• I. S. D. S. PERMIT •

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

Permit: EH-11-005

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: **27255 MOFFITT TRAIL C**
Legal description of property: TR OF LAND IN PT OF TR 147 SEC 21 & 22-5-85 TOTAL 75.26A
Parcel Id.: 946214001 Lot No.:

Owner: NUGENT, JOHN M. III
Address: P O BOX 882345 STEAMBOAT SPRINGS, CO
STEAMBOAT SPRINGS CO 80488
Phone: 202-251-1277

Applicant: NUGENT, JACK
Address: P.O. BOX 882345
STEAMBOAT SPRINGS CO 80488
Phone: 202-251-1277

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: 5**
Percolation Rate: 33 MPI
Minimum Septic Tank Capacity: 1500 gallon
Tank Material: Y Concrete N Polyethylene
Design: 1: Engineer shall certify that construction complies with permitted design.
Comments:
Notice: All Sewage *HOLDING* Tanks must be Concrete. Inspections required (24 hour advanced notice required).

Environmental Health Specialist: H Stanley **Date of Issue:** 4/20/11

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

Environmental Health Specialist: H Sanders **Date** 9/21/11

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

RECEIPT

RECEIPT NUMBER: **R110000285**

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

APD #: EH-11-005 TYPE: EH-Ind. Sewage Disp Sys
SITE ADDRESS: 27255 MOFFITT TRAIL C
PARCEL: 946214001

May include fees collected within the jurisidiction.

TRANSACTION DATE: 04/20/2011

TOTAL PAYMENT:	300.00
TOTAL PAID FROM TRUST:	.00
TOTAL PAID FROM CURRENCY:	300.00

TRANSACTION LIST:

Type	Method	Description	Amount
Payment	Check	#1875	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: 04/20/2011 TIME: 09:01 AM

OK per Hutchinson Sanitation 4/20/11

EH-11-005

BUILDING PERMIT #CB-11-047
PERMIT PD 300.00 paid
PERC PD _____

4/18/11
300.00 fee Ck# 1875
John M. Nugent

APPLICATION FOR INDIVIDUAL SEWAGE SYSTEM PERMIT

NEW X REMODEL ___ REPAIR ___ EMERGENCY USE ___

Name of Owner Jack Nugent Mailing Address P.O. Box 882345 Steamboat Sp Phone 202-251-1277

Name of Applicant same Mailing Address _____ Phone _____

LOCATION OF PROPOSED SYSTEM: Street Address 27255 Moffat Trail

Legal Description PT OF TR 147 SEC 21, 22 -5-ET TOTAL 75.26 A (Lot# and Subdivision if applicable)

Parcel ID# 946214001 (this# can be found in the Assessor's Office)

Size of Lot 75.26 A (x)Residential ( )Commercial ( )Other (Describe) _____

Number of: Bedrooms 5

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 John M. Nugent Jr Date 4-18-11

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

February 18, 2011

Jack Nugent
2448 Ginny Way
Lafayette, CO 80026

Job Number: 07-7585

Subject: On-Site Wastewater System Design,
Proposed Nugent Residence, 27255 Moffitt Trail,
Routt County, Colorado.

Ladies and Gentlemen:

This report presents the results of an On-site Wastewater System (OWS) design for the proposed Nugent Residence to be constructed at 27255 Moffitt Trail in Routt County, Colorado. NWCC, Inc. (NWCC) previously completed a Subsoil and Foundation Investigation for this property under this job number and dated July 16, 2007. NWCC also completed an Alternate Subsoil and Foundation Investigation at the new proposed building site under this job number and dated October 26, 2010.

Proposed Construction: NWCC has not received or reviewed building plans for this project. It is our understanding, based on our conversations with the architect, Lou Thackston of ESA, that the proposed residence will be constructed with a total of five bedrooms when completed. The absorption field for the OWS will be placed to the southeast of the proposed residence.

Site Conditions: The residence is situated northwest of Whitewood Lane at the end of Moffitt Trail in Routt County, Colorado. The vegetation in the area of the proposed OWS absorption field consists of grasses, weeds and deciduous brush. Scrub oaks are located to the north and west of the proposed OWS. Aspen trees are located along a natural drainage located to the southwest of the proposed OWS.

The topography in the area of the proposed OWS is variable and generally slopes moderately down to the southeast on the order of 8 to 12 percent. A site plan showing the approximate location of the existing features and proposed OWS is shown in Figure #1.

