• I. S. D. S. PERMIT •

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

Permit: EH-12-005

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

5/25/12 Parallel BORK

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

This permit effective only on premises located at: **56060 A 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 STE B
PERRYSBURG OH 43551-1483
Phone: 419-872-4620

Applicant: BORK, ALEX
Address: PO BOX 1023
CLARK CO 80428
Phone: 307-399-5281 ? 307-399-5284

Not Building

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: Clubhouse **Number of bedrooms: 0**
Percolation Rate: 190 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 04/23/2012 THIS IS A RANCH CLUBHOUSE WITH 1 MEN'S & 1 WOMEN'S SHOWER FACILITIES.
Notice: All Sewage *HOLDING* Tanks must be Concrete. Inspections required (24 hour advanced notice required).

Finish when I get money

Environmental Health Specialist: **Date of Issue:**

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

Environmental Health Specialist: **Date**

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

OK Full Permit
4/19/12

BUILDING PERMIT # CB-12-059
PERMIT PD _____
PERC PD _____

APPLICATION FOR INDIVIDUAL SEWAGE SYSTEM PERMIT

EH-12-005

NEW X REMODEL ___ REPAIR ___ EMERGENCY USE ___

Name of Owner ENTELCO CORPORATION Mailing Address 132 W SECOND ST PERRYSBURG, OH 43551 Phone 419-872-4620

Name of Applicant ALEX BORK Mailing Address PO BOX 1023, CLARK, CO 80428 Phone 307-399-5284

LOCATION OF PROPOSED SYSTEM: Street Address ~~420~~ 56015 HANNAHS WY CLARK, CO 80428

Legal Description LOT 2 MURPHY LARSEN RANCH (Lot# and Subdivision if applicable) Parcel ID# 2868000 02 (this# can be found in the Assessor's Office)

Size of Lot 50.22A ( )Residential (X)Commercial ( )Other (Describe) _____

Number of: Bedrooms Shared 0 - Clubhouse - 2 Baths
1 men's
1 women's

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 arranged with 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.

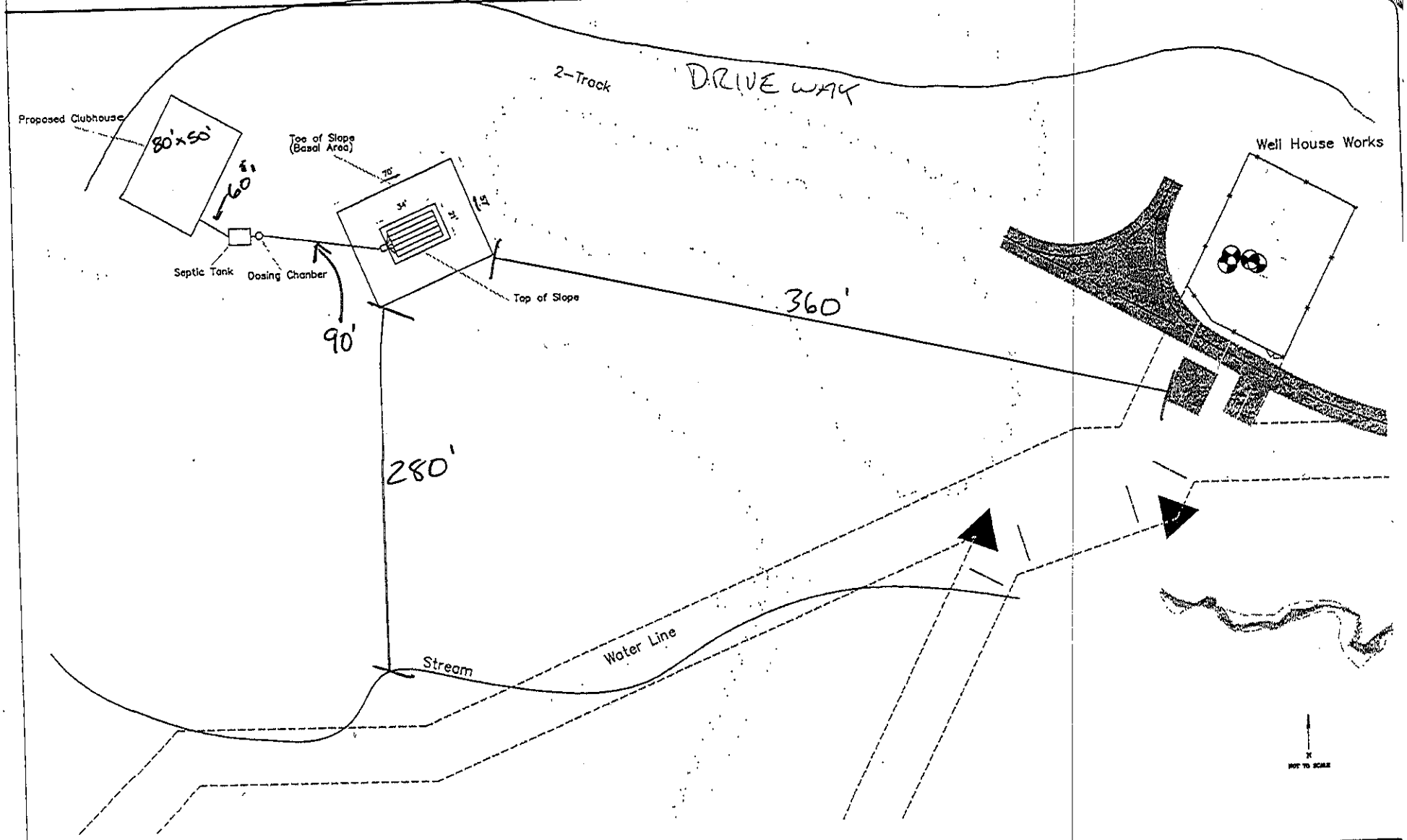
Application for an individual sewage disposal system is hereby submitted. The individual sewage disposal system will be constructed, installed and operated in accordance with the regulations governing individual sewage disposal systems within Routt County and will comply with applicable State Regulations 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 on-site sewage disposal systems.)

