

APR 10 2006 PM 1:45

ON-SITE WASTEWATER TREATMENT SYSTEM APPLICATION & PERMIT TO CONSTRUCT

Gallatin City-County Health Department, Environmental Health Services
311 West Main, Bozeman, MT 59715 (406) 582-3120

Please see
important information
on the back.

PRINT/TYPE in black or blue ink. Please press firmly. See fee schedule.

Purpose of Application: New ☒ Upgrade/Expansion ☐ Replacement ☐ Failed Yes No (old permit # ☐)
(Check all that apply) Individual/Shared ☒ Multiple-User (3-14 connections) ☐ Public ☐ Commercial ☐

Current Property Owner: Kurt Thompson Phone: 539-8605

Mailing Address: 6 Candlelight

City/Zip: Bozeman 59730

Applicant/Authorized Agent: Kurt Thompson Phone:

Mailing Address: 6 Candlelight

City/Zip: Bozeman 59730

Address of Site: 31 Candlelight Dr. Bozeman Certificate of Survey No.:

[An Authorized Road Address may be obtained by contacting the Gallatin County GIS Department at (406) 582-3049]

Is the Certificate of Subdivision Approval Statement recorded in Clerk & Records? ☒ Yes No EQ #:

Subdivision: Wily Creek Ph 3 Sub Approval Date (mm/yyyy): 10/2004

Lot/Tract/Parcel: 157 Block Section 29 Township 1S Range 5E Size of Parcel: .5 acres

Type of Structure(s) proposed: Single Family Dwelling ☒ Other ☐ (please describe)

Unfinished Basement: Yes ☐ No ☒ Total # of Bedrooms Proposed (+1 for unfinished basement): 4

(An unfinished basement must be considered as an additional bedroom.)

OR gpd to be produced:

Number & type of structures allowed: 1 SFD

Water Supply: Individual Well ☐ Public ☐ Multi-User ☒ Confirmation #

I (We) hereby certify under penalty of perjury that I (we) am the legal owner(s) of the above real property or an authorized agent thereof and that the information above is true, complete, accurate and correct to the best of my (our) knowledge. I (We) further certify that the wastewater treatment system will be installed according to state and local regulations for Wastewater Treatment Systems and any permit conditions.

I have read the information on the back of this application. KLT (Initial)

Date: 4-10-06 Signature: [Signature]

The following section is to be completed by the Health Department only

PERMIT TO CONSTRUCT

Minimum Requirements (based on # of bedrooms/GPD proposed):

A permit to construct is valid for 24 months (unless otherwise noted). The system must be installed and an inspection scheduled with GCCHD.

Type of System Required Standard Pressure Distribution Maximum Trench Depth 18"

Concrete Septic Tank: 1500 gallons Pump Tank/Chamber: 1000 gallons

Absorption Area (Square Feet): Gravel & Pipe NA Gravelless 525

CERTIFICATION AND AS-BUILT OF INSTALLED SYSTEM WILL BE REQUIRED FOR FINAL APPROVAL

Certification required by: ☐ Professional Engineer ☐ Registered Site Evaluator ☒ Installer

Drainfield areas must be staked by engineer prior to construction

Insure drainfields are 100 feet from unlined ditch.

Install per approved plans maintaining all setbacks. Drainfield configuration changes require pre-approval by system designer and GCCHD.

✓ Effluent Filter Screen Required

✓ Sanitary Well Seal Required

Permit Number 14563 Approved By: Thomas Monens Date Issued: 4-25-2008 Date Expires: 4-25-2008

