• I. S. D. S. PERMIT •

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

Permit: EH-14-008

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: **28305 A MEADOW BROOK DRIVE C**
Legal description of property: LOT 20 BIG VALLEY RANCH SUBD FILING IIA
Parcel Id.: 105700020 Lot No.: 020

Owner: LAUGHLIN, HENRY & LINDA
Address: P O BOX 774971
STEAMBOAT SPRINGS CO 80477-4971
Phone: 970-846-7062

Applicant: LAUGHLIN, HENRY & LINDA
Address: PO BOX 774971
STEAMBOAT SPRINGS CO 80477
Phone: 970-846-7062

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

Y Residential N Commercial Other: **Number of bedrooms: 1**
Percolation Rate: 40 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 04/21/2014 THIS IS A ONE BEDROOM GUEST SUITE IN GARAGE. SYSTEM DESIGNED FOR 2 BEDROOMS.
Notice: All Sewage *HOLDING* Tanks must be Concrete. Inspections required (24 hour advanced notice required).

Environmental Health Specialist: JGarrabrant **Date of Issue:** 4/21/14

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

RECEIPT

RECEIPT NUMBER: R140000388

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

APD #: EH-14-008 TYPE: EH-Ind. Sewage Disp Sys
SITE ADDRESS: 28305 A MEADOW BROOK DRIVE C
PARCEL: 105700020

May include fees collected within the jurisidiction.

TRANSACTION DATE:	04/21/2014	TOTAL PAYMENT:	300.00
		TOTAL PAID FROM TRUST:	.00
		TOTAL PAID FROM CURRENCY:	300.00

TRANSACTION LIST:

Type	Method	Description	Amount
Payment	Check	#724	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: 04/21/2014 TIME: 09:54 AM

OK Per Heather 4/21/14

Eff-14-008

BUILDING PERMIT # CB-14-096
PERMIT PD 300.00
PERC PD _____
Routt County Treasurer
Ck # 724 Rec'd 4/15/14

APPLICATION FOR ON-SITE WASTEWATER SYSTEM PERMIT

NEW X REMODEL ____ REPAIR ____ EMERGENCY USE ____ Henry Laughlin

Name of Owner HENRY & LINDA LAUGHLIN Mailing Address P.O. 774971 Phone 846-7062

Name of Applicant " Mailing Address " Phone "

LOCATION OF PROPOSED SYSTEM: Street Address 28306 MEADOWBROOK DR.

Legal Description LOT 20 BIG VALLEY RANCH F. II A Parcel ID# 105700020
(Lot# and Subdivision if applicable) (this # can be found in the Assessor's Office)

