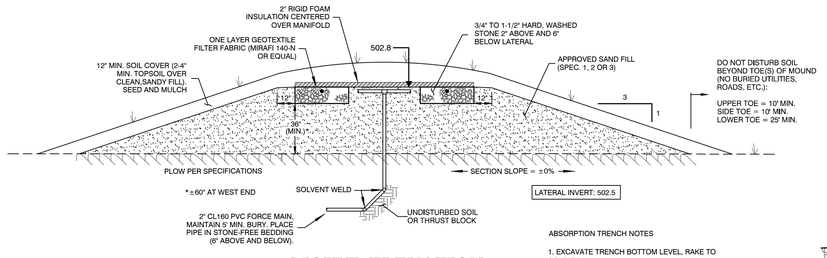
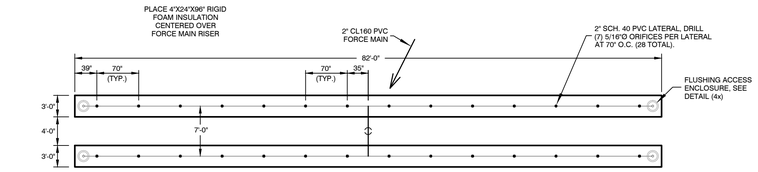


MOUND ELEVATION

NTS

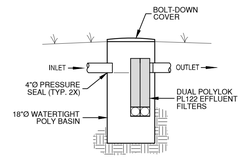
ABSORPTION TRENCH NOTES

1. EXCAVATE TRENCH BOTTOM LEVEL, RAKE TO SCARIFY.
2. PRIME AND SOLVENT WELD ALL CONNECTIONS.
3. ORIFICES SHALL POINT DOWNWARDS WHERE INDICATED WITH AN ORIFICE SHIELD COVERING EACH HOLE (28 TOTAL).
4. DISTRIBUTION: 82'x3' = 246 SF, 246 SF/14 ORIFICES = 17.6 SF/ORIFICE.