Subsurface Conditions: A profile pit was excavated in the area of the proposed OWS at the time the field investigation was completed for the original Subsoil and Foundation Investigation.

The subsurface conditions encountered in the profile pit consisted of approximately 30 inches of topsoil and organic materials overlying natural sands and clays that extended to the maximum depth investigated, 5 feet. The natural sands and clays were fine-grained, moderately plastic, blocky, stiff to medium dense, moist and brown in color.

Groundwater was not encountered in the profile pit at the time of the field investigation and no evidence of a seasonal groundwater table was observed.

Percolation testing in the area of the proposed absorption field was completed by NWCC on October 14, 2010. A set of 6-percolation test holes ranging from 12 to 36 inches in depth were advanced in the vicinity of the proposed OWS to determine the percolation rate of the natural, near surfaces soils. The percolation tests conducted indicate that the upper 24 to 30 inches of natural topsoil and organic materials in this portion of the site yielded percolation rates of 20 to 40 minutes per inch (mpi) with an average percolation rate of 33 mpi. The deeper natural sands and clays exhibited a percolation rate in excess of 80 mpi.

OWS Design: Based on the percolation test results of the natural topsoil and organic materials encountered at the site and our understanding of the proposed construction, we recommend that the OWS design consist of a modified seepage bed absorption system constructed in the upper 6 to 12 inches of natural topsoil and organic materials.

The OWS design presented below is based on the total anticipated number of bedrooms and appurtenances for the structures, as well as the average percolation rate for the natural, near surface soils. Considering the anticipated construction, we have calculated a peak effluent flow of 1,313 gallons per day (gpd) for the system. Based on the percolation test results, a minimum absorption area of 1,509 square feet is required for a bed absorption system. Any fill materials required to level the site on the downhill side of the bed should consist of a granular material approved by the design engineer from NWCC prior to placement. A minimum of 18 inches of topsoil should be placed over the seepage bed and a layer of compacted clay fill materials should be placed along the sides of the gravel bed that are constructed above the existing ground surface.

A septic tank with a minimum capacity of 1,500-gallons is required for the five-bedroom residence. Due to the subsurface conditions encountered at the site, we recommend that a concrete septic tank be used. An effluent filter must be installed in the downstream outlet 'T' of the septic tank. We recommend that the tank be placed to allow access for pumping. Generally a septic tank can be pumped from 100 feet away with a maximum lift of 10 feet; however, a local pump contractor should be consulted in regards to the tank maintenance access. The construction of an access road to allow for pumping the septic tank may be required.

We recommend a dosing system be used to distribute effluent to the absorption field. The dosing system should consist of a minimum 400-gallon concrete dosing tank installed downstream of the septic tank with an automatic dosing siphon, if sufficient grade is available. We recommend a Fluid Dynamics FD417 automatic dosing siphon. An alternate would be to use a FLXX 2,000-gallon three-compartment septic tank with the siphon installed in the downstream compartment. The system should have a high water alarm system installed in the residence to warn the owner in the event of a siphon malfunction.

The system design for the seepage bed system is presented in Figures #1 through #3. The design calculations are shown in Appendix A and the specifications for the system are given in Appendix B.

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 that 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 1 to 3 years is likely at the design flows used for this system; however, depending on use, pumping may only be required every 3 to 5 years.

2) *Effluent Filter and Dosing System*: The effluent filter at the septic tank outlet should be cleaned when the septic tank is inspected or as required. The siphon should be checked semi-annually to ensure the siphon is functioning properly. If the high water alarm sounds, the system should be inspected and serviced immediately.

3) *Absorption Field*: We recommend that the absorption field be fenced off to 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 within the absorption field should be observed through the inspection pipes.

4) *Treated Water*: We do not recommend that the 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.

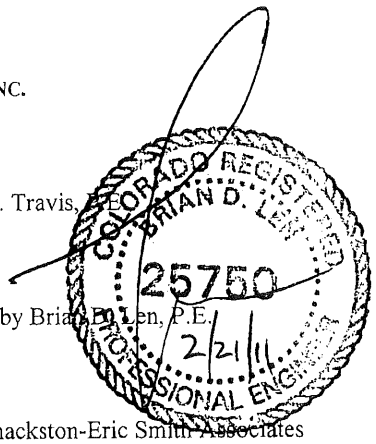
5) *General Notes*: The owner should be aware that the operation of the OWS is different from a public sewer service. Plastic and other non-biodegradable materials should not be placed into the system. Water use should be monitored so fixtures are not allowed to run if a seal malfunctions. Allowing fixtures 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 continually 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 structures and usage of the facilities. 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.