Please submit all three copies to GCCHD for review

White - Office Copy

Yellow - Property Owner's Copy

Pink - Applicant's Copy

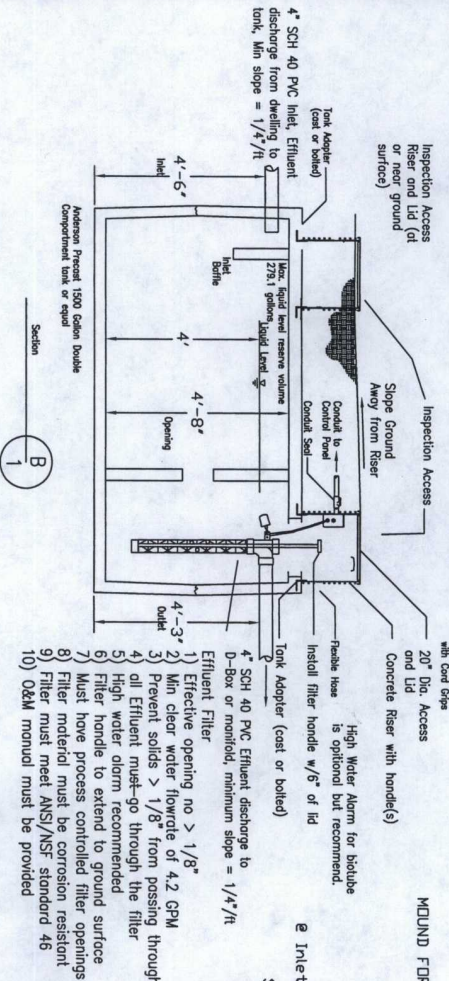
Duane Vinger 8-7-06

14563

Thompson

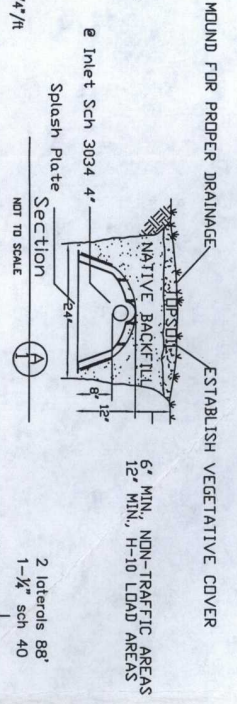
OK to cover

1500 Gallon Double compartment Septic Tank (not to scale)

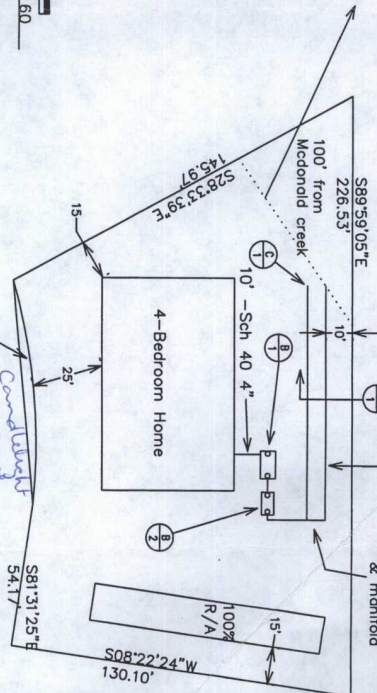
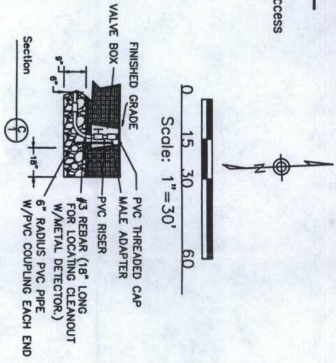
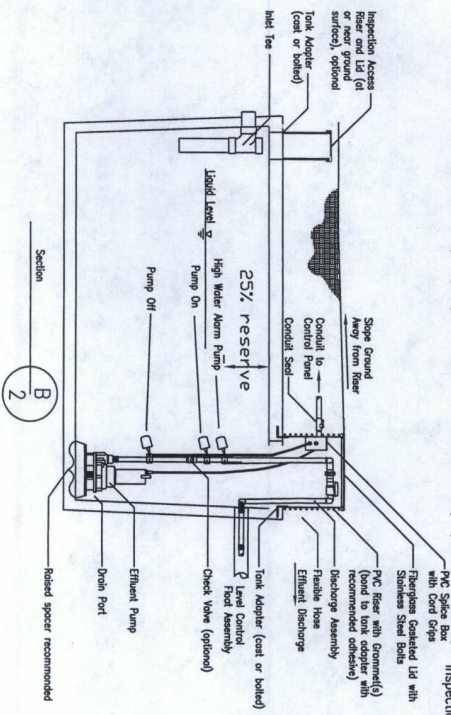


- 1) Effluent opening no > 1/8"
- 2) Min clear water flowrate of 4.2 GPM
- 3) Prevent solids > 1/8" from passing through
- 4) all Effluent must go through the filter
- 5) High water alarm recommended
- 6) Filter handle to extend to ground surface
- 7) Must have process controlled filter openings
- 8) Filter material must be corrosion resistant
- 9) Filter must meet ANSI/NSF standard 46
- 10) O&M manual must be provided

INFILTRATOR STANDARD CHAMBER TRENCH DETAIL



1000Gallon Effluent Pumping System-Low Head Pump(not to scale)



Prior to Construction of drainfield, verify that septic system and all components will meet all required setbacks and notify engineer of any discrepancies.

