• I. S. D. S. PERMIT •

TO INSTALL, CONSTRUCT, ALTER OR REPAIR
AN INDIVIDUAL SEWAGE DISPOSAL SYSTEM

Permit: EH-13-012

New: Y
Repair: N
Alteration: N
Addition: N

ROUTT COUNTY DEPARTMENT OF ENVIRONMENTAL HEALTH • P.O. BOX 770087 • STEAMBOAT SPRINGS, CO • 970-870-5588

This permit effective only on premises located at: **56065 HANNAHS WAY C**
Legal description of property: LOT 2 MURPHY-LARSEN RANCH SUBD 50.22A
Parcel Id.: 286800002 Lot No.: 002

Owner: ENTELCO CORPORATION
Address: 132 W SECOND ST. SUITE B
PERRYSBURG OH 43551-1483
Phone:

Applicant: ALEX BORK
Address: P.O. BOX 1168
CLARK CO 80428
Phone: 307-399-5284

As authorized and required by Chapter 25, Article 10 C.R.S., permission is hereby granted to the owner or a Routt County licensed ISDS installer to construct or repair an I.S.D.S. system at the property indicated above. All work must comply with the specifications on this permit and the Guidelines on Individual Sewage Disposal Systems - Revised 1988 - Colorado State Board of Health, 5 CCR 1003-6. This permit expires one year from date of issue.

SPECIFICATIONS

N Residential Y Commercial Other: **Number of bedrooms: 0**
Percolation Rate: 30 MPI
Minimum Septic Tank Capacity: 1000 gallon
Tank Material: Y Concrete N Polyethylene
Design: 1: Engineer shall certify that construction complies with permitted design.
Comments: SG 06/26/2013 THIS IS A HOMEOWNERS CLUBHOUSE.
Notice: All Sewage *HOLDING* Tanks must be Concrete. Inspections required (24 hour advanced notice required).

Environmental Health Specialist: **Date of Issue:** 6/26/13

The above individual sewage disposal system installed by _____ has received a final inspection. The system is hereby approved for use.

Environmental Health Specialist: **Date** 2/20/14

	State fee	**$23.00**
Fee:	**Percolation**	**$0.00**
	Permit	**$277.00**
		$300.00

Not signed PC 5-9-07 2/20/14

5/13/14

RECEIPT

RECEIPT NUMBER: R130000632

Routt County Environmental Health Department
P.O. Box 770087 Phone 970-870-5588
Steamboat Springs, CO 80477

Copy Reprinted on 06-26-2013 at 11:07:01 06/26/2013

APD #: EH-13-012 TYPE: EH-Ind. Sewage Disp Sys
SITE ADDRESS: 56065 HANNAHS WAY C
PARCEL: 286800002

May include fees collected within the jurisidiction.

TRANSACTION DATE:	06/26/2013	TOTAL PAYMENT:	300.00
		TOTAL PAID FROM TRUST:	.00
		TOTAL PAID FROM CURRENCY:	300.00

TRANSACTION LIST:

Type	Method	Description	Amount
Payment	Check	#5486	300.00
		TOTAL:	300.00

ACCOUNT ITEM LIST:

Description	Account Code	Current Pmts
I.S.D.S. Permit Fee	01-20-22-000-568	277.00
State Surcharge for ISDS	01-20-22-000-546	23.00
	TOTAL:	300.00

RECEIPT ISSUED BY: SG INITIALS: SAG
ENTERED DATE: 06/26/2013 TIME: 11:05 AM

OK. fill permit
JS 5/26/13

EH-13-012
BUILDING PERMIT # CB-13-134
PERMIT PD 300.00 pd
PERC PD _____
Ck# 5486
Entelco Corp.
6/3/13

APPLICATION FOR ON-SITE WASTEWATER SYSTEM PERMIT

NEW X REMODEL ____ REPAIR ____ EMERGENCY USE ____

Name of Owner ENTELCO CORPORATION Mailing Address 132 W SECOND ST STE 6 PETERSBURG, OH 45651 Phone _____

Name of Applicant ALEX BORK Mailing Address PO BOX 1168 CORTEZ, CO 81328 Phone 307-399-5284
Call Alex with questions

LOCATION OF PROPOSED SYSTEM: Street Address 56060 HANNAHS WAY

Legal Description LOT 2 MURPHY LARSEN RANCH SUBD Parcel ID# 28L800002
(Lot# and Subdivision if applicable) (this # can be found in the Assessor's Office)

Size of Lot 50.22 A ( )Residential (X)Commercial ( )Other (Describe) Homeowners meeting bldg

Number of: Bedrooms 0

Water Supply: (X) Private Well
( ) Public (give name of supply) _____

An appropriate plot plan must accompany this application showing required information. Percolation tests and an on-site inspection must be conducted by a Colorado Registered Professional Engineer, P.E. or the Routt County Department of Environmental Health after receipt of the application and plot plan. The permit, upon approval of this application may be obtained at the Routt County Department of Environmental Health with payment of the required fee.

Application for an individual wastewater system is hereby submitted. The on-site wastewater system will be constructed, installed and operated in accordance with the regulations governing individual sewage disposal systems within Routt County and will comply with applicable State Regulations adopted pursuant to Article 10 of Title 25, C.R.S. 1973, as amended. The undersigned acknowledges that the above information is true and that false information will invalidate the application or subsequent permit. The owner assumes all responsibility in case of failure or inadequacy of this sewage disposal system. (*Hot tubs and Jacuzzis shall not be connected to on-site sewage disposal systems.)

Signature of Applicant _____ Date 6.1.13

SOILOGIC

April 19, 2013

Entellco Corp
132 West Second Street
Perrysburg, Ohio 43551

Attn: Steve & Ann Stranahan

Re: Addendum #1
Murphy Larsen Ranch Clubhouse
Clark, Colorado
Soilogic Project # 11-4008

Steve and Ann Stranahan:

Our geotechnical subsurface exploration report for the referenced project was submitted to your attention in a report dated September 14, 2012. At this time we understand the proposed construction has changed slightly to eliminate slab-on-grade construction and provide taller foundation stem-walls (approximately 6 feet) to allow for construction of a partial below grade crawl space area. Our recommendations concerning development of foundation bearing based on the revised design is included with this report.

The materials encountered in boring B-3 completed in the proposed construction area consisted of approximately 24 inches of vegetation and topsoil underlain by brown lean to fat clay. The lean clay was very stiff to hard in consistency and showed low to moderate swell potential at current moisture and density conditions. At boring location B-3, the lean to fat clay extended to a depth of approximately 14 feet below ground surface and was underlain by dense brown/grey/rust silty sand and gravel. The silty sand and gravel extended to a depth of approximately 21 feet below ground surface and was underlain by grey lean to fat clay. The lean to fat clay extended to the bottom of boring B-3 at a depth of approximately 30 feet below present site grades.

