Size, Few Cobbles

58 – 68 10YR 7/6 Yellow, Medium Sand, Heterogeneous, loose, Single Grained

REDOX OBS: 43” Below Grade 7.5YR 5/8 Strong Brown

Soil Series: Canton

OBSWT: > 68” Below Grade

ESHWT: 43” Below Grade

Roots: 8 – 26” Below Grade

Ledge: 50” Below Grade & 68” below Grade

Test Pit # 3 April 6th, 2022

0 – 8 10YR 3/2 Very Dark Grayish Brown, Loam, Organic Horizon, Friable, Blocky

8 – 24 2.5Y 5/6 Light Olive Brown, Sandy Loam, Massive,

24 – 40 2.5Y 7/4 Pale Brown, Loamy Sand, Friable, Granular, Homogenous, Very Few Cobbles

40 – 88 10YR 5/4 Yellowish Brown, Loamy Sand, > 15% Angular Rock Fragments, Homogenous Soils, Platy, Decaying Bedrock

REDOX OBS: 70” Below Grade 2.5YR 4/8 Red

<u>Soil Series:</u> Canton

OBSWT: > 88” Below Grade

ESHWT: 70” Below Grade

Roots: 20 – 24” Below Grade

Ledge: 62” Below Grade

Project No: 47307.01
Project Name: Katara -70 Pleasant Point Drive - Portsmouth, NH

Date: 4/6/2022
Location: TP-1

For 5 cm Auger

A of Auger Hole = 19.6 cm^2
Radius of Hole = 2.5 cm
Depth of Auger Hole = 48.0 cm
Depth to Impervious Layer or ESHWT = 142.2 cm 56 in (From Ground Surface

H= D-d = 48-22 = 26

										Approximate Glover Solution		Glover Solution						
															if s>2H		if s<2H	
Reading #	Time Interval	H	Coefficient A	Reading	Δ	Elapsed Time	# On Azm	Conv. Factor (Area)	Outflow	Saturated Hydraulic Conductivity (K_{sat})		s	A1	B1	Saturated Hydraulic Conductivity (K_{sat})		Saturated Hydraulic Conductivity (K_{sat})	
	min	cm	l/cm	cm	cm	hrs	cm	cm^3	cm^3/hr	cm/hr	in/hr	cm			cm/hr	in/hr	cm/hr	in/hr
1	0	-	-	36	-	-		-	-	-	-	-	-	-	-			
2	0.5	26	0.00050145	32	4.0	0.008	1	20	9600	4.813926	1.895	94.2	0.000501	0.0003	4.811	1.894	3.099	1.220
3	1	26	0.00050145	27.6	4.4	0.008	1	20	10560	5.295318	2.085	94.2	0.000501	0.0003	5.293	2.084	3.408	1.342
4	1.5	26	0.00050145	23.2	4.4	0.008	1	20	10560	5.295318	2.085	94.2	0.000501	0.0003	5.293	2.084	3.408	1.342
5	2	26	0.00050145	19.2	4.0	0.008	1	20	9600	4.813926	1.895	94.2	0.000501	0.0003	4.811	1.894	3.099	1.220
6	2.5	26	0.00050145	15.3	3.9	0.008	1	20	9360	4.693577	1.848	94.2	0.000501	0.0003	4.691	1.847	3.021	1.189
7	3	26	0.00050145	11.2	4.1	0.008	1	20	9840	4.934274	1.943	94.2	0.000501	0.0003	4.932	1.942	3.176	1.250
8	3.5	26	0.00050145	7.2	4.0	0.008	1	20	9600	4.813926	1.895	94.2	0.000501	0.0003	4.811	1.894	3.099	1.220
9	4	26	0.00050145	3.3	3.9	0.008	1	20	9360	4.693577	1.848	94.2	0.000501	0.0003	4.691	1.847	3.021	1.189
Average Ksat based on readings 2-7											1.887					1.886		1.215

NOTE: Could not keep a steady H reading in the Hole - Infiltrating beyond equipment ability to read

H Steady Head (amount of water in auger hole from bottom of the hole to the surface of the water D-d)
A Coefficient A from CCHP Manual - Approximate for Glover Solution
d Distinance from top of water to outflow of CCHP (D-H)
A1 Calculated Coefficient A for Glover Solution (H>2s)
B1 Calculated Coefficient A for Glover Solution (H<2s)
s Distance from bottom of auger hole to impereable layer

Project No: 45407.12
Project Name: 437 Lafatette Road - Portsmouth, NH

Date: 4/6/2022
Location: TP-1

For 5 cm Auger

A of Auger Hole = 19.6 cm^2
Radius of Hole = 2.5 cm
Depth of Auger Hole = 43.0 cm
Depth to Impervious Layer or ESHWT = 142.2 cm 56 in (From Ground Surface

H= D-d = 43-13 = 30

Reading #	Time Interval	H	Coefficient A	Reading	Δ	Elapsed Time	# On Azm	Conv. Factor (Area)	Outflow	Approximate Glover Solution: Saturated Hydraulic Conductivity (K_{sat})		Glover Solution: s	A1	B1	if s>2H: Saturated Hydraulic Conductivity (K_{sat})		if s<2H: Saturated Hydraulic Conductivity (K_{sat})	
	min	cm	l/cm	cm	cm	hrs	cm	cm^3	cm^3/hr	cm/hr	in/hr	cm			cm/hr	in/hr	cm/hr	in/hr
1	0	-	-	37	-	-		-	-	-	-	-	-	-	-			
2	0.5	30	0.0003998	34.5	2.5	0.008	1	20	6000	2.398782	0.9444	99.2	0.000400	0.0003	2.398	0.9439	1.645	0.648
3	1	30	0.0003998	32.2	2.3	0.008	1	20	5520	2.206879	0.8689	99.2	0.000400	0.0003	2.206	0.8684	1.514	0.596
4	1.5	30	0.0003998	30	2.2	0.008	1	20	5280	2.110928	0.8311	99.2	0.000400	0.0003	2.110	0.8307	1.448	0.570
5	2	30	0.0003998	27.9	2.1	0.008	1	20	5040	2.014977	0.7933	99.2	0.000400	0.0003	2.014	0.793	1.382	0.544
6	2.5	30	0.0003998	26	1.9	0.008	1	20	4560	1.823074	0.7177	99.2	0.000400	0.0003	1.822	0.717	1.250	0.492
7	3	30	0.0003998	23.9	2.1	0.008	1	20	5040	2.014977	0.7933	99.2	0.000400	0.0003	2.014	0.793	1.382	0.544
8	3.5	30	0.0003998	22	1.9	0.008	1	20	4560	1.823074	0.7177	99.2	0.000400	0.0003	1.822	0.717	1.250	0.492
Average Ksat based on readings 2,4-8											0.7555					0.755		0.518

NOTE: Could not keep a steady H reading in the Hole - Infiltrating beyond equipment ability to read

H Steady Head (amount of water in auger hole from bottom of the hole to the surface of the water
A Coefficient A from CCHP Manual - Approximate for Glover Solution
d Distinance from top of water to outflow of CCHP (D-H)
A1 Calculated Coefficient A for Glover Solution (H>2s)
B1 Calculated Coefficient A for Glover Solution (H<2s)
s Distance from bottom of auger hole to impereable layer

Project No: 47307.01
Project Name: Katara -70 Pleasant Point Drive - Portsmouth, NH

Date: 4/6/2022
Location: TP-1

For 5 cm Auger

A of Auger Hole = 19.6 cm^2
Radius of Hole = 2.5 cm
Depth of Auger Hole = 34.0 cm
Impervious Layer or ESHWT = 142.2 cm 56 in (From Ground Surface

H= D-d = 34-12 = 22

										Approximate Glover Solution		Glover Solution						
															if s>2H		if s<2H	
Reading #	Time Interval	H	Coefficient A	Reading	Δ	Elapsed Time	# On Azm	Conv. Factor (Area)	Outflow	Saturated Hydraulic Conductivity (K_{sat})		s	A1	B1	Saturated Hydraulic Conductivity (K_{sat})		Saturated Hydraulic Conductivity (K_{sat})	
	min	cm	l/cm	cm	cm	hrs	cm	cm^3	cm^3/hr	cm/hr	in/hr	cm			cm/hr	in/hr	cm/hr	in/hr
1	0	-	-	38.0	-	-		-	-	-	-	-	-	-	-			
2	0.5	22	0.000651	34.6	3.4	0.008	1	20	8160	5.31216	2.091	108.2	0.000651	0.0003	5.308	2.090	2.727	1.074
3	1	22	0.000651	32.3	2.3	0.008	1	20	5520	3.59352	1.415	108.2	0.000651	0.0003	3.591	1.414	1.845	0.726
4	2	22	0.000651	27.8	4.5	0.017	1	20	5400	3.5154	1.384	108.2	0.000651	0.0003	3.513	1.383	1.805	0.710
5	2.5	22	0.000651	25.8	2.0	0.008	1	20	4800	3.1248	1.230	108.2	0.000651	0.0003	3.123	1.229	1.604	0.632
6	3	22	0.000651	23.9	1.9	0.008	1	20	4560	2.96856	1.169	108.2	0.000651	0.0003	2.966	1.168	1.524	0.600
7	3.5	22	0.000651	22.0	1.9	0.008	1	20	4560	2.96856	1.169	108.2	0.000651	0.0003	2.966	1.168	1.524	0.600
8	4	22	0.000651	20.2	1.8	0.008	1	20	4320	2.81232	1.107	108.2	0.000651	0.0003	2.810	1.106	1.444	0.568
9	4.5	22	0.000651	18.5	1.7	0.008	1	20	4080	2.65608	1.046	108.2	0.000651	0.0003	2.654	1.045	1.363	0.537
											1.123					1.122		1.123

* NOTE: Could not keep a steady H reading in the Hole - Infiltrating beyond equipment ability to read
H Steady Head (amount of water in auger hole from bottom of the hole to the surface of the water
A Coefficient A from CCHP Manual - Approximate for Glover Solution
d Distinance from top of water to outflow of CCHP (D-H)
A1 Calculated Coefficient A for Glover Solution (H>2s)
B1 Calculated Coefficient A for Glover Solution (H<2s)
s Distance from bottom of auger hole to impereable layer

Hole #1	1.9
Hole #2	0.8
Hole #3	1.1
Average	1.3

Project No: 47307.01
Project Name: Katara -70 Pleasant Point Drive - Portsmouth, NH

Date: 4/6/2022
Location: TP-2

For 5 cm Auger

A of Auger Hole = 19.6 cm^2
Radius of Hole = 2.5 cm
Depth of Auger Hole = 93.4 cm — 23" Down in the hole = 35+23*2.54
Depth to Impervious Layer or ESHWT = 243.8 cm — 96 in (From Ground Surface

H= D-d = 35-15=20

Reading #	Time Interval	H	Coefficient A	Reading	Δ	Elapsed Time	# On Azm	Conv. Factor (Area)	Outflow	Approximate Glover Solution: Saturated Hydraulic Conductivity (K_{sat})		Glover Solution: s	A1	B1	if s>2H: Saturated Hydraulic Conductivity (K_{sat})		if s<2H: Saturated Hydraulic Conductivity (K_{sat})	
	min	cm	l/cm	cm	cm	hrs	cm	cm^3	cm^3/hr	cm/hr	in/hr	cm			cm/hr	in/hr	cm/hr	in/hr
1	0	-	-	34.0	-	-		-	-	-	-	-	-	-	-			
2	0.5	20	0.000753	30.5	3.5	0.008	1	20	8400	6.3252	2.4902	150.4	0.000753	0.0003	6.329	2.492	2.311	0.910
3	1	20	0.000753	26.5	4.0	0.008	1	20	9600	7.2288	2.8460	150.4	0.000753	0.0003	7.233	2.848	2.641	1.040
4	1.5	20	0.000753	23.0	3.5	0.008	1	20	8400	6.3252	2.4902	150.4	0.000753	0.0003	6.329	2.492	2.311	0.910
5	2	20	0.000753	19.8	3.2	0.008	1	20	7680	5.78304	2.2768	150.4	0.000753	0.0003	5.787	2.278	2.113	0.832
6	2.5	20	0.000753	16.4	3.4	0.008	1	20	8160	6.14448	2.4191	150.4	0.000753	0.0003	6.148	2.421	2.245	0.884
7	3	20	0.000753	13.2	3.2	0.008	1	20	7680	5.78304	2.2768	150.4	0.000753	0.0003	5.787	2.278	2.113	0.832
8	3.5	20	0.000753	10.0	3.2	0.008	1	20	7680	5.78304	2.2768	150.4	0.000753	0.0003	5.787	2.278	2.113	0.832
Average Ksat based on readings 1-6											2.3717					2.373		0.867

NOTE: Could not keep a steady H reading in the Hole - Infiltrating beyond equipment ability to read

H Steady Head (amount of water in auger hole from bottom of the hole to the surface of the water
A Coefficient A from CCHP Manual - Approximate for Glover Solution
d Distinance from top of water to outflow of CCHP (D-H)
A1 Calculated Coefficient A for Glover Solution (H>2s)
B1 Calculated Coefficient A for Glover Solution (H<2s)
s Distance from bottom of auger hole to impereable layer

Project No: 47307.01
Project Name: Katara -70 Pleasant Point Drive - Portsmouth, NH

Date: 4/6/2022
Location: TP-2

For 5 cm Auger

A of Auger Hole = 19.6 cm^2
Radius of Hole = 2.5 cm
Depth of Auger Hole = 98.4 cm 23" Down in the hole = 40+23*2.54
Depth to Impervious Layer or ESHWT = 243.8 cm 96 in (From Ground Surface

H= D-d = 40-20 =20

										Approximate Glover Solution		Glover Solution						
															if s>2H		if s<2H	
Reading #	Time Interval	H	Coefficient A	Reading	Δ	Elapsed Time	# On Azm	Conv. Factor (Area)	Outflow	Saturated Hydraulic Conductivity (K_{sat})		s*	A1	B1	Saturated Hydraulic Conductivity (K_{sat})		Saturated Hydraulic Conductivity (K_{sat})	
	min	cm	l/cm	cm	cm	hrs	cm	cm^3	cm^3/hr	cm/hr	in/hr	cm			cm/hr	in/hr	cm/hr	in/hr
1	0	-	-	40	-	-		-	-	-	-	-	-	-	-			
2	0.5	20	0.000753	36.7	3.3	0.008	1	20	7920	5.96376	2.3479	145.4	0.000753	0.0003	5.968	2.349	2.241	0.882
3	1	20	0.000753	33.6	3.1	0.008	1	20	7440	5.60232	2.2056	145.4	0.000753	0.0003	5.606	2.207	2.105	0.829
4	1.5	20	0.000753	30.2	3.4	0.008	1	20	8160	6.14448	2.4191	145.4	0.000753	0.0003	6.148	2.421	2.309	0.909
5	2	20	0.000753	27.7	2.5	0.008	1	20	6000	4.518	1.7787	145.4	0.000753	0.0003	4.521	1.780	1.698	0.668
6	2.5	20	0.000753	24.6	3.1	0.008	1	20	7440	5.60232	2.2056	145.4	0.000753	0.0003	5.606	2.207	2.105	0.829
7	3	20	0.000753	21.8	2.8	0.008	1	20	6720	5.06016	1.9922	145.4	0.000753	0.0003	5.063	1.993	1.902	0.749
8	3.5	20	0.000753	19	2.8	0.008	1	20	6720	5.06016	1.9922	145.4	0.000753	0.0003	5.063	1.993	1.902	0.749
9	4	20	0.000753	16.2	2.8	0.008	1	20	6720	5.06016	1.9922	145.4	0.000753	0.0003	5.063	1.993	1.902	0.749
Average Ksat based on readings 1-3											2.0456					2.047		0.769

NOTE: Could not keep a steady H reading in the Hole - Infiltrating beyond equipment ability to read

H Steady Head (amount of water in auger hole from bottom of the hole to the surface of the water
A Coefficient A from CCHP Manual - Approximate for Glover Solution
d Distinance from top of water to outflow of CCHP (D-H)
A1 Calculated Coefficient A for Glover Solution (H>2s)
B1 Calculated Coefficient A for Glover Solution (H<2s)
s Distance from bottom of auger hole to impereable layer (ESHW - Depth of Auger Hole in cm)

Project No: 47307.01
Project Name: Katara -70 Pleasant Point Drive - Portsmouth, NH

Date: 4/6/2022
Location: TP-2

For 5 cm Auger

A of Auger Hole = 19.6 cm^2
Radius of Hole = 2.5 cm
Depth of Auger Hole = 84.4 cm — 23" Down in the hole = 26+23*2.54
Impervious Layer or ESHWT = 243.8 cm — 96 in (From Ground Surface

H= D-d = 26-13 = 13

										Approximate Glover Solution		Glover Solution			if s>2H		if s<2H	
Reading #	Time Interval	H	Coefficient A	Reading	Δ	Elapsed Time	# On Azm	Conv. Factor (Area)	Outflow	Saturated Hydraulic Conductivity (K_{sat})		s	A1	B1	Saturated Hydraulic Conductivity (K_{sat})		Saturated Hydraulic Conductivity (K_{sat})	
	min	cm	l/cm	cm	cm	hrs	cm	cm^3	cm^3/hr	cm/hr	in/hr	cm			cm/hr	in/hr	cm/hr	in/hr
1	0	-	-	32.0	-	-		-	-	-	-	-	-	-	-			
2	0.5	13	0.001436	28.0	4.0	0.008	1	20	9600	13.7856	5.427	159.4	0.001436	0.0003	13.786	5.428	3.249	1.279
3	1	13	0.001436	23.4	4.6	0.008	1	20	11040	15.85344	6.242	159.4	0.001436	0.0003	15.854	6.242	3.736	1.471
4	1.5	13	0.001436	19.1	4.3	0.008	1	20	10320	14.81952	5.834	159.4	0.001436	0.0003	14.820	5.835	3.493	1.375
5	2	13	0.001436	14.8	4.3	0.008	1	20	10320	14.81952	5.834	159.4	0.001436	0.0003	14.820	5.835	3.493	1.375
6	2.5	13	0.001436	10.4	4.4	0.008	1	20	10560	15.16416	5.970	159.4	0.001436	0.0003	15.165	5.970	3.574	1.407
7	3	13	0.001436	5.8	4.6	0.008	1	20	11040	15.85344	6.242	159.4	0.001436	0.0003	15.854	6.242	3.736	1.471
Average Ksat based on readings 3-6											5.880					5.880		1.386

*	NOTE: Could not keep a steady H reading in the Hole - Infiltrating beyond equipment ability to read
H	Steady Head (amount of water in auger hole from bottom of the hole to the surface of the water
A	Coefficient A from CCHP Manual - Approximate for Glover Solution
d	Distinance from top of water to outflow of CCHP (D-H)
A1	Calculated Coefficient A for Glover Solution (H>2s)
B1	Calculated Coefficient A for Glover Solution (H<2s)
s	Distance from bottom of auger hole to impereable layer

Hole #1	2.4
Hole #2	2
Hole #3	5.9
Average	3.4

Project No: 47307.01

Project Name: Katara -70 Pleasant Point Drive - Portsmouth, NH

Date: 4/6/2022

Location: TP-3

For 5 cm Auger

A of Auger Hole = 19.6 cm^2

Radius of Hole = 2.5 cm

Depth of Auger Hole = 88.3 cm   19" Down in the hole = 40+19*2.54

Depth to Impervious Layer or ESHWT = 243.8 cm   96 in   (From Ground Surface

H= D-d = 40-8=32

Reading #	Time Interval	H	Coefficient A	Reading	Δ	Elapsed Time	# On Azm	Conv. Factor (Area)	Outflow	Approximate Glover Solution: Saturated Hydraulic Conductivity (K_{sat})		s	A1	B1	Glover Solution if s>2H: Saturated Hydraulic Conductivity (K_{sat})		Glover Solution if s<2H: Saturated Hydraulic Conductivity (K_{sat})	
	min	cm	l/cm	cm	cm	hrs	cm	cm^3	cm^3/hr	cm/hr	in/hr	cm			cm/hr	in/hr	cm/hr	in/hr
1	0	-	-	18.0	-	-		-	-	-	-	-	-	-	-			
2	0.5	32	0.00036064	14.8	3.2	0.008	1	20	7680	2.769736	1.0904	155.6	0.000360	0.0002	2.768	1.090	1.435	0.565
3	1	32	0.00036064	11.5	3.3	0.008	1	20	7920	2.856291	1.1245	155.6	0.000360	0.0002	2.855	1.124	1.480	0.583
4	1.5	32	0.00036064	8.2	3.3	0.008	1	20	7920	2.856291	1.1245	155.6	0.000360	0.0002	2.855	1.124	1.480	0.583
5	2	32	0.00036064	4.8	3.4	0.008	1	20	8160	2.942845	1.1586	155.6	0.000360	0.0002	2.941	1.158	1.525	0.600
6	2.5	32	0.00036064	0.6	4.2	0.008	1	20	10080	3.635279	1.4312	155.6	0.000360	0.0002	3.633	1.430	1.883	0.742
Average Ksat based on readings 1-6											1.1245					1.124		0.583

NOTE: Could not keep a steady H reading in the Hole - Infiltrating beyond equipment ability to read

H Steady Head (amount of water in auger hole from bottom of the hole to the surface of the water

A Coefficient A from CCHP Manual - Approximate for Glover Solution

d Distinance from top of water to outflow of CCHP (D-H)

A1 Calculated Coefficient A for Glover Solution (H>2s)

B1 Calculated Coefficient A for Glover Solution (H<2s)

s Distance from bottom of auger hole to impereable layer

Project No: 47307.01
Project Name: Katara -70 Pleasant Point Drive - Portsmouth, NH

Date: 4/6/2022
Location: TP-3

For 5 cm Auger

A of Auger Hole = 19.6 cm^2
Radius of Hole = 2.5 cm
Depth of Auger Hole = 79.3 cm 19" Down in the hole = 31+19*2.54
Depth to Impervious Layer or ESHWT = 243.8 cm 96 in (From Ground Surface

H= D-d = 31-10=21

Reading #	Time Interval	H	Coefficient A	Reading	Δ	Elapsed Time	# On Azm	Conv. Factor (Area)	Outflow	Approximate Glover Solution: Saturated Hydraulic Conductivity (K_{sat})		Glover Solution: s*	A1	B1	if s>2H: Saturated Hydraulic Conductivity (K_{sat})		if s<2H: Saturated Hydraulic Conductivity (K_{sat})	
	min	cm	l/cm	cm	cm	hrs	cm	cm^3	cm^3/hr	cm/hr	in/hr	cm			cm/hr	in/hr	cm/hr	in/hr
1	0	-	-	38	-	-		-	-	-	-	-	-	-	-			
2	0.5	21	0.000669	35.7	2.3	0.008	1	20	5520	3.69288	1.4539	164.6	0.000699	0.0002	3.859	1.519	1.362	0.536
3	1	21	0.000669	33.2	2.5	0.008	1	20	6000	4.014	1.5803	164.6	0.000699	0.0002	4.194	1.651	1.481	0.583
4	1.5	21	0.000669	30.8	2.4	0.008	1	20	5760	3.85344	1.5171	164.6	0.000699	0.0002	4.026	1.585	1.421	0.560
5	2	21	0.000669	28	2.8	0.008	1	20	6720	4.49568	1.7700	164.6	0.000699	0.0002	4.697	1.849	1.658	0.653
6	2.5	21	0.000669	25.7	2.3	0.008	1	20	5520	3.69288	1.4539	164.6	0.000699	0.0002	3.859	1.519	1.362	0.536
7	3	21	0.000669	23.2	2.5	0.008	1	20	6000	4.014	1.5803	164.6	0.000699	0.0002	4.194	1.651	1.481	0.583
8	3.5	21	0.000669	20.8	2.4	0.008	1	20	5760	3.85344	1.5171	164.6	0.000699	0.0002	4.026	1.585	1.421	0.560
Average Ksat based on readings 1-3											1.5297					1.598		1.530

NOTE: Could not keep a steady H reading in the Hole - Infiltrating beyond equipment ability to read

H Steady Head (amount of water in auger hole from bottom of the hole to the surface of the water
A Coefficient A from CCHP Manual - Approximate for Glover Solution
d Distinance from top of water to outflow of CCHP (D-H)
A1 Calculated Coefficient A for Glover Solution (H>2s)
B1 Calculated Coefficient A for Glover Solution (H<2s)
s Distance from bottom of auger hole to impereable layer (ESHW - Depth of Auger Hole in cm)

Project No: 47307.01
Project Name: Katara -70 Pleasant Point Drive - Portsmouth, NH

Date: 4/6/2022
Location: TP-3

For 5 cm Auger

A of Auger Hole = 19.6 cm^2
Radius of Hole = 2.5 cm
Depth of Auger Hole = 77.3 cm — 19" Down in the hole = 29+19*2.54
Depth to Impervious Layer or ESHWT = 243.8 cm — 96 in (From Ground Surface

H= D-d = 29-12 =17

Reading #	Time Interval	H	Coefficient A	Reading	Δ	Elapsed Time	# On Azm	Conv. Factor (Area)	Outflow	Approximate Glover Solution: Saturated Hydraulic Conductivity (K_{sat})		Glover Solution: s*	A1	B1	if s>2H: Saturated Hydraulic Conductivity (K_{sat})		if s<2H: Saturated Hydraulic Conductivity (K_{sat})	
	min	cm	l/cm	cm	cm	hrs	cm	cm^3	cm^3/hr	cm/hr	in/hr	cm			cm/hr	in/hr	cm/hr	in/hr
1	0	-	-	35	-	-		-	-	-	-	-	-	-	-			
2	0.5	20	0.000753	32.4	2.6	0.008	1	20	6240	4.69872	1.8499	166.6	0.000753	0.0003	4.702	1.851	1.576	0.620
3	1	20	0.000753	29.9	2.5	0.008	1	20	6000	4.518	1.7787	166.6	0.000753	0.0003	4.521	1.780	1.515	0.597
4	1.5	20	0.000753	27.2	2.7	0.008	1	20	6480	4.87944	1.9210	166.6	0.000753	0.0003	4.883	1.922	1.636	0.644
5	2	20	0.000753	24.9	2.3	0.008	1	20	5520	4.15656	1.6364	166.6	0.000753	0.0003	4.159	1.637	1.394	0.549
6	2.5	20	0.000753	22.6	2.3	0.008	1	20	5520	4.15656	1.6364	166.6	0.000753	0.0003	4.159	1.637	1.394	0.549
7	3	20	0.000753	20.4	2.2	0.008	1	20	5280	3.97584	1.5653	166.6	0.000753	0.0003	3.978	1.566	1.333	0.525
8	3.5	20	0.000753	18.1	2.3	0.008	1	20	5520	4.15656	1.6364	166.6	0.000753	0.0003	4.159	1.637	1.394	0.549
Average Ksat based on readings 1-3											1.6187					1.620		1.619

NOTE: Could not keep a steady H reading in the Hole - Infiltrating beyond equipment ability to read

H Steady Head (amount of water in auger hole from bottom of the hole to the surface of the water
A Coefficient A from CCHP Manual - Approximate for Glover Solution
d Distinance from top of water to outflow of CCHP (D-H)
A1 Calculated Coefficient A for Glover Solution (H>2s)
B1 Calculated Coefficient A for Glover Solution (H<2s)
s Distance from bottom of auger hole to impereable layer (ESHW - Depth of Auger Hole in cm)

Hole #1	1.1
Hole #2	1.5
Hole #3	1.6
Average	1.4

APPENDIX D – PRE-DEVELOPMENT CALCULATIONS

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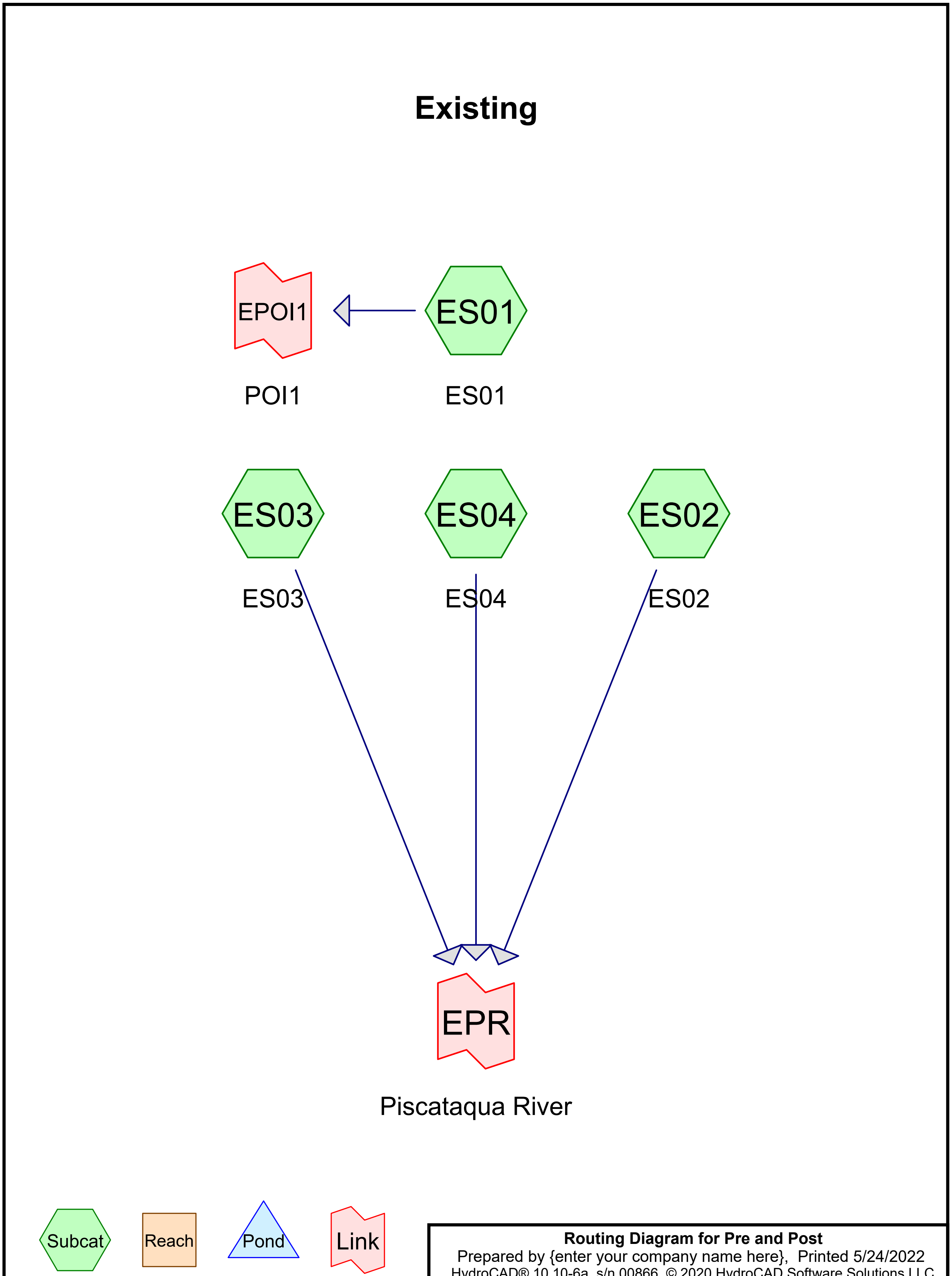

Routing Diagram for Pre and Post
Prepared by {enter your company name here}, Printed 5/24/2022
HydroCAD® 10.10-6a s/n 00866 © 2020 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 yr	Type III 24-hr		Default	24.00	1	3.69	2
2	10 yr	Type III 24-hr		Default	24.00	1	5.59	2
3	25 yr	Type III 24-hr		Default	24.00	1	7.10	2
4	50 yr	Type III 24-hr		Default	24.00	1	8.49	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.142	35	Brush, Fair, HSG A (ES02, ES03, ES04)
0.435	49	Pasture/grassland/range, Fair, HSG A (ES01, ES02, ES03, ES04)
0.120	98	Paved parking, HSG A (ES02, ES03, ES04)
0.057	98	Roofs, HSG A (ES01, ES03, ES04)
0.005	43	Woods/grass comb., Fair, HSG A (ES01)
0.759	**58**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.759	HSG A	ES01, ES02, ES03, ES04
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.759		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.142	0.000	0.000	0.000	0.000	0.142	Brush, Fair	ES02, ES03, ES04
0.435	0.000	0.000	0.000	0.000	0.435	Pasture/grassland/range, Fair	ES01, ES02, ES03, ES04
0.120	0.000	0.000	0.000	0.000	0.120	Paved parking	ES02, ES03, ES04
0.057	0.000	0.000	0.000	0.000	0.057	Roofs	ES01, ES03, ES04
0.005	0.000	0.000	0.000	0.000	0.005	Woods/grass comb., Fair	ES01
0.759	**0.000**	**0.000**	**0.000**	**0.000**	**0.759**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment ES01: ES01 Runoff Area=4,670 sf 3.55% Impervious Runoff Depth=0.24"
Flow Length=85' Slope=0.0235 '/' Tc=8.1 min CN=50 Runoff=0.0 cfs 0.002 af

Subcatchment ES02: ES02 Runoff Area=10,846 sf 38.00% Impervious Runoff Depth=0.96"
Flow Length=120' Tc=6.0 min CN=67 Runoff=0.2 cfs 0.020 af

Subcatchment ES03: ES03 Runoff Area=13,313 sf 17.35% Impervious Runoff Depth=0.31"
Flow Length=141' Tc=8.5 min CN=52 Runoff=0.0 cfs 0.008 af

Subcatchment ES04: ES04 Runoff Area=4,216 sf 26.54% Impervious Runoff Depth=0.66"
Flow Length=93' Tc=6.0 min CN=61 Runoff=0.1 cfs 0.005 af

Link EPOI1: POI1 Inflow=0.0 cfs 0.002 af
Primary=0.0 cfs 0.002 af

Link EPR: Piscataqua River Inflow=0.3 cfs 0.033 af
Primary=0.3 cfs 0.033 af

Total Runoff Area = 0.759 ac Runoff Volume = 0.035 af Average Runoff Depth = 0.56"
76.65% Pervious = 0.581 ac 23.35% Impervious = 0.177 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentES01: ES01 Runoff Area=4,670 sf 3.55% Impervious Runoff Depth=0.95"
Flow Length=85' Slope=0.0235 '/' Tc=8.1 min CN=50 Runoff=0.1 cfs 0.008 af

SubcatchmentES02: ES02 Runoff Area=10,846 sf 38.00% Impervious Runoff Depth=2.23"
Flow Length=120' Tc=6.0 min CN=67 Runoff=0.6 cfs 0.046 af

SubcatchmentES03: ES03 Runoff Area=13,313 sf 17.35% Impervious Runoff Depth=1.08"
Flow Length=141' Tc=8.5 min CN=52 Runoff=0.3 cfs 0.028 af

SubcatchmentES04: ES04 Runoff Area=4,216 sf 26.54% Impervious Runoff Depth=1.74"
Flow Length=93' Tc=6.0 min CN=61 Runoff=0.2 cfs 0.014 af

Link EPOI1: POI1 Inflow=0.1 cfs 0.008 af
Primary=0.1 cfs 0.008 af

Link EPR: Piscataqua River Inflow=1.1 cfs 0.088 af
Primary=1.1 cfs 0.088 af

Total Runoff Area = 0.759 ac Runoff Volume = 0.096 af Average Runoff Depth = 1.52"
76.65% Pervious = 0.581 ac 23.35% Impervious = 0.177 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentES01: ES01 Runoff Area=4,670 sf 3.55% Impervious Runoff Depth=1.72"
Flow Length=85' Slope=0.0235 '/' Tc=8.1 min CN=50 Runoff=0.2 cfs 0.015 af

SubcatchmentES02: ES02 Runoff Area=10,846 sf 38.00% Impervious Runoff Depth=3.39"
Flow Length=120' Tc=6.0 min CN=67 Runoff=1.0 cfs 0.070 af

SubcatchmentES03: ES03 Runoff Area=13,313 sf 17.35% Impervious Runoff Depth=1.91"
Flow Length=141' Tc=8.5 min CN=52 Runoff=0.6 cfs 0.049 af

SubcatchmentES04: ES04 Runoff Area=4,216 sf 26.54% Impervious Runoff Depth=2.77"
Flow Length=93' Tc=6.0 min CN=61 Runoff=0.3 cfs 0.022 af

Link EPOI1: POI1 Inflow=0.2 cfs 0.015 af
Primary=0.2 cfs 0.015 af

Link EPR: Piscataqua River Inflow=1.8 cfs 0.141 af
Primary=1.8 cfs 0.141 af

Total Runoff Area = 0.759 ac Runoff Volume = 0.157 af Average Runoff Depth = 2.48"
76.65% Pervious = 0.581 ac 23.35% Impervious = 0.177 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentES01: ES01 Runoff Area=4,670 sf 3.55% Impervious Runoff Depth=2.55"
Flow Length=85' Slope=0.0235 '/' Tc=8.1 min CN=50 Runoff=0.3 cfs 0.023 af

SubcatchmentES02: ES02 Runoff Area=10,846 sf 38.00% Impervious Runoff Depth=4.53"
Flow Length=120' Tc=6.0 min CN=67 Runoff=1.3 cfs 0.094 af

