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1.0	1.0	1.0	0.5	1.5	2.0	1.0	0.5	3.0	4.0	2.0	1.0	4.5	6.5	3.0	2.0	10.0	14.0	7.5	4.0	CEMENTED GRAVEL AND SAND	4
1.0	1.5	1.0	0.5	2.0	2.5	1.5	1.0	3.5	5.0	3.0	1.5	6.0	8.5	5.0	2.5	13.0	18.5	10.0	5.0	COARSE AND FINE COMPACT SAND	
1.5	2.5	1.5	1.0	2.5	3.5	2.0	1.0	5.5	7.5	4.0	2.0	9.0	13.0	7.0	3.5	20.0	27.5	15.0	8.0	MEDIUM CLAY (CAN BE SPADED)	
3.0	4.5	2.5	1.5	5.0	7.0	4.0	2.0	10.5	15.0	8.0	4.0	18.0	25.0	14.0	7.0	39.0	55.0	30.0	15.0	SOFT CLAY	
MAX	(IMUM)	WATE	R PRF	SSUR	F =	300 F	SI	NOTE	RFD	UCFR	BFAR	ING A	RFA =	= 45°	BENI		R	PIPF	GATE	VAIVF = F	

WATER LINE DISINFECTION AND LEAKAGE TESTING:

DISINFECTING

- 1. DISINFECTION MAY BE DONE USING LIQUID CHLORINE AND SHALL BE APPLIED BY THE CONTINUOUS FEED METHOD SO THAT THE CHLORINE CONCENTRATION IN THE PIPE IS MAINTAINED AT A MINIMUM OF 50 MG/L. AFTER THE LINE IS FILLED, A 24 HOUR PERIOD SHALL ELAPSE BEFORE THE CHLORINE RESIDUAL IS DETERMINED; THE MINIMUM LIMIT BEING 10 MG/L. DISINFECTION SHALL BE PROVIDED IN ACCORDANCE WITH THE REQUIREMENTS PRESCRIBED BY THE AWWA STANDARD C651-86 PLUS THE LATEST EDITION, AND AS APPROVED BY THE OWNER. ALL VALVES IN THE LINES BEING STERILIZED SHALL BE OPENED AND CLOSED SEVERAL TIMES DURING THE CONTACT PERIOD.
- 2. SAMPLES OF WATER: SAMPLES OF WATER SHALL BE TAKEN BY THE CONTRACTOR AND A LABORATORY ANALYSIS PERFORMED BY AN INDEPENDENT LABORATORY SATISFACTORY TO THE ENGINEER AND QUALIFIED TO ANALYZE PUBLIC WATER SUPPLY SAMPLES AT THE CONTRACTOR'S EXPENSE TO DETERMINE THE EFFECTIVENESS OF DISINFECTION. THERE SHALL BE TWO SAMPLES TAKEN FROM EACH WATER LINE, ONE FROM MIDWAY AND ONE FROM THE FLUSHING HYDRANTS AT THE END OF THE LINE, IF THE SAMPLES TESTED FAIL TO MEET LABORATORY STANDARDS AS DETERMINED BY THE OWNER (0 COLIFORM), THE PIPELINES SHALL BE REPEATEDLY TREATED BY THE CONTRACTOR, AT NO ADDITIONAL EXPENSES TO THE OWNER, UNTIL THE DESIRED RESULTS ARE OBTAINED.
- 3. WATER SHALL BE FLUSHED FROM THE LINE TAKING CARE TO ALLOW CHLORINATED WATER TO FLOW OVER GRASSED AREAS, SEVERAL HUNDRED FEET FROM ANY STREAM SO AS TO ALLOW CHLORINE ABOVE 2 MG/L FROM ENTERING STREAMS.

LEAKAGE TEST:

1. ALL PIPES SHALL UNDERGO A HYDROSTATIC PRESSURE TEST FOR AT LEAST A 2 -HOUR PERIOD AT THE PIPE'S RATED PRESSURE, OR AT 150% OF THE WORKING PRESSURE, AS DETERMINED BY THE ENGINEER, WHICHEVER IS GRATER. LEAKAGE ALLOWED IN ALL PIPE TESTING SHALL BE CALCULATED BASED ON EQUATIONS IN AWWA C651 (LATEST EDITION). PIPE LINES SHALL BE FILLED WITH WATER, CARE BEING TAKEN IN THE FILLING PROCESS TO ELIMINATE ALL AIR POCKETS AND BUBBLES. AFTER THE PIPELINES HAVE BEEN FILLED, AND ALL AIR RELEASED, THE PRESSURE IN THE PIPING SHALL BE INCREASED UNTIL THE TEST PRESSURE, AS DETERMINED BY THE ENGINEER, HAS BEEN OBTAINED. THE PRESSURE SHALL BE MAINTAINED WITHIN 5 PSI OF THE TEST PRESSURE FOR AT LEAST 2 HOURS.

THE LEAKAGE TEST SHALL BE PERFORMED SIMULTANEOUSLY WITH THE PRESSURE TEST. WATER SHALL BE PUMPED FROM A RESERVOIR OF KNOWN VOLUME INTO THE MAIN. THE AMOUNT OF WATER DRAWN FROM THE RESERVOIR WILL BE THE ACTUAL LEAKAGE. THE LEAKAGE SHALL NOT EXCEED 10 GALLONS PER INCH OF DIAMETER PER MILE OF PIPE PER 24 HOURS.

ALL LEAKAGE TESTS SHALL BE CONDUCTED UNDER THE DIRECT SUPERVISION OF THE ENGINEER. THE OWNER, STATE AND ENGINEER SHALL BE FURNISHED A WRITTEN DOCUMENT OF ALL LEAKAGE TEST RESULTS. UNLESS OTHERWISE PERMITTED OR DIRECTED BY THE ENGINEER, TESTING SHALL BE DONE ON THE BURIED PIPE. THE LAST PIPE SECTION BEING AT LEAST PARTIALLY COVERED WITH BACKFILL.