Groundwater was encountered at boring location B-3 at a depth of approximately 15 feet below ground surface at the time of drilling. Groundwater was measured in boring B-3 (approximately 24 hours after the completion of drilling) at a depth of approximately 11.5 feet below ground surface.

A sample of lean clay obtained at a depth of approximately 4 feet below ground surface in boring B-3 completed in the proposed construction area showed moderate swell potential at in-situ moisture and density conditions. A sample of lean clay obtained at a depth of approximately 9 feet below ground surface in the same boring showed no swell potential when inundated under a 500 psf confining pressure. Based on results of the completed field and laboratory testing, it is our opinion overexcavation/replacement procedures could be completed beneath the proposed clubhouse to reduce the potential for post-construction movement of the supported elements as outlined in our original report. The risk of some movement cannot be eliminated.

With the revised structure design incorporating taller stem-walls and eliminating all slab-on-grade construction, it is our opinion the overexcavation zone could be revised to extend to low swelling lean clay or to a minimum depth of three (3) feet below proposed foundation bearing, whichever results in the greater overexcavation depth. The overexcavation area should extend a minimum of 8 inches laterally past the interior and exterior perimeter of the building footing foundations and column pads for every 12 inches of overexcavation depth.

To allow for higher allowable soil bearing pressures, soils used as overexcavation/replacement should consist of non-expansive select granular fill free from organic matter, debris and other objectionable materials. Structural fill soils consistent with Colorado Department of Transportation (CDOT) Class 5, 6 or 7 specifications could be considered for use. After stripping and completing all cuts and overexcavation, and prior to placement of any overexcavation/replacement, we recommend the exposed subgrades be scarified to a depth of 9 inches, adjusted in moisture content and compacted to at least 95% of the materials standard Proctor maximum dry density. The moisture content of the scarified soils should be adjusted to within the range of 0 to +3% of standard Proctor optimum moisture content at the time of compaction. Overexcavation/replacement materials consisting of essentially-granular structural fill should be placed in loose lifts not to exceed 9 inches thick, adjusted to within ±2% of standard Proctor optimum moisture content and compacted to at least 98% of the material's standard Proctor maximum dry density.

Care should be taken to maintain the proper moisture content in the reconditioned site lean clay and placed structural fill soils prior to concrete placement. The prepared structural soils should not be left exposed for extended periods of time. In the event that the reconditioned soils are allowed to dry out or if rain, snowmelt or water from any source is allowed to infiltrate the bearing/subgrade soils, reworking of those materials or removal/replacement procedures may be required.

Inherent risks exist when building in areas of expansive soils. The overexcavation/replacement procedures outlined above will reduce but not eliminate the potential for movement of the building subsequent to construction. The in-place materials below the moisture conditioned zone can increase in moisture content causing some heaving of the overlying improvements. If some limited movement and associated distress cannot be tolerated, a drilled pier foundation used in conjunction with a structural flooring system should be employed.

Footing Foundations

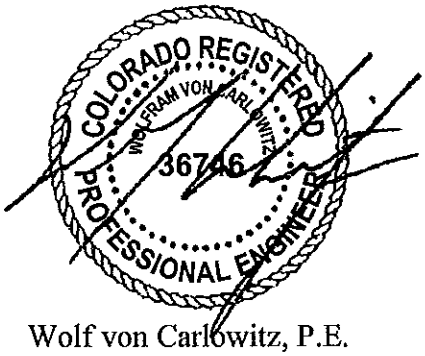
For design of footing foundations bearing on a minimum of three (3) feet of suitable structural fill developed as outlined above, we recommend using a maximum net allowable soil bearing pressure of 2,500 psf. As a precaution, we recommend the footing foundations be designed to maintain a minimum dead load pressure of 750 psf on the supporting soils.

For design of footing foundations and foundation walls to resist lateral movement, a passive equivalent fluid pressure value of 250 pcf could be used. A coefficient of friction of 0.45 could be used between foundation and floor slab concrete and the bearing/subgrade soils to resist sliding. The recommended passive equivalent fluid pressure value and coefficient of friction do not include a factor of safety.

Exterior footings should bear a minimum of 48 inches below finished adjacent exterior grade to provide frost protection. We recommend formed strip footings have a minimum width of 12 inches and isolated pad foundations have a minimum width of 24 inches in order to facilitate construction and reduce the potential for development of eccentrically loaded footings. Actual footing widths should be designed by a structural engineer.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the enclosed information or if we can provide any further assistance, please do not hesitate to contact us.

Very Truly Yours,
Soilogic, Inc.



Wolf von Carlowitz, P.E.
Principal Engineer

Voiding of portions of the footings may be required to develop the minimum recommended dead load pressures with the minimum footing widths outlined above.

We estimate settlement of footing foundations designed and constructed as outlined above and resulting from the assumed structural loads would be less than 1 inch. Differential settlement could approach the amount of total settlement estimated above.

Septic Design

Tyson -

Please contact engineer w/ these questions

MZ.

At this time we understand a rock and perforated pipe system is proposed as opposed to a system utilizing chamber infiltrators. The use of chambers (chambers) allows for a 40% reduction in bed size. Also, burrowing animals have caused failure of chamber systems due to the void cavities that are associated with these types of systems. If chambers are to be constructed, a minimum bed size of 576 square feet and a 2 foot buffer will be required around the bed area, with 12 inches of gravel to develop a suitable treatment zone beneath the gravel bed. Sand or other pervious material approved by the Routt County [illegible] overlying the gravel and prior to placement of cover material in order to reduce the potential for fines washing into the gap graded distribution rock. As part of our original septic design, dosing of the field is recommended. If positive gravity drainage can be developed from the clubhouse to the field, an automatic dosing siphon could be used precluding the need for a mechanical pump and electric service.

questions

? • Inspection ports in Bed
• Inspection schedule
• Perc Rate or LTAR (which is used)
• Design Q - how arrived at?
• Normally we see smaller Dist. pipe suspended in chambers 1.5" - 2" and No "D" box

