TIMBRSHOR HOMEOWNERS ASSOCIATION
WELL 5/9 PUBLIC WATER SUPPLY DESIGN REPORT

Lake County
Polson, MT 59860

Prepared for:

Timbrshor Homeowners Association

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1.0 INTRODUCTION

Hydrometrics, Inc. has prepared the following Public Water System Design Report to support an application to the Montana Department of Environmental Quality (DEQ) for a new proposed Public Water System (PWS) to serve the condominium subdivision referred to as Timbrshor, managed by the Timbrshor Homeowners Association (THOA). The proposed PWS, referred to as the Well 5/9 system, will service 24 condominium units with 19 service connections within the Timbrshor subdivision. An additional 24 units within the Timbrshor subdivision will be serviced by separate Public Water Systems, submitted to and approved by the DEQ under separate covers.

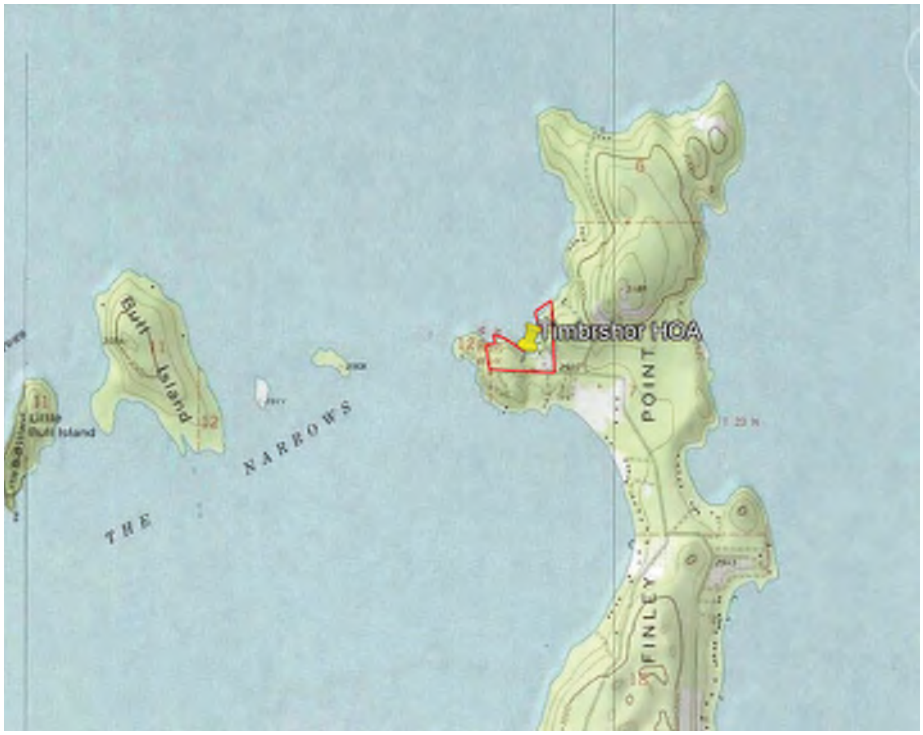
This Well 5/9 PWS system design report addresses the requirements of Circular DEQ 3 – Standards for Small Water Systems (MDEQ, 2018) and presents all the data required of the Circular DEQ 3 Design Report.

2.0 PROJECT BACKGROUND

2.1 LOCATION

The THOA is located in the SW ¼ of the NW ¼ of Section 7 of Township 23 N., Range 19 W. It is located on Finley Point, on the southeast side of Flathead Lake. The project is located within Lake County. The Property is described as the Borchers at Finley Point (Assessment Code 0000077777). It is located at approximately a latitude of 47.7702 N, longitude 114.0901 W. Figure 1 shows the Site Location.

FIGURE 2-1. SITE LOCATION MAP



2.2 BRIEF PROJECT HISTORY

A Certificate of Subdivision Approval (COSA) was issued on July 22, 1977 (Appendix A) for the Borchers of Finley Point project that included one 20-acre lot with 50 proposed lease residential building sites (units), to be served by community surface water systems and community sewer systems (#24-77-K902). The property also included 16 existing units and a lodge served by individual water and sewer systems that were exempt from subdivision approval because their development predated the Sanitation in Subdivisions Act. The 1977 COSA (Appendix A) required connection of proposed subdivision units to a community

surface water supply system; however, the original developer did not complete the permitting and did not develop the necessary water infrastructure according to approved documents and the approvals for both the community public water and sewer systems expired before the systems were constructed.

In June 2007, Lake County Environmental Health Department determined that the legal record for this subdivision needed to be corrected and that Borchers of Finley Point must revise its DEQ approval regarding water and wastewater systems (Appendix B). Based on the findings of non-compliance with the 1977 COSA, Lake County Environmental Health Department issued a building moratorium on the subdivision until such time that the community wastewater system and water system were approved by DEQ and an orderly plan for future water and wastewater infrastructure was provided. Lake County Planning Department issued a letter on June 11, 2009 (Appendix C), detailing the issues and necessary steps to resolve these issues, in order to bring the subdivision into compliance.

In 2016, Hafferman Engineering, Inc. (HEI) applied for a rewrite of the COSA on behalf of the THOA to address the wastewater treatment systems. In September 2016, COSA EQ#15-1971 was issued and superseded COSA #24-77-K902 for the wastewater treatment systems only, and stated that the original conditions not changed by this approval are still in effect and that the original July 27, 1977 community Water supply system approval (E.S. 77/K345) was not being modified as part of the scope of this wastewater re-write. The re-write added a proposed unit to the development (#317) that had been inadvertently omitted from the previous 1977 COSA, and exempted (established sanitary restrictions on) one of the previously approved units (#217) at the request of the owner. In addition, six of the previously approved units (#202, 319, 413, 420, 423 and 425) were restricted from development per the “Restriction on Development of Identified Lots”, agreed to by Lake County Commissioners on April 16, 2015. Under EQ#15-1971, proposed multi-user and public wastewater treatment systems were reviewed and approved to serve all the proposed or existing units in the development, including the 16 units and lodge that had previously been exempt from the 1977 COSA. All the approved

wastewater treatment systems have been constructed.

Unfortunately, since the approval for the water supply systems had expired in 1980 and the approval of COSA EQ#15-1971 superseded COSA #24-77-K902 for the wastewater treatment systems only, the subdivision was left without an approved water supply. The THOA received a letter from MDEQ on January 9, 2018 (Appendix D), which listed unit compliance/ non-compliance with the 1977 COSA and provided three options for the non-compliant units to become complaint. Table 2-1 provides a list of the units, their compliance/ non-compliance status, and whether they have been developed. Of the 48 units that currently exist, 17 units are listed in the 1977 COSA as exempt and in the January 9, 2018 MDEQ letter as compliant; while the remaining 31 units are listed in the January 9, 2018 MDEQ letter as non-compliant. As stated in the January 9, 2018 MDEQ letter, Units 203, 204, 205, 210, 211, 306, 307, 308, 309, 311, 312, 314, 315, 316, 401, 402 and the lodge were outlined as having individual water systems that predated the 24-77-K902 Borchers at Finley Point Water Certificate of Subdivision Approval (dated July 22, 1977); therefore, these lots may remain served by individual water systems in lieu of connection to the proposed PWS systems. Of the 31 non-compliant units, 12 of them are currently developed. The three options for the non-compliant units provided by the MDEQ in the January 9, 2018 (Appendix D) letter were as follows:

1. Leave the 1977 COSA pertaining to water in place and obtain approval from DEQ of a community public water supply system, served by either groundwater or surface water. If the community PWS system is designed for domestic use only, groundwater wells that pump less than 35gpm and 10 acre-feet of volume per year could be used for supply.
2. Rewrite the 1977 COSA to allow for individual, shared, or multi-user water systems that could be served by groundwater wells that pump less than 35gpm and 10 acre-feet of volume per year.
3. Rewrite the 1977 COSA for individual or shared cisterns.

Since 2018, new water supply system plans were prepared by HEI and submitted to DEQ for review and approval as a community public water supply system. The DEQ issued conditional approval for the groundwater well locations on April 15, 2020 (Appendix E).

Based on documents prepared by HEI, the following project criteria have been documented

and have guided the design and decision making process:

- Option #2 (above) from the DEQ 01/9/2018 letter would be followed, the DEQ rules will allow for multi-user wells with less than fifteen (15) connections and PWS wells for more than fifteen (15) connections, and the 1977 COSA would be re-written to allow for multiple multi-user and PWS systems.
- All of the water supply systems within the Timbrshor Subdivision are Transient non-community (TNC) public water supply systems because they do not regularly serve at least 25 of the same persons for at least 6 months a year. Timbrshor is seasonally occupied from approximately June 1st to September 1st by 33 units, while two units are occupied year round.
- The TNC system design shall supply domestic water, via groundwater wells, that supply less than 35 gallons per minute (gpm) and use less than 10 acre feet of water per year. These wells will hopefully secure a protected water right. Only one well is required for each TNC system; however, more than one well may be provided.
- When the number of connections needs to be expanded beyond the well yield, assuming the DEQ peak design flow requirement for a minimum of three (3) gpm average daily flow rate per unit, storage tanks will be installed between the well and the units. Storage will allow the well to pump less than 35 gpm, while achieving peak demand through larger pumps in the storage tanks.
- Although there are 17 existing units that do not require system upgrades, a majority have advised the THOA that they would like the option to receive a connection from the TNC groundwater system but understand that connection to the system is not a requirement.

Since the Lake County Planning Department issued a letter on June 11, 2009 (Appendix C), detailing the issues and necessary steps to resolve these issues, the THOA has been working towards accomplishing these subdivision corrections. The THOA has taken on the responsibility of developing the master plan for the entire subdivision water system, completing the system engineering, and re-writing the COSA, in an effort to get the building moratorium removed. As part of this process, the THOA has created Well Groups (Table 2-1) and has drafted Well User Agreements (Appendix F), with each group being responsible to build, operate and pay for their respective water system.

Units have been assigned to one of three well groups. Each well group will be a different PWS and will provide water service to a different service area. Between the three separate well groups, water service will be provided to the entire Timbrshor property. Water service was separated into three well groups, rather than combining them under a single PWS, due to the physical constraints of the site and the economic limitations of combining the systems. Further

discussion of this separation into three separate well groups is provided in Section 3.8. The well groups are follows:

- The eastern Well Group will service areas along Borchers Ln, Coot Ln, and Woodpecker Ln will be served by two wells, Wells No. 5 & Wells No. 9. The PWS servicing this Well Group has been named the Well 5/9 PWS.
- The central Well Group will service an area at the eastern end of Osprey Ln and will be served by one existing well, the McCarthy Well. The PWS servicing this Well Group has been named the McCarthy Well PWS.
- The western Well Group will service an area on the Osprey Ln loop and at the end of Snowberry Ln. The western Well Group will be serviced by one well, Well No. 4. The PWS servicing this Well group has been named the Well No. 4 PWS.

3.0 WELL 5/9 PUBLIC WATER SYSTEM

3.1 OWNERSHIP

The Well 5/9 Public Water System will be owned by the Well 5/9 Well Group and operated by the Timbrshor Homeowners Association. Their mailing address is:

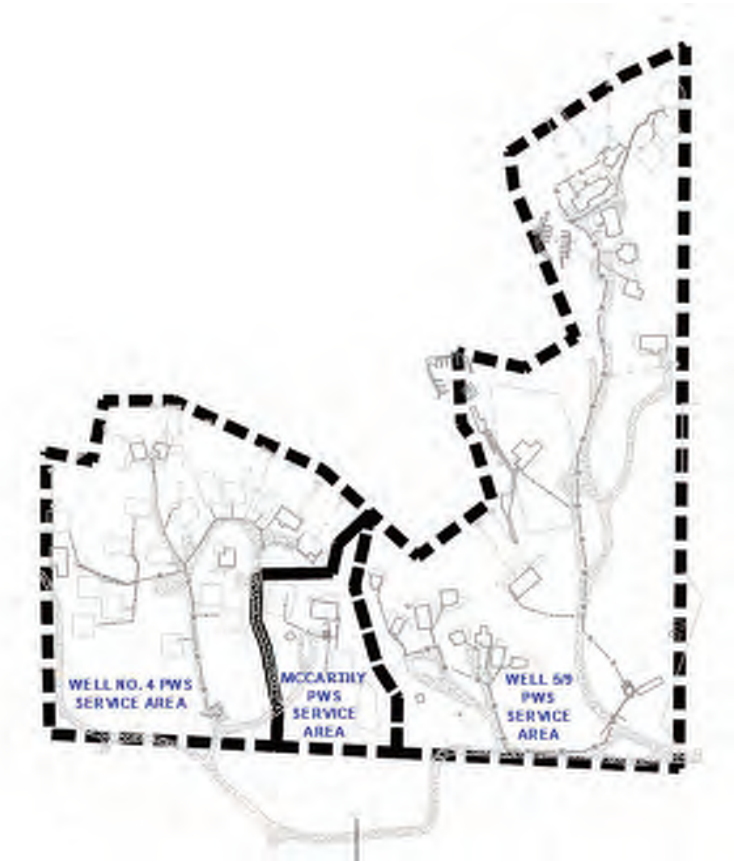
Timbrshor Homeowners Association Well 5/9 Well Group
Timbrshor Lake County Water and Sewer District Entity 102414
C/o Blake Johnson Chairman
30371 Osprey Lane
Polson, Montana 59860

3.2 SYSTEM BOUNDARIES

The Timbrshor subdivision is approximately 20 acres in size and is classified as a Condominium Subdivision based on Chapter VI of the Lake County Subdivision Regulations. The THOA and Timbrshor subdivision boundary is shown on Figure 2.

The service area for the Well 5/9 PWS is shown on Sheet 2 of the Plans (Appendix G). The service areas for the Well No. 4 PWS and the McCarthy Well System are also shown in Figure 3-1. The service areas are also shown on Figure 3-1. Water service will be provided by one of these three water systems to all noncompliant lots that have an existing structure. Additionally, service line connections will be made to undeveloped lots at the time of their construction. The service line connection locations for undeveloped lots may need to be relocated by the owner at the time of construction. The proposed locations of the service line connections for both developed and undeveloped lots are shown on Sheet 2 of the Plans (Appendix G). There are no proposed or existing noncompliant units within the THOA boundary that will not be served by one of these three water systems.

FIGURE 3-1. SERVICE AREAS



There are no plans to provide water service to facilities outside of the THOA boundary. Additionally, there are no plans for future development of the lot that could increase or change water demands beyond the development of the 48 units described in the COSA EQ#15-1971.

3.3 WATER SYSTEM CLASSIFICATION

All of the units within the THOA are seasonally used by its residents, with the exception of two units. At this point in time, the remainder of the units are primarily used between May and September each year intermittently. Within the Well 5/9 system, two of the units currently experience year-round usage.

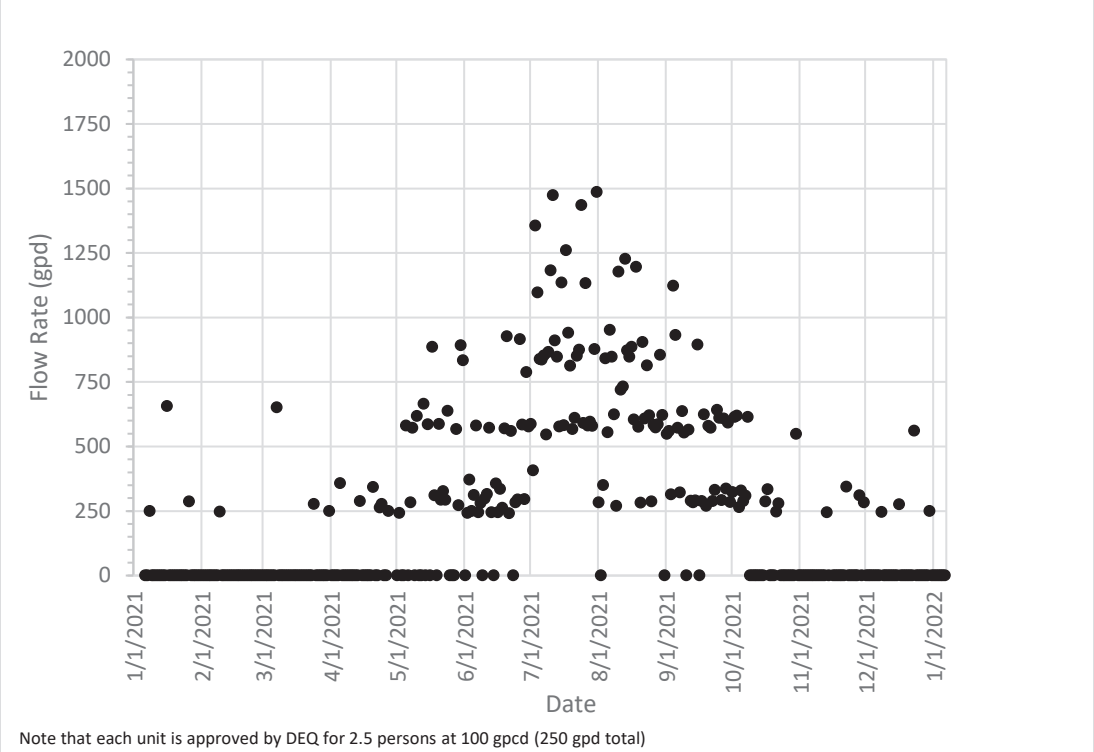
As a result, the Well 5/9 PWS does not meet the requirements for classification as a community water system, since it does not regularly serve at least 25 of the same persons for more than 6-

months a year or have 15 service connections used by year-round residents. Additionally, since the primary use of the units is seasonal and owners do not occupy the units for more than 6-months out of the year, the system meets the definition of a Transient Non-Community (TNC) Public Water System.

A REVIEW OF THE 2021 SANITARY SEWER FLOW RECORDS FROM SYSTEM A OF THE WASTEWATER TREATMENT SYSTEM (SYSTEM A) PROVIDES EVIDENCE SUPPORTING THE SEASONAL AND INTERMITTENT USE OF THE UNITS IN THE WELL 5/9 PWS SERVICE AREA. SYSTEM A COLLECTS WASTEWATER FLOW FROM UNITS 201, 203, 204, 205, 206, 209, 210, 211, 215, 216, 301, 302, 305, 306, 307, 308, 309, 311, AND THE LODGE, A TOTAL OF 19 UNITS. UNITS 215, 216 AND 217 MAY BE ADDED TO THIS SYSTEM AT A FUTURE DATE. ALL OF THESE UNITS ARE IN THE WELL 5/9 PWS SERVICE AREA.

Figure 3-2 shows these daily flow rates.

FIGURE 3-2. WASTEWATER SYSTEM A DAILY FLOW RATES



While not anticipated, if use were to change such that 25 of the same persons lived in the units year-round, or 15 or more of the units had year-round residents, then the PWS would need to be reclassified as a Community water system. If reclassification of the PWS were to occur, water quality data would need to be evaluated to determine if the system meets the DEQ requirements and treatment may be necessary if certain parameters are not in compliance. Additional requirements including the need to hire a Certified Water Operator to run the system and conduct more stringent testing and reporting would also be required.

3.4 EXISTING FACILITIES

3.4.1 Units

There are currently 48 units that are within the THOA boundary. The Well 5/9 PWS will have 19 service connections, servicing 24 units. Table 2-1 shows the units and service connections that are included in the Well 5/9 system.

There are no plans to expand the THOA to beyond 48 units as a whole (43 service connections) or for the Well 5/9 system to service more than 24 units (19 service connections).

TABLE 2-1. UNIT CONSTRUCTION AND SERVICE SUMMARY

Unit	PWS	Developed Pre-COSA & Compliant?	Currently Developed?
408	Well No. 4	-	-
417		-	-
416		-	-
429		-	-
426		-	-
427		-	-
428		-	Yes
430		-	-
422		-	-
421		-	-
401		Yes	Yes
402		Yes	Yes
424		-	-
418/419		-	Yes
403/404		-	-
406		-	Yes
410		-	-
411		-	Yes
412		-	Yes
409		-	Yes
414	McCarthy Well	-	-
317		Pre-COSA*	Yes
318		-	-
320		-	-
316	Well 5/9	Yes	Yes
315		Yes	Yes
314		Yes	Yes
312		Yes	Yes
311		Yes	Yes
301		-	Yes
305		-	Yes
302		-	Yes
306		Yes	Yes
307			
308			
309			
Lodge		Yes	Yes
209		-	Yes
205		Yes	Yes
206		-	Yes
203		Yes	Yes
204			
211		Yes	Yes
210			
201		-	Yes
217		-	-
216		-	-
219		-	-

*Inadvertently left off Water COSA, but included in Wastewater COSA. Water system not Compliant.

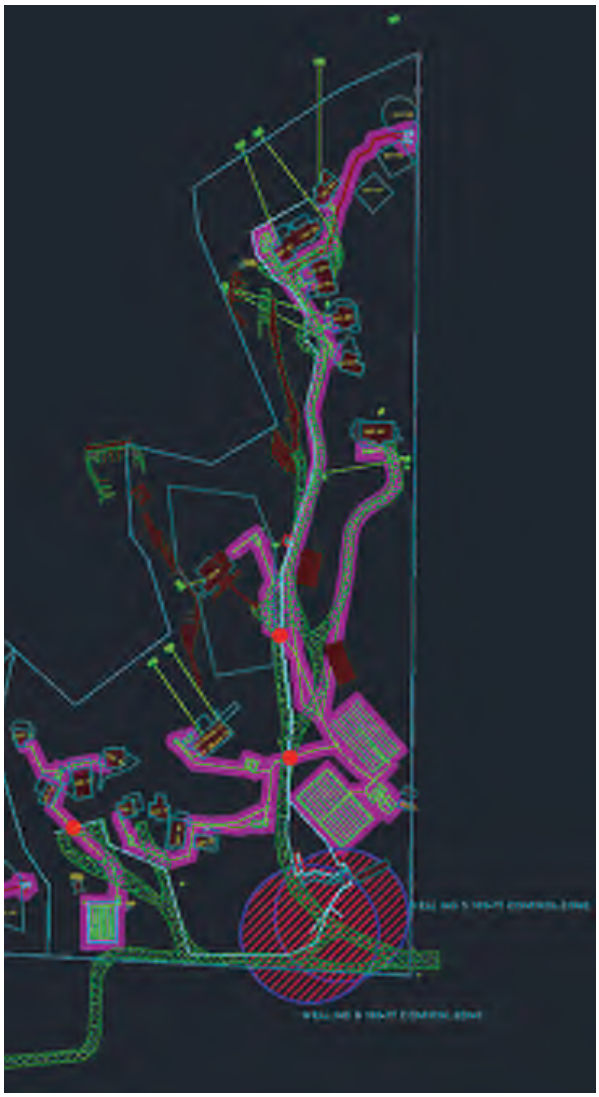
3.4.2 Potable Water Facilities

Currently, there is not a centralized water distribution system and the separate lots that have been constructed have individual intakes that draw water from Flathead Lake. The existing intakes and the service lines are shown on Sheet 2 of the Plans in Appendix G. The units that have currently been developed are listed in Table 2-1. Several of these units were identified in the 1977 COSA as being compliant. These units are also listed in Table 2-1. The units that are compliant have the ability and authority to continue to use their existing water systems and have the ability to elect not to connect to the proposed PWS. Existing water systems will not be able to be connected into the new PWS and shall remain physically separate.

3.4.3 Sanitary Sewer Facilities

The existing sanitary sewer facilities were recently improved upon in 2018. This work was required as part of the 1977 COSA (COSA #24-77-K902), which was superseded in September 2016 by COSA EQ#15-1971. As a result of those improvements, several drain fields were constructed and a sanitary sewer system collection system map was developed. The sanitary sewer collection system map includes both the existing sanitary sewer facilities as well as proposed connections for the units that have not yet been developed. The existing and proposed sanitary sewer facilities in the Well 5/9 service area are shown on Figure 3-3, highlighted in purple. Unit 217 currently has sanitary restrictions placed on it, which are in the process of being resolved, so that these restrictions can be removed and this Unit can be developed.

FIGURE 3-3. SANITARY SEWER FACILITIES



3.5 SITE CONDITIONS

The Well 5/9 system is located in an area with very shallow bedrock. The bedrock is located at an approximate depth of 0-4 feet below the ground surface. There are many locations where the bedrock is exposed at the surface. The water mains will be largely constructed in trenches excavated from the bedrock. Building foundations will likely be constructed so their foundations will be on bedrock. There are no proposed subsurface structures due the shallow bedrock conditions.

3.6 ALTERNATE PLANS

3.6.1 Public Water System Configuration

The construction of a single PWS that would connect all three service areas was considered as part of the overall water system planning effort. However, the cost of connecting these separate water systems is significant, due to the following:

- High cost of bedrock excavation,
- Large distance and change in elevation between systems,
- Interconnection of the systems would require a water main to run on adjacent property, not owned by THOA.

As part of the well location selection process and approval, it was determined by the THOA and DEQ that it was not economically feasible to make a connection between the McCarthy system, the Well 5/9 system or the Well No. 4 systems.

Additionally, the McCarthy system is existing and would require minimal current capital costs to continue its operations. Therefore, it was determined that a more cost-effective solution would be to provide three separate water systems.

3.6.2 Well Locations

During the course of investigating locations for a PWS well, several well locations were identified within the THOA boundary. The property has a large number of existing septic systems and associated leach fields and pipes. As a result, there are very few locations on property that are less than 100-feet away from a sanitary sewer pipe, septic tank, or leach field. HEI investigated multiple locations prior to requesting approval for the current Well No. 4, Well No. 5 and Well No. 9 locations. These well locations are shown in Figure 3-4.

FIGURE 3-4. CONSIDERED WELL LOCATIONS

Following this investigation, two locations were identified as suitable locations for wells to serve the Well No. 5/9 PWS. These locations are shown in Figure 3-2. Only one location was identified as a suitable location to serve the McCarthy Well PWS and one location was identified as a suitable location to serve the Well 4 PWS. The locations of those 4 wells were approved by DEQ on April 15, 2020. That approval is included in this report as Appendix E.

3.7 PROPOSED WELL NO. 5 & WELL NO. 9

The Timbrshor Subdivision lies within the boundaries of the Confederated Salish and Kootenai Tribal (CSKT) reservation. In order to be able to construct a water supply system that would not require issuance of a State of Montana or CSKT permit, the THOA determined that a water supply system needed to be designed to supply domestic water and served by groundwater wells that will pump less than 35 gallons a minute (gpm) and use less than 10-acre feet of water per year. At this point in time, it is our understanding that each Well Group could obtain a protected right in the use of the water by each of them filing a Montana Department of Natural Resources and Conservation (DNRC) Notice of Completion of Groundwater Development for each well.

The Proposed Well No. 5 is located at approximately latitude 47.7697 N, longitude 114.0870 W. The Proposed Well No. 9 is located at approximately latitude 47.7697 N, longitude

114.0873 W. Both wells were conditionally approved by the DEQ on April 15, 2020. This conditional approval (EQ#20-1440) is attached as Appendix E. Neither well has been drilled. As a result, the two wells have not yet had an aquifer test or water quality sampling performed at this time. Prior to placing wells into service, this will be performed and submitted to DEQ, alongside the other conditions listed in the April 15, 2020 conditional approval letter (Appendix E).

Based on the production capacity of other wells in the same area and aquifer, it is assumed at this time that the wells will be able to produce 15 gpm of water during peak demand periods. If through aquifer testing, the wells are not able to produce this flow rate of water or have additional capacity, the proposed design(s) will need to be revised.

3.8 SERVICE AREA POPULATION

3.8.1 Unit Descriptions and Population

The THOA currently has 31 developed units in 25 separate buildings. 21 of those units and 16 of those buildings are within the Well 5/9 service area boundary. None of those buildings currently have a service connection, as there is not currently a central water system. Each building will, under the PWS, have a service connection unless the owner of a currently compliant unit and/or building elects not to participate in the PWS. 15 of the units (10 buildings) within the Well 5/9 service area were constructed before the 1977 COSA and are considered to be compliant. Table 2-1 lists all of the units within the THOA property boundary and whether or not they are considered to be compliant.

A development moratorium has been placed on the THOA until water and sanitary sewer services can be provided to the units within the HOA that were constructed after the signing of the 1977 COSA. Additionally, the development moratorium will be continued by Lake County until the COSA can be updated with the State of Montana.

Once the development moratorium is lifted, the THOA may add an additional 3 units (3 service connections) within the Well 5/9 service area. The development of those 3 units will require the construction of 3 buildings, each with its own service connection. A summary of all of the

units is included in Table 2-1.

Full buildout of the Well 5/9 system would result in 24 units and 19 service connections within the Well 5/9 service area.

For purposes of calculating both existing and proposed water demands, it is estimated that each unit has approximately 2.6 persons living in it, on average, when in use. Use of the units within the THOA boundary is both seasonal and intermittent, with the most usage occurring during the summer months between May and September. This pattern of usage is not expected to change as additional lots are developed since most of these units are second homes or vacation homes for the owners.

Within the Well No. 5/9 PWS service area, two of the existing units currently experience year-round usage. It is anticipated that following full buildout, the use pattern will not change and that none of the additional 3 units (3 service connections) within the Well No. 5/9 PWS service area will experience year-round usage.

3.9 WATER DEMAND

3.9.1 Existing Water Demand

3.9.1.1 Background

Currently each individual unit within the Well 5/9 service area boundary has an unmetered water service line and intake that extends into Flathead Lake. There is no existing water usage data.

3.9.1.2 Average Day

Because there is no existing water use data for this system, an average demand of 100 gallons per capita per day (gpcd) has been used to calculate the average daily demand per DEQ-3 Section 3.2.1.2.a. Existing Average Day water demands have been calculated assuming full occupancy of each unit with 2.6 persons per unit (US Census Bureau). This calculation represents the approximate average demand during full occupancy periods and is a conservatively high estimate of the existing water demand for the system.

3.9.1.3 Maximum Day

Existing Maximum Day demands have been calculated using a peaking factor of 1.5 times the Average Day Demand. Given the intermittent and seasonal use of the THOA alongside the conservative assumption that all units are simultaneously occupied, this is an appropriate peaking factor for calculating the Maximum Day demand.

3.9.1.4 Peak Hour

The existing Peak Hour demand has been calculated using methods provided for in Chapter 5 of the AWWA Water System Design Manual. Calculations are attached to this report as Appendix H.

3.9.1.5 Fire Protection Demand

The THOA is located within the FPFD service area. There is not currently a water storage and distribution system provided for firefighting purposes within the THOA boundary, however Flathead Lake is adjacent to the property and the water in the lake has historically been used as a water source for firefighting purposes for the area within the Finley Point/Yellow Bay Fire Department (FPFD) service area.

3.9.1.6 Summary

Table 3-1 shows the calculated existing water system Average Day, Maximum Day and Peak Hour demands for the units currently present within the Well No. 5/9 service area.

TABLE 3-1. WELL 5/9 SERVICE AREA WATER DEMANDS

	Existing*	Full Buildout	Units
Average Day Demand	5502	6288	(gpd)
Maximum Day Demand	8253	9432	(gpd)
Peak Hour Demand	35	38	(gpm)

(*) Existing system is not metered and is not a single connected system. Values shown are estimates of usage during full occupancy conditions within service area boundaries.

3.9.2 Proposed Water Demand

3.9.2.1 Fire Protection and Other Uses

Based on discussions with the local fire chief at FPFD, fire flow is not required to be provided as part of the potable water system and emergency fire water can be provided through the use of a dry hydrant with a suction hose that terminates in Flathead Lake. Water storage for firefighting purposes could also be provided in cisterns separate from the water system. Therefore, there is not a fire flow demand included in the proposed water system, since water demands associated with firefighting activities will be provided for separately.

The system will not be used for commercial or industrial purposes and the water system will not be used for lawn watering or irrigation purposes.

3.9.2.2 Average Day

For water system planning purposes, it was assumed that all of the units are occupied and that there are 2.6 persons in each unit. It was also assumed that all of the buildings within the Well 5/9 service area were constructed and that they are all served from the Well No. 5/9 PWS. Because there is no existing water use data for this system, an average demand of 100 gallons per capita per day (gpcd) has been used to calculate the average daily demand per DEQ-3 Section 3.2.1.2.a. It has also been assumed that there will be simultaneous use of all of the units (full occupancy). Given the intermittent and seasonal use of the THOA units, this is a conservative assumption and will result in calculated demands that are likely high.

3.9.2.3 Maximum Day

Proposed Maximum Day demands have been calculated using a peaking factor of 1.5 times the Average Day Demand. Given the intermittent and seasonal use of the THOA alongside the conservative assumption that all units are simultaneously occupied, this is an appropriate peaking factor for calculating the Maximum Day demand for design purposes.

3.9.2.4 Peak Hour

The proposed Peak Hour Demand has been calculated using methods provided for in Chapter 5 of the AWWA Water System Design Manual. Calculations are attached to this report as Appendix H.

3.9.2.5 Summary

Table 3-1 shows the calculated proposed water system average daily, maximum day and peak hour demands for the proposed Well No. 5/9 system.

3.10 ESTIMATED SUPPLY YIELD

3.10.1 Existing

There is no current well as part of the Well 5/9 system.

The McCarthy well, which is inside of the THOA boundary is not currently metered. At the time of well testing, the McCarthy well was able to produce a flow rate of 15 gpm during the pumping test. This test was performed in 1985 and is believed to be a reasonable estimate of the production capacity of the existing and proposed wells. The Well Log Report for the McCarthy well is provided in Appendix I.

3.10.2 Proposed

The proposed Well No. 5 and Well No. 9 are each estimated to be able to provide 15 gpm during peak demand periods. The existing supply is limited by the DNRC and the CSKT to 35 gpm and 10 acre-feet per year. It is not anticipated that the Well No. 5 nor the Well No. 9 system will exceed the flow rate limit of 35 gpm or the volume limit of 10 acre-feet per year. It is estimated that due to the seasonal and intermittent usage of the system, approximately 2.0 acre-feet of total water will be used each year after the full buildout of the development and that the wells will be able to supply that volume of water. This calculation is provided in Appendix H.

The anticipated production rate of 15 gallons per minute will be sufficient to meet the Maximum Day demand. As shown in Table 3-1, the Maximum Day demand of the proposed Well No. 5/9 system is 9,432 gpd. If one well is pumping continuously at a rate of 15 gpm, it will be able to produce more than 21,000 gallons during a day. This volume of likely production capacity exceeds the required Maximum Day demand. It is possible that the production rate of the well could be less than 15 gpd. If this occurs, then the production of the

well could be as low as 7 gpm and still be able to meet Maximum Day Demands. It is not anticipated that the production capacity of the well will be less than 7 gpm. For the purpose of calculating the required amount of storage, a supply production rate of 10 gpm has been assumed, which is conservatively low. Additionally, it was assumed that only one well was pumping at a time, even though both wells could in theory be pumping simultaneously.