- 2. EVALUATION OF RESULTS/CORRECTIVE ACTIONS: FOR LEAKING PIPE FITTINGS OR VALVES.
- A. PIPE FITTINGS OR VALVES FOUND DEFECTIVE SHALL BE REPLACED AND ALL LEAKING JOINTS SHALL BE MADE TIGHT, BY THE CONTRACTOR, AS DIRECTED BY THE OWNER. THE TESTS SHALL BE REPEATED AS OFTEN AS NECESSARY, AT NO ADDITIONAL EXPENSE TO THE OWNER, TO ASSURE THE OWNER THAT ALL PIPING, VALVES AND APPURTENANCES ARE FREE OF DEFECTS AND THAT ALL JOINTS ARE TIGHT. ALL VISIBLE LEAKS IN THE JOINTS SHALL BE STOPPED, AND ANY CRACKED OR DEFECTIVE PIPE, PIPE FITTING OR VALVE SHALL BE REMOVED AND REPLACED WITH NEW MATERIAL BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER. THE PRESSURE TEST SHALL BE MAINTAINED FOR A PERIOD OF NOT LESS THAN ONE HOUR AFTER ALL VISIBLE LEAKS IN THE PIPE HAVE BEEN STOPPED AD CORRECTIVE WORK HAS BEEN SATISFACTORILY COMPLETED.

STORM CULVERT/WATER LINE CROSSING





horizons
Engineering
Civil and Structural Engineering Land Surveying and Environmental Consulting
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No. 16736
NH STATE PARKS
Campground Expansion Project Pil Jericho Mountain State Park
298 Jericho Lake Road Berlin, NH
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1. This subsurface disposal system has been designed in accordance with the rules, regulations, standards, and practices of the New Hampshire Department of Environmental Services (NHDES) and municipal regulations. Installation shall be done in accordance with this set of plans and any conditions listed on the NHDES Construction Approval. EDA = Effluent Disposal

2. <u>SEWER PIPE, EFFLUENT PIPE AND PUMP DISCHARGE PIPE</u> A. Sewer pipe, effluent pipe, pump discharge pipe and fittings shall be specified in Design Data.

B. Unless otherwise noted, minimum depth of cover of sewer and effluent pipes shall be 12". Where beneath an area to be clear of snow, pipes shall be protected from freezing by placement of 2" by 24" closed cell rigid board insulation centered

C. Pump discharge pipes shall be installed with a minimum uninsulated depth of cover of 6' to finish grade. In no situation, other than rise to Pump Chamber and D-box, shall pipes be installed at less than 36" depth of cover and shall be protected from freezing by placement of 4" by 24" closed cell rigid board insulation centered on top of the pipe. D. Sewer or effluent pipe located within 75' of surface water, open drainage or private on-site well shall be SDR 26 or

E. Where sewer pipes, effluent pipes or pump discharge pipes cross electric/communication cables or wetlands, pipes shall be sleeved in larger diameter schedule 40 PVC pipe; sleeves shall be made watertight by plastic solvent welded joints and sealing sleeve ends with a flexible rubber sealant. Sleeve ends' locations shall be recorded for future reference. Sleeve lengths for crossings shall be a minimum of 10' beyond both sides of the crossing.

3. SEPTIC TANKS, PUMP CHAMBERS AND DISTRIBUTION BOXES (D-BOX)

A. Unless noted otherwise, all septic tanks, pump chambers and d-boxes are to be watertight pre-cast concrete or high molecular weight HDPE and are to be set on firmly compacted ground to prevent differential settling with inlet and outlet inverts at elevations indicated.

B. Septic tank, pump chamber and distribution box shall have appropriate inlet and outlet baffles constructed from 4"Ø plastic tees secured to the pipe using stainless steel screws. The inlet baffles shall be constructed to divert incoming sewage and effluent downward. Use of 6"Ø inlet baffle riser is recommended. Access to each compartment and baffle shall be through a removable cover set directly on the tank or through a riser. At grade covers shall be protected against unauthorized opening by either locking, mechanically fasteners or constructed of cast iron or weight equivalent. C. Connections between a septic tank and the inlet and outlet shall be sealed with a watertight, flexible joint connector that will accommodate normal movement of the septic tank without leaking or breaking.

D. Make abandoned inlet from existing building watertight. 4. The installer shall contact HORIZONS ENGINEERING, INC. prior to and/or during construction if any deviations between the site and this plan are noted or if any construction changes are required.

5. NHDES construction approvals expire 4 years from the date of issue.

6. HORIZONS ENGINEERING, INC. assumes no control over installation practices or the end use of the sewage disposal system and therefore cannot guarantee the proper operation of the disposal system or disposal system life expectancy.

INDIVIDUAL SEWAGE DISPOSAL SYSTEM DESIGN DATA

AT EDA: 55C (HERMON SANDY LOAM, - SLOPES, VERY STONY) ATE: 4 MINUTES/INCH TO ESHWT: 48" TO LEDGE: NONE OBSERVED"	PUMP CHAMBER REQUIREMENTS - 2"Ø SCH 40 PVC OR GALVANIZED PIPE/FITTINGS FOR INTERNAL PLUMBING - (2) PUMP EQUIVALENT TO MYERS ME50 - CONTROL PANEL EQUIVALENT TO SJE-RHOMBUS EZ SIMPLEX - FLOAT SWITCHES EQUIVALENT SJE-RHOMBUS PUMPMASTER - NEMA 4X NON-CORROSIVE PVC JUNCTION BOX
PIPE REQUIREMENTS LE 40 PVC OR SDR 26 PLASTIC PIPE	- 2"Ø DISCONNECT EQUIVALENT TO CAMPBELL/MARTINSON - 2"Ø FLEXIBLE DISCHARGE PIPE (160 PSI RATED MIN)
K REQUIREMENTS 0.02(B)) ALL 2X THE DAILY FLOW ,280 GALLONS 9/464 GALLON 2 COMPARTMENT N SECOND COMPARTMENT AJ FOSS	EFFLUENT PIPE/FORCE MAIN REQUIREMENTS - 2"Ø FLEXIBLE DISCHARGE PIPE (160 PSI RATED MIN) MUST BE CAPABLE OF BEARING VEHICULAR LOADS EDA REQUIREMENTS MIN. 5 OUTLET D-BOX EQUIVALENT TO AJ FOSS 8' X 8' CONCRETE CHAMBERS EQUIVALENT TO AJ FOSS CAMP SITES SERVED: 19 REQUIRED SEWAGE LOADING: 19 SITES X 60 GPD/SITE = 1,140 GPD DESIGN SEWAGE LOADING = 1,140 GPD PERCOLATION RATE: 4 MINS / INCH CONCRETE CHAMBERS USE TABLE 1016-1 140 SQ FT PER 100 GPD =(1,140/100) * 140 = 1,596 * 0.6
	FOR CONCRETE CHAMBERS = 958 SQ FT USE 18, 8'X8' CHAMBERS = 1,152 SQ FT PROVIDED