Size of Lot 35+ (X)Residential ( )Commercial ( )Other (Describe) _____

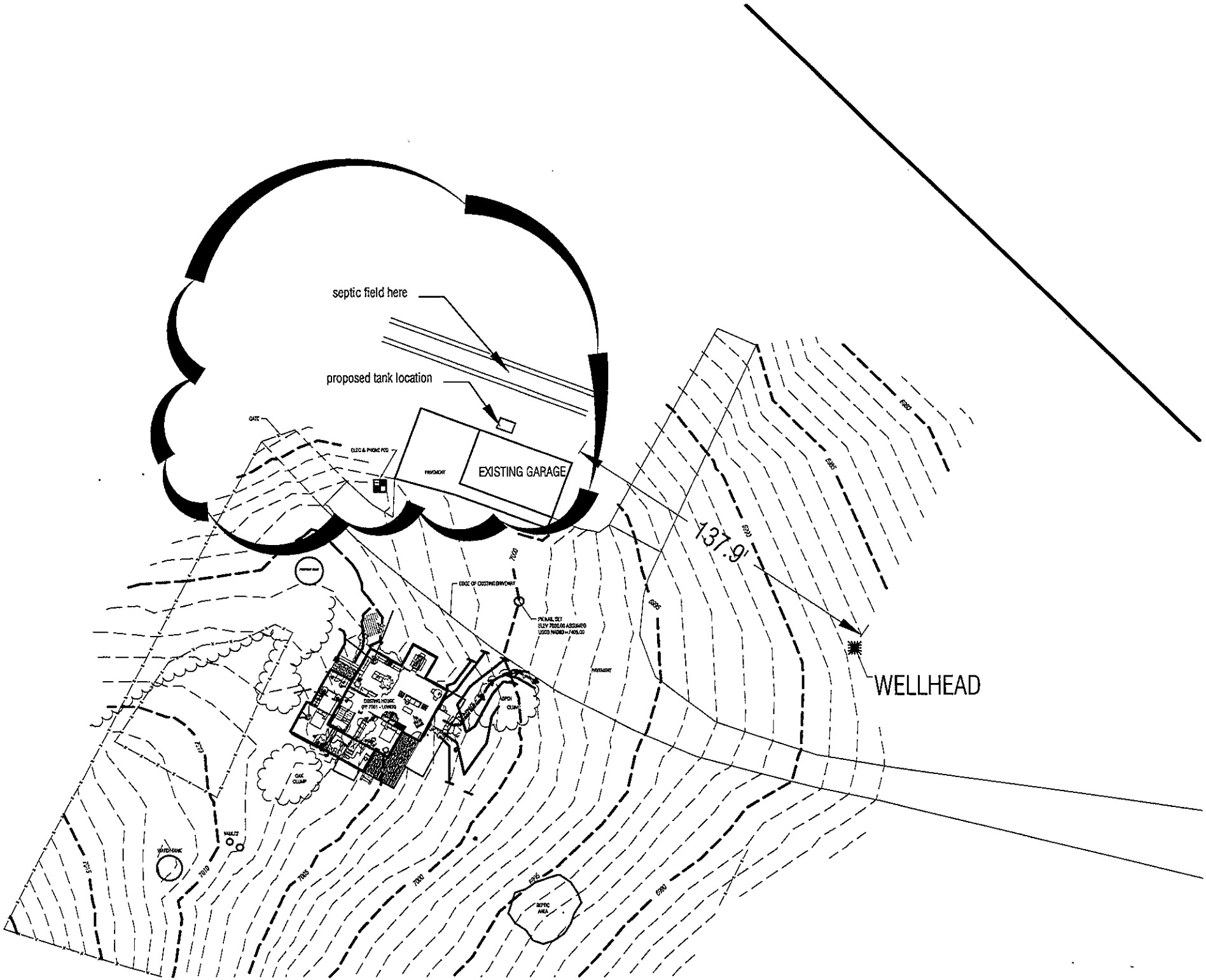
Number of: Bedrooms 1

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 [signature] - Agent Date 4.15.14

