Memorandum

To: Mr. Charles Rowley, P.E

Date: October 27, 2021
Project #: 73170.00

From: Curtis Quitzau, P.E.

Re: 3013 Cranberry Highway Supplemental Test Pits

We are pleased to report that six supplemental test pits (two in each proposed infiltration area) were excavated on October 21 by Aries Engineering for the purpose of observing soils conditions and confirming groundwater elevations for the proposed Reign car wash project. The test pit logs and letter report (attached) indicate that depth to ground water was observed from 3′ to 6.4′ depth measured from existing surface grades.

Actual ground water elevations can easily be determined from the topographic surface model of the project site that is based upon field survey conducted by VHB in January 2021. The attached plan exhibit shows the existing site topography at 0.1′ contour interval (NAVD 1988) and the location of all soils testing data points, which includes the original borings conducted by Terracon Consultants, Inc., the Geotechnical Engineer, and the more recent test pits conducted by Aries Engineers. VHB tabulated the surface and groundwater elevations across the site and the results show that groundwater elevation ranges from elevation 5.7′ toward the south eastern side of the site to elevation 6.5′ on the northwest side of the site. Soils observations from the test pit program are generally consistent with the boring data – the subsurface material is composed of loose to medium dense poorly graded sand; some of which is fill. Test pit no. 6 encountered organics in the upper 3 feet of fill material and loamy sand to the excavated depth. The test pit was conducted in a landscape island so it is likely plantable soil from previous construction, which will be removed and replaced with native sands during construction of the car wash.

VHB had assumed a groundwater elevation of 7.0′ for design of the infiltration basins to follow the recommendation of the Geotechnical Engineer as a conservative estimate of seasonally high ground water. The actual elevations observed in both the borings and the test pits are all slightly lower, therefore the data supports VHB's conclusion that the stormwater management basins comply with DEP's requirements as our design provides more than the minimum 2.0′ separation between the bottom of the infiltration basins and seasonal high ground water.

It is our understanding that depth to ground water was your one remaining outstanding concern relative to the stormwater management design, and with these results we respectfully request your concurrence that this issue has been satisfactorily addressed.

