

E-5065-001 June 17, 2024

Mr. Peter Britz, Director of Planning and Sustainability City of Portsmouth Planning Department 1 Junkins Avenue Portsmouth, New Hampshire 03801

Re: Site Review Permit Application Ethos Veterinary Health, 231 Corporate Drive – Portsmouth, NH

Dear Peter:

On behalf of Ethos Veterinary Health, we are pleased to submit the following information to support a request to the Planning Board for a recommendation for approval to the Pease Development Authority (PDA) for Site Plan Review and Wetland Buffer Conditional Use Permit for a proposed building expansion, located at 231 Corporate Drive:

- One (1) copy of the PDA Application for Site Review, dated June 17, 2024;
- One (1) full-size & one (1) half-size copy of the Site Plan Set, dated June 17, 2024;
- One (1) copy of the Drainage Analysis, dated June 17, 2024;
- One (1) copy of the Operations and Maintenance Plan, dated June 17, 2024;
- One (1) copy of the Site Plan Review Application Fee Form;

The proposed project is located at 231 Corporate Drive which is identified as Map 314 Lot 2 on the City of Portsmouth Tax Maps. The existing site currently consists of a 2-story building, previously occupied by Southern New Hampshire University, with associated parking and site improvements.

The proposed project consists of the construction of a 2,340 SF addition for a linear accelerator vault to support the recently opened veterinary hospital. In addition to the building expansion, the project proposes to remove a row of parking which will reduce overall impervious surface impacts within the wetland buffer by approximately 8,801 SF.

The project will consist of associated site improvements such as lighting, landscaping, and stormwater management that will include stormwater treatment via a Contech Jellyfish unit to treat the proposed pavement section, building addition and pet relief areas.



We respectfully request to be placed on the Technical Advisory Committee (TAC) meeting agenda for July 2, 2024. If you have any questions or need any additional information, please contact Neil Hansen by phone at (603) 294-9213 or by email at <u>nahansen@tighebond.com</u>.

Sincerely,

TIGHE & BOND, INC.

Neil A. Hansen, PE Project Manager

Copy: Ethos Veterinary Health (via email) The Kane Company (via email) Capone Architecture (via email) Pease Development Authority

Patrick M. Crimmins, PE Vice President

J:\E\E5065 Ethos Veterinary Health\001_231 Corporate Drive\Report - Evaluation\Applications\City of Portsmouth\20240617_TAC Submission\E-5065-001 TAC Cover Letter.docx

Pease Development Authority 55 International Drive, Portsmouth, NH 03801, (603) 433-6088



Application for Site Review

For PDA Use Only			
Date Submitted:	Municipal Review:	Fee:	
Application Complete:	Date Forwarded:	Paid:	Check #:

Applicant Information

Applicant: Ethos Veterinary Health	Agent: Tighe & Bond
Address: 150 Presidential Way, Suite 200 Woburn, MA 01801	Address: 177 Corporate Dr Portsmouth, NH 03801
Business Phone:	Business Phone: 603-433-8818
Mobile Phone:	Mobile Phone:
Fax:	Fax:

Site Information

Portsmouth Tax Map: 314	Lot #: 2	Zone: Business & Commercial	
Site Address / Location: 231 Corporate Drive Portsmouth, NH 03801			
Site Address / Location :		Area of On-site Wetlands:	

Activity Information

Change of Use: Yes [No[] Existing Use: Office Space
	Proposed Use: Veterinary Clinic
Description of Project:	The proposed project consists of converting the existing 2-story building to a veterinary clinic and
the construction of a 2,3	0 SF addition for a linear accelerator vault. In addition to the building expansion, the project
proposes to remove a ro	v of parking which will reduce the overall surface impacts within the wetland buffer by
approximately 8,800 SF	The project will consist of associated site improvements such as lighting, landscaping, and
stormwater managemer	that will include stormwater treatment via a Contech Jellyfish unit to treat the proposed pavement
section, building addition	and pet relief areas.
All above information :	nall be shown on a site plan submitted with this application. Provide 3 full size hard copies and one
PDF copy of all applicatio	materials as well as one half-size set of drawings to PDA. Applicant shall supply additional copies as

may be required by applicable municipality. Refer to Chapter 400 of PDA land Use Controls for additional information.

Certification

I hereby certify under the penalties of perjury that the foregoing information and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I hereby apply for Site Review and acknowledge I will comply with all regulations and any conditions established by the Review Committee(s) and PDA Board in the development and construction of this project.			
_ Douglas Berry	06/17/24		
Signature of Applicant	Date		
Douglas Berry			
Printed Name			

N:\Engineer\ ApplicationforSiteReview.xlsx

231 CORPORATE DRIVE PROPOSED VETERINARY OFFICE PORTSMOUTH, NEW HAMPSHIRE JUNE 17, 2024

LIST OF DRAWINGS				
SHEET NO.	SHEET TITLE	LAST REVISED		
	COVER SHEET	6/17/2024		
1 OF 1	EXISTING CONDITIONS - TOPOGRAPHIC PLAN	12/22/2022		
G-100	GENERAL NOTES AND LEGEND SHEET	6/17/2024		
C-101	EXISTING CONDITIONS & DEMOLITION PLAN	6/17/2024		
C-102	SITE PLAN	6/17/2024		
C-103	GRADING, DRAINAGE, AND EROSION CONTROL PLAN	6/17/2024		
C-104	UTILITY PLAN	6/17/2024		
C-105	LANDSCAPE PLAN	6/17/2024		
C-106	PHOTOMETRIC PLAN	6/17/2024		
C-501	EROSION CONTROL NOTES AND DETAILS SHEET	6/17/2024		
C-502	DETAILS SHEET	6/17/2024		
C-503	DETAILS SHEET	6/17/2024		
C-504	DETAILS SHEET	6/17/2024		
C-505	DETAILS SHEET	6/17/2024		
A1-02	LINAC ADDITION PROPOSED FLOOR PLAN	5/14/2024		

st Save Date: June 4, 2024 5:07 PM By: NWILCOX ot Date: Monday, June 17, 2024 Plotted By: Colter Krzcuik &B File Location: J:\E\E5065 Ethos Veterinary Health\001_231 Corporate Drive\Drawings\AutoCAD\Sheet\E5065-001-CS.dwg Layout Tab





PREPARED BY:



177 CORPORATE DRIVE PORTSMOUTH, NH 03801 603-433-8818

APPLICANT:

ETHOS VETERINARY HEALTH 150 Presidential Way, Suite 200 Woburn, MA 01801



- <u>CONSTRUCTION NOTES</u>: .. THE CONTRACTOR SHALL NOT RELY ON SCALED DIMENSIONS AND SHALL CONTACT THE ENGINEER FOR CLARIFICATION IF A REQUIRED DIMENSION IS NOT PROVIDED ON THE PLANS
- 2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS AND METHODS, AND FOR SITE CONDITIONS THROUGHOUT CONSTRUCTION. NEITHER THE PLANS NOR THE SEAL OF THE ENGINEER AFFIXED HEREON EXTEND TO OR INCLUDE SYSTEMS REQUIRED FOR THE SAFETY OF THE CONTRACTOR, THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING AND IMPLEMENTING SAFETY PROCEDURES AND SYSTEMS AS REQUIRED BY THE UNITED STATES OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), AND ANY STATE OR LOCAL SAFETY REGULATIONS.
- TIGHE & BOND ASSUMES NO RESPONSIBILITY FOR ANY ISSUES LEGAL OR OTHERWISE, RESULTING FROM CHANGES MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION OF TIGHE & BOND.

SURVEYOR:

DOUCET SURVEY LLC 102 Kent Place Newmarket, NH 03857 ARCHITECT: CAPONE ARCHITECTURE 18 Shipyard Dr #2a Hingham, MA 02043

<u>LESSOR:</u> PEASE DEVELOPMENT AUTHORITY 55 International Drive Portsmouth, NH 03801

<u>LESSEE:</u> THE KANE COMPANY 210 Commerce Way, Suite 300 Portsmouth, NH 03801





TAC SUBMISSION COMPLETE SET 15 SHEETS



1.	THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR THE ENGINEER. IT IS THE CONTRACTOR'S	1.	PAVE BARS
	RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK AT NO		AND
-	ADDITIONAL COST TO THE OWNER.		STOP
2.	COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAYS WITH THE CITY OF PORTSMOUTH AND PEASE DEVELOPMENT AUTHORITY.		REQU
3.	THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED LAND SURVEYOR TO	2.	ALL P
4.	THE CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES. CALL DIG SAFE AT		MARK
	LEAST 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL HAVE THE "DIG-SAFE" NUMBER ON SITE AT ALL TIMES.	3.	SEE D
5.	IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES AND COMPLY WITH	4.	
6.	THE CONDITIONS OF ALL OF THE PERMIT APPROVALS. THE CONTRACTOR SHALL OBTAIN AND PAY FOR AND COMPLY WITH ADDITIONAL PERMITS,	5.	STOP
	NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION	6	TO CL
7.	THE CONTRACTOR SHALL PHASE DEMOLITION AND CONSTRUCTION AS REQUIRED TO	0.	EMUL
	CONSTRUCTION PERIOD. EXISTING BUSINESS SERVICES INCLUDE, BUT ARE NOT LIMITED TO	7. 8.	SEE E
	ELECTRICAL, COMMUNICATION, FIRE PROTECTION, DOMESTIC WATER AND SEWER SERVICES. TEMPORARY SERVICES, IF REQUIRED, SHALL COMPLY WITH ALL FEDERAL, STATE, LOCAL AND		FORM
	UTILITY COMPANY STANDARDS. CONTRACTOR SHALL PROVIDE DETAILED CONSTRUCTION	9.	ALL L
	COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH THE UTILITY COMPANY AND	10.	COOR
8.	AFFECTED ABUTTER. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE,	12.	PROP
q	AND LOCAL CODES & SPECIFICATIONS.		WALK NECE
۶.	STANDARD SPECIFICATIONS AND WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF		
	CURRENT EDITION. "STANDARD SPECIFICATIONS OF ROAD AND BRIDGE CONSTRUCTION",	1.	СОМР
10.	CONTRACTOR TO SUBMIT AS-BUILT PLANS IN DIGITAL FORMAT (.DWG AND .PDF FILES) ON DISK TO THE OWNER AND ENGINEER UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL		BELO
	BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR.		TREN SAND
11.	CONTRACTOR SHALL THOROUGHLY CLEAN ALL CATCH BASINS AND DRAIN LINES, WITHIN THE LIMIT OF WORK, OF SEDIMENT IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.		BELO
12.	SEE EXISTING CONDITIONS PLAN FOR BENCH MARK INFORMATION.		ALL P OPTIN
13. 14.	UPON COMPLETION OF CONSTRUCTION AND PRIOR TO THE ISSUANCE OF CERTIFICATE OF		ASTM D-155
	OCCUPANCY OR RELEASE OF BOND, THE APPLICANT SHALL SUBMIT A LETTER TO THE PEASE DEVELOPMENT AUTHORITY, SIGNED AND STAMPED BY A PROFESSIONAL ENGINEER. STATING	2.	ALL S
	CONSTRUCTION HAS BEEN COMPLETED IN CONFORMANCE WITH THE APPROVED PLANS.	3.	N-12 ADJUS
15.	SUBMISSION OF A MINIMUM OF TWO 7460-1'S TO THE FAA WILL BE REQUIRED FOR THE CONSTRUCTION OF THE BUILDING AND TEMPORARY USE OF A CRANE. ALLOW A MINIMUM OF	1	FINIS
	45 DAYS OF PROCESSING	4.	SPOT:
		5.	RAMP: ALL D
4	DEMOLITION NOTES:	6	LOAM
1.	OR DEMOLITION ACTIVITIES.	6.	ALL S
2.	COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY	7.	ALL P SUMP
3.	ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/	8.	PRIOF
	DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO MATCH ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.	9.	ACCEI ALL D
4.	SAW CUT AND REMOVE PAVEMENT ONE (1) FOOT OFF PROPOSED EDGE OF PAVEMENT OR	10.	CONT
_	PAVEMENT OR CONCRETE TO REMAIN.		CONS
5.	THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK, EXCEPT FOR WORK NOTED TO BE		
	COMPLETED BY OTHERS. MATERIAL DEMOLITION AND DISPOSAL SHALL BE DONE IN	1.	SEE S
6.	UTILITIES SHALL BE TERMINATED AT THE MAIN LINE PER UTILITY COMPANY AND CITY OF		
	PORTSMOUTH, NEW HAMPSHIRE STANDARDS. THE CONTRACTOR SHALL REMOVE ALL ABANDONED UTILITIES LOCATED WITHIN THE LIMITS OF WORK UNLESS OTHERWISE NOTED.	1.	COOR
7.	CONTRACTOR SHALL VERIFY ORIGIN OF ALL DRAINS AND UTILITIES PRIOR TO		• NATU
	ANY ON OR OFF-SITE STRUCTURE TO REMAIN. THE CONTRACTOR SHALL NOTIFY ENGINEER		• WAT • SEW
	IMMEDIATELY OF ANY SUCH UTILITY FOUND AND SHALL MAINTAIN THESE UTILITIES UNTIL PERMANENT SOLUTION IS IN PLACE.		• ELEC
8.	PAVEMENT REMOVAL LIMITS ARE SHOWN FOR CONTRACTOR'S CONVENIENCE. ADDITIONAL PAVEMENT REMOVAL MAY BE REQUIRED DEPENDING ON THE CONTRACTOR'S OPERATION	2.	• COM ALL W
0	CONTRACTOR TO VERIFY FULL LIMITS OF PAVEMENT REMOVAL PRIOR TO BID.	3.	
9.	PADS, UTILITIES AND PAVEMENT WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY		CHLO
	IDENTIFIED TO REMAIN. ITEMS TO BE REMOVED INCLUDE BUT ARE NOT LIMITED TO: CONCRETE, PAVEMENT, CURBS, STAIRS, FENCES, WALLS, BUILDING SLABS, FOUNDATION.	4. 5.	ALL S
10	TREES AND LANDSCAPING.	<i>.</i>	WATE
10.	GRUB AND REMOVE ALL STUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF SITE IN	6.	EXIST DEPAF
	ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS. CONTRACTOR SHALL COMPLY WITH NEW HAMPSHIRE DOT: "BEST MANAGEMENT PRACTICES FOR ROADSIDE	7.	ALL EI
11	INVASIVE PLANTS" FOR THE REMOVAL OF INVASIVE SPECIES.	8.	THE E
± ± •	AND CONSTRUCTION OPERATIONS. SHOULD ANY MONUMENTATION BE DISTURBED BY THE	9.	COOR ALL U
	REPLACE DISTURBED MONUMENTS.	10	
12.	PROVIDE INLET PROTECTION BARRIERS AT ALL CATCH BASINS/CURB INLETS WITHIN	10.	CONN
	FROM CONSTRUCTION ACTIVITIES. INLET PROTECTION BARRIERS SHALL BE MAINTAINED FOR		DETAI OPERA
	WATER INLET FILTER" BY BLOCKSOM % CO. OR EQUAL. INSPECT BARRIERS WEEKLY AND	11.	CONT
	AFTER EACH RAIN EVENT OF 0.25 INCHES OR GREATER. CONTRACTOR SHALL COMPLETE A MAINTENANCE INSPECTION REPORT AFTER EACH INSPECTION. COIR MATS SHALL BE	12.	A 10-
13	INSTALLED AND MAINTAINED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATION.		BETWI OUTSI
15.	BARRICADING, FENCING, SECURITY AND SAFETY DEVICES REQUIRED FOR THE MAINTENANCE		CROS
14.	SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL	13.	SAW (
	UTILITIES TO BE REMOVED AND PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN	14	PROPO
15.	THE CONTRACTOR SHALL REMOVE AND SALVAGE EXISTING GRANITE CURB FOR REUSE.	17.	PORTS
16.	THE CONTRACTOR SHALL ACQUIRE A PDA DIG PERMIT BEFORE ANY DISTURBANCE CAN TAKE PLACE. ALLOW 7 CALENDAR DAYS FOR PROCESSING.	15. 16	COOR ALL SI
17.	BEFORE ANY DEWATERING IS PERFORMED, COORDINATION BETWEEN THE APPLICANT, PDA,		
	PERMITTING REQUIRED.	1/.	
18.	ALL EXCESS SOIL RESULTING FROM THE CONSTRUCTION SHALL REMAIN ON SITE.	18	OVERH
		_01	
		19.	CONTR
			FOUNE

GENERAL NOTES:

- IREMENTS OF AASHTO M248 TYPE "F".
- ROL DEVICES", "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT (INGS", AND THE AMERICANS WITH DISABILITIES ACT REQUIREMENTS, LATEST ONS.
- DETAILS FOR PAVEMENT MARKINGS, ADA SYMBOLS, SIGNS AND SIGN POSTS.
- FED ISLANDS SHALL BE FOUR (4) INCH WIDE DIAGONAL LINES AT 3'-0" O.C. EREDBY FOUR (4) INCH WIDE LINES.
- URRENT MUTCD STANDARDS.
- SION IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE,
- TRACTOR TO PROVIDE BACKFILL AND COMPACTION AT CURB LINE AFTER CONCRETE TRACTOR.
- IGHT POLE BASES NOT PROTECTED BY A RAISED CURB SHALL BE PAINTED YELLOW.
- RDINATE ALL WORK ADJACENT TO BUILDING WITH BUILDING CONTRACTOR.
- DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED. ERTY MANAGER WILL BE RESPONSIBLE FOR TIMELY SNOW REMOVAL FROM ALL SIDE SSARY, WHEN SNOW STORAGE AREAS HAVE REACHED CAPACITY.