SubcatchmentES03: ES03 Runoff Area=13,313 sf 17.35% Impervious Runoff Depth=2.78"
Flow Length=141' Tc=8.5 min CN=52 Runoff=0.8 cfs 0.071 af

SubcatchmentES04: ES04 Runoff Area=4,216 sf 26.54% Impervious Runoff Depth=3.82"
Flow Length=93' Tc=6.0 min CN=61 Runoff=0.4 cfs 0.031 af

Link EPOI1: POI1 Inflow=0.3 cfs 0.023 af
Primary=0.3 cfs 0.023 af

Link EPR: Piscataqua River Inflow=2.5 cfs 0.196 af
Primary=2.5 cfs 0.196 af

Total Runoff Area = 0.759 ac Runoff Volume = 0.218 af Average Runoff Depth = 3.46"
76.65% Pervious = 0.581 ac 23.35% Impervious = 0.177 ac

APPENDIX E – PRE-DEVELOPMENT CALCULATIONS (10-YEAR STORM EVENT)

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	10 yr	Type III 24-hr		Default	24.00	1	5.59	2

Summary for Subcatchment ES01: ES01

Runoff = 0.1 cfs @ 12.15 hrs, Volume= 0.008 af, Depth= 0.95"
Routed to Link EPOI1 : POI1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
166	98	Roofs, HSG A
225	43	Woods/grass comb., Fair, HSG A
4,279	49	Pasture/grassland/range, Fair, HSG A
4,670	50	Weighted Average
4,504		96.45% Pervious Area
166		3.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	85	0.0235	0.18		**Sheet Flow, Sheet Flow 1** Grass: Short n= 0.150 P2= 3.21"

Summary for Subcatchment ES02: ES02

Runoff = 0.6 cfs @ 12.10 hrs, Volume= 0.046 af, Depth= 2.23"
Routed to Link EPR : Piscataqua River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
4,121	98	Paved parking, HSG A
738	35	Brush, Fair, HSG A
5,987	49	Pasture/grassland/range, Fair, HSG A
10,846	67	Weighted Average
6,725		62.00% Pervious Area
4,121		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	48	0.1250	0.31		**Sheet Flow, Sheet Flow 1** Grass: Short n= 0.150 P2= 3.21"
0.4	51	0.0660	1.94		**Sheet Flow, Sheet Flow 2** Smooth surfaces n= 0.011 P2= 3.21"
0.2	21	0.1900	2.18		**Shallow Concentrated Flow, Shallow Concentrated 1** Woodland Kv= 5.0 fps
2.8					**Direct Entry, Direct Entry**
6.0	120	Total			

Summary for Subcatchment ES03: ES03

Runoff = 0.3 cfs @ 12.15 hrs, Volume= 0.028 af, Depth= 1.08"
Routed to Link EPR : Piscataqua River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
650	98	Paved parking, HSG A
1,660	98	Roofs, HSG A
5,154	35	Brush, Fair, HSG A
5,849	49	Pasture/grassland/range, Fair, HSG A
13,313	52	Weighted Average
11,003		82.65% Pervious Area
2,310		17.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0300	0.20		**Sheet Flow, Sheet Flow 1**
					Grass: Short n= 0.150 P2= 3.21"
0.2	41	0.2190	3.28		**Shallow Concentrated Flow, Shallow Concentrated 1**
					Short Grass Pasture Kv= 7.0 fps
8.5	141	Total			

Summary for Subcatchment ES04: ES04

Runoff = 0.2 cfs @ 12.10 hrs, Volume= 0.014 af, Depth= 1.74"
Routed to Link EPR : Piscataqua River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
463	98	Paved parking, HSG A
656	98	Roofs, HSG A
283	35	Brush, Fair, HSG A
2,814	49	Pasture/grassland/range, Fair, HSG A
4,216	61	Weighted Average
3,097		73.46% Pervious Area
1,119		26.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	19	0.1500	2.21		**Sheet Flow, Sheet Flow 1** Smooth surfaces n= 0.011 P2= 3.21"
0.1	26	0.0100	2.99	0.30	**Channel Flow, Channel 1** Area= 0.1 sf Perim= 1.3' r= 0.08' n= 0.009 PVC, smooth interior
0.2	48	0.2900	3.77		**Shallow Concentrated Flow, Shallow Concentrated 1** Short Grass Pasture Kv= 7.0 fps
5.6					**Direct Entry, Direct Entry**
6.0	93	Total			

Summary for Link EPOI1: POI1

Inflow Area = 0.107 ac, 3.55% Impervious, Inflow Depth = 0.95" for 10 yr event
Inflow = 0.1 cfs @ 12.15 hrs, Volume= 0.008 af
Primary = 0.1 cfs @ 12.15 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link EPR: Piscataqua River

Inflow Area = 0.651 ac, 26.61% Impervious, Inflow Depth = 1.62" for 10 yr event
Inflow = 1.1 cfs @ 12.11 hrs, Volume= 0.088 af
Primary = 1.1 cfs @ 12.11 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

APPENDIX F – POST-DEVELOPMENT CALCULATIONS

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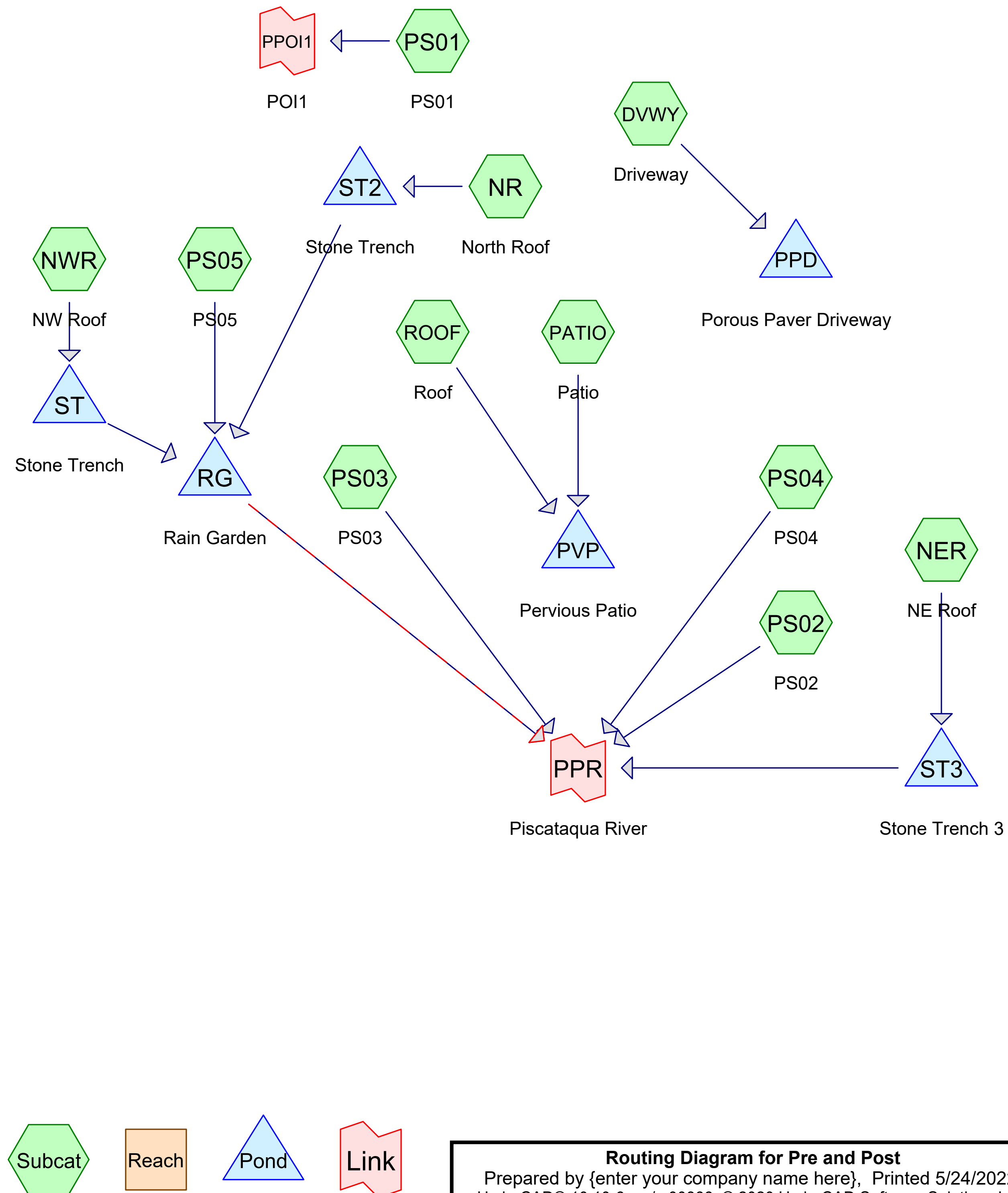

Routing Diagram for Pre and Post
Prepared by {enter your company name here}, Printed 5/24/2022
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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 yr	Type III 24-hr		Default	24.00	1	3.69	2
2	10 yr	Type III 24-hr		Default	24.00	1	5.59	2
3	25 yr	Type III 24-hr		Default	24.00	1	7.10	2
4	50 yr	Type III 24-hr		Default	24.00	1	8.49	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.513	49	Pasture/grassland/range, Fair, HSG A (PS01, PS02, PS03, PS04, PS05)
0.138	98	Paved parking, HSG A (DVWY, PS01, PS02)
0.026	98	Pervious Patio, HSG A (PATIO)
0.013	98	Retaining Wall & Steps, HSG A (PS03)
0.005	98	Retaining Wall & Walkway, HSG A (PS05)
0.004	98	Retaining Wall and Steps, HSG A, (PS04)
0.059	98	Roofs, HSG A (NER, NR, NWR, ROOF)
0.759	**65**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.759	HSG A	DVWY, NER, NR, NWR, PATIO, PS01, PS02, PS03, PS04, PS05, ROOF
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.759		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.513	0.000	0.000	0.000	0.000	0.513	Pasture/grassland/range, Fair	PS01, PS02, PS03, PS04, PS05
0.138	0.000	0.000	0.000	0.000	0.138	Paved parking	DVWY, PS01, PS02
0.026	0.000	0.000	0.000	0.000	0.026	Pervious Patio	PATIO
0.013	0.000	0.000	0.000	0.000	0.013	Retaining Wall & Steps	PS03
0.005	0.000	0.000	0.000	0.000	0.005	Retaining Wall & Walkway	PS05
0.004	0.000	0.000	0.000	0.000	0.004	Retaining Wall and Steps	PS04
0.059	0.000	0.000	0.000	0.000	0.059	Roofs	NER, NR, NWR, ROOF
0.759	**0.000**	**0.000**	**0.000**	**0.000**	**0.759**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentDVWY: Driveway Runoff Area=2,397 sf 100.00% Impervious Runoff Depth>3.44"
Tc=790.0 min CN=98 Runoff=0.0 cfs 0.016 af

SubcatchmentNER: NE Roof Runoff Area=871 sf 100.00% Impervious Runoff Depth=3.46"
Tc=0.0 min CN=98 Runoff=0.1 cfs 0.006 af

SubcatchmentNR: North Roof Runoff Area=288 sf 100.00% Impervious Runoff Depth=3.46"
Tc=0.0 min CN=98 Runoff=0.0 cfs 0.002 af

SubcatchmentNWR: NW Roof Runoff Area=359 sf 100.00% Impervious Runoff Depth=3.46"
Tc=0.0 min CN=98 Runoff=0.0 cfs 0.002 af

SubcatchmentPATIO: Patio Runoff Area=1,136 sf 100.00% Impervious Runoff Depth>3.44"
Tc=790.0 min CN=98 Runoff=0.0 cfs 0.007 af

SubcatchmentPS01: PS01 Runoff Area=3,398 sf 3.91% Impervious Runoff Depth=0.27"
Flow Length=63' Slope=0.0630 '/' Tc=6.0 min CN=51 Runoff=0.0 cfs 0.002 af

SubcatchmentPS02: PS02 Runoff Area=11,262 sf 30.98% Impervious Runoff Depth=0.80"
Flow Length=145' Tc=6.0 min CN=64 Runoff=0.2 cfs 0.017 af

SubcatchmentPS03: PS03 Runoff Area=7,487 sf 7.71% Impervious Runoff Depth=0.34"
Flow Length=71' Slope=0.0600 '/' Tc=6.0 min CN=53 Runoff=0.0 cfs 0.005 af

SubcatchmentPS04: PS04 Runoff Area=2,723 sf 6.17% Impervious Runoff Depth=0.31"
Flow Length=68' Slope=0.1760 '/' Tc=6.0 min CN=52 Runoff=0.0 cfs 0.002 af

SubcatchmentPS05: PS05 Runoff Area=2,083 sf 10.66% Impervious Runoff Depth=0.38"
Flow Length=35' Slope=0.1070 '/' Tc=6.0 min CN=54 Runoff=0.0 cfs 0.001 af

SubcatchmentROOF: Roof Runoff Area=1,041 sf 100.00% Impervious Runoff Depth=3.46"
Tc=6.0 min CN=98 Runoff=0.1 cfs 0.007 af

Pond PPD: Porous Paver Driveway Peak Elev=9.70' Storage=0 cf Inflow=0.0 cfs 0.016 af
Outflow=0.0 cfs 0.016 af

Pond PVP: Pervious Patio Peak Elev=16.61' Storage=75 cf Inflow=0.1 cfs 0.014 af
Outflow=0.0 cfs 0.014 af

Pond RG: Rain Garden Peak Elev=14.02' Storage=88 cf Inflow=0.1 cfs 0.003 af
Discarded=0.0 cfs 0.003 af Primary=0.0 cfs 0.000 af Secondary=0.0 cfs 0.000 af Outflow=0.0 cfs 0.003 af

Pond ST: Stone Trench Peak Elev=14.71' Storage=0.000 af Inflow=0.0 cfs 0.002 af
Discarded=0.0 cfs 0.001 af Primary=0.0 cfs 0.001 af Outflow=0.0 cfs 0.002 af

Pond ST2: Stone Trench Peak Elev=18.23' Storage=0.000 af Inflow=0.0 cfs 0.002 af
Discarded=0.0 cfs 0.001 af Primary=0.0 cfs 0.001 af Outflow=0.0 cfs 0.002 af

Pond ST3: Stone Trench 3 Peak Elev=19.01' Storage=42 cf Inflow=0.1 cfs 0.006 af
Discarded=0.0 cfs 0.002 af Primary=0.1 cfs 0.004 af Outflow=0.1 cfs 0.006 af

Link PPOI1: POI1 Inflow=0.0 cfs 0.002 af
Primary=0.0 cfs 0.002 af

Link PPR: Piscataqua River Inflow=0.3 cfs 0.028 af
Primary=0.3 cfs 0.028 af

Total Runoff Area = 0.759 ac Runoff Volume = 0.067 af Average Runoff Depth = 1.06"
67.68% Pervious = 0.513 ac 32.32% Impervious = 0.245 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentDVWY: Driveway Runoff Area=2,397 sf 100.00% Impervious Runoff Depth>5.32"
Tc=790.0 min CN=98 Runoff=0.0 cfs 0.024 af

SubcatchmentNER: NE Roof Runoff Area=871 sf 100.00% Impervious Runoff Depth=5.35"
Tc=0.0 min CN=98 Runoff=0.1 cfs 0.009 af

SubcatchmentNR: North Roof Runoff Area=288 sf 100.00% Impervious Runoff Depth=5.35"
Tc=0.0 min CN=98 Runoff=0.0 cfs 0.003 af

SubcatchmentNWR: NW Roof Runoff Area=359 sf 100.00% Impervious Runoff Depth=5.35"
Tc=0.0 min CN=98 Runoff=0.1 cfs 0.004 af

SubcatchmentPATIO: Patio Runoff Area=1,136 sf 100.00% Impervious Runoff Depth>5.32"
Tc=790.0 min CN=98 Runoff=0.0 cfs 0.012 af

SubcatchmentPS01: PS01 Runoff Area=3,398 sf 3.91% Impervious Runoff Depth=1.01"
Flow Length=63' Slope=0.0630 '/' Tc=6.0 min CN=51 Runoff=0.1 cfs 0.007 af

SubcatchmentPS02: PS02 Runoff Area=11,262 sf 30.98% Impervious Runoff Depth=1.98"
Flow Length=145' Tc=6.0 min CN=64 Runoff=0.6 cfs 0.043 af

SubcatchmentPS03: PS03 Runoff Area=7,487 sf 7.71% Impervious Runoff Depth=1.15"
Flow Length=71' Slope=0.0600 '/' Tc=6.0 min CN=53 Runoff=0.2 cfs 0.016 af

SubcatchmentPS04: PS04 Runoff Area=2,723 sf 6.17% Impervious Runoff Depth=1.08"
Flow Length=68' Slope=0.1760 '/' Tc=6.0 min CN=52 Runoff=0.1 cfs 0.006 af

SubcatchmentPS05: PS05 Runoff Area=2,083 sf 10.66% Impervious Runoff Depth=1.22"
Flow Length=35' Slope=0.1070 '/' Tc=6.0 min CN=54 Runoff=0.1 cfs 0.005 af

SubcatchmentROOF: Roof Runoff Area=1,041 sf 100.00% Impervious Runoff Depth=5.35"
Tc=6.0 min CN=98 Runoff=0.1 cfs 0.011 af

Pond PPD: Porous Paver Driveway Peak Elev=9.70' Storage=0 cf Inflow=0.0 cfs 0.024 af
Outflow=0.0 cfs 0.024 af

Pond PVP: Pervious Patio Peak Elev=16.78' Storage=144 cf Inflow=0.1 cfs 0.022 af
Outflow=0.0 cfs 0.022 af

Pond RG: Rain Garden Peak Elev=14.38' Storage=153 cf Inflow=0.1 cfs 0.008 af
Discarded=0.0 cfs 0.005 af Primary=0.0 cfs 0.004 af Secondary=0.0 cfs 0.000 af Outflow=0.0 cfs 0.008 af

Pond ST: Stone Trench Peak Elev=14.71' Storage=0.000 af Inflow=0.1 cfs 0.004 af
Discarded=0.0 cfs 0.002 af Primary=0.0 cfs 0.002 af Outflow=0.0 cfs 0.004 af

Pond ST2: Stone Trench Peak Elev=18.23' Storage=0.000 af Inflow=0.0 cfs 0.003 af
Discarded=0.0 cfs 0.001 af Primary=0.0 cfs 0.001 af Outflow=0.0 cfs 0.003 af

Pond ST3: Stone Trench 3 Peak Elev=19.02' Storage=42 cf Inflow=0.1 cfs 0.009 af
Discarded=0.0 cfs 0.002 af Primary=0.1 cfs 0.007 af Outflow=0.1 cfs 0.009 af

Link PPOI1: POI1 Inflow=0.1 cfs 0.007 af
Primary=0.1 cfs 0.007 af

Link PPR: Piscataqua River Inflow=0.9 cfs 0.076 af
Primary=0.9 cfs 0.076 af

Total Runoff Area = 0.759 ac Runoff Volume = 0.138 af Average Runoff Depth = 2.19"
67.68% Pervious = 0.513 ac 32.32% Impervious = 0.245 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentDVWY: Driveway Runoff Area=2,397 sf 100.00% Impervious Runoff Depth>6.82"
Tc=790.0 min CN=98 Runoff=0.0 cfs 0.031 af

SubcatchmentNER: NE Roof Runoff Area=871 sf 100.00% Impervious Runoff Depth=6.86"
Tc=0.0 min CN=98 Runoff=0.2 cfs 0.011 af

SubcatchmentNR: North Roof Runoff Area=288 sf 100.00% Impervious Runoff Depth=6.86"
Tc=0.0 min CN=98 Runoff=0.1 cfs 0.004 af

SubcatchmentNWR: NW Roof Runoff Area=359 sf 100.00% Impervious Runoff Depth=6.86"
Tc=0.0 min CN=98 Runoff=0.1 cfs 0.005 af

SubcatchmentPATIO: Patio Runoff Area=1,136 sf 100.00% Impervious Runoff Depth>6.82"
Tc=790.0 min CN=98 Runoff=0.0 cfs 0.015 af

SubcatchmentPS01: PS01 Runoff Area=3,398 sf 3.91% Impervious Runoff Depth=1.81"
Flow Length=63' Slope=0.0630 '/' Tc=6.0 min CN=51 Runoff=0.1 cfs 0.012 af

SubcatchmentPS02: PS02 Runoff Area=11,262 sf 30.98% Impervious Runoff Depth=3.08"
Flow Length=145' Tc=6.0 min CN=64 Runoff=0.9 cfs 0.066 af

SubcatchmentPS03: PS03 Runoff Area=7,487 sf 7.71% Impervious Runoff Depth=2.00"
Flow Length=71' Slope=0.0600 '/' Tc=6.0 min CN=53 Runoff=0.4 cfs 0.029 af

SubcatchmentPS04: PS04 Runoff Area=2,723 sf 6.17% Impervious Runoff Depth=1.91"
Flow Length=68' Slope=0.1760 '/' Tc=6.0 min CN=52 Runoff=0.1 cfs 0.010 af

SubcatchmentPS05: PS05 Runoff Area=2,083 sf 10.66% Impervious Runoff Depth=2.09"
Flow Length=35' Slope=0.1070 '/' Tc=6.0 min CN=54 Runoff=0.1 cfs 0.008 af

SubcatchmentROOF: Roof Runoff Area=1,041 sf 100.00% Impervious Runoff Depth=6.86"
Tc=6.0 min CN=98 Runoff=0.2 cfs 0.014 af

Pond PPD: Porous Paver Driveway Peak Elev=9.70' Storage=0 cf Inflow=0.0 cfs 0.031 af
Outflow=0.0 cfs 0.031 af

Pond PVP: Pervious Patio Peak Elev=16.94' Storage=207 cf Inflow=0.2 cfs 0.028 af
Outflow=0.0 cfs 0.029 af

Pond RG: Rain Garden Peak Elev=14.43' Storage=166 cf Inflow=0.2 cfs 0.014 af
Discarded=0.0 cfs 0.005 af Primary=0.2 cfs 0.009 af Secondary=0.0 cfs 0.000 af Outflow=0.2 cfs 0.014 af

Pond ST: Stone Trench Peak Elev=14.71' Storage=0.000 af Inflow=0.1 cfs 0.005 af
Discarded=0.0 cfs 0.002 af Primary=0.1 cfs 0.003 af Outflow=0.1 cfs 0.005 af

Pond ST2: Stone Trench Peak Elev=18.23' Storage=0.000 af Inflow=0.1 cfs 0.004 af
Discarded=0.0 cfs 0.002 af Primary=0.0 cfs 0.002 af Outflow=0.1 cfs 0.004 af

Pond ST3: Stone Trench 3 Peak Elev=19.02' Storage=42 cf Inflow=0.2 cfs 0.011 af
Discarded=0.0 cfs 0.002 af Primary=0.2 cfs 0.009 af Outflow=0.2 cfs 0.011 af

Link PPOI1: POI1 Inflow=0.1 cfs 0.012 af
Primary=0.1 cfs 0.012 af

Link PPR: Piscataqua River Inflow=1.6 cfs 0.123 af
Primary=1.6 cfs 0.123 af

Total Runoff Area = 0.759 ac Runoff Volume = 0.205 af Average Runoff Depth = 3.24"
67.68% Pervious = 0.513 ac 32.32% Impervious = 0.245 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentDVWY: Driveway Runoff Area=2,397 sf 100.00% Impervious Runoff Depth>8.21"
Tc=790.0 min CN=98 Runoff=0.0 cfs 0.038 af

SubcatchmentNER: NE Roof Runoff Area=871 sf 100.00% Impervious Runoff Depth=8.25"
Tc=0.0 min CN=98 Runoff=0.2 cfs 0.014 af

SubcatchmentNR: North Roof Runoff Area=288 sf 100.00% Impervious Runoff Depth=8.25"
Tc=0.0 min CN=98 Runoff=0.1 cfs 0.005 af

SubcatchmentNWR: NW Roof Runoff Area=359 sf 100.00% Impervious Runoff Depth=8.25"
Tc=0.0 min CN=98 Runoff=0.1 cfs 0.006 af

SubcatchmentPATIO: Patio Runoff Area=1,136 sf 100.00% Impervious Runoff Depth>8.21"
Tc=790.0 min CN=98 Runoff=0.0 cfs 0.018 af

SubcatchmentPS01: PS01 Runoff Area=3,398 sf 3.91% Impervious Runoff Depth=2.67"
Flow Length=63' Slope=0.0630 '/' Tc=6.0 min CN=51 Runoff=0.2 cfs 0.017 af

SubcatchmentPS02: PS02 Runoff Area=11,262 sf 30.98% Impervious Runoff Depth=4.18"
Flow Length=145' Tc=6.0 min CN=64 Runoff=1.2 cfs 0.090 af

SubcatchmentPS03: PS03 Runoff Area=7,487 sf 7.71% Impervious Runoff Depth=2.89"
Flow Length=71' Slope=0.0600 '/' Tc=6.0 min CN=53 Runoff=0.5 cfs 0.041 af

SubcatchmentPS04: PS04 Runoff Area=2,723 sf 6.17% Impervious Runoff Depth=2.78"
Flow Length=68' Slope=0.1760 '/' Tc=6.0 min CN=52 Runoff=0.2 cfs 0.014 af

SubcatchmentPS05: PS05 Runoff Area=2,083 sf 10.66% Impervious Runoff Depth=3.01"
Flow Length=35' Slope=0.1070 '/' Tc=6.0 min CN=54 Runoff=0.2 cfs 0.012 af

SubcatchmentROOF: Roof Runoff Area=1,041 sf 100.00% Impervious Runoff Depth=8.25"
Tc=6.0 min CN=98 Runoff=0.2 cfs 0.016 af

Pond PPD: Porous Paver Driveway Peak Elev=9.70' Storage=1 cf Inflow=0.0 cfs 0.038 af
Outflow=0.0 cfs 0.038 af

Pond PVP: Pervious Patio Peak Elev=17.10' Storage=271 cf Inflow=0.2 cfs 0.034 af
Outflow=0.0 cfs 0.034 af

Pond RG: Rain Garden Peak Elev=14.45' Storage=172 cf Inflow=0.2 cfs 0.019 af
Discarded=0.0 cfs 0.005 af Primary=0.3 cfs 0.014 af Secondary=0.0 cfs 0.000 af Outflow=0.3 cfs 0.019 af

Pond ST: Stone Trench Peak Elev=14.72' Storage=0.000 af Inflow=0.1 cfs 0.006 af
Discarded=0.0 cfs 0.002 af Primary=0.1 cfs 0.004 af Outflow=0.1 cfs 0.006 af

Pond ST2: Stone Trench Peak Elev=18.23' Storage=0.000 af Inflow=0.1 cfs 0.005 af
Discarded=0.0 cfs 0.002 af Primary=0.1 cfs 0.003 af Outflow=0.1 cfs 0.005 af

Pond ST3: Stone Trench 3 Peak Elev=19.03' Storage=42 cf Inflow=0.2 cfs 0.014 af
Discarded=0.0 cfs 0.002 af Primary=0.2 cfs 0.012 af Outflow=0.2 cfs 0.014 af

Link PPOI1: POI1 Inflow=0.2 cfs 0.017 af
Primary=0.2 cfs 0.017 af

Link PPR: Piscataqua River Inflow=2.3 cfs 0.172 af
Primary=2.3 cfs 0.172 af

Total Runoff Area = 0.759 ac Runoff Volume = 0.271 af Average Runoff Depth = 4.29"
67.68% Pervious = 0.513 ac 32.32% Impervious = 0.245 ac

APPENDIX G – POST-DEVELOPMENT CALCULATIONS (10-YEAR STORM EVENT)

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	10 yr	Type III 24-hr		Default	24.00	1	5.59	2

Summary for Subcatchment DVWY: Driveway

Runoff = 0.0 cfs @ 21.94 hrs, Volume= 0.024 af, Depth> 5.32"
Routed to Pond PPD : Porous Paver Driveway

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
2,397	98	Paved parking, HSG A
2,397		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
790.0					**Direct Entry, Direct Entry**

Summary for Subcatchment NER: NE Roof

Runoff = 0.1 cfs @ 12.00 hrs, Volume= 0.009 af, Depth= 5.35"
Routed to Pond ST3 : Stone Trench 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
871	98	Roofs, HSG A
871		100.00% Impervious Area

Summary for Subcatchment NR: North Roof

Runoff = 0.0 cfs @ 12.00 hrs, Volume= 0.003 af, Depth= 5.35"
Routed to Pond ST2 : Stone Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
288	98	Roofs, HSG A
288		100.00% Impervious Area

Summary for Subcatchment NWR: NW Roof

Runoff = 0.1 cfs @ 12.00 hrs, Volume= 0.004 af, Depth= 5.35"
Routed to Pond ST : Stone Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
359	98	Roofs, HSG A
359		100.00% Impervious Area

Summary for Subcatchment PATIO: Patio

Runoff = 0.0 cfs @ 21.94 hrs, Volume= 0.012 af, Depth> 5.32"
Routed to Pond PVP : Pervious Patio

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

	Area (sf)	CN	Description
*	1,136	98	Pervious Patio, HSG A
	1,136		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
790.0					**Direct Entry, Direct Entry**

Summary for Subcatchment PS01: PS01

Runoff = 0.1 cfs @ 12.11 hrs, Volume= 0.007 af, Depth= 1.01"
Routed to Link PPOI1 : POI1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
133	98	Paved parking, HSG A
0	98	Roofs, HSG A
3,265	49	Pasture/grassland/range, Fair, HSG A
3,398	51	Weighted Average
3,265		96.09% Pervious Area
133		3.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	63	0.0630	0.25		**Sheet Flow, Sheet Flow 1** Grass: Short n= 0.150 P2= 3.21"
1.7					**Direct Entry, Direct Entry**
6.0	63	Total			

Summary for Subcatchment PS02: PS02

Runoff = 0.6 cfs @ 12.10 hrs, Volume= 0.043 af, Depth= 1.98"
Routed to Link PPR : Piscataqua River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

	Area (sf)	CN	Description
	3,489	98	Paved parking, HSG A
	0	98	Roofs, HSG A
	7,773	49	Pasture/grassland/range, Fair, HSG A
	0	35	Brush, Fair, HSG A
	11,262	64	Weighted Average
	7,773		69.02% Pervious Area
	3,489		30.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	78	0.0770	0.28		**Sheet Flow, Sheet Flow 1** Grass: Short n= 0.150 P2= 3.21"
0.3	22	0.0450	1.41		**Sheet Flow, Sheet Flow 2** Smooth surfaces n= 0.011 P2= 3.21"
0.1	18	0.0555	4.78		**Shallow Concentrated Flow, Shallow Concentrated 1** Paved Kv= 20.3 fps
0.2	27	0.1850	2.15		**Shallow Concentrated Flow, Shallow Concentrated 2** Woodland Kv= 5.0 fps
0.7					**Direct Entry, Direct Entry**
6.0	145	Total			

Summary for Subcatchment PS03: PS03

Runoff = 0.2 cfs @ 12.11 hrs, Volume= 0.016 af, Depth= 1.15"
Routed to Link PPR : Piscataqua River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

	Area (sf)	CN	Description
*	577	98	Retaining Wall & Steps, HSG A
	6,910	49	Pasture/grassland/range, Fair, HSG A
	7,487	53	Weighted Average
	6,910		92.29% Pervious Area
	577		7.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	71	0.0600	0.25		**Sheet Flow, Sheet Flow 1** Grass: Short n= 0.150 P2= 3.21"
1.2					**Direct Entry, Direct Entry**
6.0	71	Total			

Summary for Subcatchment PS04: PS04

Runoff = 0.1 cfs @ 12.11 hrs, Volume= 0.006 af, Depth= 1.08"
Routed to Link PPR : Piscataqua River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

	Area (sf)	CN	Description
*	168	98	Retaining Wall and Steps, HSG A,
	0	98	Roofs, HSG A
	2,555	49	Pasture/grassland/range, Fair, HSG A
	0	35	Brush, Fair, HSG A
	2,723	52	Weighted Average
	2,555		93.83% Pervious Area
	168		6.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	68	0.1760	0.26		**Sheet Flow, Sheet Flow 1**
					Grass: Dense n= 0.240 P2= 3.21"
1.6					**Direct Entry, Direct Entry**
6.0	68	Total			

Summary for Subcatchment PS05: PS05

Runoff = 0.1 cfs @ 12.11 hrs, Volume= 0.005 af, Depth= 1.22"
Routed to Pond RG : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

	Area (sf)	CN	Description
*	222	98	Retaining Wall & Walkway, HSG A
	1,861	49	Pasture/grassland/range, Fair, HSG A
	2,083	54	Weighted Average
	1,861		89.34% Pervious Area
	222		10.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	35	0.1070	0.27		**Sheet Flow, Sheet Flow**
					Grass: Short n= 0.150 P2= 3.21"
3.8					**Direct Entry, Direct Entry**
6.0	35	Total			

Summary for Subcatchment ROOF: Roof

Runoff = 0.1 cfs @ 12.09 hrs, Volume= 0.011 af, Depth= 5.35"
Routed to Pond PVP : Pervious Patio

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 yr Rainfall=5.59"

Area (sf)	CN	Description
1,041	98	Roofs, HSG A
1,041		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Direct Entry**

Summary for Pond PPD: Porous Paver Driveway

Inflow Area = 0.055 ac,100.00% Impervious, Inflow Depth > 5.32" for 10 yr event
Inflow = 0.0 cfs @ 21.94 hrs, Volume= 0.024 af
Outflow = 0.0 cfs @ 21.94 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.0 cfs @ 21.94 hrs, Volume= 0.024 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 9.70' @ 21.94 hrs Surf.Area= 2,099 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (1,455.9 - 1,455.9)

Volume	Invert	Avail.Storage	Storage Description
#1	10.95'	210 cf	**Subbase (Irregular)**Listed below (Recalc) -Impervious 2,099 cf Overall x 10.0% Voids
#2	10.70'	210 cf	**Pea Stone (Irregular)**Listed below (Recalc) -Impervious 525 cf Overall x 40.0% Voids
#3	9.70'	840 cf	**Rock Reservoir (Irregular)**Listed below (Recalc) 2,099 cf Overall x 40.0% Voids
		1,259 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
10.95	2,099	257.0	0	0	2,099
11.95	2,099	257.0	2,099	2,099	2,356

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
10.70	2,099	257.0	0	0	2,099
10.95	2,099	257.0	525	525	2,163

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
9.70	2,099	257.0	0	0	2,099
10.70	2,099	257.0	2,099	2,099	2,356

Device	Routing	Invert	Outlet Devices
#1	Discarded	9.70'	**0.650 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.0 cfs @ 21.94 hrs HW=9.70' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Summary for Pond PVP: Pervious Patio

Inflow Area = 0.050 ac,100.00% Impervious, Inflow Depth > 5.34" for 10 yr event
Inflow = 0.1 cfs @ 12.09 hrs, Volume= 0.022 af
Outflow = 0.0 cfs @ 11.85 hrs, Volume= 0.022 af, Atten= 88%, Lag= 0.0 min
Discarded = 0.0 cfs @ 11.85 hrs, Volume= 0.022 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 16.78' @ 12.76 hrs Surf.Area= 1,000 sf Storage= 144 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 36.4 min (1,151.9 - 1,115.6)

Volume	Invert	Avail.Storage	Storage Description
#1	19.00'	100 cf	**Subbase (Irregular)**Listed below (Recalc) -Impervious 1,000 cf Overall x 10.0% Voids
#2	18.75'	100 cf	**Pea Stone (Irregular)**Listed below (Recalc) -Impervious 250 cf Overall x 40.0% Voids
#3	16.42'	932 cf	**Rock Reservoir (Irregular)**Listed below (Recalc) 2,330 cf Overall x 40.0% Voids
		1,132 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
19.00	1,000	212.1	0	0	1,000
20.00	1,000	212.1	1,000	1,000	1,212

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
18.75	1,000	212.1	0	0	1,000
19.00	1,000	212.1	250	250	1,053

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
16.42	1,000	212.1	0	0	1,000
18.75	1,000	212.1	2,330	2,330	1,494

Device	Routing	Invert	Outlet Devices
#1	Discarded	16.42'	**0.650 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.0 cfs @ 11.85 hrs HW=16.46' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Summary for Pond RG: Rain Garden

Inflow Area = 0.063 ac, 31.83% Impervious, Inflow Depth = 1.62" for 10 yr event
Inflow = 0.1 cfs @ 12.04 hrs, Volume= 0.008 af
Outflow = 0.0 cfs @ 12.46 hrs, Volume= 0.008 af, Atten= 71%, Lag= 25.3 min
Discarded = 0.0 cfs @ 11.45 hrs, Volume= 0.005 af
Primary = 0.0 cfs @ 12.46 hrs, Volume= 0.004 af
Routed to Link PPR : Piscataqua River
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link PPR : Piscataqua River

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 14.38' @ 12.46 hrs Surf.Area= 115 sf Storage= 153 cf

Plug-Flow detention time= 390.0 min calculated for 0.008 af (100% of inflow)
Center-of-Mass det. time= 390.9 min (1,217.7 - 826.8)