576 Perc

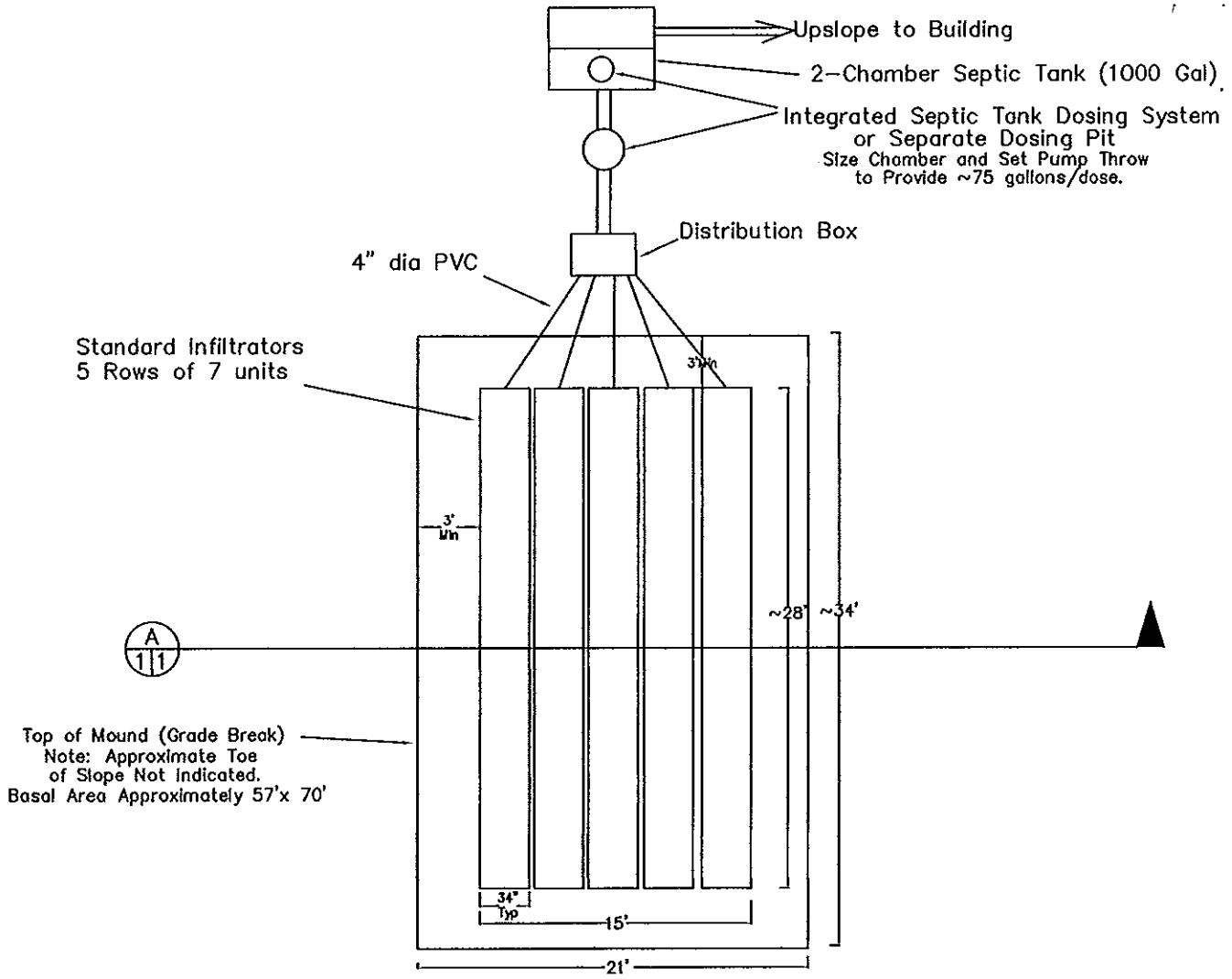
Please review design

We will Not sign off until they pay.