GRADING AND DRAINAGE NOTES:

- PACTION REQUIREMENTS: W PAVED OR CONCRETE AREAS ICH BEDDING MATERIAL AND BLANKET BACKFILL W LOAM AND SEED AREAS
- D-1557, METHOD C FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM 56 OR ASTM-2922.
- OR EQUAL), UNLESS OTHERWISE SPECIFIED.
- H GRADE.
- PS AND LOADING DOCK AREAS ADJACENT TO THE BUILDING.
- VISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" ,SEED FERTILIZER AND MULCH.
- IFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.
- ROPOSED CATCH BASINS SHALL BE EQUIPPED WITH OIL/GAS SEPARATOR HOODS AND 4'
- PT NEW CORES FOR PROPOSED DRAIN PIPE.
- RAINPIPE WITH LESS THAN 4' OF COVER SHALL BE INSULATED RIGID INSULATION.
- ONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO TRUCTION.

EROSION CONTROL NOTES:

UTILITY NOTES:

- RDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY. URAL GAS -UNITIL
- FER CITY OF PORTSMOUTH
- VER CITY OF PORTSMOUTH
- CTRIC EVERSOURCE
- IMUNICATIONS CONSOLIDATED COMMUNICATIONS

- RINATION AND TESTING WITH THE CITY OF PORTSMOUTH WATER DEPARTMENT. EWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE STATED.
- R DEPARTMENT STANDARDS.
- ING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE
- , LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
- XACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE
- CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, ECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY ATIONAL.
- RAL GAS SERVICES. FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED SINGS.
- OSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN
- ANTS, GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF SMOUTH.
- DINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF PORTSMOUTH.
- PAVED AREAS SHALL BE INSULATED. RACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: UIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION,
- IEER.
- RACTOR SHALL CONSTRUCT ALL UTILITIES AND DRAINS TO WITHIN 10' OF THE DATION WALLS AND CONNECT THESE TO SERVICE STUBS FROM THE BUILDING.

SITE NOTES:

MENT MARKINGS SHALL BE INSTALLED AS SHOWN, INCLUDING PARKING SPACES, STOP , ADA SYMBOLS, PAINTED ISLANDS, AND ARROWS. ALL MARKINGS EXCEPT CENTERLINE MEDIAN ISLANDS TO BE CONSTRUCTED USING WHITE PAVEMENT MARKINGS. ALL MOPLASTIC PAVEMENT MARKINGS INCLUDING LEGENDS, ARROWS, CROSSWALKS AND BARS SHALL MEET THE REQUIREMENTS OF AASHTO M249. ALL PAINTED PAVEMENT (INGS INCLUDING CENTERLINES, LANE LINES AND PAINTED MEDIANS SHALL MEET THE

AVEMENT MARKINGS AND SIGNS TO CONFORM TO "MANUAL ON UNIFORM TRAFFIC

BARS SHALL BE EIGHTEEN (18) INCHES WIDE, WHITE THERMOPLASTIC AND CONFORM

N AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAW CUT LINE WITH RS-1 BUILDING DRAWINGS FOR ALL CONCRETE PADS & SIDEWALKS ADJACENT TO BUILDING.

IS FOR SIDEWALKS AND PADS HAVE BEEN STRIPPED. COORDINATE WITH BUILDING

(S, AND DRIVES. SNOW SHALL BE HAULED OFF-SITE AND LEGALLY DISPOSED OF, WHEN

95%

95%

90% PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE MUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH

TORM DRAINAGE PIPES SHALL BE HIGH DENSITY POLYETHYLENE (HANCOR HI-Q, ADS

IST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO

RACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE AND LAWN AREAS FREE OF LOW S AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCES, EXITS,

TORM DRAIN CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE NHOOT STANDARD

R TO CONSTRUCTION CONTRACTOR SHALL VERIFY THAT EXISTING STRUCTURES CAN

RACTOR SHALL VERIFY ALL PROPOSED DRAINAGE INVERTS AND PIPE ELEVATIONS PRIOR

HEET C-501 FOR GENERAL EROSION CONTROL NOTES AND DETAILS.

ATER MAIN INSTALLATIONS SHALL BE CLASS 52, CEMENT LINED DUCTILE IRON PIPE. ATER MAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER TRUCTION PRIOR TO ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE

ECTION TO EXISTING WATER MAIN SHALL BE CONSTRUCTED TO CITY OF PORTSMOUTH

RTMENT OF PUBLIC WORKS STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES. LECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC

DINATED WITH THE BUILDING DRAWINGS AND THE APPLICABLE UTILITY COMPANIES. NDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING

ILED ON THESE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND

RACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR

'EEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO IDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER

CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL

EWER PIPE WITH LESS THAN 6' OF COVER IN PAVED AREAS OR LESS THAT 4' OF COVER

HEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY. LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE ING AND SIGN ILLUMINATION SHALL BE PROVIDED BY THE PROJECT ELECTRICAL

20. CONTRACTOR SHALL VERIFY ALL PROPOSED SEWER INVERTS AND PIPE ELEVATIONS PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION

LANDSCAPE NOTES:

- THE CONTRACTOR SHALL FURNISH AND PLANT ALL PLANTS IN QUANTITIES AS SHOWN ON THIS PLAN. NO SUBSTITUTIONS WILL BE PERMITTED UNLESS APPROVED BY OWNER. ALL PLANTS SHALL BE NURSERY GROWN.
- 2. ALL PLANTS SHALL BE NURSERY GROWN AND PLANTS AND WORKMANSHIP SHALL CONFORM TO THE AMERICAN ASSOCIATION OF NURSERYMEN STANDARDS, INCLUDING BUT NOT LIMITED TO SIZE, HEALTH, SHAPE, ETC., AND SHALL BE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO ARRIVAL ON-SITE AND AFTER PLANTING.
- 3. PLANT STOCK SHALL BE GROWN WITHIN THE HARDINESS ZONES 4 THRU 7 ESTABLISHED BY THE PLANT HARDINESS ZONE MAP, MISCELLANEOUS PUBLICATIONS NO. 814, AGRICULTURAL RESEARCH SERVICE, UNITED STATES DEPARTMENT AGRICULTURE, LATEST REVISION.
- 4. PLANT MATERIAL SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS TO THE ORIGINAL PLANTING GRADE PRIOR TO DIGGING.
- 5. THE NUMBER OF EACH INDIVIDUAL PLANT TYPE AND SIZE PROVIDED IN THE PLANT LIST OR ON THE PLAN IS FOR THE CONTRACTOR'S CONVENIENCE ONLY. IF A DISCREPANCY EXISTS BETWEEN THE NUMBER OF PLANTS ON THE LABEL AND THE NUMBER OF SYMBOLS SHOWN ON THE DRAWINGS, THE GREATER NUMBER SHALL APPLY.
- 6. NO SUBSTITUTION OF PLANT MATERIALS WILL BE ALLOWED WITHOUT THE PRIOR WRITTEN APPROVAL OF THE OWNER'S REPRESENTATIVE.
- 7. THE CONTRACTOR SHALL LOCATE, VERIFY AND MARK ALL EXISTING AND NEWLY INSTALLED UNDERGROUND UTILITIES PRIOR TO ANY LAWN WORK OR PLANTING. ANY CONFLICTS WHICH MIGHT OCCUR BETWEEN PLANTING AND UTILITIES SHALL IMMEDIATELY BE REPORTED TO THE OWNER SO THAT ALTERNATE PLANTING LOCATIONS CAN BE DETERMINED.
- 8. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED, SHALL RECEIVE 6" OF LOAM AND SEED. NO FILL SHALL BE PLACED IN ANY WETLAND AREA.
- THREE INCHES (3") OF BARK MULCH IS TO BE USED AROUND THE TREE AND SHRUB PLANTING AS SPECIFIED IN THE DETAILS. WHERE BARK MULCH IS TO BE USED IN A CURBED ISLAND THE BARK MULCH SHALL MEET THE TOP INSIDE EDGE OF THE CURB. ALL OTHER AREAS SHALL RECEIVE 6" INCHES OF LOAM AND SEED.
- 10. LANDSCAPING SHALL BE LOCATED WITHIN 150 FT OF EXTERIOR HOSE ATTACHMENT OR SHALL BE PROVIDED WITH AN IRRIGATION SYSTEM.
- 11. SEE PLANTING DETAILS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- 12. TREE STAKES SHALL REMAIN IN PLACE FOR NO LESS THAN 6 MONTHS AND NO MORE THAN 1 YEAR. 13. PLANTING SHALL BE COMPLETED FROM APRIL 15TH THROUGH OCTOBER 1ST. NO PLANTING
- DURING JULY AND AUGUST UNLESS SPECIAL PROVISIONS ARE MADE FOR DROUGHT.
- 14. PARKING AREA PLANTED ISLANDS TO HAVE MINIMUM OF 1'-0" TOPSOIL PLACED TO WITHIN 3 INCHES OF THE TOP OF CURB ELEVATION. REMOVE ALL CONSTRUCTION DEBRIS BEFORE PLACING TOPSOIL.
- 15. TREES SHALL BE PRUNED IN ACCORDANCE WITH THE LATEST EDITION OF ANSI A300 'TREES, SHRUBS AND OTHER WOOD PLANT MAINTENANCE STANDARD PRACTICES.
- 16. ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24 HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL BE WATERED WEEKLY, OR MORE OFTEN, IF NECESSARY DURING THE FIRST GROWING SEASON. LANDSCAPE CONTRACTOR SHALL COORDINATE WATERING SCHEDULE WITH OWNER DURING THE ONE (1) YEAR GUARANTEE PERIOD.
- 17. EXISTING TREES AND SHRUBS SHOWN ON THE PLAN ARE TO REMAIN UNDISTURBED. ALL EXISTING TREES AND SHRUBS SHOWN TO REMAIN ARE TO BE PROTECTED WITH A 4-FOOT SNOW FENCE PLACED AT THE DRIP LINE OF THE BRANCHES OR AT 8 FEET MINIMUM FROM THE TREE TRUNK. ANY EXISTING TREE OR SHRUB SHOWN TO REMAIN, WHICH IS REMOVED DURING CONSTRUCTION, SHALL BE REPLACED BY A TREE OF COMPARABLE SIZE AND SPECIES TREE OR SHRUB.
- THE CONTRACTOR SHALL GUARANTEE ALL PLANTINGS TO BE IN GOOD HEALTHY, FLOURISHING AND ACCEPTABLE CONDITION FOR A PERIOD OF ONE (1) YEAR BEGINNING AT THE DATE OF ACCEPTANCE OF SUBSTANTIAL COMPLETION. ALL GRASSES, TREES AND SHRUBS THAT, IN THE OPINION OF THE LANDSCAPE ARCHITECT, SHOW LESS THAN 80% HEALTHY GROWTH AT THE END OF ONE YEAR PERIOD SHALL BE REPLACED BY THE CONTRACTOR.
- 19. UPON EXPIRATION OF THE CONTRACTOR'S ONE YEAR GUARANTEE PERIOD, THE OWNER SHALL BE RESPONSIBLE FOR LANDSCAPE MAINTENANCE INCLUDING WATERING DURING PERIODS OF DROUGHT
- 20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PLANTING AND LAWNS AGAINST DAMAGE FROM ONGOING CONSTRUCTION. THIS PROTECTION SHALL BEGIN AT THE TIME THE PLANT IS INSTALLED AND CONTINUE UNTIL THE FORMAL ACCEPTANCE OF ALL THE PLANTINGS.
- 21. PRE-PURCHASE PLANT MATERIAL AND ARRANGE FOR DELIVERY TO MEET PROJECT SCHEDULE AS REQUIRED IT MAY BE NECESSARY TO PRE-DIG CERTAIN SPECIES WELL IN ADVANCE OF ACTUAL PLANTING DATES.

EXISTING CONDITIONS PLAN NOTES:

1. EXISTING CONDITIONS ARE BASED ON A FIELD SURVEY BY DOUCET SURVEY LLC, DATED

12/22/2022.

- **REFERENCE PLANS:**
- "SOUTHERN NEW HAMPSHIRE UNIVERSITY 231 CORPORATE DRIVE PEASE INTERNATIONAL TRADEPORT PORTSMOUTH, NH" PREPARED BY KIMBALL CHASE, LAST REVISED NOVEMBER 17, 2003

ABBREVIATIONS

TBR

BLDG

TYP

COORD

30'R

VGC

SGC

FGC

TC

BC

HDPE

FF

VIF

TO BE REMOVED BUILDING TYPICAL - 29.50

COORDINATE CURB RADIUS VERTICAL GRANITE CURB SLOPED GRANITE CURB FLUSH GRANITE CURB TOP OF CURB BOTTOM OF CURB HIGH-DENSITY POLYETHYLENE FINISH FLOOR VERIFY IN FIELD PROPOSED SPOT GRADE EXISTING SPOT GRADE

LEGEND

-28-

_____XS_____XS_____XS_____XS____

-ohw------

PROPOSED SAWCUT LIMIT OF WORK PROPOSED SILT SOCK

APPROXIMATE LIMIT OF PAVEMENT TO BE REMOVED

APPROXIMATE LIMIT OF TREELINE TO BE REMOVED

APPROXIMATE LIMIT OF 100' WETLAND BUFFER IMPACT

EXISTING PROPERTY LINE PROPOSED EDGE OF PAVEMENT PROPOSED CURB

PROPOSED BUILDING

PROPOSED PAVEMENT SECTION

PROPOSED CONCRETE SIDEWALK

PROPOSED SIGN PROPOSED MAJOR CONTOUR LINE PROPOSED MINOR CONTOUR LINE PROPOSED DRAIN LINE (TYP) PROPOSED CATCHBASIN PROPOSED DRAIN MANHOLE PROPOSED YARD DRAIN EXISTING STORM DRAIN EXISTING SANITARY SEWER EXISTING WATER EXISTING GAS EXISTING UNDERGROUND ELECTRIC EXISTING OVERHEAD UTILITY PROPOSED GAS PROPOSED UNDERGROUND ELECTRIC APPROXIMATE EXISTING ELECTRIC APPROXIMATE EXISTING IRRIGATION APPROXIMATE EXISTING SEWER APPROXIMATE EXISTING WATER EXISTING CATCHBASIN EXISTING DRAIN MANHOLE EXISTING SEWER MANHOLE EXISTING ELECTRIC MANHOLE EXISTING TELEPHONE MANHOLE PROPOSED WATER VALVE PROPOSED GAS VALVE















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GENERAL PROJECT INFORMATION PROJECT APPLICANT: CAPONE ARCHITECTURE

PROJECT NAME: PROJECT MAP / LOT: TAX MAP 314, LOT 2 PROJECT LATITUDE: 43°-04'-33.62"N PROJECT LONGITUDE: 70°-47'-33.12"W

PROPOSED VETERINARY OFFICE PROJECT ADDRESS: 231 CORPORATE DRIVE, PORTSMOUTH NH

PROJECT DESCRIPTION

THE PROPOSED PROJECT CONSISTS OF CONVERTING THE EXISTING 2-STORY BUILDING TO A VETERINARY CLINIC AND CONSTRUCTION OF A 2,320 SF ADDITION FOR A LINEAR ACCELERATOR VAULT. IN ADDITION TO THE BUILDING EXPANSION, THE PROJECT PROPOSES TO REMOVE A ROW OF PARKING WHICH WILL REDUCE OVERALL IMPERVIOUS SURFACE IMPACTS WITHIN THE WETLAND BUFFER.

DISTURBED AREA

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 1.03 ACRES.

SOIL CHARACTERISTICS

BASED ON THE NRCS WEB SOIL SURVEY FOR STRAFFORD COUNTY - NEW HAMPSHIRE, THE SOILS ON SITE CONSIST OF URBAN LAND-CANTON GRAVELLY FINE SANDY LOAM SOILS WHICH HAVE A FAST INFILTRATION RATE WHEN THOROUGHLY WET. THESE SOILS HAVE A HYDROLOGIC SOIL GROUP RATING OF A.

NAME OF RECEIVING WATERS

THE STORM WATER RUNOFF WILL ULTIMATELY DISCHARGE INTO THE WETLAND TO THE EAST OF THE SITE

CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:

- .. CUT AND CLEAR TREES. CONSTRUCT TEMPORARY AND PERMANENT SEDIMENT, EROSION AND DETENTION CONTROL FACILITIES. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATIONS THAT WILL INFLUENCE STORMWATER RUNOFF SUCH
 - NEW CONSTRUCTION
 - CONTROL OF DUST
 - NEARNESS OF CONSTRUCTION SITE TO RECEIVING WATERS
 - CONSTRUCTION DURING LATE WINTER AND EARLY SPRING
- ALL PERMANENT DITCHES, SWALES, DETENTION, RETENTION AND SEDIMENTATION BASINS TO BE STABILIZED USING THE VEGETATIVE AND NON-STRUCTURAL BMPS PRIOR TO DIRECTING RUNOFF TO THEM.
- . CLEAR AND DISPOSE OF DEBRIS
- CONSTRUCT TEMPORARY CULVERTS AND DIVERSION CHANNELS AS REQUIRED GRADE AND GRAVEL ROADWAYS AND PARKING AREAS - ALL ROADS AND PARKING AREA
- SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
- BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES
- SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, PERIMETER
- EROSION CONTROL MEASURES, SEDIMENT TRAPS, ETC., MULCH AND SEED AS REQUIRED. SEDIMENT TRAPS AND/OR BASINS SHALL BE USED AS NECESSARY TO CONTAIN RUNOFF
- UNTIL SOILS ARE STABILIZED. 10. FINISH PAVING ALL ROADWAYS AND PARKING LOTS.
- 11. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES.
- 12. COMPLETE PERMANENT SEEDING AND LANDSCAPING. 13. REMOVE TRAPPED SEDIMENTS FROM COLLECTOR DEVICES AS APPROPRIATE AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES.