Volume	Invert	Avail.Storage	Storage Description
#1	14.00'	99 cf	**Custom Stage Data (Irregular)** Listed below (Recalc) -Impervious
#2	12.25'	40 cf	**Filter Media (Irregular)** Listed below (Recalc) -Impervious 201 cf Overall x 20.0% Voids
#3	11.25'	46 cf	**Crushed Stone (Irregular)** Listed below (Recalc) 115 cf Overall x 40.0% Voids
		185 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
14.00	115	44.1	0	0	115
14.50	296	64.2	99	99	290

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
12.25	115	44.1	0	0	115
14.00	115	44.1	201	201	192

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
11.25	115	44.1	0	0	115
12.25	115	44.1	115	115	159

Device	Routing	Invert	Outlet Devices
#1	Primary	12.00'	**6.0" Round Culvert** L= 82.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 12.00' / 10.00' S= 0.0244 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Discarded	11.25'	**0.700 in/hr Exfiltration over Horizontal area**
#3	Secondary	15.10'	**20.0' long x 5.0' breadth Broad-Crested Rectangular Weir**

			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#4	Device 1	14.40'	**24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 1	14.20'	**2.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.0 cfs @ 11.45 hrs HW=11.29' (Free Discharge)
└─**2=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 12.46 hrs HW=14.38' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.0 cfs of 1.1 cfs potential flow)
  ├─**4=Grate** (Controls 0.0 cfs)
  └─**5=Orifice** (Orifice Controls 0.0 cfs @ 1.50 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=11.25' TW=0.00' (Dynamic Tailwater)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond ST: Stone Trench

Inflow Area = 0.008 ac,100.00% Impervious, Inflow Depth = 5.35" for 10 yr event
Inflow = 0.1 cfs @ 12.00 hrs, Volume= 0.004 af
Outflow = 0.0 cfs @ 12.00 hrs, Volume= 0.004 af, Atten= 5%, Lag= 0.0 min
Discarded = 0.0 cfs @ 7.00 hrs, Volume= 0.002 af
Primary = 0.0 cfs @ 12.00 hrs, Volume= 0.002 af
Routed to Pond RG : Rain Garden

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 14.71' @ 12.00 hrs Surf.Area= 0.001 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 105.7 min (846.4 - 740.7)

Volume	Invert	Avail.Storage	Storage Description
#1	13.70'	0.000 af	**3.00'W x 14.70'L x 1.00'H Prismatoid** 0.001 af Overall x 40.0% Voids
#2	14.70'	0.000 af	**3.00'W x 14.70'L x 0.20'H Prismatoid**-Impervious 0.000 af Overall x 0.0% Voids
		0.000 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	13.70'	**0.700 in/hr Exfiltration over Surface area**
#2	Primary	14.70'	**16.0' long x 14.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63

Discarded OutFlow Max=0.0 cfs @ 7.00 hrs HW=13.71' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 12.00 hrs HW=14.71' TW=13.02' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.0 cfs @ 0.28 fps)

Summary for Pond ST2: Stone Trench

```
Inflow Area =       0.007 ac,100.00% Impervious,  Inflow Depth =  5.35"   for  10 yr event
Inflow      =       0.0 cfs @  12.00 hrs,  Volume=         0.003 af
Outflow     =       0.0 cfs @  12.00 hrs,  Volume=         0.003 af,  Atten= 7%,  Lag= 0.0 min
Discarded   =       0.0 cfs @   7.80 hrs,  Volume=         0.001 af
Primary     =       0.0 cfs @  12.00 hrs,  Volume=         0.001 af
   Routed to Pond RG : Rain Garden
```

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 18.23' @ 12.00 hrs Surf.Area= 0.001 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 116.9 min (857.6 - 740.7)

Volume	Invert	Avail.Storage	Storage Description
#1	17.22'	0.000 af	**3.00'W x 14.70'L x 1.00'H Prismatoid**
			0.001 af Overall x 40.0% Voids
#2	18.22'	0.000 af	**3.00'W x 14.70'L x 0.20'H Prismatoid**-Impervious
			0.000 af Overall x 0.0% Voids
		0.000 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	17.22'	**0.700 in/hr Exfiltration over Surface area**
#2	Primary	18.22'	**16.0' long x 14.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63

Discarded OutFlow Max=0.0 cfs @ 7.80 hrs HW=17.23' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 12.00 hrs HW=18.23' TW=13.02' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.0 cfs @ 0.25 fps)

Summary for Pond ST3: Stone Trench 3

```
Inflow Area =       0.020 ac,100.00% Impervious,  Inflow Depth =  5.35"   for  10 yr event
Inflow      =       0.1 cfs @  12.00 hrs,  Volume=         0.009 af
Outflow     =       0.1 cfs @  12.00 hrs,  Volume=         0.009 af,  Atten= 1%,  Lag= 0.0 min
Discarded   =       0.0 cfs @   3.05 hrs,  Volume=         0.002 af
Primary     =       0.1 cfs @  12.00 hrs,  Volume=         0.007 af
   Routed to Link PPR : Piscataqua River
```

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 19.02' @ 12.00 hrs Surf.Area= 33 sf Storage= 42 cf

Plug-Flow detention time= 172.2 min calculated for 0.009 af (100% of inflow)
Center-of-Mass det. time= 173.3 min (914.0 - 740.7)

Volume	Invert	Avail.Storage	Storage Description
#1	17.75'	42 cf	**2.00'W x 16.60'L x 1.25'H Prismatoid**
#2	19.00'	0 cf	**2.00'W x 16.65'L x 0.20'H Prismatoid** Impervious 7 cf Overall x 0.0% Voids
		42 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	17.75'	**0.700 in/hr Exfiltration over Surface area**
#2	Primary	19.00'	**20.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.0 cfs @ 3.05 hrs HW=17.77' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.1 cfs @ 12.00 hrs HW=19.02' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 0.1 cfs @ 0.32 fps)

Summary for Link PPOI1: POI1

Inflow Area = 0.078 ac, 3.91% Impervious, Inflow Depth = 1.01" for 10 yr event
Inflow = 0.1 cfs @ 12.11 hrs, Volume= 0.007 af
Primary = 0.1 cfs @ 12.11 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link PPR: Piscataqua River

Inflow Area = 0.576 ac, 23.83% Impervious, Inflow Depth = 1.57" for 10 yr event
Inflow = 0.9 cfs @ 12.10 hrs, Volume= 0.076 af
Primary = 0.9 cfs @ 12.10 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

APPENDIX H – PRE-DEVELOPMENT DRAINAGE MAP

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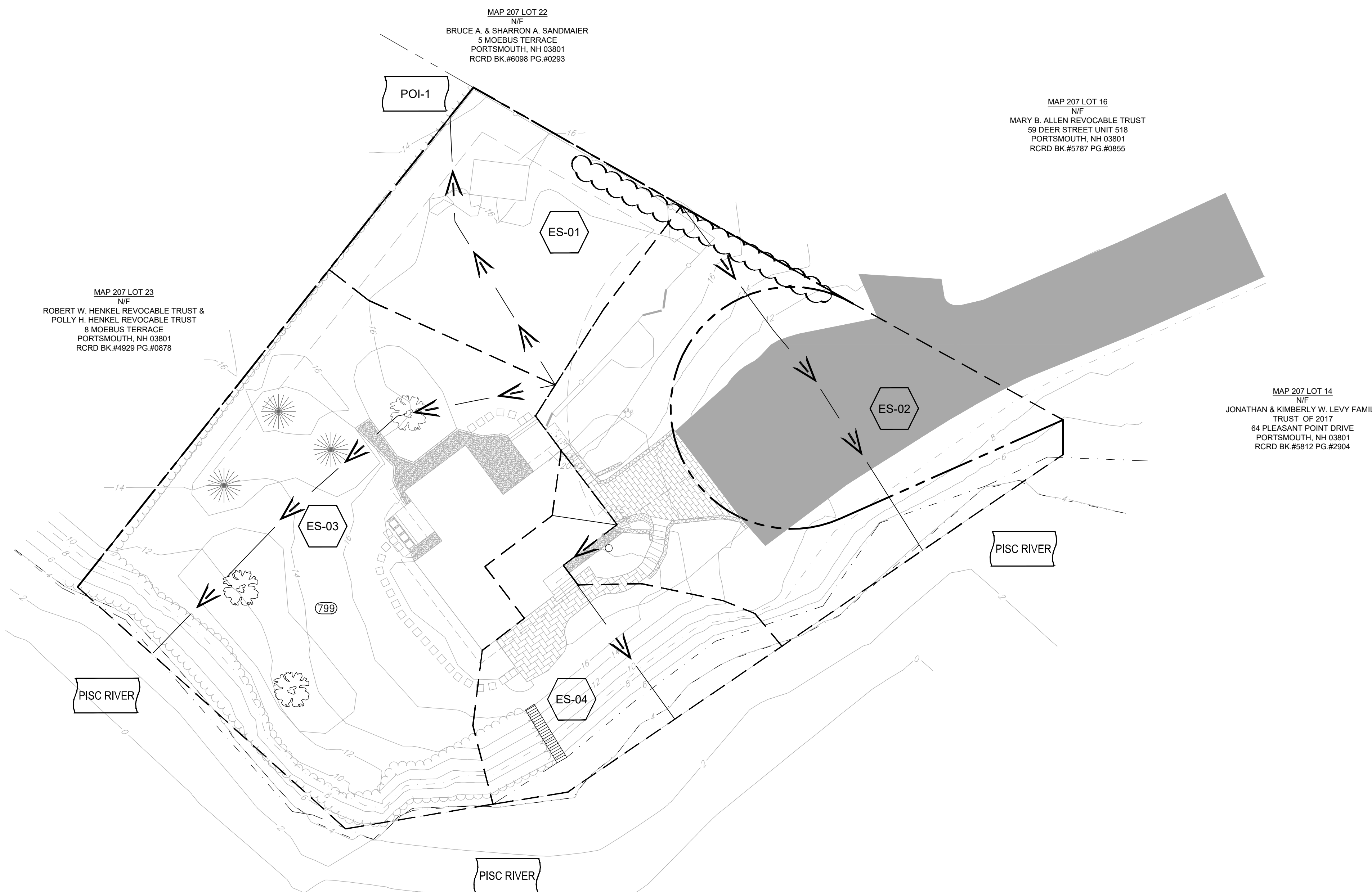

LEGEND

- PROPERTY LINE
- LIMITS OF DRAINAGE SUBCATCHMENT
- SOIL GROUP BREAKLINE
- FLOW PATH (Tc LINE)
- REACH
- POI-1 — POINT OF INTEREST
- ES-1 — SUBCATCHMENT AREA
- EP-1 — POND, CULVERT, OR CATCH BASIN
- ER-1 — REACH

SOIL LEGEND
(PER USDA NRCS WEB SOIL SURVEY)

SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP
799	URBAN LAND-CANTON COMPLEX, 3 TO 15 PERCENT SLOPES	A

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

PRE-DEVELOPMENT DRAINAGE MAP

70 PLEASANT POINT DRIVE

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

KATARA, LLC

1"=40' (11"X17")
SCALE: 1"=20' (22"X34")

MAY 25, 2022

HORIZONTAL SCALE 1"=20'
20 10 0 20

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UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

May 25, 2022 - 8:22am
F:\MSC Projects\47307 - Pleasant Point Dr - Portsmouth\47307-01 - Katara - 70 Pleasant Point Drive\Drainage\HydroCAD\Maps\47307-01_Pre-Dev.dwg

APPENDIX I – POST-DEVELOPMENT DRAINAGE MAP

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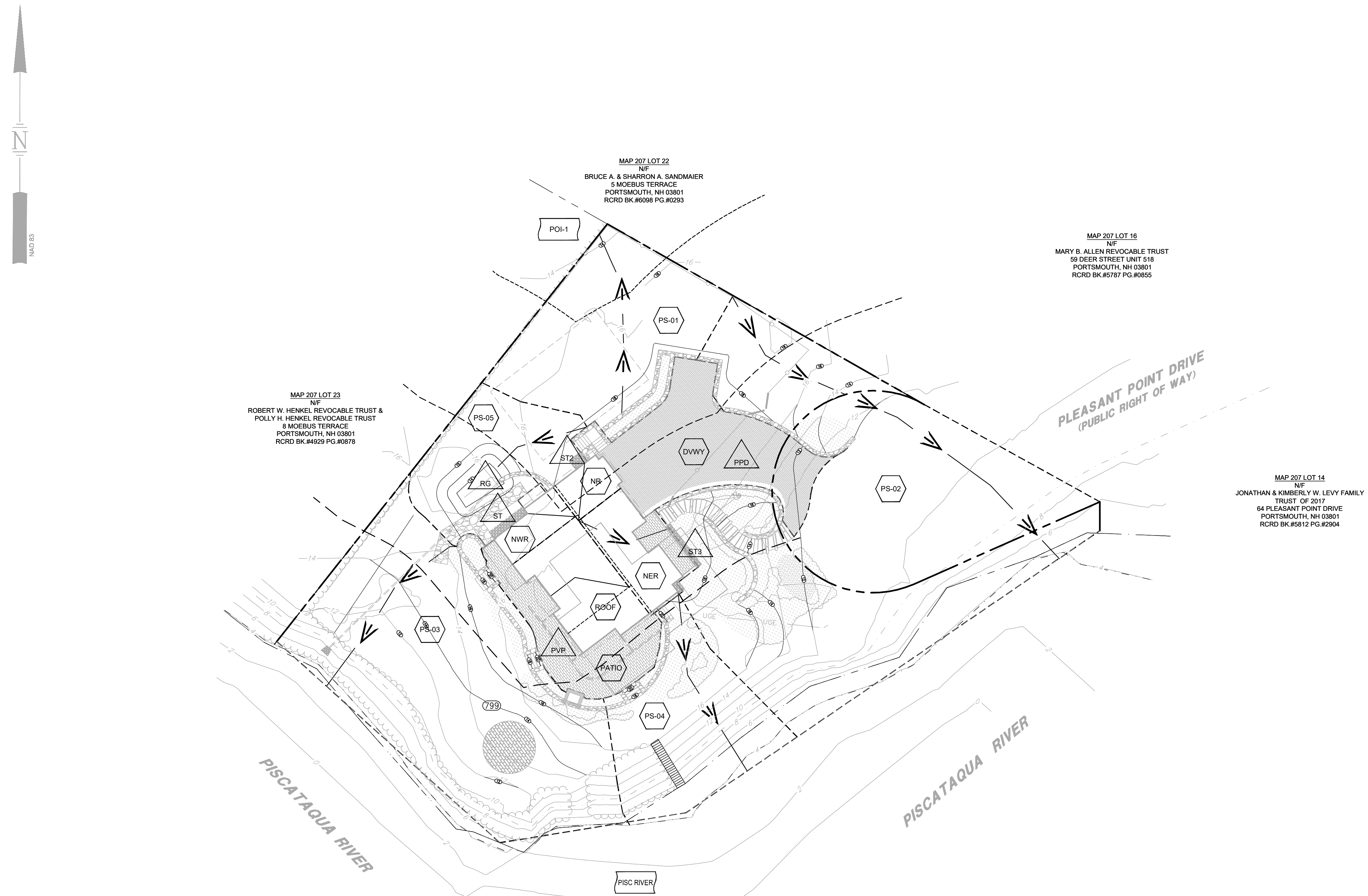

LEGEND

	PROPERTY LINE
	LIMITS OF DRAINAGE SUBCATCHMENT
XXX	SOIL GROUP BREAKLINE
	FLOW PATH (Tc LINE)
	REACH
POI-1	POINT OF INTEREST
PS-1	SUBCATCHMENT AREA
PP-1	POND, CULVERT, OR CATCH BASIN
PR-1	REACH

SOIL LEGEND (PER USDA NRCS WEB SOIL SURVEY)		
SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP
799	URBAN LAND–CANTON COMPLEX, 3 TO 15 PERCENT SLOPES	A

HORIZONTAL SCALE 1"=20'
20 10 0 20

REV	DATE	DESCRIPTION	DR	CK

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

POST-DEVELOPMENT DRAINAGE MAP

70 PLEASANT POINT DRIVE

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

KATARA, LLC

1"=40' (11"X17")
SCALE: 1"=20' (22"X34")

MAY 25, 2022

TFM®
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
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www.tfmoran.com

FILE	DR	JKC	FB	–	
47307.01	CK	JCC	CADFILE	47307-01_POST-DEV	DRAIN-02

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

SITE RENOVATION PLANS

70 PLEASANT POINT DRIVE
PORTSMOUTH, NEW HAMPSHIRE

MAY 25, 2022
LAST REVISED JUNE 27, 2022

GENERAL INFORMATION

OWNER/APPLICANT
MAP 207 LOT 15
KATARA, LLC
274 MILLER AVENUE
PORTSMOUTH, NH 03801

RESOURCE LIST

PLANNING DEPARTMENT
1 JUNKINS AVENUE, 3RD FLOOR
PORTSMOUTH, NH 03801
(603) 610-7216
BEVERLY MESA-ZENDT, PLANNING DIRECTOR

CONSERVATION COMMISSION
1 JUNKINS AVENUE, 3RD FLOOR
PORTSMOUTH NH, 03801
(603) 610-7216
BARBARA McMILLAN, CHAIR

POLICE DEPARTMENT
3 JUNKINS AVENUE
PORTSMOUTH, NH 03801
(603) 427-1500
MARK NEWPORT, CHIEF OF POLICE

FIRE DEPARTMENT
170 COURT STREET
PORTSMOUTH, NH 03801
(603) 427-1515
TODD GERMAIN, FIRE CHIEF

ASSOCIATED PROFESSIONALS

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DESTEFANO MAUGEL ARCHITECTS
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(603) 431-8701
JOSHUA BUTKUS, PROJECT ARCHITECT

STRUCTURAL CONSULTANT
JSN ASSOCIATES
1 AUTUMN STREET
PORTSMOUTH, NH 03801
(603) 766-4898
SARAH DESIDERIO, STRUCTURAL ENGINEER

LANDSCAPE ARCHITECT
TERRAIN PLANNING & DESIGN, LLC
311 KAST HILL ROAD
HOPKINTON, NH 03229
(603) 491-2322
ERIC BUCK, LANDSCAPE ARCHITECT

CIVIL ENGINEERING/SURVEYOR
TFMORAN, INC.
170 COMMERCE WAY, SUITE 102
PORTSMOUTH, NH 03801
(603) 431-2222

INDEX OF SHEETS

PERMITS/APPROVALS

	NUMBER	APPROVED	EXPIRES
PORTSMOUTH PLANNING BOARD WETLAND CONDITIONAL USE PERMIT	–	–	–
NHDES WETLAND DREDGE AND FILL PERMIT	–	–	–
NHDES SHORELAND WATER QUALITY PROTECTION ACT PERMIT	–	–	–

VICINITY PLAN

N

HORIZONTAL SCALE 1"=500'
500 250 0 500

APPROVED BY THE CITY OF PORTSMOUTH PLANNING BOARD

ON ______________________

BOARD MEMBER ______________________ AND

BOARD MEMBER ______________________

STATE OF NEW HAMPSHIRE
JOHN J. McTIGUE
No. 14950
LICENSED
PROFESSIONAL ENGINEER

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15
COVER
70 PLEASANT POINT DRIVE
PORTSMOUTH, NEW HAMPSHIRE
OWNED BY
KATARA, LLC

SCALE: NTS **MAY 25, 2022**

THESE PLANS ARE PERMIT DRAWINGS ONLY AND HAVE NOT BEEN DETAILED FOR CONSTRUCTION OR BIDDING.

REV	DATE	DESCRIPTION	DR	CK
1	6/22/22	REVISIONS PER TOWN COMMENTS	JKC	JCC

TFM

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
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DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

LEGEND

PROPOSED

- PROPERTY LINE
- ZONING LINE
- EASEMENT
- BASELINE
- FLOODPLAIN
- EDGE OF WATERBODY
- EDGE OF WETLAND
- SETBACK (WETLAND)
- SETBACK (STRUCTURE)
- SETBACK (PARKING)
- SETBACK (LANDSCAPE)
- GRAVEL ROAD
- EOP — EDGE OF PAVEMENT
- VGC — VERTICAL GRANITE CURB
- SGC — SLOPED GRANITE CURB
- CC — CONCRETE CURB
- ICC — INTEGRATED CONCRETE CURB
- BIT — BITUMINOUS ASPHALT CURB
- CCB — CAPE COD BERM
- SAWCUT
- BUILDING
- BUILDING ROOF OVERHANG
- BUILDING FOUNDATION
- BUILDING ENTRANCE
- OVERHEAD DOOR
- TREE LINE
- FENCE (CHAIN LINK)
- FENCE (WIRE)
- FENCE (STOCKADE)
- GUARDRAIL
- STONE WALL
- RETAINING WALL
- SILT FENCE
- SS — SILT SOCK
- SOIL BOUNDARY
- LIMIT OF GRADING
- CONTOUR
- TC100.50 / BC100.00 OR 100.00 — SPOT GRADE
- ## — PARKING COUNT
- DSLY — YELLOW DOUBLE SOLID LINE
- SSLY — YELLOW SINGLE SOLID LINE
- SSLW — WHITE SINGLE SOLID LINE
- SBLW — WHITE SINGLE BROKEN LINE
- STOP — STOP BAR
- CROSSWALK
- ACCESSIBLE PARKING SYMBOL
- PAVEMENT ARROW
- TRAFFIC FLOW ARROW (NOT PAINTED)
- SIGN (SINGLE POST)
- SIGN (DOUBLE POST)
- SIGN (PYLON)
- SIGN (MONUMENT)
- BOLLARD
- D — DUMPSTER PAD

PROPOSED

- CONCRETE
- GRAVEL
- HEAVY DUTY PAVEMENT
- CONSTRUCTION ENTRANCE
- SNOW STORAGE
- RIPRAP
- INLET PROTECTION
- FLOW ARROW
- DRAIN LINE
- DRAINAGE SWALE
- STORMWATER BMP
- S — SEWER LINE
- FM — SEWER FORCE MAIN LINE
- W — WATER LINE
- G — GAS LINE
- OHE — OVERHEAD UTILITY LINE
- UGE — UNDERGROUND UTILITY LINE
- CATCH BASIN
- DRAIN INLET
- OUTLET CONTROL STRUCTURE
- ROOF DRAIN
- DRAIN CLEANOUT
- DRAIN MANHOLE
- FARED END SECTION
- SEWER CLEAN OUT
- SEWER MANHOLE
- SEWER VENT
- DRAIN/SEWER/WATER PLUG OR CAP
- HYDRANT
- FIRE DEPARTMENT CONNECTION
- WATER GATE VALVE
- WATER SHUTOFF
- THRUST BLOCK
- WATER METER
- WATER MANHOLE
- WELL
- GAS GATE VALVE
- GAS SHUT OFF
- GAS METER
- TELEPHONE MANHOLE
- ELECTRIC MANHOLE
- TRAFFIC CONTROL CABINET
- ELECTRIC HANDHOLE
- ELECTRIC PULL BOX
- ELECTRIC METER
- FLOOD LIGHT
- LIGHT POLE
- UTILITY POLE
- GUY POLE
- T — TRANSFORMER PAD
- B-# — BORING LOCATION
- TP-# — TEST PIT LOCATION
- IT-# — INFILTRATION TEST LOCATION
- MW-# — MONITORING WELL

ABBREVIATIONS

GENERAL

ABAN	ABANDON	EP	EDGE OF PAVEMENT	OC	ON CENTER
AC	ACRES	EXIST	EXISTING	PAVE	PAVEMENT
ADJ	ADJUST	FFE	FINISHED FLOOR ELEVATION	PERF	PERFORATED
APPROX	APPROXIMATE	FND	FOUNDATION	PROP	PROPOSED
BC	BOTTOM OF CURB	HP	HIGH POINT	R	RADIUS
BIT	BITUMINOUS	INV	INVERT ELEVATION	R&D	REMOVE AND DISPOSE
BK/PG	BOOK & PAGE	IT	INFILTRATION TEST	R&R	REMOVE AND RESET
BLDG	BUILDING	L	LENGTH	REM	REMOVE
BMP	BEST MANAGEMENT PRACTICE	LF	LINEAR FEET	RET	RETAIN
BS	BOTTOM OF SLOPE	LSA	LANDSCAPE AREA	RIM	RIM ELEVATION
BW	BOTTOM OF WALL	MAX	MAXIMUM	ROW	RIGHT OF WAY
CONC	CONCRETE	MIN	MINIMUM	S	SLOPE
COORD	COORDINATE	N/F	NOW OR FORMERLY	SF	SQUARE FEET
DIA	DIAMETER	NHFG	NEW HAMPSHIRE FISH & GAME	SW	SIDEWALK
ELEV	ELEVATION	NTS	NOT TO SCALE	TBM	TEMPORARY BENCHMARK
				TC	TOP OF CURB
				TP	TEST PIT
				TW	TOP OF WALL
				TYP	TYPICAL
				UG	UNDERGROUND
				WCR	ACCESSIBLE WHEELCHAIR RAMP
				W/	WITH

UTILITIES

CB	CATCH BASIN
CIP	CAST IRON PIPE
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
COND	CONDUIT
DCB	DOUBLE CATCH BASIN
DIP	DUCTILE IRON PIPE
DMH	DRAIN MANHOLE
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FES	FLARED END SECTION
GT	GREASE TRAP
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HH	HANDHOLE
HW	HEADWALL
HYD	HYDRANT
LP	LIGHT POLE
OCS	OUTLET CONTROL STRUCTURE
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
SMH	SEWER MANHOLE
SOS	SEDIMENT OIL SEPARATOR
TSV	TAPPING SLEEVE, VALVE, AND BOX
UP	UTILITY POLE

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

GENERAL NOTES

1. THESE PLANS ARE PERMIT DRAWINGS ONLY AND HAVE NOT BEEN DETAILED FOR CONSTRUCTION OR BIDDING.
2. THESE PLANS WERE PREPARED UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER. TFMORAN, INC. ASSUMES NO LIABILITY AS A RESULT OF ANY CHANGES OR NON-CONFORMANCE WITH THESE PLANS EXCEPT UPON THE WRITTEN APPROVAL OF THE ENGINEER OF RECORD.
3. ALL IMPROVEMENTS SHOWN ON THE SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING BOARD.
4. ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE CITY OF PORTSMOUTH, AND SHALL BE BUILT IN A WORKMANLIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. ALL WORK TO CONFORM TO CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS. ALL WORK WITHIN THE RIGHT-OF-WAY OF THE CITY AND/OR STATE SHALL COMPLY WITH APPLICABLE STANDARDS. COORDINATE ALL WORK WITHIN THE RIGHT-OF-WAY WITH APPROPRIATE CITY, COUNTY, AND/OR STATE AGENCY.
5. THE SITE CONTRACTOR SHALL ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH APPLICABLE SECTIONS OF ENV-WQ 1500. THE SITE CONTRACTOR SHALL NOTIFY THE ENGINEER IN ADVANCE OF CONSTRUCTION OF EACH STORMWATER FACILITY TO COORDINATE REQUIRED INSPECTIONS. THE CONTRACTOR SHALL TAKE PROGRESS PHOTOS DURING CONSTRUCTION OF ALL STORMWATER DRAINAGE COMPONENTS AND SEND TO THE ENGINEER.
6. SEE EXISTING CONDITIONS PLAN FOR THE HORIZONTAL AND VERTICAL DATUM.
7. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION. VERIFY TBM ELEVATIONS PRIOR TO CONSTRUCTION.
8. CONTACT EASEMENT OWNERS PRIOR TO COMMENCING ANY WORK WITHIN THE EASEMENTS.
9. PRIOR TO COMMENCING ANY SITE WORK, ALL LIMITS OF WORK SHALL BE CLEARLY MARKED IN THE FIELD.
10. SITE WORK SHALL BE CONSTRUCTED FROM A COMPLETE SET OF PLANS, NOT ALL FEATURES ARE DETAILED ON EVERY PLAN. THE ENGINEER IS TO BE NOTIFIED OF ANY CONFLICT WITHIN THIS PLAN SET.
11. TFMORAN, INC. ASSUMES NO LIABILITY FOR WORK PERFORMED WITHOUT AN ACCEPTABLE PROGRAM OF TESTING AND INSPECTION AS APPROVED BY THE ENGINEER OF RECORD.
12. TEMPORARY FENCING SHALL BE PROVIDED AND COVERED WITH A FABRIC MATERIAL TO CONTROL DUST MITIGATION.
13. ALL DEMOLITION SHALL INSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKWAYS, AND ANY OTHER ADJACENT OPERATING FACILITIES. PRIOR WRITTEN PERMISSION FROM THE OWNER/DEVELOPER AND LOCAL PERMITTING AUTHORITY IS REQUIRED IF CLOSURE/OBSTRUCTIONS TO ROADS, STREET, WALKWAYS, AND OTHERS IS DEEMED NECESSARY. CONTRACTOR TO PROVIDE ALTERNATE ROUTES AROUND CLOSURES/OBSTRUCTIONS PER LOCAL/STATE/FEDERAL REGULATIONS.
14. REFER TO ARCHITECTURAL PLANS FOR LAYOUT OF BUILDING FOUNDATIONS AND CONCRETE ELEMENTS WHICH ABUT THE BUILDING SUCH AS STAIRS, SIDEWALKS, LOADING DOCK RAMPS, PADS, AND COMPACTOR PADS. DO NOT USE SITE PLANS FOR LAYOUT OF FOUNDATIONS.
15. IN THE EVENT OF A CONFLICT BETWEEN PLANS, SPECIFICATIONS, AND DETAILS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.
16. IF CONDITIONS AT THE SITE ARE DIFFERENT THAN SHOWN ON THE PLANS, THE ENGINEER SHALL BE NOTIFIED PRIOR TO PROCEEDING WITH THE AFFECTED WORK.
17. CONTRACTOR'S GENERAL RESPONSIBILITIES:
    - A. BID AND PERFORM THE WORK IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL CODES, SPECIFICATIONS, REGULATIONS, AND STANDARDS AND CONDITIONS OF ALL PROJECT-SPECIFIC PERMITS AND APPROVALS AS LISTED ON THE COVER SHEET TO THESE PLANS OR OTHERWISE REQUIRED.
    - B. NOTIFY ENGINEER IN WRITING OF ANY DISCREPANCIES OF PROPOSED LAYOUT AND/OR EXISTING FEATURES.
    - C. EMPLOY A LICENSED SURVEYOR TO DETERMINE ALL LINES AND GRADES AND LAYOUT OF SITE ELEMENTS AND BUILDINGS.
    - D. THE CONTRACTOR SHALL BE RESPONSIBLE TO BECOME FAMILIAR WITH THE SITE AND ALL SURROUNDING CONDITIONS. THE CONTRACTOR SHALL ADVISE THE APPROPRIATE AUTHORITY OF INTENTIONS AT LEAST 48 HOURS IN ADVANCE.
    - E. TAKE APPROPRIATE MEASURES TO REDUCE, TO THE FULLEST EXTENT POSSIBLE, NOISE, DUST, AND UNSIGHTLY DEBRIS. CONSTRUCTION ACTIVITIES SHALL BE CARRIED OUT BETWEEN THE HOURS OF 7 AM AND 6 PM, MONDAY THROUGH FRIDAY IN ACCORDANCE WITH THE APPLICABLE MUNICIPAL ORDINANCES AND REGULATIONS OF THE CITY OF PORTSMOUTH, NEW HAMPSHIRE.
    - F. MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY WORK AT ALL TIMES.
    - G. IN ACCORDANCE WITH RSA 430:53 AND AGR 3800, THE CONTRACTOR SHALL NOT TRANSPORT INVASIVE SPECIES OFF THE PROPERTY, AND SHALL DISPOSE OF INVASIVE SPECIES ON-SITE IN A LEGAL MANNER.
    - H. COORDINATE WITH ALL UTILITY COMPANIES AND CONTACT DIGSAFE (811 OR 888-344-7233) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION.
    - I. PROTECT NEW AND EXISTING BURIED UTILITIES DURING INSTALLATION OF ALL SITE ELEMENTS. DAMAGED UTILITIES SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.
    - J. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY TFMORAN, INC., DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR OR ENGINEER HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE US OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REGULATIONS.
    - K. WRITTEN DIMENSIONS HAVE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN CASE OF CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWING AND/OR SPECIFICATION, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATIONS.
    - L. VERIFY LAYOUT OF PROPOSED BUILDING FOUNDATIONS WITH ARCHITECT AND THAT PROPOSED FOUNDATION MEETS PROPERTY LINE AND/OR WETLAND SETBACKS PRIOR TO COMMENCING ANY FOUNDATION CONSTRUCTION.
    - M. AN AS-BUILT PLAN WILL BE REQUIRED AT THE COMPLETION OF THE PROJECT TO THE PLANNING DIRECTOR AND PER CITY REGULATIONS.
    - N. IF ANY DEVIATIONS FROM THE APPROVED PLANS AND SPECIFICATIONS HAVE BEEN MADE, THE SITE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS STAMPED BY A LICENSED SURVEYOR OR QUALIFIED ENGINEER ALONG WITH A LETTER STAMPED BY A QUALIFIED ENGINEER DESCRIBING ALL SUCH DEVIATIONS, AND BEAR ALL COSTS FOR PREPARING AND FILING ANY NEW PERMITS OR PERMIT AMENDMENTS THAT MAY BE REQUIRED.
    - O. AT COMPLETION OF CONSTRUCTION, THE SITE CONTRACTOR SHALL PROVIDE A LETTER CERTIFYING THAT THE PROJECT WAS COMPLETED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS, AND A LETTER STAMPED BY A QUALIFIED ENGINEER THAT THEY HAVE OBSERVED ALL UNDERGROUND DETENTION SYSTEMS, INFILTRATION SYSTEMS, OR FILTERING SYSTEMS PRIOR TO BACKFILL, AND THAT SUCH SYSTEMS CONFORM TO THE APPROVED PLANS AND SPECIFICATIONS.

GRADING & DRAINAGE NOTES

1. THE CONTRACTOR SHALL ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF NHDES ENV-WQ 1500 AS APPLICABLE.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CHECK THE ACCURACY OF THE TOPOGRAPHY AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO ANY EARTHWORK BEING PERFORMED ON THE SITE. NO CLAIM FOR EXTRA WORK WILL BE CONSIDERED FOR PAYMENT AFTER EARTHWORK HAS COMMENCED.
3. COORDINATE WITH STRUCTURAL PLANS FOR SITE PREPARATION AND OTHER BUILDING INFORMATION.
4. COORDINATE WITH ARCHITECTURAL PLANS FOR DETAILED GRADING AT BUILDING, AND SIZE AND LOCATION OF ALL BUILDING SERVICES.
5. COORDINATE WITH MECHANICAL AND PLUMBING PLANS FOR ROOF DRAIN INFORMATION.
6. LIMITS OF WORK ARE SHOWN AS APPROXIMATE. THE CONTRACTOR SHALL COORDINATE ALL WORK TO PROVIDE SMOOTH TRANSITIONS. THIS INCLUDES GRADING, PAVEMENT, CURBING, SIDEWALKS, AND ALIGNMENTS.
7. THE CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE, RAMPS, AND LOADING AREAS.
8. THE SITE SHALL BE GRADED SO ALL FINISHED PAVEMENT HAS POSITIVE DRAINAGE AND SHALL NOT POND WATER DEEPER THAN 1/4" FOR A PERIOD OF MORE THAN 15 MINUTES AFTER FLOODING.
9. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE PRIOR TO INSTALLATION OF FINISHED SURFACE.
10. ROAD AND DRAINAGE CONSTRUCTION SHALL CONFORM TO THE DETAILS SHOWN ON THE PLANS AND SHALL MEET LOCAL STANDARDS AND THE REQUIREMENTS OF THE LATEST NHDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGE CONSTRUCTION AND THE NHDOT STANDARD STRUCTURE DRAWINGS UNLESS OTHERWISE NOTED.
11. STORMWATER DRAINAGE SYSTEM SHALL BE CONSTRUCTED TO LINE AND GRADE AS SHOWN ON THE PLANS. CONSTRUCTION METHODS SHALL CONFORM TO NHDOT STANDARD SPECIFICATIONS, SECTION 603.
12. NO FILL SHALL BE PLACED IN ANY WETLAND AREA OR OTHER AREAS THAN SHOWN ON THE GRADING PLAN.
13. ALL EXCAVATIONS SHALL BE THOROUGHLY SECURED ON A DAILY BASIS BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION OPERATIONS IN THE IMMEDIATE AREA.
14. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED, FERTILIZER, AND MULCH.
15. DENSITY REQUIREMENTS:

MINIMUM DENSITY*	LOCATION
95%	BELOW PAVED OR CONCRETE AREAS
95%	TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL
90%	BELOW LOAM AND SEED AREAS

*ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557, METHOD C. FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 OR ASTM D-6938.