Signature of Applicant Alex Bork Date 4-18-12

AUGUST 2011
PROJECT # 11-4008

PROPOSED SEPTIC LAYOUT DIAGRAM

SOILOGIC



MURPHY LARSEN RANCH CLUBHOUSE

CLARK, COLORADO

SOILOGIC

August 15, 2011

Entellco Corp
132 West Second Street
Perrysburg, Ohio 43551

Attn: Steve & Ann Stranahan

Re: Septic System Design Comments
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 August 8, 2011. At this time we have been asked to provide additional comments concerning the potential for contamination of the development water supply system with septic effluent. Our comments are included with this report.

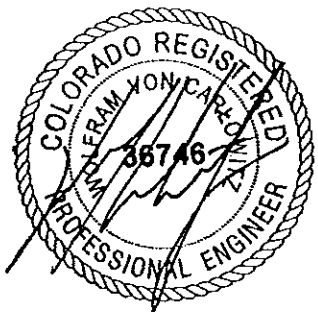
Based on discussions with the water supply system designer (Drexel Barrell and Co.) and provided diagrams of the system layout, we understand two water supply wells feed a storage area located north of the well house at the subject property. We understand the water is screen filtered and treated with chlorine prior to pumping up to the development lots. The waterline which transfers water from the western supply well to the well house passes within approximately 200 feet of the proposed septic absorption field. The well house is located approximately 400 feet from the proposed absorption field area. In addition, a creek passes within approximately 180 feet of the proposed absorption field. A diagram indicating approximate offset distances between system components and site features and amenities was included with our original subsurface exploration report. Based on the calculated design flow of the proposed system and discussions with Routt County Environmental Health personnel, a minimum 100 foot separation distance is required between the system absorption field and wells, suction lines and streams. A minimum 25 foot separation distance is required between septic absorption fields and potable water supply lines. The proposed system location meets these requirements.

Based on the separation distances achievable between system components and site features and amenities, we believe there would be a very low risk of contamination of the development water supply system with septic effluent generated with this project.

The natural site soils exhibited slow percolation rates warranting an alternative and engineered septic system design. The proposed system design includes mounding suitable filter materials to treat septic effluent in a localized area. Low permeability site lean clay soils are recommended to develop the mound taper areas reducing the potential for short circuiting of the system. An alternative to the mounded system could include a secondary treatment system used in conjunction with a pressurized drip irrigation system. These types of systems are buried relatively shallow in the near surface soils and tend to be larger than typical mounded systems due to low application rates. Additional costs associated with the secondary treatment system would also be anticipated. At this time, it is our opinion the provided mounded system design would provide the most efficient method of effluent treatment in the most localized footprint area for this project.