UNLESS OTHERWISE NOTED, ELEVATIONS LISTED ARE THE INVERT OF THE LISTED COMPONENT.

COMBIN. TANK	D-BOX	EDA
INLET: 1313.9	INLET: 1343.7	PIPE INVERT: 1343.4
PUMP OFF: 1308.8	OUTLET: 1343.5	BOTTOM OF CHAMBER: 1343.0

DESIGN INTENT: THE BOTTOM OF THE CHAMBER IS APPROXIMATELY 0.0 FEET (AT) EXISTING GRADE AT THE HIGH CONTOUR OF THE DESIGNED EFFLUENT DISPOSAL AREA.

MEDIUM TO COARSE TEXTURED SAND WITH AN EFFECTIVE SIZE OF 0.25 TO 2.0 MM, NO GREATER THAN 5% PASSING THE #200 SIEVE AND NO PARTICLE SIZE LARGER THAN $\frac{3}{4}$ ". ALTERNATIVELY, MATERIAL MEETING THE ASTM C-33 SPECIFICATION. FILL SHALL BE CLEAN BANK SAND SAND, FREE OF TOPSOIL, HUMUS, DREDGING, STONES, OR ORGANIC

SIZE	PERCENT PASSING (BY WEIGHT)
ΙN	100
N	90 - 100
IN	0 - 20
4	0 - 5
00	0 - 2

and.	Civil a	0		
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C	IRCUIT I	BREAKER PANEL N	0: 'PH'										
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VOLT-AM A	PS(V-A) B	CIRCUIT DESCRIPTION	CONDUCTOR	POLES	C.B.	СК	'Τ#	C.B.	POLES	CONDUCTOR	CIRCUIT DESCRIPTION	VOLT-AM A	PS(V–A) B
2040	\geq	PUMP CONTROL PANEL	3#8+#10G.	2	40	1	2	20	2	3#12+#12G.	WELL PUMP (1)	1200	\geq
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PUMPHOUSE ELECTRICAL PLAN

NOT TO SCALE

	CHARLES P. BUCKLEY PROFESSIONAL ENGINEER 500 DEPOT ST. BUMNEY, N.H. 03266
	TEL.(603)786-9992 FAX.(603)786-2365
	N.H. LIC. NO. 09198
	CHARLES P. BUCKLEY NO. 09198 BUCKLEY NO. 09198
	HVAC, Elec. & Plumb. Engineer: Charles P. Buckley, P.E. 500 Depot Street Rumney, NH 03266 tel: (603) 786-9992
	Structural Engineer: Fisher Engineering, P.C. 686 Belknap Mountain Road Gilford, NH 03249 tel: (603) 528-7641
LITHONIA LED STRIP LIGHT MODEL CLX L48 4000LM SEF FDL MVOLT (TYPICAL OF 2)	
	NH STATE PARKS Campground Expansion Project PII Jericho Mountain State Park 298 Jericho Lake Road Berlin, NH
- BOOSTER PUMP	03570
CONTROL PANEL	Issue
	CONTRACT SET
RV-13,15	Graphic Scale
	North
	Scale: As indicated
	Date: JULY 8, 2024
	Drawn By: CPB
	Checked By: CPB
	Issues: No. Description Date
	Title
	PUMPHOUSE ELECTRICAL PLAN
	Sheet Number: E1.05J
	Project Number: 23045001 File:

Doiron Environmental LLC 720 Browns Ridge Road Ossipee, NH 03864

September 28, 2023

Will Davis Horizons Engineering, Inc. PO Box 1825 New London, NH 03257-1825

RE: Site-Specific Soil Survey Jericho Mountain State Park Project Tax Map 407, Lots 9 & 10 Jericho Lake Road Berlin, New Hampshire

Dear Mr. Davis,

Per your request, Doiron Environmental LLC (DE) conducted a site-specific soil survey at the referenced properties. Approximately 7 acres of the parcels were included in the survey. This area lies within the "Limit of Soil Survey" boundary as depicted in the enclosed "Site-Specific Soil Map". The purpose of this soil survey is intended for use in site planning for a proposed campground expansion project that includes roadway, RV sites, septic system, and stormwater management structures. In addition, it is anticipated that the soil survey map and report will be used for an Alteration of Terrain permit application that will be submitted to the New Hampshire Department of Environmental Services (NHDES). This report and associated soil map are specific to the referenced site and were created in consideration of the proposed use.

Most of the assessed area is undeveloped and wooded with dense early successional growth shrubs and saplings. This area was clear cut within the last twelve years. The western extent of the soil survey area consists of graded and filled areas that are used for all-terrain vehicle recreation. These areas were created/disturbed within the last twelve years based on review of historical aerial imagery. Jurisdictional wetlands within the assessed area were delineated by others prior to soil survey activities.

The soil survey was conducted in accordance with the Society of Soil Scientists of Northern New England's "Site-Specific Soil Mapping Standards for New Hampshire and Vermont", version 7.0, July 2021 (SSSMS). The fieldwork for the survey was completed on August 3, 2023 and September 6, 2023. A topographic survey plan having a scale of $1^{"} = 80^{"}$, contour intervals of 2 feet, and survey located control points including wetland boundary flags was used as a base plan for the fieldwork and soil map. This base plan was produced and provided by Horizons Engineering, Inc.

