

• I.S.D.S. PERMIT •
TO INSTALL, CONSTRUCT, ALTER OR REPAIR
AN INDIVIDUAL SEWAGE DISPOSAL SYSTEM

Permit: EH-14-022

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: 26125 LARKSPUR LANE C

Legal description of property: PT OF TRACT 51 SECS 21,28-10-85 TOTAL 17.14A

Parcel Id.: 912282002 Lot No.:

Owner: ZAMZOW, DARREN & CARROLL

Address: PO BOX 874

CLARK CO 80428-0874

Phone: 970-846-2981

Applicant: DARREN ZAMZOW

Address: PO BOX 874

CLARK CO 80428

Phone: 970-846-2981

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

☒ Residential ☐ Commercial Other:

Percolation Rate: 5 MPI

Minimum Septic Tank Capacity: 1250 gallon

Tank Material: ☒ Concrete ☐ Polyethylene

Design: 1: Engineer shall certify that construction complies with permitted design.

Comments: SG 08/11/2014 SYSTEM IS DESIGNED FOR A 4 BEDROOM

RESIDENCE WITH A 2,000 GALLON, 3 COMPARTMENT SEPTIC TANK

AND WOULD REQUIRE AN INSPECTION TO VERIFY CONNECTIONS AT A

FUTURE DATE WHEN HOUSE IS CONSTRUCTED.

Notice: All Sewage *HOLDING* Tanks must be Concrete. Inspections required (24 hour advanced notice required).

Number of bedrooms: 4

Environmental Health Specialist:

Handwritten signature

Date of Issue:

8/14/14

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:

RI40001118

Routt County Environmental Health Department

P.O. Box 770087 Phone 970-870-5588

Steamboat Springs, CO 80477

Copy Reprinted on 08-11-2014 at 12:52:35 08/11/2014

APD #: EH-14-022
 SITE ADDRESS: 26125 LARKSPUR LANE C
 PARCEL: 912282002
 TYPE: EH-Ind. Sewage Disp Sys

May include fees collected within the jurisdiction.

TRANSACTION DATE: 08/11/2014
 TOTAL PAYMENT: 300.00
 TOTAL PAID FROM TRUST: .00
 TOTAL PAID FROM CURRENCY: 300.00

TRANSACTION LIST:

Type	Method	Description	Amount
Payment	Check #1125		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: SG

ENTERED DATE: 08/11/2014

TIME: 12:44 PM

24-14-022

BUILDING PERMIT #

PERMIT PD 300.00

PERC PD

APPLICATION FOR ON-SITE WASTEWATER SYSTEM PERMIT

NEW ☒

REMODEL

REPAIR

EMERGENCY USE

Ch# 1125

Current Damm Damaged

CB-14-318

Name of Owner

DARRIN + CHARLIE ZAMZOW

Mailing Address

PO: 8746 LARK LN.

Phone

970-327-2987

Name of Applicant

11

Mailing Address

Phone

LOCATION OF PROPOSED SYSTEM:

Street Address

26125 LARK LN.

Legal Description

POWDER RUNNEY EX.

Parcel ID#

912282002

(Lot# and Subdivision if applicable)

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

Size of Lot

17+/- AC

☒ Residential

() Commercial

() Other (Describe)

Number of:

Bedrooms

1

Water Supply:

() Private Well

☒ Public (give name of supply)

MANEOTIS SPRING A-2

System is designed for a 4 bdrm residence with a 2,000 gal. 3 compartment septic tank and would require an inspection to verify connection at future date when house is constructed.

accompany this application showing required information. Percolation tests and an on-site a Colorado Registered Professional Engineer, P.E. or the Routt County Department of apt of the application and plot plan. The permit, upon approval of this application may be partment of Environmental Health with payment of the required fee.

sewage system is hereby submitted. The on-site wastewater system will be constructed, ance with the regulations governing individual sewage disposal systems within Routt County State Regulations adopted pursuant to Article 10 of Title 25, C.R.S. 1973, as amended. The the above information is true and that false information will invalidate the application or assumes all responsibility in case of failure or inadequacy of this sewage disposal system. (*Hot ed to on-site sewage disposal systems.)