During Peak Hour demands, the system demand will be greater than the production capacity of the well(s). To prevent the system from running out of water, the system will draw water from storage while the well(s) are pumping into the storage tanks. In order to meet these demands, 8,000 gallons of storage will be provided as part of the Well No. 5/9 system. This storage will be provided in the Pumphouse #5/9 building. It will be provided in two 4,000 gallon above-ground polyethylene water storage tanks.

3.11 OPERATION

The Well 5/9 system will be operated by the Timbrshor Homeowners Association or their designated representative.

3.12 PLANS AND SPECIFICATIONS

Plans for the proposed Well No. 5/9 PWS are attached as Appendix G.

Specifications for the proposed Well No. 5/9 PWS are attached as Appendix J.

3.13 TECHNICAL, MANAGERIAL AND FINANCIAL CAPACITY

3.13.1 Technical Capacity

The physical infrastructure is described in the attached plans and specifications as well as this report and its appendices.

The source water adequacy is described in the Source Water Delineation and Assessment Report prepared by HEI. This document is included as Appendix K to this report.

An Operations and Maintenance Manual (O&M) manual will be provided following

construction of the system.

3.13.2 Managerial Capacity

The Well No. 5/9 PWS will be owned by the THOA Well 5/9 Well Group. The owner's address is:

Timbrshor Homeowners Association
Timbrshor Lake County Water and Sewer District Entity 102414
C/o Blake Johnson Chairman
30371 Osprey Lane
Polson, Montana 59860

The PWS will be staffed and operated by the THOA Well 5/9 Well Group. The THOA will assign one of its board members the responsibility to manage, operate and maintain the system. This person will be responsible for obtaining, coordinating and submitting all required water quality samples, including those for nitrates, nitrites, total dissolved solids, and *E. coli*.

The operator of the system will be the Well 5/9 Well Group, as a certified water operator is not needed for a transient non-community system. The board may assign additional or alternate persons to serve as the operator or back-up operator depending on whether those persons will be on-site.

Records will be maintained by the Secretary of the THOA and will be stored on-site in Pumphouse #5/9. These records include records of operation, service maintenance, and repairs, plans and specifications for construction, as-built drawings, O&M manuals, and compliance information. This information will be accessible to the operators, managers and owners of the system.

In the event that the Well #5/9 Well Group becomes insolvent, then the system will be maintained by the THOA.

3.13.3 Financial Capacity

The capital cost of the project will be paid for by the Well #5/9 Well Group. The Well #5/9 Well Group will receive funds from the owners of the properties within the THOA who will pay dues and assessment fees for capital and maintenance costs of the system.

4.0 WATER SOURCES

4.1 WELL NO. 5 & WELL NO. 9 LOCATIONS

The Well No. 5 and Well No. 9 locations were selected following a review of the locations of the existing sanitary sewer facilities, road access and power availability. The selected locations were feasible locations within the service area that had road access and which had 100-feet of setback from leach fields, sanitary sewer mains and septic tanks. This is further discussed in Section 3.6.2.

The proposed well locations are more than 100-feet away from both septic tanks and leach fields, are located near a road, are located near power and are also located in a relatively central location for service area. Additionally, the well locations were approved by the DEQ on April 15, 2020. This approval is included in this report as part of Appendix E.

The wells are both proposed to be approximately 400-feet deep through the Belt Supergroup formation. The closest well is the McCormick Well, which is approximately 500 feet away from the proposed location of Well No. 9 and 600 feet away from the proposed location of Well No. 5. The McCarthy Well was completed to a depth of 403-feet and would be in the same formation as the proposed wells. It is not expected that pumping either Well No. 5 or Well No. 9 will create a significant enough cone of depression that the output from the McCarthy well will be impacted. Additionally, both the McCarthy well and Well No. 4 will be approximately the same depth.

It is possible that pumping of Well No. 5 could create drawdown of the static water level in Well No. 9 and vice versa. Therefore, the two wells will not be operated simultaneously, except in emergency conditions. All calculations in this report have assumed that only one of the two wells will be pumping at any one given time. The other, non-pumping, well will serve as the system's redundant backup water source to meet the requirements of Circular DEQ 1 Section 3.2.1.2.

The Montana Groundwater Assessment Atlas 2 states that that

> *Bedrock underlies all of the surficial deposits and is the primary aquifer in the Flathead Lake perimeter; almost 80 percent of all wells are completed in bedrock. The bedrock aquifer is relatively evenly developed on the east and west sides of the lake; about 1,100 wells have been drilled on the west and about 400 wells on the east (the east side of the lake has about half of the shoreline miles as the west side). The bedrock aquifer produces water from fracture permeability. The occurrence of saturated fractures is variable, causing some wells to be deeper than 1,000 ft, although the overall median depth is 240 ft. Wells are generally deeper on the west side of the lake (median depth 255 ft) than on the east side (median depth 200 ft). ….Yields from the bedrock are not as high as those from the alluvial aquifers but are generally adequate for domestic uses; the maximum reported yield is 850 gpm, and the median is 20 gpm.……Despite the difference in median well depths in the bedrock aquifer on either side of the lake, there is little difference in median well yields.*

There has been no source exploration at the proposed location of Well No. 5 or Well No. 9. The well log for the McCarthy Well, which is approximately 500 feet away from the proposed location of Well No. 9 and 600 feet away from the proposed location of Well No. 5 is included in Appendix I.

Both Well No. 5 and Well No. 9 will have similar methods of construction and will be constructed to similar depths. The proposed wells will be constructed of a 10-inch borehole to a depth of 30 feet, which will have a bentonite grout seal injected into it. The well casing will be a 4.5-inch PVC casing with perforations near the base of the well. The extent of the perforated interval will be determined during construction. The well casing will also extend 3-feet above ground. Appendix l includes the detail for the construction of Well No. 5 and Well No. 9. This detail was submitted in March, 2020 and approved on April 15, 2020.

Following construction, the wells will be step tested to determine each well's production capacity. The pumping rates will be determined in the field but will not exceed 35 gallons per minute. Following the pumping test, water quality samples will be taken and analyzed for *E.*

coli, nitrates & nitrites.

All sanitary sewer facilities are located more than 100-feet away from the proposed well sites. There are no other known sources of potential contamination. Future construction of sanitary sewer facilities including sanitary sewers, septic tanks and leach fields, will be prohibited within the 100-foot well isolation zone for both wells. The portion of the isolation zone within the THOA boundary will be protected through an administrative rule passed by the THOA board. The portion of the isolation zone outside of the THOA boundary will be protected through a notification made to the adjoining property owner.

Since the proposed wells are approximately 400-feet deep, it is not anticipated that it will be under the direct influence of surface water. The nearest major waterbody is Flathead Lake, which is approximately 500-feet away from the proposed well location. Flathead Lake is approximately 240 feet deep in the nearby area. Therefore, the well will be deeper than Flathead Lake is in the region.

A Preliminary Assessment of the potential for the wells to be Under the Direct Influence of Surface Water was completed based on the best available information at this time. Since the wells have not yet been drilled, these assessments should be re-evaluated after construction of the wells and submitted to DEQ as part of the project file. At this time, it is not expected that the wells will be Under the Direct Influence of Surface Water. These assessments are included in Appendix M.

Additional information regarding the anticipated characteristics of the wells can be found in the Source Water Delineation and Assessment Report prepared by HEI in 2019. This document is attached to this Report as Appendix K.

5.0 TREATMENT PROCESSES

There is no treatment proposed as part of the public water supply system. There is no history of groundwater contamination in this area and the system will be a Transient, Non-Community public water system. Per the Administrative Rules of Montana (ARM) 17.38.229, disinfection

is not required for this type of system. If it is determined following construction and testing of the wells that the water is contaminated or at risk of contamination, or if there are risks associated with the distribution system, then disinfection will be provided.

The wells are not Groundwater Under the Direct Influence of Surface Water. Therefore, filtration is not required.

While a water quality analysis of the wells has not at this time been performed, it is not believed that there will be any pollutants in the water at concentrations over the Primary Drinking Water Standards. Therefore, no advanced treatment of the water is anticipated to be required at this time. If sampling and testing of the water determines that there are pollutants in the water that would result in exceedances of the Primary Drinking Water Standards, then this will be re-evaluated.

There is no sanitary sewer system associated with the proposed PWS facilities. The sanitary sewer system associated with the THOA units is shown on Figure 3-3. While there are several sanitary sewer crossings of the proposed water main, there are no areas where contamination of the water system is likely to occur. A standard detail of a typical sanitary sewer crossing is provided on Sheet 4 of the plans.

There are no proposed waste products associated with the PWS facilities.

6.0 SUMMARY OF DESIGN CRITERIA

6.1 OPERATIONS

6.1.1 Automation

The proposed water system will be designed to operate using water stored in the water storage tanks and then distributed to the distribution system based on water system pressures. This system will require minimal day-to-day system operation by the operator. Because the THOA has very limited use for most of the year, it is important that this system be able to operate without full-time staff.

To summarize the operations, the pump will be turned on when the water level in the storage tanks drops to approximately 80% of the full storage volume. The booster pumps will be operated based on the pressure in the water system. When the pressure in the water system drops below 60 psi, the pumps will turn on to provide pressure to the distribution system. It should be noted that these operational points may change over time.

6.2 POWER SUPPLY

6.2.1 Main Power Supply

The power supply for the Project area is the Mission Valley Power utility system. The Finley point area has one substation that feeds the Project area. The Project area is serviced by a single-phase 110/220 Volt service line. This service line has seen relatively infrequent power outages. Power outages usually occur as a result of weather events such as high winds and fires. Winter storms have also resulted in short duration power outages for the area. For example, in 2021, there was a 10-hour outage as a result of strong northeast winds that blew down mature trees that pulled down power lines and broke poles. According to Mission Valley Power, this was an uncommon event and typical power outages average 2 hours and 15 minutes long across their system.

6.2.2 Backup Power Supply

Due to the risk of pipes freezing during a power outage, since power is required to heat the heat trace tape, backup power will be supplied to the Well No. 5/9 system. Backup power will be in the form of a 20-kilowatt liquid propane fueled generator fueled by a 500-gallon propane tank. The 500-gallon propane tank will be able to provide at least 5-days of backup power at peak usage and longer if peak power demand is not used. The backup power supply system will be located approximately 450 feet north of Pumphouse #5/9 and is shown on Sheet 2 of the Plans. This backup power supply provides a backup power supply for the Well 5/9 Public Water System. The generator will be located in a small building that will also host the controllers for the heat trace system for Water Main #1.

6.2.3 Fire Protection Considerations

The fire protection system is separate from the public water system. Therefore, the capacity of

the fire protection system will not be diminished by a power failure.

6.3 HEAT TRACE

6.3.1 Water Main Freeze Protection

Due to the shallow bedrock, a direct burial of the pipe with sufficient depth to avoid freezing is impractical for most of the system. As a result, providing insulated pipe and a heat trace wire has been included in the design plans. The main pipes will have a 2-inch diameter butt joint welded HDPE DR11 center pipe with 2-inches of insulation around the pipe inside of an HDPE jacket. The HDPE jacket is pressure tested for watertightness. An integral heat trace channel with heat trace cable will be installed between the insulation and the main service pipe. This heat trace cable will be a 4 Watt/FT constant wattage heat trace cable. The heat trace cable for Water Main #2 will be controlled via a controller located in Pumphouse #5/9. The heat trace cable for Water Main #1 will be controlled via a controller located in the generator building. Both water main controllers will receive information on pipe temperature via temperature sensors. When the temperature sensor indicates that the temperature of the pipe is dropping below 37-degrees Fahrenheit, the controller will turn on the heat trace. When the temperature of the pipe exceeds 39-degrees Fahrenheit, the controller will turn off the heat trace. A secondary temperature sensor will also be provided to ensure that the heat within the heat trace channel does not exceed the maximum allowable temperature of the pipe of 149-degrees Fahrenheit. The Well No. 5 and Well No. 9 Water Mains will have separate heat trace systems. Calculations regarding the necessary power requirements for the heat trace cable are provided in Appendix H.

In the event that there is a power outage, and that the back-up power generator either fails, or runs out of fuel, calculations indicate that the pipes will take approximately 2.5 days to freeze completely. This 2.5-day period provides the operator & power company some additional time to repair and replace missing/broken parts, or to put more propane in the tank feeding the back-up generator. As noted above, the average power outage time is two hours and 15 minutes. Calculations for this time of freezing are provided in Appendix H.

The Well #5 Raw Water Pipe from Well No. 5 and the Well No. 9 Raw Water Pipe from Well

No.9 to Pumphouse #5/9 will be buried a minimum of 6-feet in depth to prevent freezing.

6.3.2 Service Line Freeze Protection

Each unit that will be serviced by the PWS will be required to install their own individual heat trace systems, a minimum of 6-feet burial depth or other freeze protection system for their service line pipes. The heat trace for the water mains will end at the curbstop and the service line heat trace will start on the service line side of the curbstop.

6.4 SEPERATION OF SANITARY SEWER PIPE AND WATER MAINS

6.4.1 Sanitary Sewer Line Crossings

Due to the location of existing wastewater facilities, there are several locations where it will be necessary for the water mains to cross either existing or proposed sanitary sewer pipes. The locations of these crossings are shown in Figure 6-1. The risk for cross-contamination of the water mains will be mitigated through several redundant methods. These methods are shown on Sheet 4 of the Plans and are also described below:

- The insulated HDPE pipe will have a pressure tested, watertight HDPE jacket around the insulation. This jacket will act as a carrier pipe for the main water main.
- The contractor will attempt on providing a minimum of 18-inches of separation between the potable water pipe and the sanitary sewer pipe if possible.
    - If that is not possible, a second 8-inch diameter PVC Sch. 40 Carrier pipe will be sleeved over the water main for at least 10-feet on either side of the crossing.
- The Contractor will install the potable water pipe above the sanitary sewer pipe if possible.
    - If that is not possible, 6-inches of flowable fill will be installed around the sanitary sewer pipe for at least 10-feet on either side of the crossing.
- The Contractor will orient the potable water pipe as close to 90-degrees to the sanitary sewer pipe as possible and will also attempt to locate the potable water pipe at the mid-point between sanitary sewer joints.

Note that According to ARM 17.36.323 (9) “Unless a waiver is granted by the department

pursuant to ARM 17.36.601, sewer mains that cross water mains must be laid with a minimum vertical separation distance of 18 inches between the mains." Due to the nature of the bedrock onsite, and the existing sanitary sewer system, it may not be possible to maintain 18-inches of vertical separation between the mains. A deviation waiver has been requested to allow for less than 18-inches of separation, in accordance with Section 8.4.2 of DEQ Circular 3, and a deviation waiver request is described in Section 7.0 of this report.

FIGURE 6-1. WELL 5/9 PWS SANITARY SEWER CROSSINGS

6.4.2 Sanitary Sewer Line Separation

There may be areas in the Well 5/9 PWS where it is not possible for the sanitary sewer and the potable water main to be separated by at least 10-feet, as is required by DEQ Circular 3 Sections 8.4.1 and 8.4.3 and DEQ Circular 1 Sections 8.8.2 and 8.8.4. In these areas, the risk for cross-contamination of the water mains will be mitigated through several redundant methods. These methods are shown on Sheet 4 of the Plans and are also described below:

- The sanitary sewer and the potable water pipe will be installed in separate trenches. Due to the nature of bedrock being present on the site, the bedrock will provide a physical barrier between the sanitary sewer trench and the potable water trench.
- The potable water pipe will have a watertight HDPE jacket surrounding the insulated portion of the pipe.

6.5 PUMPHOUSE #5/9 AND EQUIPMENT

6.5.1 Storage Tanks

The water storage in Pumphouse #5/9 will total 8,000 gallons. The 8,000 gallons of water storage will be comprised of two 4,000-gallon above-ground polyethylene potable water storage tanks. Flow into these tanks will be from both Well No. 5 and Well No. 9. Both water storage tanks will be provided with overflow pipes and drain pipes. Both overflow and drain pipes will convey water outside of the building. The discharge location of the overflow and drain pipes is shown on Sheet 2 of the plans. Any discharge will be of unchlorinated water. The tanks will be 10.5’ in height and the overflows will be set at 10.0 feet. The piping configuration is designed so that water from either or both well(s) will be able to fill either water storage tank individually, or both tanks simultaneously.

The level in the tanks will control the Well No. 5 pump. The Well No. 9 pump will operate in a lag functionality and only turn on during emergency operations. The priority of these well operations may be periodically changed by the operator. When water levels reach a depth of 8.5 feet, the well pump will be turned on. When water levels reach a depth of 9.5 feet, the pump will be turned off. These operation points may be adjusted by the operator. The level will be controlled using a liquid level probe installed on the outside of one of the tanks. The liquid level probe will monitor the water level of the tank(s) in service. There will only be one

liquid level probe for both tanks. If one tank is taken offline (by closing the discharge and inlet valves), the liquid level probe will measure the water level in the other tank. If both tanks are online, then the tank water levels will equilibrate and the liquid level probe will measure the water level of both tanks. The liquid level probe housing will be constructed of clear schedule 40 PVC, so that the water level in the tanks and the set points of the probe are clearly visible to the operator.

6.5.2 Booster Pumps

The water storage tanks will gravity feed to the booster pumps. There will be two booster pumps installed. The booster pumps will be designed to operate in a lead-lag functionality based on the pressure downstream of the hydropneumatic pressure tank. The booster pumps will be controlled using a Variable Frequency Drive (VFD).

6.5.3 Hydropneumatic Pressure Tank

Downstream of the booster pumps will be a minimum 400-gallon Hydropneumatic Pressure Tank. The hydropneumatic pressure tank will reduce the number of pump starts to at most 5 times per hour. Calculations are included in Appendix H.

6.5.4 Backflow Preventer

Prior to distribution, the water will pass through a double check valve backflow preventer. This will prevent water from flowing back into the water treatment plant from the distribution system.

6.5.5 Sampling and Monitoring

Sample taps will be provided on the raw water lines from both wells prior to the water storage tank, for well water quality monitoring. A sample tap will also be provided immediately prior to distribution.

Sampling will be performed by the operator, will be tested by a certified laboratory, reported to DEQ and kept in the water system records in accordance with ARM 17.38.215, ARM

17.38.217, ARM 17.38.234[1]. The compliance point for the system will be the distribution sample tap marked on Sheet 5 of the drawings. This sample tap is the sample tap immediately prior to distribution.

6.6 HYDRAULIC DESIGN

6.6.1 General

The lowest service point for the Well 5/9 system is at an approximate elevation of 2,897 feet. The highest point in the distribution system is at the Pumphouse #5/9 at approximately 2946 feet. Pumphouse 5/9 is at an elevation of approximately 2924 feet.

The longest continuous run of service main pipe is approximately 950-feet in length from the Pumphouse #5/9 to the end of the water main.

6.6.2 Well No. 5

The well design is based on a design pumping rate of 15 gpm and the other operation parameters of the Well No. 5/9 PWS system. These include the following:

Static Water Level:	100'*	Below ground surface (bgs) at well head
Pumping Water Level:	350'	bgs (assumed to be pump intake)
Well Ground Surface Elevation	2934.0'	Ground surface elevation
Tank Elevation:	2931'	High Water Level of Storage Tank (9.5' above F.G)
Operating Pressure:	0 psi	Lift is to top of Water Storage Tanks
Major & Minor Losses:	8.5'	(assumes 2" drop pipe and 2" raw water pipe)
Total Dynamic Head:	**356'**	

[1] Per ARM17.38.216, sampling and reporting requirements for chemical and radiological quality samples is not required for a transient, non-community public water supply system.

*Based on McCarthy Well Log, well not yet drilled

The theoretical horsepower requirement for this system is 2 HP, assuming a 75% motor/pump system efficiency rating. Therefore, a 2 HP submersible pump should be capable of handling these operational requirements.

The pipe velocities at 15 gpm in a 2-inch nominal diameter drop and supply line is < 5 feet per second (fps). The proposed supply line from Well No. 5 to Pumphouse #5/9 is a 2-inch diameter PVC pipe, so these pipe velocities are acceptable.

The 6-inch diameter well and perforations created by the 5/16" Holte Perforator will create entrance velocities of < 1 fps through the pipe and the vertical velocity in the 6-inch well is approximately 0.17 fps.

6.6.3 Well No. 9

The well design is based on a design pumping rate of 15 gpm and the other operation parameters of the Well No. 5/9 PWS system. These include the following:

Static Water Level:	100'*	Below ground surface (bgs) at well head
Pumping Water Level:	350'	bgs (assumed to be pump intake)
Well Ground Surface Elevation	2936.0'	Ground surface elevation
Tank Elevation:	2931'	High Water Level of Storage Tank (7.5' above F.G)
Operating Pressure:	0 psi	Lift is to top of Water Storage Tanks
Major & Minor Losses:	10'	(assumes 2" drop pipe and 2" raw water pipe)
Total Dynamic Head:	**354'**	

*Based on McCarthy Well Log, well not yet drilled

The theoretical horsepower requirement for this system is 2 HP, assuming a 75% motor/pump system efficiency rating. Therefore, a 2 HP submersible pump should be capable of handling these operational requirements.

The pipe velocities at 15 gpm in a 2-inch nominal diameter drop and supply line is < 5 feet per second (fps). The proposed supply line from Well No. 9 to Pumphouse #5/9 is a 2-inch diameter PVC pipe, so these pipe velocities are acceptable.

The 6-inch diameter well and perforations created by the 5/16" Holte Perforator will create entrance velocities of < 1 fps through the pipe and the vertical velocity in the 6-inch well is approximately 0.17 fps.

6.6.4 Maximum Distribution System Pressure

The maximum steady-state pressure within the distribution system's water mains, assuming 0 flow (no head loss) and 65 psi at Pumphouse #5/9 is 76 psi at the end of Water Main #1. To avoid over pressurizing the distribution system during pump start-up or shut-down, pressure relief valves will be located in Pumphouse #5/9 on the discharge side of each pump.

Depending on how many units are connected to the system at one time, water system demands, and actual pressure readings in the system, the operator may change the maximum distribution pressure at Pumphouse #5/9. For example, the operator may determine that it is appropriate to reduce the maximum distribution pressure during low-use periods since there will be less head loss in the system. Calculations for the hydropneumatic pressure tank, as described in

Appendix H and Section 6.5.3, are based on a maximum distribution pressure of 65 psi at Pumphouse #5/9 and all units within the service area having been developed and in-use.

The Pumphouse #5/9 booster pumps will be designed to be able to be able to provide a flow rate of 38 gpm at a design pressure of 65 psi at Pumphouse #5/9. This is a total dynamic head for the booster pumps of 150-feet.

6.6.5 Minimum Distribution System Pressure

The minimum pressure within the water mains, assuming 65 psi at Pumphouse #5/9, and a peak hour demand of 38 gpm is anticipated to be 50 psi. During peak demand, the pressure at the high point of Water Main #2 will be approximately 50 psi (5 psi lost through friction and 10 psi of pressure lost due to elevation). Since Water Main #1 largely drops in elevation, water pressures at the end of Water Main #1 are expected to be higher than those in Water Main #2, despite the longer length of pipe.

If the pressure at Pumphouse #5/9 drops to 55 psi, then pressures in Water Main #2 may be as low as 40 psi during a peak hour demand period.

Depending on how many units are connected to the system at one time, system demands, and actual pressure readings in the system, the operator may change the minimum distribution pressure at Pumphouse #5/9. For example, the operator may determine that it is appropriate to increase the minimum distribution pressure during low-use periods so that users have a lower variation in pressure at their service line connections. Calculations for the Hydropneumatic pressure tank, as described in Appendix H and Section 6.5.3, are based on a minimum distribution pressure of 55 psi at Pumphouse #5/9 and all units within the service area having been developed and in-use.

6.6.6 Pressure Zones

Due to the low variation in elevation and the small amount of head loss within the distribution system, there will only need to be one pressure zone for the Well No. 5/9 system. Both Water Main #1 and Water Main #2 have ball valves located within Pumphouse #5/9 prior to

distribution. The operator may decide, during some operational conditions, to partially restrict flow to one of the Water Mains if additional water pressure is needed for the other water main. While this is not anticipated to be a regular operating condition, it is an option available to the operator.

6.6.7 System Velocities

Following full development of the units within the Well No. 5/9 PWS service area, the maximum pipe velocities that will be experienced in the distribution system are 2.5 fps. This velocity will occur at the point of distribution for Water Main #1 in Pumphouse #5/9. The Peak Hour Demand at full buildout of the Well No. 5/9 system is 38 gpm. The calculations for the Peak Hour Demand is presented in Section 3.9.2.4 and in Appendix H.

Individual service lines will be 1-inch in diameter. If a unit is using 3 gallons per minute, then the velocity in its service line will be 1.2 fps.

Velocities within Pumphouse #5/9 before Water Main #1 and Water Main #2 diverge are expected to be as high as 3.9 fps during peak hour demands after full system buildout.

7.0 DEVIATION WAIVER REQUESTS

7.1 VERTICAL SEPARATION OF SANITARY SEWER AND POTABLE WATER PIPE AT CROSSINGS

According to ARM 17.36.323 (9) "Unless a waiver is granted by the department pursuant to ARM 17.36.601, sewer mains that cross water mains must be laid with a minimum vertical separation distance of 18 inches between the mains." Maintaining a minimum of 18-inches between the existing sanitary sewer pipe and the proposed potable water pipe may not be possible at all locations of the system. This may not be possible for the following reasons:

- The existing orientation and depth of the existing sanitary sewer system is shown on Sheet 2 of the Plans (Appendix G) based on the best currently available information. However, the exact orientation and depth of every sanitary sewer pipe is not known at this time. The locations of sanitary sewer crossings are shown in Figure 6-1.
- Several crossings may be located in such a configuration that excavating or blasting the bedrock around the sewer pipes would be necessary to create more than 18-inches of separation and the proposed water mains could create damage to the existing sanitary sewer system.

Due to the nature of the bedrock onsite, and the existing sanitary sewer system, it may not be possible to maintain 18-inches of vertical separation between the potable water main and the sanitary sewer. However, Sheet 3 of the Plans (Appendix G) provides a design detail to prevent contamination of the proposed water mains with leakage from the sanitary sewer mains if 18-inches of separation cannot be obtained.

A deviation waiver has been requested to allow for less than 18-inches of separation for the above reason, in accordance with Section 8.4.2 of DEQ Circular 3 and is included in Appendix N to this report.

7.2 HORIZONTAL SEPARATION OF SANITARY SEWER AND POTABLE WATER PIPE

According to Circular DEQ 1, Section 8.8.2,

> Water mains must be laid at least 10 feet horizontally from any existing or

> proposed gravity sanitary or storm sewer, septic, tank, or subsoil treatment system. The distance must be measured edge to edge. If the minimum horizontal separation as described above cannot be obtained, the design engineer shall submit a request for a deviation along with a description of the problem and justifying circumstances. If the deviation is granted, the sewer must be designed and constructed with the following minimum conditions:
>
> a. Sewers must be constructed of slip-on or mechanical joint pipe complying with public water supply design standards and be pressure tested to a minimum of 150 psi to assume water tightness;
>
> b. Sewer services utilizing in-line fittings and extending to the property lines, or beyond must be installed and tested in the area of the encroachment. Saddles are not acceptable.

Additionally, Section 8.8.4 of DEQ Circular 1 states that,

> There must be at least a 10-foot horizontal separation between water mains and sanitary sewer force mains. There must be an 18-inch vertical separation at crossings, as required in Section 8.8.3.

Similar language also exists in DEQ Circular 3 Sections 8.4.1 and 8.4.3.

Maintaining a minimum of 10 horizontal feet between the existing sanitary sewer pipe and the proposed potable water pipe is not be possible at all locations of the system. This is not possible for the following reasons:

- The existing orientation and depth of the existing sanitary sewer system is shown on Sheet 2 of the Plans (Appendix G) based on the best currently available information. However, the exact orientation of every sanitary sewer pipe is not known at this time. The locations of sanitary sewer crossings are shown in Figure 6-1.
- Bedrock is prevalent throughout the service area at shallow depths. Constructing the potable water mains at least 10-feet away from the existing sanitary sewer mains would potentially require blasting and other expensive and potentially irreversible

construction methods.

As the sanitary sewer main has already been constructed, it is not possible for the sanitary sewer to comply with the Sections 8.8.2. and 8.8.4 of Circular DEQ 1 and Sections 8.4.1 and 8.4.3 of DEQ Circular 3.

The narrow separation between the sanitary sewer main and the potable water main is most likely to occur along Borchers Ln north of the Lodge. This is an area where there is a narrow road, high cliffs on one side of the road and the lake on the other, as well as shallow bedrock. The existing sanitary sewer main does not follow the alignment of the road. At some locations, the sewer line is on the east side of the road, in others, the west side of the road and in many places, is in the center of the road. The road is approximately 12 feet wide in this area. There is not a feasible alternate route for the water main to be constructed along and there are locations where the water main will need to be within 10 feet of the existing sanitary sewer main.

The design plans for the existing sanitary sewer main system describe the sanitary sewer main pipe as 3-inch DR11 HDPE and 4-inch CL200 PVC. They type of pipe varies along its alignment.

In order to prevent cross-contamination of the water main in areas of close horizontal separation, multiple mitigative measures will be implemented. These include:

- The contractor will be requested to mark all utilities prior to construction to limit the length of distance that the sanitary sewer mains and the potable water mains will be within 10-feet of each other. Re-alignment of the water main prior to construction will occur if necessary to minimize the length of water main within that 10-foot zone.
- The water main will not be constructed in the same trench as the sanitary sewer mains. These will be kept separate. Due to the nature of the existing ground being largely bedrock, in most or all areas where the sanitary sewer main is closer than 10-feet away from the potable water main, there will be naturally low-permeability bedrock separating the two trenches.
- The potable water main will be constructed so that it has a watertight jacket pipe

surrounding rigid foam insulation, which in turn surrounds the main HDPE pipe. This watertight jacket pipe will provide a barrier should any leaking wastewater come in contact with the pipe.

Sheet 4 of the Plans (Appendix G) provides a design detail to prevent contamination of the proposed water mains with leakage from the sanitary sewer mains if 10-feet of horizontal separation cannot be obtained.

A deviation waiver has been requested to allow for less than 10-feet of horizontal separation between the sanitary sewer mains and the potable water mains for the above reasons, in accordance with Section 8.4.2 of DEQ Circular 3 and is included in Appendix N to this report.

APPENDIX A

STATE OF MONTANA
DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
CERTIFICATE OF SUBDIVISION PLAT APPROVAL
(Section 69-5001 through 69-5009, R.C.M. 1947)

To: Clerk and Recorder
Lake County
Polson, Montana

No. 24-77-5002

E.S. 76/030

THIS IS TO CERTIFY THAT the plans and supplemental information relating to the subdivision known as Bonners of Finley Point consisting of a lodge plus 50 lease residential building sites located in Lake County, Montana, have been reviewed by personnel of the Subdivision Bureau, and,

THAT the documents and data required by Section 69-5001 through 69-5009, R.C.M. 1947 and the rules of the Department of Health and Environmental Sciences made and promulgated pursuant thereto have been submitted and found to be in compliance therewith, and,

THAT approval of the site plan of said subdivision is made with the understanding that the following conditions shall be met:

THAT the total number of residential building sites or their identification number as indicated on the site plan to be filed with the county clerk and recorder will not be further altered without approval, and,

THAT the reviewed site locations shall be used for residential building sites, and,

THAT the community water supply systems for the residential-commerce site locations identified as 201, 202, 206, 209, 216, 217, 219, 301, 302, 305, 316, 319, 320, 403, 404, 406, 408, 409, 410, 411, 412, 413, 414, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, and 430 shall be constructed in accordance with the current standards of the Department of Health and Environmental Sciences and the plans and specifications filed with the Bureau under the seal of Douglas E. Daniels, P.E., dated 28 June, 1977, and,

THAT the community sewage disposal systems for the residential-commerce site locations identified as 201, 202, 206, 209, 216, 217, 219, 301, 302, 305, 316, 319, 320, 403, 404, 406, 408, 409, 410, 411, 413, 414, 416,417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, and 430 shall be constructed in accordance with the criteria established in ARC 16-2.14(10)-S14340, the most current standards of the Department of Health and Environmental Sciences and the plans and specifications filed with the Bureau under the seal of Douglas E. Daniels, P.E. dated 28 June, 1977, and,

THAT the individual water supply and sewage disposal systems serving the existing residential-structure site locations 203, 204, 205, 210, 211, 306, 307, 308, 309, 311, 312, 314, 315, 316, 401, 402 and lodge are exempt from this statement because their creation predated applicable law, and,

THAT the bottom of the drainfield shall be at least four feet above the water table, and four feet above all bedrock occurrences, and,

THAT no sewage disposal system shall be constructed within 100 feet of the maximum highwater level of a 100 year flood of any stream, lake, watercourse, or irrigation ditch, nor within 100 feet of any domestic water supply source, and,

THAT the owner of record of Borchers of Finley Point shall assume total responsibility for the operation of the community water and sewage disposal systems, and,

THAT plans for the proposed water and individual sewage systems will be reviewed and approved by the Lake County Health Department before construction is started, and,

THAT the developer shall provide each leaser of property with a copy of the filed site plan and a copy of this document, and,

THAT instruments of transfer for this property shall contain reference to thes conditions, and,

THAT departure from any criteria set forth in the approved plans and specifications and MAC 16-2.14(10)-S14340 when erecting a structure and appurtenant facilities in said subdivision without Department approval, is grounds for injunction by the Department of Health and Environmental Sciences.

YOU ARE REQUESTED to record this certificate by attaching it to the Borchers of Finley Point site plan filed in your office as required by law.

DATED this 22nd day of July, 1977.

A.C. KNIGHT, M.D., F.C.C.P.
DIRECTOR

By: _____
W. O. Aikin, P.E.
Subdivision Bureau
Environmental Sciences Division

Department of Health and Environmental Sciences
STATE OF MONTANA Environmental Sciences Division
P.O. Box 1031
Kalispell, Montana 59901
John S. Anderson M.D.

July 27, 1977

Mr. Douglas E. Daniels, P.E.
Thomas, Dean and Hoskins, Inc.
3 Sunset Plaza
Kalispell, MT 59901

Re: A community water supply system for a portion of the Subdivision known as Borcher's of Finley Point; i.e., a community water supply system composed of a Flathead Lake (source) intake which will pump the required demand flow through an intake consisting of 350 feet of 3-inch P.V.C. which will include a sequential in-line filtration, disinfection, chlorine-contact time and storage capability. Distribution out of the storage tank will be by means of 650 feet of 2-inch P.V.C. with hydropneumatic tank pressure-volume support to the individual services. As specified by plans and specifications provided this office under the seal of Douglas E. Daniels, P.E., dated June 28, 1977. E.S. 77/K345.