UTILITY NOTES

1. LENGTH OF PIPE IS FOR CONVENIENCE ONLY. ACTUAL PIPE LENGTH SHALL BE DETERMINED IN THE FIELD.
2. ALL PROPOSED UTILITY WORK, INCLUDING MATERIAL, INSTALLATION, TERMINATION, EXCAVATION, BEDDING, BACKFILL, COMPACTION, TESTING, CONNECTIONS, AND CONSTRUCTION SHALL BE COORDINATED WITH AND COMPLETED IN ACCORDANCE WITH THE APPROPRIATE REQUIREMENTS, CODES, AND STANDARDS OF ALL CORRESPONDING UTILITY ENTITIES AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE, AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION BE AGREED TO BY THE ENGINEER BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT "DIGSAFE" (811) AT LEAST 72 HOURS BEFORE DIGGING.
4. COORDINATE ALL WORK ADJACENT TO PROPOSED BUILDINGS WITH ARCHITECTURAL BUILDING DRAWINGS. CONFIRM UTILITY PENETRATIONS AND INVERT ELEVATIONS ARE COORDINATED PRIOR TO INSTALLATION.
5. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES OWNING UTILITIES, EITHER OVERHEAD OR UNDERGROUND, WITHIN THE CONSTRUCTION AREA AND SHALL COORDINATE AS NECESSARY WITH THE UTILITY COMPANIES OF SAID UTILITIES. THE PROTECTION OR RELOCATION OF UTILITIES IS ULTIMATELY THE RESPONSIBILITY OF THE CONTRACTOR.
6. THE EXACT LOCATION OF NEW UTILITY CONNECTIONS SHALL BE DETERMINED BY THE CONTRACTOR IN COORDINATION WITH UTILITY COMPANY, COUNTY AGENCY, AND/OR PRIVATE UTILITY COMPANY.
7. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER THE UTILITY INSTALLATION COMPLETE AND OPERATIONAL.
8. ALL UTILITY COMPANIES REQUIRE INDIVIDUAL CONDUITS. CONTRACTOR TO COORDINATE WITH TELEPHONE, CABLE, AND ELECTRIC COMPANIES REGARDING NUMBER, SIZE, AND TYPE OF CONDUITS REQUIRED PRIOR TO INSTALLATION OF ANY CONDUIT.
9. SANITARY SEWER SHALL BE CONSTRUCTED TO THE STANDARDS AND SPECIFICATIONS AS SHOWN ON THESE PLANS. ALL SEWER MAINS AND FITTINGS SHALL BE PVC AND SHALL CONFORM TO ASTM F 679 (SDR 35 MINIMUM). FORCE MAINS AND FITTINGS SHALL CONFORM TO NH CODE OF ADMINISTRATIVE RULES ENV-WQ 700. ALL SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH NH CODE OF ADMINISTRATIVE RULES ENV-WQ 700. SANITARY MANHOLES SHALL CONFORM TO NHDES WATER DIVISION WASTEWATER ENGINEERING BUREAU STANDARDS AND SPECIFICATIONS SHOWN HEREON.
10. ON-SITE WATER DISTRIBUTION SHALL BE TO CITY OF PORTSMOUTH STANDARDS AND SPECIFICATIONS. WATER MAINS SHALL HAVE A MINIMUM OF 5.5' COVER. WHERE WATER PIPES CROSS SEWER LINES A MINIMUM OF 18" VERTICAL SEPARATION BETWEEN THE TWO OUTSIDE PIPE WALLS SHALL BE OBSERVED. HORIZONTAL SEPARATION BETWEEN WATER AND SEWER SHALL BE 10' MINIMUM. WHERE A SANITARY LINE CROSSES A WATER LINE, SEWER LINE MUST BE CONSTRUCTED OF FORCE MAIN MATERIALS (PER ENV-WQ 704.08) FROM BUILDING OR MANHOLE TO MANHOLE, OR SUBSTITUTE RUBBER-GASKETED PRESSURE PIPE FOR THE SAME DISTANCE. WHEN SANITARY LINES PASS BELOW WATER LINES, LAY PIPE SO THAT NO JOINT IN THE SANITARY LINE WILL BE CLOSER THAN 6' HORIZONTALLY TO THE WATER LINE.
11. THRUST BLOCKS SHALL BE PROVIDED AT ALL LOCATIONS WHERE WATER LINE CHANGES DIRECTIONS OR CONNECTS TO ANOTHER WATER LINE.
12. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CONDUIT AND WIRING TO ALL SIGNS AND LIGHTS. CONDUIT TO BE A MINIMUM OF 24" BELOW FINISH GRADE.
13. ALL PROPOSED UTILITIES SHALL BE UNDERGROUND. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES.
14. THE CONTRACTOR SHALL ARRANGE AND PAY FOR ALL INSPECTIONS, TESTING, AND RELATED SERVICES AND SUBMIT COPIES OF ACCEPTANCE TO THE OWNER, UNLESS OTHERWISE INDICATED.
15. PROVIDE PERMANENT PAVEMENT REPAIR FOR ALL UTILITY TRENCHES IN EXISTING ROAD OR PAVEMENT TO REMAIN. SAW CUT TRENCH, PAVEMENT, AND GRANULAR BASE THICKNESS TO MATCH EXISTING PAVEMENT. OBTAIN ALL PERMITS REQUIRED FOR TRENCHING.
16. UNLESS OTHERWISE SPECIFIED, ALL UNDERGROUND STRUCTURES, PIPES, CHAMBERS, ETC. SHALL BE COVERED WITH A MINIMUM OF 18" OF COMPACTED SOIL BEFORE EXPOSURE TO VEHICLE LOADS.
17. THE PROPERTY WILL BE SERVICED BY THE FOLLOWING:

DRAINAGE	PRIVATE
SEWER	CITY SEWER
WATER	CITY WATER
GAS	NOT AVAILABLE
ELECTRIC	EVERSOURCE
TELEPHONE	CONSOLIDATED COMMUNICATIONS
CABLE	COMCAST

STATE OF NEW HAMPSHIRE
JOHN J. McTIGUE
No. 14950
LICENSED PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION	DR	CK
1	6/27/22	NO REVISIONS TO THIS SHEET		

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

NOTES & LEGEND

70 PLEASANT POINT DRIVE

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

KATARA, LLC

SCALE: NTS **MAY 25, 2022**

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
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FILE	DR	JKC	FB	–	
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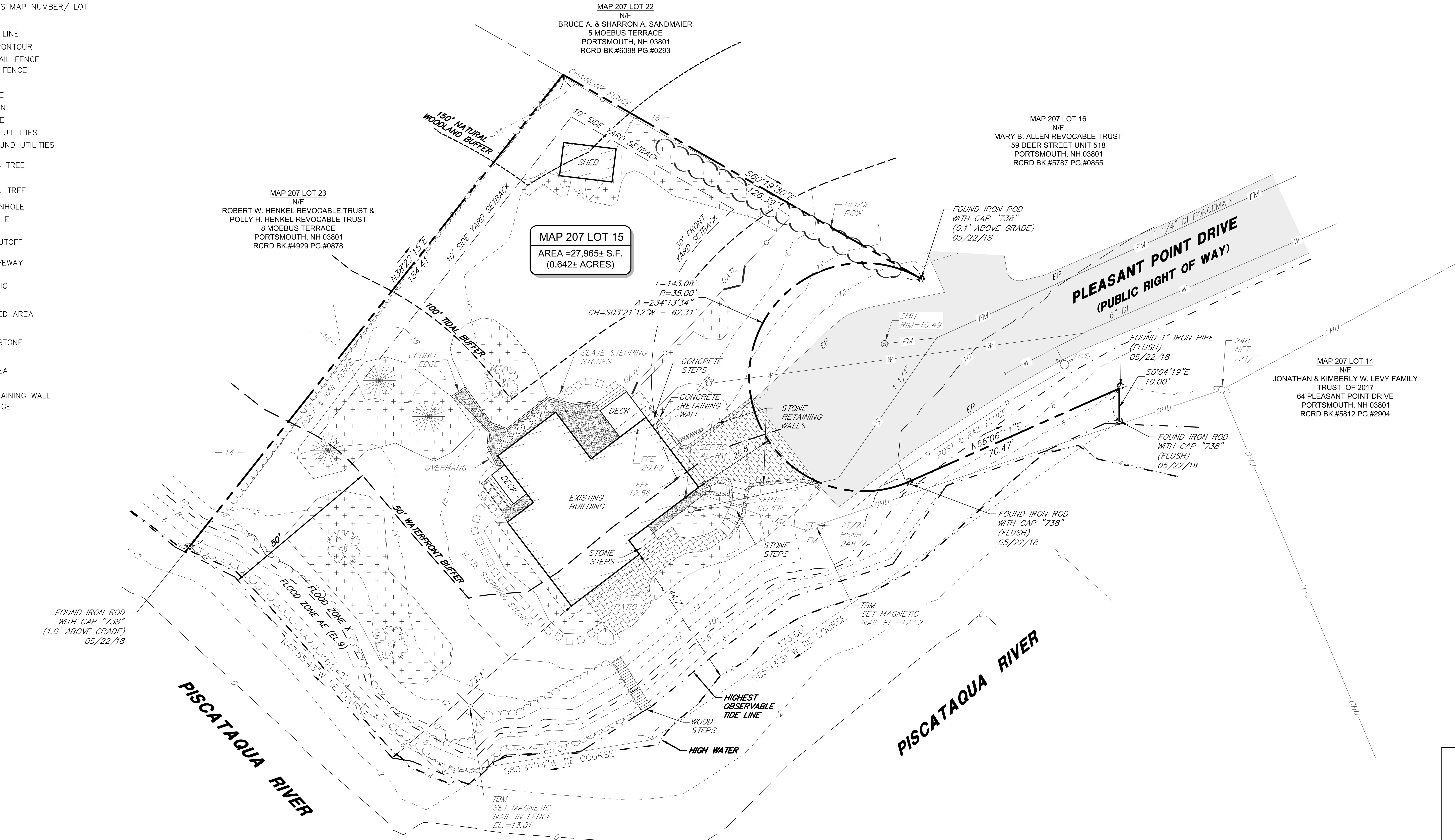
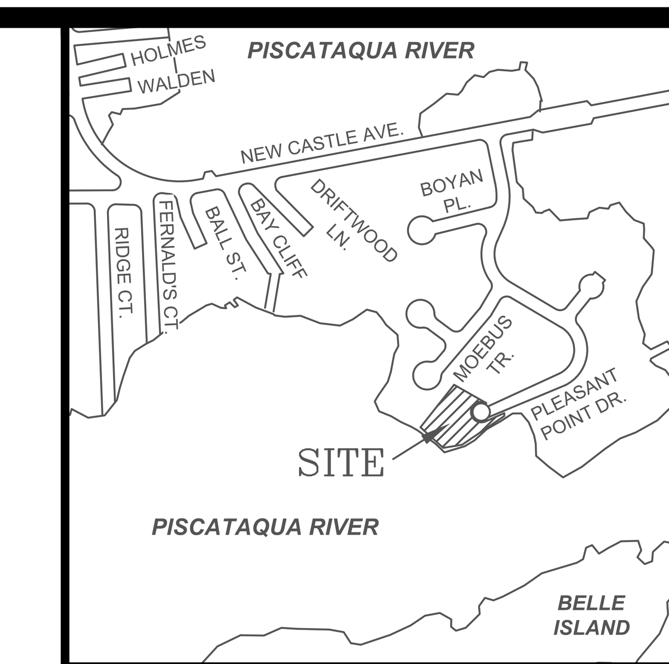
LEGEND:

BK/PG	BOOK & PAGE
CH	CHORD
DI	DUCTILE IRON PIPE
EL.	ELEVATION
EM	ELECTRIC METER
EP	EDGE OF PAVEMENT
FFE	FINISHED FLOOR ELEVATION
L	LENGTH
NET	NEW ENGLAND TELEPHONE
PSNH	PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
N/F	NOW OR FORMERLY
R	RADIUS
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
S.F.	SQUARE FEET
SMH	SEWER MANHOLE
TBM	TEMPORARY BENCH MARK
Δ	CENTRAL ANGLE
MAP 47 LOT 11	ASSESSOR'S MAP NUMBER/ LOT NUMBER
	PROPERTY LINE
6	EXISTING CONTOUR
	POST & RAIL FENCE
	CHAINLINK FENCE
	TREE LINE
S	SEWER LINE
FM	FORCE MAIN
W	WATER LINE
OHU	OVERHEAD UTILITIES
UGU	UNDERGROUND UTILITIES
	DECIDUOUS TREE
	EVERGREEN TREE
S	SEWER MANHOLE
	UTILITY POLE
HYD	HYDRANT
	WATER SHUTOFF
	BRICK DRIVEWAY
	SLATE PATIO
	LANDSCAPED AREA
	CRUSHED STONE
	PAVED AREA
	STONE RETAINING WALL
	COBBLE EDGE





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NAD83(2011)

LOCATION PLAN

NOTES:

1. THE PARCEL IS LOCATED IN THE SINGLE RESIDENCE B (SRB) ZONING DISTRICT.
2. THE PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 207 AS LOT 15.
3. THE PARCEL IS GRAPHICALLY LOCATED IN FLOOD ZONE X (AREA OF MINIMAL FLOOD HAZARD) AND SPECIAL FLOOD HAZARD ZONE AE (EL.9), AS SHOWN ON NATIONAL FLOOD INSURANCE PROGRAM (NFIP) INSURANCE RATE MAP (FIRM), COUNTY OF ROCKINGHAM, NEW HAMPSHIRE, PANEL 278 OF 681, VERSION NUMBER 2.3.2.1, MAP NUMBER 33015C0278F, MAP REVISED JANUARY 29, 2021.
4. OWNER OF RECORD:
   MAP 207 LOT 15
   KATARA, LLC
   274 MILLER AVENUE
   PORTSMOUTH, NH 03801
   RCRD BK.#6290 PG.#1229
5. TOTAL PARCEL AREA:
   27,965± S.F.
   (0.642± ACRES)
6. ZONING REQUIREMENTS:

ZONING REQUIREMENTS:	REQUIRED:	PROVIDED:
MINIMUM LOT DIMENSIONS:		
LOT AREA	15,000 S.F.	27,965± S.F.
LOT AREA PER DWELLING UNIT:	15,000 S.F.	27,965± S.F.
CONTINUOUS STREET FRONTAGE:	100 FT	213.5 FT
DEPTH:	100 FT	142 FT
MINIMUM YARD DIMENSIONS:		
FRONT:	30 FT	25.8 FT
SIDE:	10 FT	44.7 FT
REAR:	30 FT	72.1 FT
MAXIMUM STRUCTURE DIMENSIONS:		
STRUCTURE HEIGHT		
SLOPED ROOF:	35 FT	
FLAT ROOF:	30 FT	
ROOF APPURTENANCE HEIGHT:	8 FT	
BUILDING COVERAGE:	20%	9.2%
MINIMUM OPEN SPACE:	40%	86.4%

7. UTILITIES SHOWN HEREON ARE BASED ON OBSERVED EVIDENCE, RECORD PLANS AND THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS (DPW) PROVIDED GIS INFORMATION. LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE DEPICTED AND THEREFORE ARE APPROXIMATE ONLY. CONTACT DIGSAFE @ 1-888-DIGSAFE TO VERIFY UTILITIES.
8. THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES IN ACCORDANCE WITH THE CURRENT LEGAL DESCRIPTIONS. IT IS NOT AN ATTEMPT TO DEFINE UNWRITTEN RIGHTS, DETERMINE THE EXTENT OF OWNERSHIP OR DEFINE THE LIMITS OF TITLE.
9. THE PURPOSE OF THIS PLAN IS TO SHOW THE TOPOGRAPHY AND CURRENT SITE FEATURES OF TAX MAP 207 LOT 15.
10. THE BOUNDARY OF THE LOCUS PROPERTY IS BASED ON PLAN REFERENCE 1. THIS OFFICE COMPLETED A TOPOGRAPHIC AND EXISTING FEATURES SURVEY ONLY.
11. HORIZONTAL DATUM IS NAD83 PER STATIC GPS OBSERVATIONS. VERTICAL DATUM IS NAVD88 PER GPS OBSERVATIONS. THE CONTOUR INTERVAL IS 2 FEET.
12. PARCEL IS SUBJECT TO THE RIGHTS AND RESTRICTIONS AS DESCRIBED IN RCRD BK.#2776 PG.#1029.

PLAN REFERENCES:

1. "STANDARD BOUNDARY SURVEY OF TAX MAP 207 – LOT 15 FOR DONNA LYN TAMAROFF 70 PLEASANT POINT DRIVE CITY OF PORTSMOUTH COUNTY OF ROCKINGHAM STATE OF NEW HAMPSHIRE" BY AMBIT ENGINEERING, INC., DATED OCTOBER 2012. RCRD PLAN #D-37460.
2. "PLAN OF LOTS, NEWCASTLE AVENUE, PORTSMOUTH, N.H. FOR ROBERT A. MOEBUS & HENRY C. SIVIK" BY JOHN W. DURGIN, CIVIL ENGINEERS, DATED OCTOBER 1952. RCRD PLAN #02160-B.

I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY THOSE UNDER MY DIRECT SUPERVISION AND ARE THE RESULT OF A FIELD SURVEY CONDUCTED IN MAY 2018. THIS SURVEY CONFORMS TO THE ACCURACY REQUIREMENTS OF AN URBAN SURVEY OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS.
I FURTHER CERTIFY THAT THIS SURVEY IS CORRECT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, AND THE FIELD TRAVERSE SURVEY EXCEEDS A PRECISION OF 1:15,000.

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 844 J. COREY COLWELL

Cory Colwell

LICENSED LAND SURVEYOR

2022-05-23

DATE

20 10 0 20
Graphic Scale in Feet

REV.	DATE	DESCRIPTION	DR	CK

TAX MAP 207 LOT 15
EXISTING CONDITIONS PLAN
FOR PROPERTY AT
70 PLEASANT POINT DRIVE
PORTSMOUTH, NEW HAMPSHIRE
COUNTY OF ROCKINGHAM
OWNED BY
KATARA, LLC

SCALE: 1" = 20' (22x34)
1" = 40' (11x17)

SEPTEMBER 7, 2021

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
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Portsmouth, NH 03801
Phone (603) 431-2222
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FILE	47307.01	DR	IID	FB	549	S-1
		CK	JCC	CADFILE		

May 23, 2022 - 9:10am
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ROCK BLASTING AND WATER QUALITY NOTES

1. IDENTIFY DRINKING WATER WELLS LOCATED WITHIN 2000 FEET OF THE PROPOSED BLASTING ACTIVITIES. DEVELOP A GROUNDWATER QUALITY SAMPLING PROGRAM TO MONITOR FOR NITRATE AND NITRITE EITHER IN THE DRINKING WATER SUPPLY WELLS OR IN OTHER WELLS THAT ARE REPRESENTATIVE OF THE DRINKING WATER SUPPLY WELLS IN THE AREA. THE PLAN MUST INCLUDE PRE AND POST BLAST WATER QUALITY MONITORING AND BE APPROVED BY NHDES PRIOR TO INITIATING BLASTING. THE GROUNDWATER SAMPLING PROGRAM MUST BE IMPLEMENTED ONCE APPROVED BY NHDES.

2. ALL ACTIVITIES RELATED TO BLASTING SHALL FOLLOW BEST MANAGEMENT PRACTICES (BMPS) TO PREVENT CONTAMINATION OF GROUNDWATER INCLUDING PREPARING, REVIEWING, AND FOLLOWING AN APPROVED BLASTING PLAN; PROPER DRILLING, EXPLOSIVE HANDING AND LOADING PROCEDURES; OBSERVING THE ENTIRE BLASTING PROCEDURES; EVALUATING BLASTING PERFORMANCE; AND HANDLING AND STORAGE OF BLASTED ROCK.
   A. LOADING PRACTICES. THE FOLLOWING BLASTHOLE LOADING PRACTICES TO MINIMIZE ENVIRONMENTAL EFFECTS SHALL BE FOLLOWED:
      (1) DRILLING LOGS SHALL BE MAINTAINED BY THE DRILLER AND COMMUNICATED DIRECTLY TO THE BLASTER. THE LOGS SHALL INDICATE DEPTHS AND LENGTHS OF VOIDS, CAVITIES, AND FAULT ZONES OR OTHER WEAK ZONES ENCOUNTERED AS WELL AS GROUNDWATER CONDITIONS.
      (2) EXPLOSIVE PRODUCTS SHALL BE MANAGED ON SITE SO THAT THEY ARE EITHER USED IN THE BOREHOLE, RETURNED TO THE DELIVERY VEHICLE, OR PLACED IN SECURE CONTAINERS FOR OFF-SITE DISPOSAL.
      (3) SPILLAGE AROUND THE BOREHOLE SHALL EITHER BE PLACED IN THE BOREHOLE OR CLEANED UP AND RETURNED TO AN APPROPRIATE VEHICLE FOR HANDLING OR PLACEMENT IN SECURED CONTAINERS FOR OFF SITE DISPOSAL.
      (4) LOADED EXPLOSIVES SHALL BE DETONATED AS SOON AS POSSIBLE AND SHALL NOT BE LEFT IN THE BLASTHOLES OVERNIGHT, UNLESS WEATHER OR OTHER SAFETY CONCERNS REASONABLY DICTATE THAT DETONATION SHOULD BE POSTPONED.
      (5) LOADING EQUIPMENT SHALL BE CLEANED IN AN AREA WHERE WASTEWATER CAN BE PROPERLY CONTAINED AND HANDLED IN A MANNER THAT PREVENTS RELEASE OF CONTAMINANTS TO THE ENVIRONMENT.
      (6) EXPLOSIVES SHALL BE LOADED TO MAINTAIN GOOD CONTINUITY IN THE COLUMN LOAD TO PROMOTE COMPLETE DETONATION. INDUSTRY ACCEPTED LOADING PRACTICES FOR PRIMING, STEMMING, DECKING, AND COLUMN RISE NEED TO BE ATTENDED TO.
   B. EXPLOSIVE SELECTION. THE FOLLOWING BMPS SHALL BE FOLLOWED TO REDUCE THE POTENTIAL FOR GROUNDWATER CONTAMINATION WHEN EXPLOSIVES ARE USED:
      (1) EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT ARE APPROPRIATE FOR SITE CONDITIONS AND SAFE BLAST EXECUTION.
      (2) EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT HAVE THE APPROPRIATE WATER RESISTANCE FOR THE SITE CONDITIONS PRESENT TO MINIMIZE THE POTENTIAL FOR HAZARDOUS EFFECT OF THE PRODUCT UPON GROUNDWATER.
   C. PREVENTION OF MISFIRES. APPROPRIATE PRACTICES SHALL BE DEVELOPED AND IMPLEMENTED TO PREVENT MISFIRES.
   D. MUCK PILE MANAGEMENT. MUCK PILES (THE BLASTED PIECES OF ROCK) AND ROCK PILES SHALL BE MANAGED IN A MANNER TO REDUCE THE POTENTIAL FOR CONTAMINATION BY IMPLEMENTING THE FOLLOWING MEASURES:
      (1) REMOVE THE MUCK PILE FROM THE BLAST AREA AS SOON AS REASONABLY POSSIBLE.
      (2) MANAGE THE INTERACTION OF BLASTED ROCK PILES AND STORMWATER TO PREVENT CONTAMINATION OF WATER SUPPLY WELLS OR SURFACE WATER.
   E. SPILL PREVENTION MEASURES AND SPILL MITIGATION. SPILL PREVENTION AND SPILL MITIGATION MEASURES SHALL BE IMPLEMENTED TO PREVENT THE RELEASE OF FUEL AND OTHER RELATED SUBSTANCES TO THE ENVIRONMENT. THE MEASURES SHALL INCLUDE AT A MINIMUM:
      (1) THE FUEL STORAGE REQUIREMENTS SHALL INCLUDE:
         - STORAGE OF REGULATED SUBSTANCES ON AN IMPERVIOUS SURFACE.
         - SECURE STORAGE AREAS AGAINST UNAUTHORIZED ENTRY.
         - LABEL REGULATED CONTAINERS CLEARLY AND VISIBLY.
         - INSPECT STORAGE AREAS WEEKLY.
         - COVER REGULATED CONTAINERS IN OUTSIDE STORAGE AREAS.
         - WHEREVER POSSIBLE, KEEP REGULATED CONTAINERS THAT ARE STORED OUTSIDE MORE THAN 50 FEET FROM SURFACE WATER AND STORM DRAINS, 75 FEET FROM PRIVATE WELLS, AND 400 FEET FROM PUBLIC WELLS.
         - SECONDARY CONTAINMENT IS REQUIRED FOR CONTAINERS CONTAINING REGULATED SUBSTANCES STORED OUTSIDE, EXCEPT FOR ON PREMISE USE HEATING FUEL TANKS, OR ABOVEGROUND OR UNDERGROUND STORAGE TANKS OTHERWISE REGULATED.
      (2) THE FUEL HANDLING REQUIREMENTS SHALL INCLUDE:
         - EXCEPT WHEN IN USE, KEEP CONTAINERS CONTAINING REGULATED SUBSTANCES CLOSED AND SEALED.
         - PLACE DRIP PANS UNDER SPIGOTS, VALVES, AND PUMPS.
         - HAVE SPILL CONTROL AND CONTAINMENT EQUIPMENT READILY AVAILABLE IN ALL WORK AREAS.
         - USE FUNNELS AND DRIP PANS WHEN TRANSFERRING REGULATED SUBSTANCES.
         - PERFORM TRANSFERS OF REGULATED SUBSTANCES OVER AN IMPERVIOUS SURFACE.
      (3) THE TRAINING OF ONSITE EMPLOYEES AND THE ON SITE POSTING OF RELEASE RESPONSE INFORMATION DESCRIBING WHAT TO DO IN THE EVENT OF A SPILL OF REGULATED SUBSTANCES.
      (4) FUELING AND MAINTENANCE OF EXCAVATION, EARTHMOVING, AND OTHER CONSTRUCTION RELATED EQUIPMENT WILL COMPLY WITH THE REGULATIONS OF NHDES (NOTE THESE REQUIREMENTS ARE SUMMARIZED IN WD DWGB 22 6: "BEST MANAGEMENT PRACTICES FOR FUELING AND MAINTENANCE OF EXCAVATION AND EARTHMOVING EQUIPMENT"OR ITS SUCCESSOR DOCUMENT).

NOTES

1. SEE NOTES ON SHEET C-01.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATIONS, SIZE, AND ELEVATIONS OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS PRIOR TO THE START OF ANY DEMOLITION. THE LOCATIONS SHOWN ON THESE PLANS ARE NOT GUARANTEED BY THE OWNER OR THE ENGINEER. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED DEMOLITION TO DETERMINE APPROPRIATE ACTION TO BE TAKEN BEFORE PROCEEDING WITH THE WORK. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO ANTICIPATE CONFLICTS AND REPAIR EXISTING UTILITIES AS NECESSARY TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY WORK AT ALL TIMES.
4. THE CONTRACTOR SHALL VERIFY ALL SURVEY INFORMATION IN THE FIELD AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO THE START OF CONSTRUCTION.
5. EXISTING UTILITY SERVICES TO BE DISCONTINUED ARE TO BE CAPPED AS REQUIRED BY THE RESPECTIVE UTILITY COMPANIES.
6. CONSTRUCTION DEBRIS AND INVASIVE SPECIES SHALL BE REMOVED FROM SITE AND DISPOSED OF IN A LEGAL MANNER.
7. PRIOR TO THE START OF WORK, THE CONTRACTOR SHALL PLACE ORANGE CONSTRUCTION FENCING AROUND EACH TREE TO BE RETAINED THROUGHOUT CONSTRUCTION. NO STOCKPILES OF MATERIAL ARE PERMITTED WITHIN THE DRIP LINE OF THE TREES TO BE SAVED.
8. CONTACT THE LANDSCAPE ARCHITECT IMMEDIATELY IF ANY TREES ARE DAMAGED DURING CONSTRUCTION.

CONSTRUCTION SEQUENCE NOTES

TO MINIMIZE EROSION AND SEDIMENTATION DUE TO CONSTRUCTION, CONSTRUCTION SHALL FOLLOW THIS GENERAL CONSTRUCTION SEQUENCE.

MODIFICATIONS TO THE SEQUENCE NECESSARY DUE TO THE CONTRACTOR'S SCHEDULE SHALL INCLUDE APPROPRIATE TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL MEASURES.

THE CONTRACTOR SHALL SCHEDULE WORK SUCH THAT ANY CONSTRUCTION AREA IS STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE EXCEPT AS NOTED BELOW. NO MORE THAN 5 ACRES OF DISTURBED LAND SHALL BE UNSTABILIZED AT ANY ONE TIME.

THE PROJECT SHALL BE MANAGED SO THAT IT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER ARG 3800 RELATIVE TO INVASIVE SPECIES.

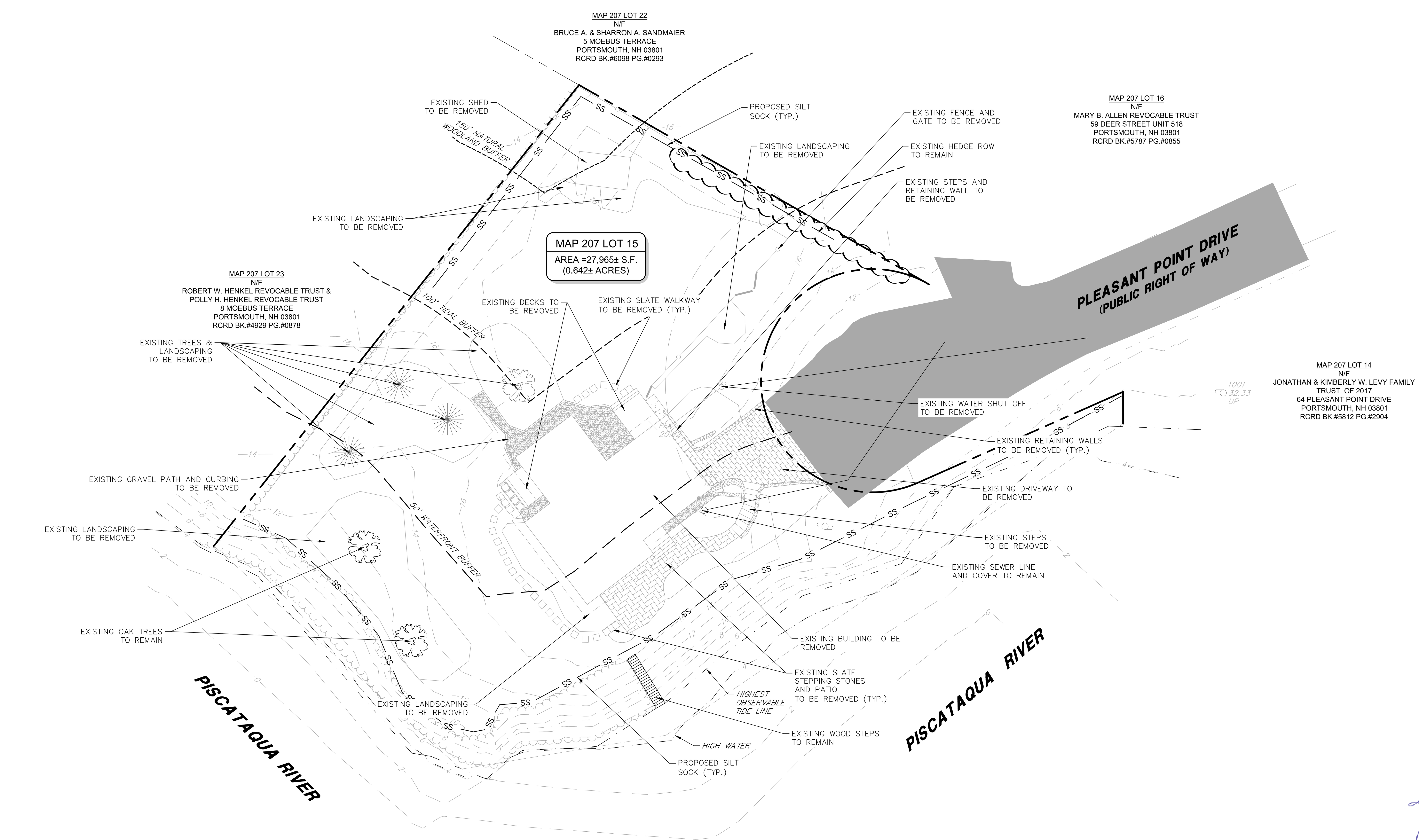
DO NOT TRAFFIC EXPOSED SOIL SURFACE OF INFILTRATION SYSTEMS WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO STORMWATER BMP'S. STORMWATER RUNOFF MUST BE DIRECTED TO TEMPORARY PRACTICES UNTIL STORMWATER BMP'S ARE STABILIZED.

DO NOT PLACE STORMWATER BMP'S INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.

AFTER THE INFILTRATION SYSTEM IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE THE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.

1. NOTIFY EASEMENT OWNERS PRIOR TO COMMENCEMENT OF WORK.
2. INSTALL ALL PERIMETER EROSION PROTECTION MEASURES AS INDICATED ON THE PLANS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
3. STORMWATER TREATMENT PONDS AND SWALES SHALL BE INSTALLED BEFORE ROUGH GRADING THE SITE.
4. DURING CONSTRUCTION EVERY EFFORT SHALL BE MADE TO MANAGE SURFACE RUNOFF QUALITY.
5. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT BARRIERS, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED. (TEMPORARY SEED MIXTURE OF WINTER RYE APPLIED AT A RATE OF 2.5 LBS/1000 SF SHALL BE USED).
6. CONDUCT MAJOR EARTHWORK, INCLUDING CLEARING AND GRUBBING, WITHIN THE LIMITS OF WORK. ALL CUT AND FILL SLOPES SHALL BE SEEDED WITHIN 72 HOURS AFTER GRADING.
7. ALL STRIPPED TOPSOIL AND OTHER EARTH MATERIALS SHALL BE STOCKPILED OUTSIDE THE IMMEDIATE WORK AND 100' BUFFER. A SILT BARRIER SHALL BE CONSTRUCTED AROUND THESE PILES IN A MANNER TO PROVIDE ACCESS AND AVOID SEDIMENT OUTSIDE OF THE WORK AREA.
8. CONSTRUCT BUILDING PAD AND COMMENCE NEW BUILDING CONSTRUCTION.
9. CONSTRUCT TEMPORARY DIVERSIONS AS REQUIRED.
10. BEGIN PERMANENT AND TEMPORARY INSTALLATION OF SEED AND MULCH.
11. PERFORM EARTHWORK NECESSARY TO ESTABLISH ROUGH GRADING AROUND DRIVEWAY. MANAGE EXPOSED SOIL SURFACES TO AVOID TRANSPORTING SEDIMENTS INTO WETLANDS.
12. INSTALL SUBSURFACE UTILITIES (WATER, SEWER, GAS, ELECTRIC, COMMUNICATIONS, DRAINAGE, DRAINAGE FACILITIES, ETC.).
13. CONSTRUCT PROPOSED DRIVEWAY, RAIN GARDENS, GRAVEL WETLANDS AND DRAINAGE SWALES. ALL DITCHES, SWALES, AND GRAVEL WETLANDS SHALL BE FULLY STABILIZED PRIOR TO DIRECTING FLOW TO THEM.
14. COMPLETE BUILDING AND ALL OFF-SITE IMPROVEMENTS.
15. COMPLETE SEEDING AND MULCHING. SEED TO BE APPLIED WITH BROADCAST SPREADER OR BY HYDRO-SEEDING, THEN ROLLED, RAKED, OR DRAGGED TO ASSURE SEED/SOIL CONTACT.
16. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDED AREAS HAVE BECOME FIRMLY ESTABLISHED AND SITE IMPROVEMENTS ARE COMPLETE.
17. DURING THE COURSE OF THE WORK AND UPON COMPLETION, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT DEPOSITS, EITHER ON OR OFF SITE, INCLUDING CATCH BASINS, AND SUMPS, DRAIN PIPES AND DITCHES, CURB LINES, ALONG SILT BARRIERS, ETC. RESULTING FROM SOIL AND/OR CONSTRUCTION OPERATIONS.
18. SEE WINTER CONSTRUCTION SEQUENCE FOR WORK CONDUCTED AFTER OCTOBER 15TH.



DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE
JOHN J. McTIGUE
No. 14950
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION	DR	CK
1	6/22/22	REVISED PER TOWN COMMENTS	JKC	JCC

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

SITE PREPARATION & DEMOLITION

70 PLEASANT POINT DRIVE

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

KATARA, LLC

SCALE: 1"=20' (11"x17")
1"=10' (22"x34")

MAY 25, 2022

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FILE	47307.01	DR	JKC	FB	-	C-02
		CK	JCC	CADFILE	47307-01_SITE PREP	

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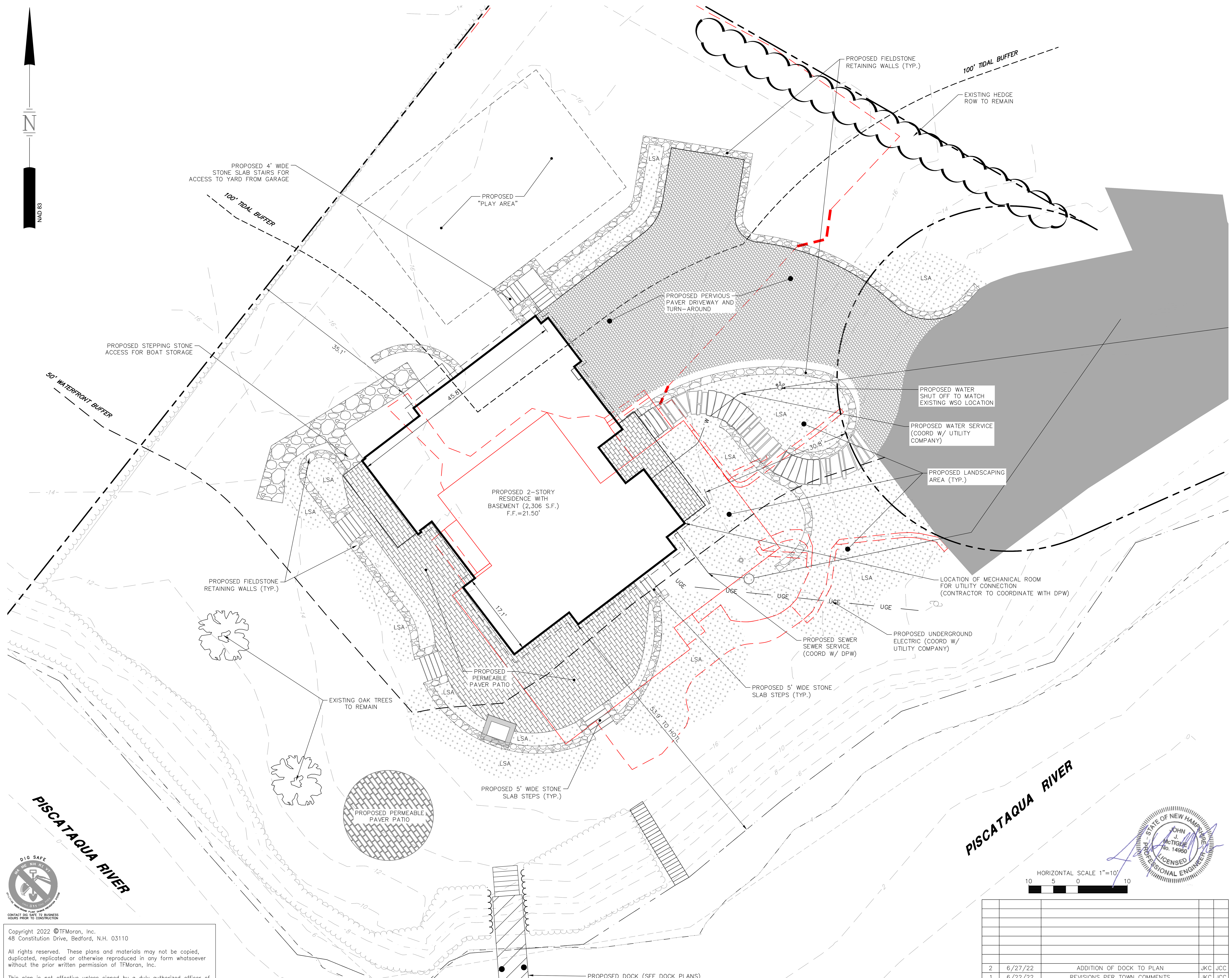

SITE DATA

ZONED: SINGLE RESIDENCE B (SRB)
EXISTING USE: SINGLE RESIDENCE
PROPOSED USE: SINGLE RESIDENCE

DIMENSIONAL REQUIREMENTS (CURRENT ZONING)

	REQUIRED:	PROVIDED:
MINIMUM LOT DIMENSIONS:		
LOT AREA	15,000 SF (0.34± AC)	27,965 SF (0.642± AC)
LOT FRONTAGE	100 FT	213.5 FT
DEPTH	100 FT	142 FT
MINIMUM YARD DIMENSIONS:		
FRONT	30 FT	30.8 FT
SIDE	10 FT	44.7 FT
REAR	30 FT	72.1 FT
MAXIMUM STRUCTURE DIMENSIONS:		
STRUCTURE HEIGHT		
SLOPED ROOF	35 FT	35 FT
ROOF APPURTENANCE HEIGHT	8 FT	>8 FT
LOT COVERAGE	20%	12.70%
MINIMUM OPEN SPACE	40%	87.30%

NOTES

1. SEE NOTES ON SHEET C–01.

PRE-CONSTRUCTION IMPERVIOUS AREA	
EXISTING DWELLING	1,971 S.F.
DRIVEWAY	512 S.F.
SLATE PATIO	442 S.F.
DECKS	202 S.F.
RETAINING WALLS	113 S.F
STEPS	211 S.F.
SHED	166 S.F.
CONCRETE PAD	25 S.F.
DOCK	N/A
TOTAL	**3,642 S.F.**
IMPERVIOUS COVERAGE = 13.02%	(3,642 S.F. / 27,965 S.F. * 100%)

POST-CONSTRUCTION IMPERVIOUS AREA	
PROPOSED DWELLING	2,605 S.F.
DRIVEWAY (PERVIOUS PAVERS)	N/A
PERVIOUS PATIO	N/A
DECKS	N/A
RETAINING WALLS	684 S.F.
STEPS	257 S.F.
SHED	N/A
CONCRETE PAD	N/A
DOCK	96 S.F.
TOTAL	**3,642 S.F.**
IMPERVIOUS COVERAGE = 13.02%	(3,642 S.F. / 27,965 S.F. * 100%)

– – – – – – EXISTING FEATURES TO BE REMOVED

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

SITE PLAN

70 PLEASANT POINT DRIVE

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

KATARA, LLC

1"=20' (11"x17")
SCALE: 1"=10' (22"x34") **MAY 25, 2022**

REV	DATE	DESCRIPTION	DR	CK
2	6/27/22	ADDITION OF DOCK TO PLAN	JKC	JCC
1	6/22/22	REVISIONS PER TOWN COMMENTS	JKC	JCC

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FILE	47307.01	DR	JKC	FB	–	C–03
		CK	JCC	CADFILE	47307–01_SITE LAYOUT	

Jun 28, 2022 - 3:33pm
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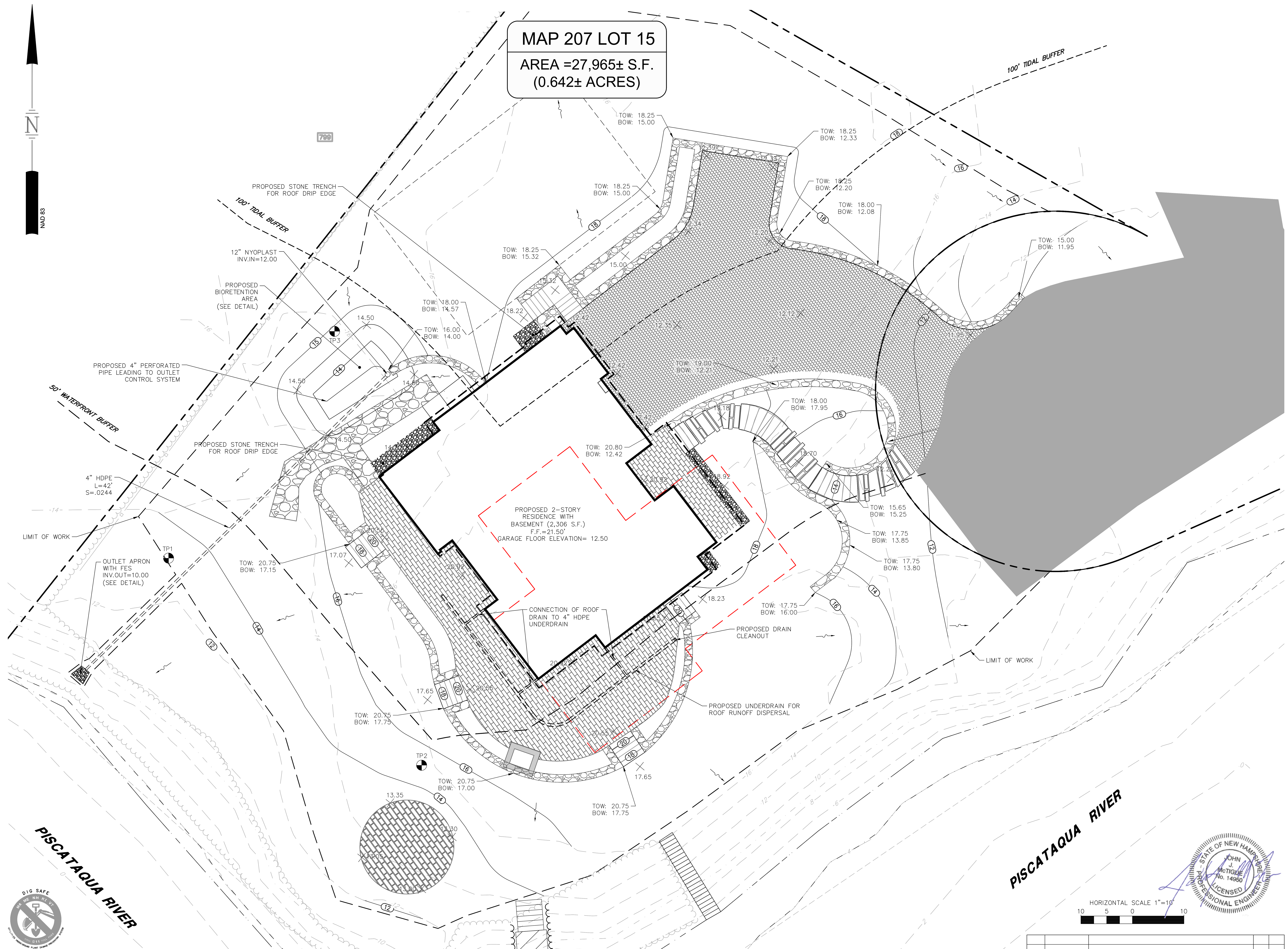

NOTES

1. SEE NOTES ON SHEET C–01.
2. ALL DOORS AND GARAGE ENTRANCES SHALL BE AT FINISHED FLOOR ELEVATION UNLESS OTHERWISE NOTED.
3. PROPOSED SPOT GRADES ARE PROVIDED TO THE NEAREST 0.05. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE FINISHED GRADES.
4. LENGTH OF PIPE IS FOR CONVENIENCE ONLY. ACTUAL PIPE LENGTH SHALL BE DETERMINED IN THE FIELD.
5. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR SUBDRAINAGE SYSTEMS FOR THE BUILDING FOUNDATION. SUBDRAINAGE MUST DAYLIGHT OR TIE INTO THE STORMWATER MANAGEMENT SYSTEM. COORDINATE SUBDRAINAGE SYSMTEM DESIGN WITH THE ENGINEER OF RECORD.

TEST PIT & INFILTRATION TEST

BMP	TEST PIT #	APPROX GROUND	BOTTOM OF POND	INFILTRATION TEST		TEST PIT	
		ELEV	ELEV	ELEV	DEPTH (IN)	ELEV	DEPTH (MIN)
	1	13.1	–	13.1	16.4	13.1	61"
	2	15.8	–	12.8	36.2	15.8	68"
BIORETENTION SYSTEM #1	3	16.1	13.0	14.1	32.1	16.1	62"

SOIL LEGEND
(PER USDA NRCS WEB SOIL SURVEY)

SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP
799	URBAN LAND–CANTON COMPLEX, 3 TO 15 PERCENT SLOPES	A

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

GRADING & DRAINAGE

70 PLEASANT POINT DRIVE

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

KATARA, LLC

1"=20' (11"x17")
SCALE: 1"=10' (22"x34")

MAY 25, 2022

REV	DATE	DESCRIPTION	DR	CK
2	6/27/22	ADDITION OF DOCK TO PLAN	JKC	JCC
1	6/22/22	REVISED PER TOWN COMMENTS	JKC	JCC

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472–4488
Fax (603) 472–9747
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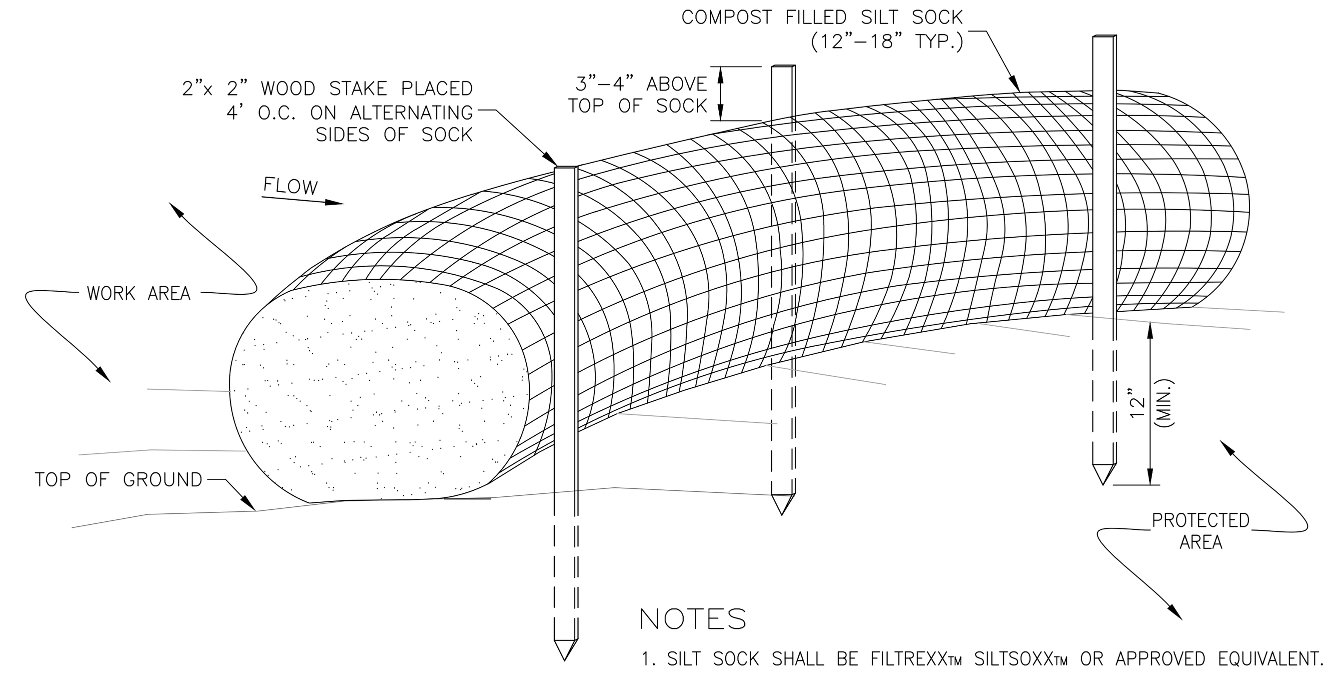
FILE	DR	JKC	FB	–	
47307.01	CK	JCC	CADFILE	47307–01_GRADING&DRAINAGE	C–04

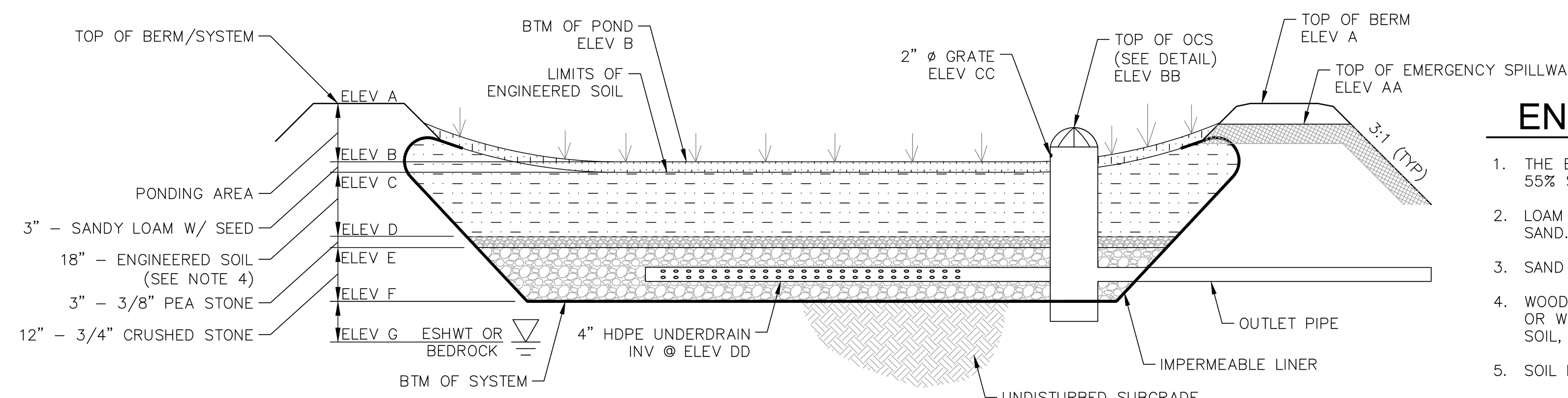


NOTES

1. SILT SOCK SHALL BE FILTREXX™ SILTSOXX™ OR APPROVED EQUIVALENT.
2. SEE SPECIFICATIONS FOR SOCK SIZE AND COMPOST FILL REQUIREMENTS.
3. SILT SOCK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS, AND REPAIR OR REPLACEMENT SHALL BE PERFORMED AS NEEDED.
4. COMPOST MATERIAL SHALL BE DISPERSED ON SITE, AS DETERMINED BY THE ENGINEER.

SILT SOCK

NOT TO SCALE



RAIN GARDEN SYSTEM MAINTENANCE

MAINTENANCE SCHEDULE TO BEGIN AFTER CONSTRUCTION IS FINISHED AND BASIN STABILIZATION IS COMPLETE.

1. CONTRACTOR AND LAND OWNERS TO PERFORM SCHEDULED MAINTENANCE ON THE BIORETENTION SYSTEM IN ACCORDANCE WITH THE STORMWATER OPERATION AND MAINTENANCE MANUAL.

RAIN GARDEN DETAIL

NOT TO SCALE

NOTE: SEE PLANS FOR BED, BERM AND OVERFLOW ELEVATIONS

ELEVATION TABLE

BIORETENTION SYSTEM #	1
A	15.50
B	14.25
C	14.00
D	12.50
E	12.25
F	11.25
G	10.17

OUTLET TABLE

BIORETENTION SYSTEM #	1
AA	15.00
BB	14.40
CC	14.20
DD	11.50

RAIN GARDEN SYSTEM CONSTRUCTION

1. CLEAR AND GRUB THE AREA WHERE THE RAIN GARDEN SYSTEMS ARE TO BE LOCATED. STOCKPILE LOAM FOR REUSE ON SLOPES.
2. GRADE RAIN GARDEN SYSTEM ACCORDING TO PLAN AND DETAILS. SIDE SLOPES SHALL HAVE 6" LOAM AND SEED AND A SLOPE NOT TO EXCEED 3:1. BOTTOM OF BIORETENTION SYSTEM AREAS TO BE CONSTRUCTED WITH MANUFACTURED SOIL (SEE RAIN GARDEN SYSTEM CONSTRUCTION DETAIL).
3. BOTTOM OF THE RAIN GARDEN SYSTEM TO BE SEEDED WITH NEW ENGLAND EROSION CONTROL/RESTORATION MIX THAT MEETS NH STATE STANDARDS.
4. THE ENGINEERED SOIL – SEE ENGINEERED SOIL MIX NOTES. SOILS TO BE TESTED AND APPROVED BY THE ENGINEER OF RECORD. ENGINEER SHALL SUBMIT LETTER OF VERIFICATION TO THE CITY.
5. THE CONTRACTOR SHALL TAKE MEASURES TO PREVENT EQUIPMENT & VEHICLE TRAFFIC FROM DRIVING IN THE AREA OF THE PROPOSED RAIN GARDEN SYSTEM AREA DURING CONSTRUCTION.
6. AFTER THE BASIN IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES. THE BASIN BOTTOM SHOULD BE LEVELED PRIOR TO BACKFILLING WITH CRUSHED STONE AND RAIN GARDEN SOIL MIXTURE.
7. AASHTO #57 STONE CAN BE USED IN PLACE OF ¾" CRUSHED STONE.

SEEDING

1. USE NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR MOIST SITES BY NEW ENGLAND WETLAND PLANTS, INC. OR EQUIVALENT.
2. SEED AT A RATE OF 1LB/1250SF. APPLY TO BARE SOIL. LIGHTLY MULCH WITH CLEAN WEED FREE STRAW.

ENGINEERED SOIL MIX PARTICLE SIZE DISTRIBUTION (PSD)

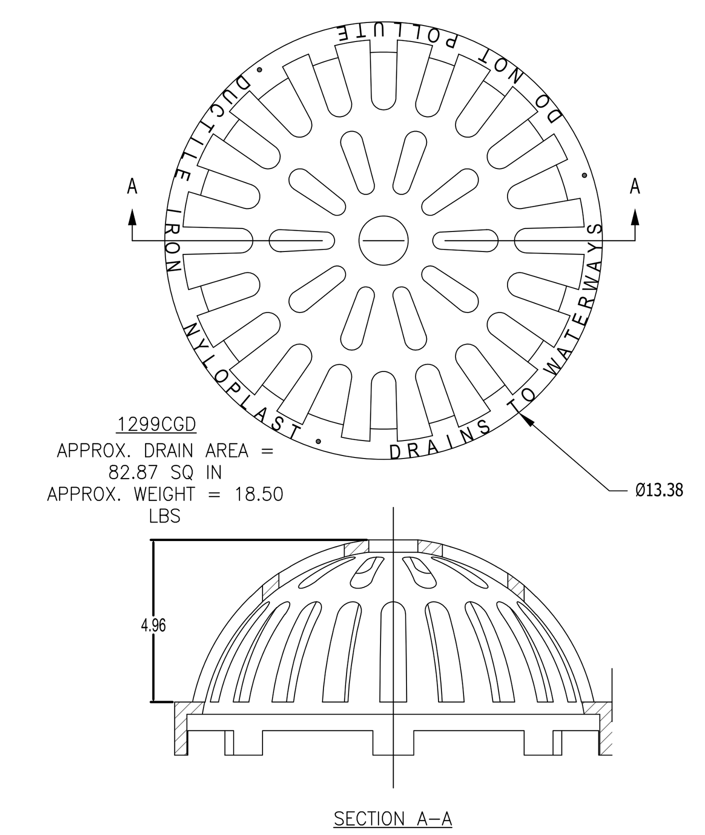
PSD UPPER LIMIT		PSD LOWER LIMIT	
SIEVE #	% Passing	SIEVE #	% PASSING
4	100	4	100
10	95	10	95
40	40	40	15
200	20	200	15
<200	5	<200	5

RAIN GARDEN

NOT TO SCALE

ENGINEERED SOIL MIX

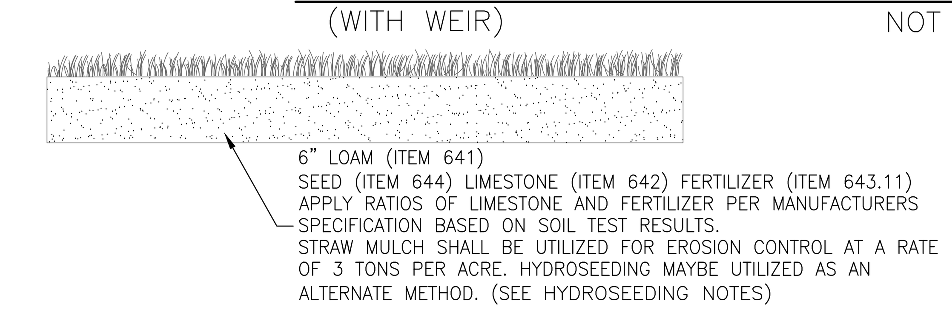
1. THE ENGINEERED SOIL IS MADE OF IS 10% WOOD CHIPS, 35% LOAM, AND 55% SAND.
2. LOAM SHALL MEET THE USDA TEXTURAL CLASSIFICATION OF LOAMY FINE SAND.
3. SAND SHALL BE CONCRETE SAND MEETING ASTM C-33 SPECIFICATION.
4. WOOD CHIPS SHALL BE SHREDDED WOOD, WOOD CHIPS, GROUND BARK, OR WOOD WASTE; OF UNIFORM TEXTURE AND FREE OF STONES, STICKS, SOIL, OR TOXIC MATERIALS
5. SOIL REACTION: PH OF 6 TO 7.
6. CEC OF TOTAL SOIL: MINIMUM 10 MEQ/100 ML AT PH OF 7.0.
7. BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS INDICATED ON DRAWINGS
8. BASIC PROPERTIES: MANUFACTURED SOIL SHALL NOT CONTAIN THE FOLLOWING:
   A. UNACCEPTABLE MATERIALS: CONCRETE SLURRY, CONCRETE LAYERS OR CHUNKS, CEMENT, PLASTER, BUILDING DEBRIS, ASPHALT, BRICKS, OILS, GASOLINE, DIESEL FUEL, PAINT THINNER, TURPENTINE, TAR, ROOFING COMPOUND, ACID, SOLID WASTE, AND OTHER EXTRANEOUS MATERIALS THAT ARE HARMFUL TO PLANT GROWTH.
   B. UNSUITABLE MATERIALS: STONES, ROOTS, PLANTS, SOD, CLAY LUMPS, AND POCKETS OF COARSE SAND THAT EXCEED A COMBINED MAXIMUM OF 5 PERCENT BY DRY WEIGHT OF THE MANUFACTURED SOIL.
   C. LARGE MATERIALS: STONES, CLODS, ROOTS, CLAY LUMPS, AND POCKETS OF COARSE SAND EXCEEDING 0.187 INCHES (4.76 MM) IN ANY DIMENSION.



DIMENSIONS ARE FOR REFERENCE ONLY
ACTUAL DIMENSIONS MAY VARY
DIMENSIONS ARE IN INCHES
QUALITY: MATERIALS SHALL CONFORM TO ASTM A536 GRADE 70–50–05
PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT
LOCKING DEVICE AVAILABLE UPON REQUEST

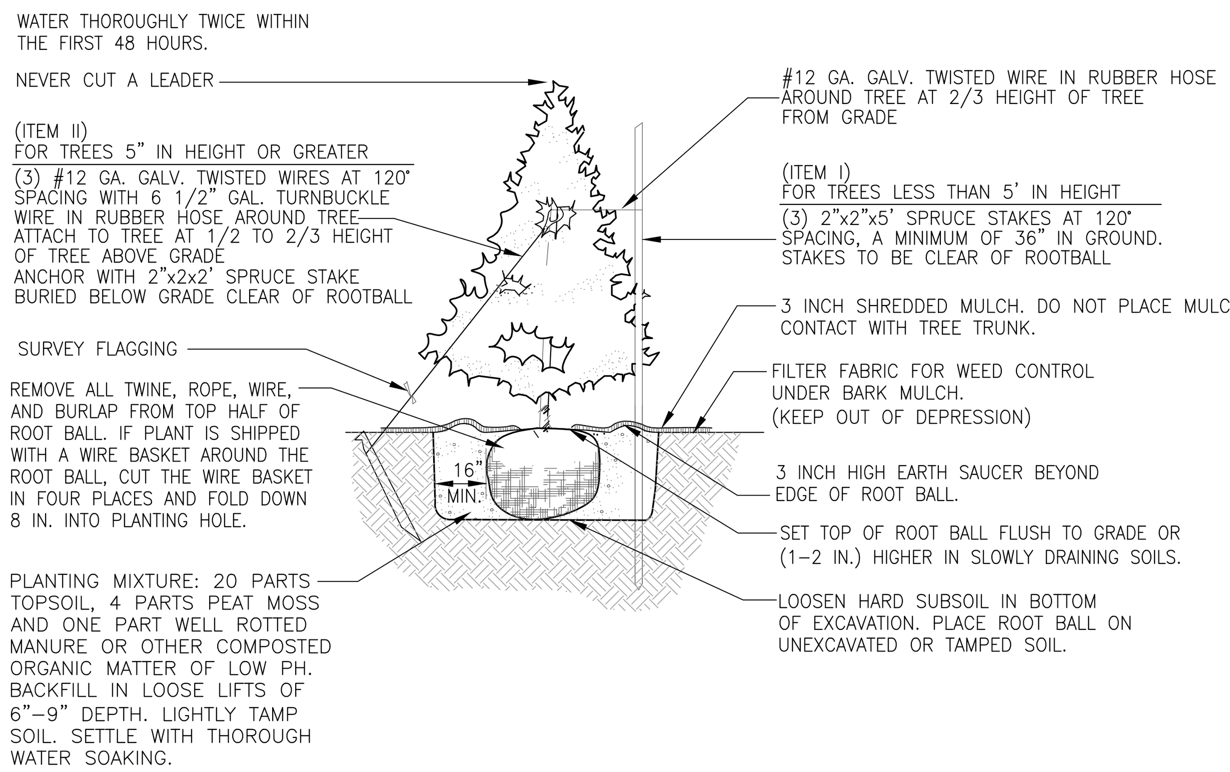
ADS 24" DOME GRATE

(WITH WEIR) NOT TO SCALE



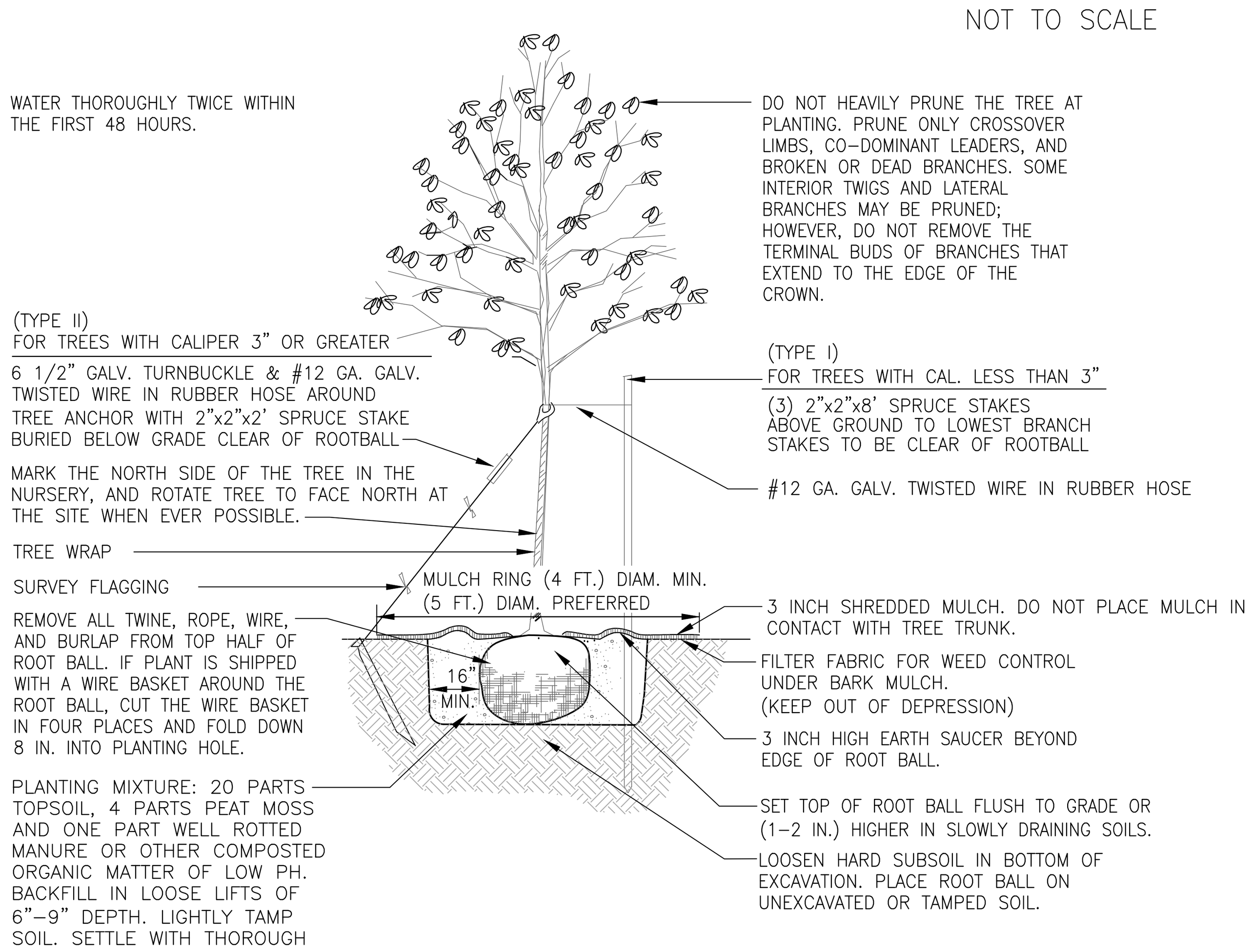
LOAM & SEED

NOT TO SCALE



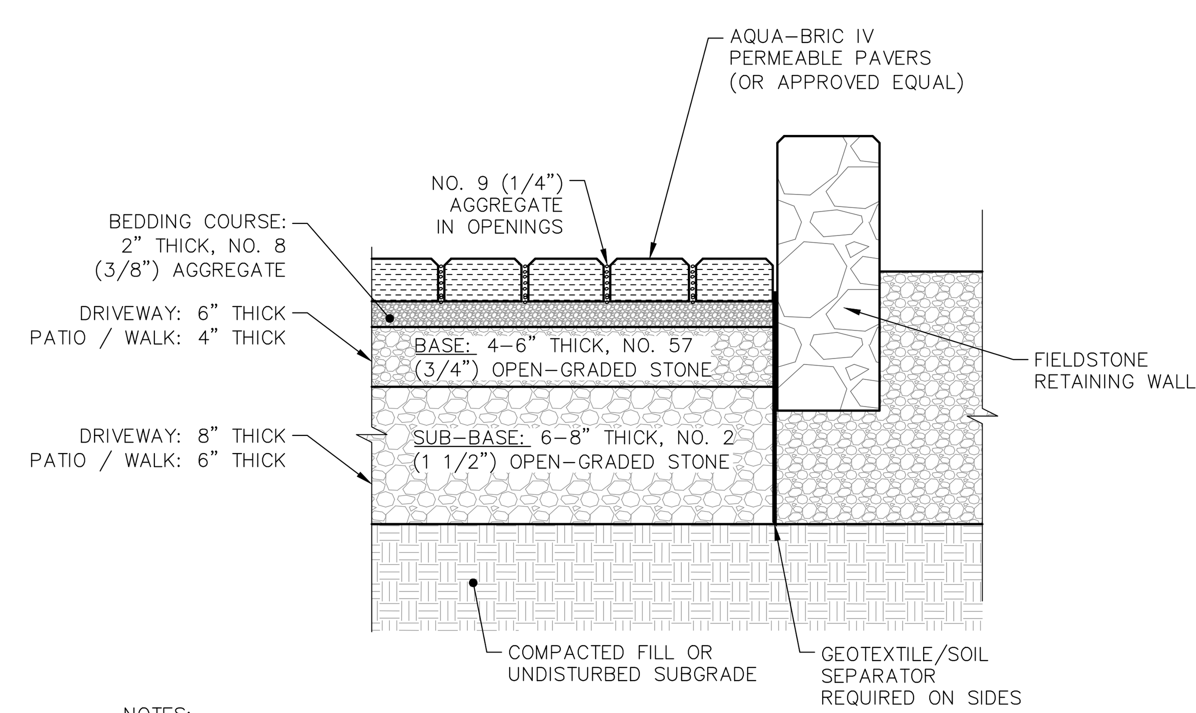
EVERGREEN PLANTING

NOT TO SCALE



DECIDUOUS TREE PLANTING

NOT TO SCALE

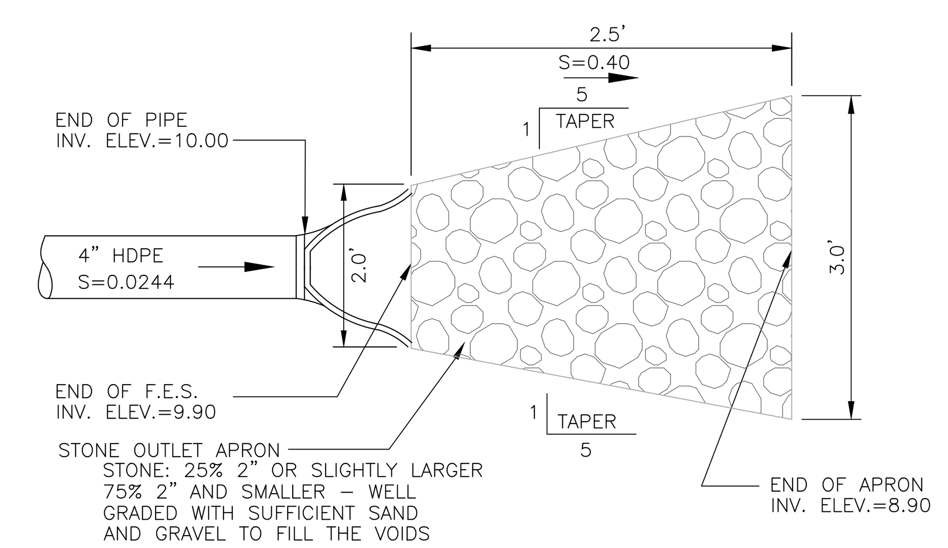


NOTES:
1. PERMEABLE PAVERS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
2. INSTALLATION OF PERMEABLE PAVER SECTION SHALL BEGIN AT LOWEST GRADE AND END AT HIGHEST GRADE.

