SOIL EVALUATION REPORT FOR ON-SITE WASTEWATER TREATMENT

Prepared for:

MODOT
P.O. Box 270
Jefferson City, MO 65102

DATE:
September 25, 2015

HOME & FARM SOIL CONSULTING

DENNIS M. MEINERT
835 GERLING LANE
NEW HAVEN, MO 63068

Phone: 573-237-5081
Fax: 573-237-5081
Email: dennismm@fidnet.com

I. LANDOWNER INFORMATION

FORM #: 14415 APPLICATION #

1). OWNERS NAME: MODOT DATE: 09/25/15
MAILING ADDRESS: P.O. Box 270 Jefferson City, MO 65102
PHONE: DAY: (573) 437-2029 EVENING: Same.
CELL: NA EMAIL: Philip.Hamilton@modot.mo.gov

2). PROPERTY ADDRESS: 1972 Hwy 50 Owensville, MO 65066
PROPERTY SIZE: 4.39 acres
LEGAL DESCRIPTION: Pt. NE1/4 NE1/4 Sec.22 T.43N., R.5W.
7.5 MINUTE QUAD SHEET: Rosebud
LATITUDE: 38 degrees 27’ 47.3” N LONGITUDE: 91 degrees 27’ 58” W
UMT’S: 633824 E 4258318 N
PROJECT: MODOT Facility COUNTY: Gasconade
TAX ID NUMBER: NA ENS#: NA

3). SYSTEM IS: Replacement.

4). SYSTEM SERVES: Government, Commercial; WATER USAGE: 375 GPD
NO. OF BATHROOMS: 1; NO. OF EMPLOYEES: 15;

5). WATER SUPPLY: PRIVATE WELL TYPE: DRILLED

6). CONTRACTOR: Self-installed REGISTERED: N;
ADDRESS: Same as above.
PHONE: Same as above. Registration #:

II. SETBACKS FROM EXISTING FEATURES

MINIMUM DISTANCE FROM	TANK #1	TANK #2	SITE #1	SITE #2	SUITABILITY
PRIVATE WATER WELL	>100’		100’		S
PUBLIC WATER SUPPLY WELL	NA		NA		S
CISTERN	NA		NA		S
SPRING	NA		NA		S
CLASSIFIED STREAM OR LAKE	NA		NA		S
STREAM OR DITCH	>25’		>25’		S
PROPERTY LINES	>15’		>25’		S
BUILDING FOUNDATION	>15’		65’		S
BASEMENT	NA		NA		S
SWIMMING POOL	NA		NA		S
WATER LINE UNDER PRESSURE	>10’		>10’		S
TOP OF CUTS	NA		NA		S
SINK HOLE	NA		NA		S
OTHER ABSORPTION SYSTEMS	>20’		>20’		S

COMMENTS:

SITE EVALUATION
SITE #1

SUITABILITY

ST	ALT		
S	S	LANDFORM	SUMMIT
		TOPOGRAPHY:	
S	S	A. SLOPE:	4 PERCENT
S	S	B. SLOPE TYPE:	UNIFORM
PS	PS	C. SHAPE:	ACROSS: LINEAR DOWN: LINEAR
S	S	D. ASPECT:	280 DEGREES
S	S	SURFACE DRAINAGE LIMITATIONS:	NONE
S	S	WATER GAINING \ WATER LOSING:	WATER GAINING
PS	PS	RUNOFF SLOPE LENGTH:	110 FEET
PS	PS	FLOODING:	NONE
-	-	GEOLOGIC FORMATION	PENNSYLVANIAN
S	S	RAPID PERMEABILITY	NONE
S	S	DEPTH TO PERMEABLE BEDROCK	>60 INCHES
S	S	SINKHOLES:	NONE
S	S	GROUNDWATER CONTAMINATION POTENTIAL	LOW
S	S	FILL MATERIAL:	NONE
S	S	SURFACE DEPRESSIONS	NONE
U	PS	ENVIRONMENTAL HAZARD:	HIGH
U	S	AVAILABLE AREA:	40x140 5600 sq. ft
U	-	ADEQUATE FOR CONVENTIONAL SYSTEM	NO
-	S	ADEQUATE FOR ALTERNATIVE SYSTEM	YES
U	S	REPLACEMENT AREA	30x150 4500 sq. ft

COMMENTS: The alternative ratings are for a drip irrigation system.