Dear Douglas:

The above referenced plans have been reviewed by engineers of the Environmental Sciences Division and were found to be satisfactory. Approval of these plans is given herewith and according to the following provisions:

(1) THAT the residential-structure site locations which shall be served by this system are those identified on the planning-plat map as 403, 404, 406, 408, 409, 410, 411, 412, 413, 414, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, and

(2) THAT this community water system will pump water from Flathead Lake at a depth of ten feet below the low-water surface elevation and the flow therefore will be continuously and adequately disinfected and filtered, and,

(3) THAT any change in the above referenced plans will be submitted to the Water Quality Bureau for review prior to beginning of construction, and,

(4) THAT upon completion of the project, the engineer will be required to submit a statement that the water supply system has been inspected and found to be installed in accordance with the plans and specifications as approved by the Department, and,

(5) THAT this approval is given with the understanding that construction will be started within two years of this date. If more than two years elapse before beginning construction, it shall be necessary to resubmit the plans when construction is contemplated, and,

(6) THAT as soon as the water supply serves ten (10) or more residential-site locations, the Montana State Department of Health will be given written notification of this fact, and a licensed Water Supply System Operator will be provided by the owner to perform Maintenance and Operation in accordance with Title 69, Section 5901 through 5912, R.C.M. 1947,

(7) THAT the water supply system serving those residential structure site locations identified on the planning-plat map as 301, 302, 305, 317, 318, 319, 230 is a multi-user water supply system to be constructed in accordance with the plans and specifications provided this office under the seal of Douglas E. Daniels, P.E., dated June 28, 1977, and,

(8) THAT the water supply system serving those residential structure site locations identified on the planning plat map as 201, 202, 206, 209, 216, 217, 219, 220 is a multi-user water supply system to be constructed in accordance with the plans and specifications provided this office under the seal of Douglas E. Daniels, P.E., dated June 28, 1977.

(9) THAT, should the multi-user water supply system or the individual water supply systems at structure site locations identified on the planning plat map as 203, 204, 205, 210, 211, 306, 307, 308, 309, 311, 312, 314, 315, 316, 401, 402, became unsatisfactory in terms of quantity, quality or dependability plans and specification will be provided the Department to provide connection to the Borcher's of Finley Point Community Water Supply System, and,

(10) THAT, departure from any criteria set forth in the approved plans and specifications and MAC 16-2.14(10)-S14340 when constructing the waste water treatment facility in said subdivision without Department approval, is grounds for injunction by the Department of Health and Environmental Sciences.

Sincerely,

Wilbur O. Aikin, P.E.
Subdivision Bureau
Environmental Sciences

WOA:kah

Department of Health and Environmental Sciences
STATE OF MONTANA Environmental Sciences Division
P.O. Box 1031
Kalispell, Montana 59901
John S. Anderson M.D.

July 21, 1977

Mr. Douglas E. Daniels, P.E.
Thomas, Dean and Hoskins, Inc.
3 Sunset Plaza
Kalispell, MT 59901

Re: A community waste water treatment plant for that Lake County Subdivision known as BORCHERS OF FINLEY POINT; i.e., a series of 5 separate multi-user collection systems consisting of 6-inch P.V.C. piping, each system to be discharged into a specific septic tank and with each septic tank to be equipped with a dual pump lift station capability by which effluents from said treatment tanks are to be pumped through pressure pipe to a common distribution box for ultimate disposal in an 1800 linear feet absorption trench drainfield as specified by plans and specifications provided this office under the seal of Douglas E. Daniels, P.E., dated June 28, 1977. E.S. 77/K329

Dear Douglas:

The above referenced plans have been reviewed by engineers of the Environmental Sciences Division and were found to be satisfactory. Approval of these plans is given herewith and according to the following provisions:

(1) THAT the residential-structure site locations herewith approved are only those identified on the planning-plat map as 201, 202, 206, 209, 216, 217, 219, 301, 302, 305, 318, 319, 320, 403, 404, 406, 408, 409, 410, 411, 412, 413, 414, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, and,

(2) THAT any failure or inadequacy of the existing individual or multi-user systems now in use at those residential-structure site locations indentified as 203, 204, 205, 210, 211, 311, 312, 313, 314, 316, 317, 401, 402, will be corrected by inclusion into this community disposal system as soon as it can be determined whether the community disposal-site must be enlarged to provide required additional adsorption area, and,

(3) THAT any change in the above referenced plans will be submitted to the Water Quality Bureau for review prior to beginning of construction, and,

(4) THAT upon completion of the project, the engineer will be required to submit a statement that the sewer system has been inspected and found to be installed in accordance with the plans and specifications as approved by the Department, and,

(5) THAT this approval is given with the understanding that construction will be started within two years of this date. If more than two years elapse before beginning construction, it shall be necessary to resubmit the plans when construction is contemplated, and,

(6) THAT as soon as the waste water treatment plant serves ten (10) or more residential-site locations, the Montana State Department of Health will be given written notification of this fact, and a licensed Waste Water Treatment Operator will be provided by the owner to perform Maintenance and Operation in accordance with Title 69, Section 5901 through 5912, R.C.M. 1947.

(7) THAT the area delineated for drainfield use will be clearly identified upon the surface of the ground and this area isolated by whatever means the developer might choose to make certain that the surface of said drainfield area is not used by wheeled vehicles for any additional purpose other than that of siting sewage disposal absorption trenches.

(8) THAT, because the system utilizes septic tanks and absorption trenches, the plans and specifications will be reviewed and approved and a septic tank permit issued by the Lake County Health Department before construction is started, and,

(9) THAT, departure from any criteria set forth in the approved plans and specifications and MAC 16-2.14(10)-S143420 when constructing the waste water treatment facility in said subdivision without Department approval, is grounds for injunction by the Department of Health and Environmental Sciences.

Sincerely,

Wilbur O. Aikin, P.E.
Subdivision Bureau
Environmental Sciences Division

WOA:kah

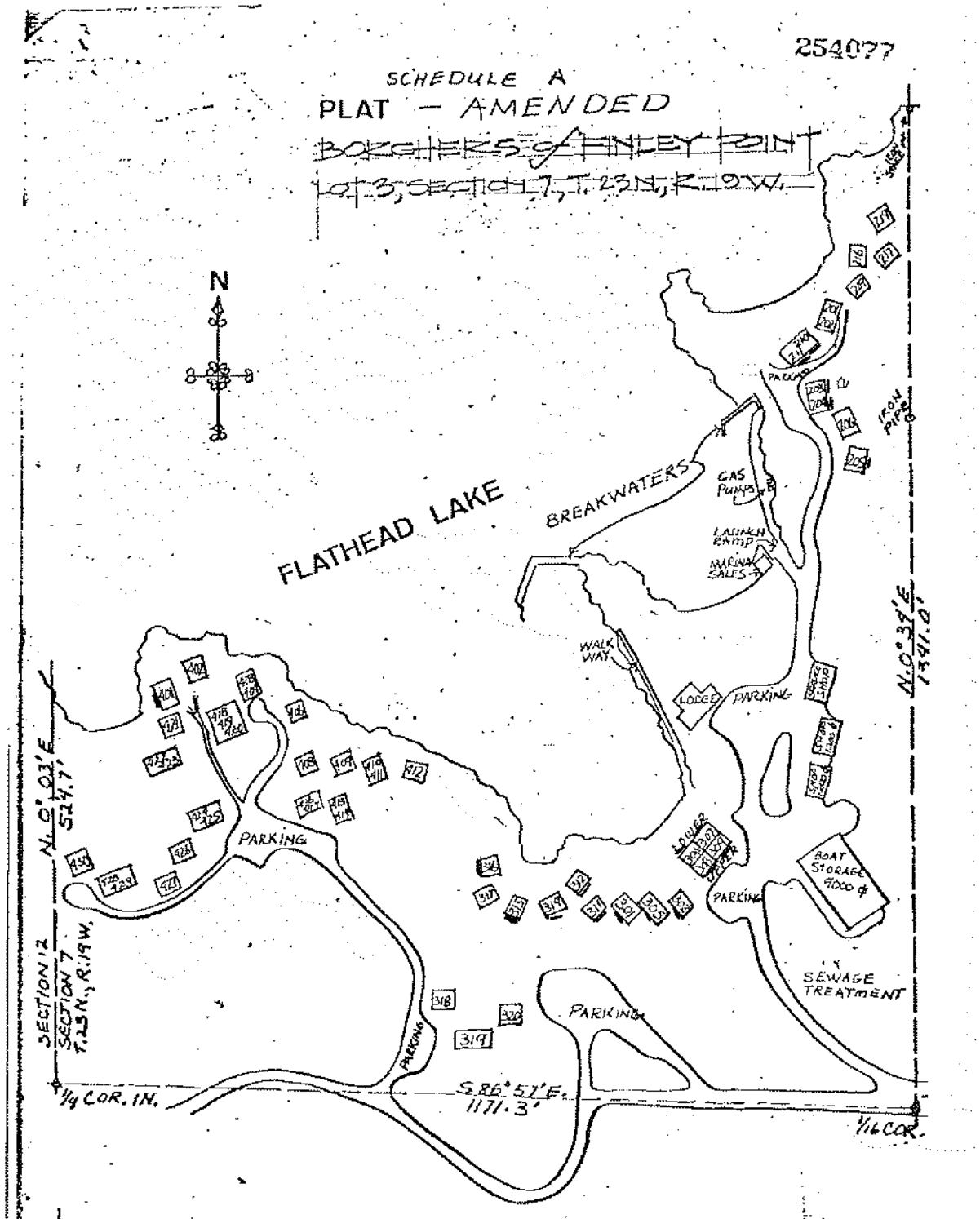
254077

SCHEDULE A

PLAT — AMENDED

~~BOECHER'S OF FINLEY POINT~~

~~Lot 3, SECTION 7, T. 23N., R. 19W.~~



THIS IS TO CERTIFY THAT I HAVE EXAMINED THE ABOVE PLAT AND

APPENDIX B

June 29, 2007

Phil Korell, Chairman
Timbershores Homeowners Association
218 Klondike Landing
Polson, Montana 59860

RE: Timbershores - Borchers of Finley Point Condominium Subdivision
Status of Environmental Health Approvals

Mr. Korell:

Earlier this year, the Lake County Environmental Health Department was asked to approve expansion of a residence within the Borchers of Finley Point Condominium Subdivision. In order to give a complete response, the department reviewed the records of the subdivision. The records reviewed were the Certificate of Subdivision Plat Approval, included, issued in 1977 by the Montana Department of Health and Environmental Sciences (now the Montana Department of Environmental Quality-MDEQ), wastewater treatment system permits issued by Lake County, the Planning Approval documents, and the original application documents for the subdivision.

From that review, it was determined there are several issues that require attention in order to bring the subdivision into compliance with its approvals. This letter will address the environmental health issues. Sue Shannon, Planning Director, 883-7235, should be contacted regarding any issues related to the subdivision's planning approval.

Environmental Health (Sanitation) Issues:

1. The MDEQ approval states that "the total number of residential building sites or their identification number as indicated on the site plan to be filed with the county clerk and recorder will not be further altered without approval". There are residential sites that are not consistent with the locations approved on the filed plat.
2. The community water systems for residential structures were to be constructed in accordance with the approved plans and specifications of Douglas E. Daniels, P.E. dated June 28, 1977. It is not clear that the systems are constructed per the approved design; see letter to Mr. Daniels dated July 27, 1977.
3. The community wastewater system for the residential structures was to be constructed in accordance with the approved plans and specifications of Douglas E. Daniels, P.E. dated June 20, 1977; see letter to Mr. Daniels dated July 21, 1977. The plan was that wastewater from all the proposed structures would flow to multi-user septic tanks and then flow to a common drainfield. When the

existing drainfields serving the existing residences failed, they were to be connected to this community drainfield.

The wastewater treatment systems serving the subdivision are clearly not as approved. The largest drainfield located near the "lodge" residence was not installed as per the approved design for the community drainfield. This drainfield has been determined to be undersized for the number of residences it serves; see evaluation page included. Some homesites are served by individual, shared, or multi-user drainfields. Some of the systems existing at the time of the subdivision are not known and probably do not meet minimum setbacks or other standards.

The newer systems installed are excellent drainfields and use advanced technologies unavailable at the time the subdivision was approved. Most of the systems installed since the subdivision approval have county permits. It is not clear why these systems did not follow the MDEQ approval for one community system.

In order to correct the legal record for this subdivision, Borchers of Finley Point must revise its MDEQ approval regarding water and wastewater systems. This involves an application made to the MDEQ that defines: h ow the residences are currently served by water and wastewater systems; how inadequate systems will be brought into compliance; and how shared user agreements, easements, and/or homeowner association documents will address system installation, maintenance and operation. The application is typically submitted by an environmental consultant, and, in this case, will likely require professional engineering.

Now that it is understood that the subdivision is not in compliance with its MDEQ approval, the Lake County Environmental Health Department will not issue wastewater permits for this subdivision nor allow new construction or changes to existing systems until the MDEQ approval is revised. Revision of the MDEQ approval, while a substantial undertaking, will both bring the subdivision into compliance with state law and provide an orderly plan for the future water and wastewater infrastructure of this condominium subdivision.

Please do not hesitate to contact me for further information and discussion on what is needed to resolve the above issues.

Sincerely,

Susan K. Brueggeman, R.S.
Environmental Health Director

Enc: MDEQ Certificate of Subdivison Approval
Water System Approval Letter
Wastewater System Approval Letter
Evaluation of Community Drainfield

APPENDIX C

LAKE COUNTY PLANNING DEPARTMENT
106 FOURTH AVENUE EAST
POLSON, MT 59860-2175

PH: 406-883-7235 FAX: 406-883-7205
E-MAIL: planning@lakemt.gov

June 11, 2009

Borchers of Finley Point Homeowners' Association:

It has been determined that the site plan and subdivision approvals for the Borchers of Finley Point Condominium Subdivision that is of record with the Lake County Clerk and Recorder's Office is not representative of what has been sold and constructed on site. The items that are not in compliance must be amended to clear the record in the Clerk and Recorder's Office and bring the condominium subdivision into compliance. The items that must be clarified or amended include the units proposed to be developed, the location of the units to be developed, the roadways that provide access to each unit, the sewer facilities that serve each unit, and the water facilities to serve each unit. In order to clear the record it will be necessary to amend the site plan of the Borchers of Finley Point Condominium subdivision through application to the Lake County Planning Department for Board of Lake County Commissioner review and application to the Lake County Environmental Health Department for Montana Department of Environmental Quality review.

Lake County has been in contact with representatives of the Homeowners Association over the last year in an effort to support and facilitate addressing the inconsistencies with the record and the as-built/sold units in the subdivision. Lake County has been asked to provide information on the status of the Borchers of Finley Point development regarding planning/zoning and sanitation issues. Enclosed is a summary of the status of each unit, based on available information, to assist your association in making decisions for the future of the development. Also included are letters and other documents provided for your reference.

In order to move this process forward, Lake County recommends the following steps to resolve the issues presented:

1. A maximum of 50 units is approved for this development. The filed legal documents stating which of the originally proposed units will not be developed is not consistent with the current ownerships and development. A resolution to correct the record regarding which units will and will not be developed is necessary.

2. The location of all the undeveloped units that are intended to be developed must be determined. This is needed in order to develop a set plan for infrastructure including roadways, driveways, parking, water systems, and wastewater systems. When considering the unit locations, the owners must keep in mind that all amendments must be in compliance with requirements of county and/or state regulations and must be approved by the homeowners' association. ***(Please see attached addendum for additional information regarding county and/or state requirements.)***

3. The total number of single-family residential units, duplex and triplex units cannot be changed from the filed site plan. Therefore, a new site plan showing the same number of structures to be developed on the property in the as-built and proposed relocated unit locations must be created and submitted for governing body review. All units depicted as a part of a duplex or triplex will be required to address the service needs (access, water and sewer) for the number of potential units. For example, a building site shown as a duplex unit will be required to have access, water and sewer services for two single-family residential units.

4. The proposed unit locations, and infrastructure to support the units including roadways, driveways, parking, water systems, and wastewater systems, that are different from what is of record at the Lake County Clerk and Recorder's Office, must be submitted by the unit owners to the Lake County Planning Department for review. Any proposed changes to the declaration of unit ownership that will address the proposed changes or maintenance of the common elements should also be submitted to the County at this time.

5. The Lake County Planning Department will then review the proposed unit location, roadways, driveways and declaration changes for adequate compliance with state and local subdivision regulations regarding public health and safety, legal and physical access, etc., and for compliance with the Finley Point Zoning District Regulations. The Planning Department will make a recommendation to the Board of Lake County Commissioners for a final determination on the request to amend the site plan.

6. The wastewater plan must be finalized and submitted to the Montana Department of Environmental Quality for revision of the 1977 Certificate of Subdivision Approval. The water system plan also requires revision; this revision may be completed as a future step toward compliance. At this time, at least a clear understanding of how each unit will be provided with water should be determined with an eye toward the future water plan.

7. The infrastructure (roadways, driveways, fire safety, water, and wastewater) must be upgraded or installed per the above approvals.

8. The condominium subdivision unit owners must file with the Lake County Clerk and Recorder the new site plan and all associated documents consistent with all of the above decisions.

It has been, and remains, Lake County's intention to work cooperatively with the Borchers of Finley Point homeowners to resolve the above issues. However, Lake County has been requested by homeowners to address the consequences should they decide not to move forward with the necessary subdivision corrections. Following is a listing of those potential actions:

1. Notic es of Violations and Orders for Correction Action may be issued for identified violations of state and local regulations.
2. Lake County may file a notice with each subdivision unit that states the conditions of non-compliance of the subdivision.
3. Zoning conformance pe rmits will not be issued.
4. Wastewater treatment system permits will not be issued.

The issues related to this development are substantial, but they are resolvable. Lake County commends the homeowners' association for the work they have completed thus far in working on solutions for the subdivision. Please contact us if you have questions on the information included with this mailing or if we can further assist you in this process.

Sincerely,

Susan K. Brueggeman, R.S., Director
Lake County Environmental Health Department

Sue Shannon, Director
Lake County Planning Department

Addendum - Borchers of Finley Point Homeowners' Association

Planning/Zoning related considerations:
A letter to the Timbrshor Association in care of Caryl Cox dated January 28, 2009 provided detailed information about the existing subdivision regulation and zoning standards which are used to review an amendment request. In order to facilitate the ability of the homeowners in the subdivision to make the amendments necessary to clear the record in the Clerk and Recorder's Office and bring the subdivision into compliance, Lake County Planning Department is offering the following minimum guidelines for the homeowners to address in an amendment proposal that would have planning department support through the amendment process.

Roadways and Driveways

All units in the condominium subdivision will be required to have legal and physical access that meets the approval of the governing body. For the purposes of this correspondence, a driveway is a roadway that only accesses one residential unit; a subdivision access road provides ingress/egress to more than one residential unit.

To address the existing roadway network, the county recognizes that the as-built access roads were not constructed as approved and recorded with the condominium subdivision. In an effort to work with the landowners to bring the subdivision into compliance with the record, the county planning department will support use of the as built roadways for physical access to the existing and recorded units so long as it is demonstrated that the physical access meets the needs of all emergency service providers. The design specifications (including but not limited to grade, width, base and surface materials) of existing roadways
must be certified acceptable by the fire department and ambulance service. If the existing roadways cannot be certified by these emergency service providers, the landowners must solicit the recommendation of the emergency service providers to bring the roadways up to a standard they are willing to certify as acceptable and the landowners must propose a plan to build the roadway to these standards prior to the county's approval of the amended condominium subdivision plan.

The subdivision access road to the western units (318-430 excluding 320) in the division traverses across an adjacent property without a legal easement and therefore, the County will not allow increased use of the roadway as part of an amendment request. This means that the number of units dependent on use of the off-site subdivision access road for access purposes shall not be increased. Currently it appears Unit 317 as depicted on the recorded plan was to access from internal on site access roads, but as built this unit is accessed via use of the off-site subdivision access road.

All non-existing access roads and driveways that are proposed to either access relocated units that are undeveloped, and/or would provide access to a unit where the access will not be constructed as depicted on the recorded plan, must have a proposal for design and construction of the access roads and driveways to be reviewed by the governing body as part of the amendment request. The design specifications (including but not limited to grade, width, curve radius, and base and surface materials) of proposed subdivision access roads/driveways should also be reviewed and approved by the fire department and ambulance service to demonstrate that all proposed accesses will meet the needs of the emergency service providers. The amendment request must also include a plan to construct the subdivision access roads/driveways and have

them certified acceptable by the emergency service providers prior to the county's final approval and recordation of the amended condominium subdivision plan.

In an effort to work with the landowners to amend the subdivision in order to clear the record and obtain compliance, the county planning department will support the following minimum standards for any proposed subdivision access roads:

1. 20 ft minimum driving surface width;
2. 75 ft minimum driving surface curve radius;
3. 10% maximum driving surface grade;
4. At the terminus of all dead end access roads, a turnaround will be required. Turnarounds can be either a cul-de-sac with an improved driving surface radius of 50 ft or "T" turn around with a minimum inside turning radius of 25ft and a minimum back-up length of 35 ft (*please ask the Fire Department which type of turnarounds they prefer);
5. Minimum construction standards consisting of a base of a minimum 12 inches of compacted pit run that is a maximum of 4 inch diameter and a surface of a minimum of 4 compacted inches of three quarter minus crushed gravel designed to drain water away from the driving surface;
6. Certified as approved for use by emergency service providers.

The county planning department will support the following minimum standards for any proposed driveways:

1. 12-foot minimum driving surface width;
2. 12 maximum driving surface grade with a maximum 5 percent slope for the initial 20 feet from the primary access road;
3. Certified as approved for use by emergency service providers.

why not?

Fire Protection

The original subdivision approval required a fire plan that was never implemented. This plan was approved by Lake County with the stipulation of fire department acceptance. The plan included the construction of a water intake and supply lines to three hydrants located in the parking areas for units 301-430. The plan also included 1200 ft of 5-inch diameter hose and a hose truck with manifold that would either be stored on site or donated to the fire department. There is no evidence of fire department acceptance of the plan, installation of the water supply infrastructure, or hose and truck as proposed.

In order for the governing body to review an amendment to the roadway and unit locations in the condominium subdivision, fire protection must be addressed. The landowners should contact the fire department and solicit comment regarding a water supply and distribution system of sufficient volume for effective fire control for all units in the subdivision. A plan to bring the property to the standards necessary for adequate fire protection must be submitted to the county for review. Upon approval of the fire protection plan, the landowners will be required to implement the plan and demonstrate fire department acceptance prior to the governing bodies final approval and recordation of the amended condominium subdivision.

Zoning Requirements
The Finley Point Zoning Regulations went into effect in September 1991. A request to amend the subdivision will require that new roads and unit locations meet the requirements of the zoning regulations. Therefore, all proposed relocated units shall meet the following setbacks:

50 ft from the highwater mark of Flathead lake
20 ft from side property boundaries

A Conditional Use approval is required for the disturbance of slopes greater than 25% on lakefront lots. Therefore any proposed relocated unit location, access road or driveway which will require the disturbance of slopes greater than 25% will require conditional use approval prior to construction.

Multi-family residential units are prohibited by the zoning regulations. Therefore, the amendment request shall not increase the total number of multi-family residential units within the subdivision.

~ ~ ~

Sanitation considerations:
The end goals of these sanitation comments are:
1. That the 1977 Certificate of Subdivision Approval issued by the Montana Department of Environmental Quality, MDEQ, for the subdivision will be revised and brought into compliance. Per previous correspondence with the homeowners' association, it has been determined that the focus will be on revision of the wastewater approval. However, the water system approval is important and should be addressed in a timely manner. The MDEQ has confirmed that this stepped revision for the wastewater plan first and then the water system plan is acceptable.
and
2. That the existing wastewater treatment systems are in brought into compliance with the MDEQ revised approval and state and local regulations.

Because the original MDEQ approval was for a single community drainfield, the revision must provide a new plan. A draft plan has been provided by Rowland Environmental Consulting and provides for five multi-user drainfields. Two of these drainfields are existing and three are replacement systems; all systems incorporate capacity for future home sites. This plan must be finalized and submitted to MDEQ for review and approval.

As stated in the letter dated to the homeowners' association in June of 2007:
Now that it is understood that the subdivision is not in compliance with its MDEQ approval, the Lake County Environmental Health Department will not issue wastewater permits for this subdivision nor allow new construction or changes to existing systems until the MDEQ approval is revised. Revision of the MDEQ approval, while a substantial undertaking, will both bring the subdivision into compliance with state law and provide an orderly plan for the future water and wastewater infrastructure of this condominium subdivision.

The above statement is based primarily on state and county regulations:

1. *MCA 76-4-130. Deviation from certificate of subdivision approval.* A person may not construct or use a facility that deviates from the certificate of subdivision approval until the reviewing authority has approved the deviation.
2. *Lake County Wastewater Treatment System Regulations, Section 3.2 Denial of Installation Permit or Disapproval of Plans.* A. The Lake County Board of Health or its authorized agents may deny an Installation Permit for any of the following reasons: 5. A stipulation of the Certificate of Subdivision Approval has been violated or there is departure from any criterion set forth in the approved plans and specifications of the subdivision.
3. *Lake County Wastewater Treatment System Regulations, Section 5.2 Repair, Alteration, Enlargement or Extension of Pre-Existing Systems, A.* It shall be unlawful to repair, alter, enlarge or extend a pre-existing wastewater treatment system. All pre-existing systems for which major repairs are required shall be replaced under an Installation Permit. *and B.* When application is made for an additional wastewater treatment system on a parcel with a pre-existing or unapproved system, the pre-existing or unapproved system must be replaced under these regulations before or at the same time the additional system is installed.
4. Lake County Wastewater Treatment System Regulations, Section 3.1 Application for Installation Permit, F. 10. *The Department may require evidence that the wastewater treatment system will comply with all adopted zoning and/or land use planning requirements for the area.*

This means that no county wastewater treatment system permit will be issued for any new homesite, any new, replacement or altered wastewater system, septic tank installation, or change of use on a wastewater treatment system until the MDEQ approval has been revised. Installation of any new wastewater system component or any system that incorporates new design flow capacity will require an upgrade of any and all pre-existing and/or out of compliance drainfields.

The homeowners may benefit from having a water/wastewater district in that low interest loans are available to a district for wastewater system improvements. This would also provide for unified waste water system management including operation, maintenance, and financing.

Water Supply Systems

At the time of the subdivision in 1977, there were at least four pre-existing lake water intakes: see 1, 2, 3, and 4 located on the map.

Approved subdivision plans identified three new lake water intakes to serve the homesites that would be constructed: see 5, 6, and 7 located on the map. The pre-existing water systems would continue to serve the pre-existing homes until the systems failed at which time connection to a new system would require review and approval by MDEQ.

The approved subdivision plans were for one community lake water system and two multi-user lake water systems. It appears at least the community system required the water be filtered and chlorinated. It appears all systems were to provide storage tanks.

The water rights for the subdivision should be clarified. This may require a water rights professional to assist the homeowners' association.

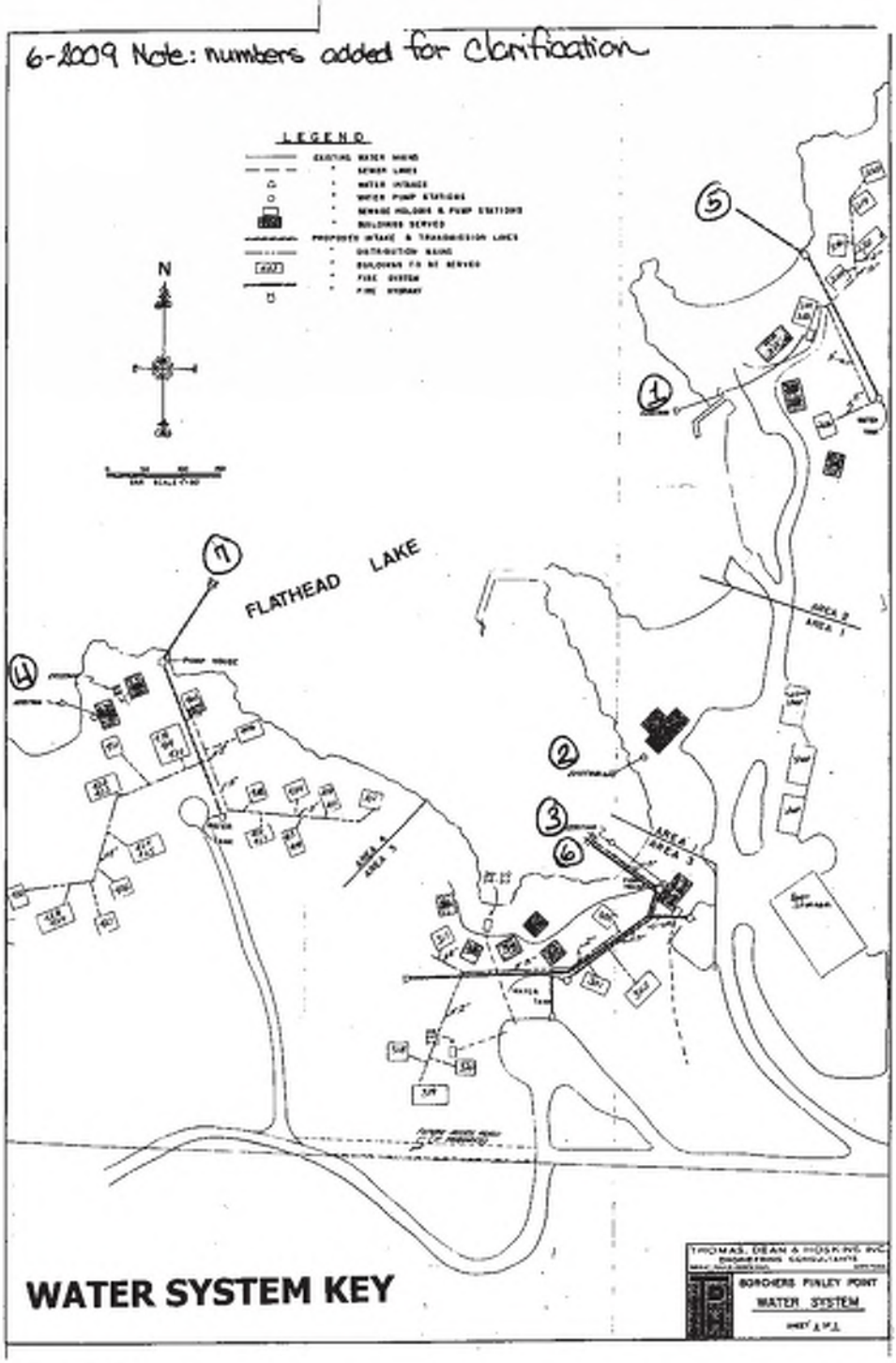
As previously discussed with the homeowners' association, the initial focus of compliance with the MDEQ approval statement would be the wastewater systems, and that compliance with the water system approval would follow. However, as the homesite locations are fixed and developed, they certainly should have the assurance that they have an approved and legal water system. Another issue to be considered is if the subdivision water systems are or should be seasonal or year around. If they are not year around, this should be known to future buyers, and it may be something the homeowners would like to work toward. Any water system that serves residences constructed since the subdivision approval will require plans be reviewed and approved by MDEQ if they are changed from the original approval. Also, as per the MDEQ approval, capacity should be made available for the pre-existing homes that may need to, or want to, connect to the subdivision systems.

Water System Considerations:

1. How do water systems for the homes constructed since the subdivision approval comply with the approved plan? This must consider all lake water intakes and any well.
2. If the water system(s) need to be revised, plans reviewed and approved by MDEQ are required unless the previously approved plans are followed. If additional capacity is to be added to serve the pre-existing homes, this additional design flow must be reviewed and approved by MDEQ.
3. Are the water systems seasonal or year around? If seasonal, do the homeowners want to plan for a year around water source?
4. Are the water rights for the subdivision in order? Who owns the water rights now and who should own them in the future?
5. The homeowners may benefit from having a water/wastewater district in that low interest loans are available to a district for water system improvements. This would also provide for unified water system management including operation, maintenance, and financing.

~ ~ ~

6-2009 Note: numbers added for clarification



Borchers of Finley Point
WASTEWATER SYSTEM EVALUATION

EXISTING SYSTEM #1
PROPOSED SYSTEM A – Orange
SYSTEM: Large Community System in Parking Area – Permit 1837

Units Connected	201 – McFadden	9947	Per Assessor	*2001 – 2BR*
	203 – Acher	3126	Per Assessor	*56/1994 – 2 BR*
	204 – Swindlehurst	3126	Per Assessor	*56/1994 – 3 BR*
	205 - Rotondi		Per Assessor	*56/2009 – 5 BR*
	206 - Walters		Per Assessor	*1996 – 4 BR*
	209 – Peterson		Per Assessor	*2002 – 2 BR* ?
	210 – Schwank		Per Assessor	*1956 – 2 BR*
	211 – Fordahl	1837	Per Assessor	*1956 – 2 BR*
Units Proposed to Connect	201 - McFadden		System A - Orange	
	202 – Borchers?			
	203 – Acher			
	204 – Swindlehurst			
	205 – Rotondi			
	206 - Walters			
	209 – Peterson			
	210 - Schwank			
	211 – Fordahl			
	216 – Borchers?			
	217 – Borchers ?			
	219 – Borchers-Michione			
System Permit	#1837 + tanks			
System Installed	1989			
Tank Size	Multiple			
Design Capacity GPD	400 GPD*			
Comments	Replacement needed.			
Compliance	MDEQ Approval must be revised Drainfield has been parking area – illegal Residences connected without permit – 205, 206, 209, 210 Residence/Bedroom Count would require 1275 GPD design flow 1275 – 400 = 875 gpd short Unit 205 expansion based upon commitment to Board of Health to upgrade system		**Note: bolded unit numbers indicate those existing in 1977 when the subdivision was approved.**	

*100' X 2' X 4 = 800sf X .5 application rate = 400 gpd

Borchers of Finley Point
WASTEWATER SYSTEM EVALUATION

EXISTING SYSTEM #2

SYSTEM: 301, 302, 305 – Drainfield by Dumpster Area

Units Connected	301 – Stam	Per Assessor *1978 – 2 BR*
	302 – Rountree	Per Assessor *1978 – 2 BR*
	305 - Estvold	Per Assessor *1978 – 3 BR*
Units Proposed to Connect	None	System B – Dark Blue
System Permit	None	
System Installed	Unknown – Assume 1978	
Tank Size	Unknown – common tank?	
Design Capacity GPD	Unknown	
Comments	System should have been upgraded per 1979 county regulation requiring upgrade of pre-existing/unapproved systems with any new permit on the lot. Replacement needed.	
Compliance	MDEQ Approval must be revised Installation without Permit Illegal Installation	

Borchers of Finley Point
WASTEWATER SYSTEM EVALUATION

EXISTING SYSTEM #3

SYSTEM: 4 Plex

Units Connected	**306 - Selvig**	Per Assessor *1956 – 2BR*
	307 - Payson	Per Assessor *1956 – 1BR*
	308 - Novinski	Per Assessor *1956 – 1BR*
	309 - Cole	Per Assessor *1956 – 1BR*
Units Proposed to Connect	None	System B – Dark Blue
System Permit	Prior to Permitting 1969?	
System Installed	Unknown	
Tank Size	Unknown	
Design Capacity GPD	Unknown	
Comments	Well under building? Water system under building? No wastewater pump – gravity? Septic tank does not likely meet 50' setback to lake. Drainfield does not likely meet 100' setback to lake. Very shallow bedrock apparently in presumed drainfield location – likely near direct discharge to bedrock Replacement plan needed.	**Note: bolded unit numbers indicate those existing in 1977 when the subdivision was approved**
Compliance	Likely violation of Section 2.1 – LCWRSR ARM 17.36.913(1) *"No person may install, alter, repair, extend or utilize any wastewater treatment system that may:* *1. Contaminate any actual or potential drinking water supply;* *4. Violate any law or regulation governing water pollution or wastewater treatment and disposal;* *5. Pollute or contaminate any state water in violation of MCA 75-5-605;"* System should have been upgraded per 1979 county regulation requiring upgrade of pre-existing systems with any new permit on the lot.	? what new permit?