SPECIAL CONSTRUCTION NOTES:

. THE CONSTRUCTION SEQUENCE MUST LIMIT THE DURATION AND AREA OF DISTURBANCE. THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

EROSION CONTROL NOTES:

- ALL EROSION CONTROL MEASURES AND PRACTICES SHALL CONFORM TO THE "NEW HAMPSHIRE STORMWATER MANUAL VOLUME 3: EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" PREPARED BY THE NHDES
- PRIOR TO ANY WORK OR SOIL DISTURBANCE, CONTRACTOR SHALL SUBMIT SHOP
- DRAWINGS FOR EROSION CONTROL MEASURES AS REQUIRED IN THE PROJECT MANUAL CONTRACTOR SHALL INSTALL TEMPORARY EROSION CONTROL BARRIERS, INCLUDING HAY BALES, SILT FENCES, MULCH BERMS, SILT SACKS AND SILT SOCKS AS SHOWN IN THESE DRAWINGS AS THE FIRST ORDER OF WORK.
- SILT SACK INLET PROTECTION SHALL BE INSTALLED IN ALL EXISTING AND PROPOSED CATCH BASIN INLETS WITHIN THE WORK LIMITS AND BE MAINTAINED FOR THE DURATION OF THE PROJECT.
- PERIMETER CONTROLS INCLUDING SILT FENCES, MULCH BERM, SILT SOCK, AND/OR HAY BALE BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT UNTIL NON-PAVED AREAS HAVE BEEN STABILIZED
- THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF CONSTRUCTION.
- ALL DISTURBED AREAS NOT OTHERWISE BEING TREATED SHALL RECEIVE 6" LOAM, SEED AND FERTILIZER.
- INSPECT ALL INLET PROTECTION AND PERIMETER CONTROLS WEEKLY AND AFTER EACH RAIN STORM OF 0.25 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE FILTER HEIGHT.
- CONSTRUCT EROSION CONTROL BLANKETS ON ALL SLOPES STEEPER THAN 3:1.

STABILIZATION:

- AN AREA SHALL BE CONSIDERED STABLE WHEN ONE OF THE FOLLOWING HAS OCCURRED: A. BASE COURSE GRAVELS HAVE BEEN 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 RIPRAP HAS BEEN INSTALLED;
- D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.; IN AREAS TO BE PAVED, "STABLE" MEANS THAT BASE COURSE GRAVELS MEETING THE
- REOUIREMENTS OF NHOOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM 304.2 HAVE BEEN INSTALLED. WINTER STABILIZATION PRACTICES:
- A. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE
- OF THAW OR SPRING MELT EVENTS; ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT
- VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS; AFTER OCTOBER 15, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS
- STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT;
- STABILIZATION SHALL BE INITIATED ON ALL LOAM STOCKPILES, AND DISTURBED AREAS, WHERE CONSTRUCTION ACTIVITY SHALL NOT OCCUR FOR MORE THAN TWENTY-ONE (21) CALENDAR DAYS BY THE FOURTEENTH (14TH) DAY AFTER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED IN THAT AREA. STABILIZATION MEASURES TO BE USED INCLUDE:
- A. TEMPORARY SEEDING; B. MULCHING.

- 4. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE 5. WHEN CONSTRUCTION ACTIVITY PERMANENTLY OR TEMPORARILY CEASES WITHIN 100 FEET OF NEARBY SURFACE WATERS OR DELINEATED WETLANDS, THE AREA SHALL BE STABILIZED WITHIN SEVEN (7) DAYS OR PRIOR TO A RAIN EVENT. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN THESE AREAS, SILT FENCES, MULCH BERMS, HAY BALE BARRIERS AND ANY EARTH/DIKES SHALL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED.
- 6. DURING CONSTRUCTION, RUNOFF WILL BE DIVERTED AROUND THE SITE WITH EARTH DIKES, PIPING OR STABILIZED CHANNELS WHERE POSSIBLE. SHEET RUNOFF FROM THE SITE WILL BE FILTERED THROUGH SILT FENCES, MULCH BERMS, HAY BALE BARRIERS, OR SILT SOCKS. ALL STORM DRAIN BASIN INLETS SHALL BE PROVIDED WITH FLARED END SECTIONS AND TRASH RACKS. THE SITE SHALL BE STABILIZED FOR THE WINTER BY NOVEMBER 15.

DUST CONTROL

- CONSTRUCTION PERIOD.
- EXPOSED AREAS, COVERING LOADED DUMP TRUCKS LEAVING THE SITE, AND TEMPORARY MULCHING.
- 3. DUST CONTROL MEASURES SHALL BE UTILIZED SO AS TO PREVENT THE MIGRATION OF DUST FROM THE SITE TO ABUTTING AREAS.

- 1. LOCATE STOCKPILES A MINIMUM OF 50 FEET AWAY FROM CATCH BASINS, SWALES, AND CULVERTS.
- 2. ALL STOCKPILES SHOULD BE SURROUNDED WITH TEMPORARY EROSION CONTROL MEASURES PRIOR TO THE ONSET OF PRECIPITATION 3. PERIMETER BARRIERS SHOULD BE MAINTAINED AT ALL TIMES, AND ADJUSTED AS NEEDED TO ACCOMMODATE THE DELIVERY AND REMOVAL OF MATERIALS FROM THE STOCKPILE. THE INTEGRITY OF THE BARRIER SHOULD BE INSPECTED AT THE END OF EACH WORKING DAY. 4. PROTECT ALL STOCKPILES FROM STORMWATER RUN-OFF USING TEMPORARY EROSION CONTROL MEASURES SUCH AS BERMS, SILT SOCK, OR OTHER APPROVED PRACTICE TO
- PREVENT MIGRATION OF MATERIAL BEYOND THE IMMEDIATE CONFINES OF THE STOCKPILES.

OFF SITE VEHICLE TRACKING:

1. THE CONTRACTOR SHALL CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE(S) PRIOR TO ANY EXCAVATION ACTIVITIES.

VEGETATION:

- 1. TEMPORARY GRASS COVER
- A. SEEDBED PREPARATION: a. APPLY FERTILIZER AT THE RATE OF 600 POUNDS PER ACRE OF 10-10-10. APPLY RATE OF THREE (3) TONS PER ACRE;
- B. SEEDING: a. UTILIZE ANNUAL RYE GRASS AT A RATE OF 40 LBS/ACRE; b. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN
- c. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, OR HYDROSEEDER (SLURRY
- BE LEFT ON SOIL SURFACE. SEEDING RATES MUST BE INCREASED 10% WHEN HYDROSEEDING; C. MAINTENANCE:
- a. TEMPORARY SEEDING SHALL BE PERIODICALLY INSPECTED. AT A MINIMUM, 95% OF DAMS, ETC.).
- 2. VEGETATIVE PRACTICE:
- A. FOR PERMANENT MEASURES AND PLANTINGS:
- OF THREE (3) TONS PER ACRE IN ORDER TO PROVIDE A PH VALUE OF 5.5 TO 7.6; b. FERTILIZER SHALL BE SPREAD ON THE TOP LAYER OF LOAM AND WORKED INTO THE SURFACE. FERTILIZER APPLICATION RATE SHALL BE 800 POUNDS PER ACRE OF
- 10-20-20 FERTILIZER; c. SOIL CONDITIONERS AND FERTILIZER SHALL BE APPLIED AT THE RECOMMENDED UNTIL THE SURFACE IS FINELY PULVERIZED, SMOOTH AND EVEN, AND THEN COMPACTED TO AN EVEN SURFACE CONFORMING TO THE REQUIRED LINES AND POUNDS PER INCH OF WIDTH;
- d. SEED SHALL BE SOWN AT THE RATE SHOWN BELOW. SOWING SHALL BE DONE ON A OVER 100 POUNDS PER LINEAR FOOT OF WIDTH;
- AND ALL NOXIOUS WEEDS REMOVED; g. THE CONTRACTOR SHALL PROTECT AND MAINTAIN THE SEEDED AREAS UNTIL
- ACCEPTED;
- BE APPLIED AT THE INDICATED RATE: SEED MIX

CREEPING RED FESCUE	20 LB
TALL FESCUE	20 LB
REDTOP	2 LBS

IN NO CASE SHALL THE WEED CONTENT EXCEED ONE (1) PERCENT BY WEIGHT. ALL SEED SHALL COMPLY WITH STATE AND FEDERAL SEED LAWS. SEEDING SHALL BE DONE NO LATER THAN SEPTEMBER 15. IN NO CASE SHALL SEEDING TAKE PLACE OVER SNOW. 3. DORMANT SEEDING (SEPTEMBER 15 TO FIRST SNOWFALL):

A. FOLLOW PERMANENT MEASURES SLOPE, LIME, FERTILIZER AND GRADING REQUIREMENTS. APPLY SEED MIXTURE AT TWICE THE INDICATED RATE. APPLY MULCH AS INDICATED FOR PERMANENT MEASURES.

CONCRETE WASHOUT AREA:

- NON-STORMWATER DISCHARGES ARE PROHIBITED ON SITE:
- A. THE CONCRETE DELIVERY TRUCKS SHALL, WHENEVER POSSIBLE, USE WASHOUT
- FACILITIES AT THEIR OWN PLANT OR DISPATCH FACILITY B. IF IT IS NECESSARY, SITE CONTRACTOR SHALL DESIGNATE SPECIFIC WASHOUT AREAS
- AND DESIGN FACILITIES TO HANDLE ANTICIPATED WASHOUT WATER; C. CONTRACTOR SHALL LOCATE WASHOUT AREAS AT LEAST 150 FEET AWAY FROM STORM
- DRAINS, SWALES AND SURFACE WATERS OR DELINEATED WETLANDS; D. INSPECT WASHOUT FACILITIES DAILY TO DETECT LEAKS OR TEARS AND TO IDENTIFY WHEN MATERIALS NEED TO BE REMOVED.

ALLOWABLE NON-STORMWATER DISCHARGES:

- FIRE-FIGHTING ACTIVITIES;
- 2. FIRE HYDRANT FLUSHING
- WATERS USED TO WASH VEHICLES WHERE DETERGENTS ARE NOT USED; 4. WATER USED TO CONTROL DUST;
- 5. POTABLE WATER INCLUDING UNCONTAMINATED WATER LINE FLUSHING;
- 6. ROUTINE EXTERNAL BUILDING WASH DOWN WHERE DETERGENTS ARE NOT USED; PAVEMENT WASH WATERS WHERE DETERGENTS ARE NOT USED;
- 8. UNCONTAMINATED AIR CONDITIONING/COMPRESSOR CONDENSATION;
- UNCONTAMINATED GROUND WATER OR SPRING WATER; 10. FOUNDATION OR FOOTING DRAINS WHICH ARE UNCONTAMINATED;
- 11. LANDSCAPE IRRIGATION.

1. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL DUST THROUGHOUT THE

2. DUST CONTROL METHODS SHALL INCLUDE, BUT BE NOT LIMITED TO SPRINKLING WATER ON

LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDE) AT A

SOIL TO A DEPTH OF TWO (2) INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED; INCLUDING SEED AND FERTILIZER). HYDROSEEDINGS, WHICH INCLUDE MULCH, MAY

THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES USED IN THE INTERIM (MULCH, FILTER BARRIERS, CHECK

a. LIMESTONE SHALL BE THOROUGHLY INCORPORATED INTO THE LOAM LAYER AT A RATE

RATES AND SHALL BE THOROUGHLY WORKED INTO THE LOAM. LOAM SHALL BE RAKED GRADES WITH APPROVED ROLLERS WEIGHING BETWEEN 4-1/2 POUNDS AND 5-1/2

CALM, DRY DAY, PREFERABLY BY MACHINE, BUT IF BY HAND, ONLY BY EXPERIENCED WORKMEN. IMMEDIATELY BEFORE SEEDING, THE SOIL SHALL BE LIGHTLY RAKED. ONE HALF THE SEED SHALL BE SOWN IN ONE DIRECTION AND THE OTHER HALF AT RIGHT ANGLES TO THE ORIGINAL DIRECTION. IT SHALL BE LIGHTLY RAKED INTO THE SOIL TO A DEPTH NOT OVER 1/4 INCH AND ROLLED WITH A HAND ROLLER WEIGHING NOT

e. HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AS INDICATED ABOVE; f. THE SURFACE SHALL BE WATERED AND KEPT MOIST WITH A FINE SPRAY AS REQUIRED, WITHOUT WASHING AWAY THE SOIL, UNTIL THE GRASS IS WELL ESTABLISHED. ANY AREAS WHICH ARE NOT SATISFACTORILY COVERED WITH GRASS SHALL BE RESEEDED,

h. A GRASS SEED MIXTURE CONTAINING THE FOLLOWING SEED REQUIREMENTS SHALL

APPLICATION RATE

- **BS/ACRE**
- **BS/ACRE** ACRE

THE FOLLOWING ARE THE ONLY NON-STORMWATER DISCHARGES ALLOWED. ALL OTHER

WASTE DISPOSAL: WASTE MATERIAL

- A. ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN A DUMPSTER;
- NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE;
- C. ALL PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT. HAZARDOUS WASTE:
- A. ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER; B. SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT
- 3. SANITARY WASTE: A. ALL SANITARY WASTE SHALL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

SPILL PREVENTION:

- 1. CONTRACTOR SHALL BE FAMILIAR WITH SPILL PREVENTION MEASURES REQUIRED BY LOCAL STATE AND FEDERAL AGENCIES. AT A MINIMUM, CONTRACTOR SHALL FOLLOW THE BEST MANAGEMENT SPILL PREVENTION PRACTICES OUTLINED BELOW.
- 2. THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:
- A. GOOD HOUSEKEEPING THE FOLLOWING GOOD HOUSEKEEPING PRACTICE SHALL BE FOLLOWED ON SITE DURING CONSTRUCTION:
- a. ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB SHALL BE STORED ON b. ALL MATERIALS STORED ON SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN
- THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE; c. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL SHALL BE
- FOLLOWED d. THE SITE SUPERINTENDENT SHALL INSPECT DAILY TO ENSURE PROPER USE AND
- DISPOSAL OF MATERIALS; e. SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY
- THE MANUFACTURER; f. WHENEVER POSSIBLE ALL OF A PRODUCT SHALL BE USED UP BEFORE DISPOSING OF
- THE CONTAINER. HAZARDOUS PRODUCTS - THE FOLLOWING PRACTICES SHALL BE USED TO REDUCE THE В. RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
- g. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE;
- h. ORIGINAL LABELS AND MATERIAL SAFETY DATA SHALL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION SURPLUS PRODUCT THAT MUST BE DISPOSED OF SHALL BE DISCARDED ACCORDING
- TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL C. PRODUCT SPECIFIC PRACTICES - THE FOLLOWING PRODUCT SPECIFIC PRACTICES SHALL BE FOLLOWED ON SITE:
- a. PETROLEUM PRODUCTS:
- ALL ON SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE LEAKAGE;
- PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT BASED SUBSTANCES USED ON SITE SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
- b. FERTILIZERS FERTILIZERS USED SHALL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS;
- ONCE APPLIED FERTILIZER SHALL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER • STORAGE SHALL BE IN A COVERED SHED OR ENCLOSED TRAILERS. THE CONTENTS
- OF ANY PARTIALLY USED BAGS OF FERTILIZER SHALL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.
- c. PAINTS: ALL CONTAINERS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED
- FOR USE;
- EXCESS PAINT SHALL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM; EXCESS PAINT SHALL BE DISPOSED OF PROPERLY ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.
- D. SPILL CONTROL PRACTICES IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION, THE FOLLOWING PRACTICES SHALL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:
- a. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP SHALL BE CLEARLY POSTED AND SITE PERSONNEL SHALL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES;
- b. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP SHALL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS SHALL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE;
- c. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY AND REPORTED TO PEASE DEVELOPMENT AUTHORITY;
- d. THE SPILL AREA SHALL BE KEPT WELL VENTILATED AND PERSONNEL SHALL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A
- HAZARDOUS SUBSTANCE; e. SPILLS OF TOXIC OR HAZARDOUS MATERIAL SHALL BE REPORTED TO THE
- APPROPRIATE LOCAL, STATE OR FEDERAL AGENCIES AS REQUIRED;
- f. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS SHALL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR. VEHICLE FUELING AND MAINTENANCE PRACTICE:
- a. CONTRACTOR SHALL MAKE AN EFFORT TO PERFORM EQUIPMENT/VEHICLE FUELING AND MAINTENANCE AT AN OFF-SITE FACILITY:
- b. CONTRACTOR SHALL PROVIDE AN ON-SITE FUELING AND MAINTENANCE AREA THAT IS CLEAN AND DRY;
- c. IF POSSIBLE THE CONTRACTOR SHALL KEEP AREA COVERED;
- d. CONTRACTOR SHALL KEEP A SPILL KIT AT THE FUELING AND MAINTENANCE AREA;
- CONTRACTOR SHALL REGULARLY INSPECT VEHICLES FOR LEAKS AND DAMAGE; CONTRACTOR SHALL USE DRIP PANS, DRIP CLOTHS, OR ABSORBENT PADS WHEN REPLACING SPENT FLUID.

