



Prevent • Promote • Protect

Environmental Health Division

1675 W. Garden of the Gods Rd., Suite 2044
Colorado Springs, CO 80907
(719) 578-3199 phone
(719) 575-8664 fax
www.elpasocountyhealth.org

ENGINEERED ON-SITE WASTEWATER TREATMENT SYSTEM FINAL INSPECTION FORM

P

On-site ID: ON0049915
Environmental Health Specialist: Neil Mayes

Tax schedule(APN) #: 5204005007
Final Inspection Date: 8.14.2019

Permit Type: New
Approved: Yes

Residential Property Information:

Owner: Mark Braun Address: 8290 Woodcrest Dr, Colorado Springs CO 80908 Approved No. Bedrooms: 4
Water supply: Well Well Installation verified: 8.14.2019 Well Location GPS: 39°02.168'N -104°40.389'W
Approval will be revoked if in the future any well is found to be within 50 feet of the septic tank and/or 100 feet of the soil treatment area.

Minimum System Requirements:

High Rock Content: N/A Soil (in-situ) Type: 2A LTAR (In-situ soil): 0.5 Limiting Layer: Groundwater: NONE Bedrock: 20"/25"
OWTS Tank: Capacity (gallons): 1250 OWTS Pump Tank: Capacity (gallons): 500
Soil Treatment Area (STA): Sq. Ft. (10-1): N/A Sq. Ft. (10-2): N/A Sq. Ft. (10-3): N/A Sq. Ft. (with Diverter Valve): N/A
NDDS (STA): Sq. Ft. (10-1): N/A NDDS Factor: N/A Sq. Ft. (NDDS adjustment): N/A
Mound (STA): LTAR (imported soil): 0.8 Chamber adjustment: $525(1.0)(0.7) = 367.5$ Distribution Area: 460 Basal Area: 735

Engineering:

Design Engineer: Geoquest, LLC Engineer design #: 18-0955
Date engineer record drawing/certification letter received: 9.25.2019
Tier II Licensed Installer: BM Plumbing

Final system installation:

Treatment Level: 1PD
Annual Operation and Maintenance Inspection: Required
OWTS Tank: GPS Location: 39°02.190'N -104°40.368'W
Tank Type: New Concrete Capacity (gallon): 1250
OWTS Pump Tank:
Tank Type: New concrete - single comp Capacity (gallon): 500 Audio/Visual Alarm: Yes
OWTS Pump: N/A
Gal/dose: 90 Flow(gpm): 33.9 Total Dynamic Head: 20.3'
Soil Treatment Area (STA): GPS Location: 39°02.198'N -104°40.363'W Total Sq. Ft installed: 480
Configuration: Bed Distribution: Pressured Distribution
Distribution Media: Chambers Infiltrative Surface Depth: mound
Distribution Area Length: 40' Distribution Area Width: 12'
Basal Area Length: 66' Basal Area Width: 39'
Media Type: Arc 36 Chambers (15 sq/ft) Total installed: 32 chambers

Notes:



19 August 2019

6825 Silver Ponds Heights #101
Colorado Springs, CO 80908
(719) 481-4560

El Paso County Health Department
1675 West Garden of the Gods Road
Colorado Springs, Colorado 80907

Re: Septic System Inspection, GQ #18-0955
Lot #42, Filing #2,
Ponderosa Pines Subdivision,
8290 Woodcrest Drive,
El Paso County, Colorado

Dear Sir or Madam,

We inspected the installation of the engineered septic system at the above address at several points during its construction as well as the finished product. It has been installed in accordance with our engineered plans and specification. This includes having the correct size septic tanks, the proper grade on all pipes and sections of the absorption field, the correct depth, size and configuration of the absorption field, and the backfill around and over the field.

The field should be seeded in the future to allow for vegetation growth next spring. Additional grading may be required in the future to repair any minor erosion areas until the grass seed takes hold. You should ensure that no vehicles are allowed to park on any portion of the system.

The system is ready for final certification from the El Paso County Health Department. **A Certificate of Occupancy (CO) will not be issued by PPRBD until El Paso County Health Department has received this letter and the Record Drawing.** Please call me if you have any questions.

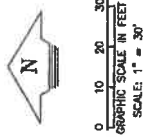
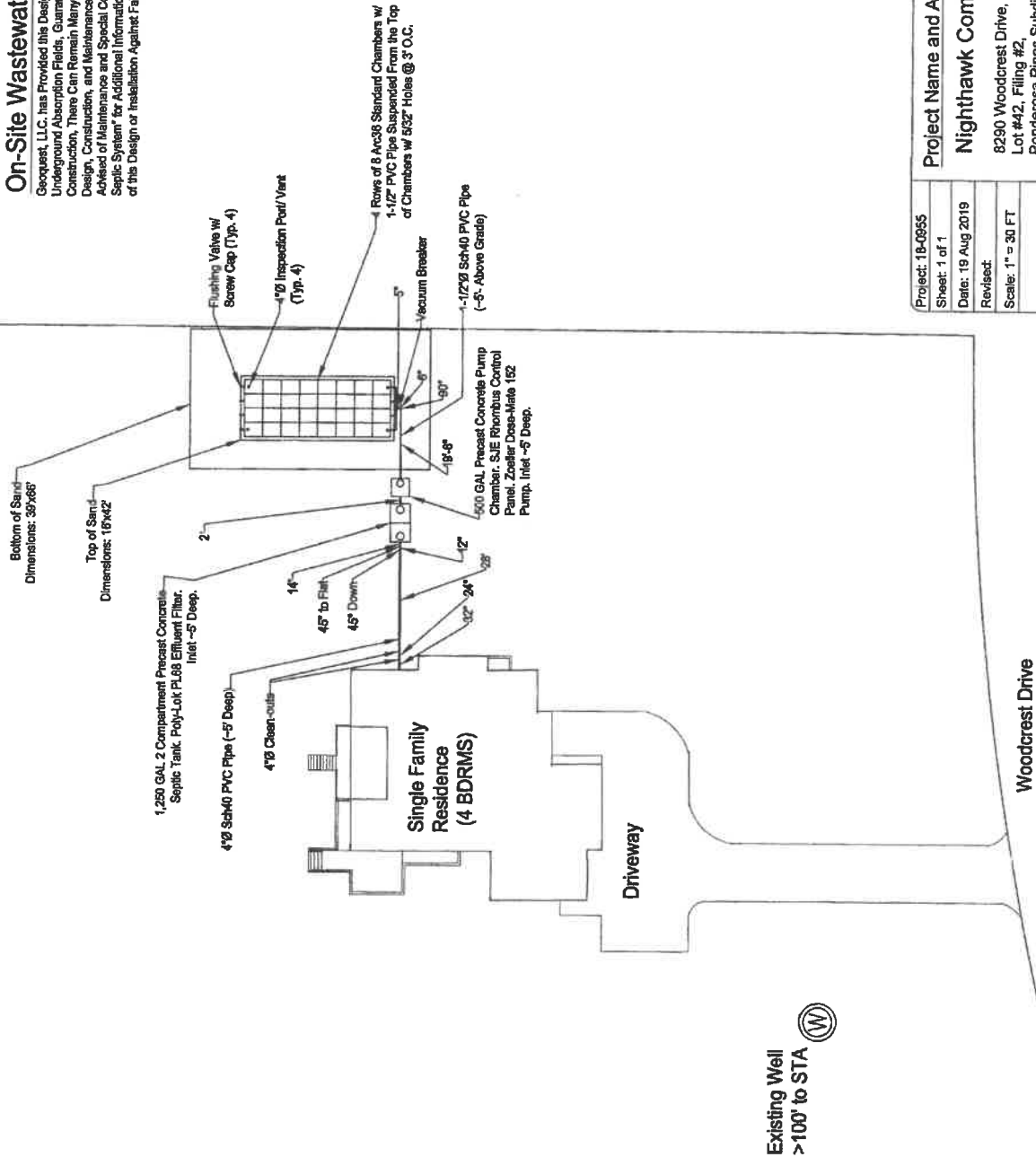
Sincerely,

Charles E. Milligan
Civil Engineer



On-Site Wastewater Treatment System (OWTS) Record Drawing

Geoquest, LLC has provided this design in accordance with the standards of practice common to the area. However, as with all underground absorption fields, guarantee from failure is impossible. Even with proper installation, as outlined for this proposed design, there can remain many uncertainties, and difficulties can still arise in the operation of the system in the future. Proper design, construction, and maintenance can assist in minimizing uncertainties, but cannot entirely eliminate them. Homeowners should be advised of maintenance and special considerations for septic systems. Refer to El Paso County Public Health Brochure: "Maintaining Your Septic System" for additional information. Due to the possibility of unknown water usage factors, Geoquest, LLC provides no warranty of this design or installation against failure or damage of any type.