Subdivision?

Borchers of Finley Point
WASTEWATER SYSTEM EVALUATION

EXISTING SYSTEM #4

SYSTEM: Current 1000D

Units Connected	**311**	Per Assessor *1972 – 2 BR*
	312	Per Assessor *1969 – 2 BR*
	314	Per Assessor *1969 – 2 BR*
	315	Per Assessor *1970 – 3 BR*
	316	Per Assessor *1969 – 2 BR*
	317 McCarthy	Per Assessor *1981 – 2 BR* ??
Units Proposed to Connect	None	System B – Dark Blue
System Permit	1000D	
System Installed	1971-72	
Tank Size	3700 G	
Design Capacity GPD	550 GPD*	
Comments	System documented after installation	
Compliance	MDEQ Approval must be revised Unit 317 Connection was not Permitted making full system Out of Compliance as an "alteration without a permit" Common tank does not meet 50' setback from lake Common tank has overflow on to surface. *Notice of Violation will be issued promptly for this overflow.* Drainfield has been parking area – illegal Residence/Bedroom Count would require 1325 GPD design flow 1325 – 550 = 775 gpd short System should have been upgraded per 1979 county regulation requiring upgrade of pre-existing/unapproved systems with any new permit on the lot. Replacement needed.	Violation of Section 2.1 – LCWRSR ARM 17.36.913(1) *"No person may install, alter, repair, extend or utilize any wastewater treatment system that may:* *1. Contaminate any actual or potential drinking water supply;* *2. Cause a public health hazard as a result of access to insects, rodents, or other possible carriers of disease to humans;* *3. Cause a public health hazard by being accessible to persons or animals;* *4. Violate any law or regulation governing water pollution or wastewater treatment and disposal;* *5. Pollute or contaminate any state water in violation of MCA 75-5-605;* *6. Cause a nuisance due to odor, unsightly appearance or other aesthetic consideration."* **Note: bolded unit numbers indicate those existing in 1977 when the subdivision was approved**

* 110' X 2' X 5 laterals = 1100 sf X .5 application rate = 550 gpd

Borchers of Finley Point
WASTEWATER SYSTEM EVALUATION

EXISTING SYSTEM #5
PROPOSED SYSTEM D – Purple

SYSTEM: 1001Q and Replacement

Units Connected	**401 – Johnson**	Per Assessor *1973 – 3 BR*
	402 – Manning	Per Assessor *1974 – 3BR*
Units Proposed to Connect	401 - Johnson	System D - Purple
	402 - Manning	
	417 - ?	
	421 - Johnson	
	422 – Johnson	
	424 - Johnson	
System Permit	1001Q	
System Installed	1973	
Tank Size	1000/500 pump	
Design Capacity GPD	220 GPD**	
Comments	System documented after installation. Replacement plan needed.	**Note: bolded unit numbers indicate those existing in 1977 when the subdivision was approved**
Compliance →	Drainfield has been driveway & parking area – illegal Drainfield very likely nearly direct discharge to fractured bedrock. Residence/Bedroom Count would require 650 GPD design flow 650 – 220 = 430gpd short	Likely violation of Section 2.1 – LCWRSR ARM 17.36.913(1) *"No person may install, alter, repair, extend or utilize any wastewater treatment system that may:* *1. Contaminate any actual or potential drinking water supply;* *4. Violate any law or regulation governing water pollution or wastewater treatment and disposal;* *5. Pollute or contaminate any state water in violation of MCA 75-5-605;"*

* 22' X 2' = 220sf X .5 application rate = 220 gpd

Borchers of Finley Point
WASTEWATER SYSTEM EVALUATION

EXISTING SYSTEM #6
PROPOSED SYSTEM C – Light Blue

SYSTEM: 5000B

Units Connected	406 - Sand	Per Assessor *1999 – 3 BR*
	409 – Roy	?
	411 – Mead	Per Assessor *2000 – 3 BR*
	412 - Cox	Per Assessor *2000 – 3 BR*
Units Proposed to Connect	403/404 - Sand	System C – Light Blue
	406 – Sand	
	408 – Caraway	
	409 – Roy	
	410 – Sand	
	411 – Mead	
	412 – Cox	
	414 – Bantry	
System Permit	5000B	
System Installed	1999	
Tank Size	Multiple tanks	
Design Capacity GPD	2400 GPD*	
Comments	Is Unit 403/404 one unit or two? one!	
Compliance	MDEQ Approval must be revised No permit issued for Roy tank. As-Built needed. Drainfield installed within 100' of Unit 317 well – plan is for drainfield to be adjusted if well is to remain. Additional homesites will require permit for septic tank.	county designed & op'd

* 44' X 110' (two beds) = 4840sf X .5 application rate = 2400 gpd

Borchers of Finley Point
WASTEWATER SYSTEM EVALUATION

EXISTING SYSTEM #7
PROPOSED SYSTEM E - Green

SYSTEM: Rys-Sikora/Kukendall - #5584 + #5912

Units Connected	428 – Rys-Sikora	Per Assessor *2002 – 3BR*
	418/419 - Kuykendall	Per Assessor *2004 – 3BR*
Units Proposed to Connect	418/419 - Kuykendall	System C - Green
	426 – Borchers, Wm	
	427 - Maxwell	
	428 – Rys-Sikora	
	430 – Rys-Sikora	
System Permit	#5584 + #5912	
System Installed	2002 & 2003	
Tank Size	Multiple	
Design Capacity GPD	1350 GPD*	
Comments	Can 418/419 Units be split - requiring additional drainfield capacity needs? Does one lateral still need to be installed?	
Compliance	MDEQ Approval must be revised. With MDEQ revision, system will be in compliance for five 3-bedroom residences with full system installed Additional homesites will require permit for septic tank.	

*8' X 80' X 2 = 1280sf
10' X 75' X 2 = 1500sf + 1280sf = 2780sf X .5 GPD application rate = 1390 GPD

Borchers of Finley Point
WASTEWATER SYSTEM EVALUATION

EXISTING SYSTEM #8

SYSTEM: Lodge

Units Connected	**Lodge – Borchers of FP**	Per Assessor *1938 – 5 BR*
Units Proposed Connected	None	Connect to System
System Permit	None - Prior to Permitting?	Dark Blue
System Installed	Unknown	
Tank Size	Unknown	
Drainfield Size	Unknown	
Design Capacity GPD	Unknown	
Comments	Tank may not meet 50' setback from lake Drainfield in presumed location does not likely meet 100' setback from lake Very shallow bedrock apparently in presumed drainfield location – likely near direct discharge to bedrock Replacement plan needed.	**Note: bolded unit numbers indicate those existing in 1977 when the subdivision was approved**
Compliance	Likely violation of Section 2.1 – LCWRSR ARM 17.36.913(1) *"No person may install, alter, repair, extend or utilize any wastewater treatment system that may:* *1. Contaminate any actual or potential drinking water supply;* *4. Violate any law or regulation governing water pollution or wastewater treatment and disposal;* *5. Pollute or contaminate any state water in violation of MCA 75-5-605;"* System should have been upgraded per 1979 county regulation requiring upgrade of pre-existing/unapproved systems with any new permit on the lot.	

Borchers of Finley Point
WASTEWATER SYSTEM EVALUATION

EXISTING SYSTEM #9

SYSTEM: Laundry Building

Units Connected	Laundry Building only?	
Units Proposed Connected	None	
System Permit	None	
System Installed	?	
Tank Size	?	
Drainfield Size	?	
Design Capacity GPD	?	
Comments	Gray water under current regulations must be treated and disposed in the same manner as full wastewater No reference to this facility in the 1977 MDEQ approval If the facility is to remain it needs to be connected to legal system. Replacement needed.	
Compliance	System should have been upgraded per 1979 county regulation requiring upgrade of pre-existing/unapproved systems with any new permit on the lot.	

Sanitation Key to Wastewater System Compliance:

Note: This summary is in response to a request to identify violations associated with each wastewater system and the legal actions possible.

1. Violation of Certificate of Subdivision Approval:

MCA 76-4-130. *Deviation from certificate of subdivision approval. A person may not construct or use a facility that deviates from the certificate of subdivision approval until the reviewing authority has approved the deviation.*

Language of the MDEQ approval statement for Borchers of Finley Point: *THAT departure from any criteria set forth in the approved plans and specifications and MAC 16-2.14(10)-S14340 when erecting a structure and appurtenant facilities in said subdivision without Department approval is grounds for injunction by the Department of Health and Environmental Sciences.*

Remedies Available:

MCA *76-4-109. Penalties. (1) A person who violates a provision of this part, except 76-4- 122(1), or a rule adopted or an order issued under this part is guilty of an offense and subject to a fine in an amount not to exceed $1,000.*

(2) (a) In addition to the fine specified in subsection (1), a person who violates any provision of this part or any rule adopted or order issued under this part is subject to an administrative penalty in an amount not to exceed $250 or a civil penalty in an amount not to exceed $1,000. Each day of violation constitutes a separate violation.

(b) Penalties assessed under this subsection (2) must be determined in accordance with the penalty factors in 76-4-1001. An action to recover penalties must be brought in the district court of the county in which the violation occurred or, if mutually agreed on by the parties in the action, in the district court of the first judicial district, Lewis and Clark County.

(3) Penalties imposed under subsection (1) or (2) do not bar enforcement of this part or rules or orders issued under it by injunction or other appropriate remedy.

(4) The purpose of this section is to provide additional and cumulative remedies.

76-4-110. Additional remedies available. This part does not abridge or alter rights of action or remedies in equity or under the common law or statutory law, criminal or civil, nor does any provision of this part or any act done by virtue of it stop the state, any municipality or other subdivision of the state, or any person in the exercise of his rights equity or under the common law or statutory law

2. Violation of Lake County Wastewater Treatment System Regulations:

DEFINITION:

Alteration - changing a wastewater treatment system by lengthening, shortening, adding or removing components, building structures over components, making non-cosmetic structural modifications to a building served by the system, or exchanging dwelling units; this shall not be construed to mean exchanging units in a campground or a trailer court currently licensed by the Montana Department of Public Health and Human Services. Alteration shall also include increasing the potential wastewater flow or strength beyond the design capacity of the system.

2a SECTION 2.1 Prohibited Acts

A. No person may install, alter, repair, extend, or utilize any wastewater treatment system in a manner that may:

As per A.R.M. 17.36.913 (1):

1. Contaminate any actual or potential drinking water supply;

2. *Cause a public health hazard as a result of access to insects, rodents, or other possible carriers of disease to humans;*
3. *Cause a public health hazard by being accessible to persons or animals;*
4. *Violate any law or regulations governing water pollution or wastewater treatment and disposal;*
5. *Pollute or contaminate any state water in violation of 75-5-605, MCA; or*
6. *Cause a nuisance due to odor, unsightly appearance or other aesthetic consideration.*

2b SECTION 3.1 Application for Installation Permit

A. No person may install, alter, repair or extend a wastewater treatment system unless the Department has issued an Installation Permit. This permit shall be for the specific installation, alteration, repair, or extension. Alternations may be authorized by a Change of Use Permit.

2c. *SECTION 3.4. Use Permit*

G. Any alteration of the wastewater treatment system not approved by the Department after the Use Permit has been issued invalidates the permit.

2d. *SECTION 3.5 Change of Use Permit*

A. No person may increase wastewater flow or strength beyond the design of a wastewater treatment system without a Change of Use Permit issued by the Department. Examples of uses requiring a Change of Use Permit include but are not limited to:

1. Addition of a bedroom(s) to a residence.

2e. *SECTION 4.2 General Standards*

F. No component of any wastewater treatment system shall be located under driveways, roads, parking areas or areas subject to heavy loading and no vehicles shall be driven over the system after installation, except those portions properly installed to accept traffic loads.

2f. *SECTION 4.2 General Standards*

B. Minimum horizontal setbacks: Septic tank to lake or well = 50'
Drainfield to lake or well = 100'

Remedies Available

SECTION 7.1 Notice of Violation or Order of the Lake County Board of Health

If any inspection discloses there has been a violation of these regulations or order of the Board of Health or authorized agents, the responsible party shall be given notice of such violation. Such notice shall be in writing and shall state the violation, the required corrective action, and provide a reasonable time for correction. Service of such notice shall be by means of certified mail or personal delivery.

A re-inspection shall be made by the Department upon receipt of notification that the violation has been corrected or at the end of the time period allowed for corrective action. The correction of a violation does not preclude the assessment of penalties as provided for in Section 7.3. If the violation has not been corrected or an order has been violated, the Board of Health or its authorized agents may seek criminal prosecution as per Section 7.3.

SECTION 7.2 Cease and Desist Order

The Lake County Board of Health or its authorized agents may issue an order to cease and desist from the use of any wastewater treatment system that is found not to be functioning in compliance with these regulations. In addition, the Health Officer, as per M.C.A. 50-2-123, may issue an order to cease and desist from any further installation, alteration, repair or extension of any wastewater treatment system for which a valid Installation Permit has not been issued under the provisions of these regulations. The order shall require the responsible party bring the wastewater treatment system into compliance within a reasonable period of time, not to exceed thirty (30) days.

A re-inspection shall be made by the Department upon receipt of notification that the wastewater treatment system has been brought into compliance or at the end of the time period allowed for corrective action. The correction of a violation does not preclude the assessment of penalties as provided for in Section 7.3. If the violation has not been corrected or an order has been violated, the Board of Health or authorized agents may seek criminal prosecution as per Section 7.3.

SECTION 7.3 Penalty for Violation

A. The Lake County Board of Health or its authorized agents may assess a penalty for violation of these regulations. The penalty shall not exceed $500 per violation and shall be assigned according to the severity of the violation. Each day of violation may be considered a separate violation.

B. Any violation of these regulations or order of the Lake County Board of Health is subject to criminal prosecution in accordance with M.C.A. 50-2-123-124.

As per M.C.A. 50-2-123: Compliance order authorized.

If a person refuses or neglects to comply with a written order of a state or local health officer within a reasonable time specified in the order, the state or local health officer may cause the order to be complied with and initiate an action to recover any expenses incurred from the person who refused or neglected to comply with the order. The action to recover expenses shall be brought in the name of the county.

As per M.C.A. 50-2-124 Penalties for Violations

(1) A person who does not comply with rules adopted by a local board is guilty of a misdemeanor. On conviction, he shall be fined not less than $10 or more than $200.

(2) Except as provided in subsection (1) of section and M.C.A. 50-2-123, a person who violates the provisions of this chapter or rules adopted by the Montana Department of Environmental Quality under the provisions of this chapter is guilty of a misdemeanor. On conviction, he shall be fined not less than $10 or more than $500, imprisoned for not more than 90 days, or both.

(3) Each day of violation constitutes a separate offense.

(4) Fines, except justice's court fines, shall be paid to the county treasurer of the county in which the violation occurs.

These are the major violations that are associated with Borchers of Finley Point. It is not meant to be all inclusive.

APPENDIX D

DEQ
Montana Department of Environmental Quality

Memo

TO: Jim Cole, Timbrshor Association President (electronic only)

CC: Kurt Hafferman, PE, Hafferman Engineering (electronic only)

Diana Luke, Lake County Sanitarian (electronic only)

FROM: Emily Gillespie, PE

DATE: January 9, 2018

SUBJECT: **Timbrshor Association (Borchers at Finley Point)**
Water System Compliance

As we previously discussed, I extend my gratitude to the Timbrshor Association for your completion of the wastewater improvements on site.

Additionally, Tim Cole recently inquired about compliance for the water systems onsite. The intent of this memo is to outline the units which are currently in compliance with the original approval and those that are not. For the ones out of compliance, I have listed a few options for coming into compliance.

Units currently in compliance (17): Units 203, 204, 205, 210, 211, 306, 307, 308, 309, 311, 312, 314, 315, 316, 401, 402 and the lodge were outlined as having individual water systems that predated the 24-77-K902 Borchers at Finley Point Water Certificate of Subdivision Approval (dated July 22, 1977). Hence, these lots may remain served by individual water systems.

Units currently out of compliance (38 original, 30 current units): Units 201, 202*, 206, 209, 216, 217**, 219, 301, 302, 305, 317***, 318, 319, 320, 403/404, 406, 408, 409, 410, 411, 412, 413, 414, 416, 417, 418/419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430 were approved to be connected to a Community water supply system. All of these units, whether built or non-built, must seek an approvable solution to their water supply. Individual surface water intakes are not allowed by current DEQ Subdivision laws.

*Shaded units are no longer approved for construction per the "Restriction on Development Lots" agreed to by the Lake County Commissioners on April 16, 2015.

**Unit 217 currently has sanitary restrictions placed on it.

***Unit 317 was inadvertently left off 1977 Water COSA, but shows up in the 1977 Wastewater COSA

Options for compliance:

(1) The 1977 COSA pertaining to water could remain in place. However, since the approved plans for the Community Public Water Supply (PWS) system have expired, new water system plans (prepared by a Professional Engineer) would need to be submitted to DEQ for review and approval as a Community PWS system. This Community PWS system could be served by either groundwater wells or surface water, with appropriate treatment. By not changing the 1977 COSA, the PWS system plans do not require water rights verification. Therefore, compliance with water rights could be delayed until the Salish Kootenai Compact has been resolved.

   a. It is also possible that a Community PWS system designed to supply domestic water only could be served by two (or more) groundwater wells that pump less than 35 gpm and use less than 10 acre-feet volume per year. In that case, simple Notice of Completion water rights certificates could be submitted to DRNC Water Resources Division.

(2) The 1977 COSA could be re-written to allow for individual, shared or multi-user water systems that could be served by groundwater wells that pump less than 35 gpm and 10 acre-feet volume per year. In this scenario, simple Notice of Completion water rights certificates could be submitted to DRNC Water Resources Division for each well.

(3) The 1977 COSA could be re-written to allow for individual or shared cisterns to be filled by a water hauler (or potentially hauled by individual unit owners). No water rights are involved with this scenario.

If you have any questions, please contact me at 406-755-8979 or egillespie@mt.gov.

APPENDIX E

DEQ
Montana Department
of Environmental Quality

April 15, 2020

Kurt Hafferman, PE
P.O. Box 1891
Kalispell, MT 59903

Re: **Timbrshr HOA**
Lake County
Proposed new Public Water Supply Wells - Conditional Approval
EQ# 20-1440

Dear Mr. Hafferman:

Thank you for the well drilling specifications, site map, design report and Source Water Delineation and Assessment Report (SWDAR) pertaining to the proposed Public Water Supply (PWS) wells, proposed to serve the existing Timbrshr HOA as a new Public Water Supply system, located on the east short of Flathead Lake on Finley Point, north of Polson, MT, received October 30, 2019 – March 16, 2020. The proposed PWS wells were reviewed in accordance with Circular Design Standards DEQ-3, 2014 Edition, based on the seasonal population.

The location and drilling specifications for the proposed Timbrshor HOA PWS groundwater wells designated #4, #5, #6, #9, received March 16, 2020, are hereby approved with the conditions listed below. One copy of the approved well location site plan and well drilling specifications bearing the approval stamp of the Department of Environmental Quality is enclosed. A second set will be retained as Department Record.

Note: The Well #8 location was not approved for PWS use given the proposed sewer line proximity. The deviation request from DEQ-3 Section 3.2.3.1 pertaining to the proposed Well #8 location was denied.

The location of the existing McCarthy well located within the Timbrshor development, is hereby approved for Multi-User Water System use with the conditions listed below, as well as the additional requirement that this well be sampled for Nitrate and Total Coliform bacteria on the same frequency as the PWS wells, during months of use. Such results must be maintained by the owner and made available to DEQ upon request.

The proposed PWS Wells are designed to serve a number of existing residential units (utilized as seasonal homes). The Timbrshr HOA condominium community is comprised of 49 units, which are built or allowed to be built. The exact number of homes proposed for connection to each well is not yet known. Due to water rights constraints, the peak withdrawal rate from the wells is 35 gpm. Actual production will be determined from aquifer testing.

Due to the seasonal nature of the residential units, the proposed PWS water system(s) are expected to be Transient PWS systems.

The proposed PWS wells (#4, #5, #6, and #9) will be constructed of 6-inch diameter permanent steel casing. Grouting of the well will be performed with a 10-inch diameter temporary, oversized conductor casing providing a minimum bentonite cement grout thickness of 1.5 inches, to extend a minimum of 25 feet below ground surface. A total depth of approximately 400 feet is estimated.

As a part of this project, deviations were requested and granted from Circular DEQ-3 Section 3.2.3.2 (continued well protection) for Well #4, #5, #8 and #9 allowing the wells in the locations proposed without protection zone easements from neighboring property.

As a part of this project, a deviation was requested and granted from Circular DEQ-3 Section 3.2.3.1 (well location) for the McCarthy well (GWIC), allowing the existing well to be utilized as a Multi-User well for a maximum of 4 unit (home) connections, conditioned upon this well maintaining the same sampling as the Transient PWS wells for Nitrate and Total Coliform bacteria during the months of operation. Such records shall be maintained by the owner and made available to DEQ upon request.

Condition One: Prior to connecting the PWS wells to the future PWS system, plans and specifications for the connection detail, pressure control system and distribution piping must be submitted to DEQ review and approval. Prior to connecting additional connections to the McCarty well plans and specifications for the connection detail, pressure control system and distribution piping must be submitted to DEQ review and approval.

Condition Two: Following drilling of the PWS wells and prior to connection of the wells to the PWS system, the following submittals must be made to DEQ for review and approval:

1. Documentation that the well, to be classified as Public Water Supply sources, were constructed by a Montana licensed well driller and installation complied with ARM Title 36, Chapter 21 and DEQ-3 subsection 3.2.5 General well construction.

2. A copy of the completed well log (DEQ-3, Standard 3.2.4.3) with supplemental grout form.

3. Yield and Drawdown Test results demonstrating compliance with DEQ-3, Standard 3.2.4.1. These results must be submitted in the DNRC format (available on their website) both in hardcopy and electronically. The proposed well will be test pumped at 53 gpm (1.5 times 35 gpm) for 24 hours or at 35 gpm for 72 hours, or until stabilized drawdown has been reached for 8 hours.

4. As a proposed "Transient" Public Water Supply well, provide Water Quality sample results demonstrating compliance with DEQ-3, Standard 3.2.2.1 Microbiological quality, and DEQ-3, Standard 3.2.2.2 Physical and chemical quality. Specifically, water quality parameters shall include the following:

    - Coliform bacteria (2 tests minimum)
    - Nitrate, Nitrite
    - Conductivity

5. Calculations regarding the pump selection and TDH of the water system and the design of the well screen prior to purchase and installation of the permanent components.

6. Documentation that the continued protection zone has been provided through zoning, easements, deed notices or leasing. Easements or Deed Restrictions must be recorded with the County Clerk and Recorders Office, within the boundary of the Timbrshor property. (DEQ-3, Standard 3.2.3.2).

7. Once the well has been placed into use, submit a Form 602 Notice of Completion Water Certificate to the DNRC Water Resources Division. Please contact Kathy Olsen with DNRC Water Resources at 406-752-2706 with any questions about the water rights application process.

Approval is given with the understanding that any deviation from the approved well location and specifications will be submitted to the Department for reappraisal and approval.

It is further understood that well construction will be completed within three years of this date. If more than three years elapse before completing well construction, plans and specifications must be resubmitted and approved before construction begins. This three-year expiration period does not extend any compliance schedule requirements pursuant to a Department enforcement action against a public water or sewage system.

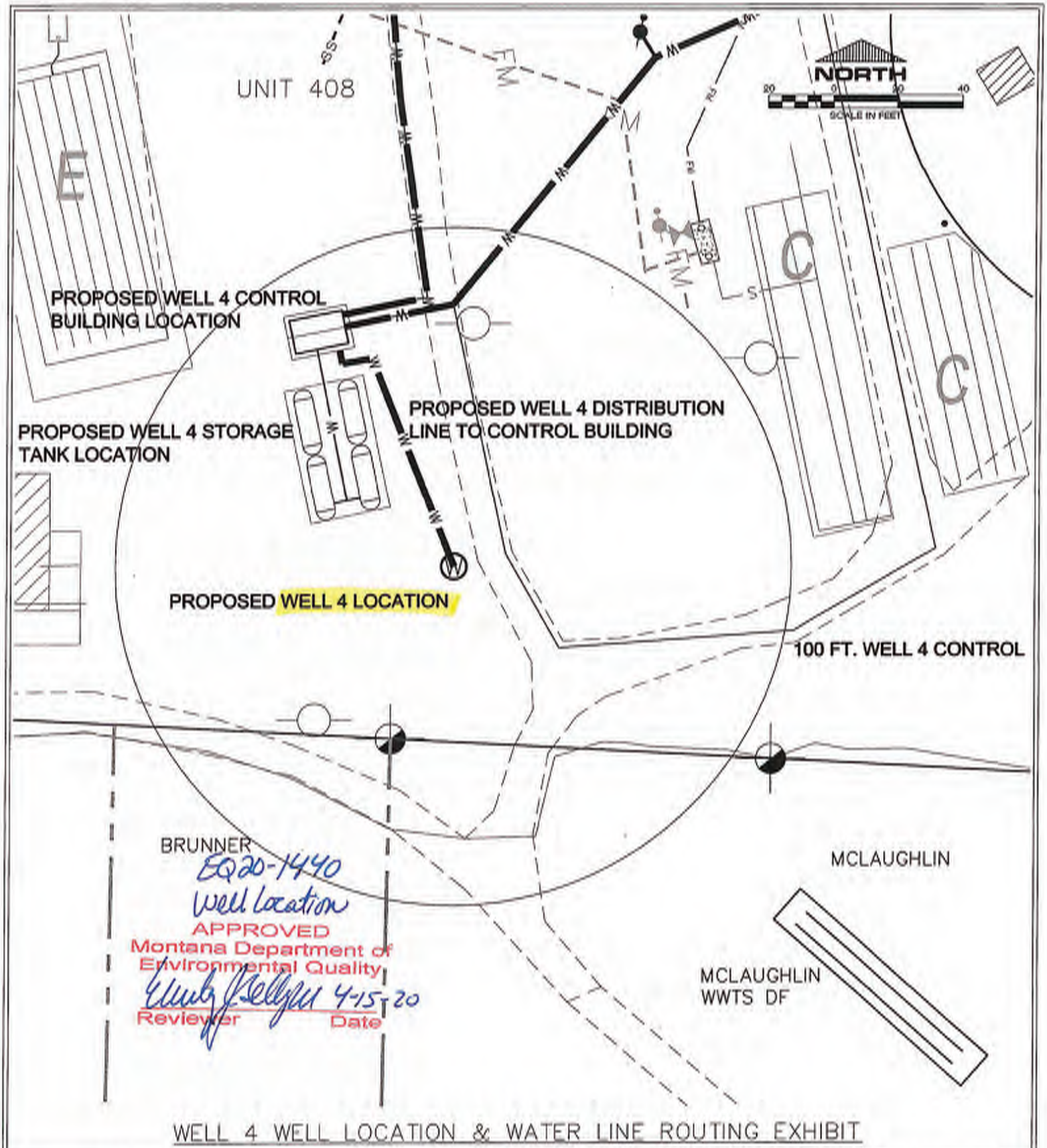
Department approval of this project covers only those portions of the plans and specifications that are subject to the Department's review authority under the Public Water Supply Laws (MCA 75-6) and the Administrative Rules promulgated thereunder (ARM 17.38). This approval does not cover items found within the plans and specifications that are outside of the Department's review authority, including but not limited to: electrical work, architecture, site grading or water and sewer service connections.

Thank you for your efforts regarding this submittal. If you have any questions, please contact me at (406) 755-8979 or egillespie@mt.gov.