EROSION CONTROL OBSERVATIONS AND MAINTENANCE PRACTICES THIS PROJECT DOES NOT EXCEED ONE (1) ACRE OF DISTURBANCE AND THUS DOES NOT REQUIRES A SWPPP.

THE FOLLOWING REPRESENTS THE GENERAL OBSERVATION AND REPORTING PRACTICES THAT SHALL BE FOLLOWED AS PART OF THIS PROJECT:

- 1. AN OBSERVATION REPORT SHALL BE MADE AFTER EACH OBSERVATION AND DISTRIBUTED TO THE ENGINEER, THE OWNER, AND THE CONTRACTOR; 2. A REPRESENTATIVE OF THE SITE CONTRACTOR, SHALL BE RESPONSIBLE FOR MAINTENANCE
- AND REPAIR ACTIVITIES; IF A REPAIR IS NECESSARY, IT SHALL BE INITIATED WITHIN 24 HOURS OF REPORT;
- 4. AN NPDES NOTICE OF INTENT SHALL BE SUBMITTED.

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GROUND 3" CRUSHED

STONE GROUNI



- SILT-SOCK

FLOW









4/2024 14, 2024-11:58am By: NWilcox



FLOOR PLAN GENERAL NOTES:

- DIMENSIONS ARE TO FACE OF STUD, CONCRETE, OR CMU UNO. ALL DOORS TO BE LOCATED 4" FROM ADJACENT PARTITION WHERE 2. DOOR IS INDICATED ADJACENT TO PARTITION UNO; PROVIDE LOW PROFILE BRUSHED STAINLESS DOME DOOR STOP (BALDWIN 4000.150 OR SIM)
- 3. SEE REFERENCED ENLARGED PLANS, FOR FURTHER DETAILS AND LAYOUT.
- REFER TO A10-01 FOR DOOR AND WINDOW SCHEDULE AND ELEVATIONS. REFER TO ELEVATIONS FOR ADDITIONAL WINDOWS/WALL OPENING 5. INFORMATION.
- 6. OPENINGS FOR DOORS, WINDOWS, LOUVERS, ETC MUST BE VERIFIED WITH MFR ROUGH OPENING REQUIREMENTS. ARCHITECTURAL DIMENSION PLANS ARE INTENDED TO LOCATE FEATURES OF THE BUILDING AND ARE NOT INTENDED TO BE USED AS CONSTRUCTION COORDINATION DRAWINGS.

Proposed Veterinary Office 231 Corporate Drive Portsmouth, NH

Drainage Analysis

Ethos Veterinary Health

June 17, 2024

OF NEW HAMPS STAT PATRICK

Tighe&Bond

Drainage Analysis

То:	City of Portsmouth TAC
FROM:	Neil A. Hansen, PE Patrick M. Crimmins, PE
Сору:	Capone Architecture
DATE:	June 17, 2024

1.0 Project Description

The proposed project is located at 231 Corporate Drive on a singular parcel which is identified as Map 314 Lot 2 on the City of Portsmouth Tax Maps. The proposed project consists of a 2,340 square foot veterinary building expansion with an updated parking layout. The project will include associated site improvements such as paving, stormwater management, utilities, lighting, and landscaping.

Runoff from the proposed surfaces will be directed to a stormwater treatment system prior to entering the existing wetland, located north of the site. Runoff from the proposed expansion and associated parking area are proposed to be treated by a Contech Jellyfish Filter filtration system. Description of the systems can be found in Section 2.2 of this memo.

2.0 Drainage Analysis

The stormwater management system for the proposed expansion has been designed to provide stormwater treatment for the additional impervious area as required by the Pease Development Authority (PDA) regulations including providing stormwater treatment for the proposed building addition and reconfigured parking area. The proposed project reduces the impervious surface on-site.

The watershed area that directs runoff to the proposed stormwater management system was analyzed to determine the Water Quality Volume (WQV) or Water Quality Flow (WQF) required to size the systems. The proposed project area was also analyzed for the pre- and post-development peak runoff rates for the 2-year, 10-year, 25-year and 50-year storm events.

2.1 Peak Rate Comparisons

The following table summarizes and compares the pre- and post-development peak runoff rates for the 2-year, 10-year, 25-year and 50-year storm events at each point of analysis. Point of Analysis 1 (PA-1) is located at the unnamed wetland, on the northern side of the site. Point of Analysis 2 (PA-2) is located at Corporate Drive, towards the northern entrance/exit of the site.

Table 2.1 – Comparison of Pre- and Post- Development Flows				
Point of Analysis	Pre/ Post 2-Year Storm (cfs)	Pre/ Post 10-Year Storm (cfs)	Pre/ Post 25-Year Storm (cfs)	Pre/ Post 50-Year Storm (cfs)
PA1	7.86/ 7.53	12.83/ 12.57	16.67/ 16.46	20.27/ 20.12
PA2	0.45/ 0.39	0.92/ 0.79	1.30/ 1.13	1.66/ 1.46

2.2 Stormwater Treatment

The stormwater management system has been designed to provide stormwater treatment as required by the Pease Development Authority. Stormwater treatment for the development area is detailed below.

The drainage system captures runoff from the proposed addition on the existing building, and runoff from the section parking lot that is to be reconfigured. Runoff from these areas will be collected through catch basins, yard drains, and a roof leader. The runoff captured will be treated by a Contech Jellyfish Filter filtration system. The Jellyfish Filter was sized to treat the Water Quality Flow (WQF), as shown in Table 2.2. The subcatchment area that was analyzed for this treatment practice (POST 1.0) can be referenced on the post-development watershed plan (Sheet C-802).

Table 2.2 - Treatment Area Proposed Filtration System							
VARIABLE	ARIABLE DESCRIPTION						
Р	1 Inch of Rainfall	1 inch					
А	Total Area Draining to Design Structure	0.79 AC					
Ai	Impervious Area Draining to Design Structure	0.47 AC					
I	% Impervious Area Draining to Design Structures	59%					
Rv	Runoff Coefficient, $Rv = 0.05 + (0.9*I)$	0.59					
WQV	Water Quality Volume, WQV = P*A*Rv 1,679 cf						
Тс	Time of Concentration (min.)	6.5					
Qu	Unit Peak Discharge (cfs/mi ² /in)	650					
WQF	WQFTotal Treatment Flow, WQF = WQV*qu0.470 cfs						

3.0 Web Soil Survey Report

United States Department of Agriculture

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

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.

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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.

	MAP LEGEND			MAP INFORMATION	
Area of Inte	Area of Interest (AOI)		Spoil Area	The soil surveys that comprise your AOI were mapped at	
	Area of Interest (AOI)	٥	Stony Spot	1:24,000.	
Soils		0	Very Stony Spot	Warning: Soil Map may not be valid at this scale	
	Soil Map Unit Polygons	Ŷ	Wet Spot	Warning. Soir wap may not be valid at the board.	
~	Soil Map Unit Lines	~	Other	Enlargement of maps beyond the scale of mapping can cause	
	Soil Map Unit Points	-	Special Line Features	line placement. The maps do not show the small areas of	
Special F	Special Point Features		hures	contrasting soils that could have been shown at a more detailed	
ၑ	Blowout		Streams and Canals	scale.	
\boxtimes	Borrow Pit	Transporta	ation	Please rely on the bar scale on each man sheet for man	
ж	Clay Spot	+++	Rails	measurements.	
\diamond	Closed Depression	~	Interstate Highways		
X	Gravel Pit	~	US Routes	Source of Map: Natural Resources Conservation Service Web Soil Survey URL:	
0 0 0	Gravelly Spot	_	Major Roads	Coordinate System: Web Mercator (EPSG:3857)	
0	Landfill		Local Roads	Mans from the Web Soil Survey are based on the Web Mercator	
A	Lava Flow Background			projection, which preserves direction and shape but distorts	
عاد	Marsh or swamp	Dackgroui	Aerial Photography	distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more	
~	Mine or Quarry			accurate calculations of distance or area are required.	
â	Miscellaneous Water			This product is constrated from the LISDA NDCS partified data as	
~	Parannial Water			of the version date(s) listed below.	
0	Pock Outeron				
×				Soil Survey Area: Rockingham County, New Hampshire Survey Area Data: Version 25 Sep 12 2022	
+					
	Sandy Spot			Soil map units are labeled (as space allows) for map scales	
-	Severely Eroded Spot				
\diamond	Sinkhole			Date(s) aerial images were photographed: Jun 19, 2020—Sep	
≫	Slide or Slip			20, 2020	
ø	Sodic Spot			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
134	Maybid silt loam	0.8	0.7%
299	Udorthents, smoothed	24.6	21.4%
799	Urban land-Canton complex, 3 to 15 percent slopes	89.9	77.9%
Totals for Area of Interest		115.4	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

134—Maybid silt loam

Map Unit Setting

National map unit symbol: 9cmg Elevation: 0 to 180 feet Mean annual precipitation: 47 to 50 inches Mean annual air temperature: 48 degrees F Frost-free period: 155 to 165 days Farmland classification: Not prime farmland

Map Unit Composition

Maybid and similar soils: 75 percent Minor components: 25 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Maybid

Setting

Landform: Marine terraces Parent material: Silty and clayey marine deposits

Typical profile

H1 - 0 to 9 inches: silt loam H2 - 9 to 26 inches: silty clay loam H3 - 26 to 63 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6w Hydrologic Soil Group: C/D Ecological site: F144AY020MA - Very Wet Coastal Lake Plain Hydric soil rating: Yes

Minor Components

Scitico

Percent of map unit: 10 percent *Landform:* Marine terraces *Hydric soil rating:* Yes

Ossipee

Percent of map unit: 10 percent

Landform: Swamps Hydric soil rating: Yes

Not named wet Percent of map unit: 5 percent Landform: Marine terraces Hydric soil rating: Yes

299—Udorthents, smoothed

Map Unit Setting

National map unit symbol: 9cmt Elevation: 0 to 840 feet Mean annual precipitation: 44 to 49 inches Mean annual air temperature: 48 degrees F Frost-free period: 155 to 165 days Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 100 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Udorthents

Properties and qualities

Depth to restrictive feature: More than 80 inches Drainage class: Excessively drained Depth to water table: More than 80 inches Frequency of flooding: None Frequency of ponding: None

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

Scituate and newfields

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

Chatfield

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

Boxford and eldridge

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

Walpole

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

Squamscott and scitico

Percent of map unit: 4 percent Landform: Marine terraces Hydric soil rating: Yes Custom Soil Resource Report





Area Listing (selected nodes)

Area	CN	Description
(sq-ft)		(subcatchment-numbers)
40,188	74	>75% Grass cover, Good, HSG C (PRE 1.0, PRE 1.1, PRE 2.0)
4,088	96	Gravel surface, HSG C (PRE 1.0, PRE 1.1, PRE 2.0)
65,667	98	Paved parking, HSG C (PRE 1.0, PRE 1.1, PRE 2.0)
12,247	98	Roofs, HSG C (PRE 1.1)
1,619	70	Woods, Good, HSG C (PRE 1.0, PRE 1.1)
123,809	90	TOTAL AREA

Soil Listing (selected nodes)

Area	Soil	Subcatchment
(sq-ft)	Group	Numbers
0	HSG A	
0	HSG B	
123,809	HSG C	PRE 1.0, PRE 1.1, PRE 2.0
0	HSG D	
0	Other	
123,809		TOTAL AREA

E5065-001_PRE	Type III 24-hr 2-Yr Rainfall=3.68"
Prepared by Tighe & Bond	Printed 6/4/2024
HydroCAD® 10.20-4b s/n 01453 © 2023 HydroCAD Software Solutions LLC	C Page 1

SubcatchmentPRE 1.0:	Runoff Area=53,021 sf 57.65% Impervious Runoff Depth>2.52" Flow Length=401' Tc=6.0 min CN=89 Runoff=3.48 cfs 11,144 cf
SubcatchmentPRE 1.1:	Runoff Area=59,650 sf 77.48% Impervious Runoff Depth>2.91" Flow Length=246' Tc=6.0 min CN=93 Runoff=4.38 cfs 14,450 cf
SubcatchmentPRE 2.0:	Runoff Area=11,138 sf 10.15% Impervious Runoff Depth>1.56" Tc=6.0 min CN=77 Runoff=0.45 cfs 1,452 cf
Link PA1:	Inflow=7.86 cfs 25,594 cf Primary=7.86 cfs 25,594 cf
Link PA2:	Inflow=0.45 cfs 1,452 cf Primary=0.45 cfs 1,452 cf

Total Runoff Area = 123,809 sf Runoff Volume = 27,045 cf Average Runoff Depth = 2.62" 37.07% Pervious = 45,895 sf 62.93% Impervious = 77,914 sf

E5065-001_PRE	Type III 24-hr	10-Yr Rainfall=5.59"
Prepared by Tighe & Bond		Printed 6/4/2024
HydroCAD® 10.20-4b s/n 01453 © 2023 HydroCAD Software Solutions L	LC	Page 2
		-

SubcatchmentPRE 1.0:	Runoff Area=53,021 sf 57.65% Impervious Runoff Depth>4.34" Flow Length=401' Tc=6.0 min CN=89 Runoff=5.84 cfs 19,158 cf
SubcatchmentPRE 1.1:	Runoff Area=59,650 sf 77.48% Impervious Runoff Depth>4.78" Flow Length=246' Tc=6.0 min CN=93 Runoff=6.99 cfs 23,736 cf
SubcatchmentPRE 2.0:	Runoff Area=11,138 sf 10.15% Impervious Runoff Depth>3.12" Tc=6.0 min CN=77 Runoff=0.92 cfs 2,897 cf
Link PA1:	Inflow=12.83 cfs 42,894 cf Primary=12.83 cfs 42,894 cf
Link PA2:	Inflow=0.92 cfs 2,897 cf Primary=0.92 cfs 2,897 cf

Total Runoff Area = 123,809 sf Runoff Volume = 45,791 cf Average Runoff Depth = 4.44" 37.07% Pervious = 45,895 sf 62.93% Impervious = 77,914 sf

Summary for Subcatchment PRE 1.0:

Runoff = 5.84 cfs @ 12.09 hrs, Volume= 19,158 cf, Depth> 4.34" Routed to Link PA1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type III 24-hr 10-Yr Rainfall=5.59"

	Area (sf)	CN	Description			
	19,473	74	>75% Grass cover, Good, HSG C			
	1,922	96	Gravel surfa	Gravel surface, HSG C		
	1,057	70	Woods, Go	Voods, Good, HSG C		
	30,569	98	Paved park	ing, HSG C		
	53,021	89	Weighted A	verage		
	22,452		42.35% Per	vious Area		
	30,569		57.65% Imp	pervious Ar	ea	
Тс	c Length	Slop	e Velocity	Capacity	Description	
(min) (feet)	(ft/ft	:) (ft/sec)	(cfs)		
0.6	6 50	0.025	0 1.40		Sheet Flow,	
					Smooth surfaces n= 0.011 P2= 3.68"	
0.7	7 115	0.016	3 2.59		Shallow Concentrated Flow,	
					Paved Kv= 20.3 fps	
2.3	3 236	0.013	1 1.72		Shallow Concentrated Flow,	
					Grassed Waterway Kv= 15.0 fps	
3.6	6 401	Total,	Increased t	o minimum	1 Tc = 6.0 min	

Summary for Subcatchment PRE 1.1:

Runoff = 6.99 cfs @ 12.09 hrs, Volume= 23,736 cf, Depth> 4.78" Routed to Link PA1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type III 24-hr 10-Yr Rainfall=5.59"

Area (sf)	CN	Description
12,247	98	Roofs, HSG C
11,028	74	>75% Grass cover, Good, HSG C
1,846	96	Gravel surface, HSG C
562	70	Woods, Good, HSG C
33,967	98	Paved parking, HSG C
59,650	93	Weighted Average
13,436		22.52% Pervious Area
46,214		77.48% Impervious Area

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 Type III 24-hr
 10-Yr Rainfall=5.59"

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Tc	Length	Slope	Velocity	Capacity	Description
(min)	(leet)	(11/11)	(It/sec)	(CIS)	
2.0	100	0.0050	0.85		Sheet Flow,
					Smooth surfaces n= 0.011 P2= 3.68"
0.7	58	0.0050	1.44		Shallow Concentrated Flow,
					Paved Kv= 20.3 fps
0.1	12	0.0220	2.39		Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
0.1	16	0.0220	2.22		Shallow Concentrated Flow,
					Grassed Waterway Kv= 15.0 fps
0.0	5	0.0220	3.01		Shallow Concentrated Flow,
					Paved Kv= 20.3 fps
0.3	46	0.0220	3.01		Shallow Concentrated Flow,
					Paved Kv= 20.3 fps
0.1	9	0.0220	2.22		Shallow Concentrated Flow,
					Grassed Waterway Kv= 15.0 fps