OWTS Installer Information:
 Installed by: BM Plumbing Inc.
 Contact Info:
 Brian Pellegrin
 (719) 800-3442
 8812 Del Rio Road
 Peyton, CO 80831
 Install Inspection Performed on: 8/14/19
 Final Inspection Performed on: 8/16/19



GEOQUEST, LLC.
 6825 SILVER PONDS HEIGHTS
 SUITE 101
 COLORADO SPRINGS, CO
 80908
 OFFICE: (719) 481-4560
 FAX: (719) 481-9204

Project Name and Address
Nighthawk Companies
 8290 Woodcrest Drive,
 Lot #42, Filing #2,
 Ponderosa Pines Subdivision,
 El Paso County, Colorado

Project: 18-0955
 Sheet: 1 of 1
 Date: 19 Aug 2019
 Revised:
 Scale: 1" = 30 FT
 Drawn by: JIK
 Checked by: cam

Existing Well
 >100' to STA (W)

Attn: BRAUN MARK
8290 WOODCREST DR
COLORADO SPRINGS, CO 80908

Notify Environmental Health of any change of ownership, type of business activity, business name, or billing address by calling (719) 578-3199. Failure to notify Environmental Health may result in late penalties, Permit/License denial or revocation, and business closure. PERMITS/LICENSES TO OPERATE AND ANNUAL FEE PAYMENTS ARE NOT TRANSFERABLE. Permits become void on change of ownership. New owners must apply and pay for a new Permit(s)/License(s) prior to beginning operation.



**EL PASO COUNTY PUBLIC HEALTH
ENVIRONMENTAL HEALTH DIVISION**
1675 W. GARDEN OF THE GODS ROAD, SUITE 2044
COLORADO SPRINGS, CO 80907
PHONE: (719) 578-3199 FAX: (719) 578-3188
www.elpasocountyhealth.org

NEW SYSTEM PERMIT - OWTS

Valid From 1/30/2019 To 1/30/2020

PERMITEE :

BRAUN MARK
8290 WOODCREST DR
COLORADO SPRINGS, CO 80908

OWNER NAME :

BRAUN MARK

Onsite ID: ON0049915

Tax Schedule # : 5204005007

Permit Issue Date: 01/30/2019

Dwelling Type: RESIDENTIAL

of Bedrooms (if Res): 4

Proposed Use (if Comm):

Designed Gallons/Day:

Water Source: PRIVATE WELL

System Installation Requirements:

- An Engineered OWTS system to be installed on site due to encountering bedrock between 20 - 25", requiring a Tier II licensed installer.
- TIER II LICENSED INSTALLER MUST BE NAMED AND VERIFIED PRIOR TO FINAL APPROVAL OF SYSTEM.
- System installation to include pressure dosed chamber in an above grade bed configuration. Minimum tank requirements 1250 gallon and 460 sq ft of soil treatment area (39 Q4 / 31 Arc 36 chambers required). A minimum basal area of 735 sq ft (40 ft x 25 ft) is required.
- The system must be installed per approved Geoquest, LLC design document #18.0955 stamped and dated 1.14.2019, changes to the approved design document must be submitted and approved by Public Health prior to installation.
- All horizontal setbacks must be maintained through system installation. In addition system must remain completely uncovered, including the tank size, for final inspection.
- The well must be installed at time of final inspection, or final approval will not be given until well installation is verified.
- Engineered systems require the as built drawing and certification letter from the engineer be submitted to Public Health prior to final approval and Regional Building sign off
- Ensure that all work is completed prior to contacting and requesting final line for inspection, otherwise additional fees may be incurred.

Attn: BRAUN MARK
8290 WOODCREST DR
COLORADO SPRINGS, CO 80908

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www.elpasocountyhealth.org**

This permit is issued in accordance with 25-10-106 Colorado Revised Statutes. The PERMIT EXPIRES upon completion/installation of the Onsite Wastewater Treatment System, or at the end of twelve (12) months from date of issue, whichever occurs first. If both a Building Permit and an Onsite Wastewater Treatment System Permit are issued for the same property and construction has not commenced prior to the expiration date of the Building Permit, the Onsite Wastewater Permit shall expire at the same time as the Building Permit. This permit is revocable if all stated requirements are not met. The Onsite Wastewater Treatment System must be installed by an El Paso County Licensed System Contractor, or the property owner.

The Health Officer shall assume no responsibility in case of failure or inadequacy of an Onsite Wastewater Treatment System, beyond consulting in good faith with the property owner or representative. Access to the property shall be authorized at reasonable time for the purpose of making such inspections as are necessary to determine compliance with the requirements of this law (permit).

Inspection request line: Call (719) 575-8699 before 3:30 p.m. the business day prior to the requested inspection date.

Authorized By: Environmental Health Specialist

580010937 AR30014950 ON00549915

APPLICATION FOR AN ON-SITE WASTEWATER TREATMENT SYSTEM PERMIT**Property Information:**Property Address: 8590 WOODCREST DRIVE City and Zip: COLORADO SPRINGS 80906Legal Description: LOT 42 PONDEROSA PINES SUB 2Tax Schedule #: 5204005007 Lot size: 2.65 ACRESIs the property gated: ☐ Yes ☒ No Please provide a gate code if necessary: _____Site Located Inside City Limits: ☐ Yes ☒ No Proposed Use: ☒ Residential ☐ CommercialWater Supply: ☒ Well ☐ Cistern ☐ Municipal Potential Number of Bedrooms: 4Has a Conditional Acceptance Document been issued for this property: ☐ Yes ☒ No ☐ Unsure**Owner Information:** ☒ Primary ContactOwner: BRAUN MARK W Daytime Phone: 719-477-9460 (C/O NORTH HAWK DESIGN)Owners Mailing Address: 8115 FREEMAN DRIVEEmail Address: HAWKCOMPANIES@GMAIL.COM Fax #: _____General Contractor: BLACK OAK HOMES Phone/Email: 719-491-1227**OWTS Installer Information:** ☐ Primary ContactSystem Installer: THERON BENNETT Daytime Phone: _____Email Address: JILESTHERON@GMAIL.COM Licensed installer: ☒ Tier 1 ☐ Tier 2All engineer-design systems must be installed by a Tier 2 licensed installer**CURRENT FEES AS APPROVED BY THE EL PASO COUNTY BOARD OF HEALTH**

All payments are due at the time of application submittal; by cash, check or major credit card (Visa / MC)

☒ **New Permit:** \$750.00 (EPCPH Charge) + \$147.00 (EPC Planning Dept. Surcharge) + \$23.00 (CDPHE Surcharge) = \$920.00☐ **Major Repair Permit:** \$535.00 (EPCPH Charge) + \$23.00 (CDPHE Surcharge) = \$558.00☐ **Minor Repair Permit:** \$245.00 (EPCPH Charge) + \$23.00 (CDPHE Surcharge) = \$268.00

Permits expire one year from date of issuance, unless otherwise noted

REQUIRED: Provide a complete written scope of work to be performed on the property.NEW SINGLE FAMILY RESIDENCE
W/ ENGINEERED SEPTIC**The following documents MUST be included with your application.**

- A soils report: including at least 1 soil profile excavation pit, in accordance with section 8.5 A-F of OWTS regulations
- A clear and legible design document: including the proposed and alternate locations, as well as system layout, labeled with all setbacks to pertinent structures and features in table 7-1.
- Provide directions to property, from a main highway, on the back side of application.

Failure to provide the above listed documents may result in denial of the permit application

I certify that the information provided on this application is in compliance with Section 8.3, Chapter 8 of the On-site Wastewater System (OWS) Regulations of the El Paso County Board of Health. I also authorize the undersigned representative of El Paso County Public Health to enter onto this property in order to obtain information necessary for the issuance of a permit.