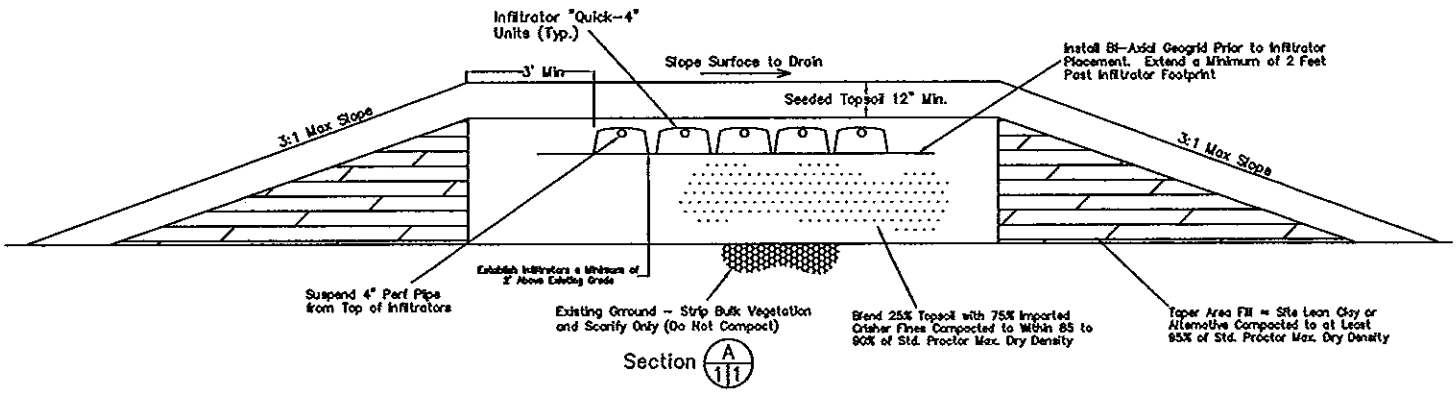
Thanks

S

SEPTEMBER 2012 PROJECT # 11-4008	SEPTIC SYSTEM DESIGN	SOILOGIC



ABSORPTION SYSTEM
NOT TO SCALE



MURPHY LARSEN RANCH CLUBHOUSE

CLARK, COLORADO

MURPHY LARSEN RANCH CLUBHOUSE

Clark, Colorado

Project # 11-4008

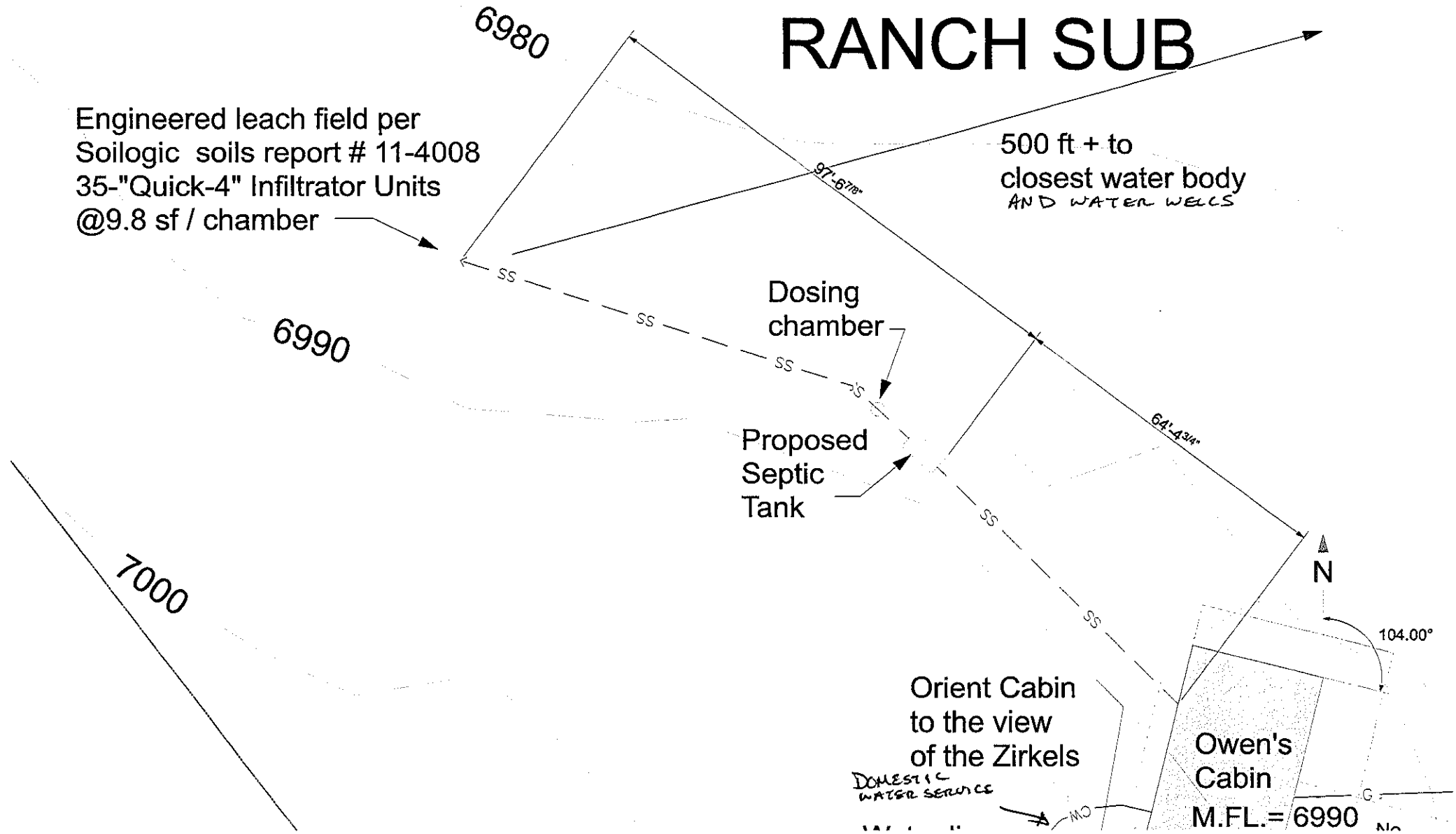
September 2012

Septic System Design Calculations

Amenity	Quantity	Total GPD
Kitchen Sink	1 @ 4.4 gpd/unit	4.4
Garbage Grinder	1 @ 1.4 gpd/unit	1.4
Dishwasher	1 @ 1.8 gpd/unit	1.8
Lavatory	2 @ 8.4 gpd/hookup	16.8
Water Closet	2 @ 24.8 gpd/unit	49.6
	Total gpd =	74
	Total Flow = gpd x 4 persons/day average	296
	t =	30
	A = (Q√t X 1.75)/5 =	567
	40% Reduction in Size w/ Graveless Absorption (Infiltrators) =	340
	Number of Infiltrator® "Quick-4" units @ 9.8 sf/chamber =	35 units

SOILOGIC

LOT 2
MURPHY-LARSEN
RANCH SUB

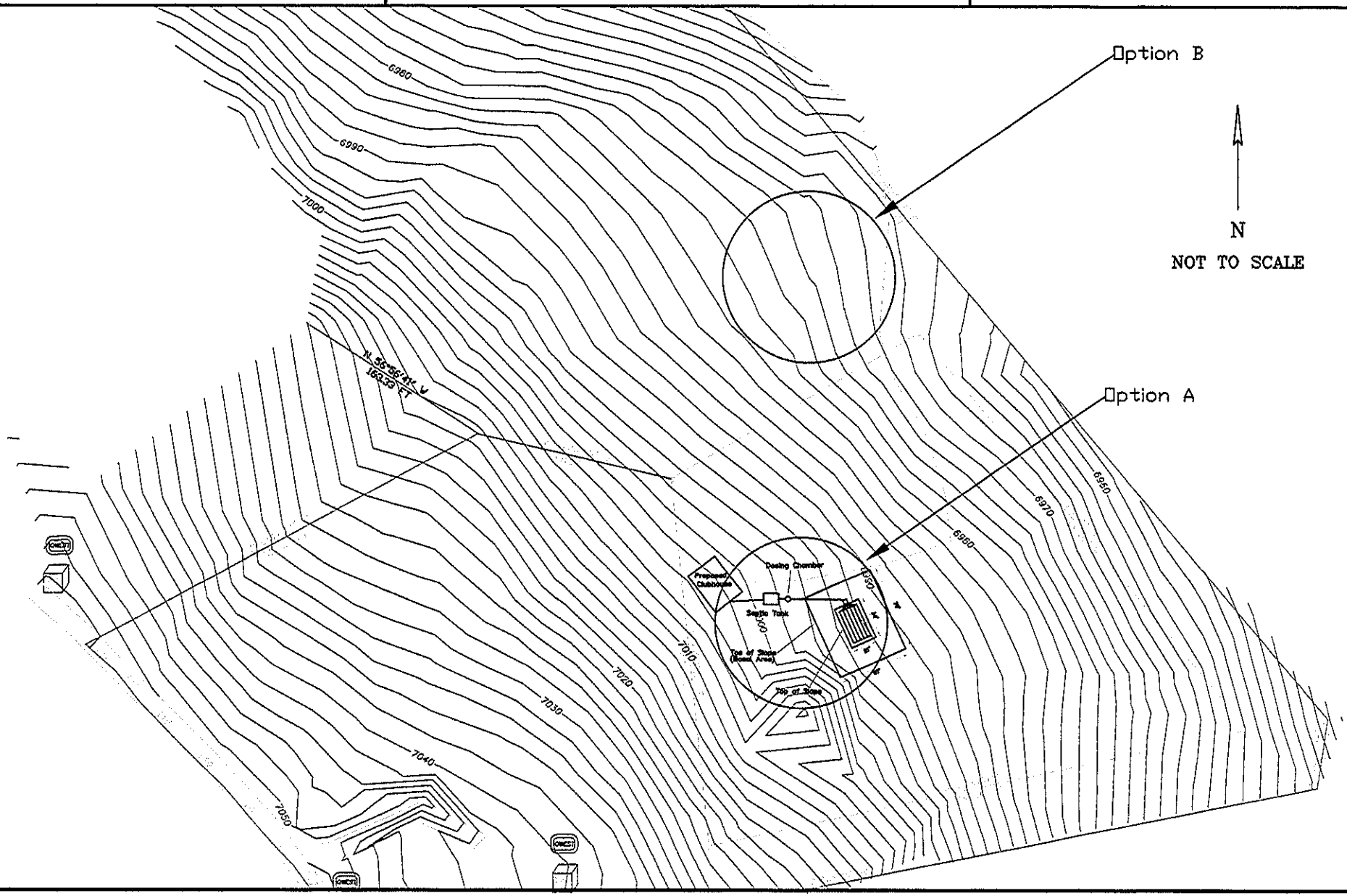


5/30/13 10:34 AM; Murphy Larson Ranch Subd. Lot 2 ISDS-No Scale

SEPTEMBER 2012
PROJECT # 11-4008

PROPOSED SEPTIC LAYOUT DIAGRAM

SOLOGIC



MURPHY LARSEN RANCH CLUBHOUSE

CLARK, COLORADO

Jason Striker

From: Wolf Von Carlowitz [wolf@soilogic.com]
Sent: Monday, June 24, 2013 2:19 PM
To: Jason Striker
Cc: Alex Bork; Ron Davies
Subject: MLR - ISDS Design
Attachments: Septic Design Calcs.xlsx