Sincerely,

Emily J. Gillespie, P.E.
Engineering Bureau

cc: Blake Johnson, Timbrshr HOA (electronic)
Diana Luke, Lake County Sanitarian
Kathy Olsen, DNRC/WRD/KRO (electronic only)
Carolyn DeMartino, DEQ Source Water Protection (electronic only)
PWS Plan Review File



EQ20-1440
Well location
APPROVED
Montana Department of Environmental Quality
Reviewer Date 4-15-20

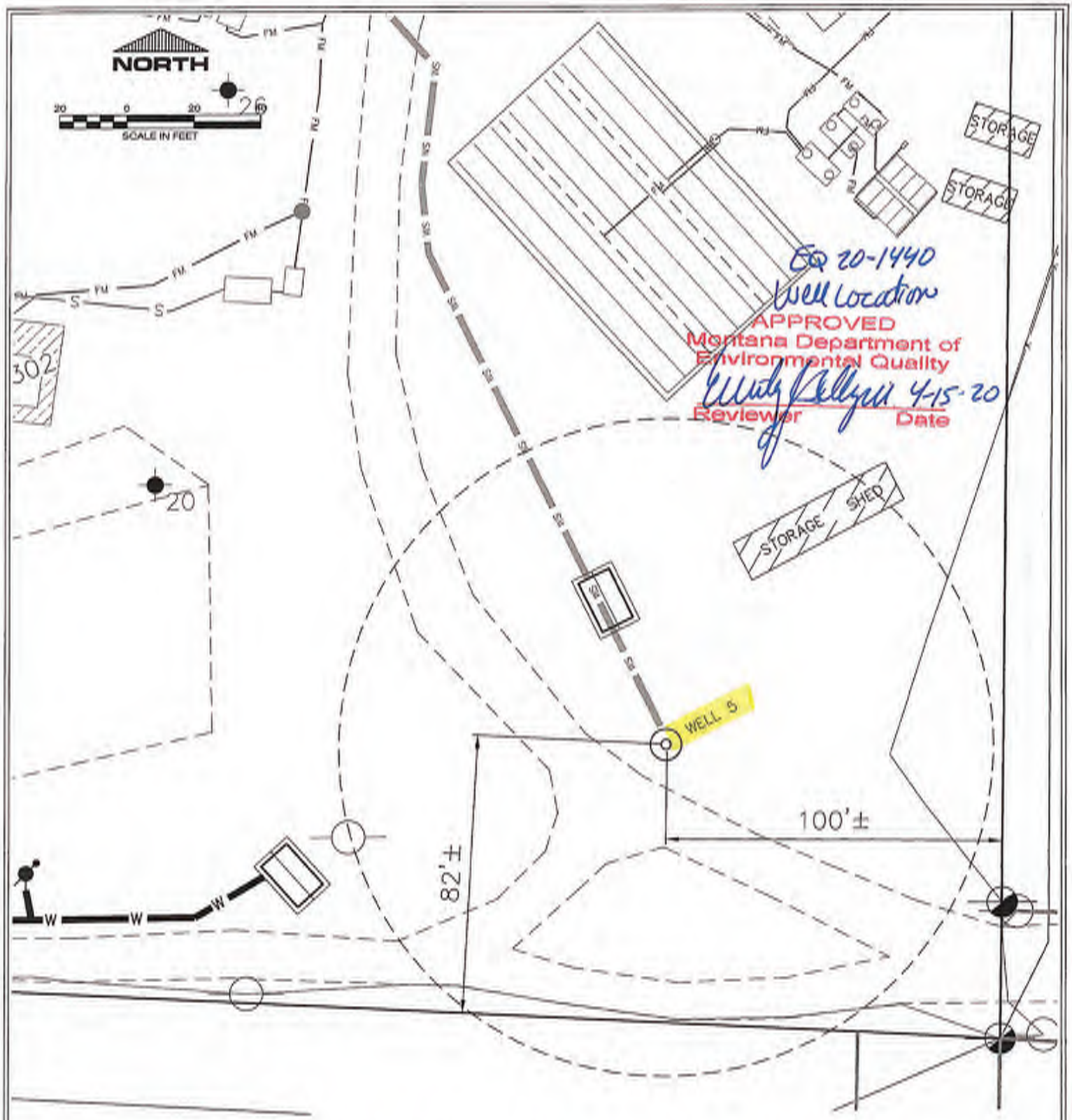
WELL 4 WELL LOCATION & WATER LINE ROUTING EXHIBIT

HAFFERMAN ENGINEERING, INC.
P.O. BOX 1691
KALISPELL, MT 59901-1691
PHONE: 406-257-8708
FAX: 406-257-8710
EMAIL: info@billmayer.com
ONLINE: www.billmayer.com

RECEIVED
MAR 16 2020
Department of Environmental Quality
Kalispell Regional Office

DRAWING TITLE:
TIMBRSHOR WELL 4 WELL CONTROL ZONE
FOR
TIMBRSHOR HOA
SECTION 7
T23N, R 19W, PM, M., LAKE COUNTY, MONTANA

DATE:	PROJECT NUMBER:	SCALE:	SHEET:
MARCH 15, 2020	T.58.2	AS SHOWN	1 OF 1
FILE LOCATION: S:\LAND PRO...\T.58.2\DWG	DRAWN BY: KMH	APPROVED BY: KMH	



EQ 20-1440
Well Location
APPROVED
Montana Department of
Environmental Quality
[signature] 4-15-20
Reviewer Date

WELL 5 WELL CONTROL ZONE AND LOCATION DIMENSIONS

HAFFERMAN ENGINEERING, INC.
P.O. BOX 1691
KALISPELL, MT 59901-1691
PHONE: 406-257-8708
FAX: 406-257-8710
EMAIL: info@billmayer.com
ONLINE: www.billmayer.com

RECEIVED
MAR 16 2020
Department of
Environmental Quality
Kalispell Regional Office

DRAWING TITLE:
TIMBRSHOR WELL 5 WELL CONTROL ZONE
FOR
TIMBRSHOR HOA
SECTION 7
T23N, R 19W, PM, M., LAKE COUNTY, MONTANA

DATE:	PROJECT NUMBER:	SCALE:	SHEET:
MARCH 14, 2020	T.58.2	AS SHOWN	1 OF 1
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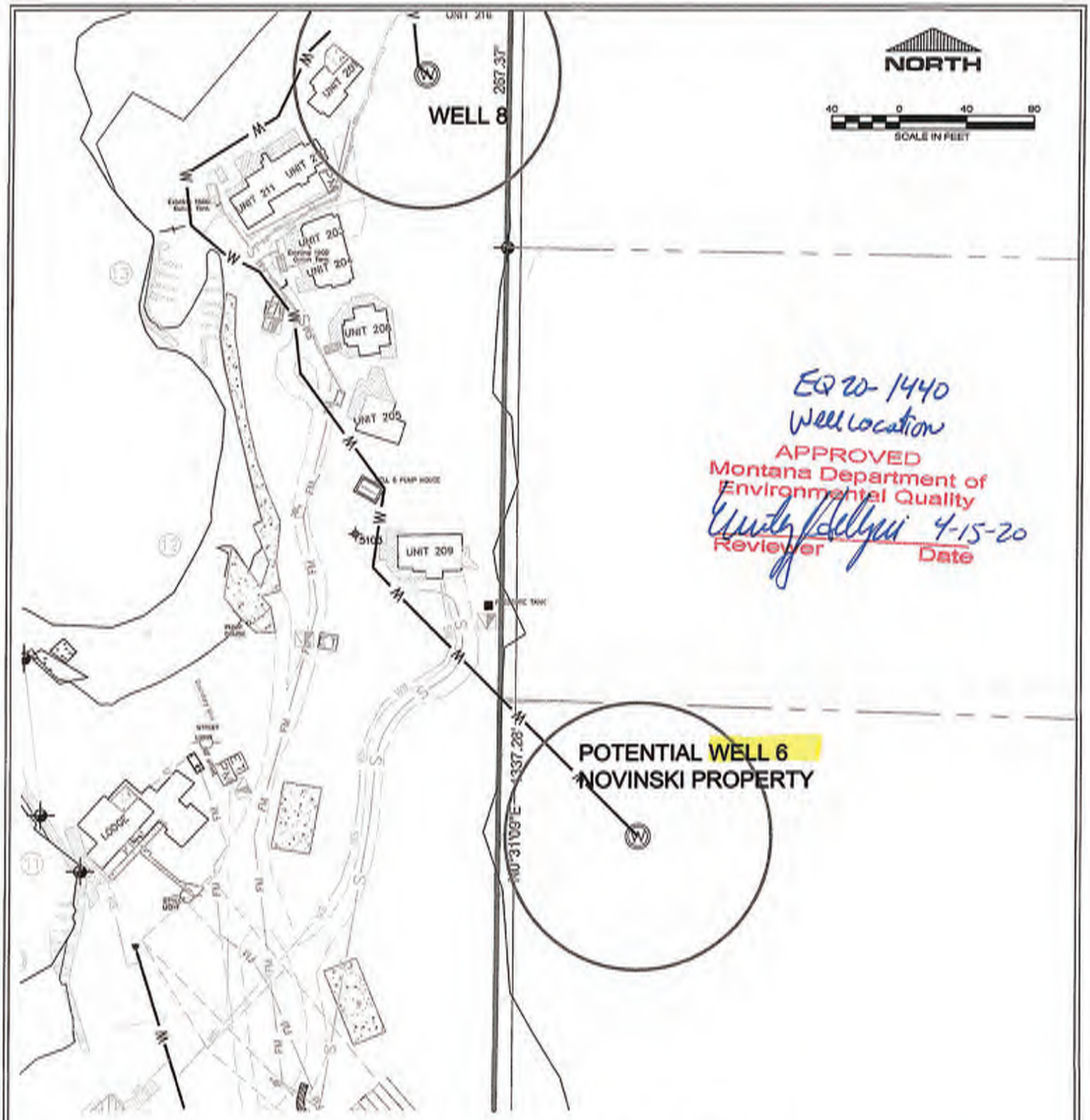


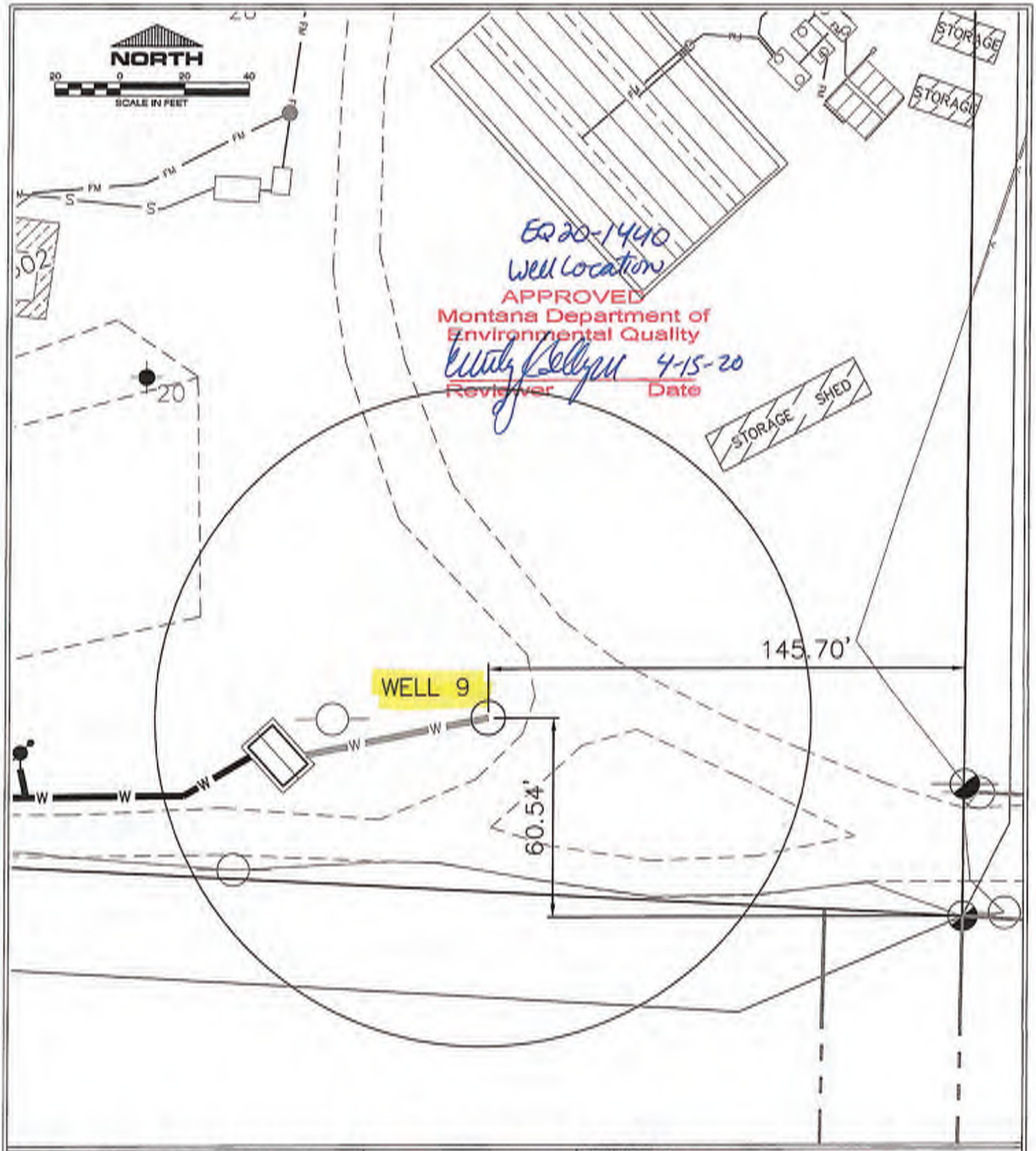
EQ 20-1440
Well location
APPROVED
Montana Department of Environmental Quality
Reviewer 4-15-20 Date

HAFFERMAN ENGINEERING, INC.
P.O. BOX 1891
KALISPELL, MT 59901-1891
PHONE: 406-257-6708
FAX: 406-257-8710
EMAIL: info@billmayer.com
ONLINE: www.billmayer.com

RECEIVED
OCT 30 2019
Department of Environmental Quality
Kalispell Regional Office

DRAWING TITLE:
TIMBRSHOR WELL 6 PROTECTION ZONE
FOR
TIMBRSHOR HOA
SECTION 7
T23N, R 19W, PM, M., LAKE COUNTY, MONTANA

DATE:	PROJECT NUMBER:	SCALE:	SHEET:
DEC 6, 2018	T.58.2	AS SHOWN	2 OF 2
FILE LOCATION: S:\LAND PRO...AT 58.2\DWG	DRAWN BY: NJF	APPROVED BY: KMH	



HAFFERMAN ENGINEERING, INC.
P.O. BOX 1691
KALISPELL, MT 59901-1691
PHONE: 406-257-8708
FAX: 406-257-8710
EMAIL: kurt@haffermanengineering.com
ONLINE: www.billmayer.com

RECEIVED
MAR 16 2020
Department of
Environmental Quality
Kalispell Regional Office

DRAWING TITLE:

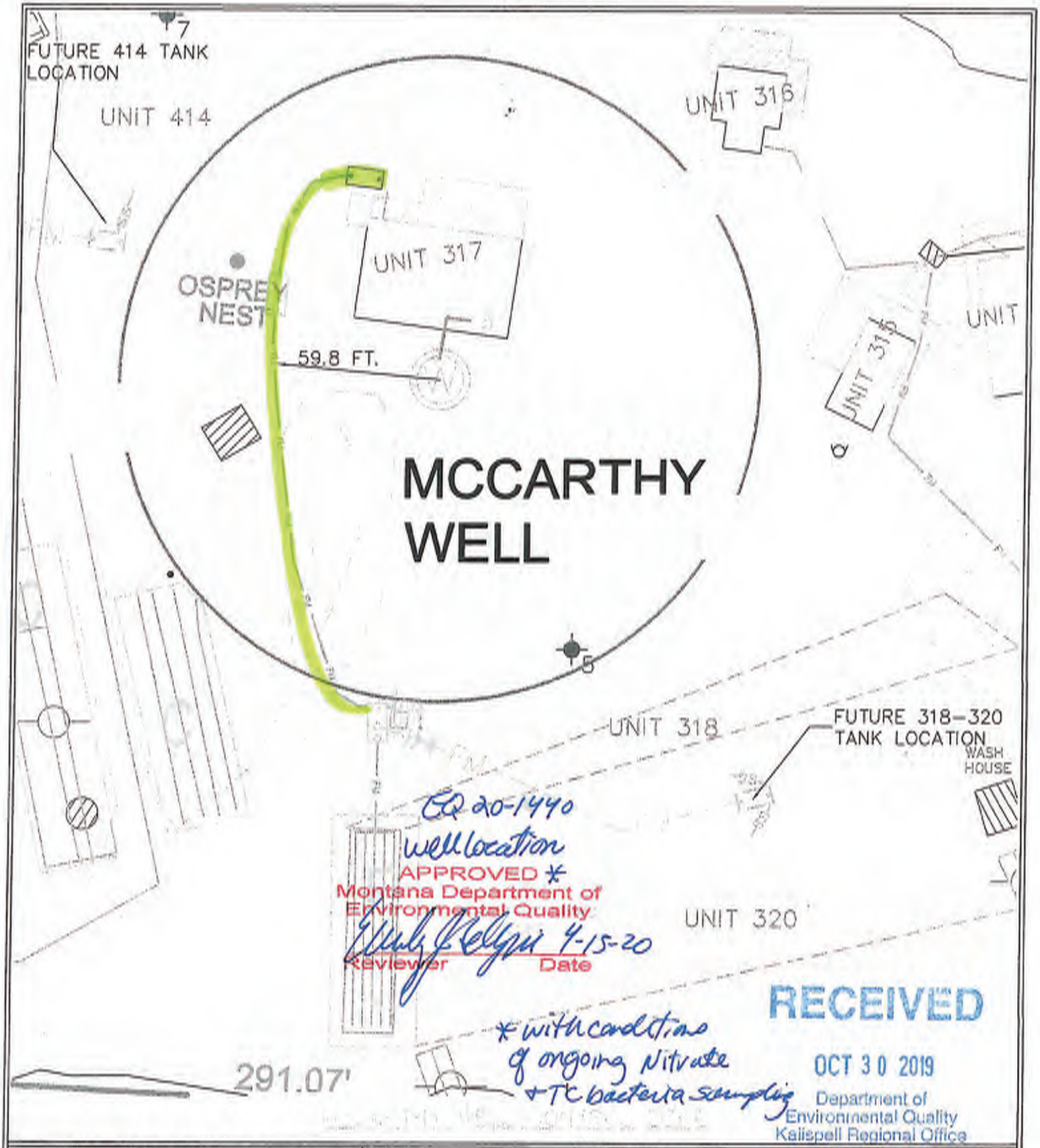
WELL 9 WELL CONTROL ZONE

FOR

TIMBRSHOR HOA

SECTION 7
T23N, R 19W, PM, M., LAKE COUNTY, MONTANA

DATE:	PROJECT NUMBER:	SCALE:	SHEET:
MARCH 9, 2020	T.58.2	1"=40'	1 OF 1
FILE LOCATION: S:\LAND PRO...\T.58.2\DWG	DRAWN BY: KMH	APPROVED BY: KMH	



GQ 20-1440
well location
APPROVED *
Montana Department of Environmental Quality
Reviewer Date 4-15-20

* with conditions of ongoing Nitrate + TC bacteria sampling

RECEIVED
OCT 30 2019
Department of Environmental Quality
Kalispell Regional Office

HAFFERMAN ENGINEERING, INC.
P.O. BOX 1691
KALISPELL, MT 59901-1691
PHONE: 406-257-8708
FAX: 406-257-8710
EMAIL: info@billmayer.com
ONLINE: www.billmayer.com

DRAWING TITLE:
McCARTHY WELL PROTECTION ZONE
FOR
TIMBRSHOR HOA
SECTION 7
T23N, R 19W, PM, M., LAKE COUNTY, MONTANA

DATE:	PROJECT NUMBER:	SCALE:	SHEET:
NOV 19, 2018	T.58.2	AS SHOWN	1 OF 2
FILE LOCATION: S:\LAND PRO...\T.58.2\DWG	DRAWN BY: NJF	APPROVED BY: KMH	

APPENDIX F

WATER WELL USERS' AGREEMENT
AND DECLARATION OF WELL CONTROL ZONES

This Water Well Users' Agreement, Reciprocal Easements and Declaration of Well Control Zones ("Agreement") is entered into by and among Timbrshor Association, Inc. (the "Association") and the unit owners the development known as Timbrshor (the "Members") who sign or accept this Agreement now or in the future. This Agreement will be effective as of _____ [date] for initial signatories and as of the date of signing and delivery for future signatories.

RECITALS

WHEREAS, the Members own individual units within, and have undivided common property interests in, the development known as Timbrshor. Timbrshor and the property subject to this Agreement is legally described as:

Lot 3, Section 7, Township 23 North, Range 19 West, P.M.M., Lake County, Montana

hereinafter ("Timbrshor").

WHEREAS, Timbrshor and the Members are subject to the Amended Declaration Under the Unit Ownership Act and Restrictive Covenants recorded March 27, 1980 as Instrument No. 254077, records of Lake County, Montana (the "Amended Declaration").

WHEREAS, on April 2, 2019 the Association's Board of Directors ("Board") approved a new water well plan ("Well Plan") through which all Members will be provided an opportunity to connect their respective developable units (each, a "Unit") to the water wells that will be constructed on Timbrshor common property.

WHEREAS, the parties wish to define the terms under which the Members may build and operate ground water well and water systems to serve their respective Units, to specify the conditions under which they may do so, to clarify their mutual reciprocal easements as they pertain to the ground water well systems, and to provide for other rights and obligations, including the declaration of well control zones required by the public authorities.

AGREEMENT

NOW, THEREFORE, in consideration of the mutual promises herein set forth and for other good and valuable consideration, the receipt and sufficiency of which is acknowledged, and subject to the terms and conditions herein, the parties agree as follows:

1. Purposes. The purposes of this Agreement include: (a) conferring upon each of the 47 developed and developable sites at Timbrshor a right to access ground water by connecting to one of the four (4) shared wells referenced in the Well Plan; (b) specifying the required conditions to be eligible to build and operate private shared wells on Timbrshor common property; and (c) clarifying the mutual reciprocal easements pertaining to ground water well systems.

2. Wells. The Well Plan assigns 47 Units to one of the five shared wells on Timbrshor common property as reflected in Exhibit A hereto. All Units assigned to a particular well are referred to as a "Well Group" and the well assigned to that group is referred to as the "Assigned Well." Subject to the terms and conditions herein, each Well Group shall have a right to build, operate and maintain its Assigned Well to provide ground water to Units at the locations specified by the Association and as generally reflected on Exhibit A hereto. The exclusive ground water source for each Unit are the particular wells as specified in Exhibit A. Water from Assigned Wells shall only be used for domestic purposes.

3. Acceptance and Participation. Members must sign and return this Agreement to be eligible to connect to a well located on Timbrshor common property. Members shall become "Participating Well Group Members" of their Assigned Well by: (a) executing this Agreement; (b) signing the Participating Well Group form appended hereto as Exhibit B; and (c) paying the Member's share of Well Infrastructure Costs, as defined below; or conveying an easement for the placement of a well and infrastructure on the Member's property, as the case may be.

4. Construction, Costs and Expenses; Responsibilities and Ownership.

(a) It is the responsibility of the Participating Well Group Members of each Assigned Well to construct and maintain a shared groundwater well, pump house and pump, well casing, pump controls and main water line (if necessary), and pay all costs associated therewith (the "Well Infrastructure Costs").

(b) One or more Members may construct an Assigned Well in anticipation that other Members of the Well Group may join and pay later. Initial Participating Well Group Members constructing an Assigned Well shall pay an equal share of Well Infrastructure Costs on a per Unit basis. A Member that was not initially a Participating Well Group Member but desires to connect to its Assigned Well after construction shall pay a late hook-up fee equal to: the Well Group's Well Infrastructure Costs divided by the number of Units then participating in the Well Group (including the newly participating Unit(s)), plus interest accruing at four percent (4%) per year from the date of well construction. Payments will be distributed pro rata to the Participating Well Group Members that funded initial construction or are otherwise entitled to reimbursement.

(c) The Participating Well Group Members are the owners of the well infrastructure paid for by the Participating Well Group Members.

(d) A Member is not obligated to pay any costs associated with its Assigned Well until the Member becomes a Participating Well Group Member. But a Member that has not become a Participating Well Group Member or paid its share of well Infrastructure costs may not connect to its Assigned Well.

(e) Each Member shall be responsible for and individually pay all other water infrastructure costs that may be necessary to connect Member's Unit to its Assigned Well, including water lines (pipes), tanks, meters, etc.

5. Cisterns. Subject to Association approval, and upon the amendment of the applicable Montana Department of Environmental Quality ("DEQ") Certificate of Subdivision Approval ("COSA") by a Member, at the Member's expense, a Member may substitute a cistern for its Assigned Well. In that event, the provisions of this Agreement shall apply to the construction and use of the Member's cistern, and such Member shall be solely responsible for building and operating a cistern to serve its Unit at a location approved by the Association. Unless a Member electing to use a cistern also retains an interest in the Member's Assigned Well by becoming a Participating Well Group Member and paying the Member's share of Well Infrastructure Costs, the Member will no longer have a well assignment after substituting a cistern.

6. Administration of Assigned Wells. Each Assigned Well shall be managed by its Participating Well Group Members who, upon majority vote, may decide all normal and customary issues pertaining to the management of a private well in accordance with this Agreement. Issues that may be managed by Well Groups include but are not limited to the following: contracting with a well driller to drill the well; determining the style and cost of the pump house; determining the payment of Well Infrastructure Costs, periodic fees and special charges by Participating Well Group Members; creating and maintaining of any reserve fund; procuring any insurance for the Assigned Well; any water testing; determining whether to sell water to cistern users and at what cost; well maintenance; ensuring compliance with this Agreement and all applicable rules and regulations of the State, County and the Association; and paying all costs and expenses pertaining to the Assigned Well. At each annual meeting of the Association, Participating Well Group Members of each Assigned Well shall elect a manager whose responsibilities include managing the foregoing and other issues and keeping a record of all actual construction costs and reporting the same annually to the Association. It is specifically understood and agreed that until a Member opts to become a Participating Well Group Member, the Member has no responsibility to pay any costs whatsoever pertaining to their Assigned Well, other than general costs assessed to all Members relating to the Well Plan and related professional costs.

7. Well Group Enforcement. In the event that any Participating Well Group Member fails to pay any fees or charges to its Well Group after a 30-day uncured delinquency notice mailed or hand-delivered to the delinquent member, the other Participating Well Group members acting as a group shall have a lien on the delinquent Member's property (i.e., Unit) for the amount of the unpaid fees and charges, with interest accruing thereon at the rate of ten percent (10%) per year from the date of the notice, forward, and may pursue all lawful remedies against the delinquent Member, including shutting off water from the Assigned Well, recording notice of the lien in property records, filing suit against the delinquent Member, and recovering from the delinquent Member attorney fees and court costs incurred in enforcing the lien and/or this Agreement.

8. Association Oversight. All construction plans and planning for wells, cisterns, unit water line connections and all other well and water infrastructure are subject to the prior review and approval of the Association Board of Directors or its designee.

9. Compliance. Each Well Group and its Participating Well Group Members shall have a continuing obligation to comply with this Agreement, all applicable governmental laws and regulations, the Amended Declaration, the Association's bylaws, and all rules and regulations adopted by the Association.

10. Reciprocal Easements. The Members hereby mutually grant and convey to one another, and one another's successors and assigns, non-exclusive easements and rights of way under, over, and across the Members' properties and the Timbrshor common areas for the surveying, construction, maintenance, operation, use, repair, and/or replacement of the well systems reflected in the Well Plan and related infrastructure, including all rights of access necessary to accomplish the foregoing.

11. Declaration of Well Control Zones (a/k/a Well Isolation Zones). So long as the property located at Timbrshor is used for purposes that are subject to regulation as a Public Water Supply, undersigned hereby declares that all such property owned by the undersigned and located within the 100-foot radius of the wells depicted on Exhibit A hereto, hereinafter referred to as the "Well Control Zone," shall be held, sold, and conveyed subject to the following restrictions: (a) except for units 318, 320, 408, 414, 416 and 417 that were fully considered as part of the MDEQ approval process, no septic system, mixing zone wastewater disposal system, sewer lines, holding tanks, sewage lift station, French drain, or class V injection well, or any structure used to convey or retain industrial, storm or sanitary waste shall be located within the Well Control Zone; (b) no hazardous substances as defined by § 75-10-602 MCA, or gasoline, liquid fuels, petroleum products, or solvents shall be stored within the Well Control Zone; (c) no stormwater injection well, grass infiltration swale, or other stormwater disposal mechanism shall be located within the Well Control Zone; (d) no livestock shall be confined, fed, watered, or maintained within the Well Control Zone; (e) no new well shall be constructed within the Well Control Zone without MDEQ approval; (f) no new public roadway or public roadway easement shall be constructed or maintained within the Well Control Zone without MDEQ approval (it being understood that driveways and access roads are fully permitted); (g) pesticides including herbicides or insecticides shall not be applied or used in the Well Control Zone; (h) the application of fertilizers shall be at agronomic rates and applied only during the growing season within the Well Control Zone; and (i) activities in the Well Control Zone that threaten the quality of water in the Well Control Zone are prohibited. These restrictions are continuing in nature and shall run with the title to undersigned's property and shall be binding on undersigned's heir, successors, and assigns, except as provided herein. These restrictions shall terminate and be of no further force and effect in the event: (a) Timbrshor is no longer being used primarily for purposes subject to regulation as a Public Water Supply; or (b) the applicable well is discontinued as a source of water and is abandoned in accordance with the laws and regulations of the Montana Department of Natural Resources and Conservation. These restrictions shall also not apply to any well that is not regulated as a Public Water supply, including any multiple user well. Although the restrictions set forth above may be specifically enforced, undersigned hereby expressly disclaims any liability for any damages or injuries that may accrue or be incurred to any person or property due to any violation of the above described restrictions. The Association hereby releases and covenants to hold undersigned (and its successors and assigns) harmless from any such liability for any damages or injuries to any person or property due to any violation of the above described restrictions, and said release and covenant shall bind the successors and assigns of the Association.

12. Defaults. If a Member elects to become a Participating Well Group Member but fails to pay its share of Well Infrastructure Costs by the date specified by the Well Group, then upon a majority vote of the Well Group, the Member becomes a "Defaulting Member" until the outstanding amounts are paid. Further, if a Member fails to pay an Association water plan assessment by its due date is, then upon a majority vote of the Board, the Member becomes a "Defaulting Member" until

the outstanding amounts are paid. A Defaulting Member is not allowed to connect to a well. The paragraph shall not limit any remedy that any party may have for any other default.

13. Breach or System Failure. In addition to all other legal remedies, in the event of a breach of this Agreement or failure of any well or water system, the Association shall have the right to remedy and/or repair any circumstance that poses an imminent or significant risk to a Member, Member property or common property, and to require all applicable Participating Well Group Members whose Assigned Well was involved in the breach or failure to reimburse the Association for the cost of any such remedy and/or repair.

14. Indemnification. A Member shall indemnify and reimburse the Association for any costs and expenses that the Association may incur (including attorney's fees and costs) due to the Member's willful misconduct, gross negligence, or noncompliance with any legal, regulatory or the Association's requirements pertaining to any Assigned Well or Well Group, including, but not limited to, the construction, operation and maintenance of the wells and associated water systems and compliance with DEQ orders and regulations.

15. Continuing Rights and Recordation. This Agreement shall run with the land and be binding upon and inure to the benefits of the heirs, successors and assigns of all the parties hereto. Once the Well Plan and associated COSA are approved by the applicable regulatory bodies, this Agreement shall be recorded with Lake County.

16. Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of Montana.

17. Severability. If any provision of this Agreement is found to be invalid or unenforceable, the remainder of this Agreement shall remain in full force and effect.

18. Counterparts. This Agreement may be executed over time in one or more counterparts, each of which will be deemed an original instrument, but all of which together shall constitute one and the same agreement.

19. Entire Agreement and Amendment. This Agreement and the documents specified or referred to herein constitute the entire agreement between the parties concerning the subject matter describe herein. If a well fails or DEQ authorizes other well sites that are of benefit to the Association, the well assignments specified herein may be amended by the Board with the concurrence of the DEQ. The other terms and conditions of this Agreement may be amended only by a majority of Participating Well Group Members in writing.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed as of the dates set forth below.

[counterpart signature pages follow]

ASSOCIATION

TIMBRSHOR ASSOCIATION, INC.

Signed by:_____ Date:_____

Its:_____

STATE OF MONTANA)
: ss.
County of Lake)

On this_____day of_____, in the year_____, before me,_____, Notary Public for the State of Montana,_____, on behalf of Timbrshor Association, Inc., personally appeared and acknowledged to me that he or she executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year above.

_____
Notary Public for the State of Montana
Residing at: _____
(NOTARIAL SEAL) My Commission expires: _____

[counterpart signature page to Water Well User's Agreement]

MEMBER(S):

Printed Name(s):

_____

The current owner(s) of Timbrshor Unit Number:

Legal Description (if applicable):

_____

_____

Signed_____ Date:

Signed_____ Date:

Signed_____ Date:

Signed_____ Date:

STATE OF _____)
: ss.
County of _____)

On this_____day of_____, in the year_____, before me,_____, Notary Public for the State of_____, the Members stated above personally appeared and acknowledged to me that they executed the foregoing instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year above.

_____
Notary Public for the State of Montana
Residing at: _____
(NOTARIAL SEAL) My Commission expires: _____

[counterpart signature page to Water Well User's Agreement]

Exhibit A

Well and Water Line Layout and Well Assignments

Exhibit B

Participating Well Group Member

I,_____[print name], the owner of Unit _____at Timbrshor, and pursuant to Section 3 of the Water Well Users Agreement and Declaration of Well Control Zones of which I am a signatory, and intending to be legally bound hereby, agree to become a Participating Well Group Member of my Assigned Well (a) by Agreeing to become a party to Water Well Users Agreement and (b) by committing to pay Well Infrastructure Costs by the date(s) specified by my Well Group, upon the understanding that my Unit will not be subject to any other costs until I connect my Unit to the Assigned Well other than general costs assessed to all Members relating to the Well Plan and related professional costs.

Agreed by Member:

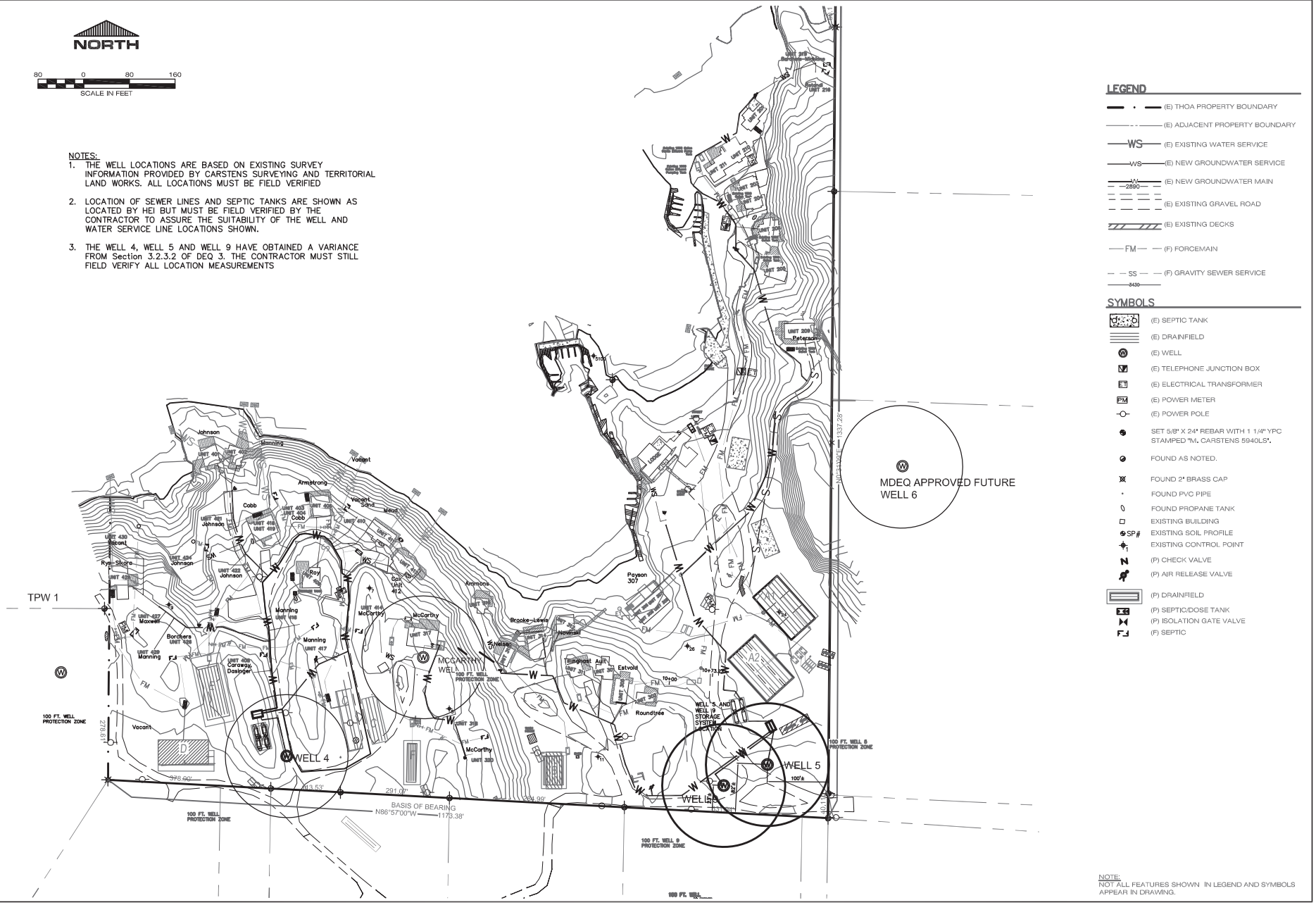
_____ _____

Signature Date

Accepted by Well Group:

_____ _____

Well Group Manager Date



DATE:	DESCRIPTION:	REVISIONS	BY:

DRAWN BY: KMH | APPROVED BY: KMH

TIMBRSHOR WATER SYSTEM
EXHIBIT A WELL USERS AGREEMENT
FOR
TIMBRSHOR HOMEOWNERS ASSOCIATION
SECTION 7, T.23N., R.19W., P.M., LAKE COUNTY, MONTANA

HAFFERMAN ENGINEERING, INC.
35 SOUTH MAIN, SUITE B
KALISPELL, MT. 59901
PHONE: (406) 257-8708
FAX: (406) 257-8710
E-MAIL: info@hilmyer.com
ONLINE: http://www.hilmyer.com

DRAWING TITLE:
MDEQ APPROVED WELL LOCATIONS

SCALE: AS SHOWN

DATE: MAY 2020

PROJECT NO: T.58.2

DRAWING NUMBER:
1 OF 1

T-58-02-WELL LOCATION MAPS.DWG

HAFFERMAN ENGINEERING, INC.