3.3 246 Total, Increased to minimum Tc = 6.0 min

Summary for Subcatchment PRE 2.0:

2,897 cf, Depth> 3.12"

Runoff	=	0.92 cfs @	12.09 hrs,	Volume=
Routed	d to I	_ink PA2 :		

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type III 24-hr 10-Yr Rainfall=5.59"

Ar	ea (sf)	CN	Description		
	9,687	74	>75% Gras	s cover, Go	bod, HSG C
	320	96	Gravel surfa	ace, HSG (
	1,131	98	Paved park	ing, HSG C	
	11,138	77	Weighted A	verage	
	10,007		89.85% Pervious Area		
	1,131		10.15% Imp	pervious Ar	ea
Tc (min)	Length (feet)	Slop (ft/ft	e Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Link PA1:

Inflow Area =		112,671 sf,	68.15% Impervious,	Inflow Depth >	4.57" f	or 10-Yr event
Inflow	=	12.83 cfs @	12.09 hrs, Volume=	42,894 cf	f	
Primary	=	12.83 cfs @	12.09 hrs, Volume=	42,894 cf	f, Atten=	0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA2:

Inflow A	Area	=	11,138 sf,	10.15% Imp	pervious,	Inflow Depth >	3.12"	for 10	0-Yr event
Inflow		=	0.92 cfs @	12.09 hrs, V	/olume=	2,897 c	f		
Primary	y	=	0.92 cfs @	12.09 hrs, V	/olume=	2,897 c	f, Atten	= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

E5065-001_PRE	Type III 24-hr	25-Yr Rainfall=7.08"
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SubcatchmentPRE 1.0:	Runoff Area=53,021 sf 57.65% Impervious Runoff Depth>5.78" Flow Length=401' Tc=6.0 min CN=89 Runoff=7.66 cfs 25,548 cf
SubcatchmentPRE 1.1:	Runoff Area=59,650 sf 77.48% Impervious Runoff Depth>6.25" Flow Length=246' Tc=6.0 min CN=93 Runoff=9.01 cfs 31,050 cf
SubcatchmentPRE 2.0:	Runoff Area=11,138 sf 10.15% Impervious Runoff Depth>4.43" Tc=6.0 min CN=77 Runoff=1.30 cfs 4,116 cf
Link PA1:	Inflow=16.67 cfs 56,598 cf Primary=16.67 cfs 56,598 cf
Link PA2:	Inflow=1.30 cfs 4,116 cf Primary=1.30 cfs 4,116 cf

Total Runoff Area = 123,809 sf Runoff Volume = 60,714 cf Average Runoff Depth = 5.88" 37.07% Pervious = 45,895 sf 62.93% Impervious = 77,914 sf

E5065-001_PRE	Type III 24-hr	50-Yr Rainfall=8.49"
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SubcatchmentPRE 1.0:	Runoff Area=53,021 sf 57.65% Impervious Runoff Depth>7.16" Flow Length=401' Tc=6.0 min CN=89 Runoff=9.37 cfs 31,650 cf
SubcatchmentPRE 1.1:	Runoff Area=59,650 sf 77.48% Impervious Runoff Depth>7.64" Flow Length=246' Tc=6.0 min CN=93 Runoff=10.90 cfs 37,998 cf
SubcatchmentPRE 2.0:	Runoff Area=11,138 sf 10.15% Impervious Runoff Depth>5.72" Tc=6.0 min CN=77 Runoff=1.66 cfs 5,310 cf
Link PA1:	Inflow=20.27 cfs 69,648 cf Primary=20.27 cfs 69,648 cf
Link PA2:	Inflow=1.66 cfs 5,310 cf Primary=1.66 cfs 5,310 cf

Total Runoff Area = 123,809 sf Runoff Volume = 74,958 cf Average Runoff Depth = 7.27" 37.07% Pervious = 45,895 sf 62.93% Impervious = 77,914 sf





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Area Listing (selected nodes)

	Area	CN	Description
	(sq-ft)		(subcatchment-numbers)
	49,454	74	>75% Grass cover, Good, HSG C (POST 1.0, POST 1.1, POST 2.0)
	2,892	96	Gravel surface, HSG C (POST 1.0, POST 1.1)
	17,246	98	Paved parking, HSG C (POST 1.0, POST 2.0)
-	14,587	98	Roofs, HSG C (POST 1.0, POST 1.1)
3	38,051	98	Unconnected pavement, HSG C (POST 1.1)
	1,579	70	Woods, Good, HSG C (POST 1.1, POST 2.0)
1:	23,809	88	TOTAL AREA

Soil Listing (selected nodes)

Area	Soil	Subcatchment
(sq-ft)	Group	Numbers
0	HSG A	
0	HSG B	
123,809	HSG C	POST 1.0, POST 1.1, POST 2.0
0	HSG D	
0	Other	
123,809		TOTAL AREA

E5065-001_POST	Type III 24-hr 2-Yr Rainfall=3.68"
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SubcatchmentPOST 1.0:	Runoff Area=34,842 sf 53.81% Impervious Runoff Depth>2.43" Flow Length=438' Tc=6.5 min CN=88 Runoff=2.19 cfs 7,059 cf
SubcatchmentPOST 1.1:	Runoff Area=79,034 sf 63.64% Impervious Runoff Depth>2.61" Flow Length=246' Tc=6.0 min CN=90 Runoff=5.35 cfs 17,222 cf
SubcatchmentPOST 2.0:	Runoff Area=9,933 sf 8.43% Impervious Runoff Depth>1.50" Flow Length=24' Slope=0.1416 '/' Tc=6.0 min CN=76 Runoff=0.39 cfs 1,238 cf
Pond PDMH 01:	Peak Elev=24.12' Inflow=2.19 cfs 7,059 cf 12.0" Round Culvert n=0.013 L=65.0' S=0.0046 '/' Outflow=2.19 cfs 7,059 cf
Pond PDMH 02:	Peak Elev=24.63' Inflow=2.19 cfs 7,059 cf Primary=1.63 cfs 6,669 cf Secondary=0.56 cfs 390 cf Outflow=2.19 cfs 7,059 cf
Pond PJJF:	Peak Elev=24.27' Inflow=1.63 cfs 6,669 cf 12.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=1.63 cfs 6,669 cf
Link PA1:	Inflow=7.53 cfs 24,281 cf Primary=7.53 cfs 24,281 cf
Link PA2:	Inflow=0.39 cfs 1,238 cf Primary=0.39 cfs 1,238 cf

Total Runoff Area = 123,809 sf Runoff Volume = 25,519 cf Average Runoff Depth = 2.47" 43.55% Pervious = 53,925 sf 56.45% Impervious = 69,884 sf

E5065-001_POST <i>Typ</i>	be III 24-hr	10-Yr Raiı	nfall=5.59"
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SubcatchmentPOST 1.0	Runoff Area=34,842 sf 53.81% Impervious Runoff Depth>4.23" Flow Length=438' Tc=6.5 min CN=88 Runoff=3.72 cfs 12,277 cf
SubcatchmentPOST 1.1	: Runoff Area=79,034 sf 63.64% Impervious Runoff Depth>4.44" Flow Length=246' Tc=6.0 min CN=90 Runoff=8.85 cfs 29,269 cf
SubcatchmentPOST 2.0	Runoff Area=9,933 sf 8.43% Impervious Runoff Depth>3.03" Flow Length=24' Slope=0.1416 '/' Tc=6.0 min CN=76 Runoff=0.79 cfs 2,505 cf
Pond PDMH 01:	Peak Elev=25.03' Inflow=3.72 cfs 12,277 cf 12.0" Round Culvert n=0.013 L=65.0' S=0.0046 '/' Outflow=3.72 cfs 12,277 cf
Pond PDMH 02:	Peak Elev=25.33' Inflow=3.72 cfs 12,277 cf Primary=2.69 cfs 10,533 cf Secondary=2.37 cfs 1,744 cf Outflow=3.72 cfs 12,277 cf
Pond PJJF:	Peak Elev=25.30' Inflow=2.69 cfs 10,533 cf 12.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=2.69 cfs 10,533 cf
Link PA1:	Inflow=12.57 cfs 41,547 cf Primary=12.57 cfs 41,547 cf
Link PA2:	Inflow=0.79 cfs 2,505 cf Primary=0.79 cfs 2,505 cf

Total Runoff Area = 123,809 sf Runoff Volume = 44,052 cf Average Runoff Depth = 4.27" 43.55% Pervious = 53,925 sf 56.45% Impervious = 69,884 sf

Summary for Subcatchment POST 1.0:

[47] Hint: Peak is 148% of capacity of segment #3

Runoff = 3.72 cfs @ 12.09 hrs, Volume= Routed to Pond PDMH 02 : 12,277 cf, Depth> 4.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type III 24-hr 10-Yr Rainfall=5.59"

_	A	rea (sf)	CN	Description					
		2,340	98	Roofs, HSC	G C				
		14,289 74 >75% Grass cover, Good, HSG C							
		1,804	96	96 Gravel surface, HSG C					
_	16,409 98 Paved parking, HSG C								
34.842 88 Weighted Average									
		16,093		46.19% Pe	rvious Area				
		18,749		53.81% Im	pervious Ar	ea			
	Тс	Length	Slope	· Velocity	Capacity	Description			
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
	4.4	40	0.0200	0.15		Sheet Flow,			
						Grass: Short n= 0.150 P2= 3.68"			
	0.4	66	0.0200	2.87		Shallow Concentrated Flow,			
						Paved Kv= 20.3 fps			
	1.7	332	0.0050	3.21	2.52	Pipe Channel,			
						12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'			
_						n= 0.013			
	6.5	438	Total						

Summary for Subcatchment POST 1.1:

Runoff = 8.85 cfs @ 12.09 hrs, Volume= 29,269 cf, Depth> 4.44" Routed to Link PA1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type III 24-hr 10-Yr Rainfall=5.59"

Area (sf)	CN	Description
12,247	98	Roofs, HSG C
26,800	74	>75% Grass cover, Good, HSG C
1,088	96	Gravel surface, HSG C
848	70	Woods, Good, HSG C
38,051	98	Unconnected pavement, HSG C
79,034	90	Weighted Average
28,736		36.36% Pervious Area
50,298		63.64% Impervious Area
38,051		75.65% Unconnected

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 Type III 24-hr
 10-Yr Rainfall=5.59"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	100	0.0050	0.85		Sheet Flow.
					Smooth surfaces n= 0.011 P2= 3.68"
0.7	58	0.0050	1.44		Shallow Concentrated Flow,
					Paved Kv= 20.3 fps
0.1	12	0.0220	2.39		Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
0.1	16	0.0220	2.22		Shallow Concentrated Flow,
					Grassed Waterway Kv= 15.0 fps
0.0	5	0.0220	3.01		Shallow Concentrated Flow,
					Paved Kv= 20.3 fps
0.3	46	0.0220	3.01		Shallow Concentrated Flow,
					Paved Kv= 20.3 fps
0.1	9	0.0220	2.22		Shallow Concentrated Flow,
					Grassed Waterway Kv= 15.0 fps

3.3 246 Total, Increased to minimum Tc = 6.0 min

Summary for Subcatchment POST 2.0:

2,505 cf, Depth> 3.03"

Runoff	=	0.79 cfs @	12.09 hrs,	Volume=
Route	d to L	ink PA2 :		

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Type III 24-hr 10-Yr Rainfall=5.59"

A	rea (sf)	CN	Description	l		
	8,365	74	>75% Gras	s cover, Go	ood, HSG C	
	731	70	Woods, Go	od, HSG C		
	837	98	Paved park	ing, HSG C)	
	9,933	76	Weighted A	verage		
	9,096		91.57% Pe	rvious Area		
	837		8.43% Imp	ervious Are	а	
Тс	Length	Slop	e Velocity	Capacity	Description	
(min)	(feet)	(ft/f	t) (ft/sec)	(cfs)		
0.6	24	0.141	6 0.72		Sheet Flow,	
					Fallow n= 0.050	P2= 3.68"
0.6	24	Total,	Increased	to minimum	Tc = 6.0 min	

Summary for Pond PDMH 01:

[80] Warning: Exceeded Pond PDMH 02 by 0.08' @ 12.10 hrs (0.84 cfs 151 cf) [80] Warning: Exceeded Pond PJJF by 0.29' @ 12.05 hrs (2.05 cfs 368 cf)

 Inflow Area =
 34,842 sf, 53.81% Impervious, Inflow Depth > 4.23" for 10-Yr event

 Inflow =
 3.72 cfs @
 12.09 hrs, Volume=
 12,277 cf

 Outflow =
 3.72 cfs @
 12.09 hrs, Volume=
 12,277 cf, Atten= 0%, Lag= 0.0 min

 Primary =
 3.72 cfs @
 12.09 hrs, Volume=
 12,277 cf, Atten= 0%, Lag= 0.0 min

 Routed to Link PA1 :
 12.09 hrs, Volume=
 12,277 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Peak Elev= 25.03' @ 12.10 hrs Flood Elev= 28.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.10'	12.0" Round Culvert L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.10' / 22.80' S= 0.0046 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
			5, , , ,

Primary OutFlow Max=3.68 cfs @ 12.09 hrs HW=25.00' TW=0.00' (Dynamic Tailwater) -1=Culvert (Barrel Controls 3.68 cfs @ 4.68 fps)

Summary for Pond PDMH 02:

Inflow Area =		34,842 sf,	53.81% Ir	npervious,	Inflow Depth > 4.23"	for 10-Yr event
Inflow	=	3.72 cfs @	12.09 hrs,	Volume=	12,277 cf	
Outflow	=	3.72 cfs @	12.09 hrs,	Volume=	12,277 cf, Atte	en= 0%, Lag= 0.0 min
Primary	=	2.69 cfs @	12.09 hrs,	Volume=	10,533 cf	
Routed to Pond PJJF :						
Secondary	/ =	2.37 cfs @	12.18 hrs,	Volume=	1,744 cf	
Routed	l to Po	nd PDMH 01:				

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs Peak Elev= 25.33' @ 12.16 hrs Flood Elev= 28.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.80'	12.0" Round TREATMENT
	•		L= 5.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 23.80' / 23.75' S= 0.0100 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	24.25'	12.0" Round BYPASS
			L= 6.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 24.25' / 23.90' S= 0.0583 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=24.91' TW=25.03' (Dynamic Tailwater)

Secondary OutFlow Max=2.51 cfs @ 12.18 hrs HW=25.18' TW=24.34' (Dynamic Tailwater) 2=BYPASS (Inlet Controls 2.51 cfs @ 3.29 fps)

Summary for Pond PJJF:

[80] Warning: Exceeded Pond PDMH 02 by 0.29' @ 12.10 hrs (2.05 cfs 368 cf)

E5065-001_POST Prepared by Tighe & Bond HydroCAD® 10.20-4b s/n 01453 © 3	Type III 24-hr 10-Yr Rainfall=5.59"Printed 6/13/20242023 HydroCAD Software Solutions LLCPage 4
Inflow Area = 34,842 sf, 5 Inflow = 2.69 cfs @ 12 Outflow = 2.69 cfs @ 12 Primary = 2.69 cfs @ 12 Routed to Pond PDMH 01 : 12	i3.81% Impervious, Inflow Depth > 3.63" for 10-Yr event 2.09 hrs, Volume= 10,533 cf 2.09 hrs, Volume= 10,533 cf, Atten= 0%, Lag= 0.0 min 2.09 hrs, Volume= 10,533 cf
Routing by Dyn-Stor-Ind method, Peak Elev= 25.30' @ 12.12 hrs Flood Elev= 28.80'	Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Device Routing Invert	Outlet Devices
#1 Primary 23.25'	12.0" Round Culvert L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.25' / 23.20' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
Primary OutFlow Max=0.99 cfs @ —1=Culvert (Inlet Controls 0.99	D 12.09 hrs HW=25.03' TW=24.96' (Dynamic Tailwater) cfs @ 1.27 fps)

Summary for Link PA1:

Inflow A	Area	ı =	113,876 sf,	60.63% Impervious,	Inflow Depth > 4	4.38" for	10-Yr event
Inflow		=	12.57 cfs @	12.09 hrs, Volume=	41,547 cf		
Primar	У	=	12.57 cfs @	12.09 hrs, Volume=	41,547 cf,	Atten= 0%	%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA2:

Inflow A	rea =	9,933 sf,	8.43% Impervious,	Inflow Depth > 3	3.03" for 10-Yr event
Inflow	=	0.79 cfs @	12.09 hrs, Volume=	2,505 cf	
Primary	· =	0.79 cfs @	12.09 hrs, Volume=	2,505 cf,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