Work shall be done in accordance with Gallatin County Health Department Regulations for Sewage Treatment Systems unless specified otherwise on this plan sheet.

No Wells, Surface Water Bodies or Known Floodplains w/in 100' of system. All separation distances on table 17-1 adhered to.

All Sewer Service lines shall be sleeved & properly bedded for protection @ all road/driveway crossings & parking areas.

A Property Boundary Survey has not been performed to date, additional field work would be required for exact property boundary, setbacks, locations, etc.

Owner must divert all storm runoff away from all sewer system components to prevent possible malfunction.

Slope of ground in drainfield area & R/A is approx. NW facing.

For Proposed 4-Bed Home, 1500 Gallon Double compartment Tank w/cleanout if necessary, 1000 Gallon Double compartment Tank w/cleanout if necessary, 1000 Gallon Double compartment Tank w/cleanout if necessary.

Valve boxes @ the beginning of each line from each lateral & @ the ends of each lateral.

Trench depth = 18" - Max

Drainfield slope = 0-3%

Design based on using Standard 3' Infiltrator chamber, 8' apart - ends marked w/rebar.

2-laterals 88", 22 chambers/lateral 1-1/2" Sch 40 transport lines

Gallatin County Health Department
Environmental Health Services
APPROVED
Date: 4-25-2006

Sec 29, T1S, R3E, Tract 159, .52 ac
GALLATIN COUNTY, MONTANA

Kurt Thompson
31 candlelight dr (lot 159)

Vinger Associates
P. O. Box 351 Glin Gwy, MT 59730
Date: 4/9/06
Scale: NOT TO SCALE
Drawn by: DV

OG-004

Vinger Associates
PO Box 351
Gallatin Gateway, Mt 59730
for Kurt Thompson

Date 4/20/2006

Proposed

example	length of dist line	180 ft	pipe size=	1.25 inches
	length of transport line	50 ft	pipe size=	2 inches
	length of manifold line	10 ft	pipe size=	2 inches
# if bedrooms	3 bedrooms	350 gpd		

diameter of pipe in inches squared * 0.041 gpd per foot of run
minimum dose volume = transport & manifold volumes +5X
normal dose volume=transport & manifold volumes +10x internal df pipe volume

volume of effluent in drainfield=	11.53125 gallons
volume of effluent in transport line=	8.2 gallons
volume of effluent in manifold line=	1.64 gallons

total 21.37125 gallons

minimum dose volume	5 (x)	67.49625 gallons
average dose volume	7 (x)	90.55875 gallons
normal dose volume	10 (x)	125.1525 gallons
reserve capacity	0.25 % daily flow	87.5 gallons

tank	500 gallon pump chamber	1000 gallon dose tank	800 gallon dose tank
dimensions	61 inches wide	50 inches wide	72 inches wide
	38.64172 inches long	96 inches long	46.649 inches long
1 in3=	0.004329 gallons	0.004329 gallons	0.004329 gallons
	10.20408 gallons/inch	20.7792 gallons/inch	14.53993 gallons/inch
1 inch =	10 gallons	1 inch = 21 gallons	1 inch = 14.54 gallons

set floats this far apart	minimum	6.6 inches	minimum	3.2 inches	minimum	4.6 inches
	average	8.9 inches	average	4.4 inches	average	6.2 inches
	normal	12.3 inches	normal	6.0 inches	normal	8.6 inches

Pump off- 16 " (datum @ tank bottom)
pump on-

minimum	22.6 inches	minimum	19.2 inches	minimum	20.6 inches
average	24.9 inches	average	20.4 inches	average	22.2 inches
normal	28.3 inches	normal	22.0 inches	normal	24.6 inches