Applicant Signature: _____

Date: 07-15-19

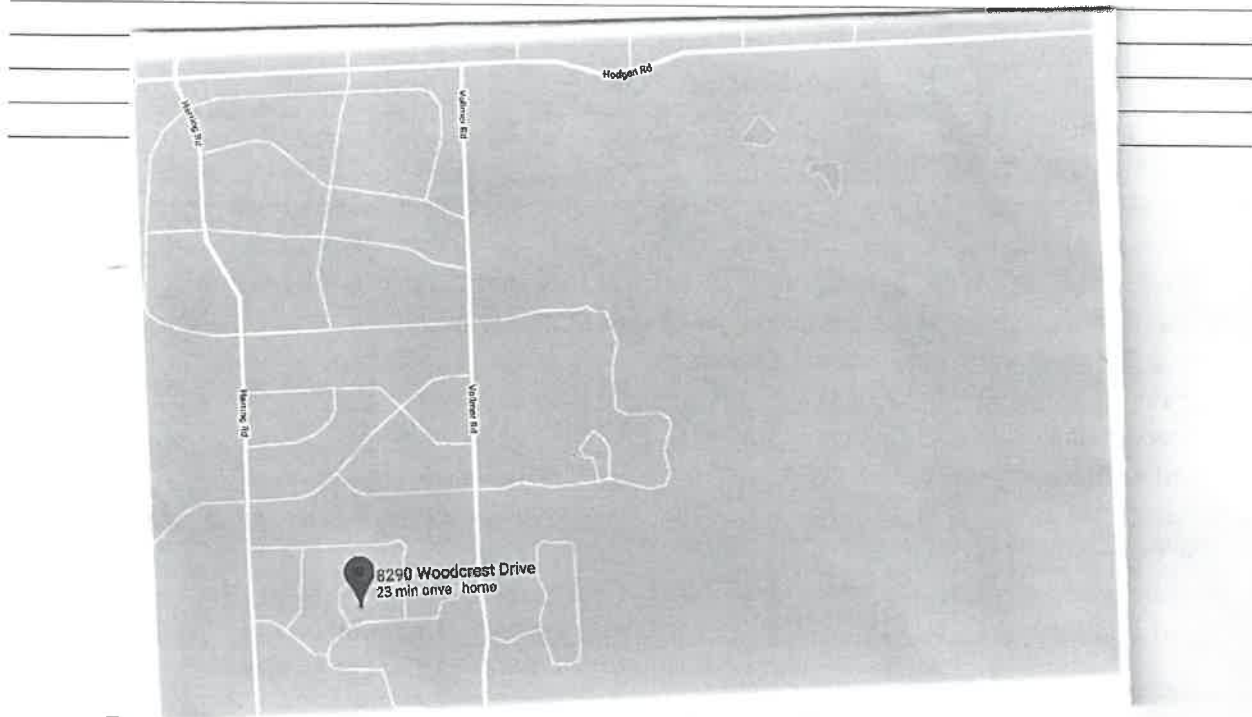
Reviewed 2018 approved fee (12/04/2017)

RODNEY B. WIEBE; NORTH HAWK DESIGN

A HAWK COMPANIES, INC. BUSINESS

Neil

- Property address or lot number must be clearly marked and visible from the road.
- Profile excavation test pit and/or soil profile holes must be clearly marked
- Proposed and alternate soil treatment areas must be protected from compaction and disturbance
- Locked gates require the gate code or lock combination be provided on front of application
- Please provide directions to the property from a main highway, by text or picture, below.



Fa

For more information may result in an additional charge for a return trip.

Permit #: _____ Site Inspection date: 1/24/19

Date Approvals Rcvd: Development Services: 1/16/19 Floodplain/enumerations: 1/18/19

Design: ☐ Conventional ☒ Engineer Design Engineer: Gequest, LLC

Engineer Job #: 16-0955 Engineer Date Stamped: 1/14/19

LTAR/Soil Type: 0.50/2A Groundwater: PP1/PP2 Bedrock: 20" PP1/25" PP2

Minimum Requirements: Tank Capacity: 1250 Soil Treatment Area: 460

System Feed: ☐ Gravity ☐ Pump to Gravity ☒ Pressure Dosed ☐ Other: _____

System Media: ☒ Chambers ☐ Rock and Pipe ☐ Other Soil Treatment Area: ☐ Trenches ☒ Bed

Additional Comments: Basal Area: 735 sq ft 1000 sq ft (40'x25')
Pump: 33.9 GPM TDH: 20.3 ft Dose: 90 gal

E.H. Specialist: Paul May Date: 1/30/19 ☒ Approved ☐ Denied



6825 Silver Ponds Heights #101
Colorado Springs, CO 80908
(719) 481-4560

PROFILE PIT EVALUATION
FOR
NIGHTHAWK COMPANIES, INC
JOB #18-0955

Lot #42, Filing #2,
Ponderosa Pines Subdivision,
8290 Woodcrest Drive,
El Paso County,
Colorado

Sincerely,



Charles E. Milligan, P.E.
Civil Engineer



PROFILE PIT FINDINGS

Enclosed are the results of the profile pit for the septic system to be installed at **Lot #42, Filing #2, Ponderosa Pines Subdivision, 8290 Woodcrest Drive, El Paso County, Colorado**. The location of the test pit was determined by Nighthawk Companies, Inc. The residence will not be on a public water system. The number of bedrooms in the design for the residence is unknown. Due to the natural slope of the property, the entire system will feed to the northeast at approximately 5% at least 20 feet. All applicable portions of the El Paso County Health Department Onsite Wastewater Treatment System Regulations (OWTS) must be complied with for the installation of the treatment system.

The inspection was performed on January 3, 2019, in accordance with Table 10-1 of the **E.P.C.P.H. OWTS Regulations**.

Soil Profile #1:

- 0 to 6"** - Topsoil - loam, organic composition.
- 6" to 20"** - USDA soil texture sandy loam, soil type 2A, structure shape granular, structure grade 1, non-cemented, LTAR 0.50, brown in color, 7.5 YR 5/4.
- 20" to 7'** - USDA soil texture sandy loam, soil type 2A, structure shape none, structure grade massive, moderately cemented, LTAR 0.50, light brown in color, 7.5 YR 6/3, sandstone.

Soil Profile #2:

- 0 to 6"** - Topsoil - loam, organic composition.
- 6" to 25"** - USDA soil texture sandy loam, soil type 2A, structure shape granular, structure grade 1, non-cemented, LTAR 0.50, brown in color, 7.5 YR 5/4.
- 25" to 5'** - USDA soil texture sandy loam, soil type 2A, structure shape none, structure grade massive, moderately cemented, LTAR 0.50, brown in color, 7.5 YR 5/3, sandstone.

Groundwater was not encountered during the inspection. Bedrock was encountered at the depth of 20 inches in Profile Pit #1 and 25 inches in Profile Pit #2 during the inspection. No known wells were observed within 100 feet of the proposed system. **All setbacks shall conform to county regulations.**

Due to encountering bedrock, the septic system to be installed on this site shall be designed by a Colorado Licensed Engineer. Based on the observed conditions, we feel a design based on an LTAR of 0.50, GPD/SF (USDA 2A, treatment soil, treatment level 1) is reasonable. An above grade uniformly pressure dosed soil treatment area is required.

If during construction of the field itself, subsurface conditions change considerably or if the location of the proposed field changes, this office shall be notified to determine whether the conditions are adequate for the system as designed or whether a new system needs to be designed.

Weather conditions at the time of the test consisted of partly cloudy skies with cool temperatures.

PROFILE PIT LOG - Profile Pit #1

JOB#: 18-0955
DATE EVALUATED: 03 Jan 2018
EQUIPMENT USED: MINI-EXCAVATOR

0'-6" TOPSOIL

Loam
Organic Composition

6"- 20" Sand

Fine-coarse Grained
Moderate Density
Low-moderate Moisture Content
Low-moderate Clay Content
Low Cohesion
Low Plasticity
Brown Color
7.5YR 5/4

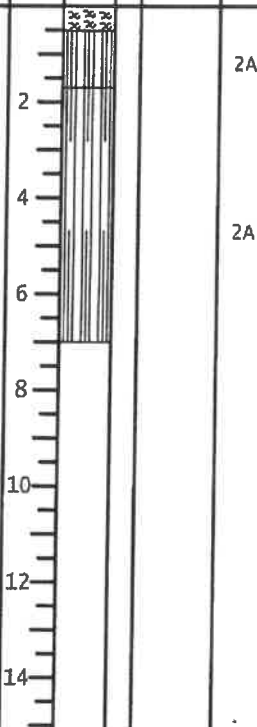
USDA Soil Texture: Sandy Loam
USDA Soil Type: 2A
USDA Structure Shape: Granular
USDA Structure Grade: 1
Cementation Class: Non-cemented
Long Term Acceptance Rate (LTAR, Treatment Level 1):0.50

20"- 7' Sandstone

Fine-coarse Grained
High Density
Low-moderate Moisture Content
Low Clay Content
Low Cohesion
Low Plasticity
Light Brown Color
7.5YR 6/3

USDA Soil Texture: Sandy Loam
USDA Soil Type: 2A
USDA Structure Shape: None
USDA Structure Grade: Massive
Cementation Class: Moderately
Long Term Acceptance Rate (LTAR, Treatment Level 1):0.50