Please be advised that Colorado law requires that a permit must be obtained prior to construction, alteration or use of an on-site wastewater system. In addition, this office must be retained by the client to observe the construction/installation of the OWS and to provide an as-built report to the Routt County Department of Environmental Health when the construction is completed.

If you have any questions concerning this report, or if we may be of further service, please contact this office.

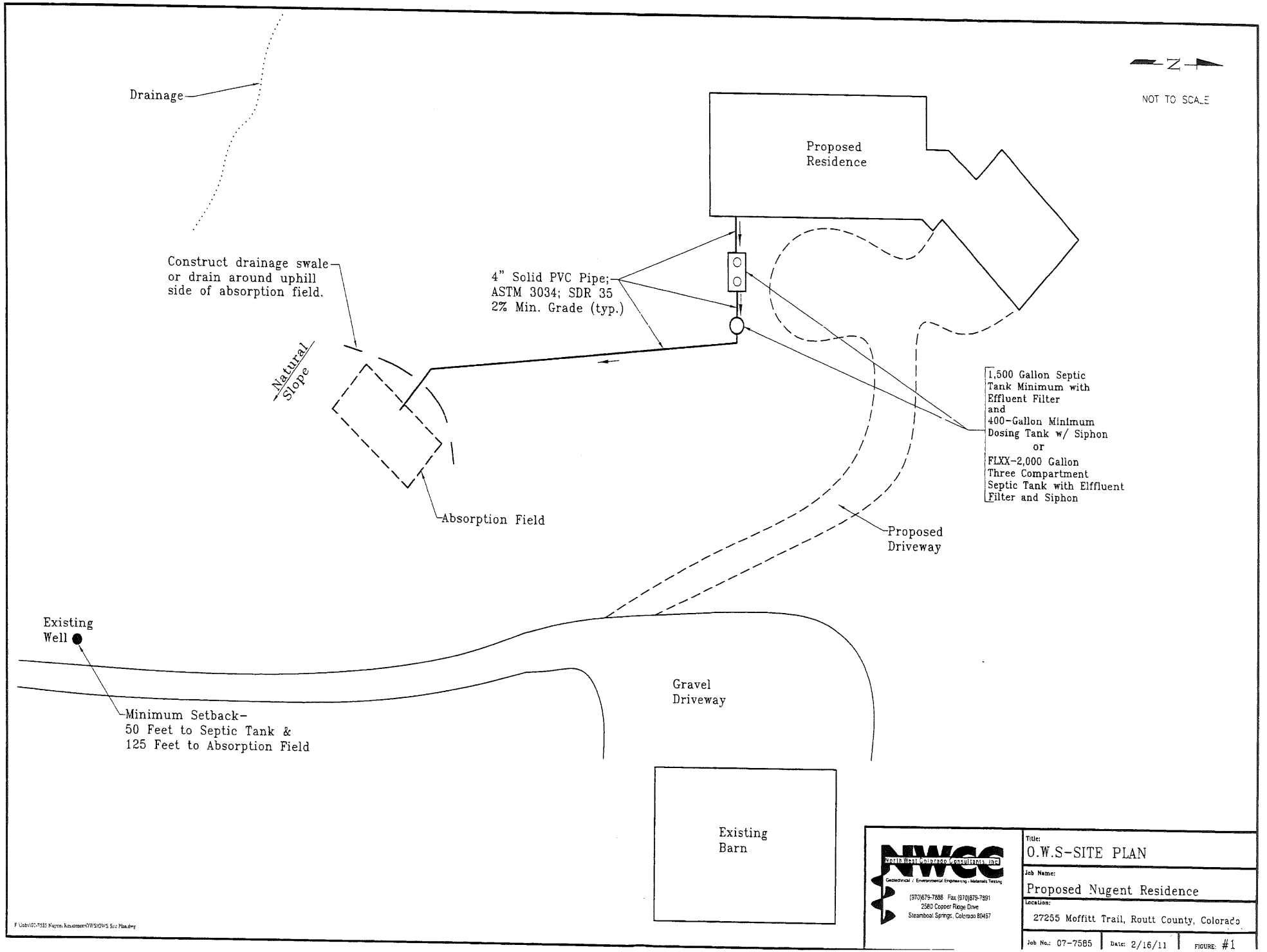
Sincerely,
NWCC, INC.