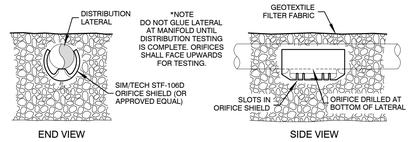
ABSORPTION TRENCH PLAN

NTS



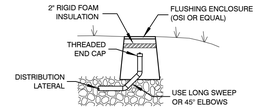
EFFLUENT FILTER BASIN

NTS



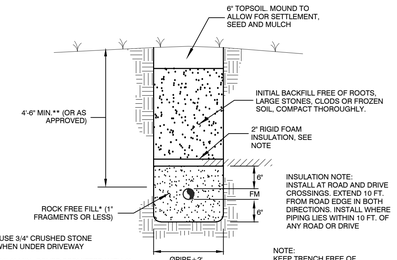
ORIFICE SHIELD

NTS



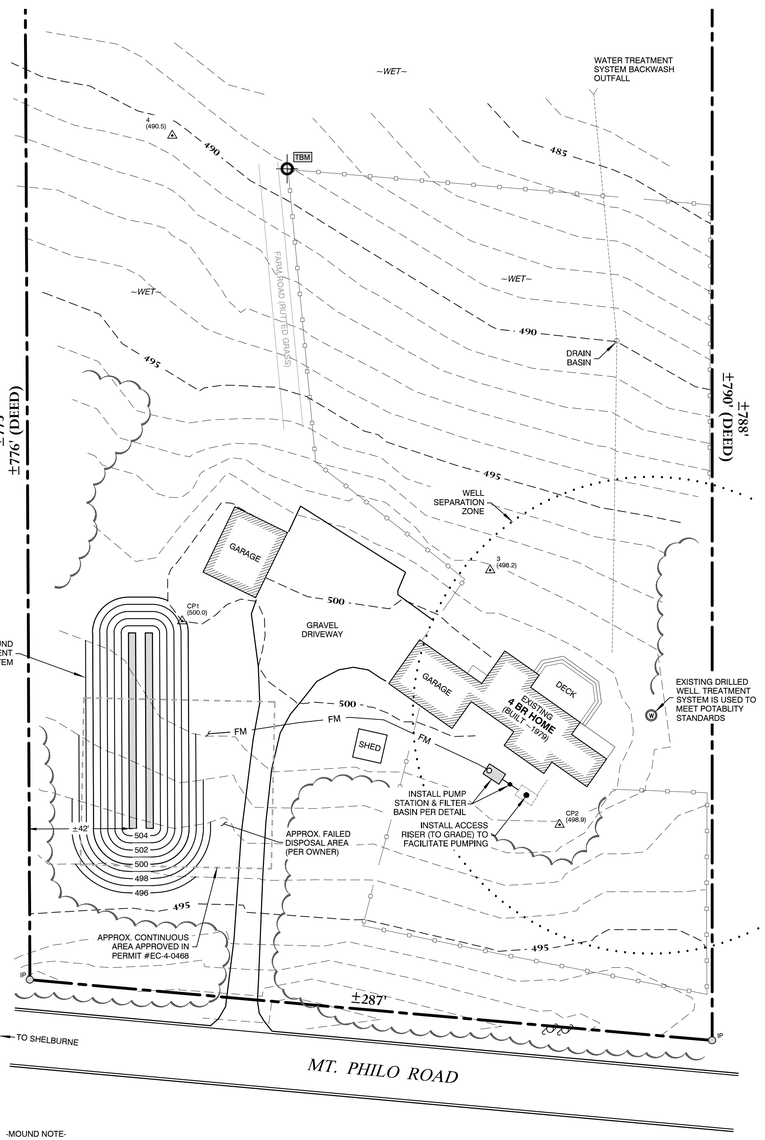
FLUSHING DETAIL

NTS



FORCE MAIN TRENCH

NTS



SITE PLAN

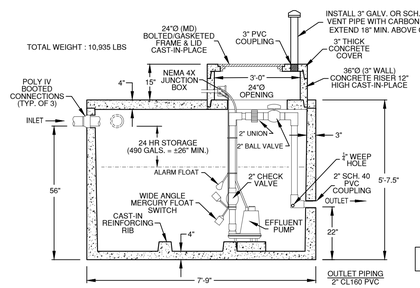
1" = 30'-0"

0 30 60 90 120 FT

-MOUND NOTE-

THE LAND AREA 25' DOWNGRADIENT OF THE ELEVATED SAND MOUND IS THE EFFLUENT DISPERSAL AREA AND SOIL IN THIS AREA MAY NOT BE REMOVED OR DISTURBED. DO NOT DISTURB SOIL WITHIN 10' OF ALL OTHER TOES.

TBM
TEMPORARY BENCHMARK
-ASSUMED DATUM-
(NOT TIED TO NGVD)
TOP OF FENCE POST
ELEV. = 492.8



SECTION

1,000 GAL.

PUMP STATION

CAMP PRECAST #1000PS

NTS

*PROVIDE ADDITIONAL RISER EXTENSIONS TO GRADE AS NECESSARY

OVERALL TANK DIMENSIONS
8'L x 5'-4"W x 5'-8"H

SUBSURFACE TANK MINIMUM ISOLATION REQUIREMENTS	
FOUNDATION/FOOTING DRAIN	10'
WATER SERVICE	25'
DRILLED WELL	50'
DRIVEWAY	5'