IV. SOIL CHARACTERISTICS
PIT #1

SUITABILITY

ST	ALT		
U	U	SOIL DRAINAGE:	SOMEWHAT POORLY DRAINED
U	U	WATER TABLE: A. TYPE:	PERCHED
		B. DEPTH:	13 INCHES
U	PS	RESTRICTIVE HORIZON:	
		A. TYPE:	FRAGIPAN
		B. DEPTH:	22 INCHES
		C. THICKNESS:	26 INCHES
S	S	ROCK OUTCROP:	NONE PERCENTAGE:
U	S	PERMEABILITY: IN./HR	0-3″: .6-1.0 3-22″: .1-.2 22-60″: <.06
U	S	DEPTH OF SUITABLE SOIL MATERIAL	22 INCHES
S	S	DEPTH TO BEDROCK	>60 INCHES TYPE:

SUITABILITY RATING: S:SUITABLE PS:PROVISIONALLY SUITABLE U:UNSUITABLE

IV. SOIL CHARACTERISTICS
PIT #2

SUITABILITY

ST	ALT		
U	U	SOIL DRAINAGE:	SOMEWHAT POORLY DRAINED
U	U	WATER TABLE: A. TYPE:	PERCHED
		B. DEPTH:	12 INCHES
U	PS	RESTRICTIVE HORIZON:	
		A. TYPE:	FRAGIPAN
		B. DEPTH:	22 INCHES
		C. THICKNESS:	26 INCHES
S	S	ROCK OUTCROP:	NONE PERCENTAGE:
U	S	PERMEABILITY: IN./HR	0-7″: .6-1.0 7-22″: .1-.2 22-60″: <.06
U	S	DEPTH OF SUITABLE SOIL MATERIAL	22 INCHES
S	S	DEPTH TO BEDROCK	>60 INCHES TYPE:

SUITABILITY RATING: S:SUITABLE PS:PROVISIONALLY SUITABLE U:UNSUITABLE

OVERALL SITE SUITABILITY: This site is unsuited to a standard system. It will require an engineered system.

SYSTEM	APPLICATION RATE .1gal/sq.ft/day	SYSTEM SIZE 3,750 SQ. FT
Alternative (DRIP) THIS SYSTEM REQUIRES AN ENGINEERED DESIGN.	TRENCH DEPTH	6 INCHES
	CURTAIN DRAIN/ DEPTH	REQUIRED / 24 INCHES

Comments:

1). The curtain drain should be a minimum of 6-8 inches in width and extend along the top of the field area. B gravel or crushed stone should be used. A 4" sock pipe should be placed in the bottom. Limestone shall be avoided when possible. It shall be placed a minimum of 10 feet above the field area.

2). This system should be installed when the soils are dry to prevent smearing of the trench walls and base.

3). This functioning of this field area would benefit from the addition of 4 inches of silt loam soil material being added. This would keep the drip line in the silt loam material and it would not be then placed in the clayey material, affecting the structure and the porosity. The drip line could also be placed on the surface of the site and then have suitable soil added over the top of the field area.

Note: Soil and site properties, comments and recommendations provided do not give any guarantee that the absorption field will function properly. They are solely to assist the landowner and/or administrative authority in meeting the specifications of 19 CSR 20-32.060.

I, the undersigned hereby certify that the site evaluation was made in accordance with the requirements of RSMO, Section 701.040, Title 19, division 20, Chapter 3.060, and that the data is correct to the best of my knowledge.

Dennis M. Meinert **DATE: 09/28/15**

Dennis M. Meinert, Soil Scientist
835 GERLING LANE
NEW HAVEN, MO 63068
573-237-5081 SS EVALUATOR #10013

SOIL MORPHOLOGICAL REPORT: **Described by: Dennis M. Meinert**

OWNER: MODOT **DATE: 09/25/13**

Site NO.: 1; PIT #1 **Excavation Depth: 60”;** **Excavation Type: Backhoe pit.**

Vegetative Cover: Fescue **Parent Material: Loess/Gravelly Colluvium/Clayey Residuum** **Shrink/Swell Potential: Low - High**