Jason:
Concerning the requested supplemental information for the Septic Design completed for the Murphy Larsen Ranch, We recommend inspection ports be installed at the ends of each infiltrator run within the absorption field and at appropriate locations between the residence and septic tank and between the septic tank and the absorption field.

As part of our site observation services, one (1) site visit would be completed after development of the mound to hand auger supplemental percolation test holes and presoak. Soilogic would return to the site after presoaking to verify the percolation rate of the developed soils meets the intent of the design. One (1) additional site visit would be completed to verify septic tank size, the presence of an auto siphon and the size of the field along with positive drainage within the distribution works.

Attached is a summary of design calculations used to size the field. An average percolation rate t = 30 minutes /inch was used in design. Based on discussions with the owners representative, an average of four (4) persons per day was estimated to use the facility and used to calculate septic design flow using the quantity and type of fixtures proposed for the clubhouse. We understand a rock and pipe distribution field will be constructed as opposed to graveless soil absorption such that an absorption bed size of 567 sf will be required.

We appreciate your attention to these design clarifications. Please let us know if you need anything additional.

thx

Wolf von Carlowitz, P.E.
President - Soilogic, Inc.
www.soilogic.com

4350 Highway 66
Longmont, Colorado 80504
(ph) 970.535.6144
(fax) 970.535.9854
(cell) 970.412.2811
Wolf@Soilogic.com

P.O. Box 1121
Hayden, Colorado 81639
(ph) 970.276.2087
(fax) 970.276.2087
(cell) 970.412.2811

From: Jason Striker [mailto:JStriker@co.routt.co.us]
Sent: Wednesday, June 05, 2013 10:32 AM
To: 'wolf@soilogic.com'
Subject: ISDS Design

Wolf,

I have reviewed the individual sewage disposal system design submitted for the Entelco Corp, Located on Lot 2 of the Murphy Larsen Subdivision. Please note that the following information, which is required for approval of the design, was not submitted:

-The plan does not show the type of the septic tank.

-No information is provide on the dosing chamber, or the equipment used for dosing.

-A soil percolation rate, or LTAR is not provide, or shown in the sizing calculations.

-Please provide further information on how you determined at your flow calculations.

Thank you

Jason Striker
Environmental Health Specialist
Routt County Department Of Environmental Health
P.O. Box 770087
Steamboat Springs CO, 80477
(970)879-0185


Please consider the environment before printing this e-mail

MURPHY LARSEN RANCH CLUBHOUSE

Clark, Colorado

Project # 11-4008

August 2011

Septic System Design Calculations

Amenity	Quantity	Total GPD
Kitchen Sink	1 @ 4.4 gpd/unit	4.4
Garbage Grinder	1 @ 1.4 gpd/unit	1.4
Dishwasher	1 @ 1.8 gpd/unit	1.8
Lavatory	2 @ 8.4 gpd/hookup	16.8
Water Closet	2 @ 24.8 gpd/unit	49.6
	Total gpd =	74
	Total Flow = gpd x 4 persons/day average	296
	Percolation Rate 't' (min/inch) =	30
	A = (Q√t X 1.75)/5 =	567
	40% Reduction in Size w/ Graveless Absorption (Infiltrators) =	340
	Number of Infiltrator® "Quick-4" units @ 9.8 sf/chamber =	35 units

SOLOGIC

SOILOGIC

December 10, 2013

Entellco Corp
132 West Second Street
Perrysburg, Ohio 43551

Attn: Steve & Ann Stranahan

Re: Septic System Observation and Testing Services and As-Built Diagram
Murphy Larsen Ranch Clubhouse
Clark, Colorado
Soilogic Project # 13-5002

Steve and Ann Stranahan:

Soilogic, Inc. (Soilogic) personnel have completed the septic system observation requested by Fair and Square Construction Inc. for the referenced project. The results of our observations and an as-built diagram with associated dimensions are included with this report.

On September 25, 2013, Soilogic personnel obtained one (1) representative sample of the imported filter sand for laboratory evaluation of the moisture density relationship of that material. The laboratory testing completed on the obtained sample included a standard Proctor (ASTM Specification D-698) test. Results of the completed standard Proctor test are included with this report.

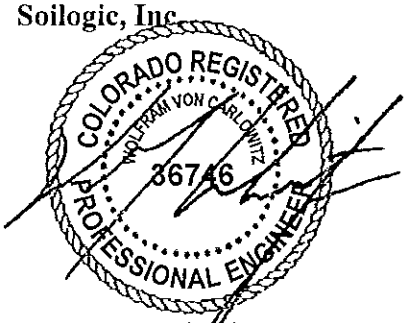
On September 25, 2013, Soilogic personnel visited the project site to complete moisture/density testing of the placed mound materials and verify the percolation rate of those materials as part of the project septic system. At the time of our site visit, the mounded area had been developed to approximate bottom of distribution rock level. The field moisture/density tests were completed at random locations across the mounded area and were performed in general accordance with ASTM Specification D-2922. Results of the completed field moisture/density tests are included with this report. The field moisture/density test results met the project compaction requirement of between 85 and 90% of the material's standard Proctor maximum dry density. As part of the supplemental percolation testing procedures, Three (3) hand auger borings were extended to a depth of approximately 12 inches below the developed mound level and presoaked.

On September 26, 2013, Soilogic personnel returned to the site to complete the percolation test. An average percolation rate of 11.8 minutes per inch was established in the placed mound materials. Based on results of the completed supplemental percolation test, it is our opinion the system as designed was sized appropriately and could be allowed to remain in-place to service cabin wastewater.

On September 25 and 26, 2013, a Soilogic field engineer observed the installed septic system components for the referenced project prior to backfilling. Three (3) rows of 40-foot long perforated pipe laterals were observed to have been installed in a bed configuration at approximately 4½ feet on center. A 1000 gallon 2-chamber septic tank was observed to be installed as part of the system with an integrated auto siphon which was connected to a PVC manifold installed at the bed headworks which was positively connected to each of the three (3) lateral runs. The lateral ends were observed to be capped and observation ports installed. The septic system components observed appeared to have been installed in general accordance with our septic system design completed for the subject property and outlined in a report dated July 17, 2013, Soilogic Project # 11-4008. An as-built diagram of the observed system components is included with this report.