Soil boundaries were identified by making soil observations throughout the survey area to enable accurate soil boundary placement and to ensure appropriate soil map unit composition. An excavator was used to dig 13 test pits within the survey area. Ten of these were fully described and

are included in the attached Soil Evaluation Report. Other soil observations were made using a shovel, hand auger, and ledge probe.

Map units were determined using the United States Department of Agriculture, Natural Resource Conservation Service (NRCS) "New Hampshire State-Wide Numerical Soils Legend", Issue #10, dated January 2011; the NRCS Official Series Descriptions; and the SSSMS. Saturated hydraulic conductivity (K_{sat}) and hydrologic soil group were determined using the Society of Soil Scientists of Northern New England's "K_{sat} Values for New Hampshire Soils", dated September 2009; the SSSMS; the NRCS "Soil Survey Manual", dated March 2017; and the NRCS "National Engineering Handbook", dated January 2009. The NRCS Web Soil Survey was referenced for use and management interpretations.

The hand-drawn soil map, which is titled "Site-Specific Soil Map", was completed on September 26, 2023. Please note that soil boundaries may be diffuse in nature and may not transition abruptly as a soil boundary line depicted on a soil map suggests. Soils are highly variable and map units typically have inclusions of other soil series, both similar and dissimilar. Limiting inclusions are a subset of dissimilar soils that differ appreciably in one or more soil properties from the named soil map unit. The soil properties of limiting inclusions are considered more restrictive than the named soil map unit and may negatively affect use and management. The maximum size of total limiting inclusions allowed by the SSSMS for the proposed use is 15 percent of the soil map unit.

The soil survey area is dominated by moderately well drained glacial till soils that have a restrictive layer within 40 inches of the soil surface. These soils are deep (40 to 60 inches) to very deep (greater than 60 inches) to bedrock. Excessively drained, somewhat excessively drained, and moderately well drained human-disturbed soils that are underlain by glacial till materials are located along the western end of the survey area. Somewhat excessively drained glacial till soils that are very deep to restrictive layer and bedrock are located in two areas along the western extent of non-human-disturbed soils. Poorly drained soils are present in the three small jurisdictional wetland areas within the survey area.

The soil map units identified in this soil survey are listed in the Site-Specific Soil Map Legend, which is included on the soil map. Following are brief descriptions of each soil map unit identified in the soil survey area. The use and management interpretations included in each soil map unit description provides information regarding limitations of the soil for the proposed uses.

55C Hermon fine sandy loam, very stony

Drainage class: somewhat excessively drained (seasonal high water > 40 inches below surface; water is removed rapidly) Parent material: glacial till

Bedrock class: very deep (> 60 inches from surface) Slope range: 8-15% Landscape position: strongly sloping side slopes Surface features: early successional growth forest, very stony Saturated hydraulic conductivity (Ksat) in B horizon: 2.0 - 20.0 inches/hour Saturated hydraulic conductivity (Ksat) in C horizon: 6.0 - 20.0 inches/hour Hydrologic soil group: A Inclusions: moderately well drained Skerry soils (<3%), well drained Becket soils (<3%) Use and management: These sandy soils drain quickly and are generally not limiting for roads.

However, they have limitations for septic system leach fields due to low filtering capacity, stormwater treatment due to moderate adsorptive capacity, and for digging shallow excavations such as trenches due to sloughing of cut banks. Leach field limitations can be mitigated with design and construction by decreasing the infiltration rate of the receiving layer. Stormwater infiltration treatment limitations can be mitigated with design and construction by amending the receiving layer to improve adsorptive capacity. Sloughing issues can be overcome by sloping cut banks. Additional limitations associated with slope and surface stoniness affect the ease and amount of excavation and earthwork.

559_Skerry fine sandy loam, very stony

Drainage class: moderately well drained (seasonal high water at 15 inches to 40 inches below surface)

Parent material: glacial till

Bedrock class: deep (> 40 inches from surface)

Slope range: 3-50%

Landscape position: gently sloping to steep side & nose slopes

Surface features: early successional growth forest, very stony

Saturated hydraulic conductivity (Ksat) in B horizon: 0.6 - 2.0 inches/hour

Saturated hydraulic conductivity (Ksat) in C horizon: 0.06 - 0.6 inches/hour

Hydrologic soil group: C

- Inclusions: somewhat poorly drained Colonel soils (<3%), soils with bedrock within 40 inches of the soil surface (<5%), somewhat excessively drained Hermon soils (<3%), well drained Becket soils (<10%)
- Use and management: These sandy lodgement till soils have limitations for septic leach fields and stormwater treatment due to the depth of restrictive feature (hardpan), which restricts vertical water movement, and depth to seasonal high water table. These limitations can be mitigated with appropriate design and construction that considers the depth of these limiting features. Limitations for roads and shallow excavations due to depth to seasonal high water table can be mitigated with appropriate design and construction that addresses drainage and groundwater management. Additional limitations associated with slope and surface stoniness affect the ease and amount of excavation and earthwork.

647B/P Pillsbury fine sandy loam (poorly drained), very stony

Drainage class: poorly drained (seasonal high water at or near the surface) Parent material: glacial till Bedrock class: very deep (> 60 inches from surface) Slope range: 3-8%Landscape position: gently sloping low-lying areas Surface features: jurisdictional wetland, early successional growth forest, very stony Saturated hydraulic conductivity (Ksat) in B horizon: 0.6 - 2.0 inches/hour Saturated hydraulic conductivity (Ksat) in C horizon: 0.06 - 0.2 inches/hour Hydrologic soil group: C Inclusions: none Use and management: Land uses are significantly limited by seasonal high water table at or near the surface. These areas are jurisdictional wetlands and require a permit(s) for any soil disturbing activities, filling, or draining.