DEPTH (in ft.)
SYMBOL
SAMPLES
WATER %
SOIL TYPE



LTAR to be Used for OWTS Sizing: 0.50GPD/SF (USDA Type 2A, Treatment soil, Treatment Level 1)
Depth to Groundwater (Permanent or Seasonal): Not Encountered
Depth to Bedrock and Type: Sandstone @ 20"
Depth to Proposed Infiltrative Surface from Ground Surface: Above Grade (Uniformly pressure dosed STA)
Soil Treatment Area Slope and Direction: NE @ 5%

Note: See El Paso County Board of Health Regulation Chapter 8: On-Site Wastewater Treatments Systems (OWTS) Regulations for Additional Information. Refer to Table 10-1 for Corresponding LTAR if Treatment Level 2, 2N, 3, or 3N will be Implemented in the Design of the OWTS. System Sizing Depends on a Number of Factors (i.e. LTAR, # of Bedrooms, Type of Soil Treatment Area (STA), Method of Transfer to the STA (Gravity, Dosed, or Pressure Dosed), and Type of Storage / Distribution Media Used in the STA)

Project: 18-0955

Sheet: 1 of 2

Date: 09 Jan 2019

Scale: 1/4" = 1'

Drawn by: mtj

Checked by: cem

Project Name and Address

NightHawk Design

8290 Woodcrest Dr
Lot 42, Filing 2
Ponderosa Pines
Sch. No. 5204005007
El Paso County, Colorado

GEOQUEST, LLC.

6825 SILVER PONDS HEIGHTS
SUITE 101
COLORADO SPRINGS, CO
80908

OFFICE: (719) 481-4560
FAX: (719) 481-9204

PROFILE PIT LOG - Profile Pit #2

JOB#: 18-0955
DATE EVALUATED: 03 Jan 2018
EQUIPMENT USED: MINI-EXCAVATOR

0"-6" TOPSOIL

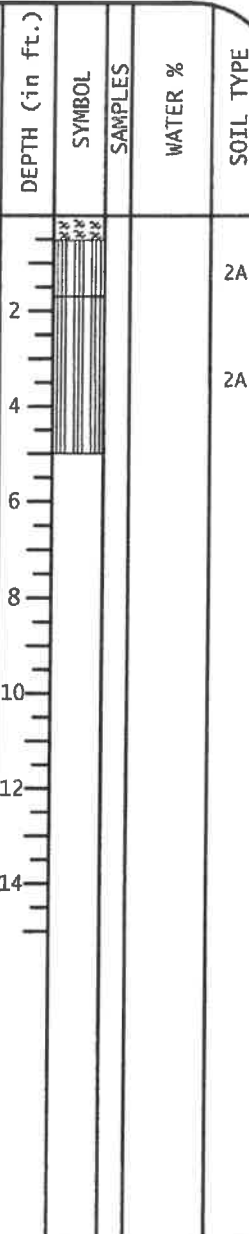
Loam
Organic Composition

6"- 25" Sand

Fine-coarse Grained	USDA Soil Texture: Sandy Loam
Moderate Density	USDA Soil Type: 2A
Low-moderate Moisture Content	USDA Structure Shape: Granular
Low-moderate Clay Content	USDA Structure Grade: 1
Low Cohesion	Cementation Class: Non-cemented
Low Plasticity	Long Term Acceptance Rate (LTAR, Treatment Level 1):0.50
Brown Color	
7.5YR 5/4	

25"- 5' Sandstone

Fine-coarse Grained	USDA Soil Texture: Sandy Loam
High Density	USDA Soil Type: 2A
Low-moderate Moisture Content	USDA Structure Shape: None
Low Clay Content	USDA Structure Grade: Massive
Low Cohesion	Cementation Class: Moderately
Low Plasticity	Long Term Acceptance Rate (LTAR, Treatment Level 1):0.50
Brown Color	
7.5YR 5/3	



LTAR to be Used for OWTS Sizing: **0.50GPD/SF (USDA Type 2A, Treatment soil, Treatment Level 1)**
Depth to Groundwater (Permanent or Seasonal): Not Encountered
Depth to Bedrock and Type: Sandstone @ 25"
Depth to Proposed Infiltrative Surface from Ground Surface: Above Grade (Uniformly pressure dosed STA)
Soil Treatment Area Slope and Direction: NE @ 5%

Note: See El Paso County Board of Health Regulation Chapter 8: On-Site Wastewater Treatments Systems (OWTS) Regulations for Additional Information. Refer to Table 10-1 for Corresponding LTAR if Treatment Level 2, 2N, 3, or 3N will be Implemented in the Design of the OWTS. System Sizing Depends on a Number of Factors (i.e. LTAR, # of Bedrooms, Type of Soil Treatment Area (STA), Method of Transfer to the STA (Gravity, Dosed, or Pressure Dosed), and Type of Storage / Distribution Media Used in the STA)

Project: 18-0955

Sheet: 2 of 2

Date: 09 Jan 2019

Scale: 1/4" = 1'

Drawn by: mtj

Checked by: cem

Project Name and Address

Nighthawk Design

8290 Woodcrest Dr
Lot 42, Filing 2
Ponderosa Pines
Sch. No. 5204005007
El Paso County, Colorado

GEOQUEST, LLC.

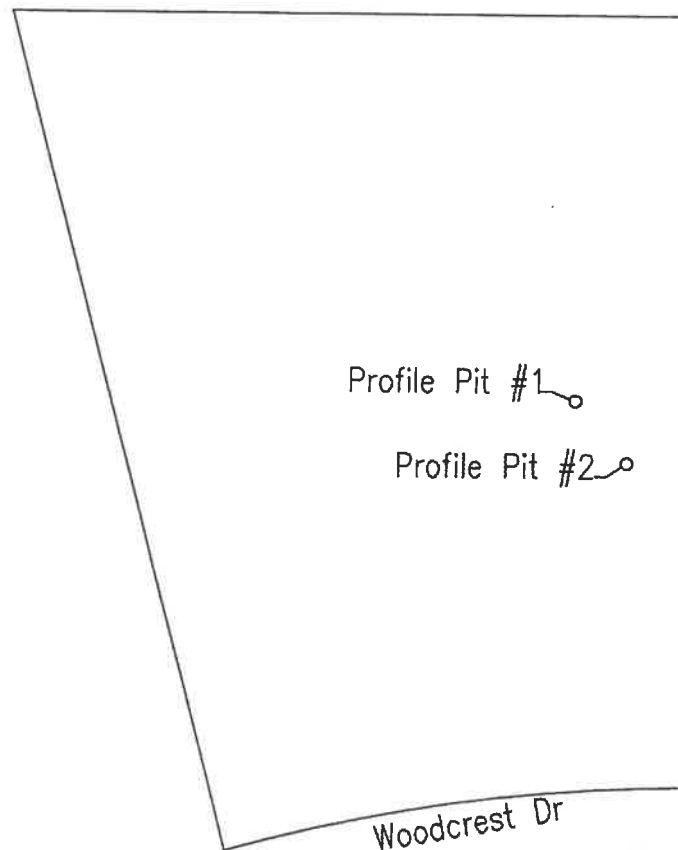
6825 SILVER PONDS HEIGHTS
SUITE 101
COLORADO SPRINGS, CO
80908

OFFICE: (719) 481-4560
FAX: (719) 481-9204

GEOQUEST LLC

SITE MAP

Lot 42, Filing 2
Ponderosa Pines
8290 Woodcrest Dr
El Paso County,
Colorado
Job #18-0955



Location from Southeast Lot Corner to Profile Pit #1:

N. 17° W. - 206'

Location from Profile Pit #1 to Profile Pit #2:

S. 39° E. - 41'

GPS Coordinates:

Pit 1; N. 39° 02' 11.65" W. 104° 40' 21.96"

Pit 2; N. 39° 02' 11.34" W. 104° 40' 21.63"



0 25 50 75 100
GRAPHIC SCALE IN FEET
SCALE: 1" = 100'

CALCULATIONS (New OWTS):

Proposed Single Family Residence with 4 Bedrooms

LTAR = 0.80 GPD/SF - Imported "Secondary" Sand Media

LTAR = 0.50 GPD/SF - USDA Soil Type 2A (TL1).

Linear Loading Rate = 9 GPD/LF - USDA Soil Type 2A

Bedrock Encountered at 20" Below Existing Grade.