AS

Date

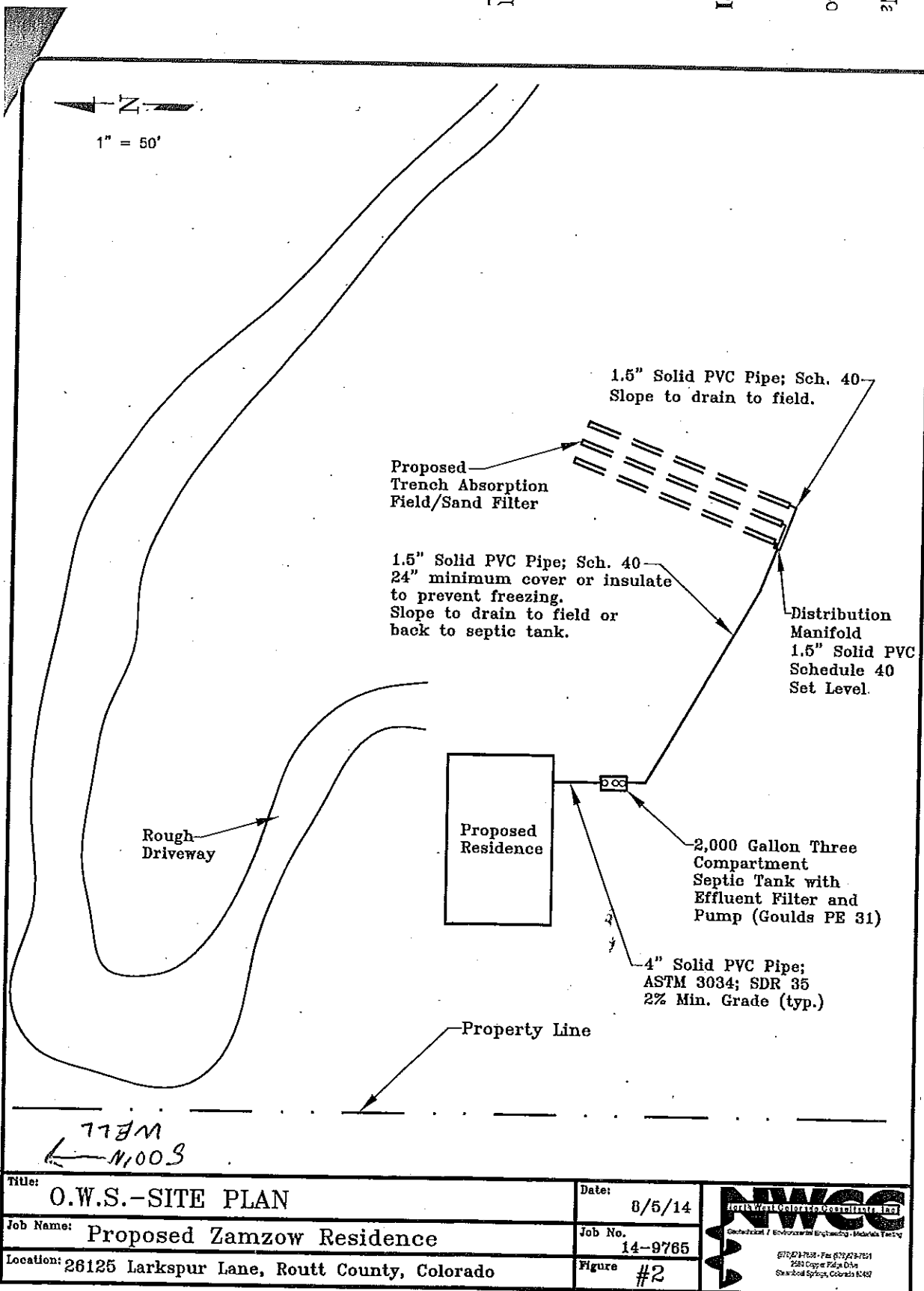
8/8/14

ST

PI

Lo

N2



Heather Savalox

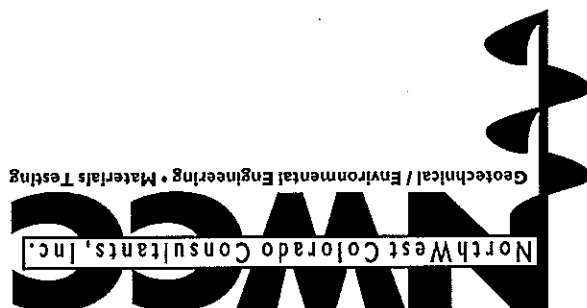
From: Darren Zamzow [darrenzamzow@gmail.com]
Sent: Monday, August 11, 2014 10:13 AM
To: Heather Savalox
Subject: septic design

Heather,

We are moving a cabin from Dutch creek guest ranch we are turning into a single family residence on plat known as Powder Monkey exception. We hope in the future either to remove small cabin or turn it into a Art studio. Then build a larger home on the same lot.

Darren Zamzow

AS
8/11/14



August 7, 2014

Darren Zamzow
P.O. Box 874
Clark, CO 80428

Job Number: 14-9765

Subject: On-Site Wastewater System
Design, Proposed Zamzow Residence,
26125 Larkspur Lane, Routt County,
Colorado.

Dear Darren,

This report presents the results of an On-site Wastewater System (OWS) design for the proposed Zamzow Residence to be constructed at 26125 Larkspur Lane in Routt County, Colorado. This design was completed in accordance with Colorado Department of Public Health and Environment-Water Quality Commission On-site Wastewater Treatment System Regulation #43 (Regulation).

Proposed Construction: It is our understanding, based on our conversations with the client, that the new residence will have a total of four bedrooms when completed. The absorption field for the OWS will be placed to the east-southeast of the proposed residence.

Site Conditions: The site is situated northwest of Larkspur Lane in Routt County, Colorado. A driveway has been roughed in to the proposed building site. The vegetation in the area of the proposed OWS absorption field consists of grasses and weeds with deciduous brush. Evergreen trees are located to the south-southwest of the proposed OWS. The topography in the area of the proposed OWS absorption field is variable and generally slopes moderately down to the southeast on the order of 8 to 15 percent.

A site plan showing the overall site and approximate locations of the existing features and proposed residence and OWS are shown in Figure #1. A detailed site plan of the proposed residence and OWS is shown in Figure #2.