PROFILE VIEW

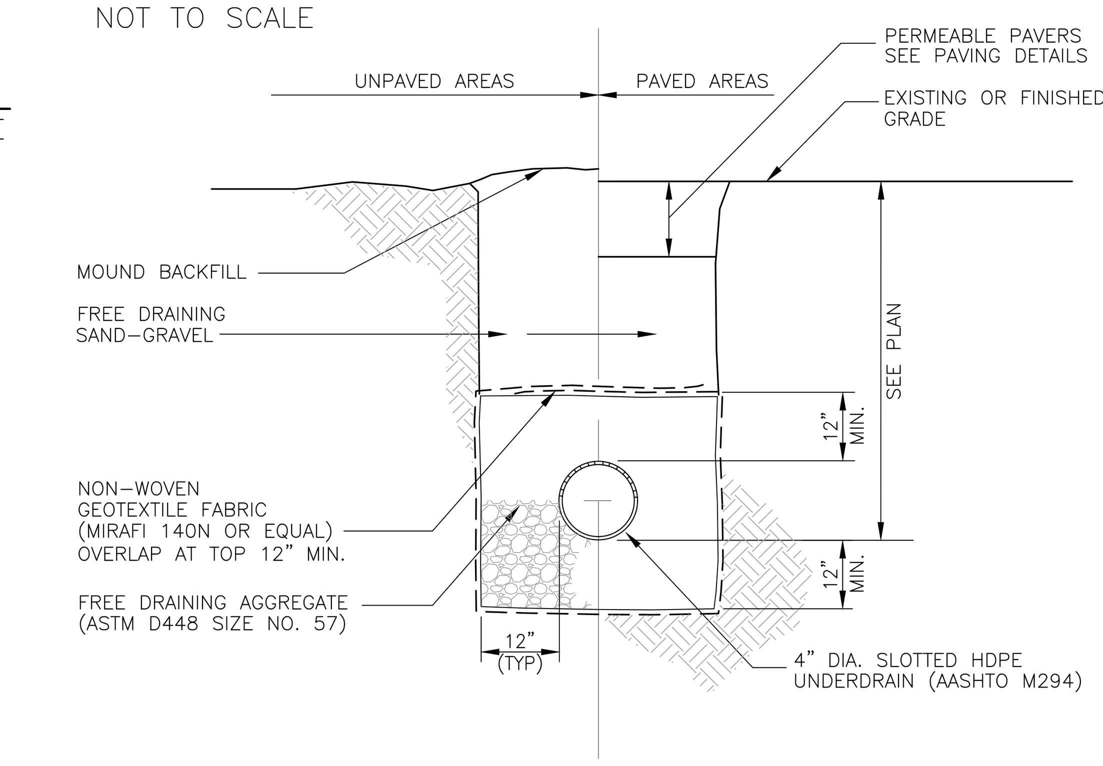
PERMEABLE PAVER

NOT TO SCALE



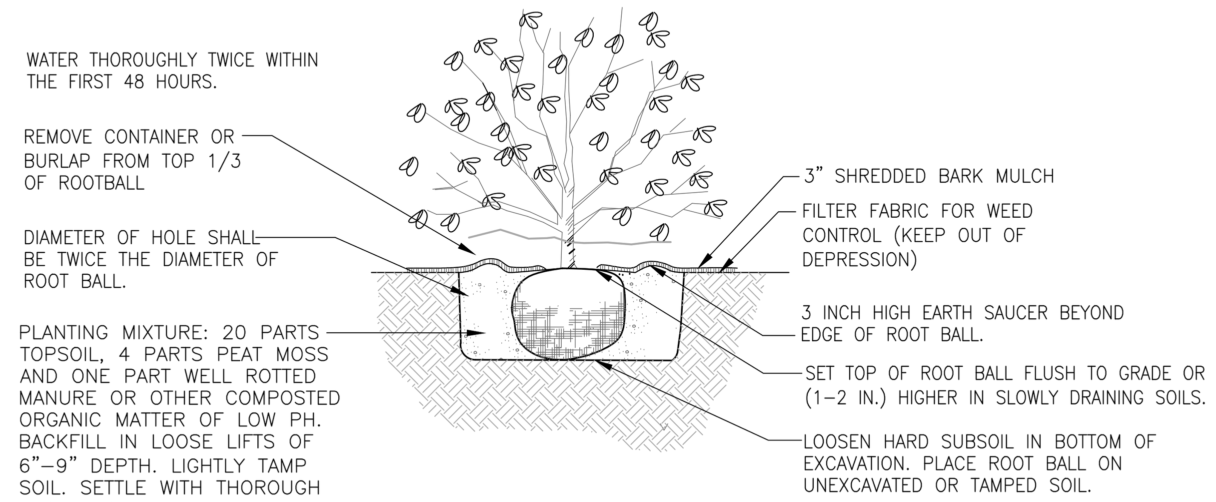
OUTLET APRON

WITH FLARED END SECTION NOT TO SCALE



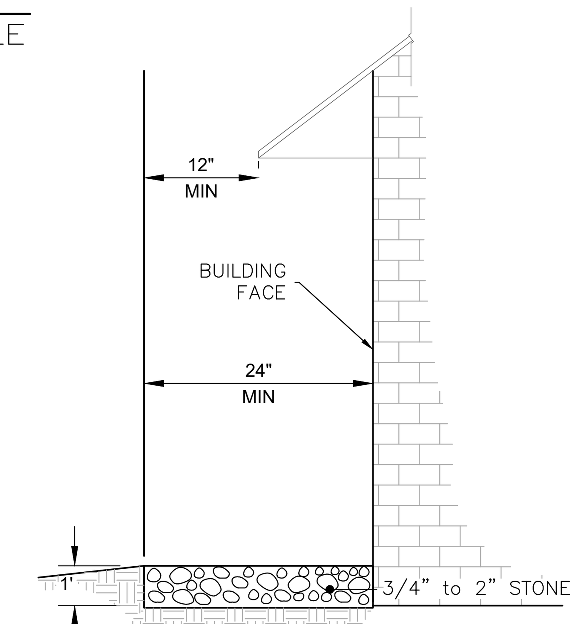
UNDERDRAIN TRENCH

NOT TO SCALE



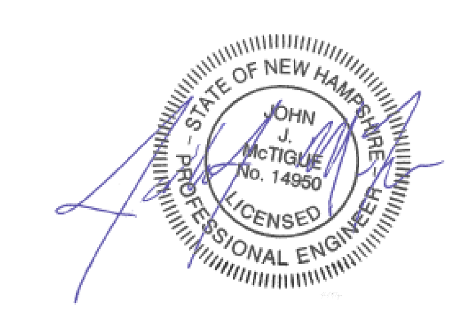
SHRUB PLANTING

NOT TO SCALE



DRIP EDGE TRENCH

NOT TO SCALE



REV	DATE	DESCRIPTION	DR	CK
1	6/27/22	NO REVISIONS TO THIS PLAN		

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

DETAILS

70 PLEASANT POINT DRIVE
PORTSMOUTH, NEW HAMPSHIRE

OWNED BY
KATARA, LLC

SCALE: NTS **MAY 25, 2022**

TFM®
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
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Scientists
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FILE	47307.01	DR	JKC	FB	–	C–05
		CK	JCC	CADFILE	47307–01_DETAILS	

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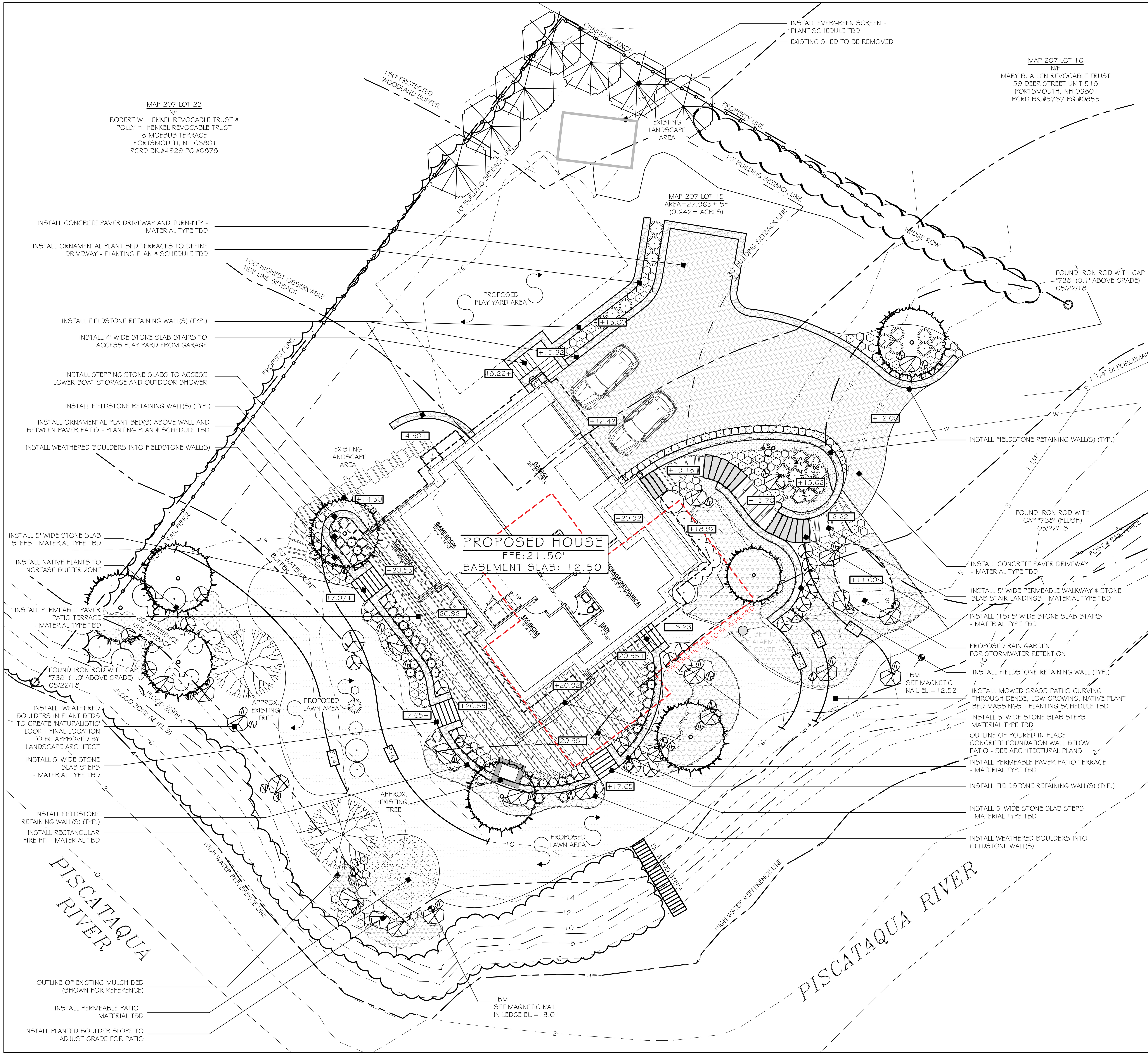


EROSION CONTROL NOTES

1. EXPOSED EARTHWORK SHALL BE CONFINED TO AS LIMITED AN AREA AS IS PRACTICAL AT ANY GIVEN TIME THROUGHOUT THE CONSTRUCTION SEQUENCE. LIMIT OF WORK IS NOTED ON THIS SHEET. CONTRACTOR TO WORK WITHIN THESE LIMITS AS SHOWN. NO AREA OF THE SITE SHALL BE LEFT IN AN UNSTABILIZED CONDITION FOR A PERIOD OF TIME EXCEEDING FIVE CALENDAR DAYS.

2. TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH PROJECT PANS. IN ADDITION SIMILAR MEASURES SHALL BE INSTALLED WHERE AND WHEN THE FIELD CONDITION, OR FIELD OPERATION OF THE INDIVIDUAL SITE CONTRACTOR MAY WARRANT. ALL TEMPORARY EROSION CONTROL MEASURES USED SHALL BE INSPECTED WEEKLY AND WITHIN 24 HOURS AFTER 0.5" OF RAINFALL OR MORE. THEY SHALL BE CLEANED AND MAINTAINED AND OTHERWISE KEPT IN AN EFFECTIVE OPERATING MANNER THROUGHOUT THE CONSTRUCTION PERIOD.

3. ALL DISTURBED AREAS DESIGNATED TO BE TURF SHALL RECEIVE A MINIMUM OF 4" LOAM (COMPACTED THICKNESS), PRIOR TO SEEDING AND MULCHING.

4. ALL SWALES AND DITCH LINES SHALL BE PERIODICALLY CLEANED OF DEPOSITED SEDIMENT SO AS TO MAINTAIN AND EFFECTIVE GRADE AND CROSS SECTION. ALL SWALES AND DITCH LINES SHALL BE FULLY STABILIZED PRIOR TO HAVING STORMWATER DIRECTED TOWARDS THEM.

5. IN THE EVENT THAT, DURING CONSTRUCTION OF ANY PORTION OF THIS PROJECT, A WINTER SHUTDOWN IS NECESSARY, THE CONTRACTOR SHALL STABILIZE ALL INCOMPLETE WORK AND PROVIDE FOR SUITABLE METHODS OF DIVERTING RUNOFF IN ORDER TO ELIMINATE SHEET FLOW ACROSS FROZEN SURFACES.

6. AN AREA SHALL BE CONSIDERED STABILIZE IF ONE OF THE FOLLOWING HAS OCCURRED:
   A. BASE COURSE OF GRADES ARE INSTALLED IN AREAS TO BE PAVED;
   B. A MINIMUM OF 85% VEGETATIVE GROWTH HAS BEEN ESTABLISHED;
   C. A MINIMUM OF 3" OF NON-EROSIVE MATERIALS, SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED; AND/OR
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

7. DUST SHALL BE CONTROLLED BY THE USE OF WATER AS NECESSARY THROUGHOUT THE CONSTRUCTION PERIOD.

8. IN NO WAY ARE THE TEMPORARY EROSION CONTROL MEASURES INDICATED ON THESE PLANS CONSIDERED ALL INCLUSIVE. THE CONTRACTOR SHALL USE JUDGMENT IN INSTALLING SUPPLEMENTARY EROSION CONTROL MEASURES WHERE AND WHEN SPECIFIC SITE CONDITIONS AND/OR CONSTRUCTION METHODOLOGIES MAY WARRANT.

9. ALL EROSION CONTROL METHODS TO BE INSTALLED AS PER MANUFACTURERS SPECIFICATIONS AS WELL AS INDICATED IN THE NEW HAMPSHIRE STORMWATER MANUAL "EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION."

10. ALL ROADS, PATHS, DRIVEWAYS, PATIOS AND POOL DECKS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.

11. ALL CUT AND FILL SLOPES SHALL BE STABILIZED WITHIN 48 HOURS OF ACHIEVING FINISH GRADE.

PROPOSED IMPERVIOUS CALCULATIONS		
HOUSE	:	2,948 SF
DRIVEWAY	:	1,754 SF
DECK	:	0 SF
SHED	:	0 SF
WALKWAY / PAVER	:	0 SF
STAIRS	:	205 SF
PATIO	:	0 SF
RETAINING WALL	:	683 SF
TOTAL IMPERVIOUS	:	5,590 SF
TOTAL LOT WITHIN 250'	:	27,965 SF
19.99% IMPERVIOUS		

DIG SAFE — CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION

LINETYPE LEGEND
- EROSION CONTROL
- PROPERTY LINE
- PROPERTY SETBACKS
- REFERENCE LINE
- REFERENCE LINE SETBACKS
- TOPOGRAPHY MIN
- TOPOGRAPHY MAJ
- VEGETATION QUAD
- MESH FENCING / PARAMETERS OF WORK
- UNALTERED AREA
- TEMPORARY IMPACT AREA

0 5' 10' 20' 30' 50'

PROGRESS PRINT NOT FOR CONSTRUCTION

terrain
planning & design llc
311 kast hill road
hopkinton nh 03229
603. 746. 3512
terrainplanning.com

ROWE - SMALL RESIDENCE

Site Location:
70 Pleasant Point Drive
Portsmouth, NH 03801
Tax Map: 207
Lot #: 15

Prepared For:
KATARA LLC
Rebecca Rowe & Marc Small
274 Miller Avenue
Portsmouth, NH 03801

LANDSCAPING PLAN

DATE: 01 - 04 - 2022

SCALE: 1" = 10'

PROJECT #: 2186

Drawn By: CGB

Checked By: ERB

REVISIONS:	DATE:
Issued for Client Review	01-21-22
Revised per client comments	01-31-22
Revised per client comments	02-17-22
Revised footprint	05-24-22
Revised per Con Com comments	06-23-22

L - 01

N

AREA BREAKDOWN

FIRST FLOOR	1,846 SF
SECOND FLOOR	1,553 SF
LOWER LEVEL	927 SF
TOTAL HEATED	4,326SF
GARAGE	684 SF
UNFINISHED	289 SF
TOTAL UNFINISHED	973 SF

21132

PROPOSED DESIGN DEVELOPMENT FOR

ROWE SMALL RESIDENCE

FIRST FLOOR PLAN

70 PLEASANT POINT DR.
PORTSMOUTH, NH

1/8" = 1'-0"

20 DECEMBER 2021

D|M|A
DESTEFANO MAUGEL ARCHITECTS

AREA BREAKDOWN	
FIRST FLOOR	1,861 SF
SECOND FLOOR	1,575 SF
LOWER LEVEL	881 SF
TOTAL HEATED	4,317 SF
GARAGE	684 SF
UNFINISHED	559 SF
TOTAL UNFINISHED	1,243 SF
HOME FOOTPRINT	2,123 SF

21132

PROPOSED SCHEMATIC DESIGN FOR

ROWE SMALL RESIDENCE

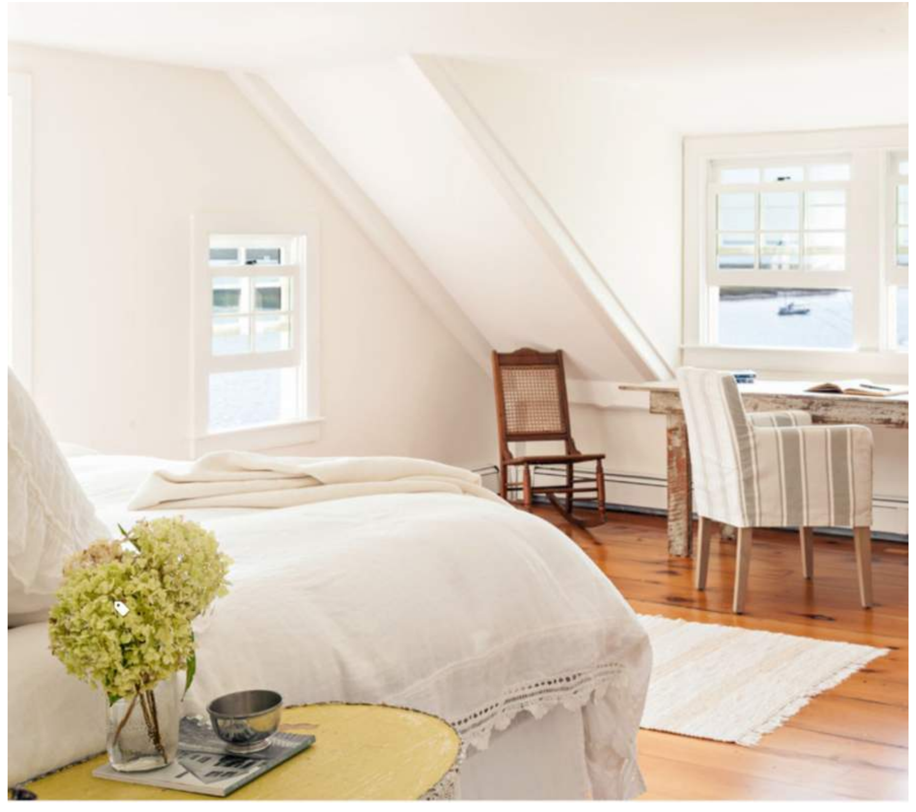
LOWER LEVEL FLOOR PLAN

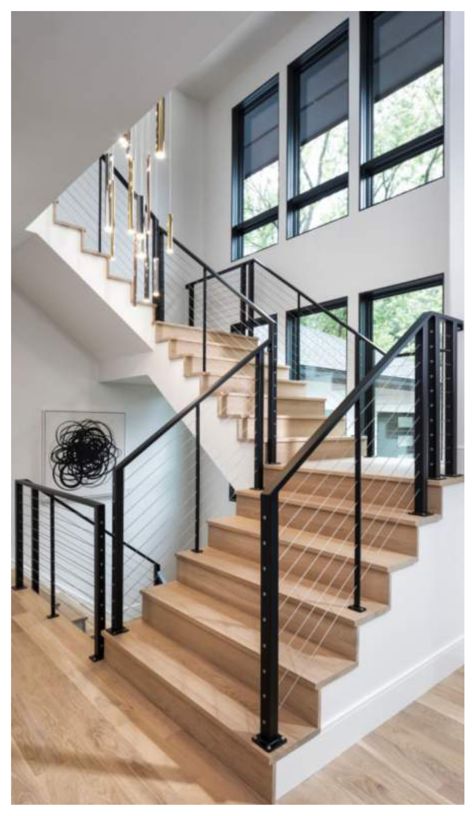
70 PLEASANT POINT DR.
PORTSMOUTH, NH

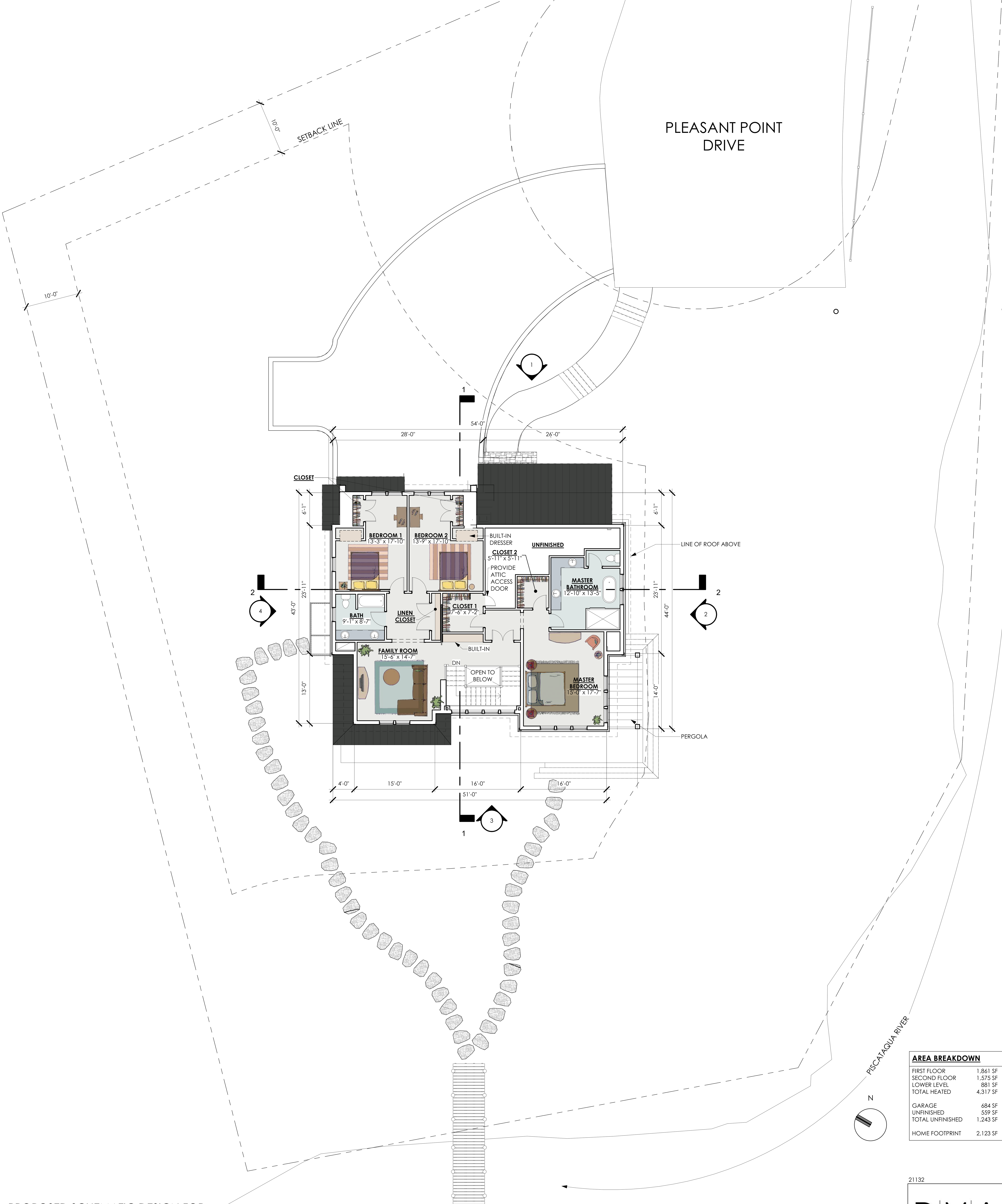
1/8" = 1'-0"

20 DECEMBER 2021

D|M|A
DESTEFANO MAUGEL
ARCHITECTS







AREA BREAKDOWN

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HOME FOOTPRINT	2,123 SF

21132

PROPOSED SCHEMATIC DESIGN FOR

ROWE SMALL RESIDENCE

70 PLEASANT POINT DR.
PORTSMOUTH, NH

SECOND FLOOR PLAN

1/8" = 1'-0"

20 DECEMBER 2021

D|M|A
DESTEFANO MAUGEL ARCHITECTS

PROPOSED WEST ELEVATION 4
1/8" = 1'-0"

PROPOSED SOUTH ELEVATION 3
1/8" = 1'-0"

PROPOSED EAST ELEVATION 2
1/8" = 1'-0"

PROPOSED NORTH ELEVATION 1
1/8" = 1'-0"

PROPOSED SCHEMATIC DESIGN FOR
ROWE SMALL RESIDENCE

PROPOSED ELEVATIONS

70 PLEASANT POINT DR.
PORTSMOUTH, NH

1/8" = 1'-0"

20 DECEMBER 2021

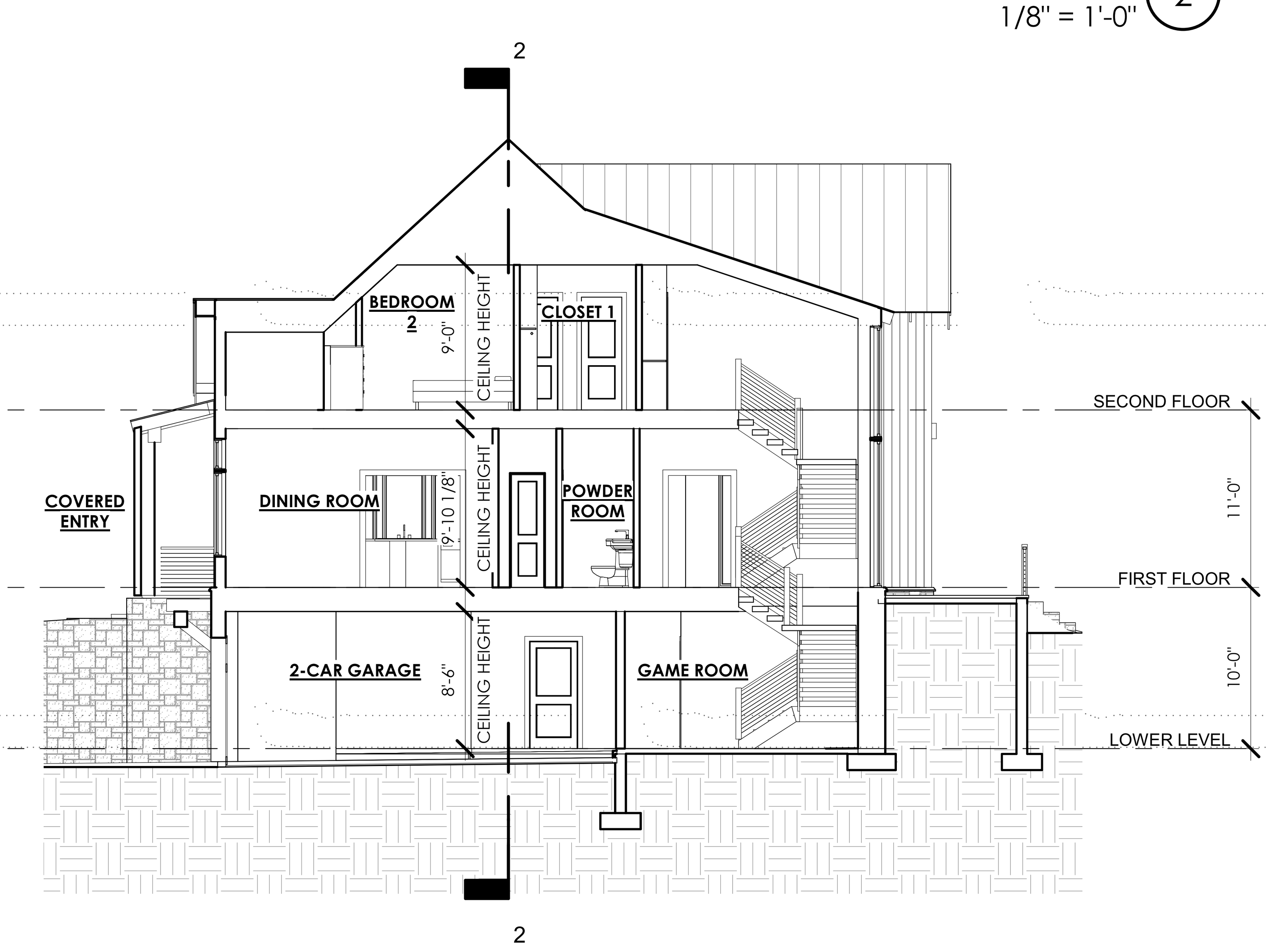
21132

D|M|A
DESTEFANO
MAUGEL
ARCHITECTS

PERSPECTIVE AT REAR 4

PERSPECTIVE AT FRONT 3

BUILDING SECTION 2 2
1/8" = 1'-0"



BUILDING SECTION 1 1
1/8" = 1'-0"

PROPOSED SCHEMATIC DESIGN FOR
ROWE SMALL RESIDENCE
70 PLEASANT POINT DR.
PORTSMOUTH, NH

SECTIONS AND PERSPECTIVES
1/8" = 1'-0"

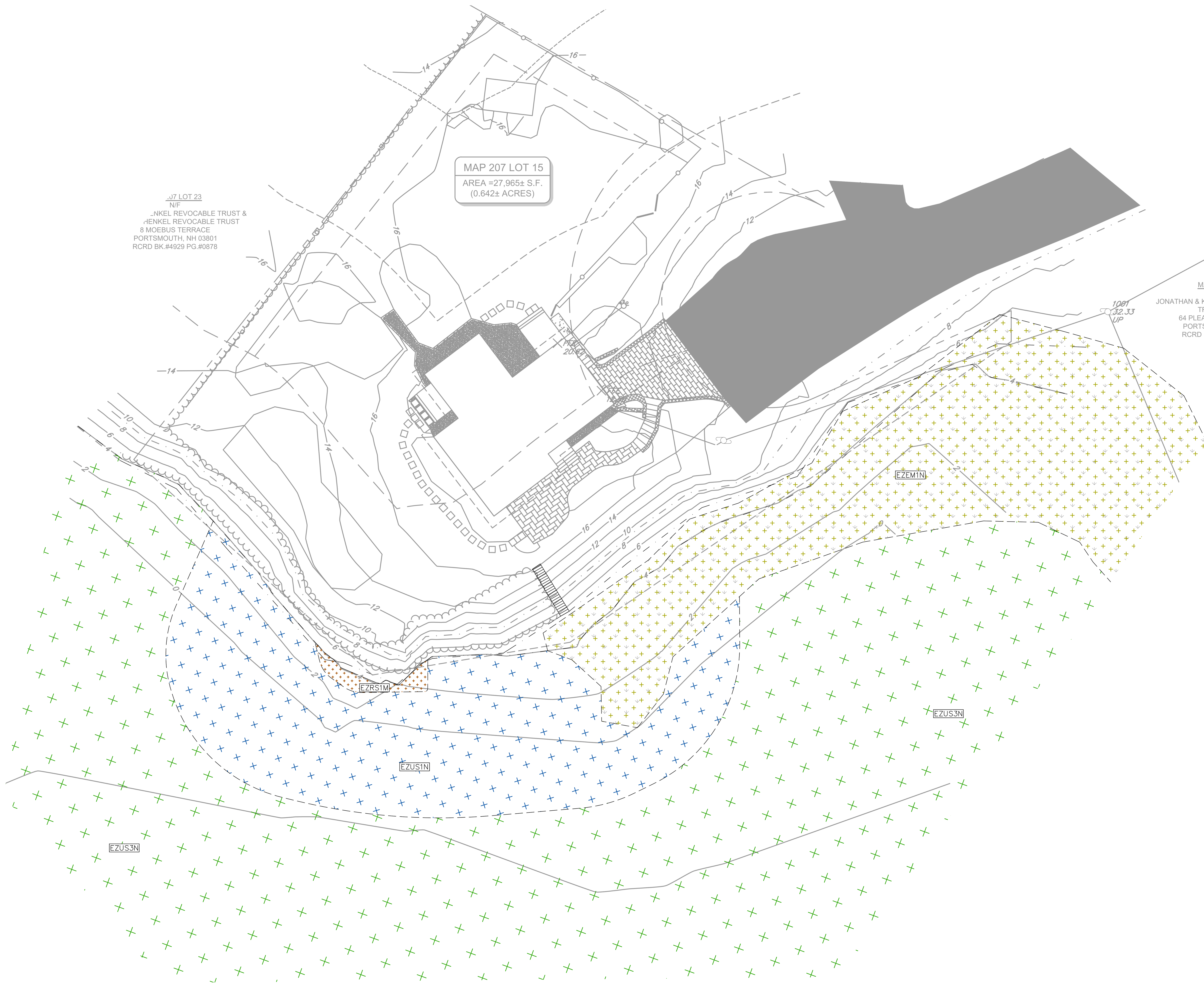
20 DECEMBER 2021

21132
D|M|A
DESTEFANO MAUGEL
ARCHITECTS

WETLAND CLASSIFICATION	
EZEM1N	ESTAURINE INTERTIDAL EMERGENT PERSISTENT REGULARLY FLOODED
EZUS1N	ESTAURINE INTERTIDAL UNCONSOLIDATED SHORE COBBLE GRAVEL REGULARLY FLOODED
EZUS3N	ESTAURINE INTERTIDAL UNCONSOLIDATED SHORE MUD REGULARLY FLOODED
EZRS2M	ESTAURINE INTERTIDAL ROCKY SHORE BEDROCK IRREGULARLY EXPOSED

N

NAD 83



HORIZONTAL SCALE 1"=20'

20 10 0 20

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

WETLANDS CLASSIFICATION MAP

70 PLEASANT POINT DRIVE

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

KATARA, LLC

1"=40' (11"x17")
SCALE: 1"=20' (22"x34")

JUNE 27, 2022

REV	DATE	DESCRIPTION	DR	CK

TFM®
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
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Scientists

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Bedford, NH 03110
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Fax (603) 472-9747
www.tfmoran.com

FILE	47307.01	DR	JKC	FB	–	EX-01
		CK	JCC	CADFILE	47307-01_WETLAND CLASS	

DIG SAFE
MA ME NH RI VT
CALL 811 TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Jun 27, 2022 - 9:37am
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LEGEND:

S.F.	SQUARE FEET
	HIGHEST OBSERVABLE TIDE LINE
	PROPERTY LINE
	EXISTING CONTOUR
	POST & RAIL FENCE
	CHAINLINK FENCE
	TREE LINE
	DECIDUOUS TREE
	EVERGREEN TREE
	UTILITY POLE
	PERVIOUS DRIVEWAY
	PERVIOUS PATIO
	LANDSCAPED AREA
14	PROPOSED CONTOUR

		IMPACT AREA
	PROPOSED PERMANENT IMPACTS JURISDICTIONAL UNDER NH WETLANDS LAW	11,993 S.F.
	PROPOSED TEMPORARY IMPACTS JURISDICTIONAL UNDER NH WETLANDS LAW	3,750 S.F.