299_/acaaa Udorthents, smoothed

This disturbed map unit represents areas that have been cut, filled, and graded. The depth of fill is less than 60 inches.

Drainage class: excessively drained (seasonal high water > 40 inches below surface; water is removed very rapidly)

Parent material: fill material over glacial till

Bedrock class: very deep (> 60 inches from surface)

Slope range: 3-50%

Landscape position: gently sloping reworked/graded area and steep fill slopes

Surface features: maintained lawn, ATV recreational arena, wooded fill slopes

Saturated hydraulic conductivity (Ksat): high (>1.4 inches/hour)

Hydrologic soil group: A

Inclusions: somewhat excessively drained filled areas (<10%), moderately well drained filled areas (<5%), and areas with restrictive layer less than 40 inches deep (<5%)

Use and management: These sandy soils drain quickly and are generally not limiting for roads. However, they have limitations for septic system leach fields due to low filtering capacity, stormwater treatment due to moderate adsorptive capacity, and for digging shallow excavations such as trenches due to sloughing of cut banks. Leach field limitations can be mitigated with design and construction by decreasing the infiltration rate of the receiving layer. Stormwater infiltration treatment limitations can be mitigated with design and construction by amending the receiving layer to improve adsorptive capacity. Sloughing issues can be overcome by sloping cut banks. Additional limitations associated with slope affect the ease and amount of excavation and earthwork.

299_/bcaaa Udorthents, smoothed

This disturbed map unit represents areas that have been cut, filled, and graded. The depth of fill is less than 60 inches.

Drainage class: somewhat excessively drained (seasonal high water > 40 inches below surface; water is removed rapidly)

Parent material: fill material over glacial till

Bedrock class: very deep (> 60 inches from surface)

Slope range: 3-15%

Landscape position: gently sloping reworked/graded area and strongly sloping fill slope

Surface features: maintained lawn, parking area

Saturated hydraulic conductivity (Ksat): high (>1.4 inches/hour)

Hydrologic soil group: A

Inclusions: moderately well drained filled areas (<5%), and areas with restrictive layer less than 40 inches deep (<5%)

Use and management: These sandy soils drain quickly and are generally not limiting for roads. However, they have limitations for septic system leach fields due to low filtering capacity, stormwater treatment due to moderate adsorptive capacity, and for digging shallow excavations such as trenches due to sloughing of cut banks. Leach field limitations can be mitigated with design and construction by decreasing the infiltration rate of the receiving layer. Stormwater infiltration treatment limitations can be mitigated with design and construction by amending the receiving layer to improve adsorptive capacity. Sloughing issues can be overcome by sloping cut banks. Additional limitations associated with slope affect the ease and amount of excavation and earthwork.

299B/dccbc Udorthents, smoothed

This disturbed map unit represents areas that have been cut, filled, and graded. The depth of fill is less than 60 inches.

Drainage class: moderately well drained (seasonal high water at 15 inches to 40 inches below surface)

Parent material: fill material over glacial till

Bedrock class: very deep (> 60 inches from surface)

Slope range: 3-8%

Landscape position: gently sloping reworked/graded areas

Surface features: maintained lawn, driveway, early successional growth wooded areas

Saturated hydraulic conductivity (Ksat): moderate (0.014-1.4 inches/hour)

Hydrologic soil group: C

Inclusions: somewhat poorly drained filled areas (<10%)

Use and management: These disturbed soils have limitations for septic leach fields and stormwater treatment due to the depth of restrictive feature (hardpan), which restricts vertical water movement, and depth to seasonal high water table. These limitations can be mitigated with appropriate design and construction that considers the depth of these limiting features. Limitations for roads and shallow excavations due to depth to seasonal high water table can be mitigated with appropriate design and construction that addresses drainage and groundwater management.

In accordance with the SSSMS, this narrative report accompanies the Site-Specific Soil Map created for the proposed campground expansion project at Jericho Mountain State Park in Berlin, New Hampshire. Please contact me at (603) 581-4478 with any questions regarding this report or the associated soil map and soil evaluation report.

Sincerely, Doiron Environmental LLC

N.D

Adam P. Doiron CWS, CSS, CPESC Principal

Enclosures:

Soil Evaluation Report (12 Pages), Stamped September 26, 2023 Site-Specific Soil Map, September 26, 2023

SOIL EVALUATION REPORT Jericho Mountain State Park Project

Tax Map 407, Lots 9 & 10 Jericho Lake Road Berlin, New Hampshire

TEST PIT	<u>#1</u>	By: Adam Doiron, NHCSS #89	Date Evaluated: 8/3/2023
Horizon	<u>Depth (in)</u>	Description	
^A	0-10	10YR3/3, loamy sand, 5% coarse fragments, weak abrupt wavy boundary (fill material)	fine granular, very friable, very
^C	10-18	10YR4/4, loamy sand, 7% coarse fragments, weak a abrupt wavy boundary (fill material)	medium granular, very friable,
2C	18-97	2.5Y4/3, loamy sand, 15% coarse fragments, massiv	ve, friable & firm (truncated)
Datim at a d C	lessonal III ah	Water Table @ None Destrictiv	a @ Nona

Estimated Seasonal High Water Table @ None Observed Water Table (Free Water) @ None Wet (Non-Satiated) @ None Restrictive @ None Refusal @ None Roots @ 18 inches

- 1. Soil Map Unit Name: Udorthents, smoothed (299_/acaaa)
- 2. Soil consists of fill material over truncated glacial till at 18 inches.
- 3. No surface stones present.
- 4. Location is maintained lawn.
- 5. Test pit location is depicted in the attached "Site-Specific Soil Map", dated September 26, 2023.