Alarm- 6 inches

minimum	28.6 inches	minimum	25.2 inches	minimum	26.6 inches
average	30.9 inches	average	26.4 inches	average	28.2 inches
normal	34.3 inches	normal	28.0 inches	normal	30.6 inches

Reserve capacity has to be greater than or equal to the 25%
56 " tank height

500g tank	125 gallons	1000g tank	250 gallons	800g tank	200 gallons
minimum	273.9 gallons	minimum	645.8 gallons	minimum	426.9 gallons
average	251.3 gallons	average	622.5 gallons	average	403.8 gallons
normal	217.4 gallons	normal	587.5 gallons	normal	369.2 gallons

Pump Selection for a Pressurized System

Input Parameters

Orifice Size	5/32 inches
Residual Head at Last Orifice	5.0 feet
Orifice Spacing	5.0 feet
Number of Laterals per Cell	2
Lateral Length	90.0 feet
Lateral Line Size	1.25 inches
Lateral Pipe Class/Schedule	40
Distributing Valve Model	None
Manifold Length	10.0 feet
Manifold Line Size	2.00 inches
Manifold Pipe Class/Schedule	40
Lift to Manifold	15.0 feet
Transport Length	50.0 feet
Transport Line Size	2.00 inches
Transport Pipe Class/Schedule	40
Discharge Assembly Size	2.00 inches
Flow Meter	None
'Add-on' Friction Losses	0.0 feet

Calculations

Minimum Flow Rate per Orifice	0.68 gpm
Number of Orifices per Zone	38
Total Actual Flow Rate	26.2 gpm
Number of Lines per Zone	2
% Flow Differential 1st and Last Orifice	7.1 %
Lift to Manifold	15.0 feet
Residual Head at Last Orifice	5.0 feet
Head Loss in Laterals	0.9 feet
Head Loss Through Distributing Valve	0.0 feet
Head Loss in Manifold	0.0 feet
Head Loss in Transport Pipe	0.6 feet
Head Loss Through Discharge	1.4 feet
Head Loss Through Flow Meter	0.0 feet
'Add-on' Friction Losses	0.0 feet
Total Flow Rate	26.2 gpm
TDH	22.9 feet



Orengo Systems
Incorporated

814 AIRWAY AVENUE

SUTHERLIN, OREGON

97479

TOLL FREE:

(800) 348-9843

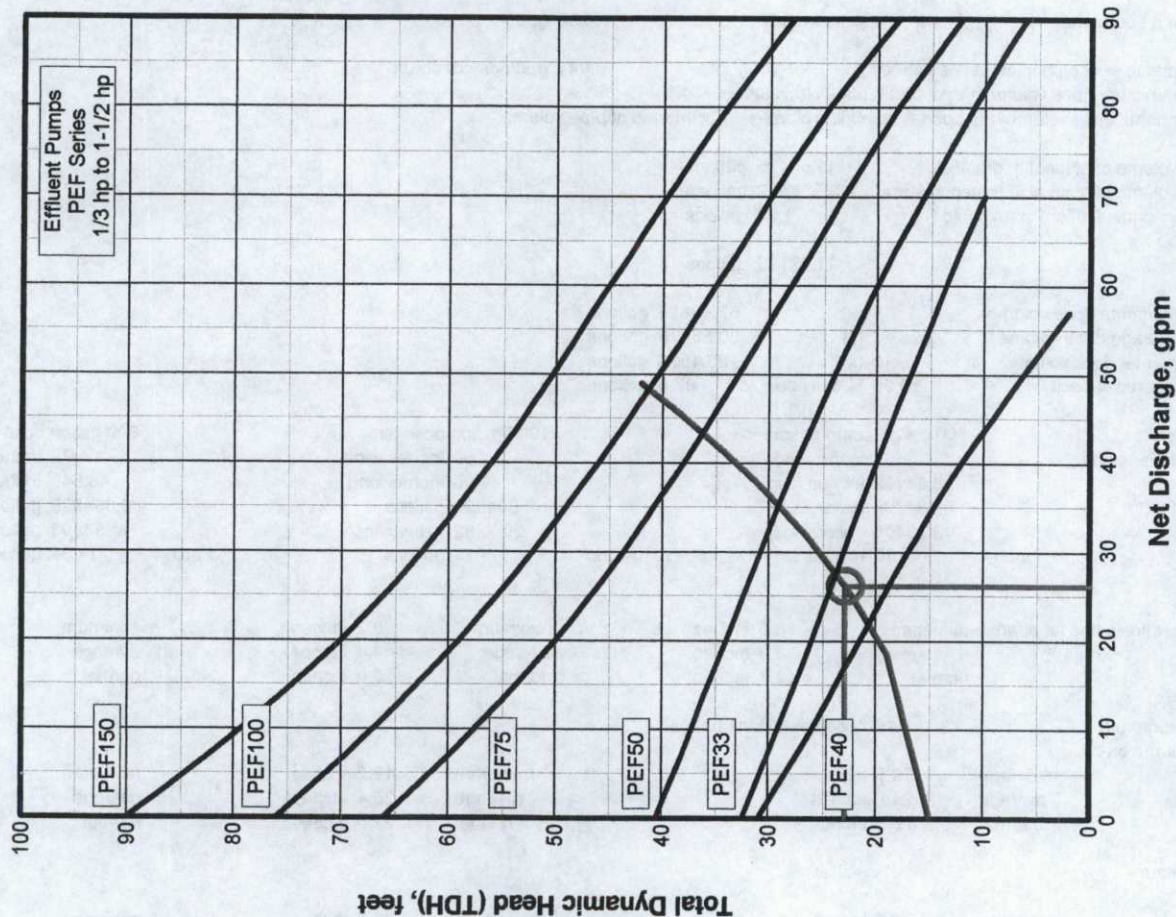
TELEPHONE:

(541) 459-4449

FACSIMILE:

(541) 459-2884

www.orengo.com



SEPTIC APPLICATION REVIEW

- ☐ 1. Owner: Kurt Thompson Signed, Date, & Initials? Y/N Date Signed: 4/10/2006
- ☐ a. Planning approval form complete? Y/N Comments No
- ☐ 2. Road Address: GIS Verifiable? Y/N Access Database or phone (x3067 or 3166)
- ☐ 3. Purpose of Application: new construction
- a. If a replacement, modification or upgrade, pull old permit & attach to permit application for processing.
- b. If upgrade from May 1, 1992- Dec 8, 2000 see Section 3.3 D Does exclusion apply? Y / N Do they have the proper form? Y / N
- c. Failed? Y / N Why _____
- Multi-User. = 3--14 units/connections & ≤ 24 people (or > 700gpd) Public = serves ≥ 15 living units/connections or ≥ 25 people for 60 calendar days or >5000 gpd
- ☐ c. Check for previously issued or denied permit. If Yes, what were major issues? Is this application a mistake? OK
- ☐ d. Is there is a public system within 200'? Y / N If Yes, must connect or provide a letter of explanation why connection is not feasible.
- ☐ e. Is project possibly commercial? Y / N If yes, is commercial addendum form completed? Y / N
- ☐ f. Is this a food service establishment? Y / N If yes, then it must be public (usually).
- ☐ 4. Type and # of structures to be served 15 PD
- ☐ 5. 4 # of Bedrooms or GPD 350 Don't forget that unfinished basement
- ☐ 6. Other dwellings on property? Y / N Do they have a septic permit? Y / N / NA If Y Permit # _____ If N is it pre 1966? Y / N
- ☐ 7. Lot Size 1/2 acres If less than 20 acres and application has site eval., check with C&R Office for creation date to find if it should have had or does have a COSA (see regs. history Appendix B). Might need subdivision review if improperly filed.
- ☐ a. Was a Clerk and Recorder check necessary? Y / N Problems Noted _____
- ☐ b. Does it have a COSA? Y/N If yes, then go to #20 OR Is it OK for Site Eval review? Y / N If yes go to #8