Timothy S. Travis, EIT

Reviewed by Brian D. Len, P.E.

cc: Lou Thackston-Eric Smith Associates



NWCC
North West Colorado Consultants, Inc.
Geotechnical / Environmental Engineering - Materials Testing
(970)879-7888 Fax (970)879-7891
2580 Copper Ridge Drive
Steamboat Springs, Colorado 80487

Title: O.W.S-SITE PLAN

Job Name: Proposed Nugent Residence

Location: 27255 Moffitt Trail, Routt County, Colorado

Job No.: 07-7585 | Date: 2/16/11 | FIGURE: #1

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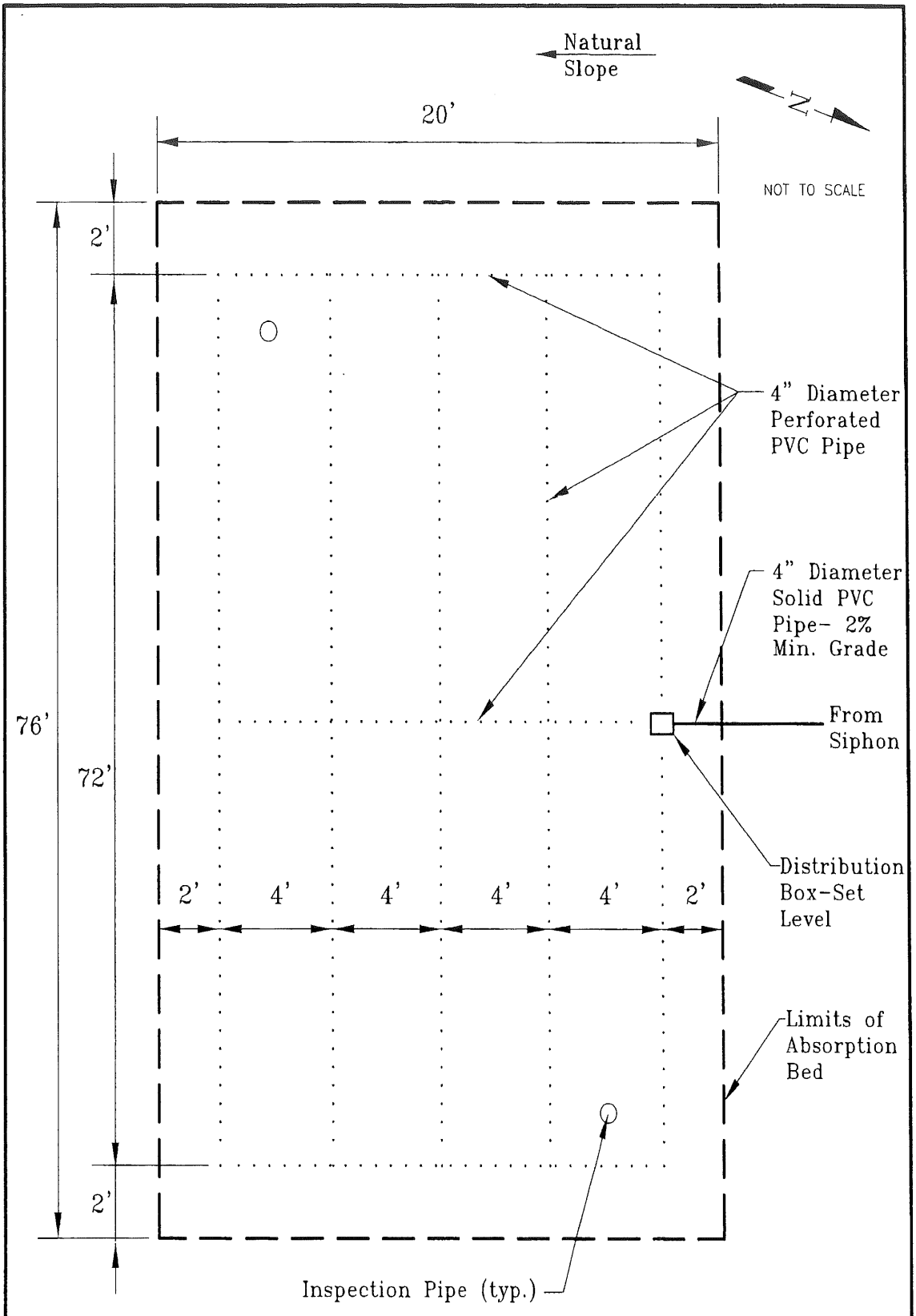

