BOH ADMIN

Call to Order/Roll Call

Conflict of Interest

Public Comments for Items not on the Agenda (5 Minutes)

Minutes from BOH meeting April 9, 2019
BOHAttendance.docx

OLD BUSINESS

NEW BUSINESS

Introduce the two new board members: Mike Inman/City and Chris Pearson/County

Variance Request for Busby
Busby_Complete.pdf

Variance Request for Bryington
Bryington_Complete.pdf

REPORTS

Sanitarian Report

Health Department Director Report

Code Enforcer's Report

BOH CLOSING

Public Comment (5 Minutes)
Adjourn
PARK COUNTY BOARD OF HEALTH MEETING

Tuesday April 9, 2019

City County Complex/West Room
414. E. Callender St.

Attendance: BOH Members-Peggy O’Neill, Mary Beebe, Caleb Minnick, Bill Berg; County Commissioner, Trish Fievet; Health Dept., Dr. Desnick; Temporary Health Officer, Cid Morrison; Public Health Nurse, Julie Anderson; Health Dept. Director. Jill

Call to Order: 4:45 PM

Approval of Minutes: Caleb M. moved to approve the January 8th minutes. Mary seconded the motion. Minutes approved.

Old Business: None

New Business:

Jill talked about the Board decided on a three-person interview panel that will work with Jill from HR to review applicants for prescreening. The Board also chose three people for this panel. These three people are Mike Inman, Peggy O’Neill, One representative from CHP. Shannon Piccolo Park County Attorney will be an alternative.

Mary Beebe motioned to create this interview panel Bill Berg seconded the motion. Motioned passed.

Bill make a motion to approve the job description. Mary seconded the motion. Job description approved.

The board also discussed a salary for the Health Officer. The board agreed on 65.00 an hour. Mary motioned to set salary for Health officer at $65.00 hr. Bill second the motion. Motioned passed.

Rasmuson property variance request. There is a septic on the property with no records found of a permitted septic. The current owner would like to abandon this system and install a permitted one. This site is constrained due to Flathead Creek running through the home site area and the
flood plain associated with it. The plan with Allied Engineering is to propose installing the new drain field on a bench well above the creek bed.

Bill motioned to adopt the PC sanitarian Kaleb Pearson findings. Mary seconded the motion. Variance granted.

Gardiner Business Park variance request. Bill motioned to accept the variance with the PC sanitarian Kaleb Pearson finding and conditions noted. Caleb M seconded the motion. Variance granted.

The Board talked about different ways they could get the community involved in being on the BOH.

Sanitarian Report: None Kaleb P. at training.

Nursing Report: Cid talked about the training the nurses have been to. She talked about different things happening in the nursing dept. The flu in the county, baby home visits and dog bites.

Health Dept. Director: Julie let the board know of her future trainings. Also about the Health Dept. getting the AMB west grant. The health department got the grant that was applied for. She also talked about other grants she is working on. She also let the board know that Sweet Grass County is very happy with our sanitarians


Public Comments: None

Adjourn: 6:00 PM
June 28th, 2019

To: Park County Board of Health

RE: Variance Application for a drainfield replacement for David Busby

Introduction:

The applicant, David Busby, is requesting a variance from the Board of Health that, if granted, would allow the construction of a new elevated sand mound (ESM) at his residence at 4968 US Hwy 89S in Livingston, Montana. The lot in question is entirely located within Zone AE of the Yellowstone River according to the FEMA flood insurance rate map. Additionally, the proposed new ESM partially encroaches the 100ft isolation zone for the well on his property due to limited space.

Background

The septic system serving this residence was installed in 1973 and is currently on its last legs. His septic tank has already collapsed, and status of the current drainfield is uncertain. In 1976, the State of Montana issued a certificate of survey review and exemption for this parcel due to the fact that the construction of the water supply and sewage disposal system pre-dated the delineation of the 100-year floodplain or flood prone areas (COS 153, 1.024 Acres, see attached). Mr. Busby wishes to obtain a variance to construct a new elevated sand mound to replace the existing 1973 drainfield to serve his residence. Due to the location of the lot, he is requesting a variance from (1) the 100 ft required setback from the mapped flood plain, and the (2) 100 ft well isolation zone from the well located on his lot.

Elevated Sand Mound

Due to high groundwater in the area, the required sewage treatment and disposal method would be to an Elevated Sand Mound (ESM) with the absorption bed approximately 12” above natural grade. A test pit was dug on 5/30/19 and ground water was observed at 84” below grade and there was evidence that water may rise up to 60” below grade during times of seasonally high ground water. The new ESM absorption bed will be constructed 12” above natural grade to achieve the required vertical setback of 48” from the bottom of the bed to high ground water. The proposed location is within the floodplain (Zone AE) of the Yellowstone River, and approximately 75 ft from the well on his property. All other required setbacks are able to be met.

The proposed system will be an upgrade and a benefit for the environment compared to the system currently in use. A Park County permit was found for the current system which shows the drainfield is undersized according to today’s standards. The permit states there is 100 lineal feet of laterals serving a 3-bedroom home, whereas, today’s standards would require approximately 300 lineal feet of a traditional pipe & gravel drainfield system for the soil type in that area. Additionally, the current drainfield is located approximately 2 ft below the surface, which would not meet the required 4 ft vertical separation between the bottom of the drainfield and the high water table.
Approval of a variance by the Board of Health may only be granted if the criteria of ARM 17.36.922 are met.

Discussion of ARM 17.36.922 Criteria

The Board of Health may grant a variance from a requirement only if it finds that all the criteria of ARM 17.36.922 are met.

The Department offers comments (bold) on the following criteria:

(a) Granting the variance will not:
   a. contaminate any actual or potential drinking water supply;
      i. Department Comment: The proposed elevated sand mound is designed in accordance with DEQ-4 standards with the bottom of the absorption bed 6 ft above the highest expected water level, which is 2 ft higher than the minimum required 4 ft. The ESM is located more than 100 ft away from any neighbor’s well. The proposed ESM is located approximately 75 ft from the well on the homeowner’s lot. The expected direction of groundwater flow is away from the well head and toward the Yellowstone River. The potential for contamination of the water supply is minimal. The department recommends
         bi-annual bacterial testing of the water supply to monitor the quality and safety of the drinking water.

   b. cause a public health hazard as a result of access to insects, rodents, or other possible carriers of disease to humans;
      i. Department Comment: The septic tank will be constructed of concrete which does not allow access to insects, rodents, or other possible carriers of disease to humans. The ESM will be covered with topsoil and seeded with local grasses so there will be no attractants to pests.

   c. cause a public health hazard by being accessible to persons or animals;
      i. Department Comment: The septic tank will be sealed with lids that are used to pumping access and will not cause a public health hazard by being accessible to persons or animals. All components of the ESM will be buried or properly sealed and will only be accessed when maintenance or repair is needed.