- CAUTION -

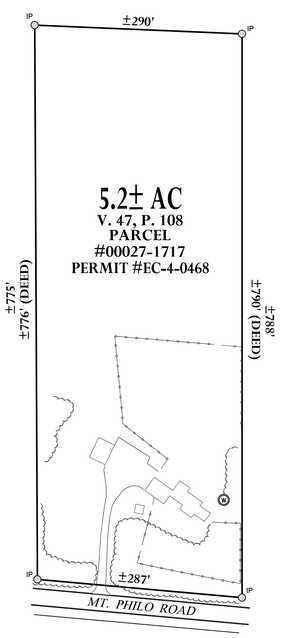
GAS WITHIN SEPTIC TANKS AND PUMP STATIONS CAN CAUSE DEATH IF ENTERED WITHOUT PROPER RESPIRATORY EQUIPMENT. SUCH SPACES ARE SUBJECT TO CONFINED-SPACE ENTRY REGULATIONS PUBLISHED BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA STANDARD 29 CFR 1910.146).

TANK VOLUME = ±235 GALS./FT.
MIN. 4 DOSES PER DAY = 122.5 GAL./DOSE.
SET FLOAT TO DISCHARGE ±100 GALS./DOSE MAX. = ±5 DOSES/DAY.

SELECT EFFLUENT PUMP CAPABLE OF DISCHARGING 55 GPM @25' TDH.

SPECIFICATIONS:

- CONCRETE MINIMUM STRENGTH 5000PSI @ 28 DAYS.
- STEEL REINFORCEMENT GRADE 60.
- TOP SEAM CONSTRUCTION.
- WATER TIGHT TO TOP OF CONCRETE.
- BOOTED PIPE CONNECTIONS.
- WEIGHTS SUBJECT TO VARIATION



PLOT PLAN

1" = 100'

TRUE
MAGNETIC

§1-913(c) SAND FILL SPECIFICATIONS		
(1)		
SIEVE NO.	OPENING (MM)	% PASSING (BY WGT)
3/8	9.500	85 - 100
40	0.420	25 - 75
60	0.240	0 - 30
100	0.149	0 - 10
200	0.074	0 - 5
(2)		
SIEVE NO.	OPENING (MM)	% PASSING (BY WGT)
4	4.750	95 - 100
8	2.380	80 - 100
16	1.190	50 - 85
30	0.590	25 - 60
50	0.297	10 - 30
100	0.149	2 - 10
ASTM SPECIFICATION C-33, INTENDED FOR MANUFACTURED MATERIAL.		
(3)		
SIEVE NO.	OPENING (MM)	% PASSING (BY WGT)
3/8	9.500	85 - 100
40	0.420	30 - 50
200	0.074	0 - 5
THE FILL MATERIAL MUST MEET SPECIFICATIONS (1), (2), OR (3) ABOVE. INTERPOLATION OF ANALYSIS IS NOT PERMITTED.		

LEGEND

TP101	TEST PIT (DEPTH TO SHWT)
P1	PERCOLATION TEST
CP1	CONTROL POINT (NAIL/SPIKE IN GROUND)
IP	IRON PIPE FOUND
	UTILITY POLE
W	DRILLED WELL
	EXISTING CONTOURS
	APPROX. BOUNDARY
	TREE LINE
W	WATER LINE
OE	O/H ELECTRIC

SOIL BORING LOG

DATE 4/29/10
METHOD (BY HAND WITH DRAIN SPADE)
PRESENT J. WILLIS, L.D.
B. WILLIS, L.D.

SEVERAL SOIL BORING WERE CONDUCTED THROUGHOUT THE PROPERTY. SURFACE WATER WAS OBSERVED IN MOST AREAS. SOILS ARE MAPPED AS GeB, GeC (GEORGIA STONY LOAM) AND VeC (VERGENNES CLAY).

TYPICAL PROFILE OBSERVED OUTSIDE CONTINUOUS AREA
0"–9": 10YR 3/2 (VERY DARK GRAYISH–BROWN) LOAM, WET, FEW ROOTS.
9"–18": 2.5Y 4/3 (OLIVE BROWN CLAY LOAM, DEPLETED, WET.