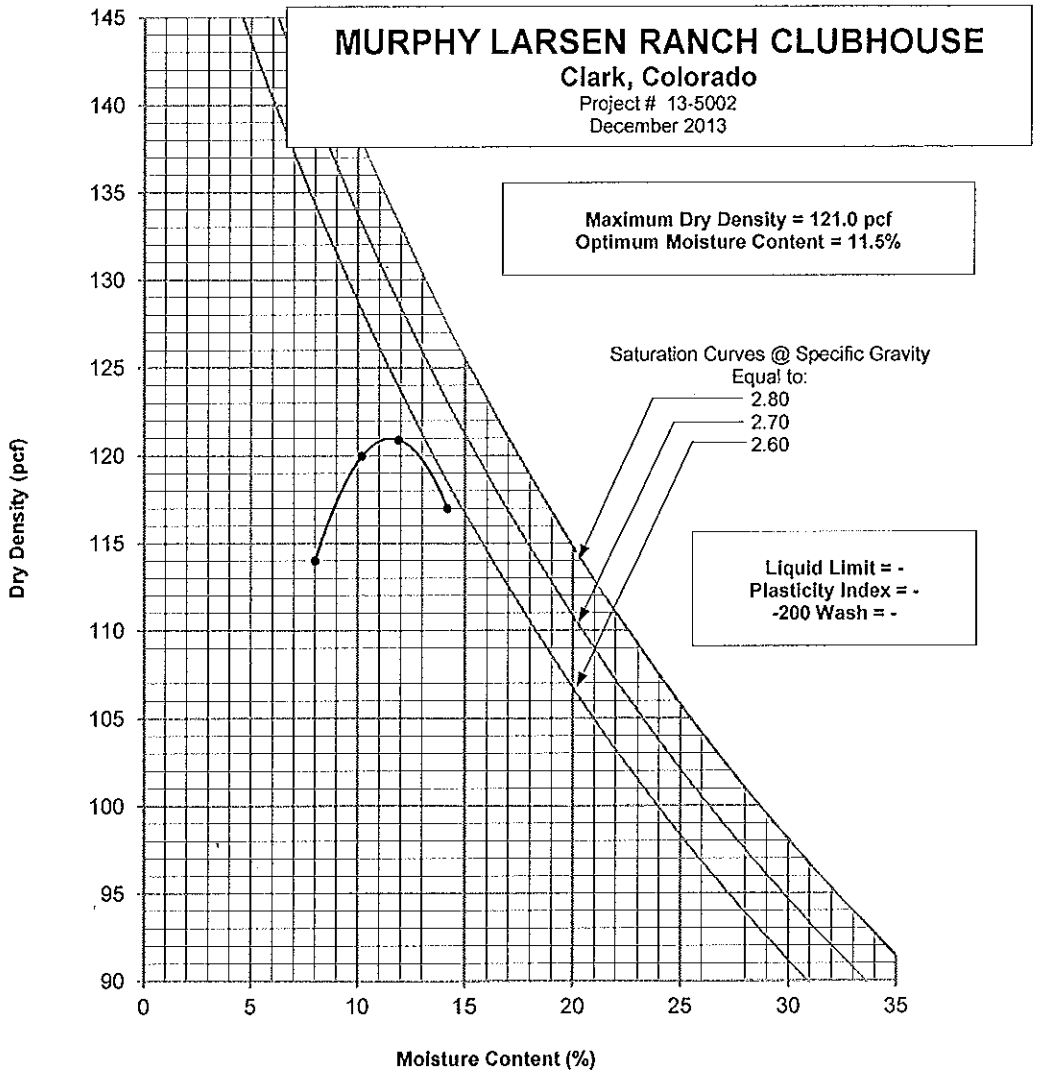
We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the enclosed information or if we can be of further service to you in any way, please do not hesitate to contact us.

Very Truly Yours,
Soilogic, Inc.



Wolf von Carlowitz, P.E.
Principal Engineer

Standard Proctor Test Summary (ASTM D-698)



Material ID: 13-5002 B
Description: Light Brown/Grey Sand
Sample Location: Absorption Bed

SOILOGIC

MURPHY LARSEN RANCH CLUBHOUSE

Clark, Colorado

Project # 13-5002

December 2013

Field Moisture/Density Testing Summary

Project Test Number	Date	Daily Test Number	Depth Below T. O. Bed	Material Tested and Location	Proctor ID	Field Results		Moisture Variability	Percent Compaction	(Pass/Fail)	
						Moisture Content	Dry Density			Moisture	Compaction
1	9/25	1	2'	Absorption Bed Filter Sand (SE Corner)	B	7.1%	104.6	-4.4%	86%	Pass	Pass
2	9/25	2	2'	Absorption Bed Filter Sand (Center)	B	6.8%	107.8	-4.7%	89%	Pass	Pass
3	9/25	3	2'	Absorption Bed Filter Sand (NW Corner)	B	6.3%	106.9	-5.2%	88%	Pass	Pass