   d. violate any law or regulation governing water pollution or wastewater treatment and disposal, including the rules contained in this subchapter except for the rule that the variance is requested from;
      i. Department Comment: The proposed system will be designed and constructed in accordance to all applicable regulations except for the rule that the variance is being requested.

   e. pollute or contaminate state waters, in violation of 75-5-605, MCA;
i. Department Comment: The proposed ESM is located approximately 830 ft away from the nearest state water, the Yellowstone River. This is farther than the required minimum setback of 100 ft. At this distance, this proposed system will not contaminate state waters.

f. degrade state waters unless authorized pursuant to 75-5-303, MCA; or

i. Department Comment: Non-degradation rules do not apply to this parcel as the residential structure has been in existence prior to April 29, 1993 when these rules came into effect. The new ESM drainfield is approximately in the same location as the existing system.

g. cause a nuisance due to odor, unsightly appearance, or other aesthetic consideration;

i. Department Comment: Septic tanks are sealed and buried below the surface and do not cause a nuisance due to odor, unsightly appearance, or other aesthetic consideration. The absorption bed of the ESM will be backfilled with loamy materials, seeded with local grass, and will not cause a nuisance due to odor, unsightly appearance, or other aesthetic consideration if not abused and proper maintenance is performed.

(b) compliance with the requirement from which the variance request would result in undue hardship to the applicant;

i. Department Comment: Due to the limited space, the location of the well on the property, the regulated floodplain, and high groundwater in the area there aren’t many options. The proposed design is the most protective of the environment and most suited for replacing this failed system. Since the entire lot is located within the floodplain, there is nothing the applicant can do to meet the 100 ft setback from the regulated floodplain. Due to the size and shape of the lot, relocation of the well would be an undue hardship and unnecessary option to meet the 100 ft setback from the well to the drainfield. Even if the well was relocated on the lot, the replacement drainfield would encroach the 100 ft well isolation zone and incur an unnecessary financial burden on the property owner.

(c) the variance is necessary to address extraordinary conditions that the applicant could not reasonably have prevented and;

i. Department Comment: Since the current system has been in use since 1973, there is nothing the applicant could have reasonably done to prevent failure. Septic systems are known to have a finite span and the 46 years the system has been in use is typical for this type of system.

(d) no alternatives that comply with the requirement are reasonably feasible.

i. Department Comment: The lot in question is located entirely in the regulated floodplain, there are no alternatives to comply with the 100 ft setback. Relocation of well to another part of the property would be unnecessary and is not reasonably feasible for this situation.
Department Position

It is the Department’s recommendation to approve the variance request. The risk to public health, safety, and the environment at this location are such that an elevated sand mound is the most protective and practical to replace the 46-year old failing system. I would approve the system with these following conditions: (1) the owner performs or hires someone to perform routine maintenance on the system (clean filter, blow out lines, reset pressure, etc.), (2) the owner keeps records of pumping and will provide upon request to the Department, (3) the owner has the well tested for coliform and E. coli bi-annually and nitrates every three years, (4) the owner will not use the system for commercial purposes, (5) and the permit application meet the requirements of ARM 17.36.918(4) and DEQ-4.

Sincerely,

Kaleb Pearson, MS, REHS/RS
Lead Sanitarian, Park County Environmental Health
Property Record Card

Summary

Primary Information

Property Category: RP
Geocode: 49-0703-11-1-01-24-0000
Primary Owner: BUSBY DAVID E
4968 US HIGHWAY 89 S
LIVINGSTON, MT 59047
NOTE: See the Owner tab for all owner information
Certificate of Survey: 153
Subdivision:
Legal Description:
S11, T03 S, R09 E, C.O.S. 153, IN NE4NE4
Last Modified: 6/10/2019 9:51:08 AM

General Property Information

Neighborhood: 249.150
Living Units: 1
Zoning: 2
Linked Property: No linked properties exist for this property

Exemptions:
No exemptions exist for this property

Condo Ownership:
General: 0
Limited: 0

Property Factors

Topography: Fronting:
Utilities: Parking Type:
Access: 3 Parking Quantity:
Location: Parking Proximity:

Land Summary

<table>
<thead>
<tr>
<th>Land Type</th>
<th>Acres</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grazing</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>Fallow</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>Irrigated</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>Continuous Crop</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>Wild Hay</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>Farmsite</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>ROW</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>NonQual Land</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>Total Ag Land</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>Total Forest Land</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>Total Market Land</td>
<td>1.020</td>
<td>56,961.00</td>
</tr>
</tbody>
</table>

Deed Information:

<table>
<thead>
<tr>
<th>Deed Date</th>
<th>Book</th>
<th>Page</th>
<th>Recorded Date</th>
<th>Document Number</th>
<th>Document Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/18/2002</td>
<td>168</td>
<td>999</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7/20/1999</td>
<td>R140</td>
<td>1651</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/3/1992</td>
<td>R-85</td>
<td>87</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Bedrooms: 3  Full Baths: 2  Addl Fixtures: 3
Family Rooms: 0  Half Baths: 0

Additional Information

Fireplaces:  Stacks: 0  Stories: Prefab/Stove: 1
Openings: 0  Cost & Design: 0  Flat Add: 0

Garage Capacity: 0  Description:
% Complete: 0

Dwelling Amenities

View: Access:

Area Used In Cost
Basement: 0  Additional Floors: 0  Attic: 0
First Floor: 1380  Half Story: 0  Unfinished Area: 0
Second Floor: 0  SFLA: 1380

Depreciation Information

CDU: Physical Condition: Average (7)  Utility: Average (7)
Desirability: Property: Average (7)  Location: Average (7)

Depreciation Calculation
Age: 38  Pct Good: 0.67  RCNLD: 118590

Additions / Other Features

Additions

<table>
<thead>
<tr>
<th>Lower</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
<th>Area</th>
<th>Year</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14 - Porch, Frame, Enclosed</td>
<td>69</td>
<td>0</td>
<td>3231</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>33 - Deck, Wood</td>
<td>613</td>
<td>0</td>
<td>7791</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There are no other features for this dwelling

Other Buildings/Improvements

Outbuilding/Yard Improvement #1
Type: Residential  Description: RRG1 - Garage, frame, detached, finished
Quantity: 1  Year Built: 1974  Grade: 5
Condition: Functional  Class Code: 3301

Dimensions
Width/Diameter: Length: Size/Area: 1050
Height: Bushels: Circumference:

Outbuilding/Yard Improvement #2
Type: Residential  Description: RRS1 - Shed, Frame
Quantity: 1  Year Built: 1960  Grade: L
Condition: Functional  Class Code: 3301

Dimensions
Width/Diameter: 8  Length: 12  Size/Area: 96
Height: Bushels: Circumference:

Outbuilding/Yard Improvement #3
Type: Residential  Description: RRS1 - Shed, Frame
Quantity: 1  Year Built: 1960  Grade: L
Condition: Functional  Class Code: 3301

Dimensions
Width/Diameter: 10  Length: 12  Size/Area: 120
Height: Bushels: Circumference:
Proposed replacement system for David Busby at 4968 US Hwy 89 S, Livingston (scale approximate)

- 100% replacement area
- 100ft well isolation zone
- 28' x 52' elevated sand mound & ground water flow direction
- 1500 gal septic/pump tank
- Flood plain boundary (red area)
- Neighbor's well isolation zone
Test Pit Data

<table>
<thead>
<tr>
<th>Layer</th>
<th>Soil Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>0” – 4”</td>
<td>Loam, black, topsoil, no cobbles</td>
</tr>
<tr>
<td>4” – 42”</td>
<td>Loamy sand, with cobbles</td>
</tr>
<tr>
<td>42” – 84”</td>
<td>Medium sand, with cobbles</td>
</tr>
<tr>
<td>84” +</td>
<td>Medium sand, groundwater encountered</td>
</tr>
</tbody>
</table>

Application rate: 0.5gpd/ft²

Signs of mottling ≈ 60”

Park County Area, Montana

1218B—Vendome-Meadowcreek complex, 0 to 4 percent slopes

Map Unit Setting
- National map unit symbol: rc7c
- Elevation: 4,300 to 5,100 feet
- Mean annual precipitation: 12 to 14 inches
- Mean annual air temperature: 43 to 45 degrees F
- Frost-free period: 90 to 120 days
- Farmland classification: Not prime farmland

Map Unit Composition
- Vendome and similar soils: 55 percent
- Meadowcreek and similar soils: 30 percent
- Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Vendome

Setting
- Landform: Stream terraces
- Landform position (three-dimensional): Tread
- Down-slope shape: Convex
- Across-slope shape: Linear
- Parent material: Sandy and gravelly alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile
- A - 0 to 4 inches: cobbly loam
- Bw - 4 to 9 inches: sandy loam
- 2Bk - 9 to 15 inches: very cobbly loamy sand
3-bedroom house

Design Flow: 300 gallons per day (gpd) (MT DEQ 3.1.2)

Land Slope: Flat, <1% slope

Underlying Soil Type: Loam

Soil Application Rate: 0.5 gallons per day per square foot (gpd/sf)

Sand Loading Rate per DEQ-4: 0.8 gpd/sf (Table 3.1-1)

Basal Loading Rate per DEQ-4: 0.5 gpd/sf (Table 3.1-1)

Bed size based upon sand loading rate:

\[ 300 \text{ gpd} \div 0.8 \frac{\text{gpd}}{\text{sf}} = 375 \text{ sf of required absorption area} \]

Required Minimum Basal Area based upon soil loading rate:

\[ 300 \text{ gpd} \div 0.5 \frac{\text{gpd}}{\text{sf}} = 600 \text{ sf of Basal Area required} \]
Proposed system design:

375 sf of bed required

§6.7.3.6 recommends a minimum 3:1 ratio of length to width

Let \( x = width \), then \( 3x = length \)

Thus:

\[ 3x^2 = 375 \]

\[ x = \sqrt{\frac{375}{3}} \]

\[ x = 11.2 \; ; \; 3x = 33.6 \]

Round to 12′ wide x 36′ long for standard 3′ wide x 4′ long chambers: §6.7.3.6 is met

Check Basal Area Requirements:

Overall Width of Mound:

\[ 6′ + 2′ + 12′ + 2′ + 6′ = 28′ \]

Overall Length of Mound:

\[ 6′ + 2′ + 36′ + 2′ + 6′ = 52′ \]

28′ x 52′ = 1,456 sf > 600 sf so §6.7.3.2 is met
Sand Mound Material Specifications:

Basal area to include five chalks and edges.

The total of material must meet one of the following classifications:

A. ASPF 5-80 for the aggregate, with a maximum of 3 percent passing the #100 sieve, or

B. Meet the following particle size distribution:

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>Particle Size (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td>1.75</td>
<td>60</td>
</tr>
<tr>
<td>0.85</td>
<td>60</td>
</tr>
<tr>
<td>0.50</td>
<td>70</td>
</tr>
<tr>
<td>0.33</td>
<td>70</td>
</tr>
<tr>
<td>0.15</td>
<td>80</td>
</tr>
</tbody>
</table>

Edge of Sloped Sand

3 to 1 Sloped Sand Area

Chamber Placement Edge-to-Edge

Montana Department of Environmental Quality
Scale: NTS
Elevated Sand Mound - Bed Design with Leaching Chambers
Dwg. No. ESM-6
Plan View - Top Cap Removed for Clarity

Basal Area

52' x 31' = 1,612 square feet
June 28th, 2019

To: Park County Board of Health

RE: Variance Application for a drainfield replacement for Clayton Bryington

Introduction:

The applicant, Clayton Bryington, is requesting a variance from the Board of Health that, if granted, would allow the construction of a new onsite wastewater treatment system on a piece of property that he owns at 412 1st St E in Clyde Park, Montana.

Background

Mr. Bryington owns a 1 ¾ -acre parcel of COS 1793 in Clyde Park. There is some space on the back part of the lot where he wishes to build a smaller house to move into and sell his existing bigger house. However, a seasonally-used irrigation ditch runs through the back part of the property where he would like to build. Due to limited space, any new drainfield would not be able to meet the required 100-foot setback to surface water.

The irrigation ditch is turned on for about 3-4 months out of the year and is used to provide water to hayfields downstream during the growing season. The ditch does not flow back into State Waters and endpoints in a field about a mile and a half downstream. He has contacted the users of the ditch to see if lining or placing a culvert in where it runs through his property would be a possibility. This would have eliminated the need for a variance, but it was refused by the users of the ditch.

State rules for onsite wastewater treatment system require a 100-foot setback from the drainfield to surface water but do not require a non-degradation determination. The closest State Water in the path of the direction of groundwater flow is the Shields River and is over 5,000-feet away from the proposed drainfield. This proposed drainfield passes all non-degradation calculations to applicable State Waters.

The irrigation ditch is measured to be about 2-feet 7-inches below natural ground surface, on average. We have proposed a drainfield with trenches dug 3-feet deep which should remove the possibility of untreated wastewater flowing into the surface water contained in the irrigation ditch. The proposed drainfield will be located 67-feet from the irrigation ditch at its closest point and will consist of 3 laterals 48-feet long to accommodate a 3-bedroom home. A test pit was observed and the soils in that area were determined to be well drained loamy sand with lots of cobbles with no evidence of seasonally high groundwater.

Mr. Bryington has been granted approval to connect to the Town of Clyde Park’s municipal water supply upon completion of a water service permit.
Discussion of ARM 17.36.922 Criteria

The Board of Health may grant a variance from a requirement only if it finds that all the criteria of ARM 17.36.922 are met.