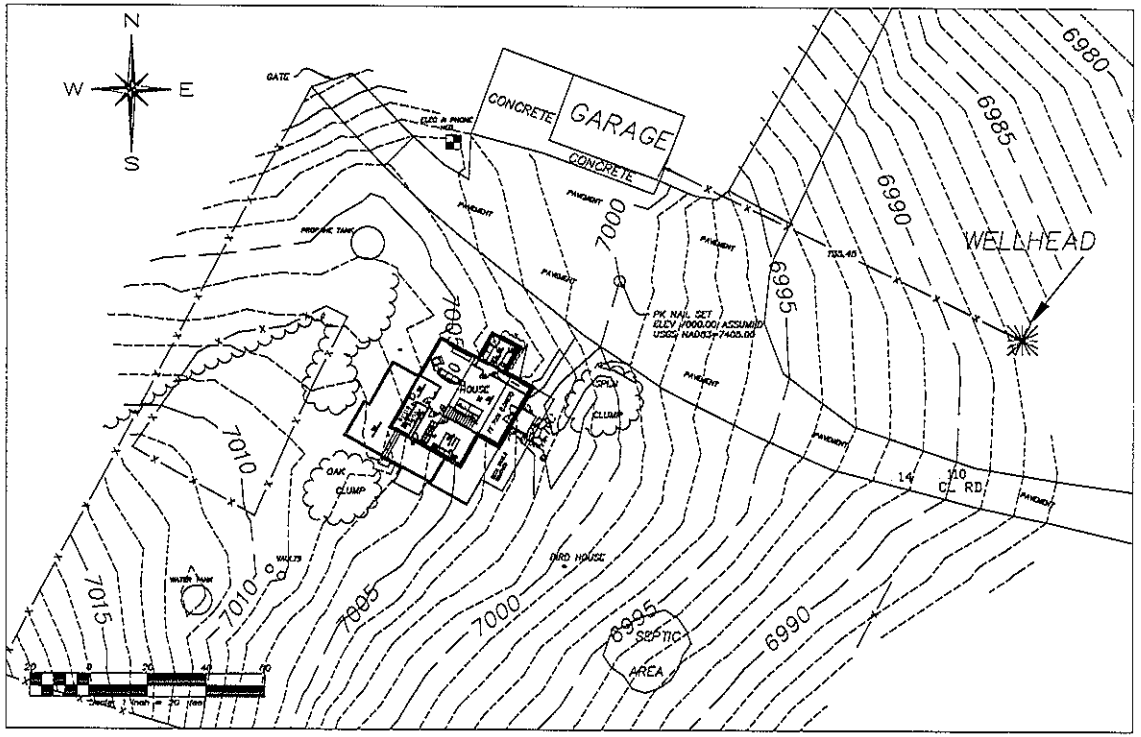

septic field here
proposed tank location
EXISTING GARAGE
137.9'
WELLHEAD

LAND SURVEYOR'S CERTIFICATE

I, James B. Ackerman, being a Professional Land Surveyor registered by the State of Colorado, do hereby certify that this TOPOGRAPHIC SURVEY was made by me and under my supervision and that it is accurate to the best of my knowledge.

Dated this ____ day of _____, A.D. 2010.

JAMES B. ACKERMAN P. L. S. #18394



UNPLATTED

S 88°00'04" E 462.90 FT

S 45°33'44" E 101.84 FT

LOT 21

EASEMENT VACATED BY BOOK 678 PAGE 2321 OF THE ROUTT COUNTY CLERK AND RECORDER'S RECORDS

S 45°33'44" E 943.91 FT

N 00°54'09" E 1363.48 FT

LOT 20
36.50 ACRES

PROPOSED NEW SEPTIC AREA

EXISTING SEPTIC AREA

OWNER HAS THE HOMEOWNERS ASSOCIATION PERMISSION TO BE IN THIS EASEMENT.

FOUNDATION TIES

541.04 FT

537.72 FT

24.66 FT

836.29 FT

842.42 FT

N 88°55'58" W 1704.37 FT

FOUND & USED #5 REBAR "DISMUKE 7736"

LOT 19

S 45°33'44" E 322.91 FT

S 67°09'59" E 41.23 FT

S 43°12'36" E 181.11 FT

S 32°26'53" E 152.86 FT

S 50°26'23" E 12.51 FT

S 23°57'45" E 49.25 FT

50

EDGE OF GRAVEL ROAD

ELEC PED

FOUND & USED GLO BRASS CAP AP-4 TR-118

78.28 FT S 88°47'26" W

UNPLATTED

LOT 16

100 0 100 200 300
Scale: 1 inch = 100 feet

NOTICE: "According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event, may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon."