TYPICAL PROFILE OBSERVED INSIDE CONTINUOUS AREA
0"–8": 10YR 3/2 (VERY DARK GRAYISH–BROWN) LOAM, WET, FEW ROOTS.
8"–18": 10YR 3/6 (DARK YELLOWISH–BROWN SILT LOAM, WET.

SEASONAL WATER TABLE IS ESTIMATED NEAR SURFACE (0"–3") THROUGHOUT PROPERTY, PROJECT DOCKET FOR PERMIT EC–4–0468 REPORTED GEORGIA STONY LOAM IN CONTINUOUS AREA WITH SANDY, SILTY LOAM TO 2', BROWN MOTTLED CLAY BELOW.

PERCOLATION TEST RESULTS

NO DATA – UNABLE TO OBTAIN REPRESENTATIVE DATA DUE TO SHALLOW SEASONAL WATER TABLE.

WASTEWATER BASIS OF DESIGN

EXISTING 4 BR HOME: (3 BR×140 GPD)+(1 BR×70 GPD) = 490 GPD FLOWS*.
*7 PERSON PEAK/MAX. OCCUPANCY.

APPLICATION RATE: (USE 1.0 MAX. ALLOWED RATE)
490 GPD÷1.0 GDSF = 490 SF REQUIRED ABSORPTION AREA.
CONSTRUCT (2) 3'W X 82'L ABSORPTION BED = 492 SF.

PRESCRIPTIVE DESKTOP MOUNDING ANALYSIS

LINEAR LOADING RATE (LLR) FACTOR:

- SLOPE IN DISPOSAL AREA = ±2.2–5%
- LOAM @2.1–4% = 3.4
- CLAY LOAM @2.1–4% = 1.1

THE SHALLOW DEPTH TO A SEASONAL WATER TABLE/WET SOIL CONDITIONS PRECLUDE THE ABILITY TO CALCULATE THE REQUIRED LINEAR LOADING RATE AND SYSTEM LENGTH.

HEAD LOSS CALCULATIONS

REQUIRED GPM:

(28) 5/16"ø ORIFICES = 1.82 GPM/ORIF. @2.5'	=	50.96 GPM
1/4"ø WEEP HOLE = 2.44 GPM @±11'	=	2.44
TOTAL	=	53.40 GPM

FRICTION LOSS:

BASED UPON 175 FT EQUIVALENT LENGTH OF 2" FM	=	±11.0 FT
ELEVATION LOSS = 502.5 (AT FIELD) – ±494.0 (PUMP OFF)	=	±8.5
NETWORK LOSS = 1.31 X 2.5'	=	3.3
TOTAL LOSS	=	±22.8 FT

SEPTIC TANK NOTE

1. INSPECT EXISTING SEPTIC TANK FOR LEAKS AND/OR STRUCTURAL DAMAGE (I.E. MISSING BAFFLES, FRACTURES, ETC.). THE SEPTIC TANK MAY REQUIRE REPLACEMENT IF DAMAGED OR LEAKING.
2. IDENTIFY AND CONNECT (AS NECESSARY) ALL WASTEWATER PIPING FROM HOUSE TO SEPTIC TANK. PIPING SHALL BE 4" SCH. 40 PVC @1/4" PER FT.
3. INSTALL "POLYLOK PL122" EFFLUENT FILTERS IN EXTERNAL BASIN PER DETAIL.
4. INSTALL RISER OVER CENTER COVER TO FACILITATE INSPECTION AND CLEANING (PUMPING).