1 Cedar Street
Suite 400
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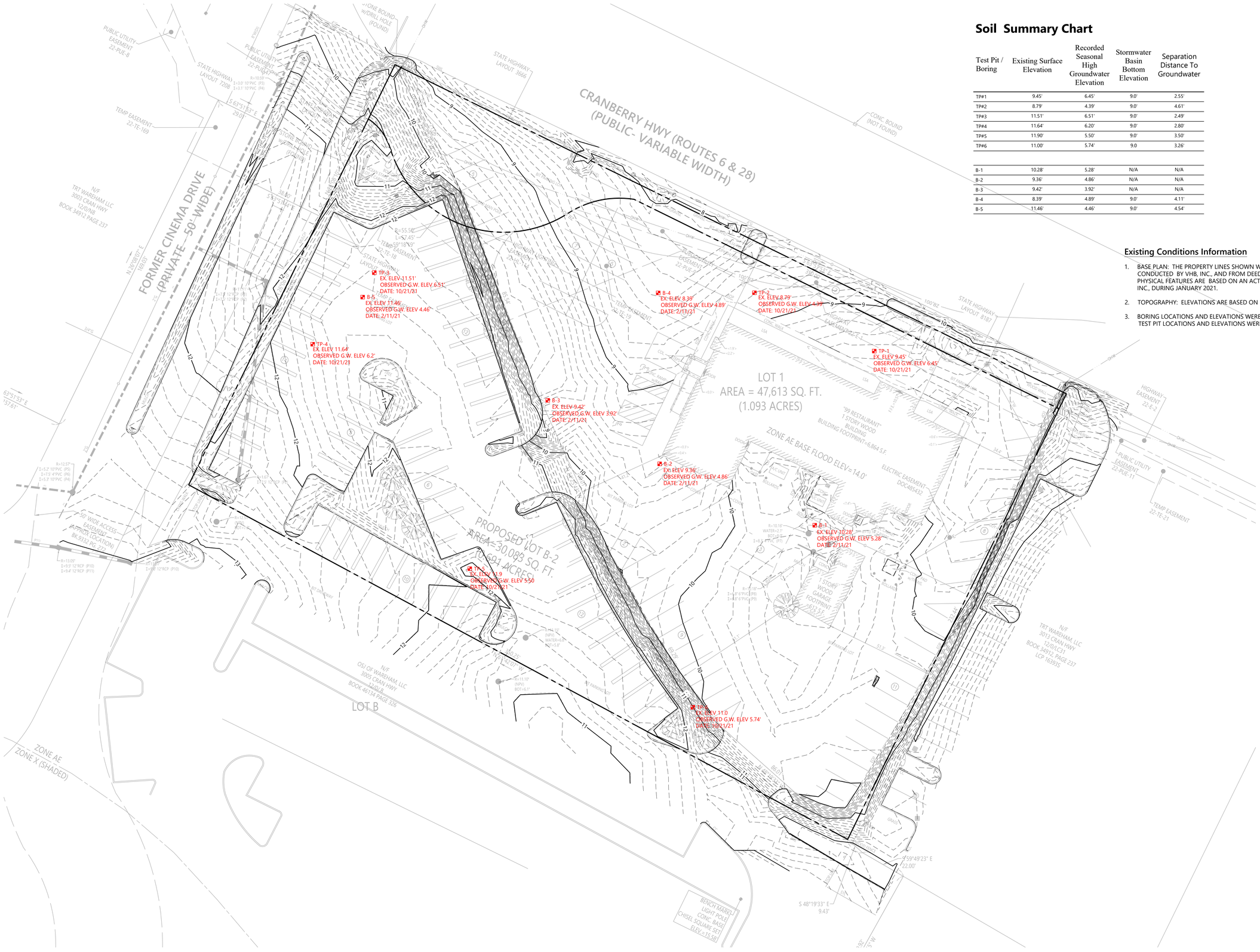
P 401.272.8100



Soil Summary Chart

Test Pit / Boring	Existing Surface Elevation	Recorded Seasonal High Groundwater Elevation	Stormwater Basin Bottom Elevation	Separation Distance To Groundwater
TP#1	9.45'	6.45'	9.0'	2.55'
TP#2	8.79'	4.39'	9.0'	4.61'
TP#3	11.51'	6.51'	9.0'	2.49'
TP#4	11.64'	6.20'	9.0'	2.80'
TP#5	11.90'	5.50'	9.0'	3.50'
TP#6	11.00'	5.74'	9.0	3.26'
B-1	10.28'	5.28'	N/A	N/A
B-2	9.36'	4.86'	N/A	N/A
B-3	9.42'	3.92'	N/A	N/A
B-4	8.39'	4.89'	9.0'	4.11'
B-5	11.46'	4.46'	9.0'	4.54'

Existing Conditions Information

1. BASE PLAN: THE PROPERTY LINES SHOWN WERE DETERMINED BY AN ACTUAL FIELD SURVEY CONDUCTED BY VHB, INC., AND FROM DEEDS AND PLANS OF RECORD. THE TOPOGRAPHY AND PHYSICAL FEATURES ARE BASED ON AN ACTUAL FIELD SURVEY PERFORMED ON THE GROUND BY VHB, INC., DURING JANUARY 2021.
2. TOPOGRAPHY: ELEVATIONS ARE BASED ON NAVD OF 1988.
3. BORING LOCATIONS AND ELEVATIONS WERE OBTAINED FROM TERRACON CONSULTANTS, INC.. TEST PIT LOCATIONS AND ELEVATIONS WERE OBTAINED FROM ARIES ENGINEERING.

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0 10 20 40 Feet

Reign Car Wash, Wareham

3013 Cranberry Highway
Wareham, Massachusetts

No.	Revision	Date	Appvd.

Designed by kc | Checked by

Issued for: Information | Date: October 27, 2021

Not Approved for Construction

Drawing Title: Test Pit Elevations

Drawing Number: TP-1

Sheet 1 of 1

Project Number: 73170.00