Title: SEEPAGE BED PLAN	Date: 2/16/11	NWCC North West Colorado Consultants, Inc. Geotechnical / Environmental Engineering - Materials Testing (970)879-7868 - Fax (970)879-7891 2580 Copper Ridge Drive Steamboat Springs, Colorado 80487
Job Name: Proposed Nugent Residence	Job No. 07-7585	
Location: 27255 Moffitt Trail, Routt County, Colorado	Figure #2	

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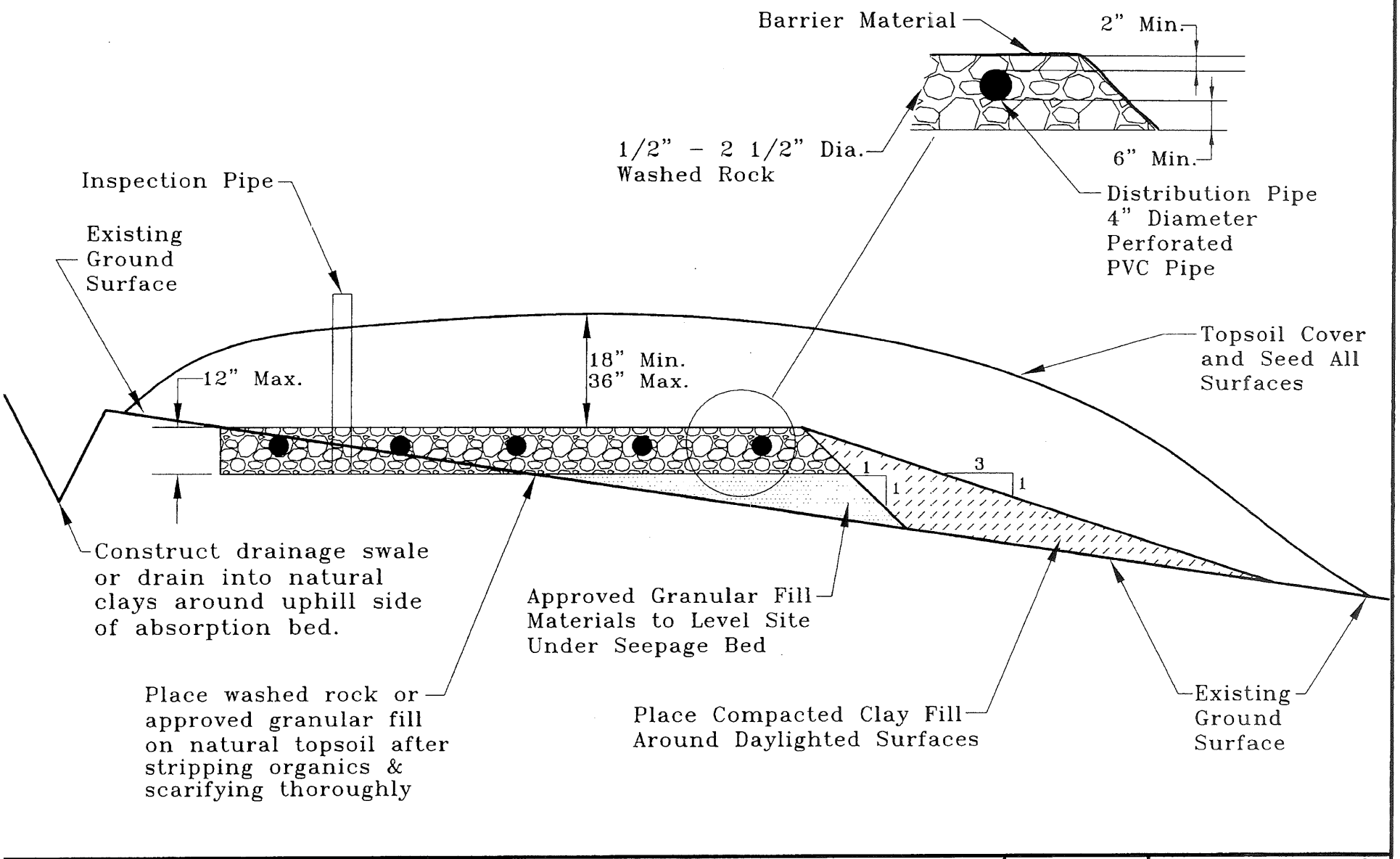