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

For areas subjected to truck turning movements and/or concentrated and repetitive loading such as dumpster or truck parking and loading areas, we recommend using a Portland cement concrete pavement with a minimum thickness of 6 inches. The concrete used for site pavements should be air entrained and have a minimum 28-day compressive strength of 3,500 psi. Woven wire mesh or fiber entrained concrete should be considered to help in the control of shrinkage cracking.

The proposed pavement section designs do not include an allowance for excessive loading conditions imposed by heavy construction vehicles or equipment. Heavily loaded concrete or other building material trucks and construction equipment can cause some localized distress to the site pavements. The recommended pavement sections are minimums and periodic maintenance efforts should be expected. A preventative maintenance program can help increase the service life of site pavements.

Percolation Test and Septic System Design

To complete the percolation test, six (6) four-inch diameter percolation test holes and one 20-foot deep profile boring were completed in the approximate area of the proposed wastewater absorption field. Care was taken at the time of our field evaluation to establish the percolation test area outside minimum required setbacks from site features and amenities. Care should be taken at the time of system installation to insure Routt County criteria concerning the proximity of system components to site features and amenities are maintained. A diagram indicating the approximate percolation test location and offset distances is included with this report.

The materials encountered in the profile test boring consisted of approximately 12 inches of topsoil and vegetation underlain by grey lean clay which extended to the bottom of boring at a depth of approximately 20-feet below ground surface. At the time of drilling, static groundwater levels were difficult to discern. Groundwater was measured in the open profile boring at a depth of approximately 4.7 feet below ground surface twelve (12) days after the completion of drilling. A log of profile test hole B-3 is included with this report.

An average percolation rate of 190 minutes per inch was established in the percolation test borings after presoaking. Routt County guidelines require a percolation rate in the range of 5 to 60 minutes per inch for use of a non-engineered conventional septic absorption field. The measured percolation rate does not meet that criterion. In addition, Routt County guidelines require that neither groundwater nor bedrock be encountered within 6-feet of ground surface in the area of the proposed absorption field. The profile boring completed indicates the depth to groundwater does not meet this requirements in the absorption field area. Due to the slow percolation rates determined in field testing and relatively shallow depth to groundwater observed in the proposed septic absorption field area, Soilogic completed an engineered septic system design for the clubhouse. A septic system design is included with this report. A proposed system layout is also included.

In general, we recommend the absorption field area be mounded a minimum of 6 feet in height with a blend of 25% topsoil and 75% imported concrete sand or similar materials. The crusher fine materials available from the local Elam aggregate pit located approximately 3 miles to the south of the subject property could be used as import sand. Care should be taken to develop a uniform blend of filter material prior to placement Based on the materials encountered in the completed site borings and results of laboratory testing, it is our opinion the near surface lean clay could be used to develop the mounded taper areas. The basal area developed through six (6) feet of mounding would be expected to accommodate the anticipated design flows at the measured percolation rate of 190 minutes/inch established in the near surface soils.

All existing topsoil and vegetation should be removed from the proposed mounding area. After stripping, we recommend the proposed fill area subgrades be scarified to a depth of 9 inches and leveled only. Moisture conditioning and compaction of the exposed subgrade soils should not be completed. We recommend the taper fill materials be placed in loose lifts not to exceed 9 inches thick, adjusted to within 0 to +4% of standard Proctor optimum moisture content and compacted to at least 95% of the materials standard Proctor maximum dry density. The interior absorption area filter sand and topsoil blend should be placed and lightly compacted to within the range of 85 to 90% of the materials standard Proctor maximum dry density. Moisture/density testing of the mounded fill materials will be required at the time of placement and compaction.

According to Routt County Health Department criteria and using an estimated percolation rate of 30 minutes/inch for the blended filter sand, the proposed clubhouse would require 35 "Quick-4" standard infiltrators in a bed configuration with a minimum septic tank capacity of 1,000 gallons. Supplemental percolation testing of the placed filter sand materials will be required to verify the percolation rate estimated above is appropriate. Supporting septic system design calculations are included with this report.