DEQ Key

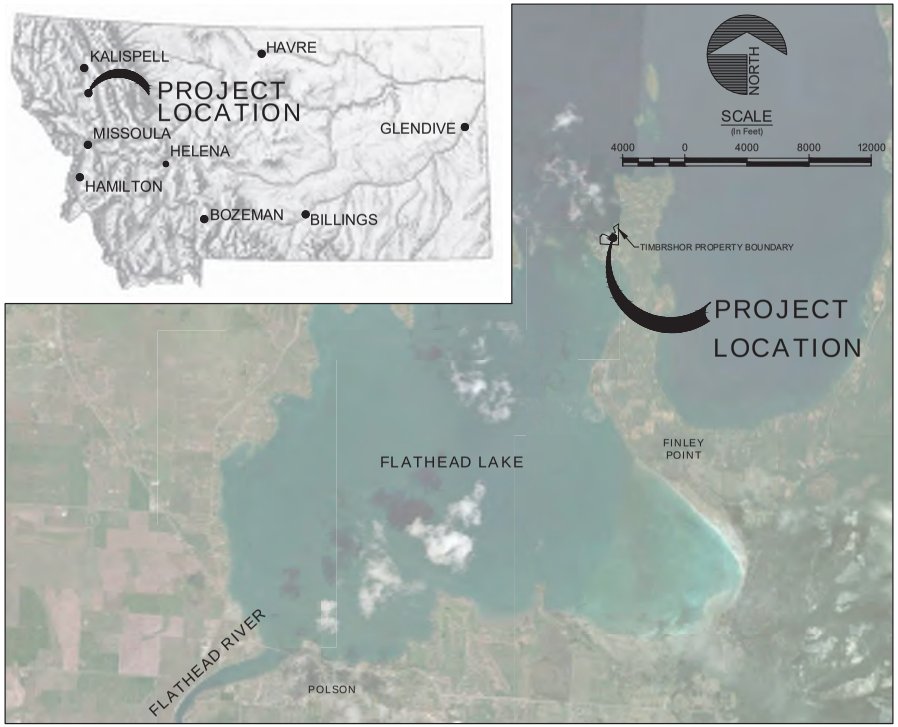
Project:	Timbrshor	Revision Date	COSA Compliant	COM
Project #:	T.58.2	6/10/2020	Not COSA Compliant	NCOM
File:	S:/…/T.58.2/…/WATER SYSTEM DESIGN/FINAL DESIGN 2020			
Assignment	Hafferman	WATER CONNECTION WELL ASSIGNMENT		

Water System Well Service Connections

Unit#	Owner	Status D=developed-#bdrms ND = not developed	DEQ Water Supply Status	Well Assignment
401	Johnson	DEVELOPED	COM	4
402	Manning	DEVELOPED	COM	4
406	Armstrong	DEVELOPED	NCOM	4
408	Caraway,Dasinger	NOT DEVELOPED	NCOM	4
409	Roy	DEVELOPED	NCOM	4
410	Sand Law Office	NOT DEVELOPED	NCOM	4
411	Mead Family Trust	DEVELOPED	NCOM	4
412	Cox	DEVELOPED	NCOM	4
416	Manning	NOT DEVELOPED	NCOM	4
417	Manning	NOT DEVELOPED	NCOM	4
421	Johnson	NOT DEVELOPED	NCOM	4
422	Johnson	NOT DEVELOPED	NCOM	4
424	Johnson	NOT DEVELOPED	NCOM	4
426	Borchers, B	NOT DEVELOPED	NCOM	4
427	Maxwell	NOT DEVELOPED	NCOM	**4**
428	Rys-Sikora	DEVELOPED	NCOM	4
429	Manning	NOT DEVELOPED	NCOM	4
430	Rys-Sikora	NOT DEVELOPED	NCOM	4
403/404	Cobb	NOT DEVELOPED	NCOM	4
418/419	Cobb	DEVELOPED	NCOM	4
			Well 4 Total Units	20
209	Peterson	DEVELOPED	NCOM	5 and 9
306	Moreland, Schoenecker, Schlender and Nichols (4-Plex)	DEVELOPED	COM	5 and 9
307	Payson Living Trust (4-plex)	DEVELOPED	COM	5 and 9
308	Cole (4-plex)	DEVELOPED	COM	5 and 9
309	Cole (4-plex)	DEVELOPED	COM	5 and 9
Lodge	Rose	DEVELOPED	COM	5 and 9
201	Rose	DEVELOPED	NCOM	5 and 9
203	Acher	DEVELOPED	COM	5 and 9
204	Swindlehurst	DEVELOPED	COM	5 and 9
205	Rotondi Family Trust	DEVELOPED	COM	5 and 9
206	Elliott and Giarraputo	DEVELOPED	NCOM	5 and 9
210	Schwank Lake Property Trust	DEVELOPED	COM	5 and 9
211	Fordahl	DEVELOPED	COM	5 and 9
216	Rotondi, M	NOT DEVELOPED	NCOM	5 and 9
219	Borchers-Michione	NOT DEVELOPED	NCOM	5 and 9
301	Ault	DEVELOPED	NCOM	5 and 9
302	Rountree	DEVELOPED	NCOM	5 and 9
305	Estvold	DEVELOPED	NCOM	5 and 9
311	Tillinghast	DEVELOPED	COM	5 and 9
312	Novinski	DEVELOPED	COM	5 and 9
314	Brooke and Lewis Living Trust	DEVELOPED	COM	5 and 9
315	Nelsen	DEVELOPED	COM	5 and 9
316	Ammons	DEVELOPED	COM	5 and 9
			Well 5 and 9 Total Units	23
317	Bantry, LLC	DEVELOPED	NCOM	McCarthy
318	Beara, LLC.	NOT DEVELOPED	NCOM	McCarthy
320	Beara, LLC.	NOT DEVELOPED	NCOM	McCarthy
414	Bantry, LLC	NOT DEVELOPED	NCOM	McCarthy
			McCarthy Total Units	4
			Total Number of Units	**47**

APPENDIX G

TIMBRSHOR HOMEOWNERS ASSOCIATION
WELL NO. 5/9 PUBLIC WATER SYSTEM
POLSON, LAKE COUNTY, MONTANA



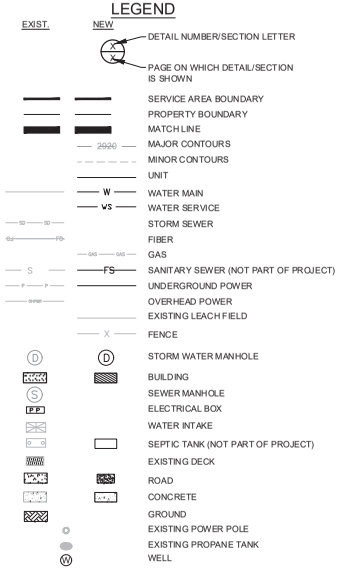
AERIAL IMAGE FROM MICROSOFT BING, 2021.

SHEET NO.	SHEET TITLE
1	TITLE, LOCATION, AND INDEX
2	WELL NO. 5/9 PWS PLAN
3	WATER MAIN PROFILES
4	DETAILS
5	PUPHOUSE #5/9 DETAILS

SHEET NOTES:

1. FOR DRAWINGS ADDRESSING MCCARTHY PWS AND WELL NO. 4 PWS, SEE SEPARATE DRAWING PACKAGE.

LEGEND



GENERAL NOTES

1. PRIOR TO THE START OF CONSTRUCTION, A PRE-CONSTRUCTION MEETING WILL BE HELD AT THE PROPOSED WELL LOCATION AND WILL BE ATTENDED BY THE CONTRACTOR AND REPRESENTATIVES OF THE OWNER. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE ENGINEER AND OWNER.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR:
   A. OBTAINING AND ADHERING TO, AT HIS OWN EXPENSE, ALL PERMITS OR LICENSES WHICH ARE NECESSARY TO PERFORM THE PROPOSED WORK, EXCEPT THOSE SPECIFICALLY LISTED AS PROVIDED BY THE OWNER OR ENGINEER.
   B. PROPER NOTIFICATION OF ALL NECESSARY AGENCIES PRIOR TO CONSTRUCTION.
   C. PROJECT SAFETY.
   D. JOB SITE CONDITIONS AT ALL TIMES.
3. THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ALL WORK SHALL BE INSPECTED AND APPROVED BY THE OWNER'S REPRESENTATIVE.
4. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE OWNER. THE OWNER RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO IT'S STANDARDS AND SPECIFICATIONS.
5. OBSERVATIONS OF WORK IN PROGRESS AND ON-SITE VISITS ARE NOT TO BE CONSTRUED AS A GUARANTEE OF ACCEPTANCE OR APPROVAL OF THE CONTRACTOR'S WORK BY THE OWNER OR OWNER'S REPRESENTATIVE.
6. ALL MATERIALS, CONSTRUCTION, AND TESTS SHALL BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, INCLUDING THE DRAWINGS AND SPECIFICATIONS. DRAWINGS AND SPECIFICATIONS SHALL NOT BE CHANGED WITHOUT THE PRIOR WRITTEN APPROVAL OF THE OWNER AND THE ENGINEER.
7. THE CONTRACTOR IS RESPONSIBLE FOR CONTROL OF POLLUTION, SURFACE WATER, EROSION AND SEDIMENT THROUGHOUT THE DURATION OF THE CONTRACT.
8. THE CONTRACTOR SHALL CONTACT ALL APPROPRIATE UTILITY COMPANIES AND OWNER'S REPRESENTATIVE PRIOR TO THE BEGINNING OF ANY CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION (INCLUDING DEPTHS) OF ANY EXISTING UTILITIES. ALL EXISTING UTILITIES SHALL BE PROTECTED FROM DAMAGE BY THE CONTRACTOR. DAMAGED UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S OWN EXPENSE.
9. THE DESIGN ENGINEER IS TO BE NOTIFIED OF ANY DISCREPANCY OR CONFLICT PRIOR TO CONTINUING CONSTRUCTION.
10. ALL ITEMS SHOWN ON THE PLANS AS EXISTING ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. THE ACTUAL LOCATION MAY VARY FROM THE PLANS, ESPECIALLY IN THE CASE OF UTILITIES. WHENEVER CONTRACTOR DISCOVERS A DISCREPANCY IN LOCATIONS, HE SHALL CONTACT ENGINEER IMMEDIATELY.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROL OF SURFACE WATER, STORMWATER, AND GROUND WATER THROUGHOUT THE LENGTH OF THIS CONTRACT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY GROUNDWATER ENCOUNTERED DURING THE CONSTRUCTION OF ANY PORTION OF THIS PROJECT AND OBTAINING A CONSTRUCTION DEWATERING PERMIT. GROUNDWATER SHALL BE PUMPED, PIPED, REMOVED AND DISPOSED OF IN A MANNER WHICH DOES NOT CAUSE FLOODING OF EXISTING STRUCTURES OR ROADWAYS NOR EROSION OUTSIDE OF THE SITE CONSTRUCTION BOUNDARY IN ORDER TO CONSTRUCT THE IMPROVEMENTS SHOWN ON THESE PLANS. ANY UNSTABLE AREAS, AS A RESULT OF GROUNDWATER, ENCOUNTERED DURING THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS SHALL BE STABILIZED AS AGREED UPON BY THE CONTRACTOR, AND THE DESIGN ENGINEER AT THE TIME OF THEIR OCCURRENCE.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING ALL SURFACES AND RELATED STRUCTURES, TO ORIGINAL CONDITIONS (OR BETTER) AND GRADES UNLESS DESIGNATED OTHERWISE ON THE DRAWINGS.
13. ALL ELEVATIONS SHOWN ARE TO TOP OF GROUND EXCEPT WHEN OTHERWISE SPECIFICALLY NOTED.
14. THE CONTRACTOR SHALL HAVE IN HIS POSSESSION AT ALL TIMES ONE (1) SIGNED COPY OF THE PLANS AND SPECIFICATIONS.
15. A SET OF AS-BUILT DRAWINGS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER AND THE ENGINEER WILL SUPPLY A REPRODUCIBLE SET OF THE RECORD DRAWINGS TO THE OWNER PRIOR TO ACCEPTANCE BY THE OWNER. ALL UTILITIES ENCOUNTERED DURING CONSTRUCTION SHALL BE STATIONED AND SHOWN ACCURATELY ON THE PLANS BY THE CONTRACTOR.ALL COORDINATES MUST BE SHOWN ON THE AS-BUILT PLANS SUBMITTED TO THE OWNER PRIOR TO PROJECT APPROVAL.
16. ALL EQUIPMENT, VALVES, PIPING, COATINGS AND APPURTENANCES SHALL BE IN COMPLIANCE WITH NSF 61.
17. ALL EQUIPMENT SHALL BE CLEANED OF ALL EARTHEN AND ORGANIC MATERIALS PRIOR TO ENTERING THE SITE TO PREVENT WEED SPREAD AND AQUATIC INVASIVE SPECIES (AIS) SPREAD. VEHICLES AND EQUIPMENT MUST BE INSPECTED BY ENGINEER PRIOR TO ENTRY. SEE SPECIFICATIONS FOR REQUIREMENTS.
18. CONTRACTOR WILL BE RESPONSIBLE FOR COMPLYING WITH THE TERMS OF ALL PERMITS DURING THE CONSTRUCTION PERIOD INCLUDING ANY MATERIALS AND LABOR TO INSTALL AND MAINTAIN ANY NECESSARY BMP'S DURING CONSTRUCTION.
19. THE CONTRACTOR SHALL NOTIFY ONE CALL @ 1-800-424-5555 FOR ONSITE UTILITY LOCATION. ALL EXISTING UTILITIES SHALL BE MARKED BEFORE DIGGING.
20. THE LOCATION OF EXISTING UTILITIES SHOWN ON THESE PLANS IS APPROXIMATE. THE CONTRACTOR SHALL FIELD VERIFY THE EXISTENCE, LOCATION, DEPTH, SIZE, LINE, AND GRADE OF EXISTING UTILITIES CONNECTIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANY DAMAGE TO THE EXISTING UTILITIES DUE TO FAILURE TO LOCATE OR PROVIDE PROPER PROTECTION WHEN LOCATION HAS BEEN IDENTIFIED.
21. THE CONTRACTOR SHALL MAINTAIN SERVICE OF ALL EXISTING UTILITIES. IF SAID SERVICE IS DAMAGED, THE CONTRACTOR SHALL IMMEDIATELY REPAIR THE DAMAGE AT THE CONTRACTORS EXPENSE.
22. ALL DISTURBED AREAS SHALL BE SEEDED BY THE CONTRACTOR IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
23. REFERENCE ALL SURVEY MONUMENTS, SECTION CORNERS, ¼ CORNERS AND PROPERTY CORNERS PRIOR TO BEING DISTURBED BY CONSTRUCTION. PLS MUST REPLACE ANY MONUMENTS AND CORNERS THAT ARE DISTURBED DURING CONSTRUCTION.
24. CLOSE ACCESS GATES DURING NON-WORKING HOURS.
25. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). TOPOGRAPHIC SURVEY PERFORMED BY COX 2008.
26. HORIZONTAL COORDINATE SYSTEM IS A LOCAL COORDINATE SYSTEM USED BY COX DURING 2008 SURVEY.

PRELIMINARY NOT FOR CONSTRUCTION

CONTACTS

OWNER:
TIMBRSHOR HOMEOWNERS ASSOCIATION
TIMBRSHOR LAKE COUNTY WATER AND SEWER DISTRICT ENTITY 102414
30371 OSPREY LANE
POLSON, MONTANA 59860

CONTACT:
BLAKE JOHNSON CHAIRMAN

CIVIL ENGINEER:
HYDROMETRICS, INC.
3020 BOZEMAN AVE
HELENA, MT 59601

CONTACT:
GREG LORENSON, P.E.
OR
KARL KINGERY, P.E.
406-443-4150 (OFFICE)

ABBREVIATIONS

APPROX.	APPROXIMATE	PVC	POLYVINYL CHLORIDE
CF	CUBIC FEET	R, RAD.	RADIUS
CY	CUBIC YARDS	SCH, SCHED.	SCHEDULE
DIA	DIAMETER	S	SANITARY SEWER
FT	FEET	TYP	TYPICAL
HP	HORSEPOWER	V	VERTICAL
I.E., INV.	INVERT ELEVATION	W, WTR.	WATER
IN	INCH	W/	WITH

REVISIONS NO	BY	DATE	DESCRIPTION	REVISIONS NO	BY	DATE

SCALE VERIFICATION BAR IS ONE INCH ON ORIGINAL DRAWING
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CHECKED BY
APPROVED BY
SCALE: AS NOTED

Hydrometrics, Inc.
Consulting Scientists and Engineers
Helena, Montana 59601
3020 Bozeman Avenue
(406) 443-4150

TIMBRSHOR PUBLIC WATER SYSTEM - WELL NO. 5/9

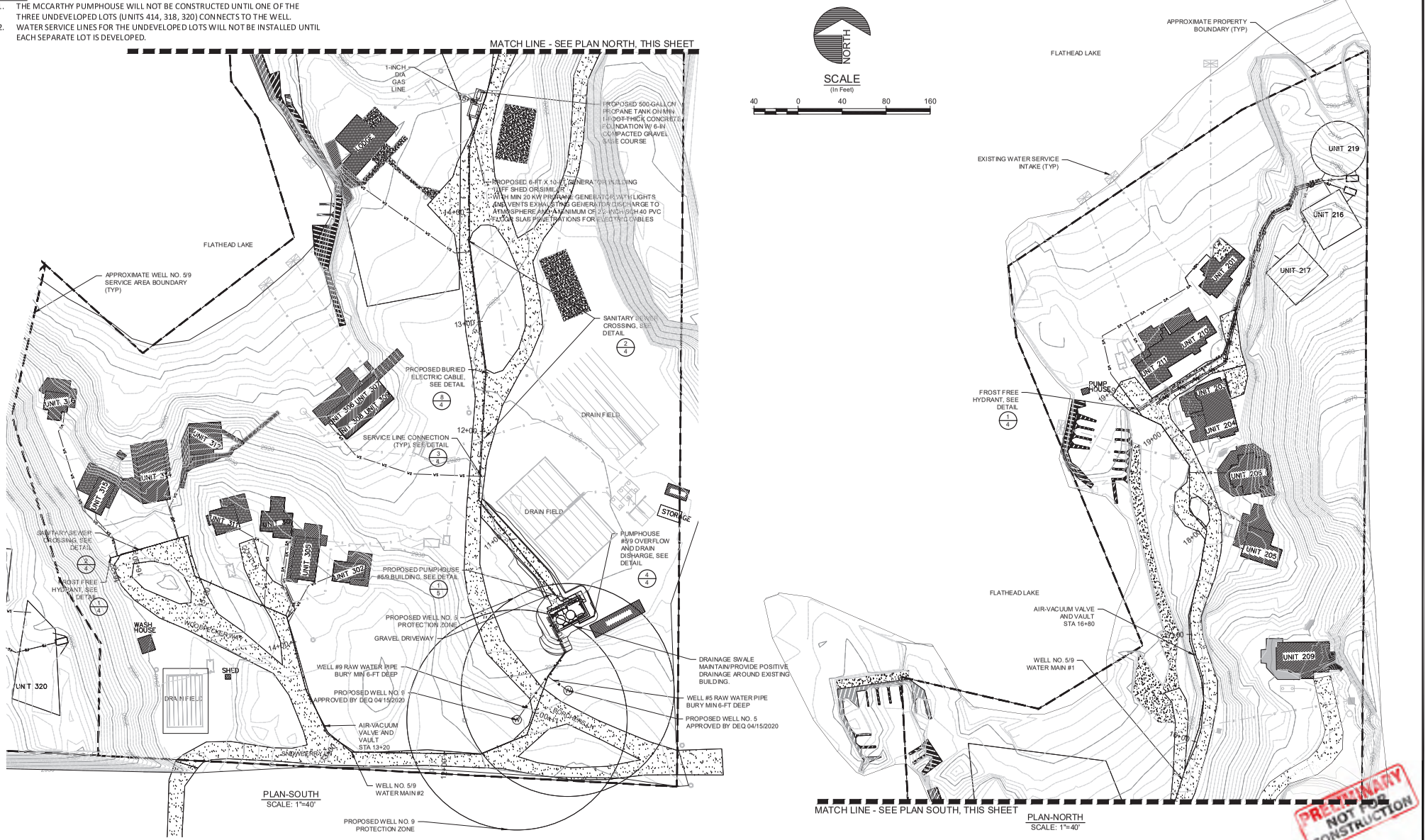
TITLE, LOCATION AND INDEX

DRAWING FILE NUMBER
COVER_59
AUTOCAD 2020 DRAWING (DWG)
SHEET NUMBER 1 REV

UPDATE TIME: 2:44 PM
KKINGERY:\HEL\20220203\ic\PROJECT\21001-THOA\DRAWINGS\COVER_59.DWG

NOTES

1. THE MCCARTHY PUMPHOUSE WILL NOT BE CONSTRUCTED UNTIL ONE OF THE THREE UNDEVELOPED LOTS (UNITS 414, 318, 320) CONNECTS TO THE WELL.
2. WATER SERVICE LINES FOR THE UNDEVELOPED LOTS WILL NOT BE INSTALLED UNTIL EACH SEPARATE LOT IS DEVELOPED.



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Consulting Scientists and Engineers
Helena, Montana 59601
3020 Bozeman Avenue
(406) 443-4150

TIMBRSHOR PUBLIC WATER SYSTEM - WELL NO. 5/9

WELL NO. 5/9 PWS PLAN

DRAWING FILE NUMBER: 1-PWS-WELL4
AUTOCAD 2020 DRAWING (DWG)
SHEET NUMBER: 2
REV:

UPDATE TIME: 6:09 PM
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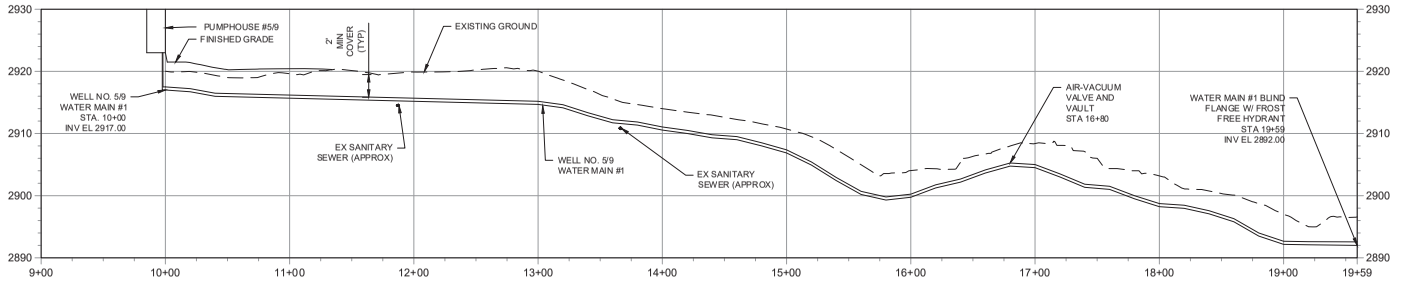
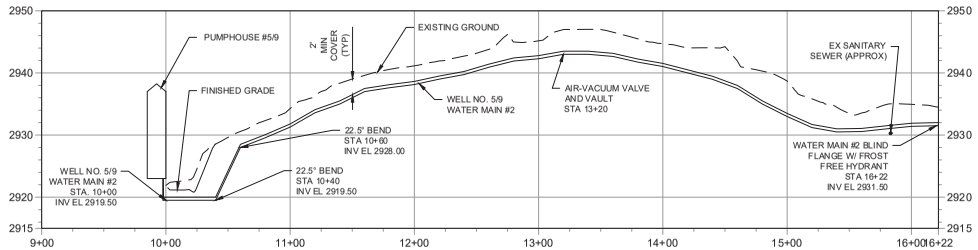


WELL NO. 5/9 WATER MAIN #1 PROFILE
HORIZONTAL SCALE: 1"=50'
VERTICAL SCALE: 1"=10'



WELL NO. 5/9 WATER MAIN #2 PROFILE
HORIZONTAL SCALE: 1"=50'
VERTICAL SCALE: 1"=10'

NOTES:
1. EXISTING SANITARY SEWER LOCATIONS ARE APPROXIMATE BASED ON BEST AVAILABLE INFORMATION. CONTRACTOR SHALL LOCATE SANITARY SEWER LOCATIONS IN FIELD PRIOR TO CONSTRUCTION AND SHALL NOTIFY ENGINEER.
2. CONTRACTOR SHALL CONNECT HEAT TRACE WIRE FOR WELL NO. 5/9 WATER MAIN #2 TO CONTROLLER IN PUMPHOUSE #4. CONTRACTOR TO CONNECT HEAT TRACE WIRE TO CONTROLLER IN GENERATOR BUILDING FOR WELL #5/9 WATER MAIN #1. CONTRACTOR SHALL PLACE 4-20 WIRE CONNECTING GENERATOR BUILDING TO PUMPHOUSE# 5/9 TO PROVIDE INFORMATION TO DISPLAY FOR HEAT TRACE CONTROLLER FOR WATER MAIN #1.
3. TEMPERATURE SENSORS FOR WATER MAIN HEAT TRACE SHALL BE LOCATED AT END OF WELL NO. 5/9 WATER MAIN #1 @ STA 19+55, AS WELL AS AT STATION 15+40. LOCATE TEMPERATURE SENSORS FOR WELL NO. 5/9 WATER MAIN #2 AT STATION 16+03.
4. AIR-VACUUM VALVE SHALL BE 1-IN VALMATIC AIR-VACUUM VALVE OR APPROVED EQUAL.
5. AIR RELEASE VALVE VAULT SHALL BE MUELLER 1-IN AIR RELEASE VALVE VAULT, 15-IN DIAMETER, 30-INCH BURY DEPTH OR APPROVED EQUAL. LOCATE VALVE VAULT SO NOT IN ROAD. WITH VALVE AT SYSTEM HIGH POINT.

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REVISIONS NO	BY	DATE	DESCRIPTION	NO	BY	DATE

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Consulting Scientists and Engineers
Helena, Montana 59601
3020 Bozeman Avenue
(406) 443-4130

TIMBRSHOR PUBLIC WATER SYSTEM - WELL NO. 5/9

WATER MAIN PROFILES

DRAWING FILE NUMBER: 1-PWS-WELL4
AUTOCAD 2020 DRAWING (DWG)
SHEET NUMBER: 3
REV: △

UPDATE TIME: 6:06 PM
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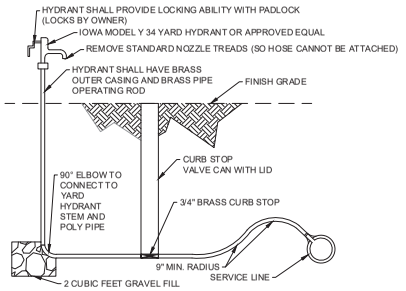
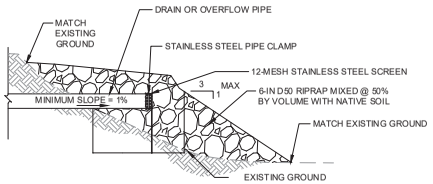
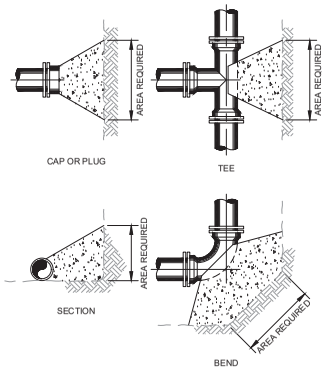


1 - DETAIL
FROST FREE HYDRANT
SCALE: 1" = 5'



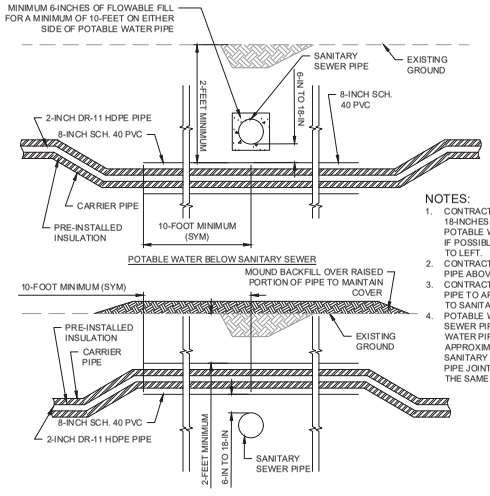
4 - DETAIL
OVERFLOW AND TANK DRAIN OUTLET PIPE
SCALE: 1" = 5'



THRUST AREA REQUIRED - SQUARE FEET					
SIZE	11 1/4° BEND OR 22 1/2° BEND	45° BEND	90° BEND	TEE	CAP (OR PLUG)
2"	1.0	1.0	1.25	1.0	1.0

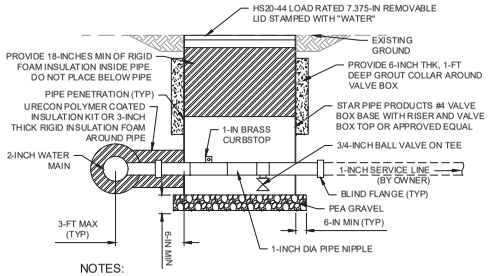
1. CONCRETE SHALL HAVE NOT LESS THAN 4,500 PSI STRENGTH AT 28 DAYS.
2. POUR CONCRETE AGAINST FIRM GROUND.
3. JOINTS AND BOLTS SHALL BE ACCESSIBLE FOR REPAIRS.
4. ALL SURFACES NOT POURED AGAINST FIRM GROUND SHALL BE FORMED OR FINISHED TO A REASONABLY SMOOTH SURFACE.
5. POUR CONCRETE IN COMPLETELY DEWATERED TRENCH.

5 - DETAIL
THRUST BLOCKS
SCALE: 1" = 5'



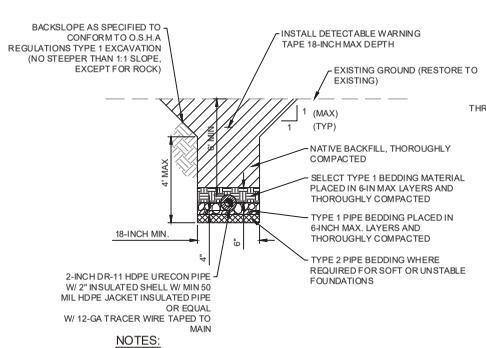
NOTES:
1. CONTRACTOR TO PROVIDE A MINIMUM OF 18-INCHES OF SEPARATION BETWEEN POTABLE WATER PIPE AND SANITARY SEWER IF POSSIBLE. IF NOT POSSIBLE, SEE DETAILS TO LEFT.
2. CONTRACTOR TO INSTALL POTABLE WATER PIPE ABOVE SANITARY SEWER IF POSSIBLE.
3. CONTRACTOR TO ORIENT POTABLE WATER PIPE TO APPROXIMATELY 90-DEGREE ANGLE TO SANITARY SEWER PIPE.
4. POTABLE WATER PIPE SHALL NOT CROSS THE SEWER PIPE AT A SEWER JOINT. POTABLE WATER PIPE SHALL BE LOCATED AT APPROXIMATELY THE MID-POINT BETWEEN SANITARY SEWER JOINTS. POTABLE WATER PIPE JOINTS SHALL ALSO BE APPROXIMATELY THE SAME DISTANCE FROM CROSSING

2 - DETAIL
POTABLE WATER - SANITARY SEWER CROSSING
SCALE: 1" = 5'



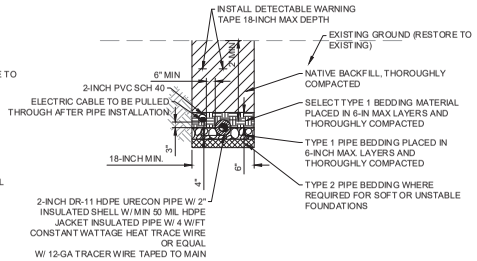
NOTES:
1. MAINTAIN MINIMUM 2-FOOT COVER BELOW FINISHED GRADE.
2. SERVICE LINE, INCLUDING SERVICE LINE HEAT TRACE SYSTEM, TO BE INSTALLED BY HOMEOWNER.
3. WRAP HEAT TRACE FROM 2-INCH WATER MAIN INTO CURBSTOP, AROUND CURBSTOP AND BALL VALVE AND RETURN HEAT TRACE TO 2-INCH WATER MAIN. (NOT SHOWN)
4. 1" DIA HEAT LINE CARAPACE PIPE, OR SIMILAR, WITH TEMPERATURE SENSOR AND THERMOSTAT MAY BE USED BY HOMEOWNER TO CONNECT ONTO SERVICE LINE CONNECTION. (NOT IN CONTRACT, NOT SHOWN)

3 - DETAIL
SERVICE LINE CONNECTION
NOT TO SCALE



NOTES:
1. SURFACE CONDITIONS (PAVING/ETC.) TO BE REPLACED IN KIND.
2. TRACER WIRE SHALL RUN UP VERTICALLY THROUGH VALVE BOXES. WRAP TRACER WIRE AROUND PIPE.
3. WARNING TAPE, 6-IN WIDE SHALL BE INSTALLED 12-18 INCHES BELOW FINISHED GRADE.
4. BEDDING MATERIALS MAY NOT BE REQUIRED IF EXCAVATED TRENCH SPOILS CAN BE USED TO BED THE PIPE TO THE ENGINEERS SATISFACTION.
5. HEAT TRACE WIRE NOT TO BE INCLUDED IN AREAS OF 6-FOOT BURY.

6 - DETAIL
RAW WATER SUPPLY
SCALE: 1" = 5'



NOTES:
1. SURFACE CONDITIONS (PAVING/ETC) TO BE REPLACED IN KIND.
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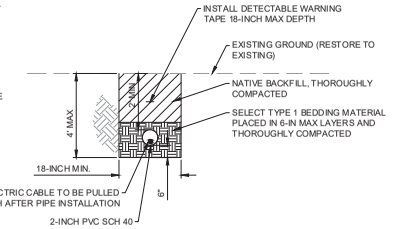
3. WARNING TAPE, 6-IN WIDE SHALL BE INSTALLED 12-18 INCHES BELOW FINISHED GRADE.
4. BEDDING MATERIALS MAY NOT BE REQUIRED IF EXCAVATED TRENCH SPOILS CAN BE USED TO BED THE PIPE TO THE ENGINEERS SATISFACTION.
5. POTABLE WATER MAIN SHALL BE CONSTRUCTED IN A SEPARATE TRENCH SEPARATED BY BEDROCK FROM EXISTING SANITARY SEWER MAIN.

7 - DETAIL
WATER MAIN WITH ELECTRICAL CONDUIT
SCALE: 1" = 5'



NOTES:
1. SURFACE CONDITIONS (PAVING/ETC) TO BE REPLACED IN KIND.
2. WARNING TAPE, 6-IN WIDE SHALL BE INSTALLED 12-18 INCHES BELOW FINISHED GRADE.