E5065-001_POST	Type III 24-hr	25-Yr Rair	nfall=7.08"
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SubcatchmentPOST 1.	ComparisonRunoff Area=34,842 sf53.81% ImperviousRunoff Depth>5.67"Flow Length=438'Tc=6.5 minCN=88Runoff=4.91 cfs16,453 cf
SubcatchmentPOST 1.	I:Runoff Area=79,034 sf63.64% ImperviousRunoff Depth>5.90"Flow Length=246'Tc=6.0 minCN=90Runoff=11.56 cfs38,842 cf
SubcatchmentPOST 2.	ConstructionRunoff Area=9,933 sf8.43% ImperviousRunoff Depth>4.32"Flow Length=24'Slope=0.1416 '/'Tc=6.0 minCN=76Runoff=1.13 cfs3,580 cf
Pond PDMH 01:	Peak Elev=25.95' Inflow=4.91 cfs 16,453 cf 12.0" Round Culvert n=0.013 L=65.0' S=0.0046 '/' Outflow=4.91 cfs 16,453 cf
Pond PDMH 02:	Peak Elev=26.33' Inflow=4.91 cfs 16,453 cf Primary=3.08 cfs 13,596 cf Secondary=3.02 cfs 2,858 cf Outflow=4.91 cfs 16,453 cf
Pond PJJF:	Peak Elev=26.25' Inflow=3.08 cfs 13,596 cf 12.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=3.08 cfs 13,596 cf
Link PA1:	Inflow=16.46 cfs 55,296 cf Primary=16.46 cfs 55,296 cf
Link PA2:	Inflow=1.13 cfs 3,580 cf Primary=1.13 cfs 3,580 cf

Total Runoff Area = 123,809 sf Runoff Volume = 58,876 cf Average Runoff Depth = 5.71" 43.55% Pervious = 53,925 sf 56.45% Impervious = 69,884 sf

E5065-001_POST 7	ype III 24-hr	50-Yr Raii	nfall=8.49"
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SubcatchmentPOST 1.	ComparisonRunoff Area=34,842 sf53.81% ImperviousRunoff Depth>7.04"Flow Length=438'Tc=6.5 minCN=88Runoff=6.03 cfs20,447 cf
SubcatchmentPOST 1.	Runoff Area=79,034 sf 63.64% Impervious Runoff Depth>7.28" Flow Length=246' Tc=6.0 min CN=90 Runoff=14.10 cfs 47,970 cf
SubcatchmentPOST 2.	ComparisonRunoff Area=9,933 sf8.43% ImperviousRunoff Depth>5.60"Flow Length=24'Slope=0.1416 '/'Tc=6.0 minCN=76Runoff=1.46 cfs4,636 cf
Pond PDMH 01:	Peak Elev=27.04' Inflow=6.03 cfs 20,447 cf 12.0" Round Culvert n=0.013 L=65.0' S=0.0046 '/' Outflow=6.03 cfs 20,447 cf
Pond PDMH 02:	Peak Elev=27.67' Inflow=6.03 cfs 20,447 cf Primary=3.90 cfs 16,524 cf Secondary=3.70 cfs 3,923 cf Outflow=6.03 cfs 20,447 cf
Pond PJJF:	Peak Elev=27.58' Inflow=3.90 cfs 16,524 cf 12.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=3.90 cfs 16,524 cf
Link PA1:	Inflow=20.12 cfs 68,417 cf Primary=20.12 cfs 68,417 cf
Link PA2:	Inflow=1.46 cfs 4,636 cf Primary=1.46 cfs 4,636 cf

Total Runoff Area = 123,809 sf Runoff Volume = 73,054 cf Average Runoff Depth = 7.08" 43.55% Pervious = 53,925 sf 56.45% Impervious = 69,884 sf

4.0 Conclusion

The proposed project will result in a reduction to the post-development peak runoff rates from the pre-development condition for all points of analysis. There is a net decrease in impervious areas resulting from the proposed project. The proposed stormwater filtration system will treat 18,700 SF of impervious surface runoff from the project area prior to ultimately discharging to the unnamed wetland, defined as PA-1. The proposed project results in an improvement to the stormwater runoff discharging from the site due to existing conditions providing no advanced stormwater treatment.

Appendices

- A. Extreme Precipitation Tables
- B. Contech Jellyfish Sizing Memo

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APPENDIX A
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	New Hampshire
Location	
Longitude	70.793 degrees West
Latitude	43.076 degrees North
Elevation	0 feet
Date/Time	Mon, 09 Jan 2023 08:29:39 -0500

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	2.91	1yr	2.35	2.80	3.21	3.93	4.54	1yr
2yr	0.32	0.50	0.62	0.81	1.02	1.30	2yr	0.88	1.18	1.51	1.93	2.48	3.20	3.56	2yr	2.84	3.42	3.93	4.67	5.31	2yr
5yr	0.37	0.58	0.73	0.97	1.24	1.60	5yr	1.07	1.46	1.88	2.42	3.13	4.06	4.57	5yr	3.59	4.39	5.02	5.92	6.69	5yr
10yr	0.41	0.64	0.81	1.11	1.44	1.88	10yr	1.24	1.72	2.22	2.88	3.74	4.86	5.52	10yr	4.30	5.30	6.06	7.09	7.96	10yr
25yr	0.47	0.75	0.96	1.32	1.76	2.32	25yr	1.52	2.13	2.76	3.61	4.72	6.16	7.08	25yr	5.45	6.81	7.77	9.00	10.03	25yr
50yr	0.53	0.85	1.09	1.52	2.05	2.73	50yr	1.77	2.51	3.26	4.30	5.64	7.38	8.56	50yr	6.53	8.23	9.38	10.78	11.96	50yr
100yr	0.59	0.95	1.23	1.75	2.39	3.22	100yr	2.06	2.96	3.87	5.12	6.74	8.84	10.36	100yr	7.82	9.96	11.32	12.92	14.26	100yr
200yr	0.67	1.09	1.41	2.02	2.79	3.79	200yr	2.41	3.49	4.57	6.08	8.04	10.59	12.52	200yr	9.37	12.04	13.67	15.50	17.01	200yr
500yr	0.79	1.29	1.69	2.45	3.43	4.70	500yr	2.96	4.34	5.70	7.64	10.17	13.46	16.11	500yr	11.91	15.49	17.56	19.71	21.48	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	0.73	0.89	1yr	0.63	0.87	0.92	1.32	1.66	2.22	2.51	1yr	1.97	2.41	2.84	3.16	3.88	1yr
2yr	0.31	0.49	0.60	0.81	1.00	1.19	2yr	0.86	1.16	1.37	1.82	2.34	3.05	3.45	2yr	2.70	3.32	3.81	4.54	5.06	2yr
5yr	0.35	0.54	0.67	0.92	1.17	1.40	5yr	1.01	1.37	1.61	2.12	2.74	3.79	4.19	5yr	3.35	4.03	4.70	5.53	6.24	5yr
10yr	0.38	0.59	0.73	1.02	1.32	1.60	10yr	1.14	1.56	1.81	2.40	3.07	4.37	4.87	10yr	3.87	4.68	5.44	6.41	7.19	10yr
25yr	0.44	0.67	0.83	1.18	1.56	1.90	25yr	1.35	1.86	2.10	2.78	3.56	4.69	5.91	25yr	4.15	5.68	6.65	7.80	8.69	25yr
50yr	0.48	0.73	0.91	1.31	1.76	2.17	50yr	1.52	2.12	2.35	3.10	3.96	5.29	6.83	50yr	4.68	6.57	7.74	9.05	10.03	50yr
100yr	0.54	0.81	1.01	1.47	2.01	2.47	100yr	1.73	2.42	2.63	3.45	4.39	5.94	7.90	100yr	5.26	7.59	9.01	10.52	11.57	100yr
200yr	0.59	0.89	1.13	1.63	2.28	2.82	200yr	1.97	2.75	2.93	3.83	4.85	6.65	9.13	200yr	5.89	8.78	10.48	12.24	13.38	200yr
500yr	0.69	1.02	1.31	1.91	2.72	3.37	500yr	2.34	3.30	3.41	4.38	5.55	7.73	11.05	500yr	6.84	10.62	12.80	14.98	16.18	500yr

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	1yr	0.76	1.06	1.25	1.75	2.21	2.99	3.14	1yr	2.65	3.02	3.58	4.37	5.04	1yr
2yr	0.33	0.52	0.64	0.86	1.06	1.26	2yr	0.92	1.24	1.48	1.96	2.51	3.42	3.68	2yr	3.03	3.54	4.07	4.82	5.63	2yr
5yr	0.40	0.61	0.76	1.04	1.33	1.61	5yr	1.15	1.58	1.88	2.53	3.24	4.33	4.93	5yr	3.83	4.74	5.36	6.34	7.12	5yr
10yr	0.46	0.71	0.89	1.24	1.60	1.96	10yr	1.38	1.92	2.27	3.10	3.93	5.33	6.16	10yr	4.71	5.92	6.76	7.79	8.71	10yr
25yr	0.57	0.87	1.08	1.54	2.03	2.55	25yr	1.75	2.49	2.94	4.05	5.11	7.78	8.28	25yr	6.89	7.96	9.05	10.27	11.35	25yr
50yr	0.66	1.01	1.26	1.81	2.43	3.10	50yr	2.10	3.03	3.57	4.97	6.25	9.74	10.36	50yr	8.62	9.96	11.29	12.64	13.89	50yr
100yr	0.78	1.18	1.47	2.13	2.92	3.77	100yr	2.52	3.68	4.34	6.11	7.66	12.19	12.98	100yr	10.79	12.48	14.09	15.58	17.00	100yr
200yr	0.91	1.37	1.73	2.51	3.50	4.59	200yr	3.02	4.49	5.29	7.52	9.39	15.30	16.27	200yr	13.54	15.64	17.60	19.19	20.81	200yr
500yr	1.12	1.67	2.15	3.13	4.45	5.95	500yr	3.84	5.81	6.86	9.92	12.31	20.67	21.93	500yr	18.29	21.09	23.63	25.29	27.21	500yr



C	Coastal and Great Bay Region Precipitation Increase							
	24-hr Storm Event (in.)	24-hr Storm Event + 15% (in.)						
2 Year	3.20	3.68						
10 Year	4.86	5.59						
25 Year	6.16	7.08						
50 Year	7.38	8.49						

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APPENDIX B



Contech Engineered Solutions, LLC Engineer:	DRA
Date Prepared:	6/12/2024

Site Information

Project Name Project City Project State Site Designation Total Drainage Area, Ad Post Development Impervious Area, Ai Pervious Area, Ap % Impervious Runoff Coefficient, Rc	Ethos Veterinary Office Portsmouth NH PJFF 0.69 ac 0.43 ac 0.26 ac 63% 0.61
Mass Loading Calculations Mean Annual Rainfall, P Agency Required % Removal Percent Runoff Capture Mean Annual Runoff, Vt Event Mean Concentration of Pollutant, EMC Annual Mass Load, M total	48 in 80% 90% 66,133 ft ³ 70 mg/l 289 lbs
Filter System Filtration Brand Cartridge Length	Jellyfish 54 in
Jellyfish Sizing Mass removed by pretreatment system	144 lbs

Mass load to filters after pretreatment144 lbsMass to be Captured by System116 lbsWater Quality Flow0.47 cfs

Method to Use

FLOW BASED

		Summary	
	Treatment Flow Rate		0.62 cfs
Flow	Required Size	JF6-3-1	
	Mass Capture provided		438 lbs

www.tighebond.com





Proposed Veterinary Office 231 Corporate Drive Portsmouth, NH

Long-Term Operation & Maintenance Plan

June 17, 2024



100% Recyclable

Section 1 Long-Term Operation & Maintenance Plan

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Section 2 Invasive Species

Section 3 Annual Updates and Log Requirements

Section 1 Long-Term Operation & Maintenance Plan

It is the intent of this Operation and Maintenance Plan to identify the areas of this site that need special attention and consideration, as well as implementing a plan to assure routine maintenance. By identifying the areas of concern as well as implementing a frequent and routine maintenance schedule the site will maintain a high-quality stormwater runoff.

1.1 Contact/Responsible Party

The Kane Company 210 Commerce Way Portsmouth, NH 03801

(Note: The contact information for the Contact/Responsible Party shall be kept current. If ownership changes, the Operation and Maintenance Plan must be transferred to the new party.)

1.2 Maintenance Items

Maintenance of the following items shall be recorded:

- Litter/Debris Removal
- Landscaping
- Catchbasin Cleaning
- Pavement Sweeping
- Contech Jellyfish Filtration System
- Detention Basin

The following maintenance items and schedule represent the minimum action required. Periodic site inspections shall be conducted, and all measures must be maintained in effective operating condition. The following items shall be observed during site inspection and maintenance:

- Inspect vegetated areas, particularly slopes and embankments for areas of erosion. Replant and restore as necessary
- Inspect catch basins for sediment buildup
- Inspect site for trash and debris

1.3 Overall Site Operation & Maintenance Schedule

Maintenance Item	Frequency of Maintenance					
Litter/Debris Removal	Weekly					
Pavement Sweeping - Sweep impervious areas to remove sand and litter.	Annually					
Landscaping - Landscaped islands to be maintained and mulched.	Maintained as required and mulched each Spring					
Catch Basin (CB) Cleaning - CB to be cleaned of solids and oils.	Annually					
Contech Jelly Fish Units	In accordance with Manufacturer's Recommendations (See section 1.5)					
Detention Basin	Bi-Annually					

1.3.1 Disposal Requirements

Disposal of debris, trash, sediment and other waste material should be done at suitable disposal/recycling sites and in compliance with all applicable local, state and federal waste regulations.

1.4 Detention Basin Maintenance Requirements

Detention Basin Inspection/Maintenance Requirements							
Inspection/	Frequency	Action					
Maintenance							
Monitor Sediment Accumulation	Annually	 Install and maintain a staff gage or other measuring devise, to indicate depth of sediment accumulation and level at which clean-out is required. 					
Visual Inspection	Annually	 Remove trash and debris as needed Remove any woody vegetation Inspect and repair embankments Inspect check dam 					
Mowing	Periodically (At least two (2) times annually)	- Embankments shall be mowed					

1.5 Contech Jellyfish Filter System Maintenance Requirements

Contech Jellyfish Filter System Inspection/Maintenance Requirements								
Inspection/ Maintenance	Frequency	Action						
Inspect vault for sediment build up, static water, plugged media and bypass condition	Quarterly during the first year of operation, Minimum of annually in subsequent years	- See section 4 & 5 of Jellyfish Filter Owner's Manual						
Replace Cartridges	As required by inspection, 1–5 years.	 See section 6 & 7 of Jellyfish Filter Owner's Manual 						



Jellyfish® Filter Owner's Manual





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Jellyfish Filter	r Inspection and Maintenance Log	
,		

THANK YOU FOR PURCHASING THE JELLYFISH® FILTER!

Contech Engineered Solutions would like to thank you for selecting the Jellyfish Filter to meet your project's stormwater treatment needs. With proper inspection and maintenance, the Jellyfish Filter is designed to deliver ongoing, high levels of stormwater pollutant removal.

If you have any questions, please feel free to call us or e-mail us:

Contech Engineered Solutions 9025 Centre Pointe Drive, Suite 400 | West Chester, OH 45069 513-645-7000 | 800-338-1122 www.ContechES.com info@conteches.com



WARNINGS / CAUTION

- 1. FALL PROTECTION may be required.
- 2. <u>WATCH YOUR STEP</u> if standing on the Jellyfish Filter Deck at any time; Great care and safety must be taken while walking or maneuvering on the Jellyfish Filter Deck. Attentive care must be taken while standing on the Jellyfish Filter Deck at all times to prevent stepping onto a lid, into or through a cartridge hole or slipping on the deck.
- 3. The Jellyfish Filter Deck can be SLIPPERY WHEN WET.
- 4. If the Top Slab, Covers or Hatches have not yet been installed, or are removed for any reason, great care must be taken to <u>NOT DROP ANYTHING ONTO THE JELLYFISH FILTER DECK</u>. The Jellyfish Filter Deck and Cartridge Receptacle Rings can be damaged under high impact loads. This type of activity voids all warranties. All damaged items to be replaced at owner's expense.
- 5. Maximum deck load 2 persons, total weight 450 lbs.

Safety Notice

Jobsite safety is a topic and practice addressed comprehensively by others. The inclusions here are intended to be reminders to whole areas of Safety Practice that are the responsibility of the Owner(s), Manager(s) and Contractor(s). OSHA and Canadian OSH, and Federal, State/Provincial, and Local Jurisdiction Safety Standards apply on any given site or project. The knowledge and applicability of those responsibilities is the Contractor's responsibility and outside the scope of Contech Engineered Solutions.

Confined Space Entry

Secure all equipment and perform all training to meet applicable local and OSHA regulations regarding confined space entry. It is the Contractor's or entry personnel's responsibility to proceed safely at all times.

Personal Safety Equipment

Contractor is responsible to provide and wear appropriate personal protection equipment as needed including, but not limited to safety boots, hard hat, reflective vest, protective eyewear, gloves and fall protection equipment as necessary. Make sure all equipment is staffed with trained and/or certified personnel, and all equipment is checked for proper operation and safety features prior to use.

- Fall protection equipment
- Eye protection
- Safety boots
- Ear protection
- Gloves
 - Ventilation and respiratory protection
 - Hard hat
 - Maintenance and protection of traffic plan

Chapter 1

1.0 – Owner Specific Jellyfish Filter Product Information

Below you will find a reference page that can be filled out according to your Jellyfish Filter specification to help you easily inspect, maintain and order parts for your system.

Owner Name:	
Phone Number:	
Site Address:	
Site GPS Coordinates/unit location:	
Unit Location Description:	
Jellyfish Filter Model No.:	
Contech Project & Sequence Number	
No. of Hi-Flo Cartridges	
No. of Cartridges:	
Length of Draindown Cartridges:	
No. of Blank Cartridge Lids:	
Bypass Configuration (Online/Offline):	

Notes:

Chapter 2

2.0 – Jellyfish Filter System Operations and Functions

The Jellyfish Filter is an engineered stormwater quality treatment technology that removes a high level and wide variety of stormwater pollutants. Each Jellyfish Filter cartridge consists of eleven membrane - encased filter elements ("filtration tentacles") attached to a cartridge head plate. The filtration tentacles provide a large filtration surface area, resulting in high flow and high pollutant removal capacity.