Q = (3 BDRM)(150 GPD) + (1 BDRM)(75 GPD)

Q = 525.0 Gallons per Day (GPD)

Adjustment Factor for Chambers = 0.7

Q = (525.0)(1.0)(0.7) = 367.5 GPD

A = Q / LTAR = 367.5 GPD / 0.80 GPD/SF = 459.4 SF - Distribution Area

A = Q / LTAR = 367.5 GPD / 0.50 GPD/SF = 735.0 SF - Basal Area

Distribution Area: Chamber Bed System (Uniformly Pressure Dosed):

A (Min) = 459.4 SF

Infiltrator Systems Inc. Quick 4 Plus Low Profile Chambers

Chambers = SF RQD / 12.0 SF per Chamber

Chambers = 459.4 SF / 12.0 SF = Min. 39 Chambers

Install 1 Zone: 4 Rows x 10 Chambers Long

Chambers Provided = 40 Total

Total Contact Area Actual = 480.0 SF

Total Contact Area Required = 459.4 SF

Note: Use of Alternative Chambers is Acceptable.

For ARC 36 Low-Profile Chambers (15.0 SF / Chamber). Install 1 Zone with 4 Rows of 8 Chambers (32 Total). 480.0 SF Provided. Contact Engineer for Clarification.

Basal Area: Sand Media

A (Min) = 735.0 SF

Distribution Length = 40 FT

Distribution Width = 12 FT

Downslope Width = 13 FT

Upslope Width = 8 FT

End Slope Length = 10 FT

Top of Sand Length = 42 FT

Top of Sand Width = 14 FT

Bottom of Sand Length = 62 FT

Bottom of Sand Width = 35 FT

Treatment Length = 40 FT (Length of Distribution)

Treatment Width = 25 FT (Width of Distribution + Downslope)

A (Actual) = (Length) X (Width) - Treatment Dimensions

A (Actual) = (40 FT) X (25 FT)

A (Actual) = 1,000.0 SF

Tank Sizes:

Main Tank Size = Min. 1,250 Gallons (Two-Compartment)

Pump Chamber = Min. 500 Gallons (One-Compartment)

INSPECTIONS REQUIRED ARE AS FOLLOWS:

- 1.) Engineer to Inspect Excavation Prior to Placement of Approved Sand Fill.
- 2.) Engineer Will Inspect the Installation of All OWTS Components (i.e. All Plumbing, Tanks, Pump Chamber, STA, etc.) Prior to Backfill.
- 3.) Engineer to Inspect the Soil Treatment Area After Backfill to Insure Min. Cover and Proper Drainage Away from Soil Treatment Area. Please Notify this Office Min. 24 Hours Prior to Inspection.

IMPORTED SAND SPECIFICATION (See Page 3 and 4):

Sand for Soil Treatment Area Absorption Bed to be Imported

"Preferred" Sand Media:

Effective Size (D10) = 0.25-0.60 mm

Coefficient of Uniformity, Cu (D60/D10) ≤ 4.0

Note: 100% Passing #4 Sieve

Less Than 3% Passing #200 Sieve

"Secondary" Sand Media:

Effective Size (D10) = 0.15-0.60 mm

Coefficient of Uniformity, Cu (D60/D10) ≤ 7.0

Note: 100% Passing #4 Sieve

Less Than 3% Passing #200 Sieve

Note: ASTM C-33 w/ Less Than 3% Fines Generally Meets "Secondary" Sand Media Requirements. Gradation Curve of the Sand Media Used MUST be Provided to Engineer Prior to to Installation. Gradation Must be Dated No More Than One Month Prior to Installation Date.

HOMEOWNER RESPONSIBILITY:

- Maintain Active Service Contract w/ Licensed Operation & Maintenance Contractor per EPCHD Regulations
- Have OWTS Inspected Annually (Service Contract)
 - Clean Effluent Filter
 - Flush Laterals
 - Function Test Valve Assemblies
 - Check Water Levels in Inspection Ports
- Have Septic Tank Pump Every 3-5 Years (or As Needed, Contact Licensed Pumper)
- Plant Native Grass Over STA (No Plants with Roots or that Require Irrigation)
- Don't Pour Chemicals Down Drain
- Don't Throw Trash in Toilet (Minimize Toilet Paper Consumption)
- Use of Garbage Disposal is Discouraged
- Conserve Water and Repair Leaking Fixtures

This is NOT a Complete List (Contact Local Health Department and EPA List of Septic "Do's and Don'ts")

GENERAL NOTES:

All Work per El Paso County Board of Health Regulations Chapter 8: On-Site Wastewater Treatment Systems (OWTS) Criteria.

All Setbacks Shall Conform to El Paso County Regulations (See Table 7-1 in the Regulations for Additional Information). Contractor/Homeowner Must Verify All Setbacks and Obtain Utility Clearances Prior to Construction.

Contractor/Homeowner is Responsible for Permit. Contractor/Homeowner Must Obtain Approval of Engineered OWTS from the El Paso County Health Department.

All Bends Limited to 45 Degree Ells or Long Sweep Quarter Bends. Areas Under Driveways Shall Be Protected as Per El Paso County Health Department Regulations.

Building Sewer Clean-Outs Shall Be Installed within 5 FT of the Structure and at Intervals Not to Exceed 100 FT in Straight Runs, Upstream at Each Change of Direction Greater Than 45°, and at Any Combination of Bends Greater Than 45° within a 40 FT Section of Building Sewer.

Grade Surrounding Area to Drain Away from the Soil Treatment Area (STA).

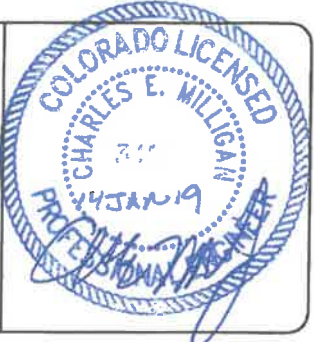
Paving, Planting of Trees/Shrubs, Irrigation, Vehicular Traffic or Hoofed Animal Traffic of Any Kind Over the STA may Cause Premature Failure and is Prohibited.

Refer to Sheet 2, 3, 4, and 5 for Additional Details and Information.

GEOQUEST, LLC.

6825 SILVER PONDS HEIGHTS
SUITE 101
COLORADO SPRINGS, CO
80908

OFFICE: (719) 481-4560
FAX: (719) 481-9204



Project: 18-0955

Sheet: 1 of 5

Date: 14 Jan 2019

Revised:

Drawn by: djp

Checked by: cem

Project Name and Address

NightHawk Companies
8290 Woodcrest Drive,
Lot #42, Filing #2,
Ponderosa Pines Subdivision,
Sch. No. 5204005007
El Paso County, Colorado

Geoquest, LLC. has Provided this Design in Accordance with the Standards of Practice Common to the Area. However, as with All Underground Absorption Fields, Guarantee from Failure is Impossible. Even with Proper Installation, as Outlined for this Proposed Construction, There Can Remain Many Uncertainties, and Difficulties Can Still Arise in the Operation of the System in the Future. Proper Design, Construction, and Maintenance can Assist in Minimizing Uncertainties, but Cannot Entirely Eliminate Them. Homeowners Should be Advised of Maintenance and Special Considerations for Septic Systems. Refer to El Paso County Public Health Brochure: "Maintaining Your Septic System" for Additional Information. Due to the Possibility of Unknown Water Usage Factors, Geoquest, LLC. Provides No Warranty of this Design or Installation Against Failure or Damage of Any Type.

Distribution Area: Chamber Bed System (Uniformly Pressure Dosed):

A (Min) = 459.4 SF

Infiltrator Systems Inc. Quick 4 Plus Low Profile Chambers

Chambers = SF RQD / 12.0 SF per Chamber

Chambers = 459.4 SF / 12.0 SF = Min. 39 Chambers

Install 1 Zone: 4 Rows x 10 Chambers Long

Chambers Provided = 40 Total

Total Contact Area Actual = 480.0 SF

Total Contact Area Required = 459.4 SF

Note: Use of Alternative Chambers is Acceptable.

For ARC 36 Low-Profile Chambers (15.0 SF / Chamber). Install 1 Zone with 4 Rows of 8 Chambers (32 Total). 480.0 SF Provided. Contact Engineer for Clarification.