TIDAL ELEVATIONS	
MHHW	4.18
MHW	3.76
MTL	-0.32
MLW	-4.39
MLLW	-4.71

TIDAL ELEVATIONS ARE BASED ON NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA) STATION 8419870, SEAVEY ISLAND, MAINE AND AS USED WITHIN THE CITY OF PORTSMOUTH VULNERABILITY ASSESSMENT PREPARED BY THE ROCKINGHAM PLANNING COMMISSION, SEPTEMBER, 2015 AND INCLUDED WITH THE NHDES WETLANDS PERMIT APPLICATION. ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

ACCESSORY STRUCTURE SIZE LIMITATION

SHORELINE FRONTAGE		417 FT
SIZE LIMITATION = 7.5 FT x 284 FT		2,130 S.F.
STRUCTURE	NOTES	SIZE
PATIOS		674 S.F.
RETAINING WALLS		172 S.F.
STEPS		212 S.F.
DOCK		96 S.F.
	TOTAL:	**1,154 S.F.**

PRE-CONSTRUCTION IMPERVIOUS AREA

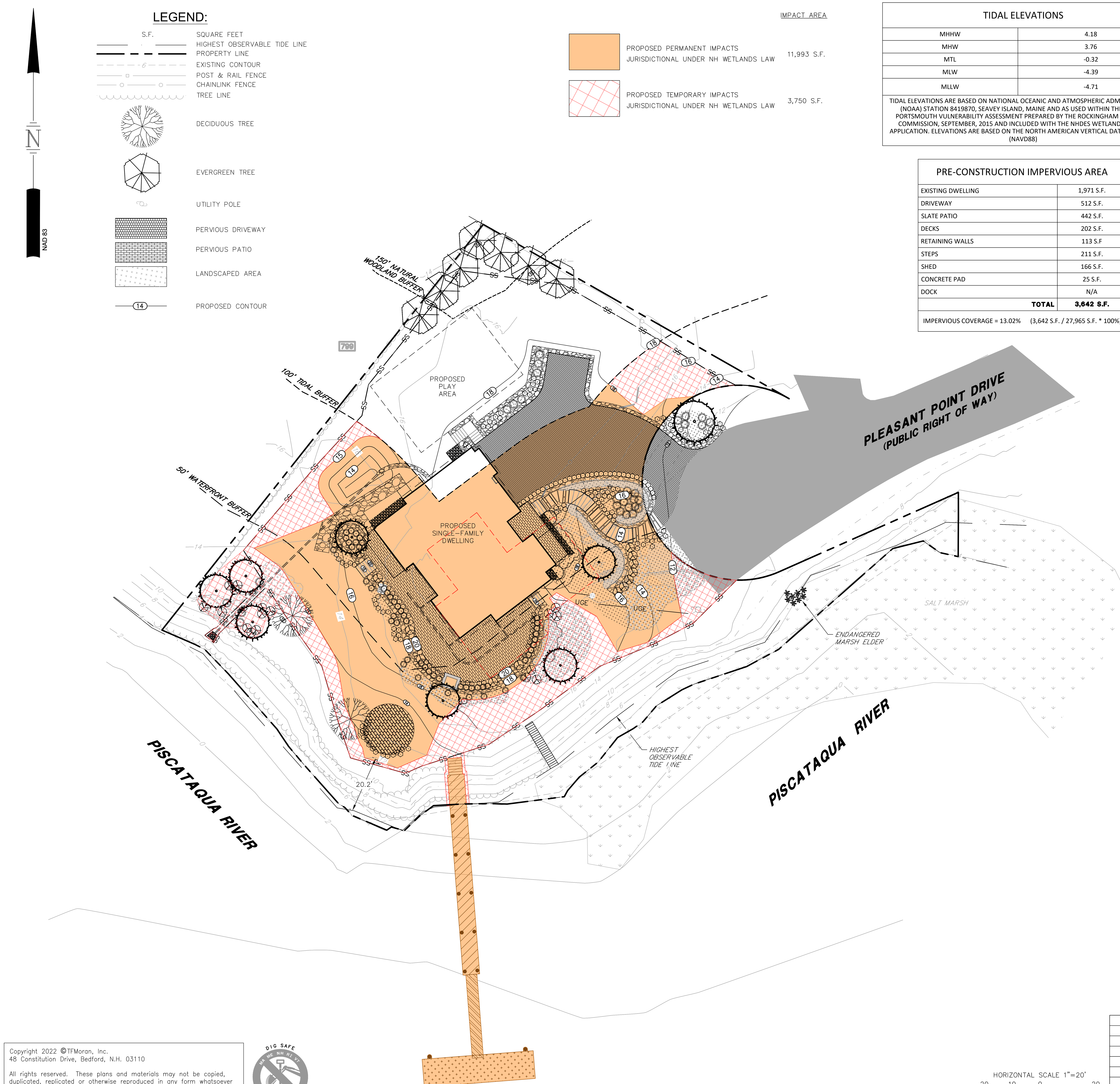
EXISTING DWELLING	1,971 S.F.
DRIVEWAY	512 S.F.
SLATE PATIO	442 S.F.
DECKS	202 S.F.
RETAINING WALLS	113 S.F
STEPS	211 S.F.
SHED	166 S.F.
CONCRETE PAD	25 S.F.
DOCK	N/A
TOTAL	**3,642 S.F.**

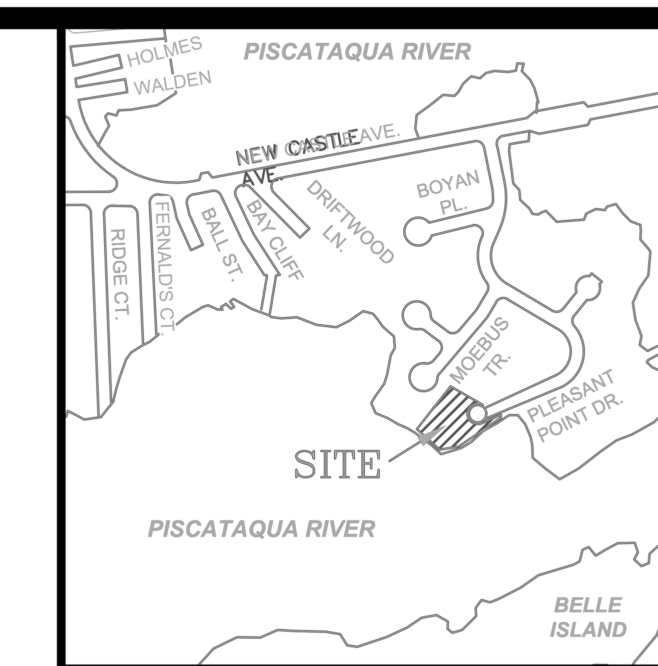
IMPERVIOUS COVERAGE = 13.02% (3,642 S.F. / 27,965 S.F. * 100%)

POST-CONSTRUCTION IMPERVIOUS AREA

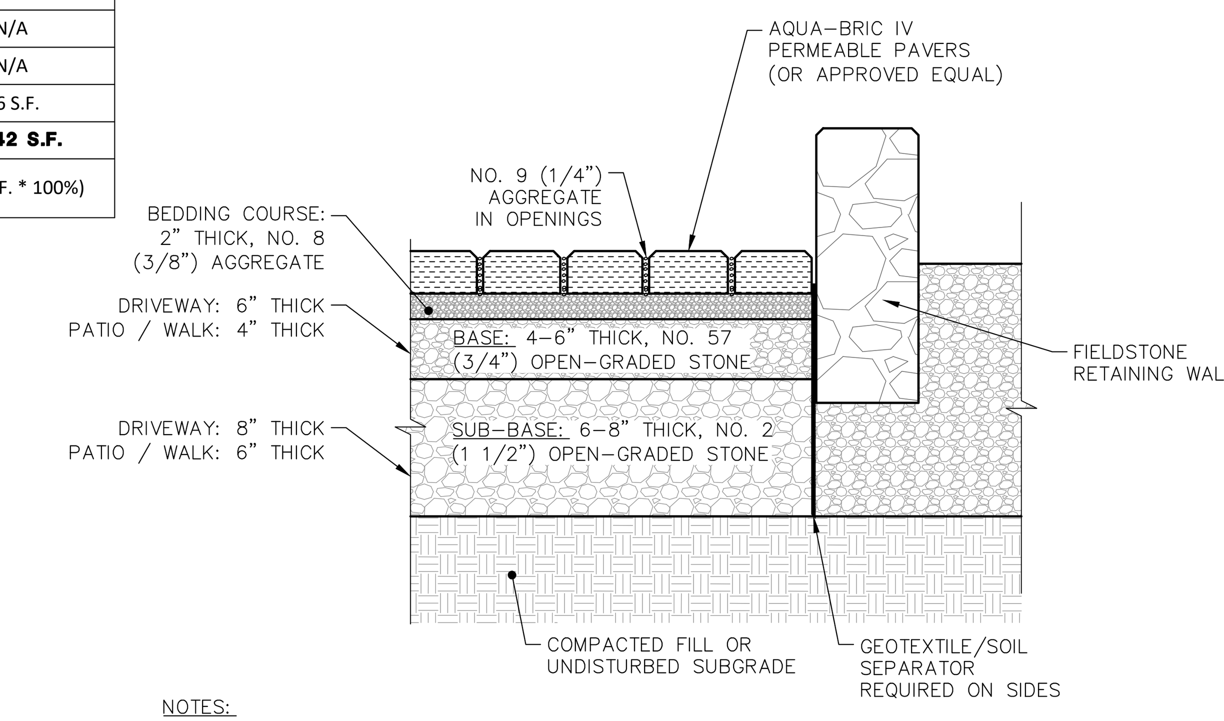
PROPOSED DWELLING	2,605 S.F.
DRIVEWAY (PERVIOUS PAVERS)	N/A
PERVIOUS PATIO	N/A
DECKS	N/A
RETAINING WALLS	684 S.F.
STEPS	257 S.F.
SHED	N/A
CONCRETE PAD	N/A
DOCK	96 S.F.
TOTAL	**3,642 S.F.**

IMPERVIOUS COVERAGE = 13.02% (3,642 S.F. / 27,965 S.F. * 100%)





LOCATION PLAN

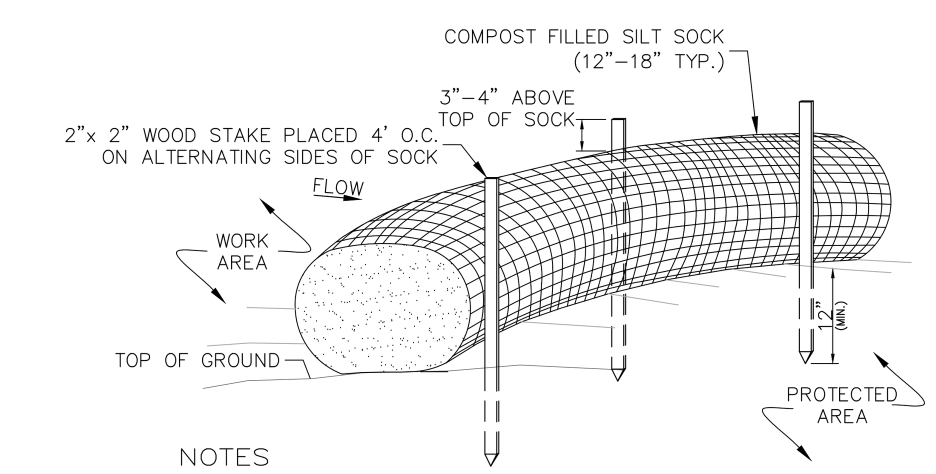


NOTES:
1. PERMEABLE PAVERS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
2. INSTALLATION OF PERMEABLE PAVER SECTION SHALL BEGIN AT LOWEST GRADE AND END AT HIGHEST GRADE.

PROFILE VIEW

PERMEABLE PAVER

NOT TO SCALE



NOTES
1. SILT SOCK SHALL BE FILTREXX™ SILTSOXX™ OR APPROVED EQUIVALENT.
2. SEE SPECIFICATIONS FOR SOCK SIZE AND COMPOST FILL REQUIREMENTS.
3. SILT SOCK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS, AND REPAIR OR REPLACEMENT SHALL BE PERFORMED AS NEEDED.
4. COMPOST MATERIAL SHALL BE DISPERSED ON SITE, AS DETERMINED BY THE ENGINEER.

SILT SOCK

NOT TO SCALE

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

WETLAND IMPACT PLAN

70 PLEASANT POINT DRIVE

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

KATARA, LLC

1"=40' (11"x17")

SCALE: 1"=20' (22"x34")

JUNE 27, 2022

HORIZONTAL SCALE 1"=20'

20 10 0 20

REV	DATE	DESCRIPTION	DR	CK

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FILE	DR	JKC	FB	–	
47307.01	CK	JCC	CADFILE	47307-01_NHDES WETLAND	EX-02

DIG SAFE — CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Jun 27, 2022 - 9:37am
F:\MSC Projects\47307 - Pleasant Point Dr - Portsmouth\47307-01 - Katara - 70 Pleasant Point Drive\Design\PRODUCTION DRAWINGS\NHDES\47307-01_NHDES Wetland.dwg

LEGEND:

S.F.	SQUARE FEET
MAP 47 LOT 11	ASSESSOR'S MAP NUMBER/ LOT NUMBER
	HIGHEST OBSERVABLE TIDE LINE
	PROPERTY LINE
	EXISTING CONTOUR
	POST & RAIL FENCE
	CHAINLINK FENCE
	TREE LINE
	DECIDUOUS TREE
	EVERGREEN TREE
	PERVIOUS DRIVEWAY
	PERVIOUS PATIO
	LANDSCAPED AREA

NAD 83

	IMPACT AREA
PROPOSED PERMANENT IMPACTS JURISDICTIONAL UNDER NH SHORELAND LAW	1,206 S.F.
PROPOSED TEMPORARY IMPACTS JURISDICTIONAL UNDER NH SHORELAND LAW	3,633 S.F.

	TOTAL AREA
TOTAL AREA ON SITE WITHIN NATURAL WOODLAND BUFFER	13,933 S.F.

PRE-CONSTRUCTION IMPERVIOUS AREA	
EXISTING DWELLING	1,971 S.F.
DRIVEWAY	512 S.F.
SLATE PATIO	442 S.F.
DECKS	202 S.F.
RETAINING WALLS	113 S.F
STEPS	211 S.F.
SHED	166 S.F.
CONCRETE PAD	25 S.F.
DOCK	N/A
TOTAL	**3,642 S.F.**
IMPERVIOUS COVERAGE = 13.02%	(3,642 S.F. / 27,965 S.F. * 100%)

POST-CONSTRUCTION IMPERVIOUS AREA	
PROPOSED DWELLING	2,605 S.F.
DRIVEWAY (PERVIOUS PAVERS)	N/A
PERVIOUS PATIO	N/A
DECKS	N/A
RETAINING WALLS	684 S.F.
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ACCESSORY STRUCTURE SIZE LIMITATION		
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SIZE LIMITATION = 7.5 FT x 284 FT		2,130 S.F.
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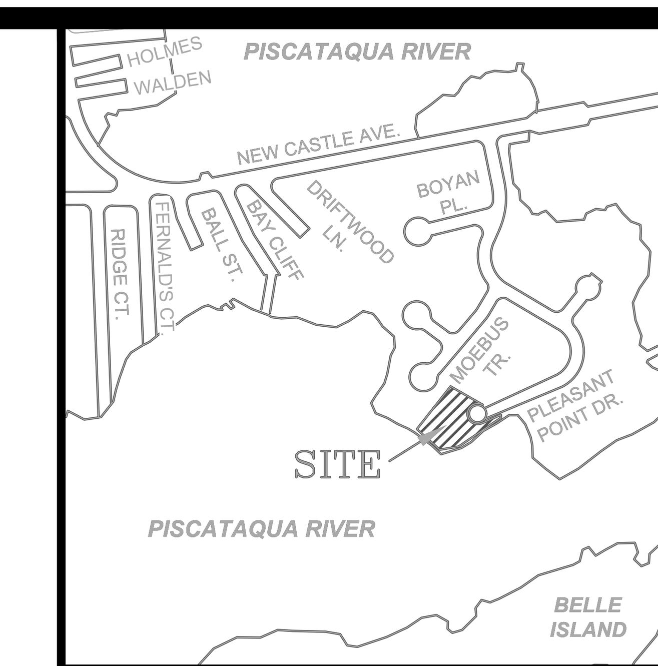
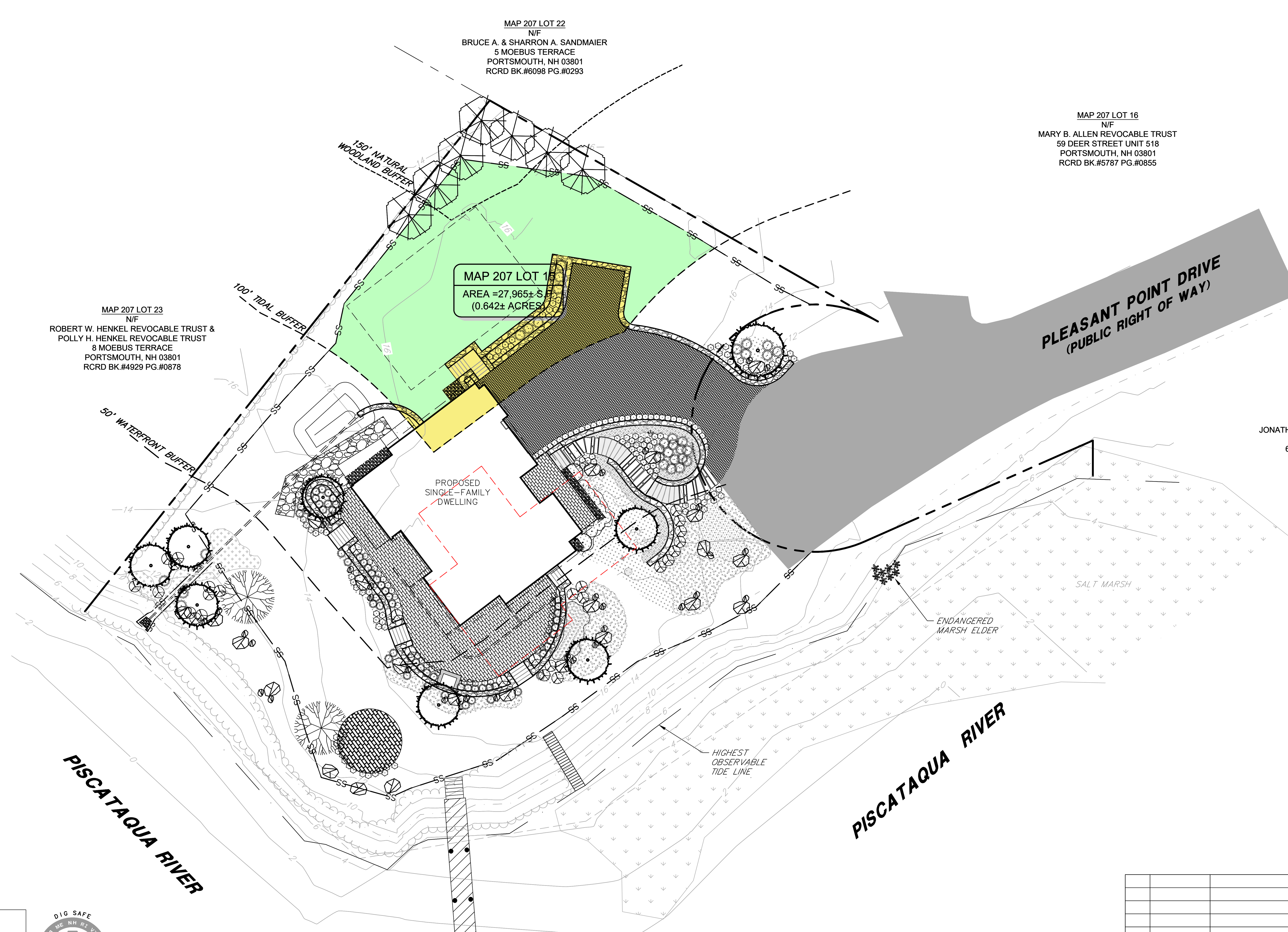
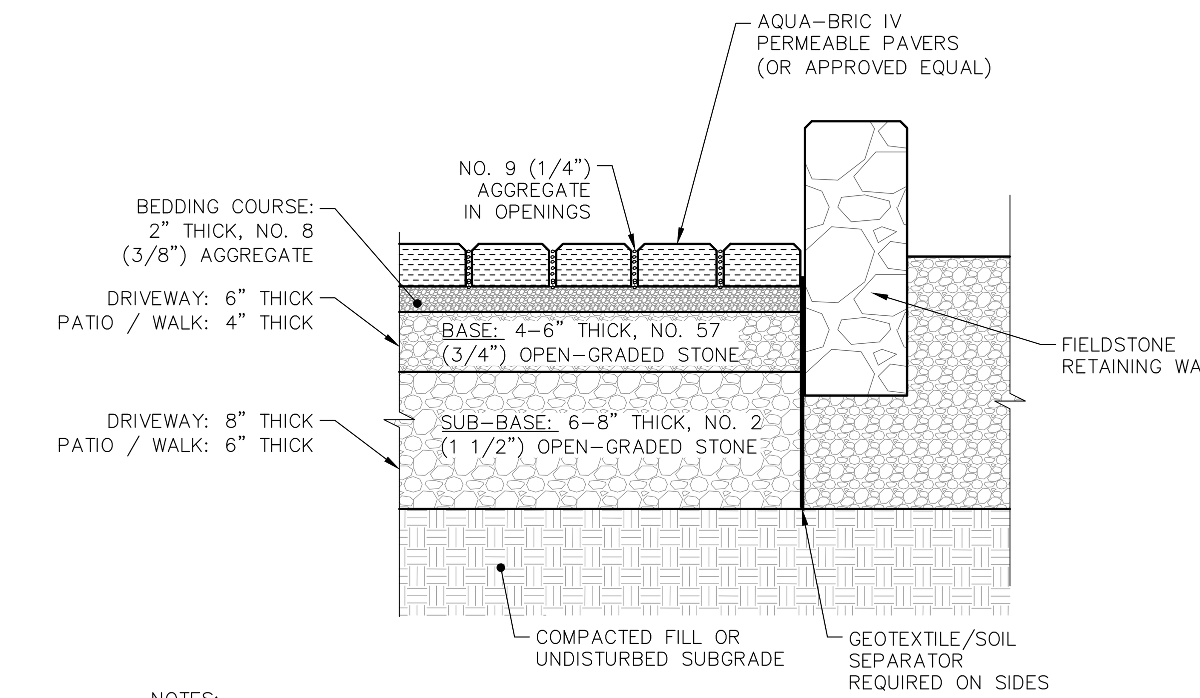


LOCATION PLAN





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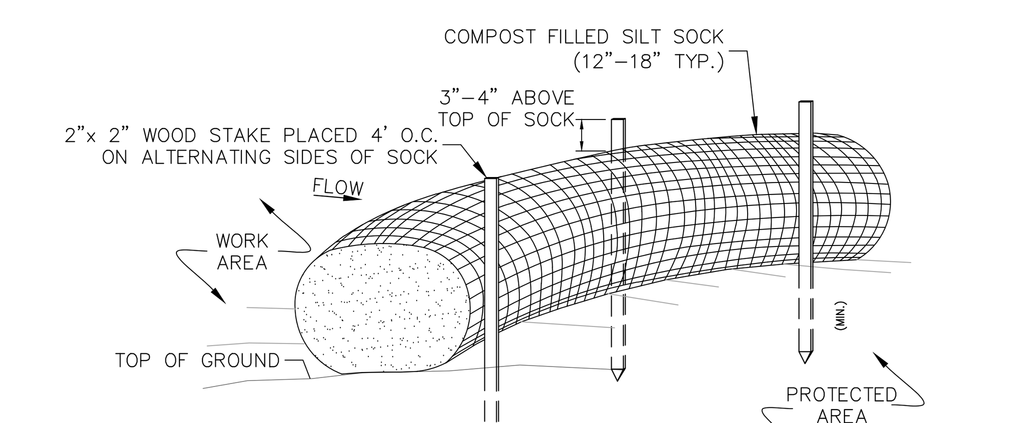
PROFILE VIEW

PERMEABLE PAVER

NOT TO SCALE



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SILT SOCK

NOT TO SCALE

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

SHORELAND IMPACT PLAN

70 PLEASANT POINT DRIVE

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

KATARA, LLC

1"=40' (11"x17")

SCALE: 1"=20' (22"x34") **JUNE 27, 2022**

HORIZONTAL SCALE 1"=20'

20 10 0 20

REV	DATE	DESCRIPTION	DR	CK

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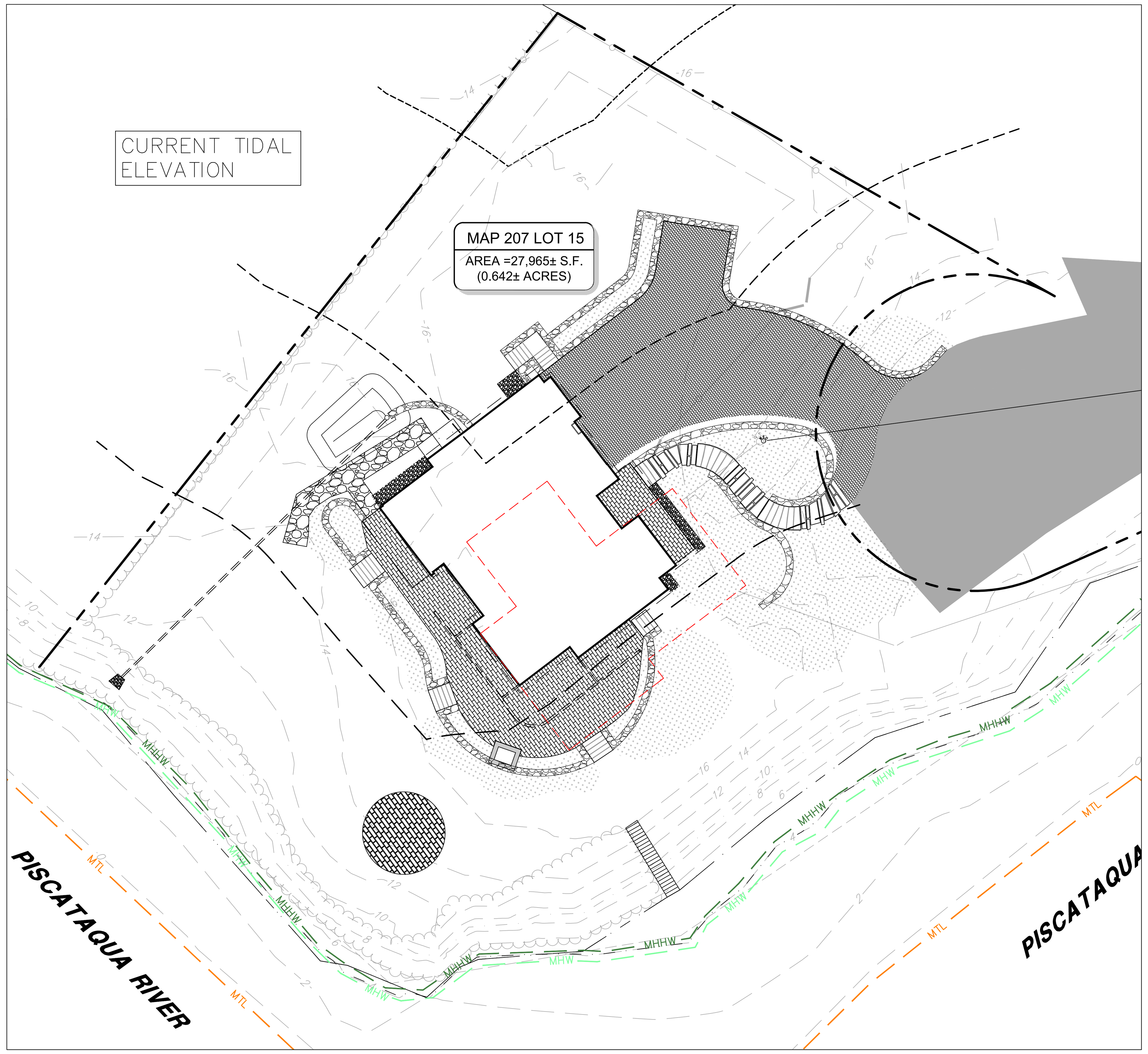
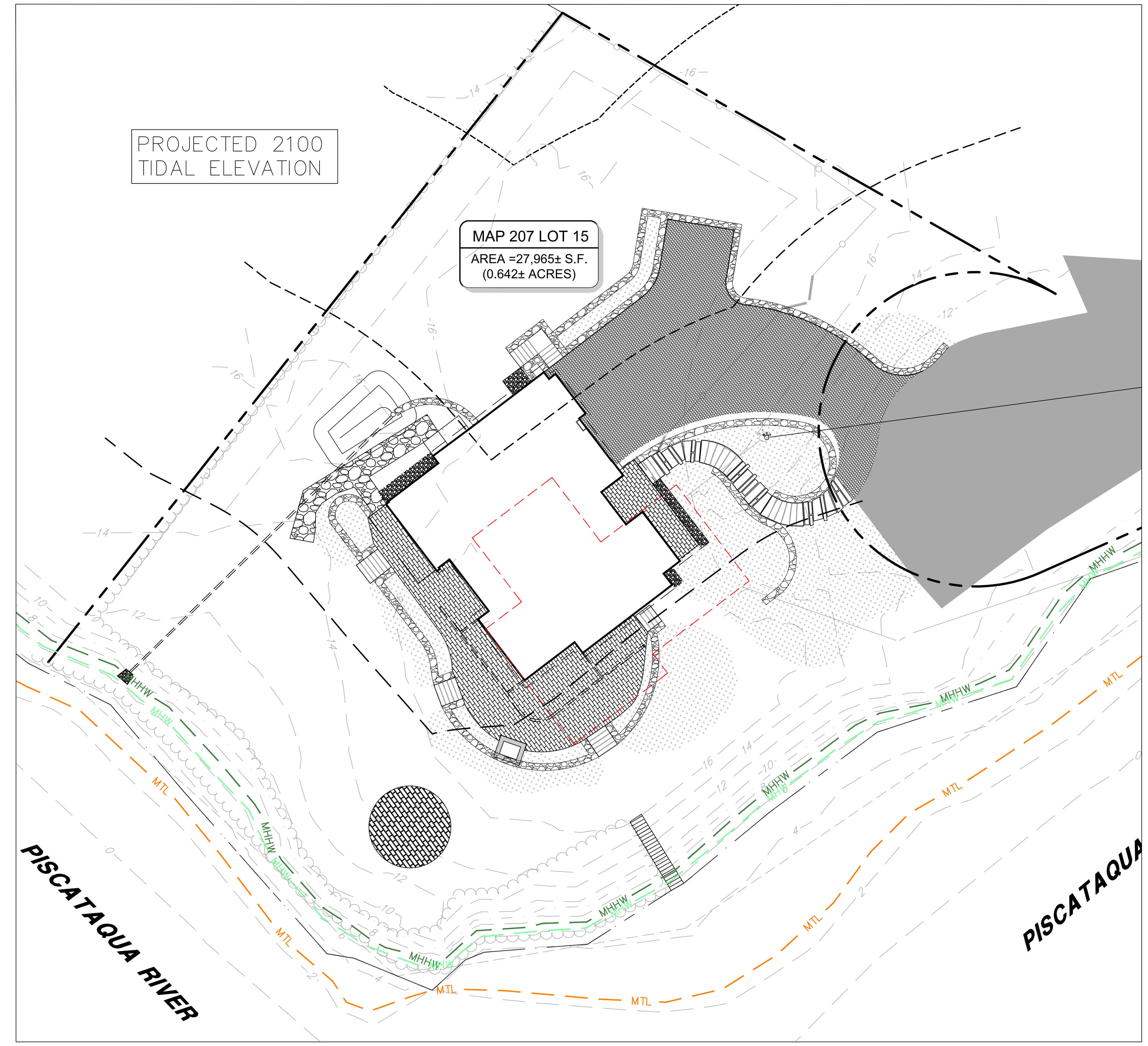
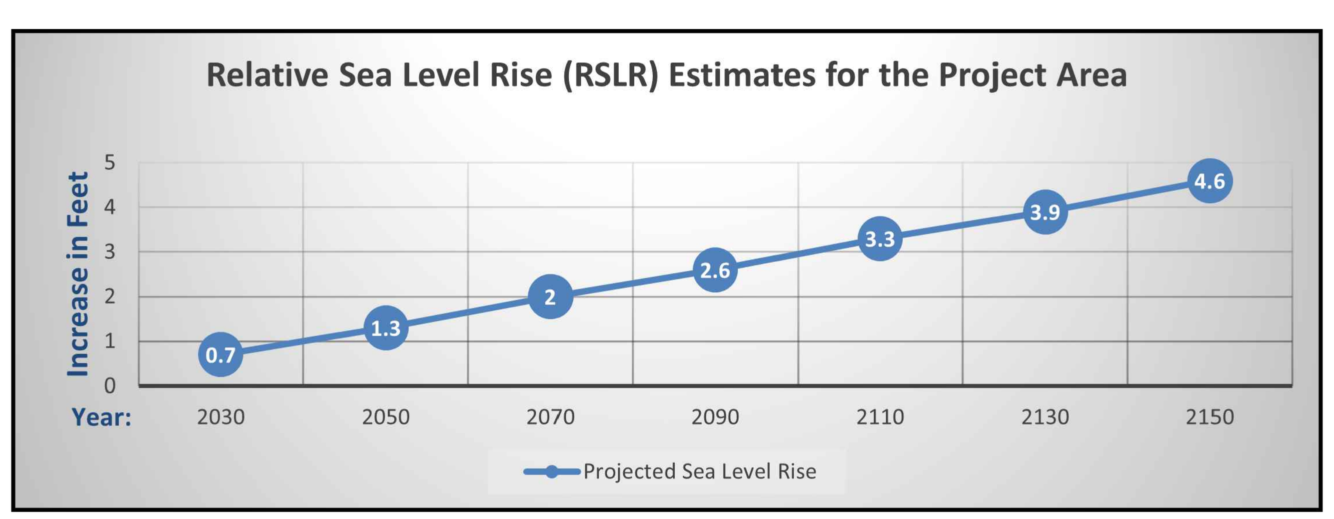
FILE	47307.01	DR JKC	FB	–	EX-03
		CK JCC	CADFILE	47307-01_NHDES SHORELAND	



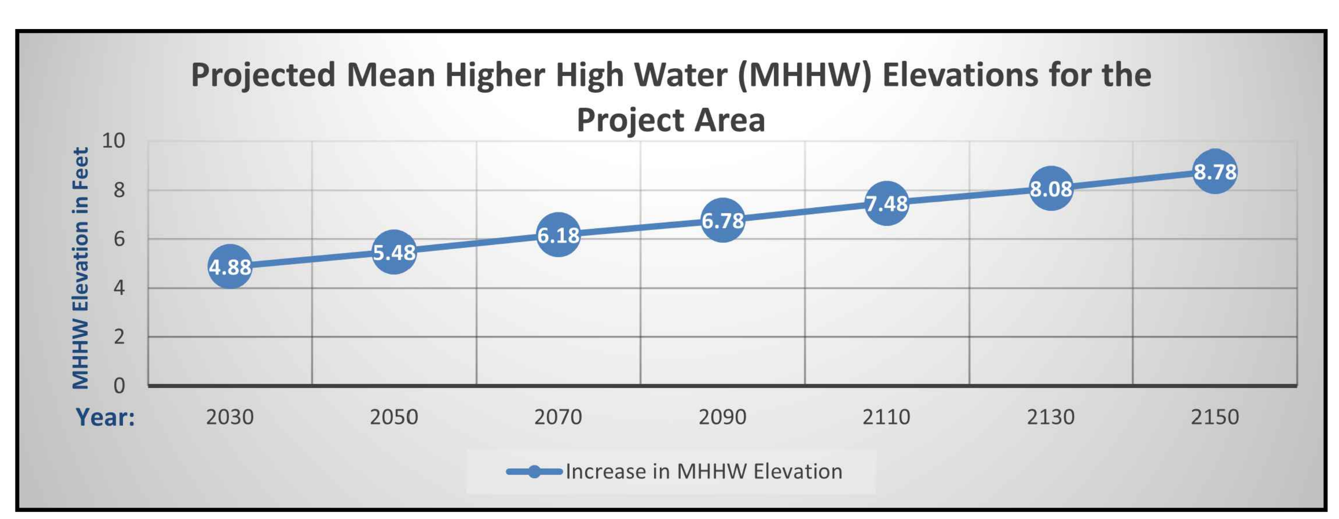


TIDAL ELEVATIONS			
	2022	2100 (PROJECTED)	
MHHW	4.18	7.13	— — — — MHHW ——
MHW	3.76	6.71	— — — — MHW ——
MTL	-0.32	2.63	— — — — MTL ——
MLW	-4.39	-1.44	
MLLW	-4.71	-1.76	

TIDAL ELEVATIONS ARE BASED ON NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA) STATION 8423898, FORT POINT, NH AND AS USED WITHIN THE TOWN OF HAMPTON VULNERABILITY ASSESSMENT PREPARED BY THE ROCKINGHAM PLANNING COMMISSION, SEPTEMBER, 2015 AND INCLUDED WITH THE NHDES WETLANDS PERMIT APPLICATION. ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)



INCREMENTAL RELATIVE SEA LEVEL RISE FOR THE PROJECT AREA BASED ON REPRESENTATIVE CONCENTRATION PATHWAY (RCP) 4.5



INCREMENTAL RELATIVE SEA LEVEL RISE FOR THE PROJECT AREA BASED ON REPRESENTATIVE CONCENTRATION PATHWAY (RCP) 4.5, A HIGH TOLERANCE FOR FLOOD RISK, AND THE CURRENT MEAN HIGHER HIGH WATER (MHHW) ELEVATION OF 4.18 FEET DETERMINED BY THE NATIONAL OCEANIC AND ATMOSPHERIC ASSOCIATION (NOAA) SEAVEY ISLAND, MAINE STATION 8419870 USING NAVD 88 DATUM.