The Jellyfish Filter functions are depicted in Figure 1 below.



Jellyfish Filter cartridges are backwashed after each peak storm event, which removes accumulated sediment from the membranes. This backwash process extends the service life of the cartridges and increases the time between maintenance events.

For additional details on the operation and pollutant capabilities of the Jellyfish Filter please refer to additional details on our website at <u>www.ContechES.com</u>.

2.1 – Components and Cartridges

The Jellyfish Filter and components are depicted in Figure 2 below.



Tentacles are available in various lengths as depicted in Table 1 below.

Cartridge Lengths	Dry Weight	Hi-Flo Orifice Diameter	Draindown Orifice Diameter
15 inches (381 mm)	10 lbs (4.5 kg)	35 mm	20 mm
27 inches (686 mm)	14.5 lbs (6.6 kg)	45 mm	25 mm
40 inches (1,016 mm)	19.5 lbs (8.9 kg)	55 mm	30 mm
54 inches (1,372 mm)	25 lbs (11.4 kg)	70 mm	35 mm

Table 1 – Cartridge Lengths / Weights and Cartridge Lid Orifice Diameters

2.2 – Jellyfish Membrane Filtration Cartridge Assembly

The Jellyfish Filter utilizes multiple membrane filtration cartridges. Each cartridge consists of removable cylindrical filtration "tentacles" attached to a cartridge head plate. Each filtration tentacle has a threaded pipe nipple and o-ring. To attach, insert the top pipe nipples with the o-ring through the head plate holes and secure with locking nuts. Hex nuts to be hand tightened and checked with a wrench as shown below.

2.3 – Jellyfish Membrane Filtration Cartridge Installation

- Cartridge installation will be performed by trained individuals and coordinated with the installing site Contractor. Flow diversion devices are required to be in place until the site is stabilized (final paving and landscaping in place). Failure to address this step completely will reduce the time between required maintenance.
- Descend to the cartridge deck (see Safety Notice and page 3).
- Refer to Contech's submittal drawings to determine proper quantity and placement of Hi-Flo, Draindown and Blank cartridges with appropriate lids. Lower the Jellyfish membrane filtration cartridges into the cartridge receptacles within the cartridge deck. It is possible that not all cartridge receptacles will be filled with a filter cartridge. In that case, a blank headplate and blank cartridge lid (no orifice) would be installed.



Cartridge Assembly

Do not force the tentacles down into the cartridge receptacle, as this may damage the membranes. Apply downward pressure on the cartridge head plate to seat the lubricated rim gasket (thick circular gasket surrounding the circumference of the head plate) into the cartridge receptacle. (See Figure 3 for details on approved lubricants for use with rim gasket.)

- Examine the cartridge lids to differentiate lids with a small orifice, a large orifice, and no orifice.
 - Lids with a <u>small orifice</u> are to be inserted into the <u>Draindown cartridge receptacles</u>, outside of the backwash pool weir.
 - Lids with a large orifice are to be inserted into the <u>Hi-Flo cartridge receptacles</u> within the backwash pool weir.
 - Lids with <u>no orifice</u> (blank cartridge lids) and a <u>blank headplate</u> are to be inserted into unoccupied cartridge receptacles.
- To install a cartridge lid, align both cartridge lid male threads with the cartridge receptacle female threads before rotating approximately 1/3 of a full rotation until firmly seated. Use of an approved rim gasket lubricant may facilitate installation.

3.0 Inspection and Maintenance Overview

The primary purpose of the Jellyfish® Filter is to capture and remove pollutants from stormwater runoff. As with any filtration system, these pollutants must be removed to maintain the filter's maximum treatment performance. Regular inspection and maintenance are required to insure proper functioning of the system. Maintenance frequencies and requirements are site specific and vary depending on pollutant loading. Additional maintenance activities may be required in the event of non-storm event runoff, such as base-flow or seasonal flow, an upstream chemical spill or due to excessive sediment loading from site erosion or extreme runoff events. It is a good practice to inspect the system after major storm events.

Inspection activities are typically conducted from surface observations and include:

- Observe if standing water is present
- Observe if there is any physical damage to the deck or cartridge lids
- Observe the amount of debris in the Maintenance Access Wall (MAW) or inlet bay for vault systems

Maintenance activities include:

- Removal of oil, floatable trash and debris
- Removal of collected sediments
- Rinsing and re-installing the filter cartridges
- Replace filter cartridge tentacles, as needed

4.0 Inspection Timing

Inspection of the Jellyfish Filter is key in determining the maintenance requirements for, and to develop a history of, the site's pollutant loading characteristics. In general, inspections should be performed at the times indicated below; or per the approved project stormwater quality documents (if applicable), whichever is more frequent.



Note: Separator Skirt not shown

- 1. A minimum of quarterly inspections during the first year of operation to assess the sediment and floatable pollutant accumulation, and to ensure proper functioning of the system.
- 2. Inspection frequency in subsequent years is based on the inspection and maintenance plan developed in the first year of operation. Minimum frequency should be once per year.
- 3. Inspection is recommended after each major storm event.
- 4. Inspection is required immediately after an upstream oil, fuel or other chemical spill.

5.0 Inspection Procedure

The following procedure is recommended when performing inspections:

- 1. Provide traffic control measures as necessary.
- 2. Inspect the MAW or inlet bay for floatable pollutants such as trash, debris, and oil sheen.
- 3. Measure oil and sediment depth in several locations, by lowering a sediment probe until contact is made with the floor of the structure. Record sediment depth, and presences of any oil layers.
- 4. Inspect cartridge lids. Missing or damaged cartridge lids to be replaced.
- 5. Inspect the MAW (where appropriate), cartridge deck and receptacles, and backwash pool weir, for damaged or broken components.

5.1 Dry weather inspections

- Inspect the cartridge deck for standing water, and/or sediment on the deck.
- No standing water under normal operating conditions.
- Standing water inside the backwash pool, but not outside the backwash pool indicates, that the filter cartridges need to be rinsed.



Inspection Utilizing Sediment Probe

- Standing water outside the backwash pool is not anticipated and may indicate a backwater condition caused by high water elevation in the receiving water body, or possibly a blockage in downstream infrastructure.
- Any appreciable sediment (≥1/16") accumulated on the deck surface should be removed.

5.2 Wet weather inspections

- Observe the rate and movement of water in the unit. Note the depth of water above deck elevation within the MAW or inlet bay.
- Less than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges (i.e. cartridges located outside the backwash pool).
- Greater than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges and each of the hi-flo cartridges (i.e. cartridges located inside the backwash pool), and water should be overflowing the backwash pool weir.
- 18 inches or greater and relatively little flow is exiting the cartridge lids and outlet pipe, this condition indicates that the filter cartridges need to be rinsed.

6.0 Maintenance Requirements

Required maintenance for the Jellyfish Filter is based upon results of the most recent inspection, historical maintenance records, or the site specific water quality management plan; whichever is more frequent. In general, maintenance requires some combination of the following:

- 1. Sediment removal for depths reaching 12 inches or greater, or within 3 years of the most recent sediment cleaning, whichever occurs sooner.
- 2. Floatable trash, debris, and oil removal.
- 3. Deck cleaned and free from sediment.
- 4. Filter cartridges rinsed and re-installed as required by the most recent inspection results, or within 12 months of the most recent filter rinsing, whichever occurs sooner.
- 5. Replace tentacles if rinsing does not restore adequate hydraulic capacity, remove accumulated sediment, or if damaged or missing. It is recommended that tentacles should remain in service no longer than 5 years before replacement.
- 6. Damaged or missing cartridge deck components must be repaired or replaced as indicated by results of the most recent inspection.
- 7. The unit must be cleaned out and filter cartridges inspected immediately after an upstream oil, fuel, or chemical spill. Filter cartridge tentacles should be replaced if damaged or compromised by the spill.

7.0 Maintenance Procedure

The following procedures are recommended when maintaining the Jellyfish Filter:

- 1. Provide traffic control measures as necessary.
- 2. Open all covers and hatches. Use ventilation equipment as required, according to confined space entry procedures. *Caution: Dropping objects onto the cartridge deck may cause damage*.
- 3. Perform Inspection Procedure prior to maintenance activity.

- 4. To access the cartridge deck for filter cartridge service, descend into the structure and step directly onto the deck. Caution: Do not step onto the maintenance access wall (MAW) or backwash pool weir, as damage may result. Note that the cartridge deck may be slippery.
- 5. Maximum weight of maintenance crew and equipment on the cartridge deck not to exceed 450 lbs.

7.1 Filter Cartridge Removal

- 1. Remove a cartridge lid.
- 2. Remove cartridges from the deck using the lifting loops in the cartridge head plate. Rope or a lifting device (available from Contech) should be used. *Caution: Should a snag occur, do not force the cartridge upward as damage to the tentacles may result. Wet cartridges typically weigh between 100 and 125 lbs.*
- 3. Replace and secure the cartridge lid on the exposed empty receptacle as a safety precaution. Contech does not recommend exposing more than one empty cartridge receptacle at a time.

7.2 Filter Cartridge Rinsing

- 1. Remove all 11 tentacles from the cartridge head plate. Take care not to lose or damage the O-ring seal as well as the plastic threaded nut and connector.
- 2. Position tentacles in a container (or over the MAW), with the



threaded connector (open end) facing down, so rinse water is flushed through the membrane and captured in the container.

3. Using the Jellyfish rinse tool (available from Contech) or a low-pressure garden hose sprayer, direct water spray onto the tentacle membrane, sweeping from top to bottom along the length of the tentacle. Rinse until all sediment is removed from the membrane. *Caution: Do not use a high pressure sprayer or focused stream of water on the membrane. Excessive water pressure may damage the membrane*.

5. Reassemble cartridges as detailed later in this document. Reuse O-rings and nuts, ensuring proper placement on each tentacle.

7.3 Sediment and Flotables Extraction

- 1. Perform vacuum cleaning of the Jellyfish Filter only after filter cartridges have been removed from the system. Access the lower chamber for vacuum cleaning only through the maintenance access wall (MAW) opening. Be careful not to damage the flexible plastic separator skirt that is attached to the underside of the deck on manhole systems. Do not lower the vacuum wand through a cartridge receptacle, as damage to the receptacle will result.
- 2. Vacuum floatable trash, debris, and oil, from the MAW opening or inlet bay. Alternatively, floatable solids may be removed by a net or skimmer.
- 3. Pressure wash cartridge deck and receptacles to remove all



Rinsing Cartridge with Contech Rinse Tool

sediment and debris. Sediment should be rinsed into the sump area. Take care not to flush rinse water into the outlet pipe.

- 4. Remove water from the sump area. Vacuum or pump equipment should only be introduced through the MAW or inlet bay.
- 5. Remove the sediment from the bottom of the unit through the MAW or inlet bay opening.
- 6. For larger diameter Jellyfish Filter manholes (\geq 8-ft) and some



Vacuuming Sump Through MAW

vaults complete sediment removal may be facilitated by removing a cartridge lid from an empty receptacle and inserting a jetting wand (not a vacuum wand) through the receptacle. Use the sprayer to rinse loosened sediment toward the vacuum hose in the MAW opening, being careful not to damage the receptacle.

7.4 Filter Cartridge Reinstallation and Replacement

- 1. Cartridges should be installed after the deck has been cleaned. It is important that the receptacle surfaces be free from grit and debris.
- 2. Remove cartridge lid from deck and carefully lower the filter cartridge into the receptacle until head plate gasket is seated squarely in receptacle. *Caution: Do not force the cartridge downward; damage may occur.*
- 3. Replace the cartridge lid and check to see that both male threads are properly seated before rotating approximately 1/3 of a full rotation until firmly seated. Use of an approved rim gasket lubricant may facilitate installation. See next page for additional details.
- 4. If rinsing is ineffective in removing sediment from the tentacles, or if tentacles are damaged, provisions must be made to replace the spent or damaged tentacles with new tentacles. Contact Contech to order replacement tentacles.

7.5 Chemical Spills

Caution: If a chemical spill has been captured, do not attempt maintenance. Immediately contact the local hazard response agency and contact Contech.

7.6 Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads. Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.

Jellyfish Filter Components & Filter Cartridge Assembly and Installation





DESCRIPTION				
JF HEAD PLATE				
JF TENTACLE				
JF O-RING				
JF HEAD PLATE				
GASKET				
JF CARTRIDGE EYELET				
JF 14IN COVER				
JF RECEPTACLE				
BUTTON HEAD CAP				
SCREW M6X14MM SS				
JF CARTRIDGE NUT				

TABLE 2: APPROVED GASKET LUBRICANTS

PART NO.	PART NO. MFR DESCRIPTION	
78713	LA-CO	LUBRI-JOINT
40501	HERCULES	DUCK BUTTER
30600	OATEY	PIPE LUBRICANT
PSLUBXL1Q	PROSELECT	PIPE JOINT LUBRICANT

NOTES:

Head Plate Gasket Installation:

Install Head Plate Gasket (Item 4) onto the Head Plate (Item 1) and liberally apply a lubricant from Table 2: Approved Gasket Lubricants onto the gasket where it contacts the Receptacle (Item 7) and Cartridge Lid (Item 6). Follow Lubricant manufacturer's instructions.

Lid Assembly:

Rotate Cartridge Lid counter-clockwise until both male threads drop down and properly seat. Then rotate Cartridge Lid clock-wise approximately one-third of a full rotation until Cartridge Lid is firmly secured, creating a watertight seal.

Jellyfish Filter Inspection and Maintenance Log

Owner:			Jellyfish Model No.:			
Location:			GPS Coordinates:			-
Land Use:	Commercial:	Industrial:	Service	e Station:		
	Road/Highway:	Airport:	Reside	ential:	Parking Lo	ot:
[
Date/Time:						
Inspector:						
Maintenance	Contractor:					
Visible Oil Pre	esent: (Y/N)					
Oil Quantity F	Removed					
Floatable Deb	oris Present: (Y/N)					
Floatable Deb	pris removed: (Y/N)					
Water Depth	in Backwash Pool					
Cartridges ex	ternally rinsed/re-commissic	ned: (Y/N)				
New tentacle	s put on Cartridges: (Y/N)					
Sediment Dep	pth Measured: (Y/N)					
Sediment Dep	pth (inches or mm):					
Sediment Rer	moved: (Y/N)					
Cartridge Lids	s intact: (Y/N)					
Observed Dar	mage:					
Comments:						

1.6 Snow & Ice Management for Standard Asphalt and Walkways

As shown on the Site Plans, the site has reasonable accommodations for on-site snow storage. If required, the property manager will be responsible for timely snow removal from all private sidewalks, driveways, and parking areas. Salt storage areas shall be covered or located such that no direct untreated discharges are possible to receiving waters from the storage site. Salt storage is not permitted within the 100' wetland buffer. Salt and shall be used to the minimum extent practical (refer to the attached for deicing application rate guideline from the New Hampshire Stormwater Management Manual, Volume 2,).

Deicing Application Rate Guidelines

24' of pavement (typcial two-lane road)

These rates are not fixed values, but rather the middle of a range to be selected and adjusted by an agency according to its local conditions and experience.

			Pounds per two-lane mile			
Pavement Temp. (°F) and Trend (↑↓)	Weather Condition	Maintenance Actions	Salt Prewetted / Pretreated with Salt Brine	Salt Prewetted / Pretreated with Other Blends	Dry Salt*	Winter Sand (abrasives)
> 30° 个	Snow	Plow, treat intersections only	80	70	100*	Not recommended
- 30	Freezing Rain	Apply Chemical	80 - 160	70 - 140	100 - 200*	Not recommended
30°	Snow	Plow and apply chemical	80 - 160	70 - 140	100 - 200*	Not recommended
¥	Freezing Rain	Apply Chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25°-30° 个	Snow	Plow and apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
23 - 30 1	Freezing Rain	Apply Chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25° - 20° - 1	Snow	Plow and apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
25-30- 4	Freezing Rain	Apply Chemical	160 - 240	140 - 210	200 - 300*	400
20°-25° ↑	Snow or Freezing Rain	Plow and apply chemical	160 - 240	140 - 210	200 - 300*	400
20° - 25° . .	Snow	Plow and apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
20-23 \$	Freezing Rain	Apply Chemical	240 - 320	210 - 280	300 - 400*	400
15°-20° 个	Snow	Plow and apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
13-20 1	Freezing Rain	Apply Chemical	240 - 320	210 - 280	300 - 400*	400
15°-20° ↓	Snow or Freezing Rain	Plow and apply chemical	240 - 320	210 - 280	300 - 400*	500 for freezing rain
0°-15° ↑↓	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	300 - 400	Not recommended	500 - 750 spot treatment as needed
< 0*	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	400 - 600**	Not recommended	500 - 750 spot treatment as needed

* Dry salt is not recommended. It is likely to blow off the road before it melts ice.