The Department offers comments (bold) on the following criteria:

(a) Granting the variance will not:
   a. contaminate any actual or potential drinking water supply;
      i. Department Comment: The proposed drainfield is designed in accordance with DEQ-4 standards with the bottom of the absorption bed > 4-ft above the highest expected water level. The new drainfield is located more than 100 ft away from any water well. Most of the residences surrounding the proposed drainfield location are served by Clyde Park municipal water supply. The potential for contamination of a water supply is minimal.
   b. cause a public health hazard as a result of access to insects, rodents, or other possible carriers of disease to humans;
      i. Department Comment: The septic tank will be constructed of concrete or another approved material which does not allow access to insects, rodents, or other possible carriers of disease to humans. The proposed drainfield will be buried underground so there will be no attractants to pests.
   c. cause a public health hazard by being accessible to persons or animals;
      i. Department Comment: The septic tank will be sealed with lids that are used for pumping access and will not cause a public health hazard by being accessible to persons or animals. All components of the proposed drainfield will be buried or properly sealed and will only be accessed when maintenance or repair is needed.
   d. violate any law or regulation governing water pollution or wastewater treatment and disposal, including the rules contained in this subchapter except for the rule that the variance is requested from;
      i. Department Comment: The proposed system will be designed and constructed in accordance to all applicable regulations except for the rule that the variance is being requested.
   e. pollute or contaminate state waters, in violation of 75-5-605, MCA;
      i. Department Comment: The proposed drainfield is located approximately 5,000-ft away from the nearest state water downstream of direction of groundwater flow, the Shields River. This is farther than the required minimum setback of 100 ft. At this distance, this proposed system will not contaminate state waters.
   f. degrade state waters unless authorized pursuant to 75-5-303, MCA; or
      i. Department Comment: Non-degradation calculations were performed and the proposed drainfield passes the required Nitrate-Nitrogen and Phosphorous
concentration at the end of the 100-ft mixing zone. The calculations are included in this submittal.

g. cause a nuisance due to odor, unsightly appearance, or other aesthetic consideration;
   i. Department Comment: Septic tanks are sealed and buried below the surface and do not cause a nuisance due to odor, unsightly appearance, or other aesthetic consideration. The proposed drainfield will be backfilled with loamy materials, seeded with local grass, and will not cause a nuisance due to odor, unsightly appearance, or other aesthetic consideration if not abused and proper maintenance is performed.

(b) compliance with the requirement from which the variance request would result in undue hardship to the applicant;
   i. Department Comment: Due to the limited space, and the location of the irrigation ditch on the property it is physically impossible for any new drainfield on this part of Mr. Bryington’s lot to meet the 100-ft setback. The proposed design is the most protective of the environment and most suited for replacing this failed system. The possibility of lining or placing a culvert in the ditch was explored but was refused by ditch users.

(c) the variance is necessary to address extraordinary conditions that the applicant could not reasonably have prevented and;
   i. Department Comment: Due to the limited space, and the location of the irrigation ditch on the property it is physically impossible for any new drainfield on this part of Mr. Bryington’s lot to meet the 100-ft setback. There are no extraordinary conditions that Mr. Bryington could have reasonable prevented.

(d) no alternatives that comply with the requirement are reasonably feasible.
   i. Department Comment: The only alternative would be to add a liner or place a culvert in the part of the ditch that crosses his property. This was explored but ultimately refused by the users of the ditch.
Department Position

It is the Department’s recommendation to approve the variance request. The risk to public health, safety, and the environment at this location are such that a drainfield with lateral lines dug 3-ft deep is the most protective and practical to accommodate a new 3-bedroom living unit. The addition of this house would allow Mr. Bryington to fulfill his desire to downsize, and would add value to his property and to the town of Clyde Park. I would approve the system with these following conditions: (1) the owner performs or hires someone to perform routine maintenance on the system when needed (clean filter, check septic tank condition, relevel the d’box if needed, etc.), (2) the owner keeps records of pumping and will provide upon request to the Department, (3) the owner will not use the system for commercial purposes, and will receive only residential-strength wastewater (4) and the permit application meet all the requirements of ARM 17.36.918(4) and DEQ-4 except for the rule that this variance is requested.

Sincerely,

Kaleb Pearson, MS, REHS/RS
Lead Sanitarian, Park County Environmental Health
## Property Record Card

### Summary

**Property Information**
- **Property Category:** RP
- **Geocode:** 49-1114-34-2-40-15-0000
- **Subcategory:** Residential Property
- **Primary Owner:** BRYINGTON CLAYTON
- **PO Box:** 148
- **Clyde Park, MT 59018**

**NOTE:** See the Owner tab for all owner information

**Certificate of Survey:**
- **Subdivision:** UHL ADD (CLYDE PARK)

**Legal Description:**
UHL ADD (CLYDE PARK), S34, T02 N, R09 E, BLOCK G, E2, BDRY ADJ AREAS OF COS 1793 E OF BLK G

**Last Modified:** 6/10/2019 9:51:08 AM

### General Property Information

- **Neighborhood:** 249.200
- **Living Units:** 1
- **Zoning:** Ownership %: 100

**Linked Property:**
- **Linked Property:** 49-1114-34-2-40-15-8002
- **Link Type:** 1 - Imps Linked to Land Owned by Others

**Exemptions:**
- No exemptions exist for this property

**Condo Ownership:**
- General: 0
- Limited: 0

### Property Factors

**Topography:**
- Fronting:

**Utilities:**
- Parking Type:

**Access:** 2

**Location:**
- Parking Quantity:

### Land Summary

<table>
<thead>
<tr>
<th>Land Type</th>
<th>Acres</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grazing</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>Fallow</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>Irrigated</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>Continuous Crop</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>Wild Hay</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>Farmsite</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>ROW</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>NonQual Land</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>Total Ag Land</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>Total Forest Land</td>
<td>0.000</td>
<td>00.00</td>
</tr>
<tr>
<td>Total Market Land</td>
<td>1.241</td>
<td>38,935.00</td>
</tr>
</tbody>
</table>

### Deed Information

<table>
<thead>
<tr>
<th>Deed Date</th>
<th>Book</th>
<th>Page</th>
<th>Recorded Date</th>
<th>Document Number</th>
<th>Document Type</th>
</tr>
</thead>
</table>

svc.mt.gov/msl/MTCadastral/PrintPropertyRecordCard/GetPropertyRecordCardData?Geocode=491114342401500008&year=2019

21

1/4
Manufacturer: Serial #: Width: 0
Model: Length: 0

Basement Information
Foundation: 2 - Concrete Finished Area: 0 Daylight:
Basement Type: 0 - None Quality:

Heating/Cooling Information
Type: Central System Type: 5 - Forced Air
Fuel Type: 3 - Gas Heated Area: 0