Subsurface Conditions: A test pit was excavated near the absorption field at the time the field investigation was completed for the Subsoil and Foundation Investigation. The subsurface conditions encountered in the test pit consisted of approximately 12 inches of topsoil and organic materials overlying natural gravels to the maximum depth investigated, 8 feet below the existing ground surface (bgs). The natural gravels were sandy to silty with cobbles, non-plastic, medium dense to dense, moist and brown to gray in color. Groundwater seepage was not encountered in the profile pit at the time of excavation and no evidence of a seasonal groundwater table was observed.

Percolation testing was not completed at the site; however, a gradation test conducted on a sample of the gravels indicates the materials consisted of 73 percent of the sample retained on the #4 sieve (sand and gravel). NWCC has classified the gravels as soil type 0 in accordance with Table 10-1 of the Regulations. The natural gravels in this portion of the site will exhibit percolation rates less than 5 minutes per inch (mpi).

OVS Design: Based on the soils encountered at the site and our understanding of the proposed construction, NWCC recommends the OVS design consist of a minimum 3 feet deep unlined sand filter, as required for soil type 0 in Table 10-1 of the Regulations.

The OVS design presented below is based on the total anticipated number of bedrooms for the structure, as well as the average percolation rate for the natural soils. Considering the anticipated construction, NWCC has determined, using Table 6-1 of the Regulations, an effluent design flow of 525 gallons per day (gpd) for a four bedroom system. Based on the soil type and design effluent flow and using an application rate 1.0 gpd/ft² (Treatment Level 1), a minimum sand filter area of 525 square feet is required for this residence. Therefore, the sand filter will need to have three trenches 2 feet wide by 89 feet in length and a minimum depth of 3 feet of sand filter material. The sand filter material must be approved by NWCC prior to use and consist of a clean, well graded sand, which meets ASTM C33 specifications for concrete sand with 1 percent or less passing the No. 200 sieve.

A pressurized distribution system is required for the sand filter. The pressurized distribution system will consist of 1.5-inch diameter PVC pipe (Schedule 40) with 5/32-inch diameter orifices spaced at 36 inches on center. The orifices should be oriented to spray upward (12 o'clock). To allow the distribution lines to drain and prevent freezing, NWCC recommends three of the orifices be oriented downward (6 o'clock). The perforated distribution lines should be placed in a minimum of 12 inches of washed gravel (3/4" to 2.5" diameter) placed over the sand filter materials. The effluent will be distributed to each of the perforated distribution lines from a low head pump (Goulds PE 31) through a 1.5-inch diameter solid PVC (Schedule 40) transport line to a level manifold, located just above the sand filter trenches. A pressure relief valve (aka: "Snifter") should also be placed at the high point of the piping between the pump and manifold. The effluent will be distributed from the manifold to each sand filter trench through a solid 1.5-inch diameter solid PVC (Schedule 40) pipe. A flow control valve must be placed in each of the transport lines, below the manifold. The solid PVC distribution lines should be sloped (1% minimum) to flow to the field or back to the weep holes in the pump chamber to allow the lines to drain and prevent freezing.

A septic tank with a minimum capacity of 1,250-gallons is required for a four bedroom residence. Due to the subsurface conditions encountered at the site, we recommend that a concrete septic tank be used. NWCC recommends a 2,000-gallon, three compartment septic tank be used for the system.

A Biotube effluent filter (Orenco FT W0444-36) must be installed in the outlet 'T' of the septic tank, between the 2nd compartment and the pump chamber. The manhole lids must be exposed at final grades. Manhole ring extensions should be used as needed to reach final grades. The tank must 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 sewage pumping 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.

The pump system for the pressurized dosing system will consist of a low head pump (Goulds PB 31) with a 1.5-inch diameter PVC (Schedule 40) discharge assembly. NWCC recommends the system have a high level alarm float, a low level/pump off float and a pump ON/OFF float. We recommend the floats in the dosing tank be set to provide a dose of approximately 75 gallons. A control panel with high level alarm (light and audible) should be placed in the residence in a location that allows line of sight between the control panel and the pump chamber. A secondary or backup pump stored on-site for quick change over is also recommended in the event of a pump failure.

The system design for the sand filter system is presented in Figures #1 through #5. The design calculations are shown in Appendix A and the specifications for the system are given in Appendix B. Any variance of equipment/materials specified in this design must be approved by NWCC prior to construction.

Operation and Maintenance: Observing the operation and performing routine maintenance of the OWS is essential to allow proper, long term functioning of the system. NWCC recommends the operation be monitored and a qualified, licensed maintenance contractor provide 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/Pump System:** The effluent filter at the septic tank outlet should be cleaned when the septic tank is inspected or as required. The effluent pump should be checked semi-annually to ensure the pumps are functioning properly. If the high water alarm sounds, the system should be inspected and serviced immediately. NWCC strongly recommends a backup pump be stored on-site for quick change over in the event of a pump failure.

3) **Absorption Field:** Absorption field should 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 each sand filter run should be observed through the observation 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.