MOUND CONSTRUCTION SPECIFICATIONS

1. CONTACT THE DESIGNER PRIOR TO ANY CONSTRUCTION FOR AN ONSITE MEETING WITH THE CONTRACTOR TO STAKE–OUT THE MOUND SYSTEM AND TO DISCUSS CONSTRUCTION REQUIREMENTS. ALL ELEVATIONS OF FEATURES SUCH AS FLOOR, SEPTIC TANK AND PUMP STATION TO BE FIELD VERIFIED. CONTACT DESIGNER TO VERIFY PUMP SIZE IF ELEVATIONS DEVIATE FROM THOSE NOTED ON THE PLAN. REPORT ANY PROPOSED CHANGES IN THE LOCATIONS OF THE HOUSE, SUB–GRADE TANKS, DRIVEWAY, ETC.
2. THE CONTRACTOR SHALL SUBMIT A RECENT SIEVE ANALYSIS (<6 MONTHS) OF THE SAND FILL. GRAIN SIZE DISTRIBUTION SHALL COMPLY WITH EITHER SPECIFICATION (A, B OR C) NOTED ON PLAN.
3. ABOVE GROUND VEGETATION SHALL BE CLOSELY CUT AND REMOVED FROM THE MOUND AREA AND 10 FEET FROM EDGE OF THE SYSTEM AS MEASURED FROM THE TOE(S). PRIOR TO PLOWING, THE PUMP DISCHARGE LINE FROM THE PUMP STATION TO THE DISTRIBUTION PIPING HEADER SHALL BE INSTALLED.
4. THE FORCE MAIN SHALL BE PRESSURE AND LEAKAGE TESTED IN ACCORDANCE WITH ENVIRONMENTAL PROTECTION RULES, SECTION A–04. THE MINIMUM TEST PRESSURE SHALL BE 50 PSI AT THE HIGHEST POINT IN THE LINE. CONTRACTOR TO FURNISH WATER AND EQUIPMENT TO PERFORM TEST AND NOTIFY DESIGNER 48 HOURS PRIOR TO TEST.
5. PLOW THE MOUND AREA TO A DEPTH OF 7" TO 8" PARALLEL TO THE LAND CONTOUR WITH THE PLOW THROWING THE SOIL UPSLOPE TO PROVIDE A PROPER INTERFACE BETWEEN THE FILL AND NATURAL SOIL. TREE STUMPS SHOULD NOT BE PULLED. PLOW WITH A MOLD–BOARD PLOW OR A CHISEL POINT ADAPTED TO A BACKHOE BUCKET (USED IN WOODED AREAS ONLY).
6. THE MOUND PERIMETER SHALL BE GRADED TO ENSURE DIVERSION OF SURFACE WATER RUN–OFF (DIVERSION DITCH OR SWALE AS SHOWN).
7. ONCE PLOWING IS COMPLETE, CONTACT THE DESIGNER FOR AN INSPECTION OF THE SITE PRIOR TO PLACEMENT OF FILL.
8. DUMP THE APPROVED SAND FILL AROUND THE EDGE OF THE PLOWED AREA WHILE KEEPING THE TRUCK WHEELS OFF THE PLOWED AREA. WHEEL TRACKS IN THE PLOWED AREA WILL LEAD TO COMPACTION AND RUTS, ADVERSELY AFFECTING THE OPERATION OF THE SYSTEM.
9. MOVE THE SAND AROUND INTO PLACE WHILE MAINTAINING AT LEAST 12" OF SAND UNDER THE EQUIPMENT TO MINIMIZE COMPACTION OF PLOWED LAYER. SHAPE THE SIDES TO THE REQUIRED SLOPES.
10. FORM THE TRENCH/BED BY MOVING ALONG ITS LENGTH. BOTTOM OF TRENCH/BED MUST BE LEVEL. HAND WORK WILL BE NECESSARY.
11. DUMP THE STONE IN THE TRENCH/BED BY MOVING UP THE SIDE SLOPE. LEVEL THE STONE TO REQUIRED ELEVATION.
12. CHANNEL STONE FOR LATERALS. LAY PIPE LEVEL WITH ORIFICES POINTING UPWARDS (WITHOUT ORIFICE SHIELDS INSTALLED UNTIL PRESSURE TESTING IS COMPLETE).
13. CONTACT THE DESIGNER PRIOR TO BACKFILLING THE LATERALS TO TEST FOR COMPLETE AND EQUAL DISTRIBUTION. DISCHARGE RATES SHOULD NOT EXCEED 10% BETWEEN ORIFICES IN A SINGLE TRENCH/BED (OR PER SQUARE FOOT LOADING RATE IF STEPPED TRENCHES). TANKS AND FORCE MAIN SHALL NOT BE BACKFILLED UNTIL INSPECTED AS WELL.
14. FILL REMAINING 2" OF STONE OVER LATERALS AFTER TEST IS COMPLETE.
15. COVER ENTIRE TRENCH/BED WITH "MIRAFI 140–N" GEO–TEXTILE FILTER FABRIC (OR EQUAL).
16. PLACE A MINIMUM OF 4" OF TOPSOIL OVER 8" OF NATIVE SOIL OVER THE ENTIRE MOUND. CROWN 18" TOTAL IN CENTER AND SHAPE SURFACE AS SHOWN.
17. LANDSCAPE THE MOUND BY PLANTING GRASSES ON THE SURFACE. SHRUBS PLACED AT THE FOOT AND UP THE SLOPE ON THE SIDES AND ENDS ARE OPTIONAL. SHRUBS PLACED ON TOP OF THE MOUND MAY INTERFERE WITH THE DISTRIBUTION SYSTEM. UPON COMPLETION OF CONSTRUCTION, CONTACT THE DESIGNER.