8 - DETAIL
BURIED ELECTRIC CABLE
SCALE: 1" = 5'

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REVISIONS	NO	BY	DATE	DESCRIPTION

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Consulting Scientists and Engineers
Helena, Montana 59601
3020 Bozeman Avenue
(406) 443-4130

TIMBRSHOR PUBLIC WATER SYSTEM - WELL NO. 5/9

DETAILS

DRAWING FILE NUMBER: 1-PWS-WELL4
AUTOCAD 2020 DRAWING (DWG)
SHEET NUMBER: 4
REV:

UPDATE TIME: 6:06 PM
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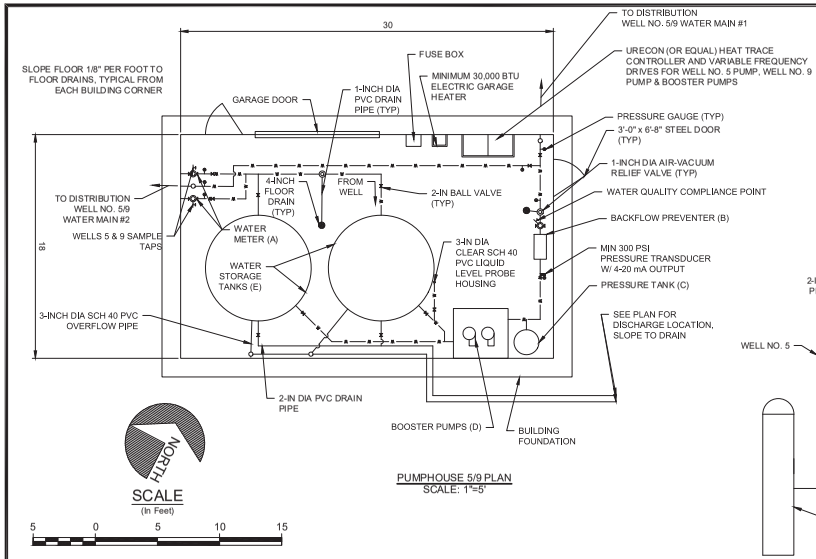
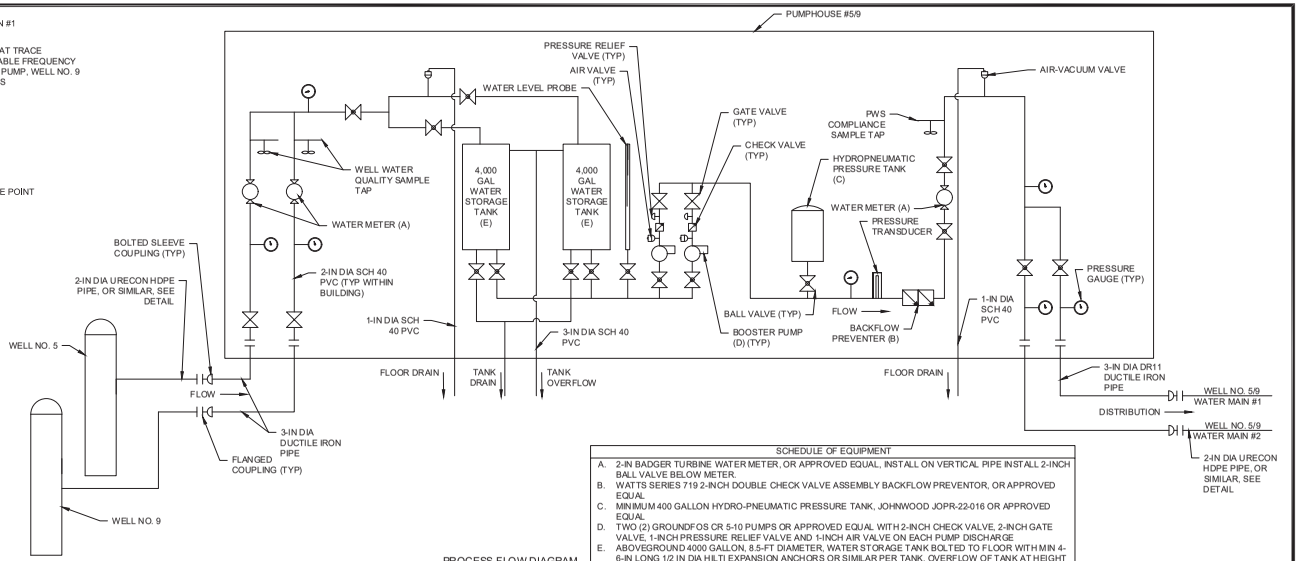
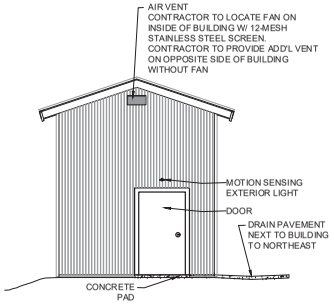


PUMPHOUSE 5/9 PLAN
SCALE: 1"=5'

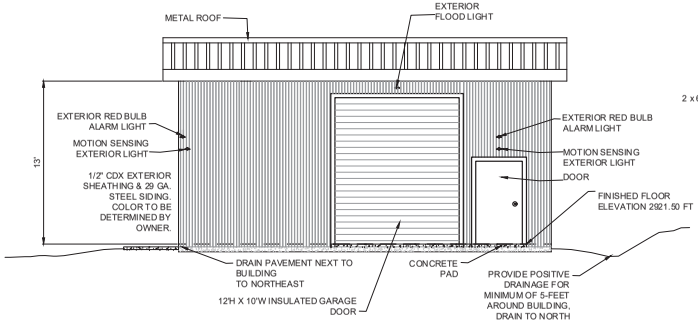


PROCESS FLOW DIAGRAM
NTS

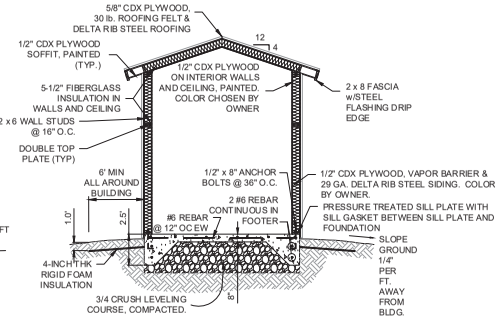
SCHEDULE OF EQUIPMENT
A. 2-IN BADGER TURBINE WATER METER, OR APPROVED EQUAL, INSTALL ON VERTICAL PIPE INSTALL 2-INCH BALL VALVE BELOW METER.
B. WATTS SERIES 719 2-INCH DOUBLE CHECK VALVE ASSEMBLY BACKFLOW PREVENTOR, OR APPROVED EQUAL
C. MINIMUM 400 GALLON HYDRO-PNEUMATIC PRESSURE TANK, JOHNWOOD JOPR-22-016 OR APPROVED EQUAL
D. TWO (2) GROUNDFOS CR 5-10 PUMPS OR APPROVED EQUAL WITH 2-INCH CHECK VALVE, 2-INCH GATE VALVE, 1-INCH PRESSURE RELIEF VALVE AND 1-INCH AIR VALVE ON EACH PUMP DISCHARGE
E. ABOVEGROUND 4000 GALLON, 8.5-FT DIAMETER, WATER STORAGE TANK BOLTED TO FLOOR WITH MIN 4-6-IN LONG 1/2 IN DIA HILTI EXPANSION ANCHORS OR SIMILAR PER TANK. OVERFLOW OF TANK AT HEIGHT OF 10'-0" ABOVE BASE OF TANK. INCLUDE 24-INCH DIAMETER MANWAY AND LADDER ON OUTSIDE OF TANK. TANK MUST BE NSF-61 COMPLIANT.



PUMPHOUSE ELEVATION NORTHEAST
SCALE: 1"=5'



PUMPHOUSE ELEVATION NORTHWEST
SCALE: 1"=5'



PUMPHOUSE SECTION
SCALE: 1"=5'

NOTES:

1. CONTRACTOR TO CONNECT RED BULB ALARM LIGHTS TO HEAT TRACE CONTROLLER AND TO BACK-UP POWER CIRCUIT TO TURN ON ALARM LIGHTS IF HEAT TRACE ALARM IS ACTIVATED OR IF BACK-UP POWER IS ACTIVATED.
2. CONTRACTOR TO INSTALL CEILING LIGHTING WITHIN BUILDING SO THAT ALL AREAS OF BUILDING ARE WELL LIT.
3. CONTRACTOR TO PROVIDE SMOOTH NOSE SAMPLING TAPS AT THE FOLLOWING LOCATIONS SHOWN ON PLANS:
   - 3.1. ON VERTICAL RISER PIPE BETWEEN WELL AND WATER STORAGE TANKS.
   - 3.2. AFTER HYDROPNEUMATIC PRESSURE TANK/BEFORE DISTRIBUTION.
4. WATER TANKS SHALL BE EQUIPED WITH WATERLINE CONTROLS WLC9100 LIQUID LEVEL PROBE, OR APPROVED EQUAL. CONTRACTOR TO CONFIGURE PROBE TO COMMUNICATE WITH WELL PUMP VFD TO TURN ON WELL WHEN WATER LEVEL IN TANK REACHES 6'-0" DEPTH AND TO TURN OFF AT 7'-0" DEPTH.
5. ON ALL BURIED WATER PIPES ENTERING OR EXITING BUILDING ENVELOPE, CONTRACTOR SHALL PROVIDE A SMITH-BLAIR 411 BOLTED SLEEVE COUPLING, OR APPROVED EQUAL AT A DISTANCE OF 5'-0" OUTSIDE OF THE BUILDING FOUNDATION. CONTRACTOR SHALL CONNECT PVC PIPE TO DUCTILE IRON PIPE VIA CONCENTRIC REDUCER (NOT SHOWN) AND FLANGED COUPLING PRIOR TO BOLTED SLEEVE COUPLING, CONTRACTOR SHALL PROVIDE 3-INCH DUCTILE IRON PIPE WITH POLYETHYLENE WRAP TO A HEIGHT OF 1-0" ABOVE THE BUILDING FLOOR SLAB.
6. CONTRACTOR TO PROVIDE 0-120 PSI GYLCERINE FILLED PRESSURE GAUGES AT LOCATIONS MARKED ON DRAWINGS.
7. CONTRACTOR TO PROVIDE MIN 400 CFM FAN TO VENTILATE BUILDING CONNECTED TO THERMOSTAT AND HUMIDITY SENSOR. OPERATIONAL POINTS TO BE DETERMINED BY OWNER.
8. CONTRACTOR SHALL COORDINATE WITH MISSION VALLEY POWER TO COORDINATE CONNECTION OF POWER TO PUMPHOUSE #4 AND TO ENSURE THAT BACKUP POWER PROVIDED FROM GENERATOR BUILDING WILL TURN ON IN EVENT OF LOSS OF POWER FROM MISSION VALLEY POWER SYSTEM.
9. CONTRACTOR SHALL PROVIDE LIGHTNING ARRESTOR AND SURGE PROTECTION ON ELECTRICAL SYSTEM.
10. CONTRACTOR TO PROVIDE A MI NIMUM OF FIVE(5) 2-INCH DIA SCH 40 PVC ELECTRICAL CONDUITS THROUGH FLOOR SLAB. (NOT SHOWN)
11. FOUNDATION CONCRETE SHALL OBTAIN A MINIMUM CONCRETE COMPRESSIVE STRENGTH OF 4,000 PSI 28-DAYS AFTER PLACEMENT.

1 DETAIL
PUMPHOUSE #5/9
SCALE: 1" = 5'

PRELIMINARY NOT FOR CONSTRUCTION

REVISIONS	NO	BY	DATE	DESCRIPTION

SCALE VERIFICATION BAR IS ONE INCH ON ORIGINAL DRAWING
0 1
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

Project No.: 21001
DRAWN BY RKK 2/7/22
CHECKED BY
APPROVED BY
SCALE: AS NOTED

Hydrometrics, Inc.
Consulting Scientists and Engineers
Helena, Montana 59601
3020 Bozeman Avenue
(406) 443-4150

TIMBRSHOR PUBLIC WATER SYSTEM - WELL NO. 5/9

PUMPHOUSE #5/9 DETAILS

DRAWING FILE NUMBER
1-PWS-WELL4
AUTOCAD 2020 DRAWING (DWG)
SHEET NUMBER 5
REV

UPDATE TIME: 6:06 PM
KKINGERY\HEL\20220207\K:\PROJECT\21001-THOA\DRAWINGS\1-PWS-WELL4.DWG

APPENDIX H

Hydrometrics, Inc.
3020 Bozeman Ave.
Helena Montana, 59602
Tel. (406)443-4150

Hydrometrics, Inc.
Consulting Scientists and Engineers

Date:	10/8/2021	Sheet:	1
Project No:	21001		
Project Name:	Timbrshore HOA - Water		
By:	RKK	Ckd. By:	

I. Purpose:

1 To determine the water system demands, and amount of storage required for the Well 5/9 system.
Also to assess the adequacy of the water production from Wells 5 & 9.

II. References:

1 LindBerg, Civil Engineering Reference Manual
2 U.S. Census Bureau QuickFacts: United States (https://www.census.gov/quickfacts/fact/table/US/HSD310219#HSD310219)
3 AWWA Water System Design Manual, 2001
4 System Map

III. Assumptions:

1 Fire Flow is not needed since it is acceptable to pull water to meet fire demands from the lake using dry hydrants or to provide cisterns. This was documented per Karl Kingery's conversation with Captain John McCulugh at the Finley Point Fire Department on 10/06/2021. Minimum flow requirement for dry hydrants/cisterns is 250 gpm at 20psi for 2 hours(per that conversation). Note that some buildings, such as the lodge, would require a higher flow rate on an individual basis (~1,500 gpm).
2 Treatment is not required and so is not a limitation on the amount of water that can be provided to the system.
3 Well will start when water storage drops below this percentage of Full (HWL) (W%): 90%
4 Peak Day Demand occurs at rate of Peak Hour Demand (conservative since all demand is squeezed into a shorter than realistic window of time).
5 Storage is not required for disinfection contact time or fire flow, so the full tank volume can be used.
6 Water will not be used for irrigation.
7 1 unit = 1 Equivalent Residential Unit
8 For purposes of calculating storage volume, only 1 well is pumping at a time. Both wells are not pumping simultaneously.

IV. Calculations

Water Demand

Proposed Water Demand - Well 5/9 System

Description	Value	Units	Calculation	Reference/Notes
Average Day Demand				
Number of Units	24	(ea)	(input)	System Map (Ref. 4)
Number of Persons Per Unit (Household)	2.62	(ea)	(input)	US Census Bureau (Ref.2)
Average Demand Per Person	100	(gpcd)	(input)	DEQ Circular 3 Sec. 3.2.1.2 - Domestic Use
Average Day Demand per Unit (ADD/Unit)	262	(gpd)	=#Pers/House*ADP	
Average Day Demand - System (ADD)	6288	(gpd)	=Demand/Unit*#Units	<---Note that this does not reflect the average daily use on an overall annual basis, but the average use during summer conditions. Winter use is significantly less.
Maximum Day Demand (MDD)				
Peaking Factor	1.5	(gpd)	(input)	Selected based on periodic nature of use for most units.
Maximum Day Demand per Unit (MDD/ERU)	393	(gpd)	=PF*ADD/Unit	Note that this is higher than the approved demand of 300 gpd/unit for the septic system.
Maximum Day Demand (MDD)	9432	(gpd)	=ADD*PF	
Peak Hour Demand (PHD)				
C	3.0	(dimless)	(input)	See Table 5-1 (Ref. 3)
N	24	(ea)	(input-see above)	System Map (Ref. 4)
F	0	(dimless)	(input)	See Table 5-1 (Ref. 3)
Peak Instantaneous Demand per Unit	1.6	(gpm)	=PHD/#Units	
Peak Instantaneous Demand for System (PHD)	38	(gpm)	PHD=(MDD/1440*(C*N+F)+18	<---Conservative, See Assumption 4

Existing Water Demand - Well 5/9 PWS Service Area*

Description	Value	Units	Calculation	Reference/Notes
Average Day Demand				
Number of Units	21	(ea)	(input)	System Map (Ref. 4)
Number of Persons Per Unit (Household)	2.62	(ea)	(input)	US Census Bureau (Ref.2)
Average Demand Per Person	100	(gpcd)	(input)	DEQ Circular 3 Sec. 3.2.1.2 - Domestic Use
Average Day Demand per Unit	262	(gpd)	=#Pers/House*ADP	
Average Day Demand - System (ADD)	5502	(gpd)	=Demand/Unit*#Units	<---Note that this does not reflect the average daily use on an overall annual basis, but the average use during summer conditions. Winter use is significantly less.
Maximum Day Demand (MDD)				
Peaking Factor	1.5	(gpd)	(input)	Selected based on periodic nature of use for most units.
Maximum Day Demand per Unit (MDD/ERU)	393	(gpd)	=PF*ADD/Unit	Note that this is higher than the approved demand of 300 gpd/unit for the septic system.
Maximum Day Demand (MDD)	8253	(gpd)	=ADD*PF	
Peak Hour Demand (PHD)				
C	3.0	(dimless)	(input)	See Table 5-1 (Ref. 3)
N	21	(ea)	(input-see above)	System Map (Ref. 4)
F	0	(dimless)	(input)	See Table 5-1 (Ref. 3)
Peak Instantaneous Demand per Unit	1.7	(gpm)	=PHD/#Units	
Peak Instantaneous Demand for System (PHD)	35	(gpm)	PHD=(MDD/1440*(C*N+F)+18	<---Conservative, See Assumption 4

*Note that there is not a centralized system in the Well 5/9 PWS service area currently, and each unit draws water from Flathead Lake separately.

WELLS NO. 5 & 9 (PROPOSED)

Well No. 5/9 Volume Used (Proposed)

Description	Value	Units	Calculation	Reference
Average Day Demand	6288	(gpd)	From Previous Calculation	
In-Season Use	40	(%)	(input)	
In-Season No. Months	5	(ea)	(input)	
Out of Season Use	20	(%)	(input)	
Out of Season No. Months	7	(ea)	(input)	
Year-round Average Day Demand	1782	(gpd)	Pro-rated ADD Demand to be year-round	
Acre-feet per Year	2.0	(acre-feet)	=ADD*365/7.48/43560	

Well No. 5/9 Supply (Proposed)

Description	Value	Units	Calculation	Reference
Maximum Instantaneous Flow Rate (Ws)	10	(gpm)	Estimated Production of Well-Estimated based on surrounding wells' production. Note that this is conservatively low and 15 gpm is expected.	
Maximum Daily Production (MDPg)	14400	(gpm)	=Ws*24*60	
Maximum Daily Production (MDPmgd)	0.014	(mgd)	(conversion = 1000000gal/mgd)	

Water Storage Tanks

Storage Tank Volume (Proposed)

Description	Value	Units	Calculation	Reference
Time to reach Max Day Demand @ PH flow rate	251	(minutes)	=MDD/PH	
	4.2	(hours)	(conversion = 60mins/hr)	
Tank Storage (Tvol)	8000	(gal)	(input)	
Storage per Unit	333	(gal)	Tvol/#units	
Remaining Storage at Well Start (Trem)	7200	(gal)	=Tvol*W%	
Time Until Start of Well Pump	21	(minutes)	=(Tvol-Trem)/PHD	
Depletion Time of Remaining Storage with Well On	260	(minutes)	=Trem/(PHD-Ws)	
Time to Depletion During Maximum Day @ Peak Hour Flow Rate	282	(minutes)	=(Tvol-Trem)/PHD+Trem/(PHD-Ws)	
Is storage Volume Adequate? (YES/NO)	**YES-Storage will be adequate to meet the Maximum Day Demand.**			

Conceptual Storage Tank Dimensions

Description	Value	Units	Calculation	Reference
Above Ground				NOTE: Does not include "non-water" volume in tank, such as air space. Add 1 foot minimum to all height values.
Height	9.5	(ft)	(input)	
Number of Tanks	2	(ea)	(input)	
Diameter	8.5	(ft)	=((Tvo/#tanks/7.48)/Ht/PI())^0.5*2	
Pump Drawdown Volume	800	(gal)	=(Ht-PumpOnHt)*Tvol/Ht	
Total Tank Height	10.6	(ft)	(input)	
Pump Turn on Height	8.6	(ft)	Ht*0.9	
Well Pump Run Time @ No Flow out of Tanks	80	(min)	=Drawdown/WellFlowRate	

V. Conclusions

1 Water Demands:

Summary - For Table in Report			
	Existing*	Proposed	
Average Day Demand	5502	6288	(gpd)
Maximum Day Demand	8253	9432	(gpd)
Peak Hour Demand	35	38	(gpm)

2 Wells 5/9 will be able to provide both adequate annual quantity of water and @ 10gpm, adequate flow rate of water for system.
3 8000 gallons of storage is adequte for the Well 5/9 System.

VI. Reference Images

Equation 5-3:

$$PHD = (MDD/1440)(C)(N) + F] + 18$$

Where: PHD = *Peak Hourly Demand, (gallons per minute, gpm)*
C = *Coefficient Associated with Ranges of EDUs*
N = *Number of Service Connections, EDUs*
F = *Factor Associated with Ranges of EDUs*
MDD = *Maximum Day Demand, (gpd/EDU)*

Table 5-1 identifies the appropriate coefficients and factors to substitute into Equation 5-3 for the ranges of EDUs:

Table 5-1

Range of N (EDUs)	C	F
15 - 50	3.0	0
51 - 100	2.5	25
101 - 250	2.0	75
251 - 500	1.8	125
> 500	1.6	225

Hydrometrics, Inc.
3020 Bozeman Ave.
Helena Montana, 59602
Tel. (406)443-4150

Hydrometrics, Inc.
Consulting Scientists and Engineers

Date:	10/8/2021	Sheet:	1
Project No:	21001		
Project Name:	Timbrshore HOA - Water		
By:	RKK	Ckd. By:	

I. Purpose:

1 To determine the appropriate overflow pipe size for the water storage tanks

II. References:

1 Chow, Hydraulics, 1979.
2 King, An Introduction to Fluid Mechanics, 2008.

III. Assumptions:

1 Well pump is capable of producing a maximum of 35 gpm. (conservative)
2 Overflow from only 1 tank is operating. (conservative)
3 Orifice Equation is appropriate to use to get water into pipe.
4 There are no other sources of water entering into the tank.
5 Overflow size must be capable of passing maximum flow rate from well.
6 Overflow is submerged and set 6-inches higher than max water level.
7 Tank has 13-inches of height above maximum water level to top of tank.

IV. Calculations

Overflow Pipe Size

Timbrshor Water Storage Tanks for Wells No. 4, 5, 9

Description	Value	Units	Calculation	Reference/Notes
Required Design Flow Rate (Q_{min})	35	gpm	(input)	
Coefficient of Discharge (Cd)	0.6	dimless	(input)	
Pipe Diameter (D)	3	inches	(input)	
Pipe Area (A)	0.049	sq. ft.	=(D/2/12)^2*pi()	
Head Above Center of Inlet	2	inches	(input)	
Water Level above Pipe Invert	3.5	inches	(input)	
Calculated Flow Rate(Qcfs)	0.10	cfs	Qcfs=Cd*A*(2g*H)^.5	
Calculated Flow Rate (Q)	43.3	gpm	Q=Qcfs*448.8	
Velocity in Overflow Pipe	2.0	fps	V=Q/A	

V. Conclusions

1 A 3-inch diameter overflow pipe is adequate.

VI. Reference Images

URECON
PRE-INSULATED PIPE

Location :

○ Above Ground ◉ Below Ground

Parameters :

	Insulation Type :	Carrier Pipe :	Outer Jacket :
	Polyurethane	HDPE	HDPE
Thermal Conductivity (K Value) W/(m*K)	0.0231	0.3893	0.3893

○ Metric ◉ Imperial

Maintain Temperature :	35.00	○ °C	◉ °F
Inlet Temperature :	35.00	○ °C	◉ °F
Soil Temperature :	-4.00	○ °C	◉ °F
Insulation Thickness :	2.00	○ mm	◉ in
Jacket Thickness :	0.05	○ mm	◉ in
External Diameter of Carrier Pipe :	2.38	○ mm	◉ in
Carrier Pipe Wall Thickness :	0.22	○ mm	◉ in
Total Length of Pipe Run :	0.00	○ m	◉ ft
Flow Rate :	0.00	○ l/s	◉ US gpm
Temperature to reach :	32.00	○ °C	◉ °F
Safety Factor for Heat Trace Req:	25	%	

OK Reset

Information

Date :	Thursday , November 11, 2021
User Name :	Ron Gravel
Client :	Hydrometrics
Project :	Timbalhor

Results ◉ Metric ○ Imperial

Insulation R Value : 3.46 (m*°K)/W

☑ Velocity of Fluid : 0 m/s

☑ Minimum Flow Rate : No Flow Required

Heat Loss Of The Fluid : 3.05 W/m

☑ Total Heat Gain From Soil On Pipe Run : 0 W

☑ Increase/Decrease in Inlet Temperature at Outlet :

Time To Reach 32.00°F at No Flow : 1.26 Hours

Time for 25% to Freeze : 15.74 Hours

Time for 50% to Freeze : 30.24 Hours

Time for 75% to Freeze : 44.78 Hours

Time For Fluid To Freeze Completely : 2 Day(s) 11 Hour(s)

Heat Trace Requirement : 3.86 W/m
1.18 W/ft

Options

Print File | Urecon Documents | Quit

Hydrometrics, Inc.		Date:	10/08/21	Sheet: 1
3020 Bozeman Ave.	Hydrometrics, Inc.	Project No:	21001	
Helena Montana, 59602	Consulting Scientists and Engineers	Project Name:	Timbrshore HOA - Water	
Tel. (406)443-4150		By:	RKK	Ckd. By:

I. Purpose:

1 To determine the amount of heat loss from the pipe to avoid freezing and to size Heat Tracer Wire

II. References:

1 LindBerg, Civil Engineering Reference Manual
2 R-value (insulation) - Wikipedia (https://en.wikipedia.org/wiki/R-value_(insulation))

III. Assumptions:

1 Pipe is HDPE
2 1W= 3.412142 BTU/hr
3 Safety Factor 1.1 SF=10%
4 R Value of pipe wall is not significant
5 Water starts at 40-degrees (or above) and does not need to be heated.
5.1 Note that the water storage tanks will be in a heated building, so the water should be warmer than 40-degrees F.
6 Soil Temperature will be warmer than coldest air temperature day
7 Service Lines do not count towards overall pipe length
8 Average soil temperature is equal to mean low temperature of air in Winter.

IV. Calculations

Pipe Characteristics				
Description	Value	Units	Calculation	Reference
Water Line Pipe Diameter	2	(in)	(input)	
Carrier Pipe Diameter	6	(in)	(input)	
Carrier Pipe Circumference	18.85	(in)	=dia*pi	
Heat Loss Area (A)	1.57	(sq.ft)/ft	(conversion - 12in/ft)	

Insulation Characteristics				
Description	Value	Units	Calculation	Reference
CLSM (k)	0.2	BTU/(ft-hr-F)	(input)	
CLSM Thickness (Ct)	0	(in)	(input)	
R	0.00	BTU/(hr-F)	R=Ct/12/k	
Insulation (k)	0.017	BTU/(ft-hr-F)	(input)	
insulation Thickness (Ct)	2	(in)	(input)	
Total Pipe Diameter	6	(in)	=Ct&2+D	
R	9.80	BTU/(hr-F)	R=Ct/12/k	
Rtot	9.8	BTU/(hr-F)	Sum of R	$U = \frac{1}{R}$
U	0.10	BTU/hr/(sq.ft/ft)/F	1/Rtot	

Temperature Characteristics				
Description	Value	Units	Calculation	Reference
Minimum Temperature	-30	(deg-F)	(input)	Based on historic record of Polson Weather Station
Design Temperature	40	(deg-F)	(input)	
Design Temperature (dT)	70	(deg-F)	Temperature Range	
Mean Low Temperature in Winter	15	(deg-F)	(input)	
Mean Temperature Difference (dTm)	25	(deg-F)	Temperature Range	

Heat Loss				
Description	Value	Units	Calculation	Reference
Heat Loss per foot (q)	11.2	(BTU/hr/ft)	q=U*A*dT	$q = UA\Delta T_{LM}$
Heat Trace input per foot	3.3	(Watt/ft)	q conversion	
Design Heat Trace Size (i)	3.6	(Watt/ft)	q*SF	

Cost of Power for Heat Trace				
Description	Value	Units	Calculation	Reference
Length of Time Running per year	90	(days)	(input)	Based on historic record of Polson Weather Station
Well 5 Pipe Length	1200	(ft)	(input)	
Well 9 Pipe Length	600	(ft)	(input)	
McCarthy Well Pipe Length	0	(ft)	(input)	
Well 4 Pipe Length	615	(ft)	(input)	
Length of Pipe (L)	2415	(ft)	=sum of pipe lengths	
Average Daily Power Consumption	74.8	KWHR/Day	P=L*i*24/1000*dTm/dT	
Average Annual Power Consumption	6736	KWHR/Year	P*days	
Cost of Power per KW-hr	$0.07	$/KWHR	(input)	Conversation w/ Greg @ Mission Valley Power (10/18/2021)
Average Cost of Power per Year	$472	$/YR	=Cost/KWHR*AvgAnn.Consumption	
90-day Continuous Operation Cost of Power	$1,320	$/YR	=Avg Cost of Power * dT/dTm	

Temperature of Wire on Pipe				
Description	Value	Units	Calculation	Reference
Ws	3.6	(Watt/ft)	q*SF	See above.
Ci	6.3	(in)	=D*pi	See above.
Ti	2	(in)	Same as Ct; (input-see above)	See above.
Ki	0.20	(see right)	k*12(in/ft)	See above.
Tj	0.25	(in)	(input)	
Kj	2.7	(see right)	(input)	
Cw	6	(in)	Total Pipe Diameter - See above	See above.
Kp	2.7	(see right)	Same material as jacket	See above.
Tp	0.25	(in)	(input)	
Tm	40	(deg-F)	(input)	
Tc	42	(deg-F)	See Equation Below	

$$Tc = \frac{3.42 \text{ Ws}}{\frac{Ci}{12}\left(\frac{1}{\frac{Ti}{Ki}+\frac{Tj}{Kj}}\right)+\left(\frac{Cw}{12}\times\frac{Kp}{Tp}\right)} + Tm$$

Type of Pipe	K Factor BTU•in/hr•ft²•°F
ABS	1.4
FRP	1.7
Polybutylene	1.5
Polyethylene	2.7
PVC	1.0

Where:
Tc = temperature of pipe wall (°F)
Ws = Watts per foot of tracer
Ci = Perimeter of conduit (in)
Ti = thickness of insulation (in)
Ki = K value of insulation (BTU • in / hr • ft² •°F)
Tj = thickness of jacket (in)
Kj = K value of jacket (BTU • in / hr • ft² •°F)
Cw = width at base of conduit (in)
Kp = K value of pipe wall (BTU • in / hr • ft² •°F)
Tp = thickness of pipe wall (in)
Tm = maintained temperature (°F)

V. Conclusions

1 A heat trace wire capable of putting out a minimum of 3.6 Watts/ft is required.
2 Average annual cost is $472/YR for power for heat trace, although it may be as high as $1300/yr.
3 Pipe Wall Temperature will not be exceeded by Heat Trace.

THE JOHN WOOD COMPANY
an ALCO Industries Co.
www.johnwood.com

TECHNICAL BULLETIN

Form 002

Sizing and Selection Guide

ASME Bladder Type Hydro-Pneumatic Tanks For Potable Water Systems

APPLICATION

ASME Bladder Type Hydro-Pneumatic Tanks can be used in a variety of applications ranging from well water and pressure boosting systems to sprinkler systems. The tanks control system shock and pressure fluctuations and provide pump protection by reducing surge pressures and by dampening pressure spikes. The tanks deliver water under pressure between pump cycles to meet the required demand. By minimizing pump starts the benefits include extended pump motor service life and energy cost savings.

These tanks utilize a flexible full acceptance butyl rubber bladder to separate the incoming water from the compressible air cushion. Butyl has proven superior for application with water storage tanks for several reasons:

1. The bladder can be flexed repeatedly with little wear or stress during normal operation.
2. The material does not foster bacterial growth.
3. The material has a very low air permeability characteristic.
4. The material generally does not impart taste and odor into the treated water.

OPERATION

The air charge pressure in the tank is typically set 2 PSI below the pressure switch pump cut-in pressure or 10% to 20% below the system pressure for surge applications. Upon operation of the system, water is pumped into the flexible bladder in the tank. As the bladder fills with water the air cushion is compressed, causing a rise in the pressure in the system. The pressure continues to rise until it reaches the desired maximum system pressure (pump cut-out setting), causing the pump to shut off. Water remains in the system piping and the tank until required. As water is drawn down from the system, the air pressure in the tank decreases. When the system pressure reaches the minimum pressure setting (pump cut-in setting), the pump will turn on and start the cycle again.

SIZING

Proper tank sizing requires a basic understanding of compressible gases – in this case, air. If a gas is held in a sealed container at constant temperature, the gas pressure increases at the same rate as the volume of the gas is reduced. As water fills the bladder, the volume of the air cushion is reduced. As the volume is reduced, the pressure will rise. If the air cushion is reduced to half its original volume, the pressure will rise to two times its original value. If the air cushion is further squeezed to one-third of its original volume, the pressure will rise to 3 times the original value.

Boyle's law is commonly used to predict the result of introducing a change in volume and pressure to the initial state of a fixed quantity of gas. The "before" and "after" volumes and pressures of the fixed amount of gas are related by the equation:

$$p_1V_1=p_2V_2$$

Forcing the volume V of the fixed quantity of gas to increase, the pressure p must decrease proportionally. Conversely, reducing the volume of the gas increases the pressure.

SIZING INFORMATION REQUIREMENTS

Proper tank sizing is important for two reasons:

1. The system will run more efficiently and as a result, use less electricity.
2. The system will last longer – providing long term cost savings through reduced maintenance charges and fewer replacement parts.

Determine the following:

1. Maximum drawdown required
2. Minimum operating pressure
3. Maximum operating pressure

ASME Bladder Type Hydro-Pneumatic Tanks Sizing and Selection Guide

STEP 1: DETERMINE THE REQUIRED DRAWDOWN

1. Pump delivery rate: 5 GPM

   Note that pump max design is 60gpm. With VFD, pump will be able to be limited to 10 gpm. Designing tank for <5 cycles per hour when the customer demand is one-half of the minimum pumping rate (10gpm)=5gpm meets DEQ 7.1.2.

2. Desired minimum pump run time: 15 minutes
   (example: 1 minute, 15 seconds = 1.25 minutes)

   Limits pump to 5 starts per hour with 2 minute pump run times. This is conservative.