Living Accommodations
Bedrooms: 3 Full Baths: 2 Addl Fixtures: 3
Family Rooms: 0 Half Baths: 0

Additional Information
Fireplaces:
Stacks: 0 Stories:
Openings: 0 Prefab/Stove: 0
Cost & Design: 0 Flat Add: 0
Description:

Dwelling Amenities
View:

Area Used In Cost
Basement: 0 Additional Floors: 0 Attic: 0
First Floor: 1128 Half Story: 540 Unfinished Area: 0
Second Floor: 0 SFLA: 1668

Depreciation Information
CDU: Physical Condition: Fair (6)
Desirability: Property: Fair (6)
Location: Average (7)

Utility: Fair (6)

Depreciation Calculation
Age: 43 Pct Good: 0.55 RCNLD: 127140

Additions / Other Features
Additions

<table>
<thead>
<tr>
<th>Lower</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>33 - Deck, Wood</td>
<td>32</td>
</tr>
<tr>
<td>11 - Porch, Frame, Open</td>
<td>540</td>
<td>312</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>407</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6702</td>
</tr>
</tbody>
</table>

There are no other features for this dwelling

Other Buildings/Improvements

Outbuilding/Yard Improvement #1
Type: Residential Description: RRS1 - Shed, Frame
Quantity: 1 Year Built: 1964 Grade: A
Condition: Functional: Class Code: 3501
Dimensions

Width/Diameter: Length: Size/Area: 872
Height: Bushels: Circumference:

Outbuilding/Yard Improvement #2
Type: Residential Description: RRS1 - Shed, Frame
Quantity: 1 Year Built: 1964 Grade: A
Condition: Functional: Class Code: 3501
Dimensions

Width/Diameter: 14 Length: 20 Size/Area: 280
Height: Bushels: Circumference:
MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Site Name: HENDERSON, CHUCK
GWIC Id: 195575
DNRC Water Right:

Section 1: Well Owner(s)
1) HENDERSON, CHUCK (MAIL)
PO BOX 220
CLYDE PARK MT 59018 [03/25/2002]

Section 2: Location

<table>
<thead>
<tr>
<th>Township</th>
<th>Range</th>
<th>Section</th>
<th>Quarter Sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>02N</td>
<td>09E</td>
<td>27</td>
<td>SW¼ SW¼</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PARK</th>
<th>45.888258387</th>
<th>-110.600505366</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude</td>
<td>Longitude</td>
<td>Geomethod</td>
</tr>
<tr>
<td>Datum</td>
<td>Datum</td>
<td></td>
</tr>
<tr>
<td>NAD83</td>
<td></td>
<td>TRS-SEC</td>
</tr>
</tbody>
</table>

Section 3: Proposed Use of Water

DOMESTIC (1)

Section 4: Type of Work

Drilling Method: ROTARY
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Monday, March 25, 2002

Section 6: Well Construction Details

<table>
<thead>
<tr>
<th>Borehole dimensions</th>
<th>From</th>
<th>To</th>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>60</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Casing</th>
<th>From</th>
<th>To</th>
<th>Diameter</th>
<th>Wall Thickness</th>
<th>Pressure Rating</th>
<th>Joint</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>60</td>
<td>6</td>
<td>0.250</td>
<td>160.00</td>
<td>WELDED</td>
<td>STEEL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Completion (Perf/Screen)</th>
<th>From</th>
<th>To</th>
<th># of Openings</th>
<th>Size of Openings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30</td>
<td>60</td>
<td>4</td>
<td>0.025</td>
<td>SCREEN-CONTINUOUS-PVC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Annular Space (Seal/Groove/Packer)</th>
<th>From</th>
<th>To</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>20</td>
<td>CASING SEAL BENTONITE</td>
</tr>
</tbody>
</table>

Section 7: Well Test Data

Total Depth: 60
Static Water Level: 15
Water Temperature:

Air Test *

16 gpm with drill stem set at 55 feet for 1 hours.
Time of recovery 0.26 hours.
Recovery water level 16 feet.
Pumping water level _ feet.

* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

Section 8: Remarks

Section 9: Well Log

Geologic Source

125FRUN - FORT UNION FORMATION

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
<td>BROKEN SHALES</td>
</tr>
<tr>
<td>10</td>
<td>11</td>
<td>SHALE FRACTURED</td>
</tr>
<tr>
<td>11</td>
<td>15</td>
<td>SHALE FRACTURED</td>
</tr>
<tr>
<td>15</td>
<td>43</td>
<td>SANDSTONE LITE BROWN TO GRAY</td>
</tr>
<tr>
<td>43</td>
<td>55</td>
<td>BLUE SHALE</td>
</tr>
<tr>
<td>55</td>
<td>56</td>
<td>SANDSTONE LITE GREEN</td>
</tr>
<tr>
<td>56</td>
<td>57</td>
<td>BLUE AND GRAY SHALE</td>
</tr>
<tr>
<td>57</td>
<td>60</td>
<td>SANDSTONE LITE GREEN</td>
</tr>
</tbody>
</table>

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: DUANE L. HAUSER
Company: RED TIGER DRILLING
License No: WWG-386
Date Completed: 3/25/2002

View scanned well log (10/22/2009 10:38:56 AM)
MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Site Name: JONES, SHAUN
GWIC id: 201602
DNRC Water Right: 30064129

Section 1: Well Owner(s)
1) JONES, SHAUN (MAIL)
P.O. BOX 134
CLYDE PARK MT 59018 [01/24/2003]

Section 2: Location

<table>
<thead>
<tr>
<th>Township</th>
<th>Range</th>
<th>Section</th>
<th>Quarter Sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>02N</td>
<td>05E</td>
<td>34</td>
<td>SW¼ NW¼ NE¼ NW¼</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>County</th>
<th>Geocode</th>
</tr>
</thead>
<tbody>
<tr>
<td>PARK</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latitude</th>
<th>Longitude</th>
<th>Geomethod</th>
<th>Datum</th>
</tr>
</thead>
<tbody>
<tr>
<td>45.8681966515</td>
<td>-110.59747903</td>
<td>TRS-SEC</td>
<td>NAD83</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ground Surface Altitude</th>
<th>Ground Surface Method</th>
<th>Datum</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Addition Block Lot

Section 3: Proposed Use of Water
DOMESTIC (1)

Section 4: Type of Work
Drilling Method: ROTARY
Status: NEW WELL

Section 5: Well Completion Date
Date well completed: Friday, January 24, 2003

Section 6: Well Construction Details

<table>
<thead>
<tr>
<th>Borehole dimensions From</th>
<th>To</th>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>39</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Casing From</th>
<th>To</th>
<th>Diameter</th>
<th>Wall Thickness</th>
<th>Pressure Rating</th>
<th>Joint</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>20</td>
<td>0.250</td>
<td>Welded</td>
<td>Steel</td>
<td>PVC-SCHED40</td>
</tr>
<tr>
<td>11</td>
<td>39</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Completion (Perf/Screen) From</th>
<th>To</th>
<th>Diameter</th>
<th># of Openings</th>
<th>Size of Openings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>21</td>
<td>39</td>
<td>4</td>
<td>0.025</td>
<td>FACT SLOT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Annular Space (Seal/Grout/Packer) From</th>
<th>To</th>
<th>Description</th>
<th>Cont. Fed?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>BENTONITE</td>
<td></td>
</tr>
</tbody>
</table>

Section 7: Well Test Data

Total Depth: 39
Static Water Level: 19
Water Temperature:

Air Test *
50 gpm with drill stem set at 35 feet for 1 hours.
Time of recovery 0.26 hours.
Recovery water level 19 feet.
Pumping water level _ feet.

* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

Section 8: Remarks

Section 9: Well Log
Geologic Source
125FRUN - FORT UNION FORMATION

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
<td>CLAYBOUND SAND AND GRAVEL</td>
</tr>
<tr>
<td>10</td>
<td>14</td>
<td>WEATHERED SANDSTONE</td>
</tr>
<tr>
<td>14</td>
<td>21</td>
<td>BROWN SANDSTONE HARD</td>
</tr>
<tr>
<td>21</td>
<td>29</td>
<td>GRAY SANDSTONE HARD</td>
</tr>
<tr>
<td>29</td>
<td>31</td>
<td>BROWN SANDSTONE FRACTURED 15 GPM</td>
</tr>
<tr>
<td>31</td>
<td>35</td>
<td>GRAY SANDSTONE HARD</td>
</tr>
<tr>
<td>35</td>
<td>37</td>
<td>BROWN SANDSTONE FRACTURED 35 GPM</td>
</tr>
<tr>
<td>37</td>
<td>39</td>
<td>GRAY SANDSTONE HARD TD</td>
</tr>
</tbody>
</table>

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: WILLIAM HAYES
Company: HAYES DRILLING
License No: WWC-361
Date Completed: 1/24/2003
MONTANA WELL LOG REPORT

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

Site Name: HOFFMAN, MARK
GWIC Id: 121845
DNRC Water Right: C076586-00

Section 1: Well Owner(s)
1) HOFFMAN, MARK (MAIL)
P.O. BOX 162
CLYDE PARK MT 59018 [08/10/1990]

Section 2: Location

<table>
<thead>
<tr>
<th>Township</th>
<th>Range</th>
<th>Section</th>
<th>Quarter Sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>02N</td>
<td>09E</td>
<td>34</td>
<td>NW3/4 NW1/4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>County</th>
<th>Geocode</th>
</tr>
</thead>
<tbody>
<tr>
<td>PARK</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Latitude</th>
<th>Longitude</th>
<th>Geomethod</th>
<th>Datum</th>
</tr>
</thead>
<tbody>
<tr>
<td>45.8853575624</td>
<td>-110.60085968405</td>
<td>TRS-SEC</td>
<td>NAD83</td>
</tr>
</tbody>
</table>

Ground Surface Altitude: Ground Surface Method: Datum: Date

Section 7: Well Test Data

Total Depth: 68
Static Water Level: 23
Water Temperature:

Air Test *

50 gpm with drill stem set at _ feet for _ hours.
Time of recovery _ hours.
Recovery water level _ feet.
Pumping water level _ feet.

* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

Section 8: Remarks

Section 9: Well Log

Geologic Source

125FRUN - FORT UNION FORMATION

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>1</td>
<td>22</td>
<td>GRAVEL</td>
</tr>
<tr>
<td>22</td>
<td>50</td>
<td>SHALE</td>
</tr>
<tr>
<td>50</td>
<td>65</td>
<td>SANDSTONE LAYERED W/SHALE</td>
</tr>
<tr>
<td>65</td>
<td>68</td>
<td>SHALE</td>
</tr>
</tbody>
</table>

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: BERNARD WESTRA
Company: VAN DYKEN DRILLING INC
License No: WWG-380
Date Completed: 8/10/1990

mbmggwic.mtech.edu/sqlserver/v11/reports/SiteSummary.asp?gwicid=121845&agency=mbmg&reqby=M&
<table>
<thead>
<tr>
<th></th>
<th>WELL 1</th>
<th>WELL 2</th>
<th>WELL 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q (Gallons Per Minute)</td>
<td>18.00</td>
<td>53.00</td>
<td>50.00</td>
</tr>
<tr>
<td>Static Water Level</td>
<td>15.00</td>
<td>19.00</td>
<td>23.00</td>
</tr>
<tr>
<td>Pumping Water Level</td>
<td>55.00</td>
<td>35.00</td>
<td>65.00</td>
</tr>
<tr>
<td>(b) Aquifer/Thickness</td>
<td>30</td>
<td>18</td>
<td>17</td>
</tr>
</tbody>
</table>

(T) TRANSMISSIVITY (ft²/day)  
667.6675256  2446.005243  1281.270265

(K) CONDUCTIVITY (ft/day)  
22.35958419  135.8891802  77.62274333

AVERAGE CONDUCTIVITY (ft/day)  
78.59916923
**Project Name:** 412 First East: Neighbor's Well

**Client Sample ID:** 412 First East: Neighbor's Well  
**Lab Sample ID:** 1905144-01  
**Collection Date:** 05/08/2019  8:00  
**Collected By:** Clayton Bryington  
**Date Received:** 05/08/2019

<table>
<thead>
<tr>
<th>Analyte</th>
<th>Result</th>
<th>Units</th>
<th>RL</th>
<th>Qual</th>
<th>MCL</th>
<th>Method</th>
<th>Analysis Date/By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrate + Nitrite as N</td>
<td>0.452</td>
<td>mg/L</td>
<td>0.05</td>
<td>10</td>
<td></td>
<td>EPA 300.1</td>
<td>05/10/19 12:00/FAF</td>
</tr>
</tbody>
</table>
Appendix E

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

NITRATE SENSITIVITY ANALYSIS

SITE NAME: 412 1st St E, Clyde Park
COUNTY: Park
LOT #: E1/2 of Lots 1 & 2 of COS 1793
NOTES: Clayton Bryington