NO.	REVISION	DATE

CALC'D JBA
DRAWN JBA
SURVEYED BY: DMD

TITLE: TOPOGRAPHIC SURVEY
LOT 21, BIG VALLEY RANCH FLG 2A
SECTION 11, T5N, R85W
ROUTT COUNTY, COLORADO

PREPARED BY:
EMERALD MOUNTAIN SURVEYS, INC.
P. O. BOX 774812
STEAMBOAT SPRINGS, COLORADO 80477
970-879-8998
www.emeraldmtn.net

PREPARED FOR:
MOUNTAIN ARCHITECTURE
29840 RCR 64
STEAMBOAT SPRINGS
COLORADO
80428

SCALE: 1" = 100'	DATE: 7-18-2011
PROJECT NO. 847-12	SHEET NO. 1 of 1

NorthWest Colorado Consultants, Inc.
Geotechnical / Environmental Engineering • Materials Testing

April 11, 2014

Henry and Linda Laughlin
P.O. Box 774971
Steamboat Springs, CO 80477

Job Number: 11-9025

CB-14-096

Subject: On-Site Wastewater System Design, Laughlin Garage-Guest Suite, 28305 Meadowbrook Drive, Routt County, Colorado.

Dear Henry and Linda,

As requested, NWCC, Inc. (NWCC) has completed an On-site Wastewater System (OWS) design for the proposed Laughlin Garage-Guest Suite to be constructed at 28305 Meadowbrook Drive in Routt County, Colorado. NWCC previously completed an Asbestos Containing Building Materials inspection report for this project under this job number in a report dated September 22, 2011.

Proposed Construction: NWCC understands the proposed guest suite in the existing garage will be constructed with one-bedroom when completed. We have designed the OWS for the RCDEH minimum residential requirement of two bedrooms per structure.

Site Conditions: The subject property is located northwest of Meadowbrook Drive in the Big Valley Ranch Subdivision in Routt County, Colorado. The existing garage is located north-northeast of the existing residence. The proposed guest suite will be constructed in the upper level of the existing garage. The absorption field for the proposed guest suite will be located approximately 50 to 100 feet northeast of the existing garage. The absorption field site was covered with approximately 3 feet of snow at the time of our site visit on April 1, 2014. The site appeared to be vegetated with grasses and weeds with deciduous brush and scattered scrub oaks.

Topography at the proposed absorption field site is fairly consistent and generally slopes moderately down to the north-northeast on the order of 10 to 15 percent. A site plan showing the approximate location of the existing structures, features and proposed OWS absorption field is shown in Figure #1.

Subsurface Conditions: To investigate the subsurface conditions at the site, one profile pit was excavated northeast of the existing garage and approximately 50 feet south of the proposed absorption field on April 1, 2014. Due to the amount of snow, access to the proposed absorption field site was not possible at this time. The subsurface conditions encountered in the profile pit consisted of approximately 18 inches of topsoil and organic materials overlying natural sands and clays and sandstone-claystone bedrock to the maximum depth investigated, 5 feet below the existing ground surface (bgs). Natural clays were encountered below the topsoil and organic materials and extended to a depth of 4 ½ feet bgs. Sandstone-claystone bedrock was

encountered below the natural clays and extended to the maximum depth investigated. Groundwater seepage was not encountered in the profile pit at the time of excavation and no evidence of a seasonal high groundwater table was observed.

Percolation testing has not been conducted at the proposed absorption field site. NWCC recommends that a new profile pit and percolation testing be conducted approximately 50 feet north-northeast of the existing profile pit. A percolation rate of 40 mpi for the upper 2 to 3 feet of natural topsoil and organics and natural soils has been assumed for the design of the OWS.

System Design: Based upon the assumed percolation test results, subsurface conditions and site topography, NWCC recommends the OWS consist of a seepage trench soil absorption system utilizing Infiltrator® chambers placed in the upper 12 inches of natural topsoil and organics.

The OWS design presented below is based upon our understanding of the proposed construction and usage, and assumed percolation rate for the natural soils. Considering the anticipated usage, a peak effluent flow of 525 gallons per day (gpd) is anticipated for the system. Based upon an assumed percolation rate of 40 minutes per inch, an absorption area of 664 square feet is required for a conventional trench absorption system. A 40% area reduction for use of Infiltrator® chambers results in a required absorption area of 399 square feet. The installation of either 40 Standard Infiltrator® chambers or 38 EQ36 Infiltrator® chambers will satisfy minimum area requirements. A schematic system layout is shown in Figure #1; however, system layout will likely vary due to variations in site topography and vegetation.