Drainage

Positive drainage is imperative for long term performance of the proposed building and associated site improvements. We recommend positive drainage be developed away from the structure with twelve (12) inches of fall in the first 10 feet away from the building during construction and throughout the life of the site improvements. Shallower slopes could be considered in hardscape areas. In the event that some settlement of the building backfill soils occurs over time, the original grade and associated positive drainage outlined above should be immediately restored. Care should be taken in the planning of landscaping to avoid features which could result in the fluctuation of the moisture content of the foundation bearing and/or flatwork and pavement subgrade soils. We recommend watering systems be placed a minimum of 5 feet away from the perimeter of the site structure and be designed to discharge away from all site improvements. Gutter systems should be considered to help reduce the potential for water ponding adjacent to the structure with the gutter downspouts, roof drains or scuppers extended to discharge a minimum of 5 feet away from structural, flatwork and pavement elements. Water which is allowed to pond adjacent to site improvements can result in unacceptable performance of those improvements over time.

LIMITATIONS

This report was prepared based upon the data obtained from the completed site exploration, laboratory testing, engineering analysis and any other information discussed. The completed borings provide an indication of subsurface conditions at the boring locations only. Variations in subsurface conditions can occur in relatively short distances away from the borings. This report does not reflect any variations which may occur across the site or away from the borings. If variations in the subsurface conditions anticipated become evident, the geotechnical engineer should be notified immediately so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any biological or environmental assessment of the site or identification or prevention of pollutants or hazardous materials or conditions. Other studies should be completed if concerns over the potential of such contamination or pollution exist.

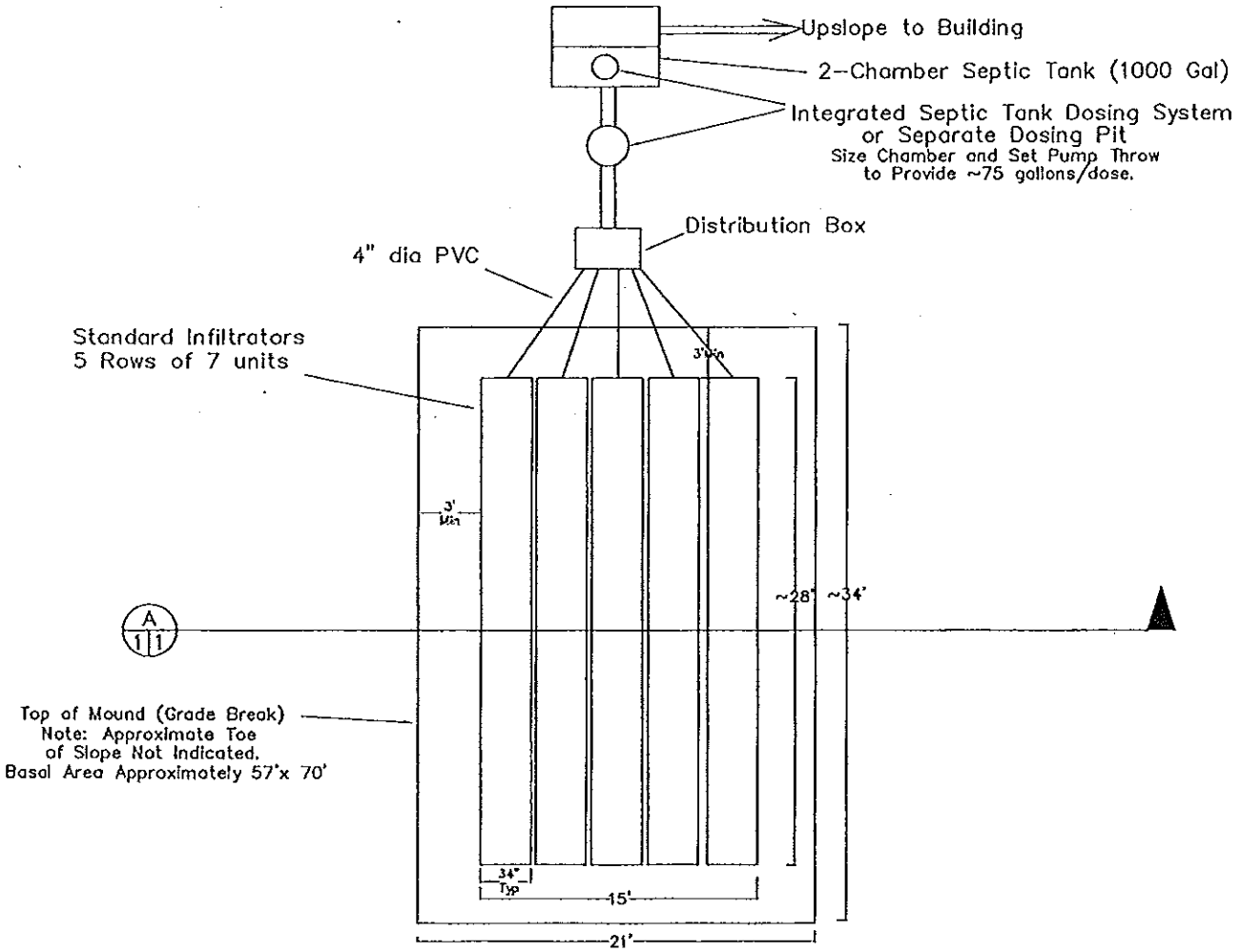
The geotechnical engineer should be retained to review the plans and specifications so that comments can be made regarding the interpretation and implementation of our geotechnical recommendations in the design and specifications. The geotechnical engineer should also be retained to provide testing and observation services during construction to help determine that the design requirements are fulfilled.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with the generally accepted standard of care for the profession. No warranties express or implied, are made. The conclusions and recommendations contained in this report should not be considered valid in the event that any changes in the nature, design or location of the project as outlined in this report are planned, unless those changes are reviewed and the conclusions of this report modified and verified in writing by the geotechnical engineer.