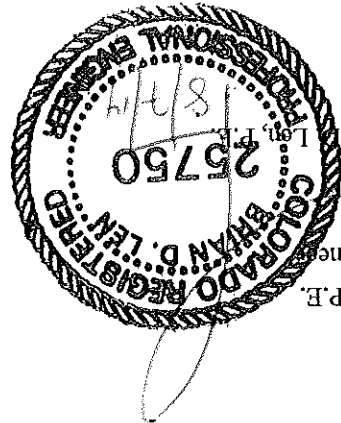
- 5) General Notes: The owner should be aware that the operation of the OWS is different from a public sewer service. Plastic and other non-biodegradable materials should not be placed into the system. Water use should be monitored so fixtures are not allowed to run if a seal malfunctions. Allowing fixtures 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 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 Public Health and Environment-Water Quality Control Commission, On-site Wastewater Treatment System Regulation, Regulation #43, effective June 30, 2013. 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, P.E.
Senior Project Engineer
Reviewed by Brian
Principal Engineer



O.W.S.-OVERALL SITE PLAN

Date: 8/5/14

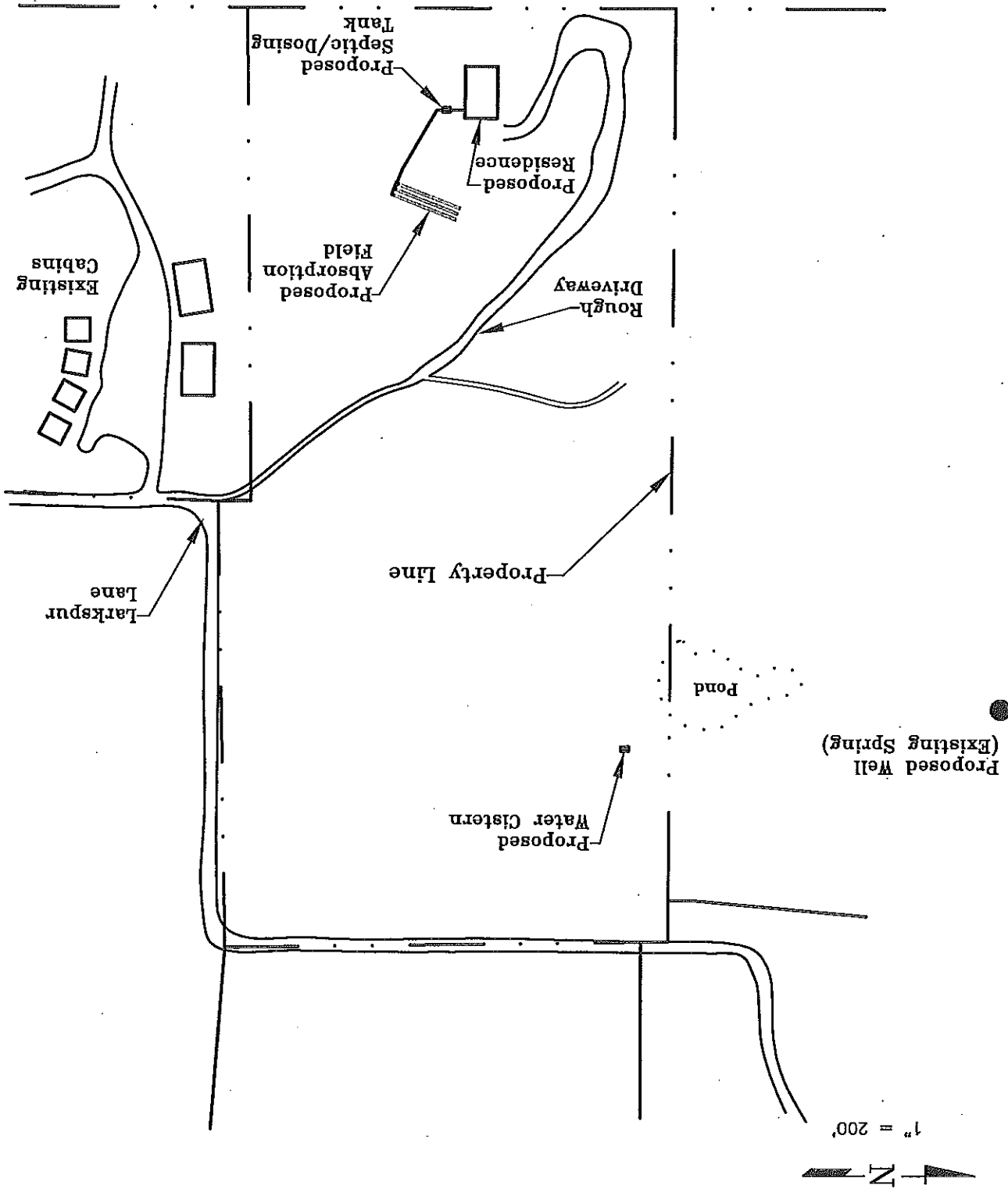
Job No. 14-9765

Figure #1

Location: 26125 Larkspur Lane, Routt County, Colorado

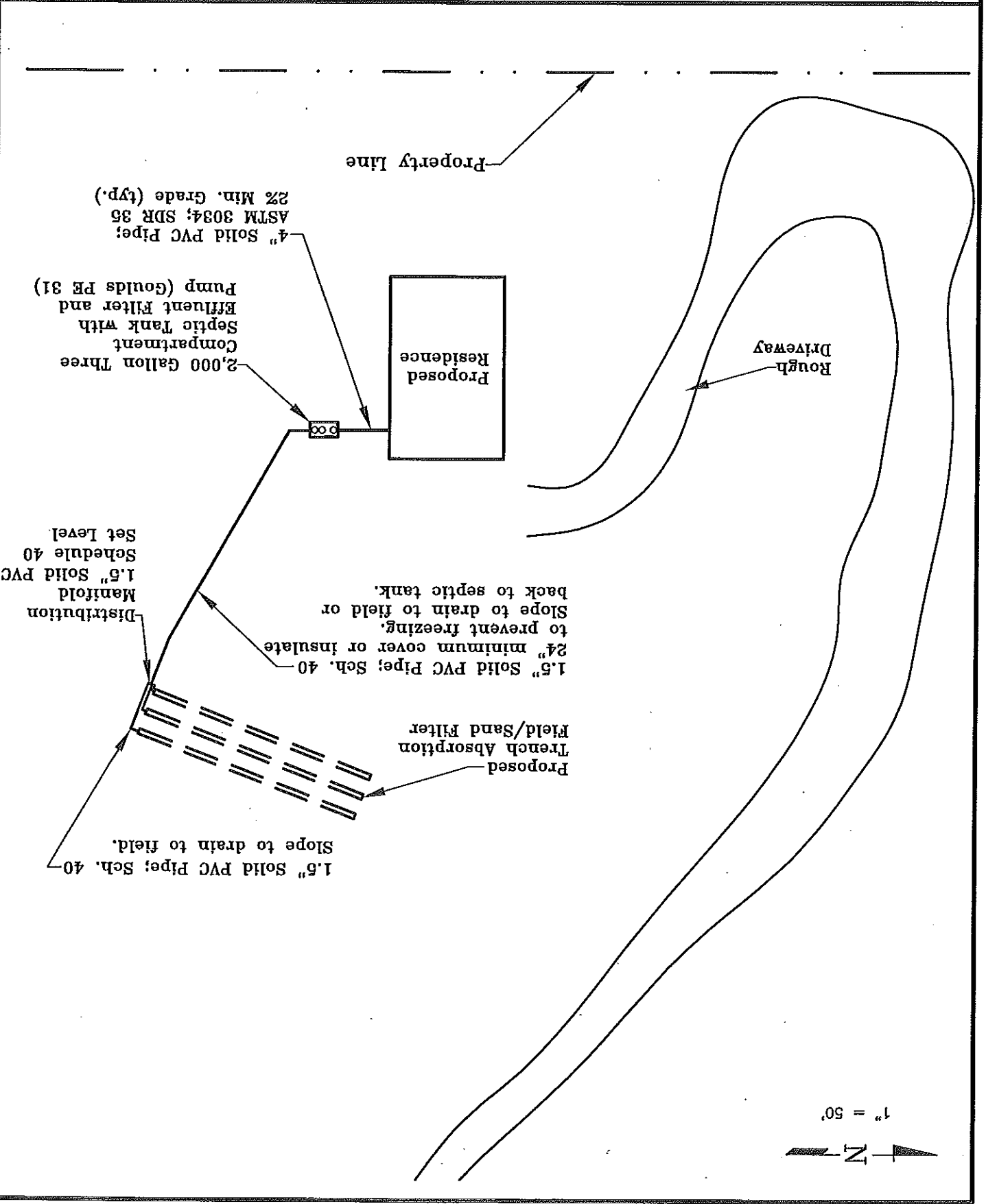
Job Name: Proposed Zamzow Residence

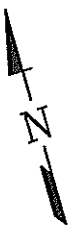
NWCC
 NORTHWEST CONSULTANTS, INC.
 2603 COGGINS ROAD
 STEUBENT SPRING, COLORADO 80487
 (970) 273-1231
 (970) 273-1231
 (970) 273-1231



Title: O.W.S.-SITE PLAN		Date: 8/5/14
Job Name: Proposed Zamzow Residence		Job No. 14-9765
Location: 26125 Larkspur Lane, Routt County, Colorado		Figure #2

NWCC
 NorthWest Consulting & Construction, Inc.
 Geotechnical / Environmental Engineering - Wetlands Testing
 2550 Ogden Road, Suite 100
 Steamboat Springs, Colorado 80487
 970.223.1033 • Fax 970.223.1031