** A blend of 6 - 8 gal/ton MgCl₂ or CaCl₂ added to NaCl can melt ice as low as -10°.

Anti-icing Route Data Form				
Truck Station:				
Date:				
Air Temperature	Pavement Temperature	Relative Humidity	Dew Point	Sky
Reason for applying:	1	I		
Route:				
Chemical:				
Application Time:				
Application Amount:				
Observation (first day	ı):			
Observation (after ev	ent):			
Observation (before r	next application):			
Name:				

Section 2 Invasive Species

With respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem is classified as an invasive species. Refer to the following fact sheet prepared by the University of New Hampshire Cooperative Extension entitled Methods for Disposing Non-Native Invasive Plants for recommended methods to dispose of invasive plant species.

UNIVERSITY of NEW HAMPSHIRE Methods for Disposing COOPERATIVE EXTENSION Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckleLonicera tataricaUSDA-NRCS PLANTS Database / Britton, N.L., andA. Brown. 1913. An illustrated flora of the northernUnited States, Canada and the British Possessions.Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these nonnative invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine

the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts nonviable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit <u>www.nhinvasives.org</u> or contact your UNH Cooperative Extension office.

New Hampshire Regulations

Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.

Bagging (solarization): Use this technique with softertissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic



Japanese knotweed Polygonum cuspidatum USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. An illustrated flora of the northern United States, Canada and the British Possessions. Vol. 1: 676.

and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for years in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

Woody Plants	Method of Reproducing	Methods of Disposal		
Norway maple (Acer platanoides) European barberry (Berberis vulgaris) Japanese barberry (Berberis thunbergii) autumn olive (Elaeagnus umbellata) burning bush (Euonymus alatus)	Fruit and Seeds	 Prior to fruit/seed ripening Seedlings and small plants Pull or cut and leave on site with roots exposed. No special care needed. Larger plants Use as firewood. Make a brush pile. Chip. Burn. 		
Morrow's honeysuckle (Lonicera morrowii) Tatarian honeysuckle (Lonicera tatarica) showy bush honeysuckle (Lonicera x bella) common buckthorn (Rhamnus cathartica) glossy buckthorn (Frangula alnus)		 After fruit/seed is ripe Don't remove from site. Burn. Make a covered brush pile. Chip once all fruit has dropped from branches. Leave resulting chips on site and monitor. 		
oriental bittersweet (Celastrus orbiculatus) multiflora rose (Rosa multiflora)	Fruits, Seeds, Plant Fragments	 Prior to fruit/seed ripening Seedlings and small plants Pull or cut and leave on site with roots exposed. No special care needed. Larger plants Make a brush pile. Burn. 		
	V	 After fruit/seed is ripe Don't remove from site. Burn. Make a covered brush pile. Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor. 		

Non-Woody Plants	Method of Reproducing	Methods of Disposal
<pre>garlic mustard (Alliaria petiolata) spotted knapweed (Centaurea maculosa) • Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling. black swallow-wort (Cynanchum nigrum) • May cause skin rash. Wear gloves and long sleeves when handling. pale swallow-wort (Cynanchum rossicum) giant hogweed (Heracleum mantegazzianum) • Can cause major skin rash. Wear gloves and long sleeves when handling. dame's rocket (Hesperis matronalis) perennial pepperweed (Lepidium latifolium) purple loosestrife (Lythrum salicaria) Japanese stilt grass (Microstegium vimineum) mile-a-minute weed (Polygonum perfoliatum)</pre>	Fruits and Seeds	 Prior to flowering Depends on scale of infestation Small infestation Pull or cut plant and leave on site with roots exposed. Large infestation Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting). Monitor. Remove any re-sprouting material. During and following flowering Do nothing until the following year or remove flowering heads and bag and let rot. Small infestation Pull or cut plant and leave on site with roots exposed. Large infestation Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting). Monitor. Remove any re-sprouting material. (You can pile onto plastic or cover with plastic sheeting). Monitor. Remove any re-sprouting material.
common reed (<i>Phragmites australis</i>) Japanese knotweed (<i>Polygonum cuspidatum</i>) Bohemian knotweed (<i>Polygonum x bohemicum</i>)	Fruits, Seeds, Plant Fragments Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.	 Small infestation Bag all plant material and let rot. Never pile and use resulting material as compost. Burn. Large infestation Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile. Monitor and remove any sprouting material. Pile, let dry, and burn.

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Managing Invasive Plants Methods of Control by Christopher Mattrick

They're out there. The problem of invasive plants is as close as your own backyard.

Maybe a favorite dogwood tree is struggling in the clutches of an Oriental bittersweet vine. Clawlike canes of multiflora rose are scratching at the side of your house. That handsome burning bush you planted few years ago has become a whole clump in practically no time ... but what happened to the azalea that used to grow right next to it?

If you think controlling or managing invasive plants on your property is a daunting task, you're not alone. Though this topic is getting lots of attention from federal, state, and local government agencies, as well as the media, the basic question for most homeowners is simply, "How do I get rid of the invasive plants in my own landscape?" Fortunately, the best place to begin to tackle this complex issue is in our own backyards and on local conservation lands. We hope the information provided here will help you take back your yard. We won't kid you—there's some work involved, but the payoff in beauty, wildlife habitat, and peace of mind makes it all worthwhile.

PLAN OF ATTACK

Three broad categories cover most invasive plant control: mechanical, chemical, and biological. Mechanical control means physically removing plants from the environment



Spraying chemicals to control invasive plants.

through cutting or pulling. Chemical control uses herbicides to kill plants and inhibit regrowth. Techniques and chemicals used will vary depending on the species. Biological controls use plant diseases or insect predators, typically from the targeted species' home range. Several techniques may be effective in controlling a single species, but there is usually one preferred method—the one that is most resource efficient with minimal impact on non-target species and the environment.

MECHANICAL CONTROL METHODS

Mechanical treatments are usually the first ones to look at when evaluating an invasive plant removal project. These procedures do not require special licensing or introduce chemicals into the environment. They do require permits in some situations, such as wetland zones. [See sidebar on page 23.] Mechanical removal is highly labor intensive and creates a significant amount of site disturbance, which can lead to rapid reinvasion if not handled properly.

Pulling and digging

Many herbaceous plants and some woody species (up to about one inch in diameter), if present in limited quantities, can be pulled out or dug up. It's important to remove as much of the root system as possible; even a small portion can restart the infestation. Pull plants by hand or use a digging fork, as shovels can shear off portions of the root

system, allowing for regrowth. To remove larger woody stems (up to about three inches in diameter), use a Weed Wrench[™], Root Jack, or Root Talon. These tools, available from several manufacturers, are designed to remove the aboveground portion of the plant as well as the entire root system. It's easiest to undertake this type of control in the spring or early summer when soils are moist and plants come out more easily.



Using tools to remove woody stems.




Volunteers hand pulling invasive plants.

Suffocation

Try suffocating small seedlings and herbaceous plants. Place double or triple layers of thick UV-stabilized plastic sheeting, either clear or black (personally I like clear), over the infestation and secure the plastic with stakes or weights. Make sure the plastic extends at least five feet past the edge of infestation on all sides. Leave the plastic in place for at least two years. This technique will kill everything beneath the plastic—invasive and non-invasive plants alike. Once the plastic is removed, sow a cover crop such as annual rye to prevent new invasions.

Cutting or mowing

This technique is best suited for locations you can visit and treat often. To be effective, you will need to mow or cut infested areas three or four times a year for up to five years. The goal is to interrupt the plant's ability to photosynthesize by removing as much leafy material as possible. Cut the plants at ground level and remove all resulting debris from the site. With this treatment, the infestation may actually appear to get worse at first, so you will need to be as persistent as the invasive plants themselves. Each time you cut the plants back, the root system gets slightly larger, but must also rely on its energy reserves to push up new growth. Eventually, you will exhaust these reserves and the plants will die. This may take many years, so you have to remain committed to this process once you start; otherwise the treatment can backfire, making the problem worse.

CHEMICAL CONTROL METHODS

Herbicides are among the most effective and resource-efficient tools to treat invasive species. Most of the commonly known invasive plants can be treated using only two herbicides—glyphosate (the active ingredient in Roundup™ and RodeoTM) and triclopyr (the active ingredient in Brush-B-Gone[™] and Garlon[™]). Glyphosate is non-selective, meaning it kills everything it contacts. Triclopyr is selective and does not injure monocots (grasses, orchids, lilies, etc.). Please read labels and follow directions precisely for both environmental and personal safety. These are relatively benign herbicides, but improperly used they can still cause both short- and long-term health and environmental problems. Special aquatic formulations are required when working in wetland zones. You are required to have a stateissued pesticide applicator license when applying these chemicals on land you do not own. To learn more about the pesticide regulations in your state, visit or call your state's pesticide control division, usually part of the state's Department of Agriculture. In wetland areas, additional permits are usually required by the Wetlands Protection Act. [See sidebar on page 23.]

Foliar applications

When problems are on a small scale, this type of treatment is usually applied with a backpack sprayer or even a small handheld spray bottle. It is an excellent way to treat large monocultures of herbaceous plants, or to spot-treat individual plants that are difficult to remove mechanically, such as goutweed, swallowwort, or purple loosestrife. It is also an effective treatment for some woody species, such as Japanese barberry, multiflora rose, Japanese honeysuckle, and Oriental bittersweet that grow in dense masses or large numbers over many acres. The herbicide mixture should contain no more than five percent of the active ingredient, but it is important to follow the instructions on the product label. This treatment is most effective when the plants are actively growing, ideally when they are flowering or beginning to form fruit. It has been shown that plants are often more susceptible to this type of treatment if the existing stems are cut off and the regrowth is treated. This is especially true for Japanese knotweed. The target plants should be thoroughly wetted with the herbicide on a day when there is no rain in the forecast for the next 24 to 48 hours.

Cut stem treatments

There are several different types of cut stem treatments, but here we will review only the one most commonly used. All treatments of this type require a higher concentration of the active ingredient than is used in foliar applications. A 25 to 35 percent solution of the active ingredient should be used for cut stem treatments, but read and follow all label instructions. In most cases, the appropriate herbicide is glyphosate, except for Oriental bittersweet, on which triclopyr should be used. This treatment can be used on all woody stems, as well as phragmites and Japanese knotweed.

For woody stems, treatments are most effective when applied in the late summer and autumn—between late August and November. Stems should be cut close to the ground, but not so close that you will lose track of them. Apply herbicide directly to the cut surface as soon as possible after cutting. Delaying the application will reduce the effectiveness of the treatment. The herbicide can be applied with a sponge, paintbrush, or spray bottle.



For phragmites and Japanese knotweed, treatment is the same, but the timing and equipment are different. Plants should be treated anytime from mid-July through September, but the hottest, most humid days of the summer are best

Cut stem treatment tools.

for this method. Cut the stems halfway between two leaf nodes at a comfortable height. Inject (or squirt) herbicide into the exposed hollow stem. All stems in an infestation should be treated. A wash bottle is the most effective application tool, but you can also use an eyedropper, spray bottle, or one of the recently developed high-tech injection systems.

It is helpful to mix a dye in with the herbicide solution. The dye will stain the treated surface and mark the areas that have been treated, preventing unnecessary reapplication. You can buy a specially formulated herbicide dye, or use food coloring or laundry dye.

There is not enough space in this article to describe all the possible ways to control invasive plants. You can find other treatments, along with more details on the above-described methods, and species-specific recommendations on The Nature Conservancy Web site (tncweeds.ucdavis.edu). An upcoming posting on the Invasive Plant Atlas of New England (www.ipane.org) and the New England Wild Flower Society (www.newfs.org) Web sites will also provide further details.



Hollow stem injection tools.

Biological controls-still on the horizon

Biological controls are moving into the forefront of control methodology, but currently the only widely available and applied biocontrol relates to purple loosestrife. More information on purple loosestrife and other biological control projects can be found at www.invasiveplants.net.

DISPOSAL OF INVASIVE PLANTS

Proper disposal of removed invasive plant material is critical to the control process. Leftover plant material can cause new infestations or reinfest the existing project area. There are many appropriate ways to dispose of invasive plant debris. I've listed them here in order of preference.

- **1. Burn it**—Make a brush pile and burn the material following local safety regulations and restrictions, or haul it to your town's landfill and place it in their burn pile.
- **2. Pile it**—Make a pile of the woody debris. This technique will provide shelter for wildlife as well.
- **3.** Compost it—Place all your herbaceous invasive plant debris in a pile and process as compost. Watch the pile closely for resprouts and remove as necessary. Do not use the resulting compost in your garden. The pile is for invasive plants only.



Injecting herbicide into the hollow stem of phragmites.

4. Dry it/cook it—Place woody debris out on your driveway or any asphalt surface and let it dry out for a month. Place herbaceous material in a doubled-up black trash bag and let it cook in the sun for one month. At the end of the month, the material should be non-viable and you can dump it or dispose of it with the trash. The method assumes there is no viable seed mixed in with the removed material.

Care should be taken in the disposal of all invasive plants, but several species need extra attention. These are the ones that have the ability to sprout vigorously from plant fragments and should ideally be burned or dried prior to disposal: Oriental bittersweet, multiflora rose, Japanese honeysuckle, phragmites, and Japanese knotweed. Christopher Mattrick is the former Senior Conservation Programs Manager for New England Wild Flower Society, where he managed conservation volunteer and invasive and rare plant management programs. Today, Chris and his family work and play in the White Mountains of New Hampshire, where he is the Forest Botanist and Invasive Species Coordinator for the White Mountain National Forest.



Controlling Invasive Plants in Wetlands

Special concerns; special precautions

Control of invasive plants in or around wetlands or bodies of water requires a unique set of considerations. Removal projects in wetland zones can be legal and effective if handled appropriately. In many cases, herbicides may be the least disruptive tools with which to remove invasive plants. You will need a state-issued pesticide license to apply herbicide on someone else's property, but all projects in wetland or aquatic systems fall under the jurisdiction of the Wetlands Protection Act and therefore require a permit. *Yes, even hand-pulling that colony of glossy buckthorn plants from your own swampland requires a permit.* Getting a permit for legal removal is fairly painless if you plan your project carefully.

1. Investigate and understand the required permits and learn how to obtain them. The entity charged with the enforcement of the Wetlands Protection Act varies from state to state. For more information in your state, contact:

ME: Department of Environmental Protection www.state.me.us/dep/blwq/docstand/nrpapage.htm

NH: Department of Environmental Services www.des.state.nh.us/wetlands/

VT: Department of Environmental Conservation www.anr.state.vt.us/dec/waterq/permits/htm/ pm_cud.htm

MA: Consult your local town conservation commission

RI: Department of Environmental Management www.dem.ri.gov/programs/benviron/water/ permits/fresh/index.htm

CT: Consult your local town Inland Wetland and Conservation Commission

- 2. Consult an individual or organization with experience in this area. Firsthand experience in conducting projects in wetland zones and navigating the permitting process is priceless. Most states have wetland scientist societies whose members are experienced in working in wetlands and navigating the regulations affecting them. A simple Web search will reveal the contact point for these societies. Additionally, most environmental consulting firms and some nonprofit organizations have skills in this area.
- **3.** Develop a well-written and thorough project plan. You are more likely to be successful in obtaining a permit for your project if you submit a project plan along with your permit application. The plan should include the reasons for the project, your objectives in completing the project, how you plan to reach those objectives, and how you will monitor the outcome.
- **4.** Ensure that the herbicides you plan to use are approved for aquatic use. Experts consider most herbicides harmful to water quality or aquatic organisms, but rate some formulations as safe for aquatic use. Do the research and select an approved herbicide, and then closely follow the instructions on the label.
- **5.** If you are unsure—research, study, and most of all, ask for help. Follow the rules. The damage caused to aquatic systems by the use of an inappropriate herbicide or the misapplication of an appropriate herbicide not only damages the environment, but also may reduce public support for safe, well-planned projects.

Section 3 Annual Updates and Log Requirements

The Owner and/or Contact/Responsible Party shall review this Operation and Maintenance Plan once per year for its effectiveness and adjust the plan and deed as necessary.

A log of all preventative and corrective measures for the stormwater system shall be kept on-site and be made available upon request by any public entity with administrative, health environmental or safety authority over the site including NHDES.

Copies of the Stormwater Maintenance report shall be submitted to the City of Portsmouth on an annual basis.

Stormwater Management Report							
Proposed Veterinary Building Addition		231 Corporate Drive – Map 314 Lot 2					
BMP Description	Date of Inspection	Inspector	BMP Installed and Operating Properly?	Cleaning / Corrective Action Needed	Date of Cleaning / Repair	Performed By	
Detention Basin			□Yes □No				
Contech Jellyfish 01			□Yes □No				

City of Portsmouth Planning Department

Site Plan Review Application Fee

Project:	Ethos Veterinary Health		Map/Lot: 314/2
Applicant:	Ethos Veterinary Health		
All developm	ent		
Base fee \$600)		\$600.00
Plus \$5.00 pe	r <i>\$1,000 of site costs</i> Site costs	\$400,000	+ \$2,000.00
Plus \$10.00 p	er 1,000 S.F. of site develo _l Site development area	oment area 45,000 S.F.	+ \$450.00
			Fee \$3,050.00
Maximum fee	e: \$20,000.00		
Fee received	by:		Date:

Note: Initial application fee may be based on the applicant's estimates of site costs and site development area. Following site plan approval, the application fee will be recalculated based on the approved site plan and site engineer's corresponding site cost estimate as approved by the Department of Public Works, and any additional fee shall be paid prior to the issuance of a building permit.