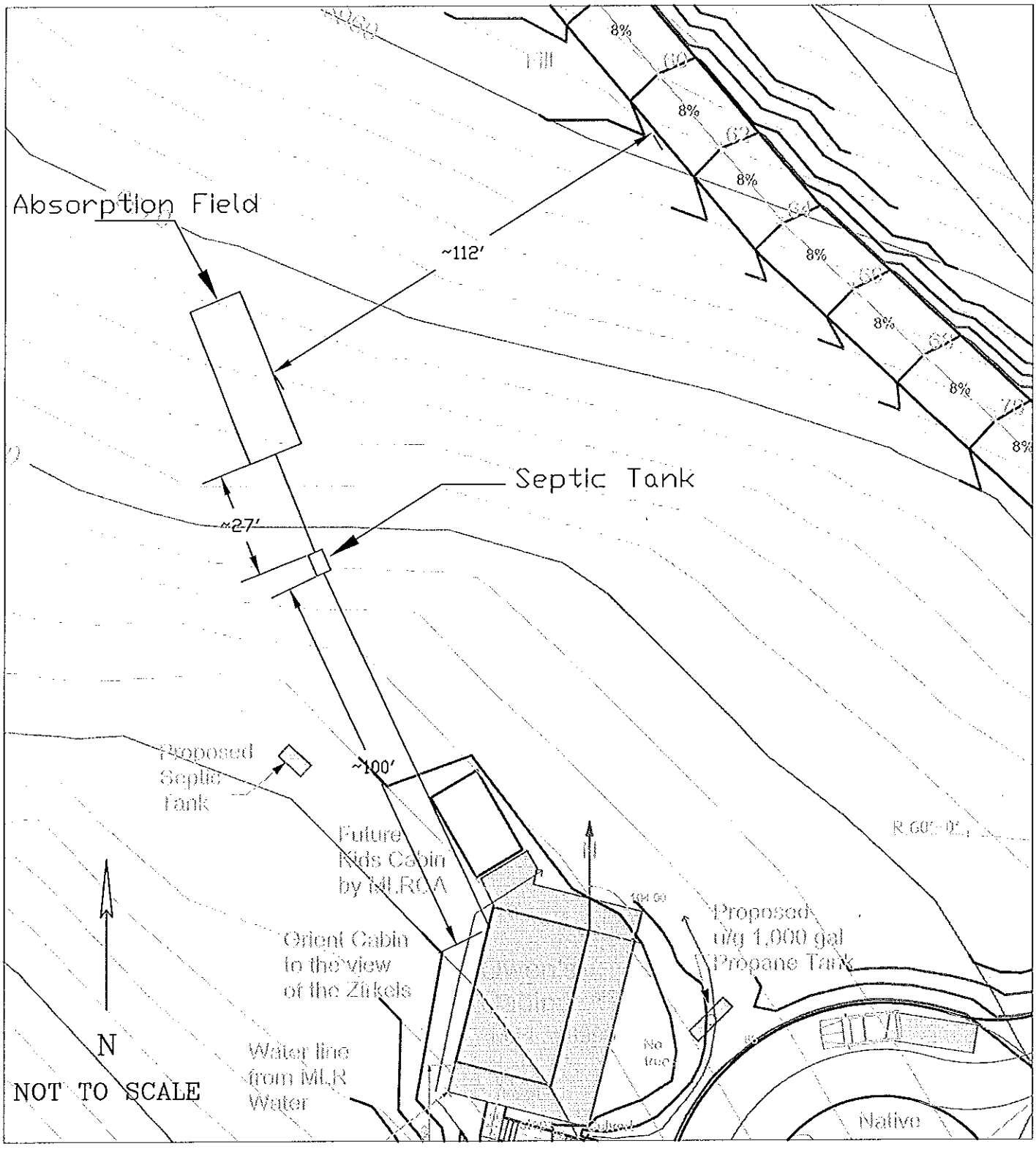
Proctor ID:	A	B			
Maximum Dry Density (pcf)	140.5	121.0			
Optimum Moisture Content (%)	5.5%	11.5%			
Moisture Content Requirement	±2%	N/A			
Compaction Requirement	98 % Min	85% - 90%			
Procedure	D-698	D-698			

SOLOGIC

DECEMBER 2013
PROJECT #13-5002

SEPTIC SYSTEM AS-BUILT DIAGRAM

SOLOGIC

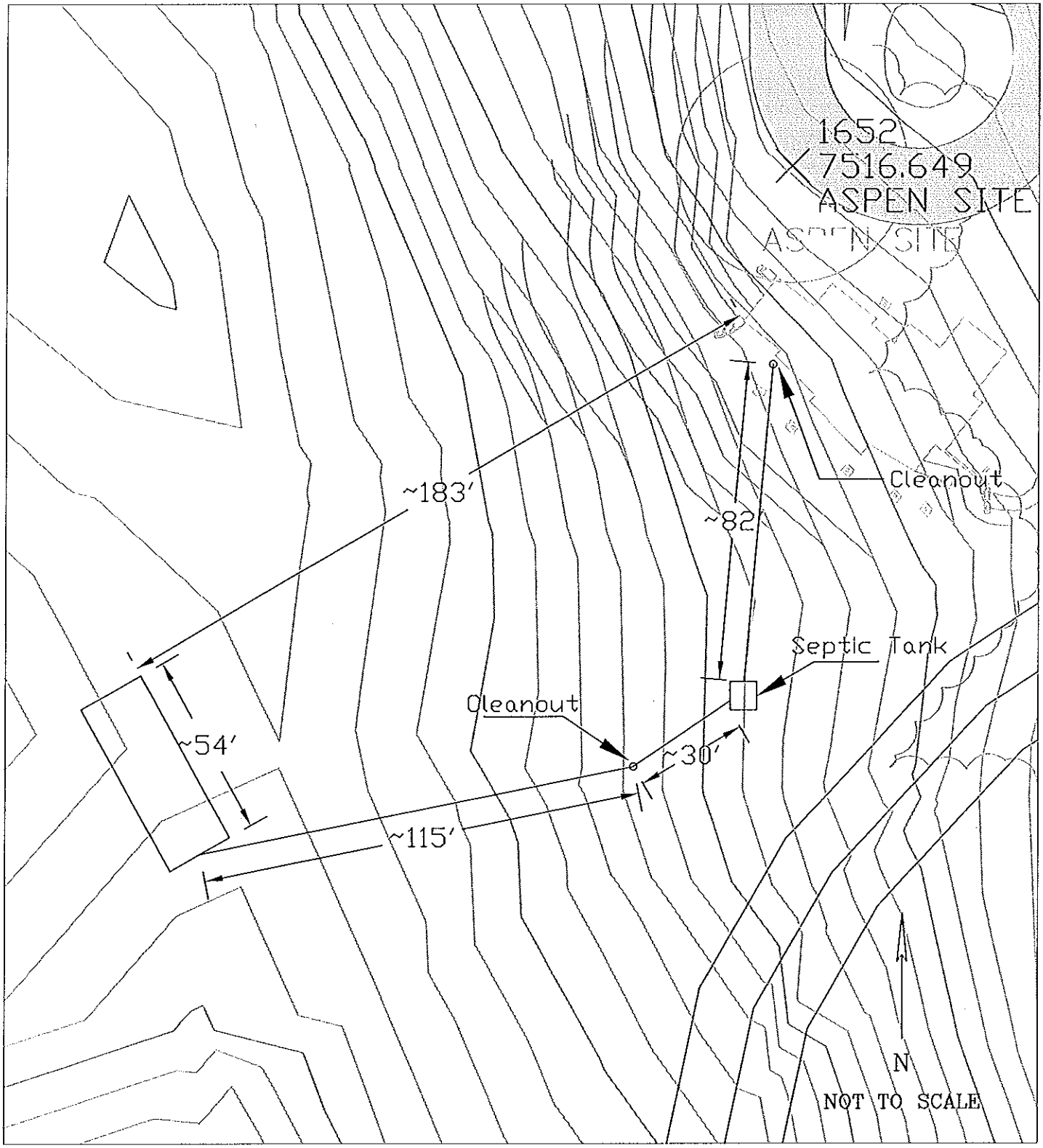


MURPHY LARSEN RANCH CLUBHOUSE
CLARK, COLORADO

DECEMBER 2013
PROJECT # 12-4011

SEPTIC SYSTEM
AS-BUILT DIAGRAM

SOLOGIC



RIDDER RESIDENCE (LOT 25B - DEERWOOD RANCHES SUBDIVISION

ROUTT COUNTY, COLORADO

Jason Striker

From: Jason Striker
Sent: Tuesday, December 17, 2013 10:44 AM
To: 'Wolf Von Carlowitz'
Subject: Final Inspection Letters

Wolf,

I have received the final inspection submittals for both the Victor Ridder Property, located 26496 High Ridge Drive, and the Murphey/Larsen Ranch located at 56065 Hannahs Way. Unfortunately I am unable to issue a final permit for either property do to the submittals being incomplete. They following requirements are incomplete or inadequate:

Victor Ridder:

-Routt County ISDS regulations sections 15, D requires that a clean-out be placed at least every 100 feet. The as-build drawing submitted shows the line between the house and the first clean out to be 115 feet.