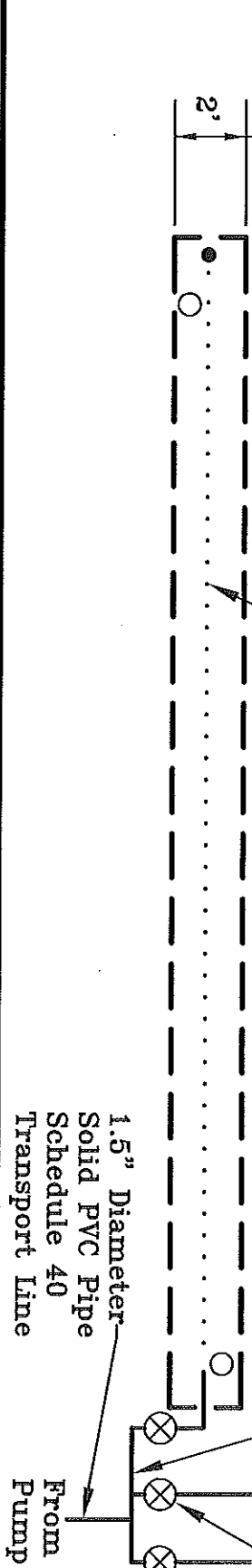
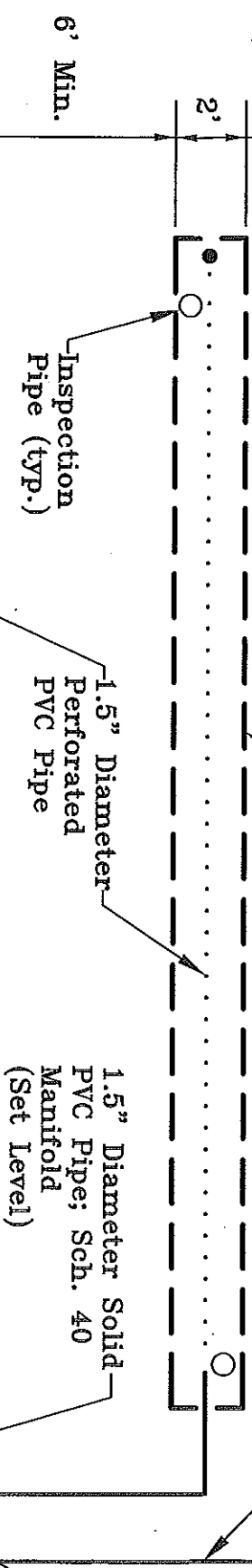
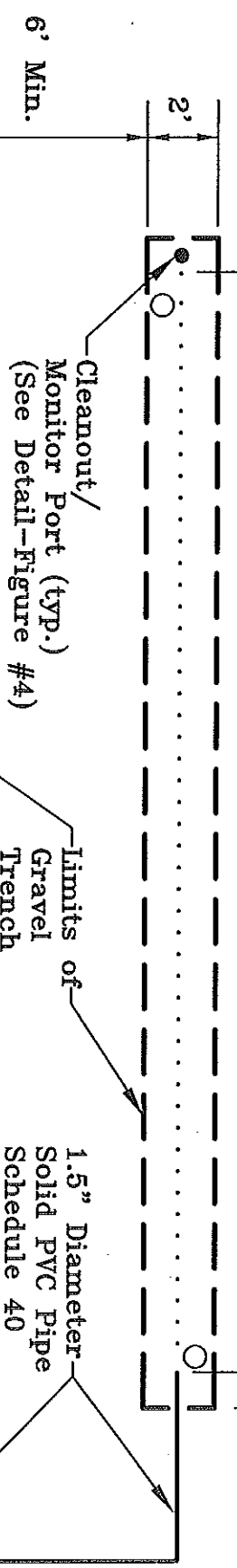


NOT TO SCALE

89'

87'- 1.5" Dia. Sch. 40 PVC with 5/32" Dia.
orifice @ 36" c.c. to spray upward.

(Three orifice's in each trench should spray downward
to allow pipe to drain and prevent freezing)



Title:

O.W.S.-TRENCH SAND FILTER PLAN

Job Name:

Proposed Zamzow Residence

Location:

26125 Larkspur Lane, Routt County, Colorado

Date:

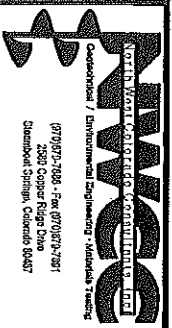
8/5/14

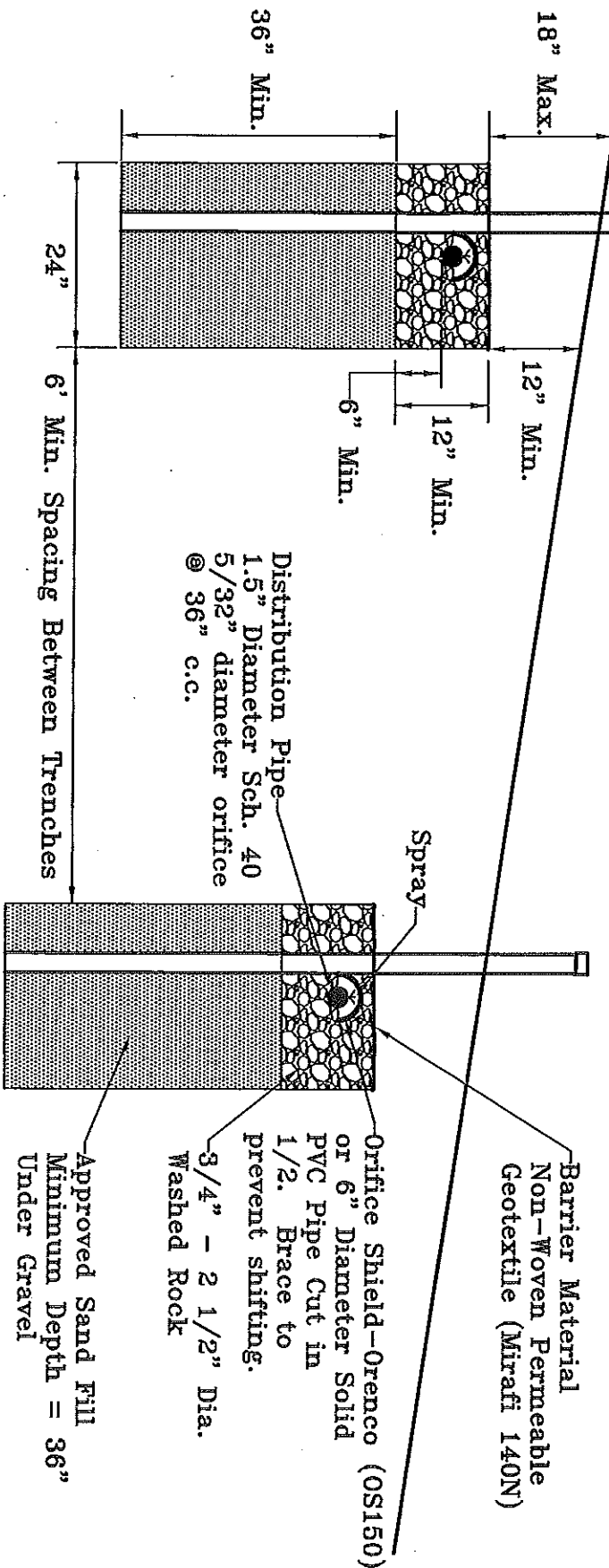
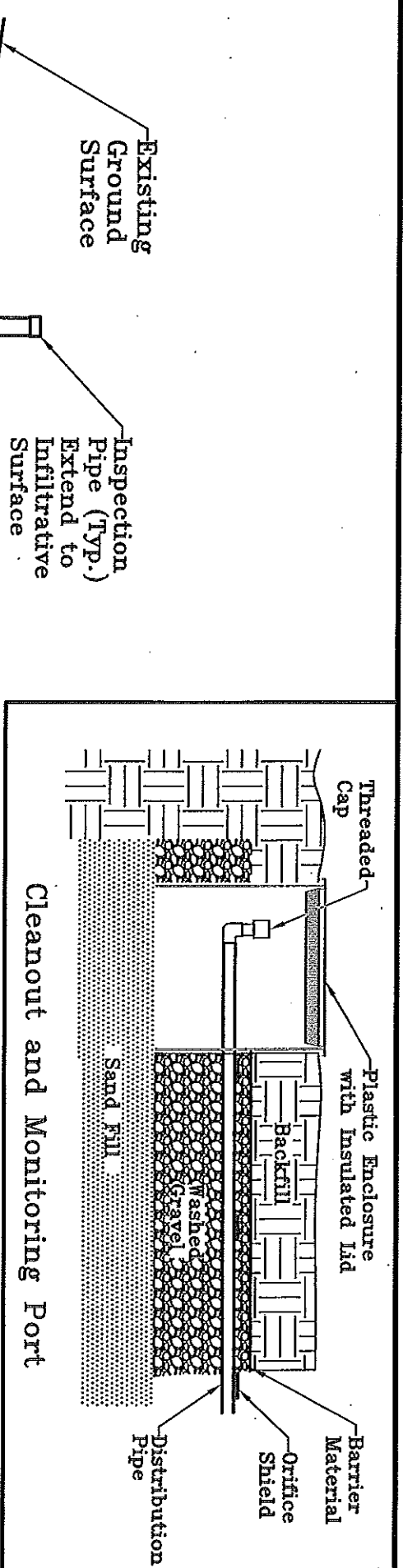
Job No.