The base of all chambers should be wrapped or covered with a ¼ inch galvanized steel or other approved, durable mesh material to prevent rodent intrusion. If the system is not in regular use, NWCC recommends periodic flooding of the system to reduce rodent intrusion.

All manufacturer installation and backfill requirements should be observed. A minimum of 18 inches of topsoil fill should be provided over installed chambers.

Effluent pretreatment should be accomplished using a 1,000-gallon concrete septic tank. NWCC recommends an effluent filter be installed at the septic tank outlet tee to limit infiltration of solids into the absorption field. Septic tank access manholes must be extended as required and exposed at final grades.

The system design is presented in Figures #1 and #2. The design calculations are shown in Appendix A and the specifications for the system are given in Appendix B. The procedures and design criteria used in this design were obtained from the EPA "Design Manual - On-site Wastewater Treatment and Disposal Systems", 1980, as well as the Colorado Department of Health "Guidelines on Individual Sewage Disposal Systems", revised 2000, and the Routt County Individual Sewage Disposal Regulations, February 1999.

Operation and Maintenance: Observing the operation and performing routine maintenance of the OWS is essential to allow proper, long term functioning of the system. We recommend the operation be monitored and a qualified, licensed maintenance contractor performs maintenance of the system.

1) *Septic Tank*: The scum and sludge accumulation in the septic tank should be monitored yearly. Once the scum or sludge thickness reaches 25% of the chamber depth, the septic tank should be pumped. A pumping frequency of 2 to 4 years is likely at the design flows. Depending on use, pumping may only be required every 3 to 7 years.

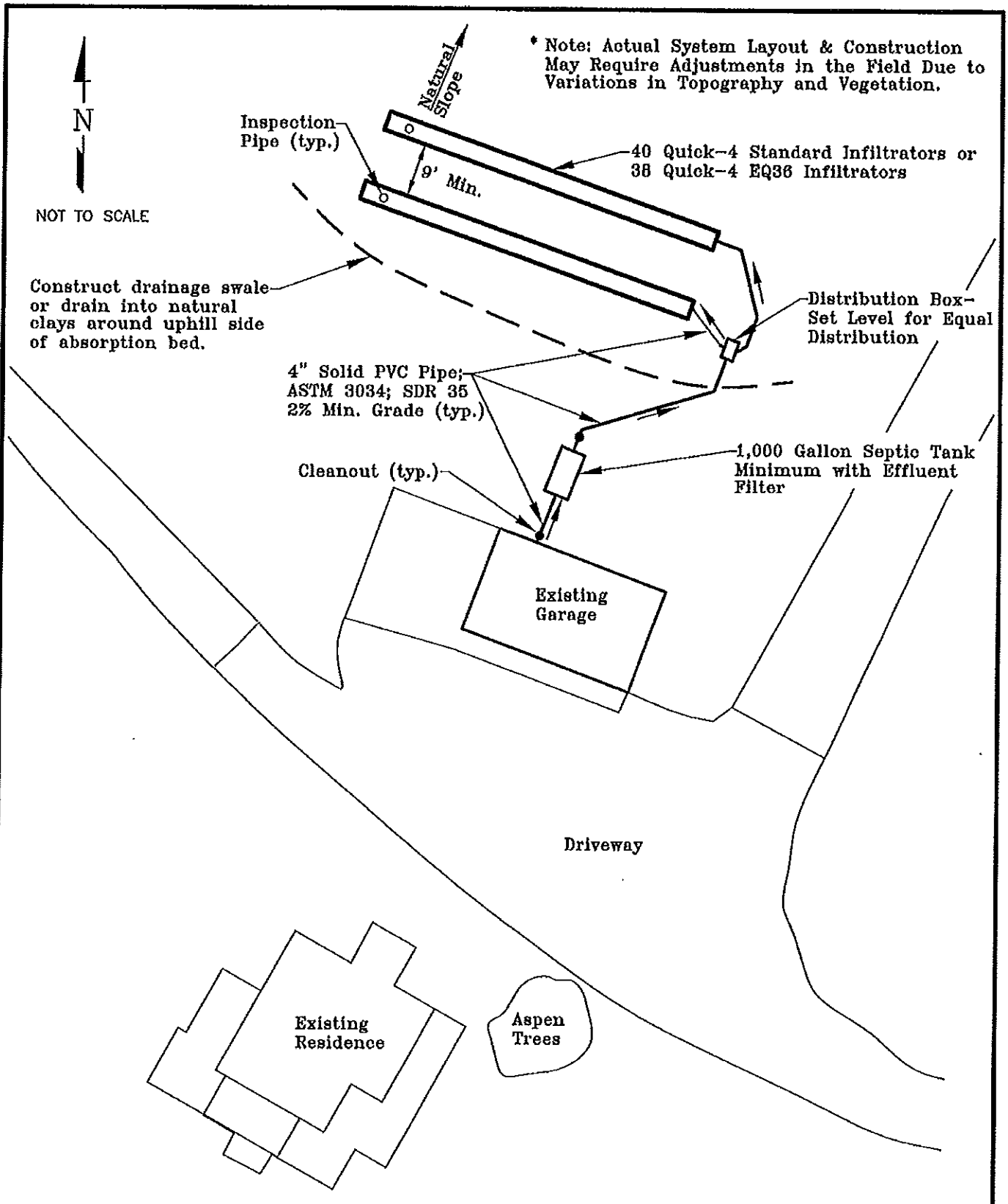
2) *Effluent Filter*: The effluent filter at the septic tank outlet should be cleaned when the septic tank is inspected or as required. NWCC recommends a minimum annual filter inspection.