-The final inspection letter does not indicate that any inspections of the system have been conducted.

-The final inspection letter does not state that this system was constructed in accordance with the design criteria.

Murphey/Larsen ranch:

- Routt County ISDS regulations sections 15, D requires that a clean-out be placed at least every 100 feet. The as-build drawing shows the line between the house and the tank to be 100 feet with no clean out. It is also important to note that distances shown on the as-build should be exact. Is 100 feet the exact distance?

-Routt County ISDS regulations, section 6.05.8 require that inspection ports be installed in each trench. The as-build drawing submitted does indicated that inspection ports have been installed.

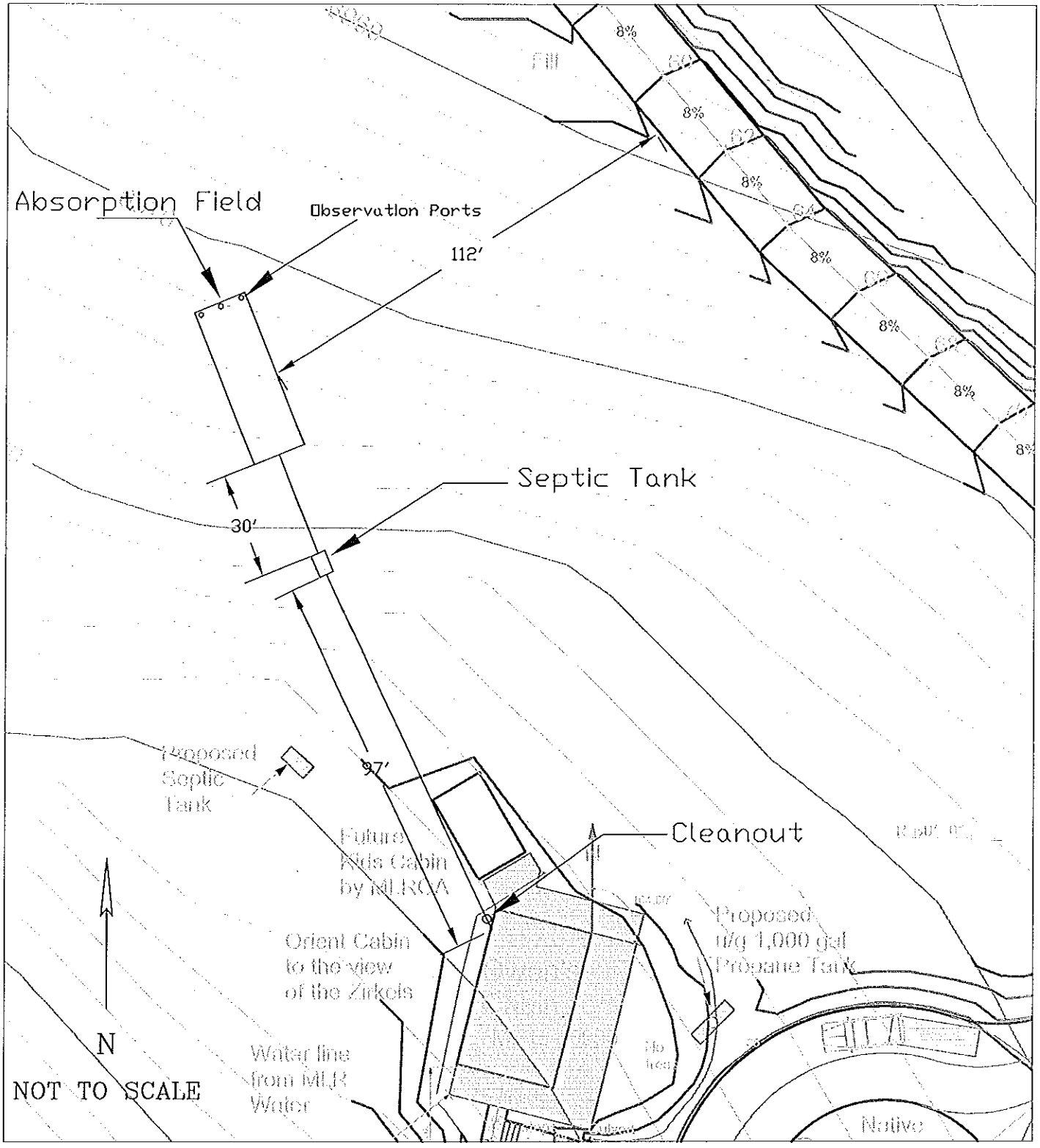
These items must be brought into compliance with Routt County ISDS regulation before a final permit can be issued. During our last conversation I invited you to have a meeting with us to discuss what this department requires for ISDS design. I still feel this meeting would be a good idea. Please feel free to contact me and schedule a time that works for you. It may also be helpful for you to review section 3.11, pg 16, of the Routt County ISDS regulations. This sections states the requirements for system designs from

Jason Striker
Environmental Health Specialist
Routt County Department Of Environmental Health
P.O. Box 770087
Steamboat Springs CO, 80477
(970)879-0185

MAY 2014
PROJECT #13-5002

SEPTIC SYSTEM AS-BUILT DIAGRAM

SOLOGIC



MURPHY LARSEN RANCH CLUBHOUSE
CLARK, COLORADO

Jason Striker

From: wolf@soilogic.com
Sent: Friday, May 09, 2014 10:02 AM
To: Jason Striker
Subject: Fw: Dowski Residence Septic Obs
Attachments: 6September2012.Dowski Residence.Septic Obs, Concrete.rpt.pdf

Jason. Will this suffice or do you need an asbuilt? I'm looking at MLR right now and can get some measurements at Dowski if need be. Thx.
Sent via BlackBerry from T-Mobile

From: "Jason" <Jason@soilogic.com>
Date: Fri, 9 May 2014 09:45:03 -0600
To: 'Wolf von Carlowitz'<wolf@soilogic.com>
Subject: Dowski Residence Septic Obs

Let me know if you need anything else.

Jason Horner, E.I.
Project Engineer

Jason@soilogic.com
www.soilogic.com

3050 67th Avenue, Suite 104
Greeley, Colorado 80634
(ph) 970.535.6144
(fax) 970.535.9854
(cell) 970.405.6515