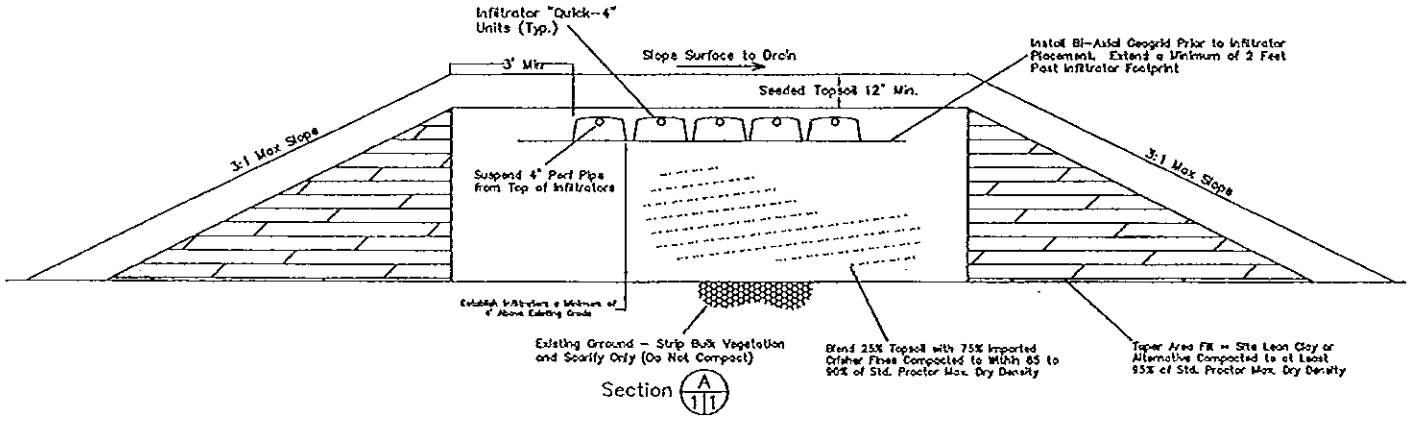
AUGUST 2011
PROJECT # 11-4008

SEPTIC SYSTEM DESIGN

SOILOGIC



ABSORPTION SYSTEM
NOT TO SCALE



MURPHY LARSEN RANCH CLUBHOUSE

CLARK, COLORADO

MURPHY LARSEN RANCH CLUBHOUSE

Clark, Colorado

Project # 11-4008

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
	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