OPERATION AND MAINTENANCE NOTES

1. THE DISPOSAL SYSTEM MAY REQUIRE ADJUSTMENTS OR MODIFICATIONS DURING STARTUP AS WELL AS DURING THE LIFETIME OF THE SYSTEM. THESE ADJUSTMENTS INCLUDE RE–LEVELING SUBSURFACE TANKS OR DISTRIBUTION BOXES DUE TO FROST ACTION OR SETTLEMENT. FILL MAY BE ADDED TO REPAIR EROSION OR LEVEL SETTLED AREAS.
2. IN GENERAL, SEPTIC TANKS MUST BE PUMPED EVERY 2 TO 3 YEARS (OR MORE FREQUENTLY DEPENDING UPON USAGE). AT LEAST ONCE A YEAR, THE DEPTH OF SLUDGE AND SCUM IN THE SEPTIC TANK BE MEASURED. THE TANK SHOULD BE PUMPED IF:
   (A) THE SLUDGE IS CLOSER THAN TWELVE INCHES TO THE OUTLET BAFFLE,
   (B) THE SCUM LAYER IS CLOSER THAN THREE INCHES TO THE SEPTIC TANK BAFFLE.
   (C) FOLLOWING SEPTIC TANK CLEANING IN UNITS OVER 5,000 GALLONS, SURFACES OF THE TANK SHOULD BE INSPECTED FOR LEAKS AND CRACKS).
3. IF APPLICABLE, AT LEAST ONCE A YEAR, DOSING TANKS AND DISTRIBUTION BOXES SHOULD BE OPENED AND SETTLED SOLIDS REMOVED AS NECESSARY AND THE DOSING TANK OR DISTRIBUTION BOX CHECKED FOR LEVELNESS.
4. PLUMBING AND ELECTRICAL COMPONENTS ASSOCIATED WITH PUMP STATIONS OR ADVANCED TREATMENT UNITS MUST BE CHECKED REGULARLY FOR OPERATION AND LEAKS.
5. TOXIC OR HAZARDOUS SUBSTANCES SHOULD IN GENERAL NOT BE DISPOSED OF IN SEPTIC SYSTEMS. THESE SUBSTANCES MAY PASS THROUGH THE SYSTEM IN AN UNALTERED STATE AND CONTAMINATE GROUNDWATER OR REMAIN IN THE SEPTAGE AND SUBSEQUENTLY CONTAMINATE THE SOIL OR CROPS AT THE SITE OF ULTIMATE DISPOSAL.
6. IF APPLICABLE, FLOW ADJUSTMENT DIALS WITHIN DISTRIBUTION BOXES SHOULD BE CHECKED AND ADJUSTED AS NECESSARY TO ENSURE EQUAL FLOW TO EACH LATERAL. ADJUSTMENT MUST BE PERFORMED WITHIN ONE YEAR OF INSTALLATION AND WHENEVER THE SEPTIC TANK IS PUMPED. FAILURE TO DO SO MAY OVERLOAD AND CAUSE THE PREMATURE FAILURE OF AN ABSORPTION TRENCH OR BED SYSTEM.
7. IMPROPER MAINTENANCE OF THE PRETREATMENT UNIT (SEPTIC TANK), AND RELATED COMPONENTS MAY RESULT IN PLUGGING WITHIN THE DISTRIBUTION NETWORK. THE LIFE OF THE DISPOSAL SYSTEM CANNOT BE ESTIMATED DUE TO A VARIETY OF OPERATIONAL AND ENVIRONMENTAL FACTORS. INTRODUCTION OF MATERIAL OTHER THAN HUMAN WASTES (E.G. USE OF NON–BIODEGRADABLE DETERGENTS, CHEMICALS AND USE OF A GARBAGE DISPOSAL). EXCESSIVE SEWAGE FLOWS OR RAINFALL WILL ADVERSELY AFFECT THE OPERATION OF THE DISPOSAL SYSTEM. SOIL SETTLEMENT, FREEZING OF COMPONENTS AND CLOGGING DUE TO ORGANIC SOLIDS ACCUMULATION WILL REQUIRE REPAIRS. USE OF GARBAGE DISPOSALS IS PROHIBITED UNLESS SPECIFIED OTHERWISE. USE OF WATER SOFTENERS (BRINE BACKWASH) CAN ADVERSELY EFFECT THE LIFE OF THE SYSTEM.
8. THE DESIGNER ASSUMES NO RESPONSIBILITY FOR THE CONTINUED PROPER USE AND MAINTENANCE OF THE SYSTEM.