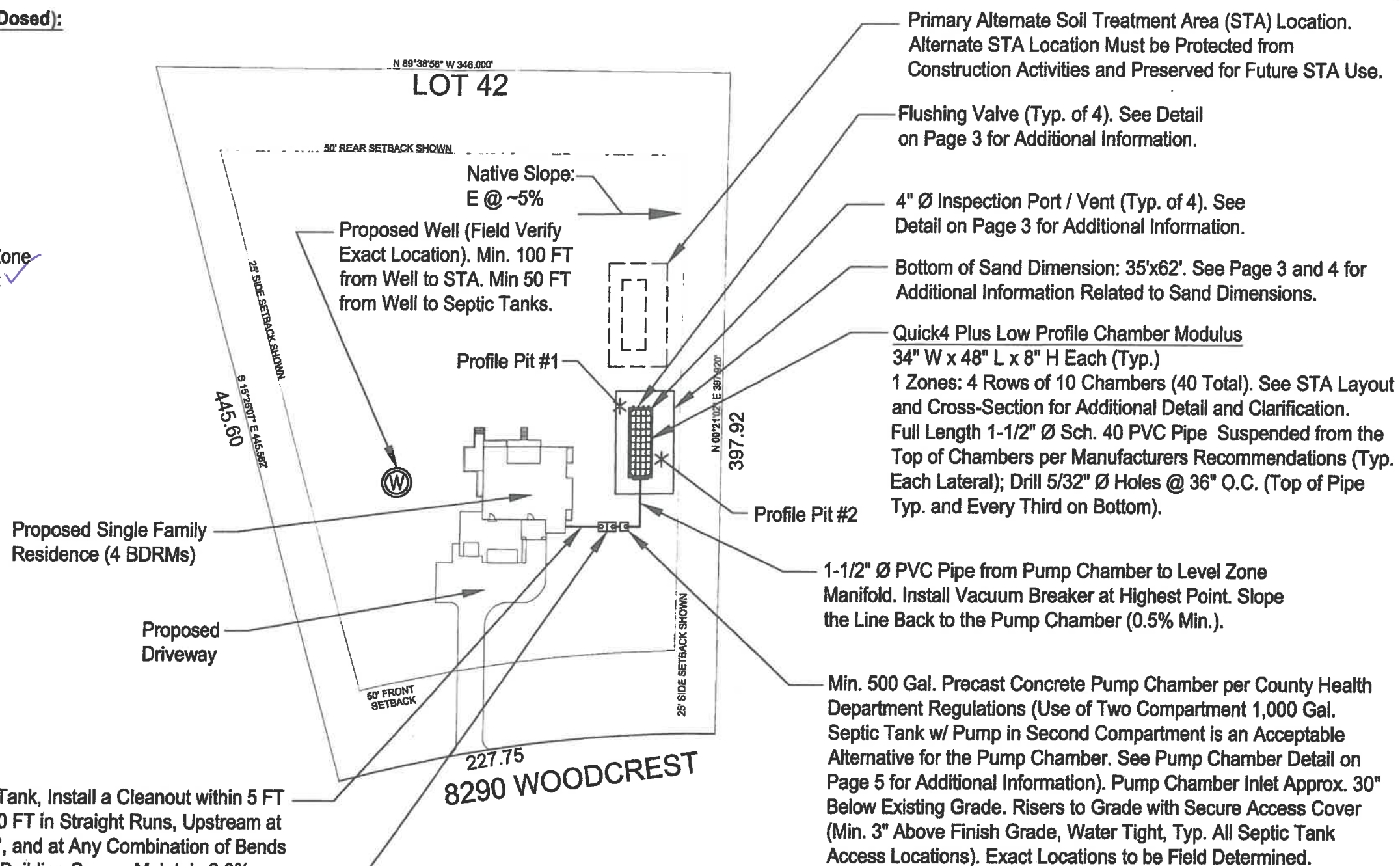
Minor Rotation or Curvature (ie. Less Than 15°) of the Soil Treatment Area (STA) Beds to Best Fit the Site Topography is Acceptable (i.e. Parallel to Site Contours). STA shall Maintain the Approximate Orientation Shown w/ Respect to Buildings and Lot Lines. Contact Engineer for Clarification.

Install Drainage Swale on All Uphill Sides to Ensure Surface Runoff is Diverted Around the STA. Downspouts near the STA Shall Discharge into the Swale or Extended Beyond the STA.

OWTS to be Roped Off (Caution Tape or Temporary Construction Fencing is Acceptable) Prior To and During Construction to Prevent Construction Traffic from Compacting Surface Soils and Protect the STA from Traffic After Installation. Construction Traffic Over the Proposed STA Will Render this Design Void.

4" Ø PVC Solid Pipe from House to Septic Tank, Install a Cleanout within 5 FT of House and at Intervals Not to Exceed 100 FT in Straight Runs, Upstream at Each Change of Direction Greater Than 45°, and at Any Combination of Bends Greater Than 45° within a 40 FT Section of Building Sewer. Maintain 2.0% Min. Grade on Pipe Feeding the Septic Tank. Exact Location of the Discharge Line from the House per Plumbing Design by Others.

Min. 1,250 Gal. Precast Concrete Two Compartment Septic Tank w/ EPCPH Approved Effluent Filter (Requires Regular Maintenance) on Outlet. Main Tank Inlet Approx. 24" Below Existing Grade. Risers to Grade with Secure Access Cover (Min. 3" Above Finish Grade, Water Tight, Typ. All Septic Tank Access Locations). Exact Locations to be Field Determined.



*Indicates Geoquest, LLC. Profile Pit Test Locations

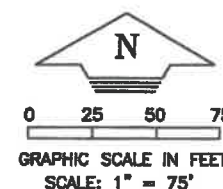
Location from Southeast Lot Corner to Profile Pit #1: N. 17° W. - 206'

Location from Profile Pit #1 to Profile Pit #2: S. 39° E. - 41'

GPS Coordinates Profile Pit #1: N. 39° 02' 11.65" , W. 104° 40' 21.96"

GPS Coordinates Profile Pit #2: N. 39° 02' 11.34" , W. 104° 40' 21.63"

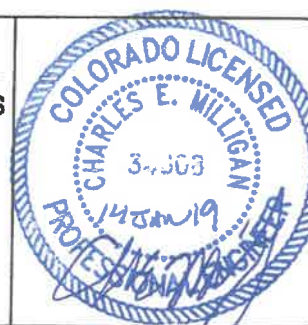
Site Plan



GEOQUEST, LLC.

6825 SILVER PONDS HEIGHTS
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Project: 18-0955

Sheet: 2 of 5

Date: 14 Jan 2019

Revised:

Drawn by: djp

Checked by: cem

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All Measurement are Horizontal. Not Measured Parallel to the Slope.

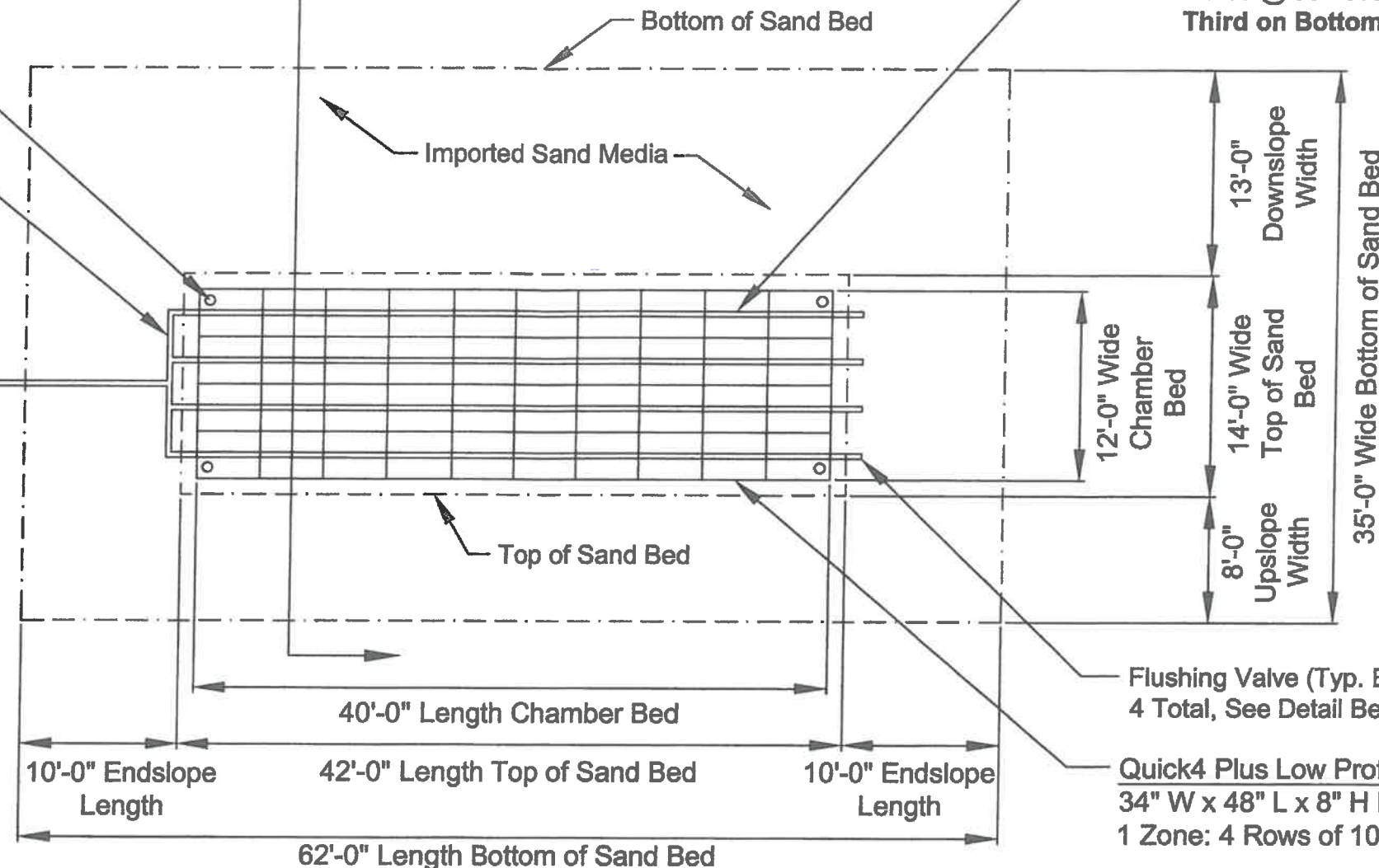
See STA Cross-Section Detail on Page 4 for Additional Information and Clarification.