SITE EVALUATION

N/A

- ☐ 8. Was a Site Eval performed? Y / N
- ☐ a. Name of registered site evaluator _____ Signature? Y / N Engineer's Seal? Y / N / NA
- ☐ b. Confirmation #? Y / N Date(s) Test Pits Excavated _____ Did GCCHD Observe Site Eval? Y / N
- ☐ 9. Has the floodplain been delineated? Y / N / NA If Yes, is proposed DF 100' from FP? Y / N Any buildings located within the FP? Y / N
- If FP has not been delineated, is a FP study needed? Y / N Any water accumulation noted? Y / N / NA
- If flows greater 1000 gpd ground water mounding evaluated? Y / N
- ☐ 10. Estimated Depth to seasonally high groundwater (shgw): _____
- ☐ a. How was it determined? _____
- ☐ b. Was water found at 7 feet? Y / N if Y then → GW monitoring and peak provided? If No need to monitor.
- ☐ c. GW monitor wells within 20 feet of proposed area Y / N / NA
- ☐ 11. Non-Degradation addressed? Y / N Phosphorous Breakthrough done? Y / N / NA Comments? _____
- ☐ a. Mixing Zones Drawn Correctly Y / N / NA Are Surrounding Wells/DF shown within 200' of proposed/existing Mixing Zones or DF? Y / N
- ☐ b. Existing well, proposed wells AND zone of influence not allowed in mixing zone Y / N / OK
- ☐ 12. Slope across absorption area _____ (No systems > 25%)—If slope is 20% + must show detail, or GCCHD check site.

SOIL DATA SUBMITTED TO INCLUDE AS A MINIMUM:

- ☐ 13. Data from test pits dug to 96 inches provided: Y / N
- ☐ a. Thickness of horizons Y / N d. Depth to water if observed: _____ Not Noted None observed
- ☐ b. Texture and structure of horizons Y / N e. Depth to limiting layer (>60 min./in.): _____ Noted Not Noted None
- ☐ c. Color and mottling (color variations) Y / N f. Other (stoniness, root depth): _____ Noted Not Noted
- ☐ 14. Results of perc tests submitted? Y / N (1) _____ min/in. at _____ " deep (2) _____ min/in at _____ " deep
- (circle result closest to df) (3) _____ min/in. at _____ " deep (4) _____ min/in at _____ " deep
- ☐ 15. Is Perc rate <3 min/in Y / N If Yes, then CHECK if soil 3 feet below infiltrative surface contains less than 15% gravel, and that there is 6 feet from bottom of trench and a limiting layer OR soil loading rate of 0.8gpd/ft2 may be used
- ☐ 16. Are soils = 125ft2 or <3 min/inch or 3-10 min/inch? Y / N If Yes, then Pressure Dose more than 4 X per day
- ☐ 17. Drainfield sizing based on soil type and/or perc rate _____
- ☐ 18. Do Perc tests and soils data differ? Y / N If Yes, sized most conservative? Y / N (Can't just size to avoid pump)
- ☐ 19. Is system greater than 500 Lineal Feet? Y / N If Yes, then must Pressure Dose!

20. SUBDIVISION

N/A

- ☐ DEQ approved? Wylie Creek Estates Phase 3 Lot/tract 157 Block — Approval Date: 10/2004
- ☐ a. Is there an RSR? ft²/bed or gpd/ft² .5 other —
- ☐ b. Allowed lot usage: Residential / Commercial Other Plat Requirements/comments gravelless
- ☐ c. HO approval COSA? Y/N Is COSA filed with Clerk and Recorder? Y/N If No, then can't issue permit until filed with C&R.
- ☐ d. Listed as a Problem Sub? Y/N If Yes, Insure drainfield locations 100' from unlined ditches
- ☐ e. Pre 1984? Y/N If yes, is sizing adequate? Y/N Adjusted Size Required 18" max

21. SITE PLAN

- ☐ Site Plan: 3 copies? 3 Paper must be $\leq 11 \times 17$ If Subdivision, are well and/or DF(s) in approved location(s) & orientation? Y/N
- ☒ a. Parcel Size noted ☒ e. 1st &/or 2nd Drainfield noted NA h. Well location noted NA
- ☒ b. Property lines noted ☒ f. If site evaluated, DF's within 25' of test pits NA i. Is there a 100' setback? X
- ☒ c. North Arrow noted ☒ g. Wells and Septics shown within 100' of property lines or MZ? NO j. Public Water System? 2
- ☒ d. Homesite, driveways, outbuildings noted
- ☐ k. Site plan shows water supplies, surface waters, etc. within 100 ft of system OR ☒ l. 100' statement made? (may not be req'd if public water supply)