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>DESCRIPTION</th>
<th>VALUE</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Hydraulic Gradient</td>
<td>0.0090</td>
<td>ft/ft</td>
</tr>
<tr>
<td>D</td>
<td>Mixing Zone Thickness (usually constant)</td>
<td>15.0</td>
<td>ft</td>
</tr>
<tr>
<td>L</td>
<td>Mixing Zone Length (see ARM 17.30.517(1)(d)(viii))</td>
<td>100</td>
<td>ft</td>
</tr>
<tr>
<td>Y</td>
<td>Width of Drainfield Perpendicular to Ground Water Flow</td>
<td>48</td>
<td>ft</td>
</tr>
<tr>
<td>Ng</td>
<td>Background Nitrate (as Nitrogen) Concentration</td>
<td>0.45</td>
<td>mg/L</td>
</tr>
<tr>
<td>Nr</td>
<td>Nitrate (as Nitrogen) Concentration in Precipitation (usually constant)</td>
<td>1.0</td>
<td>mg/L</td>
</tr>
<tr>
<td>Ne</td>
<td>Nitrate (as Nitrogen) Concentration in Effluent</td>
<td>50.00</td>
<td>mg/L</td>
</tr>
<tr>
<td>#i</td>
<td>Number of Single Family Homes on the Drainfield</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Qi</td>
<td>Quantity of Effluent per Single Family Home</td>
<td>26.70</td>
<td>ft3/day</td>
</tr>
<tr>
<td>P</td>
<td>Precipitation</td>
<td>20.0</td>
<td>in/year</td>
</tr>
<tr>
<td>V</td>
<td>Percent of Precipitation Recharging Ground Water (usually constant)</td>
<td>0.20</td>
<td></td>
</tr>
</tbody>
</table>

EQUATIONS

\[ W = (0.175)(L)+Y \]
\[ W = 65.50 \text{ ft} \]
\[ Am = \text{Cross Sectional Area of Aquifer Mixing Zone} = (D)(W) \]
\[ Am = 982.50 \text{ ft}^2 \]
\[ As = \text{Surface Area of Mixing Zone} = (L)(W) \]
\[ As = 6550.00 \text{ ft}^2 \]
\[ Qg = \text{Ground Water Flow Rate} = (K)(l)(Am) \]
\[ Qg = 695.02 \text{ ft}^3/\text{day} \]
\[ Qr = \text{Recharge Flow Rate} = (As)(P/12/365)(V) \]
\[ Qr = 5.98 \text{ ft}^3/\text{day} \]
\[ Qe = \text{Effluent Flow Rate} = (#i)(Qi) \]
\[ Qe = 26.70 \text{ ft}^3/\text{day} \]

SOLUTION

\[ Nt = \frac{(Ng)(Qg)+(Nr)(Qr)+(Ne)(Qe)}{(Qg)+(Qr)+(Qe)} \]
\[ Nt = 2.27 \text{ mg/L} \]

BY: KP
DATE: June 28, 2019

REV. 03/2005
# MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

## PHOSPHOROUS BREAKTHROUGH ANALYSIS

**SITE NAME:** 412 1st St E, Clyde Park  
**COUNTY:** PARK  
**LOT #:** E1/2 of Lots 1 & 2 of COS 1793  
**NOTES:** Clayton Bryington

### VARIABLES

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lg</td>
<td>Length of Primary Drainfield as Measured Perpendicular to Ground Water Flow</td>
<td>48.0</td>
<td>ft</td>
</tr>
<tr>
<td>L</td>
<td>Length of Primary Drainfield's Long Axis</td>
<td>48.0</td>
<td>ft</td>
</tr>
<tr>
<td>W</td>
<td>Width of Primary Drainfield's Short Axis</td>
<td>16.0</td>
<td>ft</td>
</tr>
<tr>
<td>B</td>
<td>Depth to Limiting Layer from Bottom of Drainfield Lateral s*</td>
<td>6.0</td>
<td>ft</td>
</tr>
<tr>
<td>D</td>
<td>Distance from Drainfield to Surface Water</td>
<td>1200.0</td>
<td>ft</td>
</tr>
<tr>
<td>T</td>
<td>Phosphorous Mixing Depth in Ground Water (0.5 ft for coarse soils, 1.0 ft for fine soils)**</td>
<td>1.0</td>
<td>ft</td>
</tr>
<tr>
<td>Ne</td>
<td>Number of Single Family Homes on the Drainfield</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Sw</td>
<td>Soil Weight (usually constant)</td>
<td>100.0</td>
<td>lb/ft3</td>
</tr>
<tr>
<td>Pa</td>
<td>Phosphorous Adsorption Capacity of Soil (usually constant)</td>
<td>200.0</td>
<td>ppm</td>
</tr>
</tbody>
</table>

### CONSTANTS

<table>
<thead>
<tr>
<th>Constant</th>
<th>Description</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI</td>
<td>Phosphorous Load per Single Family Home (constant)</td>
<td>6.44</td>
<td>lbs/yr</td>
</tr>
<tr>
<td>X</td>
<td>Conversion Factor for ppm to percentage (constant)</td>
<td>1.0E+06</td>
<td></td>
</tr>
</tbody>
</table>

### EQUATIONS

- Total Phosphorous Load = (PI)(#1)  
  \[ Pt = 6.44 \text{ lbs/yr} \]
- Soil Weight under Drainfield = (L)(W)(B)(Sw)  
  \[ W1 = 460800.0 \text{ lbs} \]
- Soil Weight from Drainfield to Surface Water  
  \[ W2 = 18360000.0 \text{ lbs} \]
- Total Phosphorous Adsorption by Soils = (W1 + W2)((Pa)/(X))  
  \[ P = 3764.2 \text{ lbs} \]

### SOLUTION

Breakthrough Time to Surface Water = \( P / Pt \)  
\[ BT = 584.5 \text{ years} \]

**BY:** Kaleb Pearson  
**DATE:** June 28, 2019

**NOTES:**
- Depth to limiting layer is typically based on depth to water in a test pit or bottom of a dry test pit minus two feet to account for burial depth of standard drainfield laterals.
- Material type is usually based on test pit. A soil that contains more than 35% silt and clay sized particles is considered fine grained.

*REV. 04/2000*
Town of Clyde Park
P.O. BOX 177
CLYDE PARK, MT 59018
TELEPHONE/FAX 406-686-4719
Town of Clyde Park is an equal opportunity employer

Clayton Bryington
412 East 1st St.
P.O. Box 148
Clyde Park, MT 59018

RE: Water Connection

Mr. Bryington:

Your request to make a connection to the Town of Clyde Park waterworks system has been reviewed. Pursuant to Title 4 of the Clyde Park Municipal Code, you are welcome to make a connection to the waterworks system upon completion of a water service permit by the Community Service Officer. The permit requires the following information from you in order to be issued:

- Location, nature and purpose of the proposed work (detailed map);
- Inspections planned/scheduled as required by the code;
- Identification of all easements and cleared right-of-ways from the point of connection to the subject property (proof of easements and valid right-of-ways must be submitted to the Community Service Officer or Mayor for verification);
- Description of all materials intended for use to connect (§4.02.005A.2.a.);
- Identification of any obstructions or impediments and plans for circumventing or accommodating the same (i.e: how the service line will cross the ditch without obstructing the ditch);
- If the route involves crossing or opening a section of street, when and how the excavation will be done and payment of fees for the permit required;
- General Plumbing permit and proof of a licensed contractor to perform the work;
- Payment of the tapping fee pursuant to the fee schedule;
- Execution of a service contract for water service.