DESIGN NOTE

TO THE EXTENT REASONABLY POSSIBLE, THIS DESIGN WAS PREPARED IN ACCORDANCE WITH CHAPTER 1, WASTEWATER SYSTEM AND POTABLE WATER SUPPLY RULES, EFFECTIVE 9/29/07. SYSTEM PLACEMENT IS SUBJECT TO AREA CONSTRAINTS (LEDGE, BOUNDARY, ETC.).

REQUESTED (KNOWN) WAIVERS INCLUDE: THE SOIL WITHIN AND 25' DOWNGRADIENT OF SYSTEM AREA DOES NOT MEET MINIMUM SITE CONDITIONS OR COMPLIES WITH PERFORMANCE–BASED STANDARDS.

ADDITIONAL SAND FILL IS PROPOSED TO COMPENSATE FOR POOR SITE/SOIL CONDITIONS. USE OF LOW FLOW PLUMBING FIXTURES AND DEVICES IS STRONGLY RECOMMENDED.

CALL
DIG SAFE
PRIOR TO ANY EXCAVATION
DIAL "811"
(OR 1-888-DIG-SAFE)

STATE OF VERMONT
JUSTIN T. WILLIS
NO. 344-6
LICENSED DESIGNER

NO.	DATE	REVISION	BY

WILLIS DESIGN ASSOC., INC.
P.O. BOX 98, RICHMOND, VERMONT 05477 (802) 434-3103

TODD W. & PATRICIA G.
FORD
1717 MOUNT PHILO ROAD
CHARLOTTE - VERMONT

WASTEWATER SYSTEM DESIGN

DRAWN: JTW	SCALE: NOTED
DESIGN: JTW	
DATE: 5/22/10	SHEET: 1
PROJECT: 10-018	
DRAWING: 10-018-1	

©2010 WILLIS DESIGN ASSOC., INC.