Full Length 1-1/2" Ø Sch. 40 PVC Pipe (Typ. Each Lateral); Suspend from Top of Chamber per Manufacturers Recommendations; Drill 5/32" Ø Holes @ 36" O.C. (Top of Pipe Typ. and Every Third on Bottom)

Inspection Port / Vent (See Detail Below). Each Corner of Bed (Typ. of 4).

1-1/2" Ø Sch. 40 PVC Level Zone Manifold.

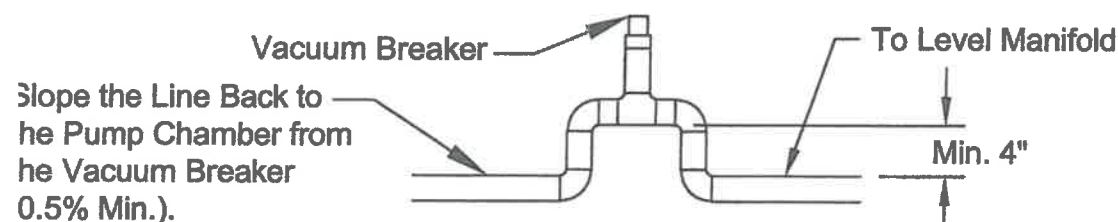
1-1/2" Ø Sch. 40 PVC Pipe from Pump Chamber to Middle of Level Manifold. Install Vacuum Breaker at Highest Point. Slope the Line Back to the Pump Chamber from Vacuum Breaker (0.5% Min.).



Native STA Slope:
E @ ~5%

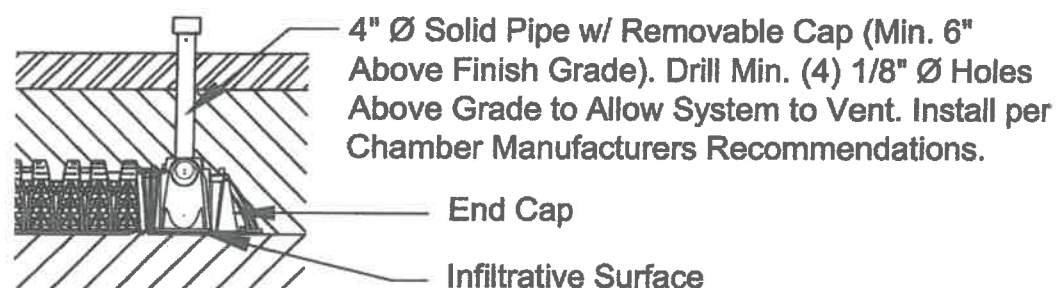
Flushing Valve (Typ. Each Lateral, 4 Total, See Detail Below)

Quick4 Plus Low Profile Chambers Modules:
34" W x 48" L x 8" H Each (Typ.)
1 Zone: 4 Rows of 10 Chambers (40 Total)



Vacuum Breaker Detail

Not to Scale

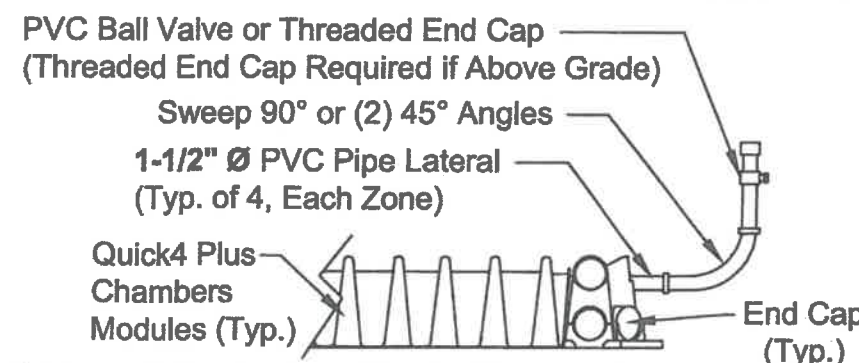


Inspection Port / Vent Detail

Not to Scale

Soil Treatment Area (STA) Layout (Uniformly Pressure Dosed Chamber Beds)

SCALE: 1" = 10'



Min. 6" Above Finish Grade or May be Placed in Small Valve Box if Desired. This Will Provide Access to Flush Each Lateral, Allowing for Removal of the Build-Up of Organics (System Maintenance).

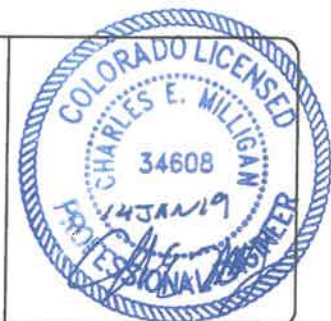
Flushing Valve Detail

Not to Scale

GEOQUEST, LLC.

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Project: 18-0955

Sheet: 3 of 5

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Provide Min. 12" (36" Max.) Cover Over Top of Chambers with Min. 6" Topsoil. Install a Continuous Crowned Slope Over All Chamber Beds to Prevent Ponding of Precipitation. Mound to Extend 12" Past Edge of Chamber Before Sloping Down.

Plant w/ Native Grasses and Maintain (See Notes)

Native STA Slope:
E @ ~5%

Approx. 36" Imported Sand Media (As Measured on the Downhill Side of Sand Bed). Sand Thickness As Necessary to Maintain Sand Depth on Uphill Side.

Bedrock at 20" Below Existing Grade.

Mow Any Native Grasses and Remove All Trees in the Soil Treatment Area (Ground Stumps). Do Not Remove Topsoil.
Scarify Existing Ground Surface (Prior to Placing Imported Sand)

Imported Clean Well Graded Sand Fill per Sand Specifications on Page 1. **Min. 16" Thick As Measured on the Uphill Side of the Bed** and ~ 36" Thick As Measured on the Downhill Side. As Necessary to Scarify Topsoil and Maintain Min. 36" from Chambers to Bedrock at 20" Below Existing Grade. Sand Dimensions per Above and Sheet 3.

35'-0" Wide Bottom of Sand Bed

13'-0" Downslope Width

14'-0" Wide Top of Sand Bed

8'-0" Upslope Width

Install Positive Drainage Swale on All Uphill Sides of the STA to Divert Surface Runoff Around STA (Min. 2% Grade).

Min. 16" Imported Sand Media (As Measured on the Uphill Side of Sand Bed). Sand Media per County Spec on Page 1.

Quick4 Plus Low Profile Chambers Modules:
34" W x 48" L x 8" H Each (Typ.)
1 Zone: 4 Rows of 10 Chambers (40 Total)

Full Length 1-1/2" Ø Sch. 40 PVC Pipe (Typ. Each Lateral); Suspend from Top of Chamber per Manufacturers Recommendations; **Drill 5/32" Ø Holes @ 36" O.C. (Top of Pipe Typ. and Every Third on Bottom).** See STA Layout for Additional Information.

Soil Treatment Area (STA) Cross Section (Uniformly Pressure Dosed Chamber Beds)

Not to Scale

NOTES:

All Work per El Paso County Board of Health Regulations Chapter 8: On-Site Wastewater Treatment Systems (OWTS) Criteria.

Contact Soil Conservation Service or County Extension Agent for Vegetation Best Suited for the Area. Grasses are Best. Trees and Shrubs May Damage/Block Pipes. Vegetation Shall Be Maintained and Mowed to Prevent Formation of Bio-Matting. Do Not Pave Over the Soil Treatment Area.