14-9765

Figure

#3





SEEPAGE TRENCH CROSS SECTION

Job Name: Proposed Zamzow Residence

Location: 26125 Larkspur Lane, Routt County, Colorado

Date: 8/5/14

Job No. 14-9765

Figure #4



O.W.S.-SEPTIC TANK DETAILS

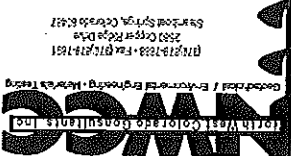
Job Name: Proposed Zamzow Residence

Location: 26125 Larkspur Lane, Routt County, Colorado

Figure #5

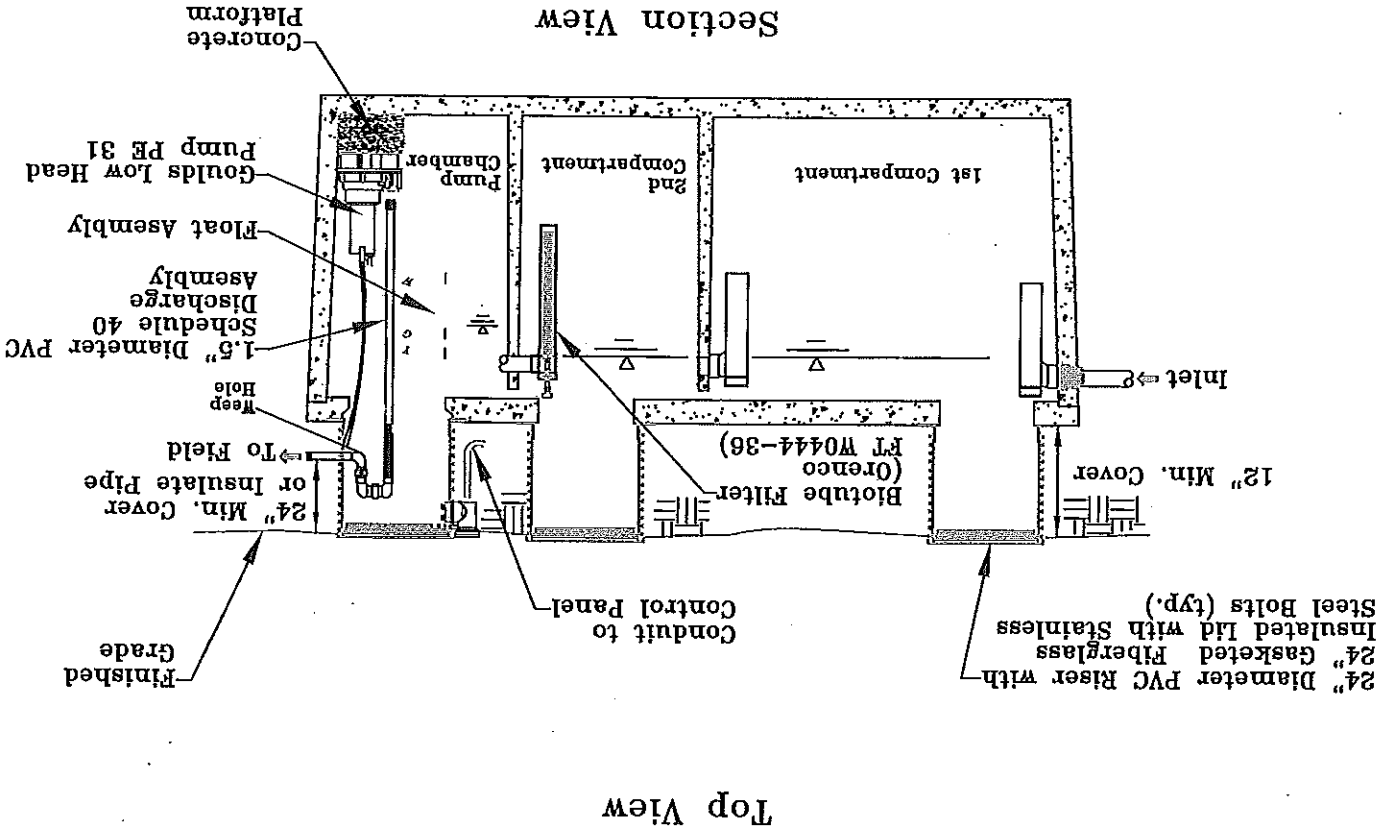
Job No. 14-9765

Date: 8/5/14



* Note: Septic tank shown is a typical 3-compartment septic tank/pump configuration. Installer must submit detail from septic tank manufacturer, for approval by NWCC prior to construction.

Float Functions
Y High Level Alarm
G Override Timer ON/OFF
W LTA/RO



APPENDIX A

SUMMARY OF DESIGN CALCULATIONS

A. Sewage Volume Calculations

- 1) Number of Bedrooms:.....4 Bedrooms
- 2) Design Flow (Regulations Table 6-1)Q = 525 gpd

B. System Sizing

- 1) Soil Type 0 (Table 10-1)
- 2) Minimum absorption area = $Q/LTAR = 525\text{gpd}/1.0\text{gpd}/\text{ft}^2 = 525\text{ ft}^2$
- 3) Sand Filter Sizing: $525\text{ ft}^2 / 2' = 263'$ => Use 3 trenches 89 feet long by 2 feet wide with 3 feet minimum depth of sand fill.
- 4) Septic Tank - 1,250-gallon septic tank minimum for a four-bedroom residence (Table 9-1).
2,000-gallon three compartment septic/pump tank recommended.
- 5) Minimum well or spring setback, per Table 7-2 = 100 feet
- 6) Minimum water body setback, per Table 7-2 = 50 feet
- 5) Minimum dry drainage setback, per Table 7-2 = 25 feet

APPENDIX B

- 1) The Rules and Regulations of the CDPHE and Routt County Department of Environmental Health must be complied with during the installation/consruction of the system.
- 2) Periodic inspections must be made by NWCC at the following points during construction:
 - a. After subgrade excavation and septic tank and solid PVC pipe installation.
 - b. After placement of sand fill, washed gravel and perforated PVC pipe, prior to backfilling.
 - c. Upon final completion of the project.
- 3) The 4-inch PVC pipe shall conform to ASTM 3034/SDR 35 or better quality. Pressurized lines shall consist of solid Schedule 40 PVC or other approved piping material suitable for pressurized wastewater transmission. Pressurized lines must be constructed to drain to field or pump tank and be tested prior to approval. NWCC recommends a minimum 20 psi testing pressure. The perforated pipe in the absorption field should be constructed level.
- 4) 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, 12 inches of soil over the absorption field 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 must be exposed at final grades. Provide manhole ring extensions as needed to reach final grades.
- 6) 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.
- 7) Surface drainage shall be ditched and diverted away from the absorption field and all tanks.
- 8) 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 or Infiltrators.
- 9) The washed rock shall be covered with synthetic filter fabric (Mirafi 140N) barrier material before overlying soils layers are placed. The washed rock will consist of gravel from 0.75 to 2.5 inches in size.
- 10) Inspection pipes to be constructed of PVC pipe with the portion of the pipe penetrating the gravel and sand being perforated. Inspection pipes must be extended to infiltrative surface at bottom of sand fill. Cleanouts must be placed in the solid distribution line upstream of the septic tank at maximum intervals of 100' or above any pipe bends 45 degrees or greater.

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

12) The sand filter materials must be approved prior to use by NWCC and consist of a clean, well graded sand meeting ASTM C33 for concrete sand with 1 percent or less passing the No. 200 sieve.