In accordance with the Town Code, the Town will arrange for the tap of the main and will inform the customer of the location for the tap and any excavation to the main. Please complete the water service application form required by §4.03.004. All expenses for laying the line from the main to the customer premises is at the expense of the customer, including materials (curb block, stop and waste cock, meter) as specified by the Town. All service pipe must be laid below street grade at a standard depth to prevent freezing. The customer assumes all liability from the location of the tap of the main to the premises. The Town will maintain the curb block, but the customer is liable for any owner-caused damage. Costs incurred to shut off service at the curb block and repair/replace service lines shall be borne by the customer/owner. The customer or the customer's licensed contractor or plumber shall coordinate with the Town as to the curb block and the stop and waste cock to insure compliance with the requirements of the Code. Any meter installed shall be in conformance with the Town's requirements in accordance with the Code.

You may obtain a copy of the relevant portions of the Town Code from the Town Clerk/Treasurer or another member of staff. Please allow sufficient time for staff to meet your request in the normal course of business.

We look forward to your business.

Town of Clyde Park

Alice Hartman
Mayor
Park County Area, Montana

248B—Tamanee cobble clay loam, 0 to 4 percent slopes

Map Unit Setting
National map unit symbol: 586x
Elevation: 4,300 to 5,500 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 70 to 90 days
Farmland classification: Not prime farmland

Map Unit Composition
Tamanee, cobble clay loam, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tamanee, Cobble Clay Loam

Setting
Landform: Stream terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Clayey alluvium derived from igneous and sedimentary rock

Typical profile
Ap - 0 to 3 inches: cobbly clay loam
Bt - 3 to 12 inches: clay loam
Btk - 12 to 15 inches: clay loam
Bk1 - 15 to 28 inches: very gravelly sandy loam
2Bk2 - 28 to 60 inches: very cobbly sandy loam

Properties and qualities
Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Salinity, maximum in profile: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water storage in profile: Low (about 5.9 inches)

Interpretive groups
Land capability classification (irrigated): 3e


Hydric soil rating: No

Data Source Information

Soil Survey Area: Park County Area, Montana
Survey Area Data: Version 10, Sep 11, 2018
Onsite Wastewater Treatment System Permit Application
Park County Environmental Health
Phone: (406) 222-4145 Fax: (406) 222-4763
414 E. Callender Street
Livingston, MT 59047

Owner information
Property owner Clayton Bryington Phone 406-220-0080
Mailing address P.O. Box 148 City, State Clyde Park Zip 59018

Statement of Accuracy and Permission to Inspect:
As the owner of the parcel of land described within the permit application, my signature below declares the information provided here is to the best of my knowledge. I acknowledge that the County Sanitarian and/or members of the Park County Board of Health are hereby empowered and authorized to enter upon my private property for the purpose of inspection and investigation concerning the onsite wastewater treatment system that treats, discharges, or disposes of wastewater to determine compliance with Park County and the State of Montana regulations.

Property owner signature (required) Clayton Bryington Date May 28, 2019

Property information
Site Address/Location 412 5th. St. E Town/City Clyde Park
Section 34 Township 2N Range 9E □ COSA □ COS # 1793 E1/2 Lot 2 & 2
Name of Subdivision (If applicable) WTL Add. Clyde Park Tract/Lot # E1/2 of Lot 17 Acres 1.24/
Directions to site 89 North to Clyde Park, East on 1st St, Prop. on South side of Street

Permit information (Check all that apply)
System to be installed by Park County licensed installer
☑ New □ Repair/Replacement System □ Upgrade/Expansion □ Connect to Existing Permit # □ Residential system □ Seasonal residence ☑ Full-time residence
Number of living units 1 *Living unit means the area under one roof that can be used for one residential unit and which has facilities for sleeping, cooking, and sanitation. A duplex is considered two living units.
Number of bedrooms in each living unit (including unfinished basements) 3

☐ Commercial system ☐ Private (serving ≤24 or more people <60 days per year daily) ☐ Public (serving 25 or more people 260 days per year daily)

Public systems require Montana DEQ approval
Number of commercial units ________
Daily design flow (gpd) ________ Rationale for design flow (include calculations) ________
System design and specifications*

Septic tank size 1000 gallons Pump chamber size N/A ✔ Concrete □ Fiberglass □ Other

Drainfield components: 3 Laterals 48 ft long 2 ft wide 3 ft deep

*On-site Wastewater treatment systems shall be designed and constructed in accordance with the requirements described in ARM Title 17, Chapter 36, Subchapters 1-8, Subdivision Rules, and ARM Title 17, Chapter 36, Subchapter 9, On-site Subsurface Wastewater Treatment, and Montana Department of Environmental Quality Circular DEQ 4, 2013 edition, Park County Onsite Wastewater Treatment Regulations, and "How to Perform a Non-degradation Analysis for Subsurface Wastewater Treatment Systems Under the Subdivision Review Process", Revised October 2015, or most recent editions.

Site evaluation report (if applicable, submit additional documents as necessary)

Date of soils test 5/14/19 Weather conditions warm & sunny

<table>
<thead>
<tr>
<th>Horizon/Depth</th>
<th>Soil Description (include type, texture, structure, mottles, limiting layers, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0&quot; - 24&quot;</td>
<td>Sandy clay loam, light gray w/cobbles</td>
</tr>
<tr>
<td>24&quot; - 96&quot;</td>
<td>Loamy sandy w/lots of cobbles</td>
</tr>
</tbody>
</table>

Application rate according to Table 2.1-1 Montana DEQ Circular 4 0.8 ft²/gpd

Comments/Unusual site features: will need variance due to approval

due to location of irrigation ditch

Non-degradation analysis included: ✔ Yes □ No, this property meets the requirements of categorical exemption #

If no, provide further details

Please submit all applicable documentation with this application- including but not limited to: flood plain maps, proposed lot layout, septic layout, pump requirements, well and water line locations, surface water locations, ground water monitoring results, etc.

A permit will not be issued until all necessary documentation has been received and approved by this office

As a Park County licensed site evaluator, my signature verifies that I have addressed the above parameters for this site. I have completed the site evaluation according to all applicable rules and regulations and the documentation provided above accurately reflects the conditions at this site. All information herein provided is true, complete, and correct to the best of my ability and knowledge.

Signature of site evaluator

Printed name

Date
Note: ditch only flows water 3-4 month/year during growing season & does not flow back into State Waters.
2’ 7” measured from bottom of ditch to natural grade
Excavate the trenches down to 3’ below surface (as allowed by DEQ Circular 4). Even though the wastewater being distributed by the drainfield is assumed to flow toward the ditch, it should have minimal effect on the water flowing through the irrigation ditch and will flow underneath the surface water.