Title:	SEEPAGE BED CROSS SECTION	Date: 2/16/11	NWCC North West Colorado Consultants, Inc. Geotechnical / Environmental Engineering · Materials Testing
Job Name:	Proposed Nugent Residence	Job No. 07-7585	(970)879-7888 · Fax (970)879-7891 2580 Copper Ridge Drive Steamboat Springs, Colorado 80487
LOCATION:	27255 Moffitt Trail, Routt County, Colorado	Figure #3	

J:\Jobs\07-7585 Nugent Residence\CAD\SEEPAGE Bed Section Diagram.dwg

APPENDIX A

SUMMARY OF DESIGN CALCULATIONS

A. Sewage Volume Calculations

1) Number of Bedrooms:.....5 Bedrooms

2) Total Average Flow: 5 x 150-gpd/bedroom.....750 gpd

3) Peak Factor .....x 1.75

4) Peak Flow for Design.....Q – 1,313 gpd

B. System Sizing

1) Minimum absorption area = $Q(t^{1/2})/5 = (1,313)(33)^{1/2}/5 = 1,509$ ft^2

2) Bed Sizing: 1,509 ft^2 / 20' = 75.5' => Use 20' x 76' Bed.

3) Septic Tank - Use 1,500-gallon septic tank minimum for a five-bedroom residence.

4) Minimum well, spring or open water setback, per Routt County Regulations = 125 feet

5) Minimum dry drainage setback, per Routt County Regulations = 50 feet

6) Minimum property line setback, per Routt County Regulations = 10 feet

APPENDIX B

1) The Rules and Regulations of the Routt County Department of Environmental Health must be complied with during the installation/construction of the system.

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

a. After subgrade excavation and septic tank and solid PVC pipe installation.
b. After placement of gravel and perforated PVC pipe, prior to backfilling.
c. Upon final completion of the project.

3) The PVC pipe, perforated or non perforated, shall conform to ASTM 3034 or better quality. The perforated pipe or trenches should be constructed level.

4) The soils beneath the pipes entering and leaving a septic or aeration tank, which has been excavated, shall be backfilled in 6 inch lifts and mechanically compacted to a minimum of 95% of the maximum standard Proctor density. Cast iron pipe or pvc pipe meeting ASTM 3034-SDR 35 or schedule 40 shall be used for 5 feet on the inlet and outlet sides of the tank.

5) Provide a minimum of 12 inches of soil cover over the septic tank, 18 inches of soil over the absorption bed 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. A layer of compacted clay fill materials should be placed along the sides of the seepage bed that are constructed above the existing ground surface. The clays should be compacted to at least 95% of the maximum standard Proctor density and have at least 70% passing the No. 200 sieve. Special care should be taken when backfilling the system to prevent disturbance/crushing of the distribution lines. In addition, the distribution lines should be carefully bedded to minimize the settlement in these lines.

6) The surface drainage shall be ditched and diverted away from the absorption field.

7) The disturbed surfaces, mounds and berms shall be covered with topsoil and heavily seeded. Heavy farm equipment and livestock should be fenced or kept off of the absorption field.

8) The washed rock shall be covered with straw and untreated building paper or synthetic filter fabric before overlying soils layers are placed. The washed rock will consist of 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 the gravel bed 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 of the minimum setback requirements.

11) The fill materials placed below the bed must be approved prior to use by the design engineer from NWCC and consist of a clean, well graded sand or sand and gravel mixture with less than 7 percent passing the No. 200 sieve.

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

September 20, 2011

Jack Nugent
2448 Ginny Way
Lafayette, CO 80026

Job Number: 07-7585

Subject: On-Site Wastewater System Observations, Nugent Residence, 27255 Moffitt Trail, Routt County, Colorado.

Ladies and Gentlemen:

As requested, NWCC, Inc. (NWCC) visited the project site on June 30, August 9 and 15, 2011 to observe the construction of the On-site Wastewater System (OWS) for the Nugent Residence under construction at 27255 Moffitt Trail in Routt County, Colorado. NWCC previously designed the OWS for the residence under this job number and dated February 18, 2011.