TEST PIT	<u># 2</u>	By: Adam Doiron, NHCSS #89 Date Evaluated: 8/3/2023
<u>Horizon</u>	<u>Depth (in)</u>	Description
Oi	0-2	10YR2/2, fibric organic material, no coarse fragments, weak fine granular, very friable, abrupt wavy boundary
Е	2-4	10YR4/1, loamy fine sand, 3% coarse fragments, weak fine granular, very friable, abrupt wavy boundary
Bs1	4-13	10YR3/6, fine sandy loam, 5% coarse fragments, weak medium subangular blocky, very friable, gradual wavy boundary
Bs2	13-24	10YR4/4, fine sandy loam, 8% coarse fragments, weak medium subangular blocky, very friable, clear wavy boundary
C1	24-55	2.5Y5/2, loamy fine sand, 15% coarse fragments, massive, friable & firm, clear wavy boundary
C2	55-80	2.5Y5/2, loamy fine sand, 15% coarse fragments, massive, friable & firm, common prominent (5YR4/4) redoximorphic concentrations

Estimated Seasonal High Water Table @ 55 inches Observed Water Table (Free Water) @ 78 inches Wet (Non-Satiated) @ 68 inches Restrictive @ None Refusal @ None Roots @ 32 inches

- 1. Soil Map Unit Name: Hermon, very stony (55)
- 2. Soil consists of glacial till materials.
- 3. Surface is very stony.
- 4. Location is early successional forest.
- 5. Test pit location is depicted in the attached "Site-Specific Soil Map", dated September 26, 2023.

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SOIL EVALUATION REPORT Jericho Mountain State Park Project Tax Map 407, Lots 9 & 10 Jericho Lake Road

Berlin, New Hampshire

TEST PIT	#3	By: Adam Doiron, NHCSS #89	Date Evaluated: 8/3/2023
<u>Horizon</u>	<u>Depth (in)</u>	Description	
Oe	0-1	10YR2/1, hemic organic material, no coarse frag abrupt broken boundary (mixing)	gments, weak fine granular, very friable,
А	1-6	7.5YR2.5/2, fine sandy loam, 5% coarse fragme abrupt broken boundary (mixing)	nts, weak fine granular, very friable,
Bs1	6-13	10YR3/6, fine sandy loam, 5% coarse fragments friable, gradual wavy boundary	, weak medium subangular blocky, very
Bs2	13-20	10YR4/4, fine sandy loam, 8% coarse fragments friable, clear wavy boundary	, weak medium subangular blocky,
BC	20-32	2.5Y4/2, loamy fine sand, 10% coarse fragments boundary, common prominent (5YR3/4) redoxir	s, massive, friable & firm, clear wavy norphic concentrations
Cd	32-68	2.5Y4/2, loamy fine sand, 10% coarse fragments (5YR3/4) redoximorphic concentrations	s, massive, firm, common prominent
Estimated S	Second Ligh	Water Table @ 20 inches Postri	tive @ 32 inches

Estimated Seasonal High Water Table @ 20 inches Observed Water Table (Free Water) @ 48 inches Wet (Non-Satiated) @ 40 inches Restrictive @ 32 inches Refusal @ None Roots @ 32 inches

- 1. Soil Map Unit Name: Skerry, very stony (559_)
- 2. Soil consists of glacial till materials.
- 3. Surface is very stony.
- 4. Location is woods road surrounded by early successional forest.
- 5. Test pit location is depicted in the attached "Site-Specific Soil Map", dated September 26, 2023.

TEST PIT # 4		By: Adam Doiron, NHCSS #89	Date Evaluated: 8/3/2023				
<u>Horizon</u>	<u>Depth (in)</u>	Description					
^C	0-8	10YR3/3, fine sandy loam, 5% coarse fragments, weak fine granular, very friable, abrupt wavy boundary (fill material)					
2BC	8-20	2.5Y4/3, loamy fine sand, 10% coarse fragmeriable, gradual wavy boundary (truncated)	nents, moderate medium subangular blocky,				
2C1	20-48	2.5Y5/2, loamy fine sand, 15% coarse fragmed boundary	nents, massive, friable & firm, clear smooth				
2C2	48-78	2.5Y5/2, loamy fine sand, 15% coarse fragmer prominent (5YR4/6) redoximorphic concern	nents, massive, friable & firm, common trations				
Estimated S	easonal High	Water Table @ 48 inches R	estrictive @ None				

Observed Water Table (Free Water) @ None Wet (Non-Satiated) @ 70 inches

Percolation Rate = 4 minutes/inch @ 16 inches

Refusal @ None Roots @ 20 inches

- 1. Soil Map Unit Name: Udorthents, smoothed (299_/bcaaa)
- 2. Soil consists of fill material over truncated glacial till materials at 8 inches.
- 3. No surface stones present.
- 4. Location is graded and near early successional forest.
- 5. Test pit location is depicted in the attached "Site-Specific Soil Map", dated September 26, 2023.

<u>TEST PIT # 5</u>		By: Adam Doiron, NHCSS #89 Date Evaluated: 8/3/20	
<u>Horizon</u>	<u>Depth (in)</u>	Description	
Oi	0-2	10YR2/1, fibric organic material, 30% coarse fragments, weak fine granular, very friable, abrupt wavy boundary	
Bhs	2-8	5YR2.5/2, fine sandy loam, 30% coarse fragmen abrupt wavy boundary	ts, weak fine granular, very friable,
Bs1	8-18	10YR3/6, fine sandy loam, 30% coarse fragment clear wavy boundary	s, weak fine granular, very friable,
Bs2	18-25	10YR4/4, loamy sand, 30% coarse fragments, ma	assive, friable, clear wavy boundary
BC	25-39	2.5Y4/3, loamy sand, 30% coarse fragments, mac common prominent (5YR4/6) redoximorphic cor	ssive, firm, abrupt wavy boundary, acentrations
Cd	39-64	2.5Y5/2, loamy sand, 30% coarse fragments, max (7.5YR4/6) redoximorphic concentrations	ssive, firm, common prominent
Estimated S	Seasonal High	Water Table @ 25 inches Restric	tive @ 25 inches

Estimated Seasonal High Water Table @ 25 inches Observed Water Table (Free Water) @ None Wet (Non-Satiated) @ None

Refusal @ None Roots @ 25 inches

- 1. Soil Map Unit Name: Skerry, very stony (559_)
- 2. Soil consists of glacial till materials.
- 3. Surface is extremely bouldery.
- 4. Location is early successional forest.
- 5. Test pit location is depicted in the attached "Site-Specific Soil Map", dated September 26, 2023.