Topsoil (Min. 6" on Final Cover). Native Topsoil (Approx. 6", Remove from STA and Stockpile for Re-Use on Final Cover)

Approved Granular Material to Provide Cover (Min. 12", Max. 36" Total, Including Topsoil)

Native Soil - Sandy Loam (USDA 2A, Approx. 6" - 20" Below Existing Grade)

Bedrock - Sandy Loam (USDA 2A, Approx. 20" - 7'-0" Below Existing Grade)

Imported Clean Well Graded Sand Fill Under Chamber Bed per EPCHD Specifications Page 1 (**Min. 16"**) As Necessary to Maintain Min. 36" to Bedrock at 20" Below Grade.

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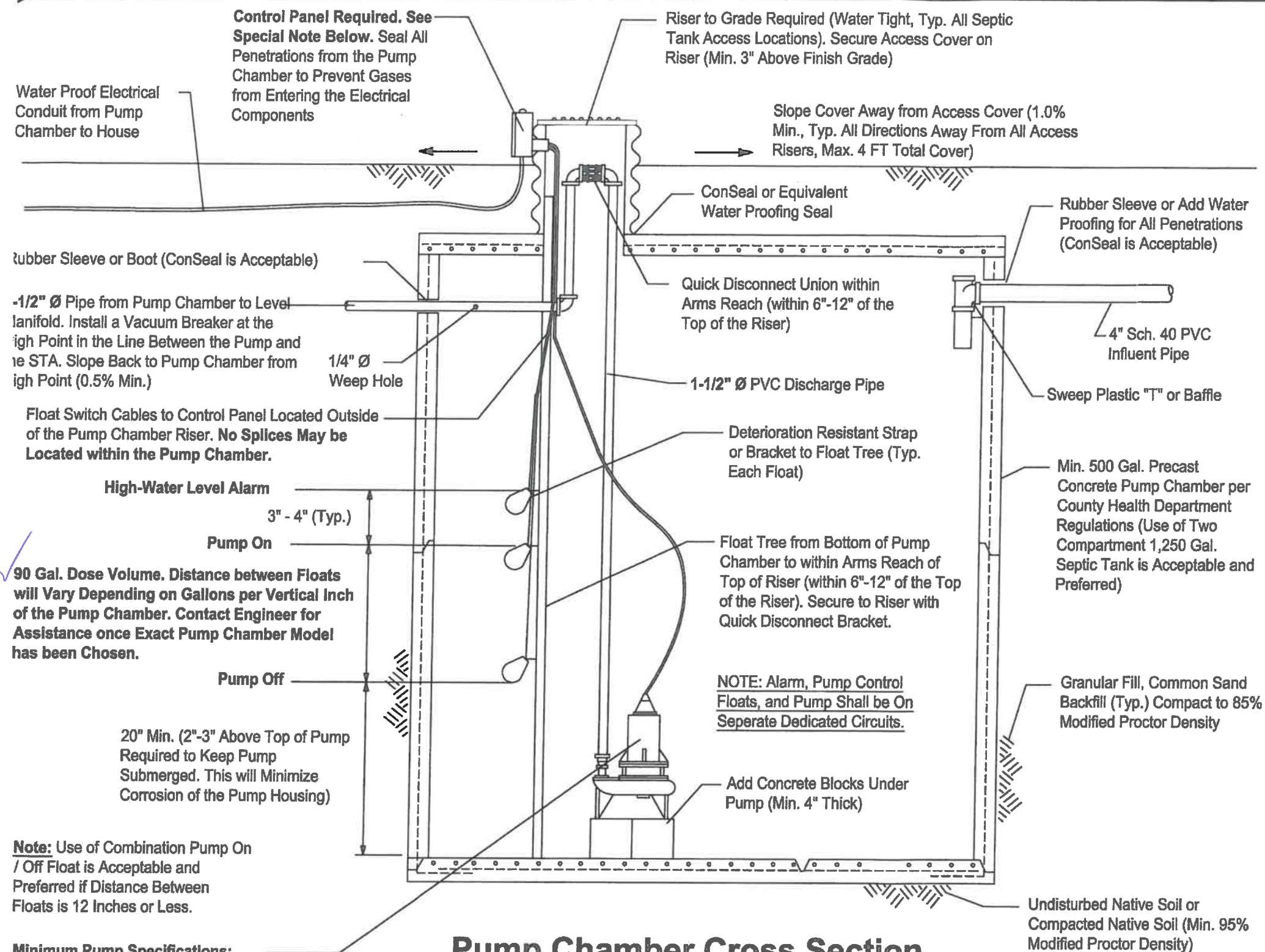
Revised:

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El Paso County, Colorado



Pump Chamber Cross Section

Not to Scale

Special Note: Per El Paso County Board of Health Regulations Chapter 8: On-Site Wastewater Treatment Systems (OWTS) Criteria, the Pump System Shall have a Mechanism for Tracking Both the Amount of Time the Pump Runs (Pump Run Counter) and the Number of Cycles the Pump Operates (Event Counter). A Manual Pump Run Switch is Required. A Control Panel is the Most Common Device to Fulfill these Requirements (as well as the Alarm System).

We Recommend the use of the Orenco MVP, Aquaworkx IPC, SJE-Rhombus or Approved Equivalent Control Panel Equipped with a Manual Pump Run Switch, Pump Run Counter, and Event Counter. Engineer to Approve Prior to Installation.

Electrical Code Requirements: All Electrical Work, Equipment, and Material Shall Comply with the Requirements of the Currently Applicable National Electrical Code as Designated by the State Electrical Board Rules and Regulations (3 CCR 710-1) on the Date of the Permit. The Electrical Installer Shall Contact the Electrical Inspector for the Location where the OWTS is Constructed. All Electrical Components Shall be Protected from Moisture and Corrosive Gases. Special Care Shall be Taken to Ensure the Electrical Requirements of Each Component Meet Manufacturer Specifications (i.e. Voltage and Amperage).

1. All Wire Splices Shall be Enclosed in the Control Panel. The Control Panel Shall be Placed in an Accessible Location Positioned Outside of the Tank Riser.
2. All Wires Shall be Spliced with Corrosion-Resistant, Watertight Connectors.
NO WIRE SPLICES ARE ALLOWED WITHIN THE PUMP CHAMBER OR RISER.
3. Conduits Shall be Sealed to Prevent Gases from Entering the Control Panel and Electrical panel.
4. A Means to Disconnect the House Power Supply to OWTS Components Shall be Provided at the Control Panel.
5. The Branch Circuit Wire from the Building to the Control Panel Shall be a Minimum of 24" Below the Ground Surface. Lines Buried Less than 24" are Allowed, but Will be Required to be in Conduit or have Ground Fault Protection on the Circuit. Conduit from the Control Panel to the House is Strongly Recommended for All Wiring.
6. Conduit Risers for Physical Protection Must Extend Min. 18" Below Finish Grade.

Best Practices Guidelines: The Following "Best Practices" are Intended to Facilitate Maintenance and Servicing of the Electrical Components Associated with Lift Stations, Dosing Systems, and Treatment Units that are Part of an OWTS.

1. The "Quick Disconnect" for the Pump Discharge pipe (i.e. Union) Shall be Located within 6"-12" of the Top of the Riser(s). Electrical Lines at the Septic Tank, Dosing Tank, or Treatment Unit Must be Placed in such a Manner as to Protect them from Damage During Backfill. Conduit from the Control Panel to the House is Strongly Recommended for All Wiring.
2. The Floats Shall be Secured to a Separate Float Tree with Approved Connecting Straps or Brackets that will Remain Secure Underwater and Not Deteriorate. Electrical Tape is Not Acceptable. Top of Float Tree to be within 6" - 12" of the Top of the Riser.
3. The Risers Shall be Secured to the Tank to Maintain the Riser in an Upright and Plumb Position. Special Care Shall be Taken During Backfill to Ensure Riser Maintains Upright and Plumb Position.
4. Control Panel Shall be Placed within "Line of Sight" of the Pump.
5. The Alarm, Pump Control Floats, and Pump Shall be Placed on a Separate Dedicated Circuits

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Project Name and Address

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El Paso County, Colorado

Minimum Pump Specifications:
Pump: Use Zoeller "Dose-Mate" 152, Orenco PF3005, or Approved Equivalent Effluent Pump Prior to Installation (May be Revised Once System has Been Plumbed and Exact Site Conditions are Verified)
Design Flow Rate = Min. 33.9 GPM
Total Dynamic Head (TDH) = Approx. 20.3 FT
Operating (Residual) Head = 4 FT
Dose Volume = 90 Gallon