At the time of our visit on June 30, 2011, the contractor, Nordic Excavating, had placed approximately 10 to 12 inches of washed rock and perforated pipe for the absorption field. The absorption field appeared to be constructed to approximately 20 feet by 76 feet configuration, which met the minimum required area. The absorption field appeared to be constructed in the upper 12 inches of natural topsoil materials on the uphill portion of the field. It appeared that 2 to 5 feet of granular fill materials had been placed on the downhill portion of the absorption field to level the site. The perforated pipe had been placed and appeared to be set level. We advised the contractor that washed rock should be placed to a minimum of 2 inches over the piping. An inspection pipe had been placed at each end of the absorption field at the time of our visit. The contractor was in the process of constructing the clay berm around the exposed areas on the downhill side of the absorption field. The contractor had also placed the piping (ASTM 3034; SDR35) from the distribution box in the seepage bed approximately 20 to 30 feet toward the proposed septic tank. The piping appeared to meet the minimum grade requirements.

We advised the contractor that a minimum of 18 inches of soil cover should be placed over the absorption field after the washed rock, barrier material and clay berm had been placed, a minimum of 12 inches of soil cover should be placed over the septic tank and a minimum of 24 inches of soil cover should be placed over the piping, when completed.

At the time of our site visit on August 9, 2011, the contractor had installed a 2,000-gallon concrete 3-compartment septic/dosing tank to the south-southeast of the residence, currently under construction. The inlet and outlet 'T' connections to the septic tank and dosing chamber visually appeared to have been properly constructed at the time of our site visit. An effluent filter had been placed in the outlet 'T' between

the 2nd and 3rd chambers of the septic/dosing tank. An automatic dosing siphon (Fluid Dynamics 417) had been installed in the dosing chamber.

The contractor had also placed the piping from the residence to the septic tank and from the dosing siphon to the piping previously constructed from the distribution box in the seepage bed. The piping had been backfilled at the time of our site visit.

At the time of our site visit on August 15, 2011, the system had been backfilled. The risers and lids for the septic/dosing tank chambers had been brought to the surface and it appeared that sufficient cover had been placed over the septic, tank, piping and absorption field. It appeared that the disturbed areas around the absorption field had been re-seeded. An as-built drawing taken from field measurements of the system is presented in Figure #1.

Based on our part-time observations, it appears that the portions of the system, which were completed and observed at the time of our site visits, had been constructed in general accordance with the design previously completed by our firm, with the noted exceptions. We believe that the system should function properly with proper care and maintenance, as outlined below, if the components backfilled or not completed at the time of our visits were properly constructed.

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 that the operation be periodically monitored and a qualified, licensed maintenance contractor perform 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 1 to 3 years is likely at the design flows. Depending on use, pumping may only be required every 3 to 5 years.

2) *Effluent Filter and Dosing System*: The effluent filter at the septic tank outlet should be cleaned when the septic tank is inspected or as required. The dosing siphon should be checked semi-annually to ensure the siphon is functioning properly. If the high water alarm sounds, the system should be inspected and serviced immediately.

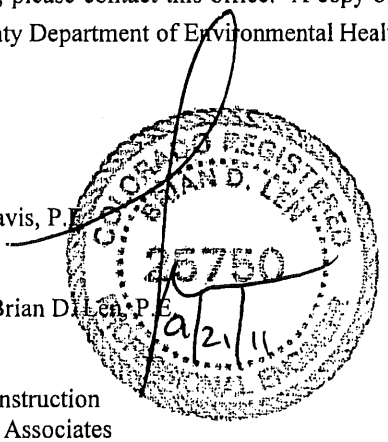
3) *Absorption Field*: We recommend that the absorption field be fenced off to vehicular traffic and livestock. The surface area around the absorption field should be observed monthly for signs of failure, such as lush vegetation growth or ponding. Liquid levels in the absorption bed should be observed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

4) *Treated Water*: We do not recommend that the 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.

If you have any questions regarding this report, our observations or recommendations or if we may be of further service, please contact this office. A copy of this report and as-built drawing has been provided to the Routt County Department of Environmental Health.