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SOIL EVALUATION REPORT Jericho Mountain State Park Project Tax Map 407, Lots 9 & 10 Jericho Lake Road Berlin, New Hampshire

TEST PIT # 6

By: Adam Doiron, NHCSS #89

Date Evaluated: 8/3/2023

Estimated Seasonal High Water Table @ 32 inches Observed Water Table (Free Water) @ None Wet (Non-Satiated) @ None Restrictive @ 32 inches Refusal @ 39 inches or none¹ Roots @ 32 inches

- 1. Test pit dug to 39 inches. Similar to Test Pit 5 except ledge or large boulder encountered at 39 inches.
- 2. Soil Map Unit Name: Skerry, very stony (559_)
- 3. Soil consists of glacial till materials.
- 4. Surface is extremely bouldery.
- 5. Location is early successional forest.
- 6. Test pit location is depicted in the attached "Site-Specific Soil Map", dated September 26, 2023.

Berlin, New Hampshire

<u>TEST PIT # 7</u>		By: Adam Doiron, NHCSS #89 Date Evaluated: 8/3/2023		
<u>Horizon</u>	<u>Depth (in)</u>	Description		
Oi	0-2	10YR2/2, fibric organic material, 10% coarse fragments, weak fine granular, very friable, abrupt wavy boundary		
А	2-4	10YR3/2, fine sandy loam, 12% coarse fragments, weak fine granular, very friable, abrupt wavy boundary		
E	4-7	10YR5/1, loamy sand, 12% coarse fragments, m friable, abrupt broken boundary	noderate medium subangular blocky,	
Bhs	7-12	5YR3/4, sandy loam, 12% coarse fragments, moderate medium subangular blocky, friable, clear wavy boundary		
Bs	12-20	10YR3/6, sandy loam, 20% coarse fragments, moderate medium subangular blocky, friable, clear wavy boundary		
BC	20-27	7.5YR3/4, loamy sand, 35% coarse fragments, s friable, abrupt wavy boundary	trong medium subangular blocky,	
Cd	27-48	2.5Y4/2, loamy sand, 35% coarse fragments, ma (5YR3/4) redoximorphic concentrations	assive, very firm, common prominent	

Estimated Seasonal High Water Table @ 27 inches Observed Water Table (Free Water) @ None Wet (Non-Satiated) @ None Restrictive @ 27 inches Refusal @ 48 inches Roots @ 27 inches

- 1. Soil Map Unit Name: Skerry, very stony (559_)
- 2. Soil consists of glacial till materials.
- 3. Surface is very stony.
- 4. Location is early successional forest.
- 5. Test pit location is depicted in the attached "Site-Specific Soil Map", dated September 26, 2023.

<u>TEST PIT # 9</u>		By: Adam Doiron, NHCSS #89Date Evaluated: 9/6/2023		
<u>Horizon</u>	<u>Depth (in)</u>	Description		
Oe	0-1	10YR2/1, hemic organic material, no coarse fragments, weak fine granular, very friable, very abrupt wavy boundary		
Ε	1-3	7.5YR5/2, loamy fine sand, 2% coarse fragment abrupt broken boundary	s, weak fine granular, very friable, very	
Bhs	3-10	5YR2.5/1, fine sandy loam, 10% coarse fragments, weak fine granular, very friable, abrupt broken boundary		
Bs	10-19	10YR3/6, fine sandy loam, 15% coarse fragmen blocky, very friable, clear wavy boundary	ts, moderate medium subangular	
BC	19-23	7.5YR3/3, loamy fine sand, 20% coarse fragmer boundary, common prominent (5YR4/6) redoxir	nts, massive, friable, abrupt wavy norphic concentrations	
Cd	23-70	2.5Y4/3, loamy fine sand, 20% coarse fragments (5YR4/4) redoximorphic concentrations	s, massive, firm, common prominent	
Estimated (Concoral Uich	Water Table @ 10 inches Bostri	ative @ 22 inches	

Estimated Seasonal High Water Table @ 19 inches Observed Water Table (Free Water) @ 68 inches Wet (Non-Satiated) @ 61 inches Restrictive @ 23 inches Refusal @ None Roots @ 19 inches

- 1. Soil Map Unit Name: Skerry, very stony (559_)
- 2. Soil consists of glacial till materials.
- 3. Surface is very stony.
- 4. Location is early successional forest.
- 5. Test pit location is depicted in the attached "Site-Specific Soil Map", dated September 26, 2023.

<u>TEST PIT # 10</u>		By: Adam Doiron, NHCSS #89	Date Evaluated: 9/6/2023
<u>Horizon</u>	<u>Depth (in)</u>	Description	
Α	0-2	10YR2/1, fine sandy loam, 10% coarse fragment abrupt broken boundary (mixing)	s, weak fine granular, very friable,
Bs1	2-13	10YR3/3, fine sandy loam, 15% coarse fragment friable, gradual wavy boundary	s, moderate medium granular, very
Bs2	13-19	10YR3/6, fine sandy loam, 15% coarse fragment gradual wavy boundary	s, moderate medium granular, friable,
Bs3	19-28	10YR4/4, fine sandy loam, 15% coarse fragment blocky, friable, clear wavy boundary	s, moderate medium subangular
Cd	28-39	2.5Y4/3, loamy fine sand, 15% coarse fragments distinct (7.5YR4/4) redoximorphic concentration	, massive, firm & friable, common

Estimated Seasonal High Water Table @ 28 inches Observed Water Table (Free Water) @ None Wet (Non-Satiated) @ None Restrictive @ 28 inches Refusal @ 39 inches Roots @ 28 inches

Notes:

- 1. Soil Map Unit Name: Skerry, very stony (559_)
- 2. Soil consists of glacial till materials.
- 3. Surface is very stony.
- 4. Location is woods road surrounded by early successional forest.
- 5. Test pit location is depicted in the attached "Site-Specific Soil Map", dated September 26, 2023.