22. SYSTEM SIZING

- ☐ a. Sizing: ft²/bedroom x # of bedrooms = — total ft² in system OR gravelless
- ☐ b. Sizing 350 gpd ÷ .5 application rate gpd/ft² = 700 total ft² in system
- ☐ c. Gravelless Sizing 700 total ft² from a. or b. x 0.75 = 525 total ft² in system with size reduction credit
- ☐ d. Septic tank: 1500 gal. Dose Tank/Chamber: 1000 gal. (dose + 25% reserve) Sizing adequate? Y/N
- ☐ e. Do site plans need to be altered? Y/N If so, contact applicant, ask for copies if revised site plan or ask for permission to alter.
- ☐ f. If PD, have dose volumes been calculated? Y/N NA Require PD specs if complicated!!

SYSTEM TYPE:

StandardPD - by design

TRENCH DEPTH:

18"

- ☐ 23. Proper fees submitted? \$ 240 Check# 2602 Receipt# 7487
- ☐ Filing Fees Required? Y/N NA \$ — (i.e. Commercial Addendum, Variance Ruling)
- ☐ 24. System Certification Required by: Installer PE Site Evaluator If SE/PE, why? —
- ☐ 25. Any Monitoring Requirements? Y/N If Yes, Describe —
- ☐ 26. O&M Requirements? Y/N If Yes, Describe —
- ☐ 27. Variance/s? Y/N If Y, then see variance check sheet note additional fees: —

Comments/Deficiencies

Need pressure specs & called owner 4/18/06 @ 4:15pm

Drainfield areas must be staked by engineer prior to construction

light site & recommend PDInsure drainfield locations 100' from unlined ditches

1st Review: Date 4/18/2006 Issue Permit? Y ? Y Reviewer Signature Theresa Sevarud

If Y, list deficiencies (Number, \checkmark & date when corrected):

2nd Review: (Needed? Y/N): Date — Issue Permit? Y ? Y Reviewer Signature —

If Y, list deficiencies (Number, \checkmark & date when corrected):

Permit Issued # 14563 By: Tom Date: 4-25-2006

Wastewater Treatment System Certification

Gallatin City-County Health Department, Environmental Health Services

In accordance with the Regulations for Wastewater Treatment Systems (effective June 27, 2004), Section 7, a completed system certification form and as-built is required for all wastewater treatment systems installed and must be submitted to EHS within 30 days of the date the inspection was scheduled with EHS. Failure to submit a system certification form and as-built for an installed system may result in the invalidation of the permit and the revocation of the registration of competency.

Please print or type the following information (black or blue ink):

Scheduled Inspection Date: 8/7/06 Permit Number: 14563

Property Owner: Kurt Thompson

Site Address: 31 Candlelight drive

Type of System Installed: Pressure Dose

Size of Septic Tank: 1500 Double / Single Compartment (Circle one) Size of Dose Tank (if used): 1000

Total Sq./Ft of Drainfield Installed: 5285F Trench Width: 3'

Distribution Method: Gravity / Dosed / Pressure Distribution (Circle One) Trench Depth: 18"

Size and Type of Pump: OSP 50 Hydromatic

Name of Installer: Duane Vinger Type of Drainfield Installed: (Circle one)

Business Name: Vinger Excavating Gravel & Pipe / Gravelless Chambers

Certification Of System Installation

I hereby certify the above-referenced wastewater treatment system was installed in the approved location and in accordance with the approved plans and applicable regulations. All required setbacks have been met and all materials used in construction of the system comply with state and local regulations. I also verify that any water well on site at the time of the system inspection was located according to the approved plans.