3) *Absorption Field*: The absorption field should be fenced off to vehicular traffic and livestock. The surface area around the absorption field should be observed monthly for signs of failure, such as lush vegetation growth or ponding. Liquid levels in the seepage trench should be observed through the inspection pipes.

4) *Treated Water*: NWCC does not recommend water softeners or water treatment systems be connected to the OWS. The chemical and hydraulic loading from the backwash of these treatment systems may be detrimental to the OWS. If a treatment system is used, a separate dry well should be constructed for the backwash waste. In addition, chemically treated water from a swimming pool or spa must not be discharged into the OWS.

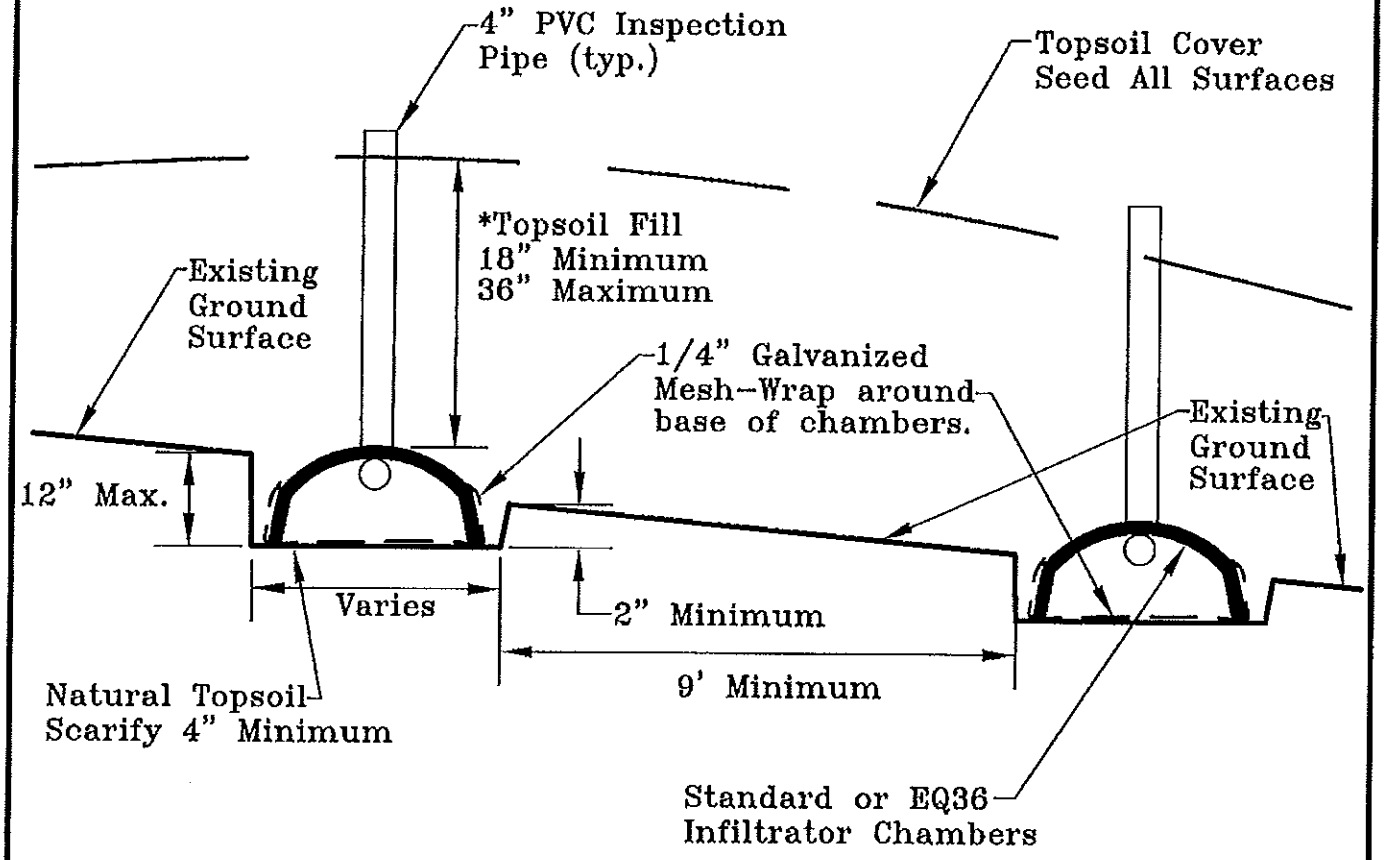
5) *General Notes*: The owner should be aware that the operation of the OWS is different from a public sewer service. Plastic and other non-biodegradable materials should not be placed into the system. Water use should be monitored so fixtures are not allowed to run if a seal malfunctions. Allowing fixtures to flow continuously to prevent water lines from freezing or a malfunctioning faucet or toilet can consume in excess of 1,000 gallons per day. Excessive flows could flood and cause premature failure of the system. No plastic or landscaping that requires additional irrigation should be placed over the absorption field.

Limitations: The procedures and design criteria used in this design were obtained from the EPA "Design Manual - On-site Wastewater Treatment and Disposal Systems", 1980, as well as the Colorado Department of Health "Guidelines on Individual Sewage Disposal Systems", revised 2000, and the Routt County Individual Sewage Disposal Regulations, February 1999. The OWS design presented is based on currently accepted design procedures, the proposed structure and usage of the facility. If the usage of the structure or addition of new facilities to those currently planned in the building changes, the OWS design will also most likely change. It should also be noted that all on-site wastewater systems require periodic maintenance as noted above. The failure of the owner to provide periodic inspection and maintenance of the system can lead to premature system failure.



Title: O.W.S.–INFILTRATOR SITE PLAN	Date: 4/10/14	NWCC Northwest Colorado Consultants, Inc. Geotechnical / Environmental Engineering · Materials Testing
Job Name: Laughlin Garage–Guest Suite	Job No. 11-9025	
Location: 28305 Meadowbrook Drive, Routt County, Colorado	Figure #1	

* The chambers should be backfilled in accordance with the manufacturer's recommendations.