TEST PIT # 11

By: Adam Doiron, NHCSS #89

Date Evaluated: 9/6/2023

Estimated Seasonal High Water Table @ 22 inches Observed Water Table (Free Water) @ None Wet (Non-Satiated) @ None

- 1. Test pit dug to 53 inches. Similar to Test Pit 7.
- 2. Soil Map Unit Name: Skerry, very stony (559_)
- 3. Soil consists of glacial till materials.
- 4. Surface is extremely bouldery.
- 5. Location is early successional forest.
- 6. Test pit location is depicted in the attached "Site-Specific Soil Map", dated September 26, 2023.

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SOIL EVALUATION REPORT Jericho Mountain State Park Project Tax Map 407, Lots 9 & 10 Jericho Lake Road Berlin, New Hampshire

TEST PIT	<u># 12</u>	By: Adam Doiron, NHCSS #89	Date Evaluated: 9/6/2023
Estimated S Observed W Wet (Non-S	easonal High Vater Table (F atiated) @ No	Water Table @ 20 inches ree Water) @ None one	Restrictive @ 24 inches Refusal @ 45 inches or none ¹ Roots @ 24 inches
Notes: 1. Test 2. Soil 3. Soil 4. Surfa 5. Loca 6. Test	pit dug to 45 Map Unit Nar consists of gla ace is extreme tion is early s pit location is	inches. Similar to Test Pit 11 except possi me: Skerry, very stony (559_) acial till materials. ely bouldery. uccessional forest. depicted in the attached "Site-Specific So	bly large boulders instead of ledge at 45 inches. il Map", dated September 26, 2023.
TEST PIT	<u># 13</u>	By: Adam Doiron, NHCSS #89	Date Evaluated: 9/6/2023
<u>Horizon</u>	<u>Depth (in)</u>	Description	
^C1	0-3	10YR3/3, fine sandy loam, 5% coarse fra boundary (fill material)	gments, massive, friable, abrupt broken
^C2	3-13	10YR4/4, fine sandy loam, 10% coarse fr boundary (fill material)	agments, massive, friable, abrupt wavy
2C	13-62	2.5Y4/3, loamy sand, 30% coarse fragme	nts, massive, very friable to firm (truncated)

Estimated Seasonal High Water Table @ NoneRestrictive @ NoneObserved Water Table (Free Water) @ NoneRefusal @ NoneWet (Non-Satiated) @ NoneRoots @ 13 inches

- 1. Soil Map Unit Name: Udorthents, smoothed (299 /bcabb)
- 2. Soil consists of fill material over truncated glacial till at 13 inches.
- 3. No surface stones present.
- 4. Location is maintained lawn and ATV arena.
- 5. Test pit location is depicted in the attached "Site-Specific Soil Map", dated September 26, 2023.

<u>TEST PIT # 14</u>		By: Adam Doiron, NHCSS #	89 Date Evaluated: 9/6/2023	
<u>Horizon</u>	<u>Depth (in)</u>	Description		
^A	0-4	10YR3/2, fine sandy loam, 2% coarse fragments, weak fine granular, very friable, abrupt wavy boundary (fill material)		
^C	4-11	7.5YR3/4, sandy loam, 7% coarse fra (fill material)	ments, massive, friable, abrupt broken boundary	
2Ab	11-28	7.5YR2.5/2, fine sandy loam, 20% coarse fragments, strong medium granular, friable, abrupt wavy boundary, common distinct (5YR3/4) redoximorphic concentrations (fill material/mixing)		
2Egb	28-34	10YR6/1, loamy fine sand, 25% coars boundary, common prominent (5YR4	e fragments, massive, friable, abrupt broken 4) redoximorphic concentrations (mixing)	
2Cd	34-60	2.5Y3/3, loamy sand, 35% coarse frag (5YR4/4) redoximorphic concentration	ments, massive, firm, common prominent	
Estimated S	easonal High	Water Table @ 11 inches	Restrictive @ 34 inches	

Observed Water Table (Free Water) @ None Wet (Non-Satiated) @ 50 inches Refusal @ None Roots @ 34 inches

- 1. Soil Map Unit Name: Udorthents, smoothed (299 /eccbc)
- 2. Soil consists of fill material over compacted glacial till at 11 inches.
- 3. No surface stones present.
- 4. Location is maintained lawn.
- 5. Test pit location is depicted in the attached "Site-Specific Soil Map", dated September 26, 2023.

Auger Hole # 2		By: Adam Doiron, NHCSS #89	Date Evaluated: 8/3/2023
<u>Horizon</u>	<u>Depth (in)</u>	Description	
Oe	0-2	10YR2/1, hemic organic materials, weak fine gra	mular, very friable
А	2-4	10YR2/1, fine sandy loam, weak fine granular, very friable	
Eg	4-15	10YR4/2, loamy fine sand, weak fine granular, v (5YR4/4) redoximorphic concentrations	ery friable, common prominent

Estimated Seasonal High Water Table @ SurfaceRestrictive @ NoneObserved Water Table (Free Water) @ 2 inchesRefusal @ NoneWet (Non-Satiated) @ SurfaceRoots @ Not determined

- 1. Soil Map Unit Name: Pillsbury (poorly drained), very stony (647B)
- 2. Soil consists of glacial till materials.
- 3. Surface is very stony.
- 4. Location is early successional forest and jurisdictional wetland.
- 5. Auger hole location is depicted in the attached "Site-Specific Soil Map", dated September 26, 2023.

Single Phase Transformer Foundation 100-250 KVA

REINI	ORCIN	G SCHEDU	LE (#6 BAR)
Туре	Qty	Length	Diagram
S1	4	62"	Straight
S2	6	44"	Straight
S 3	10	46"	Straight
U1	2	78"	18 12

Total Foundation Weight, 3030 lbs.

EVERSOURCE INTERNAL REFERENCE 53.102L