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

HORIZONTAL SCALE 1"=20'
20 10 0 20

REV	DATE	DESCRIPTION	DR	CK

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

VULNERABILITY ASSESSMENT - PROJECTED SEA LEVEL RISE

70 PLEASANT POINT DRIVE

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

KATARA, LLC

1"=40' (11"x17")
SCALE: 1"=20' (22"x34")

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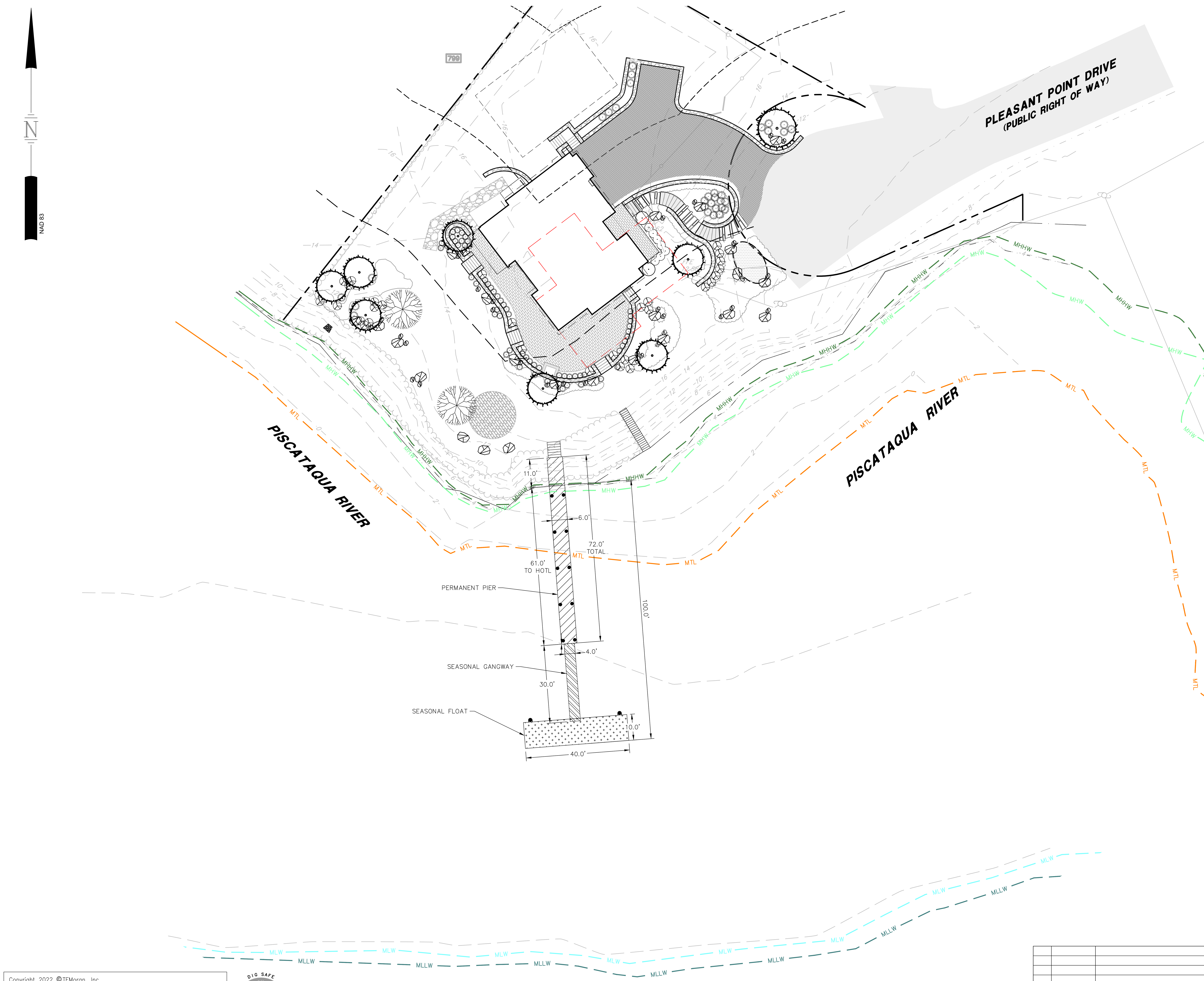
FILE	47307.01	DR	JKC	FB	–	EX-04
		CK	JCC	CADFILE	47307-01_VULNERABILITY	



TIDAL ELEVATIONS		
MHHW	4.18	MHHW
MHW	3.76	MHW
MTL	-0.32	MTL
MLW	-4.39	MLW
MLLW	-4.71	MLLW

TIDAL ELEVATIONS ARE BASED ON NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA) STATION 8419870, SEAVEY ISLAND, MAINE AND AS USED WITHIN THE CITY OF PORTSMOUTH VULNERABILITY ASSESSMENT PREPARED BY THE ROCKINGHAM PLANNING COMMISSION, SEPTEMBER, 2015 AND INCLUDED WITH THE NHDES WETLANDS PERMIT APPLICATION. ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

TIDAL DOCK REGULATIONS

THE FOLLOWING REQUIREMENTS (PROVIDED BY NHDES WB–15 "PERMITTING OF RESIDENTIAL TIDAL DOCKS") ARE MET BY THE PROPOSED TIDAL DOCK.

MINIMAL TIDAL DOCK DIMENSIONS	NHDES LIMITATIONS	PROPOSED
OVERALL STRUCTURE LENGTH	278 FEET	100 FEET
25% OF WATERWAY WIDTH AT MEAN LOW WATER	86.6 FEET	N/A
OVERALL FOOTPRINT	1,500 SF	886 SF
OVERALL FLOAT FOOTPRINT	400 SF	400 SF
DOCK IMPACTS	TEMPORARY	PERMANENT
TIDAL SURFACE WATERS	0	982 SF
TOTAL	0	982 SF

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

PROPOSED DOCKING STRUCTURE

70 PLEASANT POINT DRIVE

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

KATARA, LLC

1"=40' (11"x17")

SCALE: 1"=20' (22"x34") **JUNE 27, 2022**

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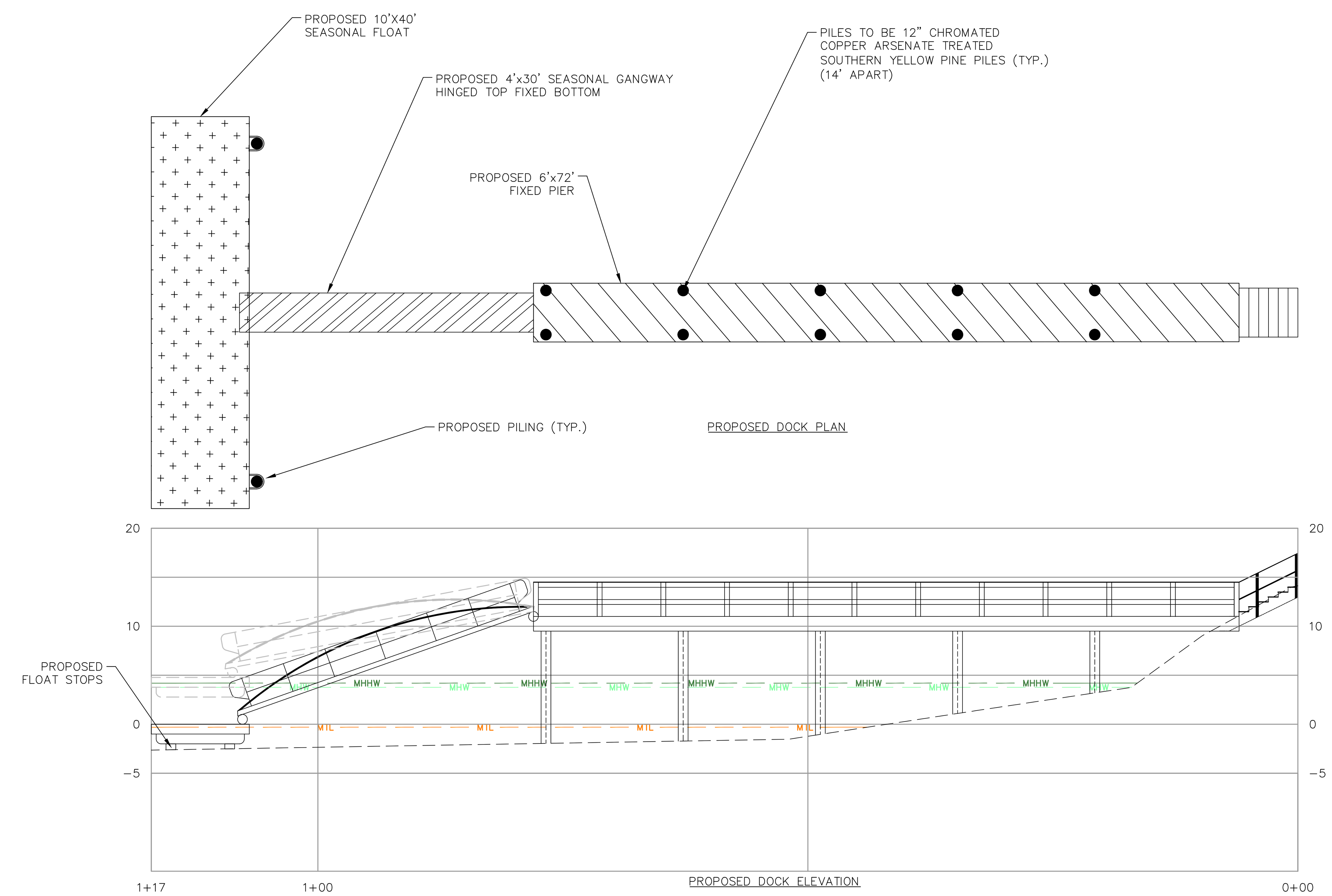
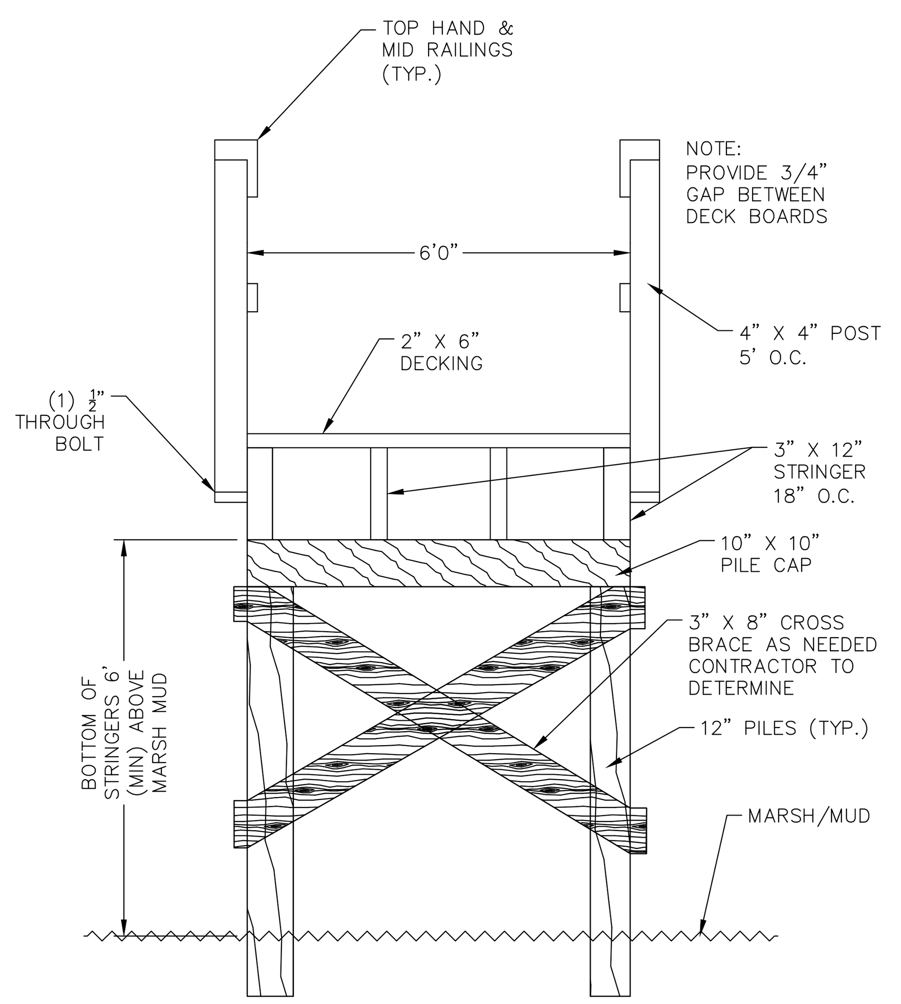
FILE	47307.01	DR	JKC	FB	–	EX–05
		CK	JCC	CADFILE	47307–01_DOCK	





SEQUENCE OF CONSTRUCTION

1. AT LEAST 48-HOURS PRIOR TO COMMENCING THE CONSTRUCTION ACTIVITIES, THE PROPERTY OWNER, OR THEIR AGENT, WILL NOTIFY NHDES VIA THE INITIATION OF CONSTRUCTION NOTIFICATION FORM.
2. MOBILIZATION OF CRANE BARGE, PUSH BOAT, WORK SKIFF, MATERIALS, AND PREFABRICATED COMPONENTS, INCLUDING THE GANGWAY AND FLOAT WILL BE TRANSFERRED TO THE PROJECT AREA.
3. THE BARGE WILL BE POSITIONED ADJACENT TO THE EXISTING DOCKING STRUCTURE AND BEYOND THE LIMITS OF ANY EMERGENT VEGETATION.
4. THE PROJECT WILL COMMENCE AT LOW TIDE TO MINIMIZE EROSION AND TURBIDITY.
5. USING THE SAME MECHANICAL VIBRATORY TECHNIQUE, THE NEW PILES WILL BE DRIVEN UNTIL REFUSAL. EACH NEW PILE WILL BE LOCATED AS DEPICTED ON THE APPROVED PLANS ASSOCIATED WITH THE APPROVED NHDES WETLANDS PERMIT.
6. ONCE THE PILINGS ARE SET, THEY ARE CUT AND BEAM CAPS ARE INSTALLED AND THE DECKING IS INSTALLED.
7. THE GANGWAY AND THE FLOAT IS LIFTED FROM THE BARGE AND SECURED TO THE PERMANENT DOCKING STRUCTURE.
8. ANY DISTURBED SOILS WITHIN THE PREVIOUSLY DEVELOPED UPLAND TIDAL BUFFER ZONE WILL BE SEEDED WITH A SHORELINE SEED MIX THAT INCLUDES SPECIES TOLERANT OF SALT AND SANDY SOILS.
9. DURING HIGH TIDE THE BARGE WILL RETREAT FROM THE AREA WITH THE EXISTING DOCKING STRUCTURE MATERIALS.
10. UPON COMPLETING THE PROJECT, THE PROPERTY OWNER, OR THEIR AGENT, WILL NOTIFY NHDES VIA THE COMPLETION OF CONSTRUCTION NOTICE AND CERTIFICATE OF COMPLIANCE FORM.

DISCHARGES, AVOIDANCE, MINIMIZATION AND MITIGATION

DISCHARGES OF DREDGED OR FILL MATERIAL INTO WATERS OF THE U.S. AND ANY SECONDARY IMPACTS SHALL BE AVOIDED AND MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE. PERMITTEES MAY ONLY FILL THOSE JURISDICTIONAL WETLANDS AND WATERWAYS THAT THE CORP AND NHDES AUTHORIZES AS SECONDARY IMPACTS. IF NOT SPECIFICALLY AUTHORIZED BY USACOE AND NHDES, ANY UNAUTHORIZED FILL OR SECONDARY IMPACT TO WETLANDS MAY BE CONSIDERED AS A VIOLATION OF THE CMA.

UNLESS SPECIFICALLY AUTHROIZED BY USACOE AND NHDES, NO WORK SHALL DRAIN A WATER OF THE U.S. BY PROVIDING A CONDUIT FOR WATER ON OR BELOW THE SURFACE.

HEAVY EQUIPMENT IN TIDAL WETLANDS

HEAVY EQUIPMENT OTHER THAN FIXED EQUIPMENT (DRILL RIGS, FIXED CRANES, ETC.) WORKING IN WETLANDS SHALL NOT BE STORED, MAINTAINED, OR REPAIRED IN WETLANDS, UNLESS IT IS LESS ENVIRONMENTALLY DAMAGING OTHERWISE, AND AS MUCH AS POSSIBLE SHALL NOT BE OPERATED WITHIN THE INTERTIDAL ZONE. WHERE CONSTRUCTION REQUIRES HEAVY EQUIPMENT OPERATION IN THE WETLANDS, THE EQUIPMENT SHALL EITHER HAVE LOW GROUND PRESSURE (<3 PSI), OR SHALL NOT BE LOCATED DIRECTLY ON WETLAND SOILS AND VEGETATION; IT SHALL BE LACED ON SWAMP MATS THAT ARE ADEQUATE TO SUPPORT THE EQUIPMENT IN SUCH A WAY AS TO MINIMIZE DISTURBANCE OF WETLAND SOIL AND VEGETATION. SWAMP MATS ARE TO BE PLACED IN THE WETLAND FROM THE UPLAND OR FROM EQUIPMENT POSITIONED ON SWAMP MATS IF WORKING IN A WETLAND. DRAGGING SWAMP MATS INTO POSITION IS PROHIBITED. OTHER SUPPORT STRUCTURES THAT ARE LESS IMPACTING AND ARE CAPABLE OF SAFELY SUPPORTING EQUIPMENT MAY BE USED WITH WRITTEN CORPS AND NHDES AUTHORIZATION. SIMILARLY, NOT USING MATS DURING FROZEN, DRY OR OTHER CONDITIONS MAY BE ALLOWED WITH WRITTEN CORPS AND NHDES AUTHORIZATION. CORDUROY ROADS AND SWAMP/CONSTRUCTION MATS ARE CONSIDERED AS FILL WHETHER THEY'RE INSTALLED TEMPORARILY OR PERMANENTLY.

TIME OF YEAR WORK WINDOW AND NOISE RESTRICTIONS

1. PILES INSTALLED IN-THE-DRY DURING LOW WATER OR IN-WATER BETWEEN NOV, 8TH - APR. 9TH, OR
2. MUST BE DRILLED AND PINNED TO LEDGE, OR
3. VIBRATORY HAMMERS USED TO INSTALL ANY SIZE AND QUANTITY OF WOOD, CONCRETE OR STEEL PILES, OR
4. IMPACT HAMERS LIMITED TO ONE HAMMER AND <50 PILES INSTALLED/DAY WITH THE FOLLOWING WOOD PILES OF ANY SIZE. CONCRETE PILES ≤ 18-INCHES DIAMETER. STEEL PILES 12-INCHES DIAMETER IF THE HAMMER IS <3000 LBS. AND A WOOD CUSHION IS USED BETWEEN THE HAMMER AND STEEL PILE FOR 2-4 ABOVE.
   I. IN-WATER NOISE LEVELS SHALL NOT >187dB SEL RE 1μPo OR 206dB PEAK RE 1μPo AT A DISTANCE >10M FROM THE PILE BEING INSTALLED AND
   II. IN-WATER NOISE LEVELS >155dB PEAK RE 1μPo SHALL NOT EXCEED 12 CONSECUTIVE HOURS ON AY GIVEN DAY AND A 12-HOUR RECOVERY PERIOD (I.E. IN-WATER NOISE BELOW 155dB PEAK RE 1μPo) MUST BE PROVIDED BETWEEN WORK DAYS.

WORK SITE RESTORATION

UPON COMPLETION OF CONSTRUCTION, ALL DISTURBED WETLAND AREAS SHALL BE PROPERLY STABALIZED. ANY SEED MIX SHALL CONTAIN ONLY PLAN SPECIES NATIVE TO NEW ENGLAND.

THE INTRODUCTION OR SPREAD OF INVASIVE PLANT SPECIES IN DISTURBED AREA IS PROHIBITED.

IN AREAS OF AUTHORIZED TEMPORARY DISTURBANCE: IF TREES ARE CUT THEY SHALL BE CUT AT GROUND LEVEL AND NOT UPROOTED IN ORDER TO PREVENT DISRUPTION TO THE WETLAND SOIL STRUCTURE AND TO ALLOW STUMP SPROUTS TO REVEGETATE THE WORK AREA, UNLESS OTHERWISE AUTHORIZED.

WETLAND AREAS WHERE PERMANENT DISTRUBANCE IS NOT AUTHORIZED SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AND ELEVATION, WHICH UNDER NO CIRCUMSTANCES SHALL BE HIGHER THAN THE PRE-CONSTRUCTION ELEVATION. ORIGINAL CONDITION MEANS CAREFUL PROTECTION AND/OR REMOVAL OF EXISTING SOIL AND VEGETATION, AND REPLACEMENT BACK TO THE ORIGINAL LOCATION SUCH THAT THE ORIGINAL SOIL LAYERING AND VEGETATION SCHEMES ARE APPROXIMATELY THE SAME.

SEDIMENTATION AND EROSION CONTROL

ADEQUATE SEDIMENTATION AND EROSION CONTROL MANAGEMENT MEASURES, PRACTICES AND DEVICES, SUCH AS PHASED CONSTRUCTION, VEGETATED FILTER STRIPS, GEOTEXTILE SILT FENCES, STORMWATER DETENTION AND INFILTRATION SYSTEMS, SEDIMENT DETENTION BASINS OR OTHER DEVICES SHALL BE INSTALLED AND PROPERLY MAINTAINED TO REDUCE EROSION AND RETAIN SEDIMENT ON-SITE DURING AND AFTER CONSTRUCTION. THEY SHALL BE CAPABLE OF PREVENTING EROSION, OR COLLECTING SEDIMENT, SUSPENDED AND FLOATING MATERIALS, AND OF FILTERING FINE SEDIMENT. THE DISTURBED AREAS SHALL BE STABILIZED AND THESE DEVICES SHALL BE REMOVED UPON COMPLETION OF WORK. THE SEDIMENT COLLECTED BY THESE DEVICES SHALL BE REMOVED AND PLACED AT AN UPLAND LOCATION IN A MANNER THAT WILL PREVENT ITS LATER EROSION INTO A WATERWAY OR WETLAND. ALL EXPOSED SOIL AND OTHER FILLS SHALL BE PERMANENTLY STABILIZED AT THE EARLIEST PRACTICABLE DATE.

SPAWNING AREAS

DISCHARGES OF DREDGED OR FILL MATERIAL, AND/OR SUSPENDED SEDIMENT PRODUCING ACTIVITIES IN FISH AND SHELLFISH SPAWNING OR NURSERY AREAS, OR AMPHIBIAN AND MIGRATORY BIRD BREEDING AREAS, DURING SPAWNING OR BREEDING SEASONS SHALL BE AVOIDED. IMPACTS TO THESE AREAS SHALL BE MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE DURING ALL TIMES OF THE YEAR. INFORMATION ON SPAWNING HABITAT FOR SPECIES MANAGED UNDER THE MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT (I.E. EFH FOR SPAWNING ADULTS) CAN BE OBTAINED FROM THE NMFS WEBSITE AT WWW.NERO.NOAA.GOV/HCD.

INSPECTIONS

THE PERMITTEE SHALL ALLOW THE CORPS AND NHDES TO MAKE PERIODIC INSPECTIONS AT ANY TIME DEEMED NECESSARY IN ORDER TO ENSURE THAT THE WORK IS BEING OR HAS BEEN PERFORMED IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THIS PERMIT. THE CORPS AND NHDES MAY ALSO REQUIRE POST-CONSTRUCTION ENGINEERING DRAWINGS FOR COMPLETED WORK, AND POST-DREDGING SURVEY DRAWINGS FOR ANY DREDGING WORK.

TIDAL ELEVATIONS

	2022	2100(PROJECTED)	
MHHW	4.18	7.13	MHHW
MHW	3.76	6.71	MHW
MTL	-0.32	2.63	MTL
MLW	-4.39	-1.44	MLW
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HORIZONTAL SCALE 1"=10'
10 5 0 10

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

DOCK DETAILS

70 PLEASANT POINT DRIVE

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

KATARA, LLC

1"=20' (11"x17")
SCALE: 1"=10' (22"x34")

JUNE 27, 2022

REV	DATE	DESCRIPTION	DR	CK

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
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www.tfmoran.com

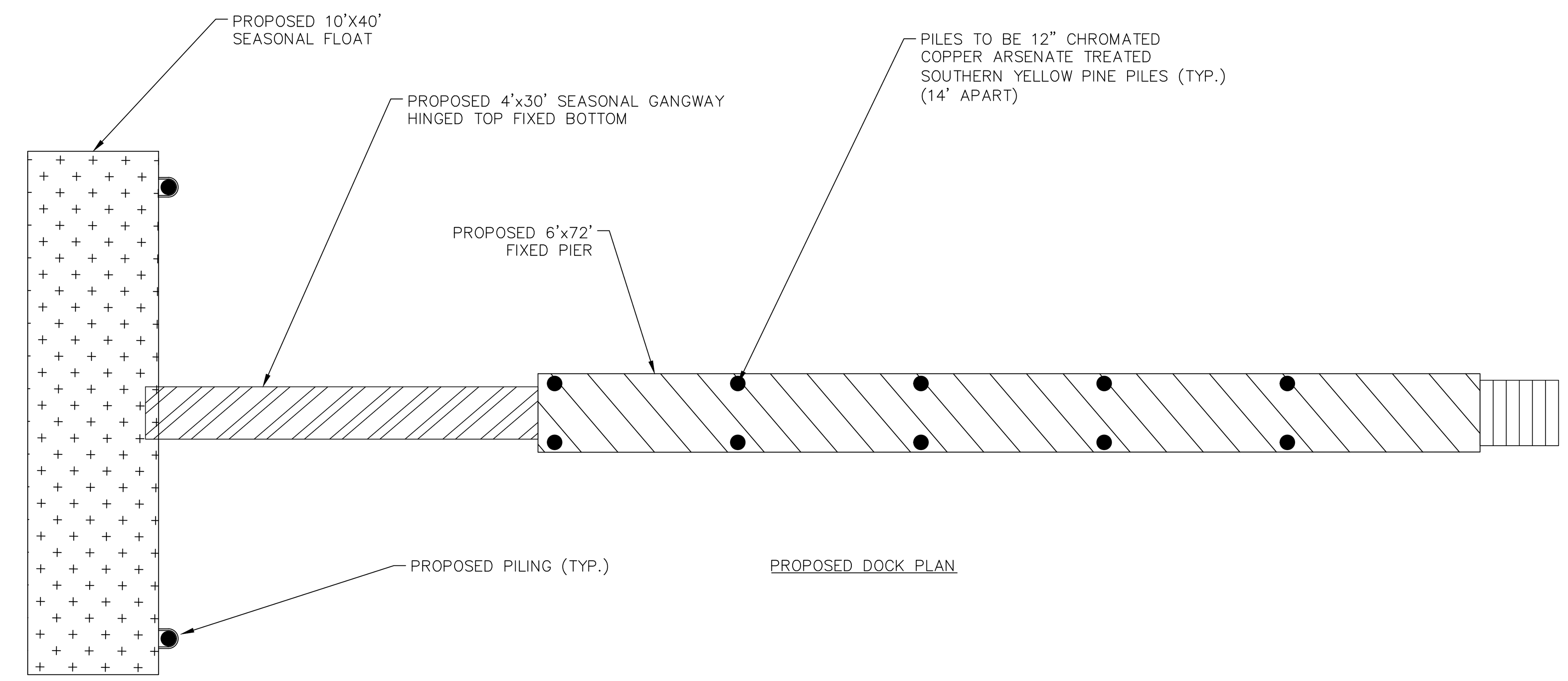
FILE	DR	JKC	FB	-	
47307.01	CK	JCC	CADFILE	47307-01_DOCK	EX-06

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

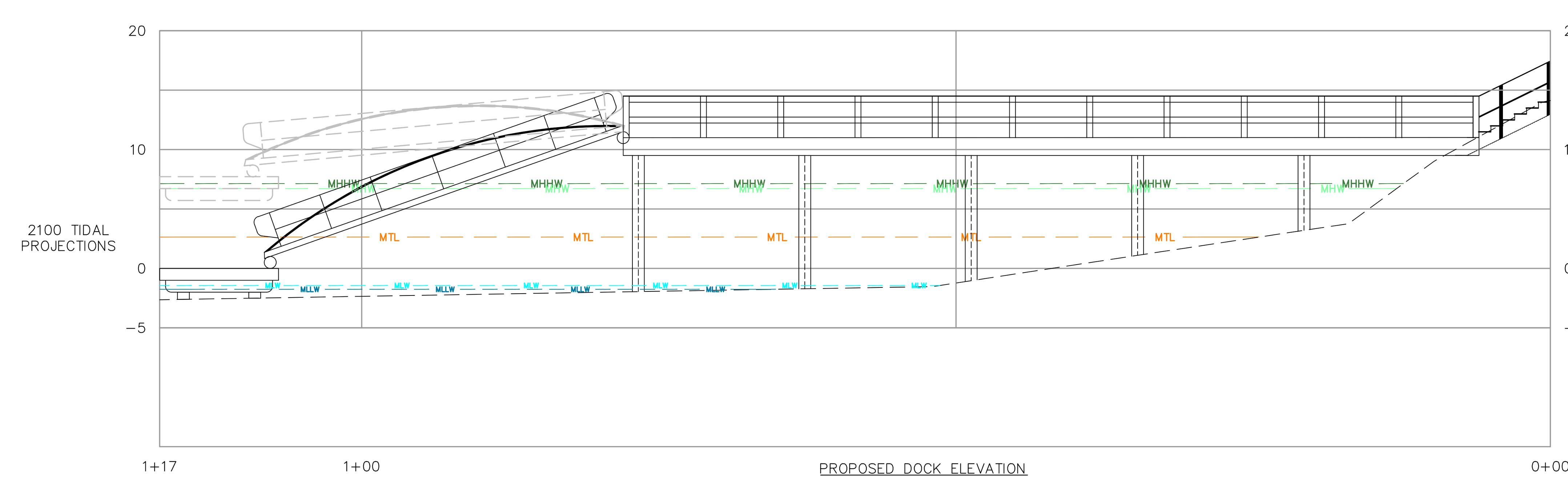
TIDAL ELEVATIONS

	2022	2100 (PROJECTED)	
MHHW	4.18	7.13	MHHW
MHW	3.76	6.71	MHW
MTL	-0.32	2.63	MTL
MLW	-4.39	-1.44	MLW
MLLW	-4.71	-1.76	MLLW

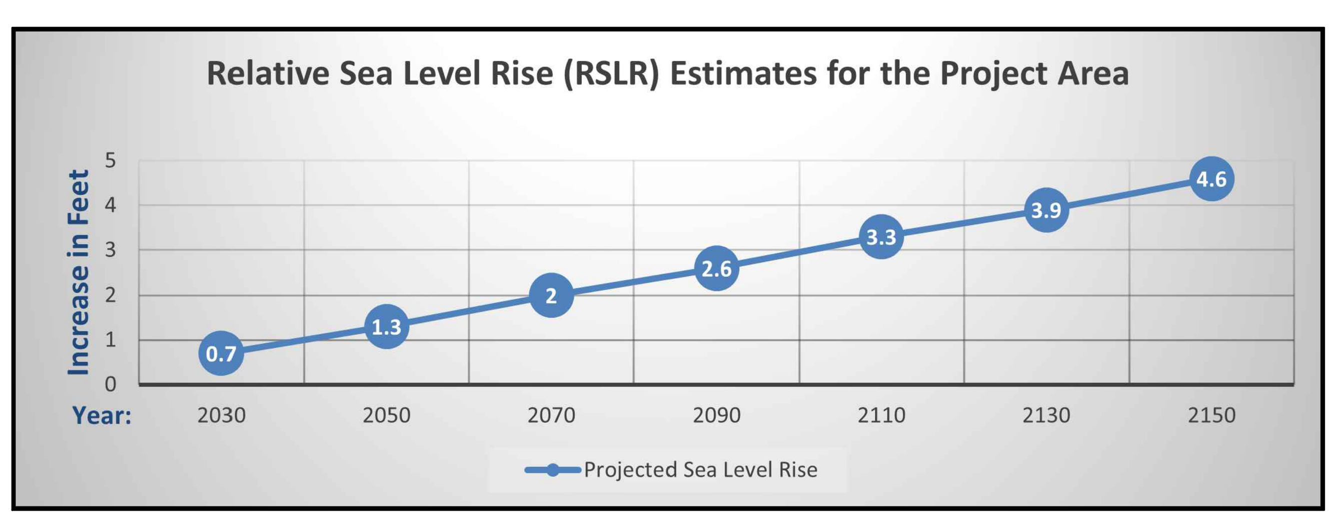
TIDAL ELEVATIONS ARE BASED ON NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA) STATION 8423898, SEAVEY ISLAND, NH AND AS USED WITHIN THE TOWN OF HAMPTON VULNERABILITY ASSESSMENT PREPARED BY THE ROCKINGHAM PLANNING COMMISSION, SEPTEMBER, 2015 AND INCLUDED WITH THE NHDES WETLANDS PERMIT APPLICATION. ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)



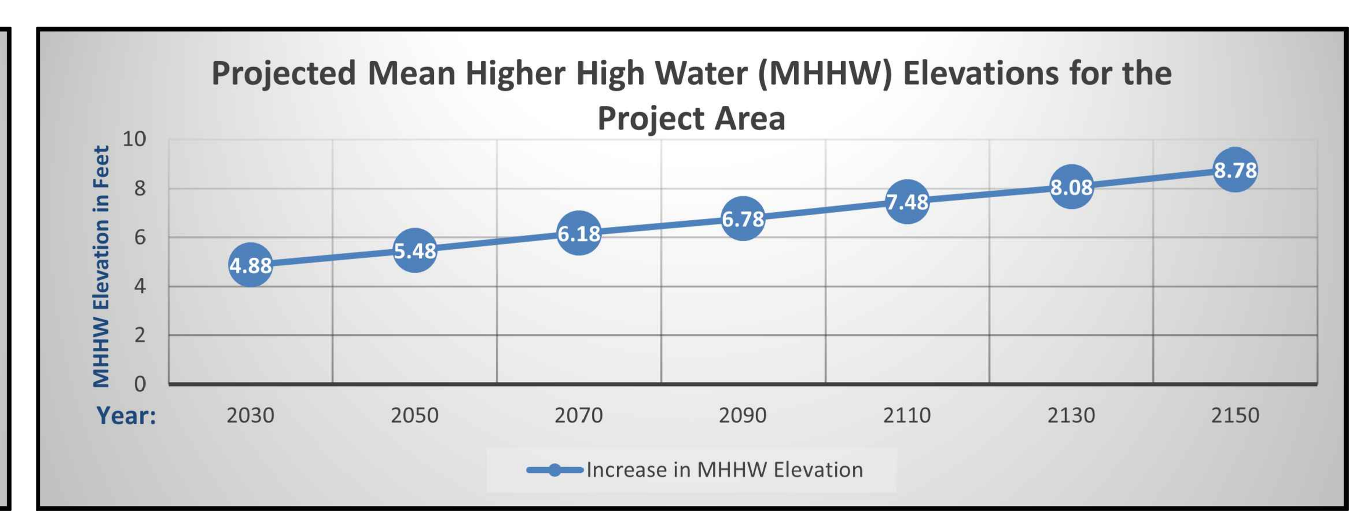
PROPOSED DOCK PLAN



PROPOSED DOCK ELEVATION



INCREMENTAL RELATIVE SEA LEVEL RISE FOR THE PROJECT AREA BASED ON REPRESENTATIVE CONCENTRATION PATHWAY (RCP) 4.5



INCREMENTAL RELATIVE SEA LEVEL RISE FOR THE PROJECT AREA BASED ON REPRESENTATIVE CONCENTRATION PATHWAY (RCP) 4.5, A HIGH TOLERANCE FOR FLOOD RISK, AND THE CURRENT MEAN HIGHER HIGH WATER (MHHW) ELEVATION OF 4.18 FEET DETERMINED BY THE NATIONAL OCEANIC AND ATMOSPHERIC ASSOCIATION (NOAA) SEAVEY ISLAND, MAINE STATION 8419870 USING NAVD 88 DATUM.

SITE DEVELOPMENT PLANS

TAX MAP 207 LOT 15

VULNERABILITY ASSESSMENT - PROJECTED SEA LEVEL RISE

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HORIZONTAL SCALE 1"=10'
10 5 0 10

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FILE	47307.01	DR JKC	FB	–	EX-07
		CK JCC	CADFILE	47307-01_DOCK	

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Jun 27, 2022 - 9:40am
F:\MSC Projects\47307 - Pleasant Point Dr - Portsmouth\47307-01 - Katara - 70 Pleasant Point Drive\Design\PRODUCTION DRAWINGS\NHDES\47307-01_Dock.dwg