Title: INFILTRATOR SYSTEM CROSS SECTION	Date: 4/10/14	NWCC Northwest Colorado Consultants, Inc.
Job Name: Laughlin Garage-Guest Suite	Job No. 11-9025	
Location: 28305 Meadowbrook Drive, Routt County, Colorado	Figure #2	

APPENDIX A

SUMMARY OF DESIGN CALCULATIONS

A. Sewage Volume Calculations

1) Number of Bedrooms: ..... 2 x 150 gpd/bedroom

2) Total Average Flow ..... 300 gpd

3) Peak Factor ..... x 1.75

4) Peak Flow for Design ..... Q = 525 gpd

B. System Sizing

1) Minimum absorption area = $Q\ (t^{1/2})/5 = (525)(40)^{1/2}/5 = 664\ ft^2$

2) Less 40% for Standard or Quick-4 Infiltrator® Chambers: 664 x 0.60 = 399 ft^2

3) No. of Quick-4 Std. Infiltrator® Chambers: 399 ft^2/10 ft^2/chamber = 39.9 chambers => use 40 Quick-4 Standard Infiltrator® chambers.

3A) No. of Quick-4 EQ36 Infiltrator® Chambers: 399 ft^2/10.67 ft^2/chamber = 37.3 chambers => use 38 Quick-4 EQ36 Infiltrator® chambers.

4) Septic Tank–per Routt County Regulations: Minimum 1,000-gallon tank for a two-bedroom residence.

5) Minimum well, watershed and open water setback-per Routt County Regulations: 100 Feet minimum.

6) Minimum property line setback-per Routt County Regulations: 10 Feet Minimum (25 Feet Recommended)

7) Minimum Building setback-per Routt County Regulations: 5 Feet Minimum (10 Feet Recommended)

APPENDIX B

1) Construction and installation must meet Routt County Department of Environmental Health and the Colorado Department of Health regulations.

2) Periodic inspections must be made by NWCC at the following points during construction:

a. After infiltration chamber and distribution piping placement, but before pipes are covered.

b. Upon final completion of the project.

3) PVC pipe shall meet or exceed ASTM 3034/SDR35 requirements. Special care should be taken when backfilling the system to prevent disturbance/crushing of distribution lines and chambers. Chamber manufacturer's recommendations should be closely followed when backfilling the chambers. All building sewer and distribution piping should be carefully bedded and shaded to minimize settlement and protect piping.

4) Tank excavation backfill may consist of suitable on-site or imported materials and shall be backfilled in 6 to 8-inch loose lifts mechanically compacted to at least 95% of the maximum standard Proctor density. NWCC recommends the use of washed or screened rock backfill beneath inlet and outlet piping. Rock fill should be compacted to at least 80% of the maximum relative density (ASTM D4253/4254).

5) Provide a minimum of 12 inches of soil cover over the septic tank and 24 inches of soils cover over all pipes. Any piping placed under a driveway or other plowed areas should have a minimum of 48 inches of soil cover or be protected from freezing using insulation or other approved means. Manhole lids should be exposed at final grades. Provide manhole ring extensions as needed to final grades. Provide non-shrink grout at all plumbing connections for water-tightness.

6) Surface drainage shall be ditched and diverted away from wastewater disposal areas.

7) Disturbed surfaces, mounds and berms shall be covered with topsoil and heavily seeded.

8) Washed rock shall be covered with synthetic filter fabric before topsoil placement. Washed rock shall consist of clean gravel from 0.5 to 2.5 inches in size.

9) Inspection pipes to be constructed of PVC pipe with the portion of the pipe penetrating absorption trench being perforated. Cleanouts must be placed in the solid distribution line at maximum intervals of 100' downstream of the septic tank and at a maximum interval of 50' upstream of the septic tank.

10) It is the responsibility of the owner and the installer to comply with all minimum setback requirements.