Duane Vinger
Print name of Installer, Site Evaluator or PE
Certifying System

Vinger Excavating
Business Name

[Signature]
Signature of Installer, Site Evaluator or PE
Certifying System

8/8/06
Date

HEALTH DEPARTMENT USE ONLY

Installation Approval By: System Cert & As-Built Date: 9/22/06

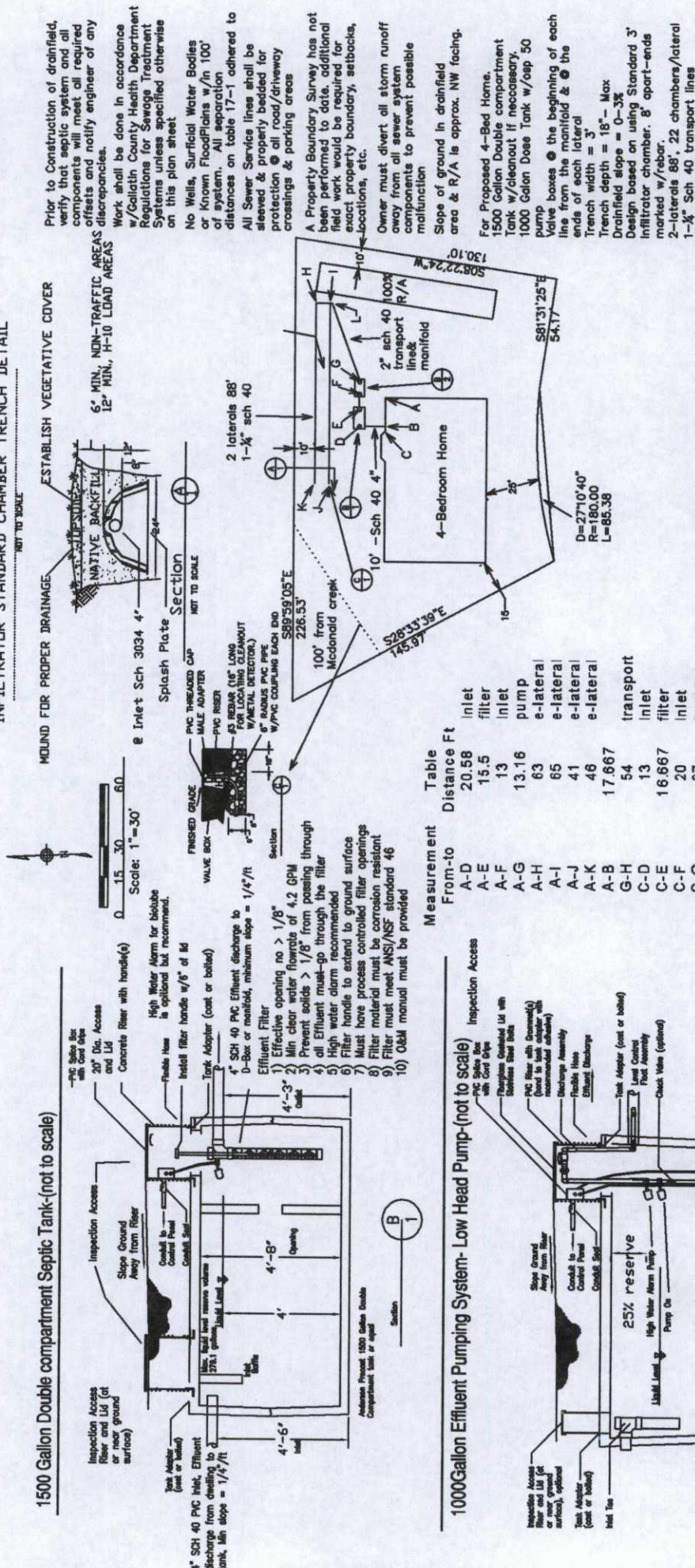
Final Approval By: [Signature] Date: 9/22/06

Final approval is the approval granted upon review and acceptance of the system certification and as-built drawing. The permit to construct then becomes a permit to operate the system as approved.

Inspections are performed only for determining compliance with these regulations and the approved permit. EHS is not responsible for ensuring workmanship. Final approval of a wastewater treatment system shall not be construed as a guarantee to the life expectancy or operation of the system.

Permit To Operate: Approved for 4 Bedrooms or 360 GPD

INFILTRATOR STANDARD CHAMBER TRENCH DETAIL



Vinger Associates
P. O. Box 351 Glen Hwy, MT 59730
DATE 8/7/06
NOT TO SCALE
DW
06-004

As-built for Kurt Thompson
Lot 159
Permit # 14683
Sec 29, T1S, R2E-TRACT 159, 52 ac
GALLATIN COUNTY, MONTANA

BICANDLELIGHT DE

Sanit City County Health Department
Environmental Health Services

ACCEPTED AS-BUILT

Date: 9/22/06