Suitability (S, PS U)		Horizon		Boundary	Munsell Color (moist)	Redoximorphic Features	Texture USDA	% Clay	Shrink Swell	% Coarse Fragments		Consistence				Structure	Roots	Pores	Soil Group	App. Rate Conv.	App. Rate Alt.
ST	ALT	Designation	Depth							<3”	>3”	Dry	Moist	Wet	Plasticity						
PS	PS	Ap	0-3	Abrupt/ Smooth	10YR 3/3 10YR 3/4	-	Silt Loam	18	Low	-	-	H	FI	NS	NP	Weak Medium Subangular Blocky	Many Fine	Few Fine	III	.4	.2
PS	PS	Bt1	3-13	Clear/ Smooth	10YR 4/6	-	Silty Clay Loam	38	Moderate	-	-	H	FI	S	P	Moderate Fine Angular Blocky	Many Fine	Few Fine	III	.3	.15
PS	PS	Bt2	13-22	Abrupt/ Smooth	75YR 4/6	10YR 5/2 10YR 5/4 Silt Coats	Silty Clay Loam	38	Moderate	-	-	H	FI	S	P	Moderate Fine Angular Blocky	Many Fine and Medium	-	III	.3	.15
U	U	Bt3	22-42	Clear/ Wavy	10YR 4/6 10YR 4/3	10YR 5/2 10YR 2/1	Silt Loam	26	Low	-	-	VH	VFI	NS	NP	Weak Coarse Prismatic	Few Fine	-	III	-	-
U	U	2Btx	42-48	Clear/ Wavy	10YR 4/4	10YR 6/2 10YR 5/6	Silty Clay Loam	30	Low	35	10	VH	VFI	NS	NP	Weak Coarse Prismatic	-	-	V	-	-
U	PS	3Bt	48-60	-	25YR 3/6	10YR 4/2 10YR 5/6	Clay	70	High	-	-	H	FI	VS	VP	Moderate Fine Angular Blocky	-	-	IVb	-	.05

RATINGS ARE GIVEN FOR BOTH STANDARD AND ALTERNATIVE SYSTEMS.

SOIL MORPHOLOGICAL REPORT: **Described by: Dennis M. Meinert**

OWNER: MODOT **DATE: 09/25/13**

Site NO.: 1; PIT #2 **Excavation Depth: 48”;** **Excavation Type: Backhoe pit.**

Vegetative Cover: Fescue **Parent Material: Loess/Gravelly Colluvium/Clayey Residuum** **Shrink/Swell Potential: Low - Moderate**

Suitability (S, PS U)		Horizon		Boundary	Munsell Color (moist)	Redoximorphic Features	Texture USDA	% Clay	Shrink Swell	% Coarse Fragments		Consistence				Structure	Roots	Pores	Soil Group	App. Rate Conv.	App. Rate Alt.
ST	ALT	Designation	Depth							<3”	>3”	Dry	Moist	Wet	Plasticity						
PS	PS	Ap	0-3	Abrupt/ Smooth	10YR 4/2	-	Silt Loam	19	Low	-	-	H	FI	NS	NP	Moderate Medium Subangular Blocky	Many Fine	Few Fine	III	.4	.2
PS	PS	Bt1	3-7	Abrupt/ Smooth	10YR 4/6 10YR 4/2	-	Silt Loam	22	Low	-	-	H	FI	NS	NP	Weak Medium Subangular Blocky	Many Fine	Few Fine	III	.4	.2
PS	PS	Bt2	7-12	Clear/ Smooth	10YR 4/4	5YR 5/6	Silty Clay	44	Moderate	-	-	H	FI	S	P	Moderate Fine Angular Blocky	Common Fine	Few Fine	III	.2	.1
PS	PS	Bt3	12-15	Clear/ Smooth	10YR 5/3	10YR 5/2 10YR 4/6	Silty Clay	40	Moderate	-	-	H	FI	S	P	Weak Fine Angular Blocky	Common Fine	-	III	.2	.1
PS	PS	Bt4	15-22	Abrupt/ Smooth	10YR 5/2	10YR 4/6 10YR 2/1	Silty Clay	38	Moderate	-	-	H	FI	S	P	Moderate Fine Angular Blocky	Few Fine	-	III	.3	.15
U	U	2Btx	22-48	-	10YR 5/4 10YR 6/2	10YR 4/6	Clay Loam	30	Low	-	-	VH	VFI	NS	NP	Weak Coarse Prismatic	-	--	V	-	-