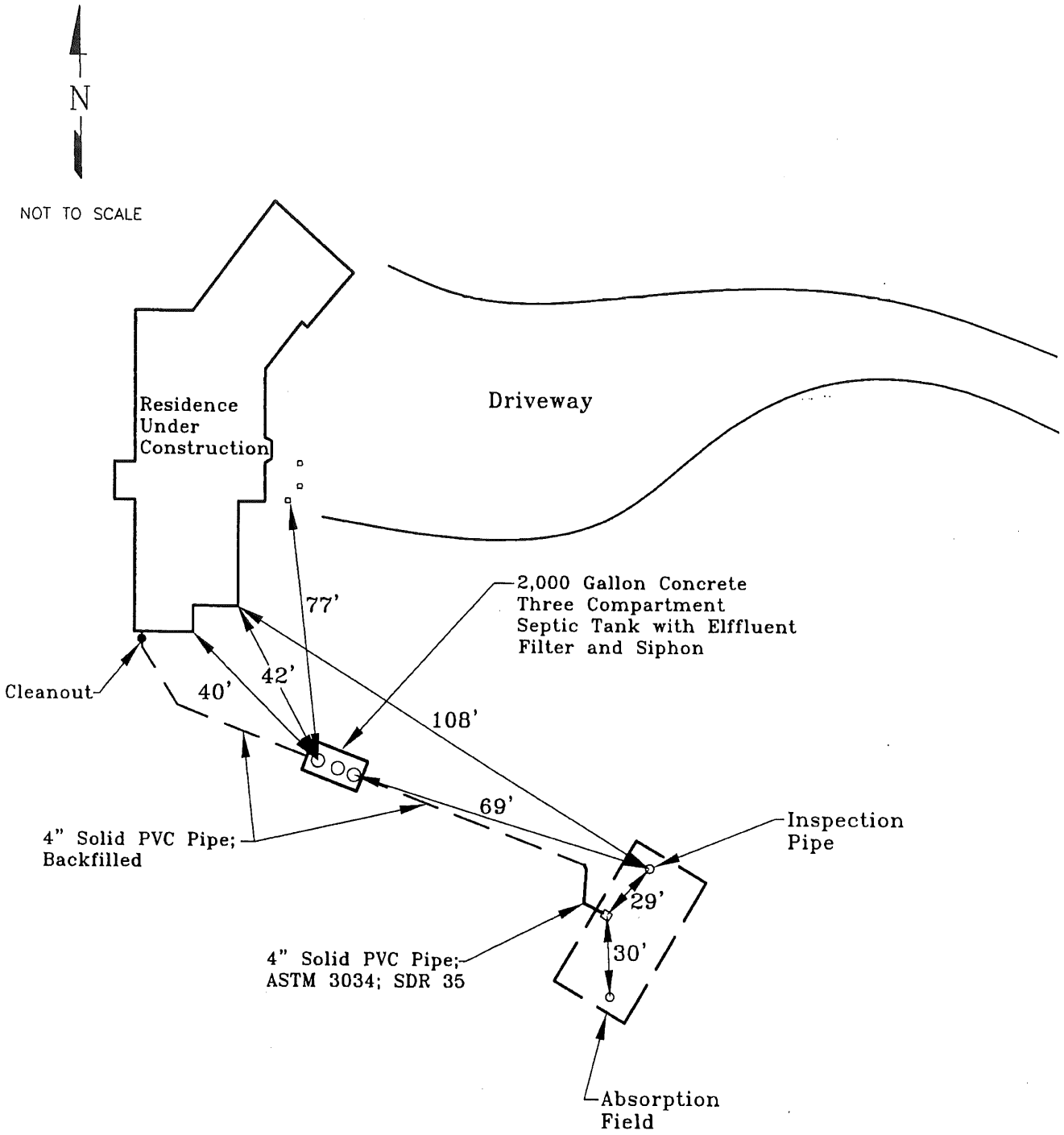
Sincerely,
NWCC, INC.,



Timothy S. Travis, P.E.

Reviewed by Brian D. Lewis, P.E.

cc: Shively Construction
Eric Smith Associates
Routt County Department of Environmental Health



Title: O.W.S.–AS BUILT	Date: 9/20/11	NWCC North West Colorado Consultants, Inc. Geotechnical / Environmental Engineering · Materials Testing
Job Name: Nugent Residence	Job No. 07–7585	(970)879-7888 · Fax (970)879-7891 2560 Copper Ridge Drive Steamboat Springs, Colorado 80487
Location: 27255 Moffitt Trail, Routt County, Colorado	Figure #1	

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