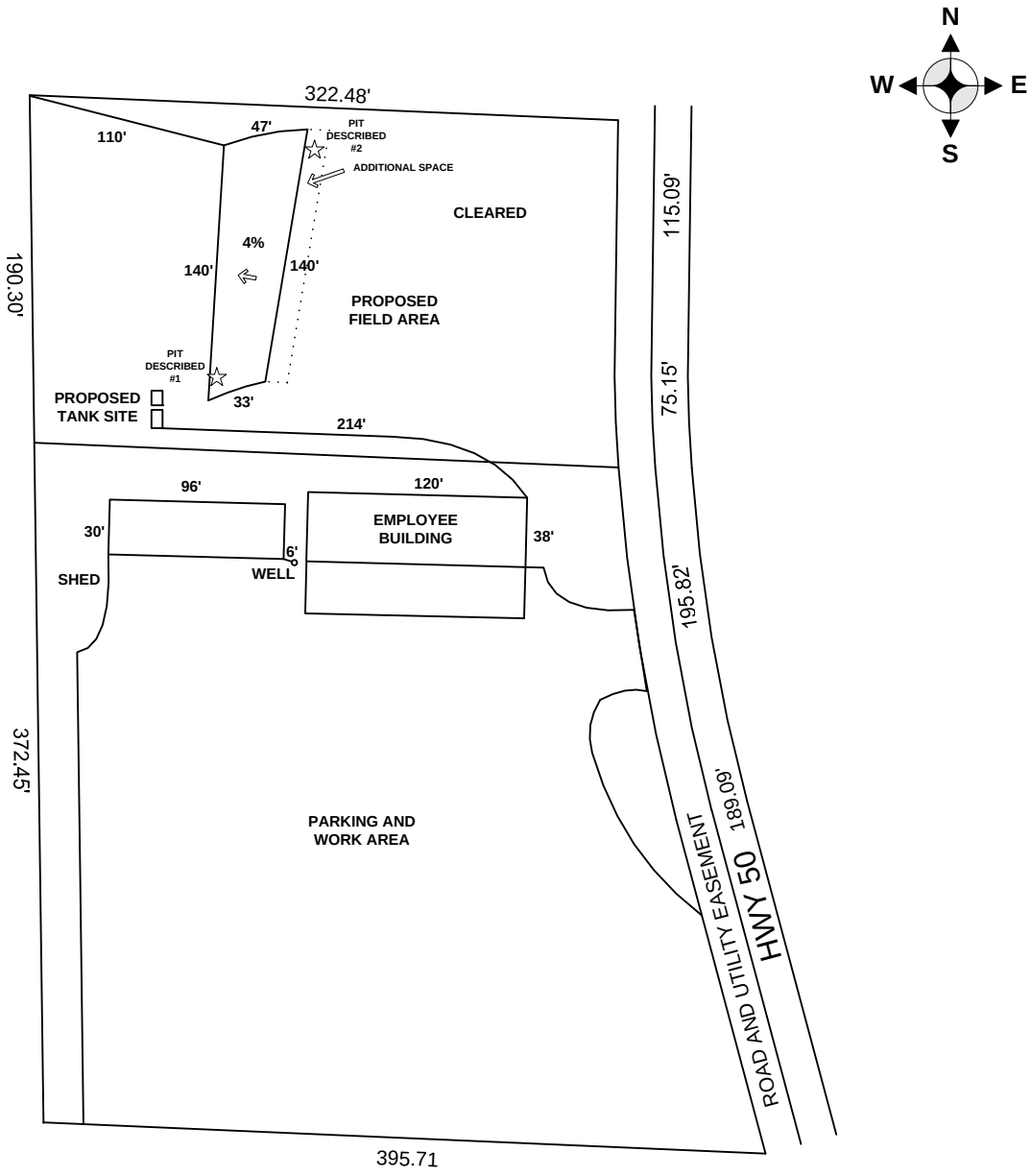
RATINGS ARE GIVEN FOR BOTH STANDARD AND ALTERNATIVE SYSTEMS.

SITE PAGE

OWNER: MODOT

LOCATION: Pt. NE1/4 NE1/4 Sec.22 T.43N., R.5W.

LOT SIZE: 4.39 ACRES SLOPE: 4% LANDFORM: SUMMIT



SCALE

0 100'

1" = 100'

V ROCK OUTCROP

—w— WATER MAIN

—e— ELECTRIC LINES

PROPERTY LINES

DRAINAGE

SLOPE DIRECTION

☆ LOCATION OF SAMPLE

CROSS SECTION