3. Multiply Line #1 times Line #2: 5 GPM x 15 minutes = 75 Gallons
   (This is the minimum drawdown or available water volume required in Gallons)

   Pressure tank also serves as surge protection for system.

STEP 2: DETERMINE THE REQUIRED TANK SIZE

1. Enter the following:

Maximum drawdown required	(A) 75	Gallons
Minimum system pressure (pump cut-in)	(B) 50	PSIG
Maximum system pressure (pump cut-out)	(C) 65	PSIG
Air precharge pressure (if different than minimum system pressure)	(D) 50	PSIG

2. Find the drawdown factor from Table 1 on page 3 (E) 0.19

   NOTE: If the precharge pressure does not equal the minimum system pressure or if the minimum and maximum operating pressures are not listed in Table 1, use the following formula to determine the drawdown factor:

$$\text{Drawdown factor} = \frac{(D) + 14.7}{(B) + 14.7} - \frac{(D) + 14.7}{(C) + 14.7}$$

3. Determine the minimum total volume required (F) 394

   Divide the maximum drawdown required (A) by the drawdown factor (E):

   (A) 75 Gallons ÷ (E) 0.19 Drawdown factor = (F) 394 Gallons

STEP 3: SELECT THE REQUIRED BLADDER TANK

1. Select a bladder tank from Table 2, 3, or 4. Choose the tank with the lowest tank capacity greater than or equal to the minimum total volume required (G). Standard pressure ratings are listed. Higher working pressures are available upon request.

EXAMPLE

1. Select a bladder tank for an application with a 50 GPM pump with a minimum run time of 2 minutes and a 20 to 50 PSIG system operating pressure range.

Determine the maximum drawdown required (50 GPM x 2 minutes)	A	100 Gallons
Minimum system pressure	B	20 PSI
Maximum system pressure	C	50 PSI
Air precharge pressure	D	18 PSI
Use the formula shown in Step 2 to determine the drawdown factor	E	0.437
Divide the required drawdown (A) by the drawdown factor (E) (100 Gallons ÷ 0.437)	F	228.8 Gallons
Select the required bladder tank from Table 2, 3, or 4	G	264 Gallons

TABLE 1

MAXIMUM OPERATING PRESSURE PSIG	MINIMUM OPERATING PRESSURE AT TANK LOCATION (PSIG)										
	5	10	12	15	20	30	40	50	60	70	80
27	0.527	0.408	0.360	0.288	0.168						
30	0.560	0.447	0.403	0.336	0.224						
35	0.604	0.503	0.463	0.403	0.302	0.101					
40	0.640	0.548	0.512	0.457	0.366	0.183					
45	0.670	0.586	0.553	0.503	0.419	0.251	0.084				
50	0.696	0.618	0.587	0.541	0.464	0.309	0.155				
55	0.717	0.646	0.617	0.574	0.502	0.359	0.215	0.072			
60	0.736	0.669	0.643	0.602	0.536	0.402	0.268	0.134			
65	0.753	0.690	0.665	0.627	0.565	0.439	0.314	0.188	0.062		
70	0.767	0.708	0.685	0.649	0.590	0.472	0.354	0.236	0.118		
75	0.780	0.725	0.702	0.669	0.613	0.502	0.390	0.279	0.167	0.056	
80	0.792	0.739	0.718	0.686	0.634	0.528	0.422	0.317	0.211	0.106	
90	0.812	0.764	0.745	0.716	0.669	0.573	0.478	0.382	0.287	0.191	0.096
100	0.828	0.785	0.767	0.741	0.698	0.610	0.523	0.436	0.347	0.261	0.174
110	0.842	0.802	0.786	0.762	0.723	0.642	0.561	0.481	0.401	0.321	0.241

TABLE 2 (ASME Bladder Type Hydro-Pneumatic Tanks with Top Connection / Type IV – see Submittal Sheet No. 621)

MODEL NUMBER	MAWP	TANK VOLUME		DIAMETER		OVERHEADS		SYS. CONN	BASE DIAMETER		SHIPPING WEIGHT	
	PSIG	GAL	L	IN	MM	IN	MM	INCH (NPT)	IN	MM	LBS	KG
JAPR-20-601	150	10	40	12	305	23	584	1	8⅝	219	50	23
JAPR-20-602	150	15	60	12	305	33½	851	1	8⅝	219	65	30
JAPR-20-603	150	24	90	12	305	52	1321	1	8⅝	219	90	41
JAPR-20-604	150	30	110	14	356	48	1219	1	8⅝	219	90	41
JAPR-20-605	150	35	130	14	356	55½	1410	1	8⅝	219	100	45
JAPR-20-606	150	40	150	14	356	63	1600	1	8⅝	219	115	52
JAPR-20-607	150	60	230	16	406	72⅜	1838	1½	11½	292	155	70
JAPR-20-608	125	80	300	20	508	63	1600	1½	18	457	175	79
JAPR-20-668	125	105	400	24	610	56	1422	1½	18	457	225	102
JAPR-20-609	125	120	450	24	610	66	1676	1½	18	457	255	116
JAPR-20-610	125	135	500	24	610	72	1829	1½	18	457	285	129

TABLE 3 (ASME Bladder Type Hydro-Pneumatic Tanks with Top Connection / Type I – see Submittal Sheet No. 615)

MODEL NUMBER	MAWP	TANK VOLUME		DIAMETER		OVERHEADS		SYS CONN	BASE DIAMETER		SHIPPING WEIGHT	
	PSIG	GAL	L	IN	MM	IN	MM	INCH (NPT)	IN	MM	LBS	KG
JBPR-22-011	125	158	600	30	762	58	1473	1½	24	610	380	172
JBPR-22-012	125	211	800	30	762	76	1930	1½	24	610	450	204
JBPR-22-013	125	264	1000	36	914	67	1702	2	30	762	650	295
JBPR-22-014	125	317	1200	36	914	78½	1994	2	30	762	750	340
JBPR-22-015	125	370	1400	36	914	91	2311	2	30	762	865	392
JBPR-22-016	125	422	1600	48	1219	63½	1613	2	42	1067	1050	476
JBPR-22-017	125	528	2000	48	1219	77¼	1962	2	42	1067	1225	556
JBPR-22-018	125	660	2500	48	1219	94	2388	2½	42	1067	1445	655

TABLE 4 (ASME Bladder Type Hydro-Pneumatic Tanks with Bottom Connection / Type I – see Submittal Sheet No. 645)

MODEL NUMBER	MAWP	TANK VOLUME		DIAMETER		OVERHEADS		SYS CONN	LEG CLEARANCE		SHIPPING WEIGHT	
	PSIG	GAL	L	IN	MM	IN	MM	INCH (NPT)	IN	MM	LBS	KG
JOPR-22-080	125	80	300	20	508	62⅞	1597	2	14	356	230	104
JOPR-22-105	125	105	400	24	610	56	1422	2	14	356	325	147
JOPR-22-009	125	120	450	24	610	66	1676	2	14	356	335	152
JOPR-22-135	125	135	500	24	610	71½	1816	2	14	356	340	154
JOPR-22-011	125	158	600	30	762	58	1473	2	14	356	435	197
JOPR-22-012	125	211	800	30	762	76	1930	2	14	356	515	234
JOPR-22-013	125	264	1000	36	914	67	1702	2	14	356	715	324
JOPR-22-014	125	317	1200	36	914	78½	1994	2	14	356	815	370
JOPR-22-015	125	370	1400	36	914	91	2311	2	14	356	935	424
JOPR-22-016	125	422	1600	48	1219	63½	1613	2	14	356	1075	488
JOPR-22-017	125	528	2000	48	1219	77⅜	1965	2	14	356	1235	560
JOPR-22-018	125	660	2500	48	1219	94	2388	2	14	356	1435	651
JOPR-22-019	125	793	3000	48	1219	122⅞	3121	2	14	356	1900	862
JOPR-22-020	125	1056	4000	54	1372	132	3429	2½	14	356	2400	1089
JOPR-22-021	125	1320	5000	54	1372	151	3835	2½	14	356	2700	1225
JOPR-22-022	125	1600	6050	72	1829	107	2718	2½	14	356	3425	1554
JOPR-22-023	125	2000	7600	72	1829	130	3302	2½	14	356	4000	1814
JOPR-22-024	125	2640	10000	72	1829	164	4166	2½	14	356	4875	2211
JOPR-22-028	125	2800	10600	72	1829	174	4420	3	14	356	5300	2404
JOPR-22-030	125	3000	11400	72	1829	186	4724	3	14	356	5700	2585
JOPR-22-039	125	3963	15000	72	1829	230	5842	3	14	356	7100	3220

THE JOHN WOOD COMPANY
AN ALCO INDUSTRIES COMPANY
98 Highland Avenue, Oaks, PA 19456-1052
T 610-666-1220 | 800-537-5581
F 610-666-0193

heat-line®
Freeze Protection Systems

CARAPACE®
Case Study - 2008

Location Info:

Nearest City/Town:	Carnarvon, ON
Latitude:	45°02'43"N
Longitude:	78°41'53"W
Elevation *(above sea level)*:	1,090'

Lake Info:

Lake Bed:	Sand
Obstructions:	None
4' water depth:	110' from shoreline
10' water depth:	150' from shoreline
20' water depth:	170' -180' from shoreline

Property Info:

Elevation (above lake level):	30' – 40'
Terrain:	Rock
Shoreline:	Rock

Product Info:

Product:	**CARAPACE®**, 1" Rural (ID controlled), 240 volt, 5w@50°F
System Length:	270' (90' on land, 180' into the lake)
Pipe Insulation on land:	Yes (90')
Pipe Insulation in lake:	None
Ground Coverage:	None (could not bury)
Thermostat:	Yes
Thermostat Setting:	50°F (10°C)
Sensor Location:	45' from building on pipe under insulation (coldest spot)

Test Results:

CARAPACE® was powered on Nov 10'07.
CARAPACE® was shut down on April 25'08
70 Days of Recorded Temperatures from Nov 10'07 to April 25'08

Coldest Recorded Temperature:	-27.4°F (-33°C)
Warmest Recorded Temperature:	48.2°F (9°C)
Average Temperature:	17.7°F (-8°C)
Kilowatt usage:	1,821 kw/h
Price per kw/h (April 2008):	$0.05
Cost for entire **CARAPACE®** operation:	$91.05

Disclaimer:

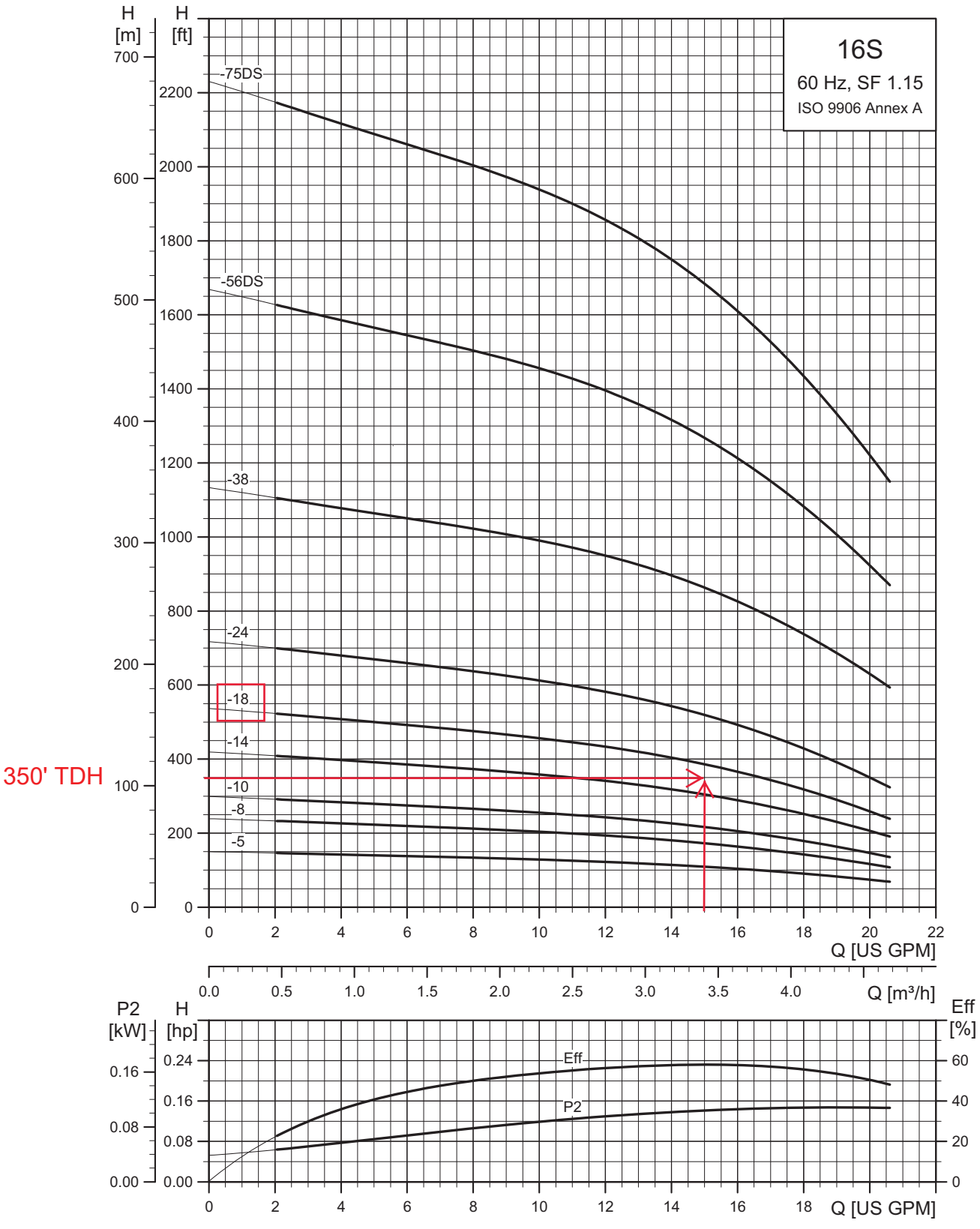
Energy consumption will change depending on product selection, application, location and climate. This case study should be used as an example only.

FOR MORE INFORMATION
Contact a Heat-Line® technical specialist:
1-800-584-4944

P 705-754-4545
F 705-754-4567
info@heatline.com
www.heatline.com

1095 Green Lake Road,
PO Box 4100,
Carnarvon ON
Canada K0M 1J0

16S (16 gpm)

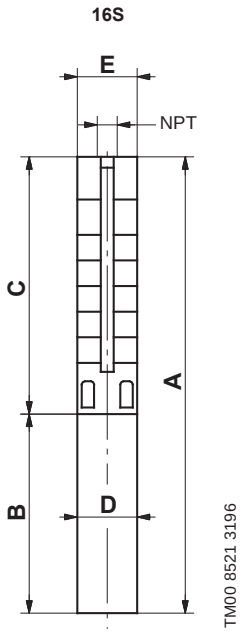

16S
60 Hz, SF 1.15
ISO 9906 Annex A
H [m]
H [ft]
-75DS
-56DS
-38
-24
-18
-14
-10
-8
-5
350' TDH
Q [US GPM]
Q [m³/h]
P2 [kW]
H [hp]
Eff [%]
Eff
P2
Q [US GPM]
TM05 0231 0112

16S (16 gpm)

Pump model	Nom. head [ft]	Ph	Volts [V]	Motor [Hp]		Dimensions A [in (mm)]	B [in (mm)]	C [in (mm)]	D [in (mm)]	E [in (mm)]	Net weight (complete) [lb]
16S, motor dia. 4 inch, 2 wire motor, 60 Hz - rated flow 16 gpm (1.25" NPT)											
16S05-5	102	1	115	.5	■	21.26 (540)	11.03 (280)	10.24 (260)	3.74 (95)	3.97 (101)	21.6
			230	.5	■	21.26 (540)	11.03 (280)	10.24 (260)	3.74 (95)	3.97 (101)	23.4
16S07-8	162	1	230	.75	■	24.34 (618)	11.62 (295)	12.72 (323)	3.74 (95)	3.97 (101)	24.3
16S10-10	203	1	230	1	■	26.58 (675)	12.21 (310)	14.38 (365)	3.74 (95)	3.97 (101)	27.9
16S15-14	284	1	230	1.5	■	31.38 (797)	13.71 (348)	17.68 (449)	3.74 (95)	3.97 (101)	36.0
16S, motor dia. 4 inch, 3 wire motor, 60 Hz - rated flow 16 gpm (1.25" NPT)											
16S05-5	102	1	115	.5	■	21.26 (540)	11.03 (280)	10.24 (260)	3.74 (95)	3.97 (101)	21.6
			230	.5	■	21.26 (540)	11.03 (280)	10.24 (260)	3.74 (95)	3.97 (101)	21.6
16S07-8	162	1	230	.75	■	24.34 (618)	11.62 (295)	12.72 (323)	3.74 (95)	3.97 (101)	27.0
16S10-10	203	1	230	1	■	26.58 (675)	12.21 (310)	14.38 (365)	3.74 (95)	3.97 (101)	27.9
16S15-14	284	1	230	1.5	●	31.38 (797)	13.71 (348)	17.68 (449)	3.74 (95)	3.97 (101)	32.4
		3	230	1.5	■	29.89 (759)	12.21 (310)	17.68 (449)	3.74 (95)	3.97 (101)	28.8
			460	1.5	■	29.89 (759)	12.21 (310)	17.68 (449)	3.74 (95)	3.97 (101)	28.8
16S20-18	366	1	230	2	●	40.48 (1028)	19.49 (495)	20.99 (533)	3.74 (95)	3.97 (101)	36.0
		3	230	2	■	34.69 (881)	13.71 (348)	20.99 (533)	3.74 (95)	3.97 (101)	36.0
			460	2	■	34.69 (881)	13.71 (348)	20.99 (533)	3.74 (95)	3.97 (101)	36.0
16S30-24	487	1	230	3	●	48.55 (1233)	22.60 (574)	25.95 (659)	3.74 (95)	3.97 (101)	62.1
		3	230	3	●	43.94 (1116)	18.00 (457)	25.95 (659)	3.74 (95)	3.97 (101)	57.6
			460	3	●	43.94 (1116)	18.00 (457)	25.95 (659)	3.74 (95)	3.97 (101)	57.6
16S50-38	814	1	230	5	●	65.91 (1674)	26.62 (676)	39.30 (998)	3.74 (95)	3.97 (101)	97.2
		3	230	5	●	62.01 (1575)	22.72 (577)	39.30 (998)	3.74 (95)	3.97 (101)	90.0
			460	5	●	62.01 (1575)	22.72 (577)	39.30 (998)	3.74 (95)	3.97 (101)	90.0
SP 16S, motor dia. 6 inch, 3 wire motor, 60 Hz - rated flow 16 gpm (1.25" NPT)											
16S75-56DS	1200	3	230	7.5	▲	95.40 (2423)	26.62 (676)	68.78 (1747)	5.63 (143)	5.51 (140)	165.1
			460	7.5	▲	95.40 (2423)	26.62 (676)	68.78 (1747)	5.63 (143)	5.51 (140)	165.1
16S100-75DS	1607	3	460	10	▲	115.08 (2923)	30.60 (777)	84.49 (2146)	5.63 (143)	5.51 (140)	190.0

Notes:
Control box is required for 3-wire, single-phase applications. Data does not include control box.
DS designation = Built into sleeve, 1-1/4" NPT, 6" minimum well diameter.

- ■ MS402 motor.
- ● MS4000 motor.
- ▲ MS6 motor.
- ∧ MMS6000 motor.
- ★ MMS8000 motor.
- ♦ Takes MS6 motor; not available as complete.
- ☼ Takes MMS6000 motor; not available as complete.
- * Takes MMS8000 motor; not available as complete.
- † Takes MMS10000 motor; not available as complete.



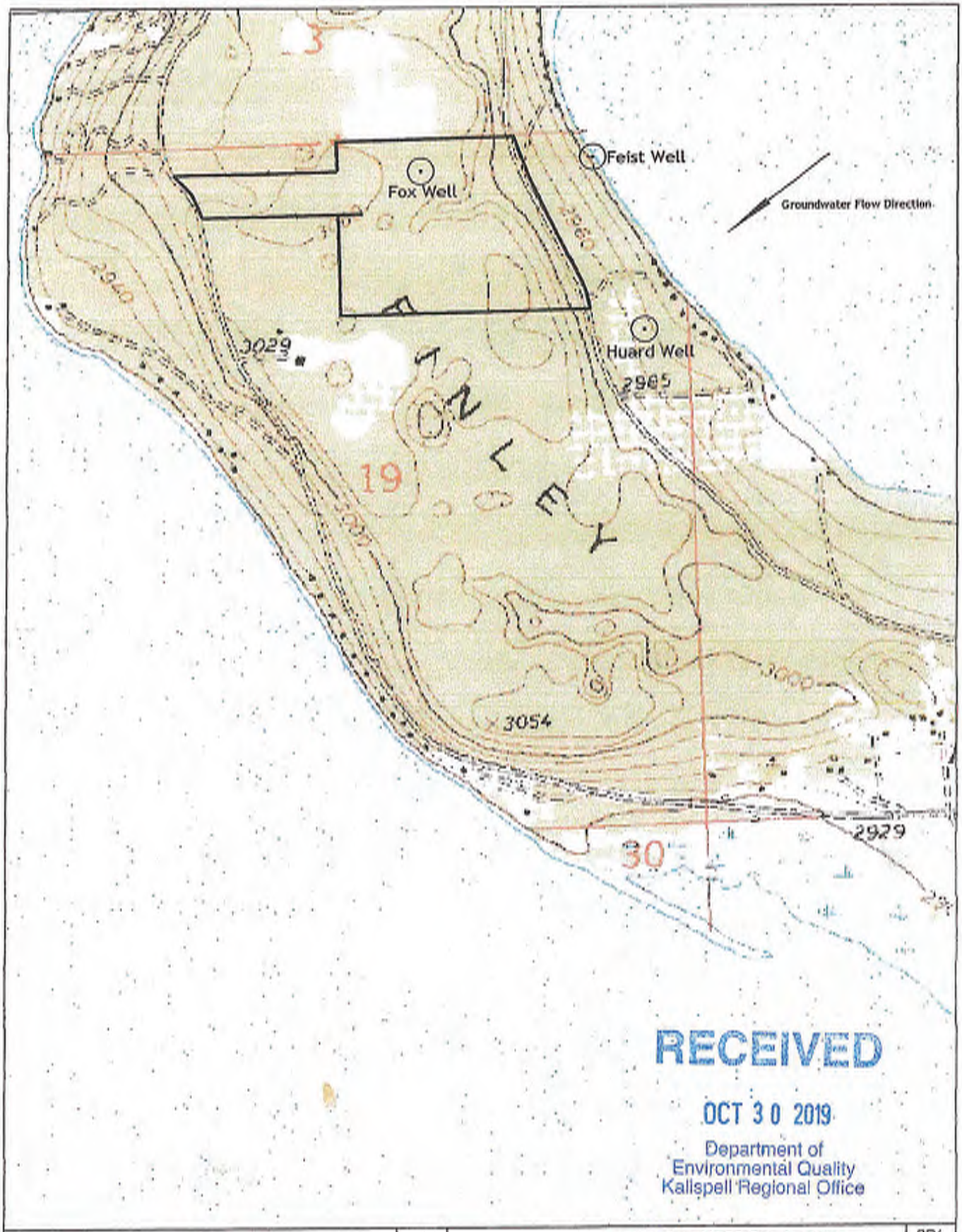
E = Maximum diameter of pump including cable guard and motor.

HAFFERMAN ENGINEERING, INC.

Timbrshor HOA PWS – 6 Report

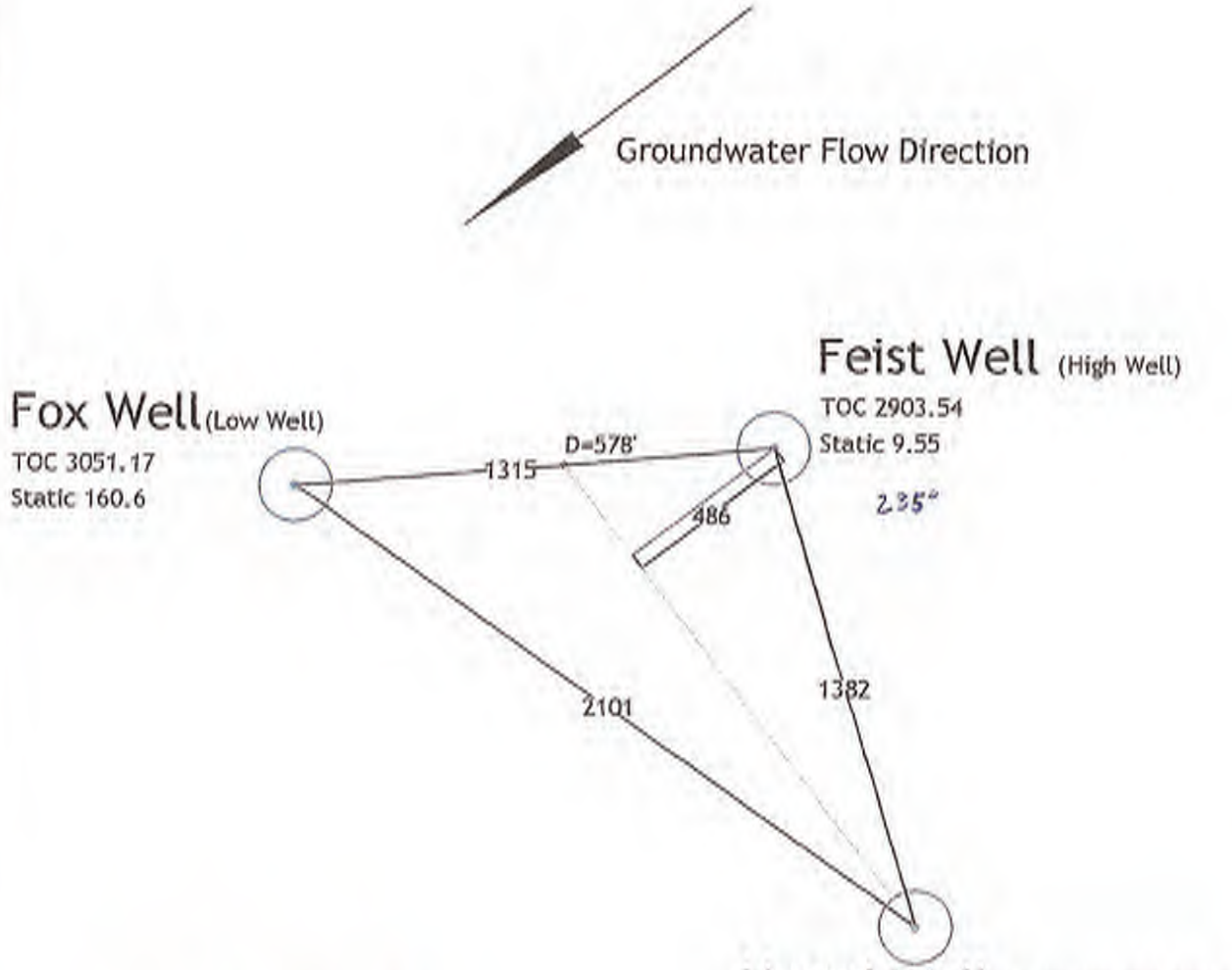
Project Location Map

860 North Meridian B-21 | P.O. Box 1891 | Kalispell, Montana 59903 | Phone: 406-257-8708 | Fax: 406-257-8710



RECEIVED
OCT 30 2019
Department of
Environmental Quality
Kalispell Regional Office

Rowland Environmental Consulting, Inc.	SIZE A — A Portion of the East Bay USGS Quadrangle	REV
	SCALE 1"=1000' — Rewrite of Finley Point Estates	Contour Interval = 20'



REC Rowland Environmental Consulting, Inc.	SIZE A	Groundwater Flow Determination	REV
	SCALE 1"=50'	Calculated Using Appendix H of How to Perform a Nondegradation Analysis	

FINLEY POINT ESTATES

Hydraulic Gradient calculations*

static rank	well identifcation	well elevation	static	static elevation	horizonal distance in feet	
high	Feist Well	2903.54	9.55	2893.99	high to mid	1381.23
intermediate	Huard Well	2940.28	47.80	2892.48	mid to low	2101.37
low	Fox Well	3051.17	160.60	2890.57	high to low	1314.93

A=	3.41	ft
B=	385.61	ft
C=	1.50	ft
D=	578.42	ft
E=	486.00	ft
X=	578.42	ft
Hydraulic grad.	0.0031	ft/ft

High static water level=(HSWE) Horizonal distance=(HD)
Intermediate water level=(ISWE) Low water level=(LSWE)

A= (hswe)-(lswe) B=(hd) between (hswe), (lswe) /A
C= (hswe)-(iswe) D=B*C=horizonal distance between the (hswe) and (lswe)=to (iswe)
X=distance D from hswe to lswe plotted on line Draw a line from iswe to X =static water level of iswe
groundwater flow= draw a line perpendicular to the iswe contour line through hswe
E=distance along ground water flow line from hswe to iswe contour line
Hydraulic gradient = C/E ft/ft

* Calculations based on Appendix H of "How to perform a Nondegradation Analysis"

Conductivity (K) Calculations

	Huard Well GWIC 77579	Feist Well GWIC ~~77579~~ 177502	Fox Well GWIC ~~77579~~ 156680
Q=pumping rate (gpm)	40.00	25.00	130.00
s= drawdown (feet)	32.00	22.00	127.00
Equation #1 T=33.6(Q/s)^0.67			
T=Transmissivity	1323.85	1241.95	1157.98
Qa=pumping rate in gpm	40.00	25.00	130.00
Q=pumping rate in Ft3/day	7700.00	4812.50	25025.00
s=drawdown (ft)	32.00	22.00	127.00

Equation #2: K=T/b

K = hydraulic conductivity (feet/day)

T= transmissivity (square feet/day)

b = aquifer thickness (feet)

(this can be equal to the screened interval or approximately 10 feet if well is finished at the bottom of drill hole with an open casing with no perforated screened interval)

			Average
132.38	124.20	115.80	124.13
1323.85	1241.95	1157.98	
10.00	10.00	10.00	

Montana Bureau of Mines and Geology
Ground-Water Information Center Site Report
HUARD D R

Plot this site on a topographic map

Location Information

GWIC Id: 77579
Location (TRS): 23N 19W 19
County (MT): LAKE
DNRC Water Right: 18821
PWS Id:
Block: 1
Lot: 5
Addition: ALSON VILLA

Source of Data: LOG
Latitude (dd): 47.7395
Longitude (dd): -114.0807
Geomethod: TRS-SEC
Datum: NAD27
Altitude (feet):
Certificate of Survey:
Type of Site: WELL

Well Construction and Performance Data

Total Depth (ft): 120.00
Static Water Level (ft): 48.00
Pumping Water Level (ft): 80.00
Yield (gpm): 40.00
Test Type: PUMP
Test Duration: 3.00
Drill Stem Setting (ft):
Recovery Water Level (ft):
Recovery Time (hrs):
Well Notes:

How Drilled: FORWARD ROTARY
Driller's Name: OKEEFE
Driller License: WWC008
Completion Date (m/d/y): 4/24/1978
Special Conditions:
Is Well Flowing?:
Shut-In Pressure:
Geology/Aquifer: 112DRFT
Well/Water Use: DOMESTIC

Hole Diameter Information

No Hole Diameter Records currently in GWIC.

Annular Seal Information

No Seal Records currently in GWIC.

Casing Information[1]

From	To	Dia	Wall Thickness	Pressure Rating	Joint	Type
0.0	120.0	6.0				STEEL

Completion Information[1]

From	To	Dia	# of Openings	Size of Openings	Description
120.0	120.0	6.0			OPEN BOTTOM *

Lithology Information

From	To	Description
0.0	40.0	SAND- GRAVEL
40.0	60.0	SILTY SAND
60.0	115.0	CLAY- SAND- SILT
115.0	120.0	GRAVEL

[1] - All diameters reported are **inside** diameter of the casing.

Montana Bureau of Mines and Geology
Ground-Water Information Center Site Report
FEIST STEVE & LINDA

Plot this site on a topographic map

Location Information

GWIC Id: 177502
Location (TRS): 23N 19W 19 AD
County (MT): LAKE
DNRC Water Right:
PWS Id:
Block:
Lot: 1
Addition:

Source of Data: LOG
Latitude (dd): 47.7413
Longitude (dd): -114.0725
Geomethod: TRS-SEC
Datum: NAD27
Altitude (feet):
Certificate of Survey:
Type of Site: WELL

Well Construction and Performance Data

Total Depth (ft): 168.00
Static Water Level (ft):
Pumping Water Level (ft): 22.00
Yield (gpm): 25.00
Test Type: AIR
Test Duration: 1.00
Drill Stem Setting (ft):
Recovery Water Level (ft): 9.00
Recovery Time (hrs): 0.08
Well Notes:

How Drilled: ROTARY
Driller's Name: JEROME
Driller License: WWC002
Completion Date (m/d/y): 4/9/1999
Special Conditions:
Is Well Flowing?:
Shut-In Pressure:
Geology/Aquifer: 112ALVM
Well/Water Use: DOMESTIC

Hole Diameter Information

No Hole Diameter Records currently in GWIC.

Annular Seal Information

No Seal Records currently in GWIC.

Casing Information[1]

From	To	Dia	Wall Thickness	Pressure Rating	Joint	Type
-2.0	168.0	6.0				STEEL

Completion Information[1]

From	To	Dia	# of Openings	Size of Openings	Description
168.0	168.0	6.0			OPEN BOTTOM *

Lithology Information

From	To	Description
0.0	12.0	SAND & GRAVEL
12.0	70.0	SILTY SAND WITH WATER CLAY LAYERS
70.0	158.0	SILTY SAND WITH WATER THIN GRAVEL LAYERS
158.0	168.0	SAND & GRAVEL WITH WATER

[1] - All diameters reported are **inside** diameter of the casing.

Montana Bureau of Mines and Geology
Ground-Water Information Center Site Report
FOX JOHN

Plot this site on a topographic map

Location Information

GWIC Id: 156680
Location (TRS): 23N 19W 18 AB
County (MT): LAKE
DNRC Water Right:
PWS Id:
Block:
Lot:
Addition: FINLEY POINT ESTATES

Source of Data: LOG
Latitude (dd): 47.7598
Longitude (dd): -114.0783
Geomethod: TRS-SEC
Datum: NAD27
Altitude (feet):
Certificate of Survey:
Type of Site: WELL

Well Construction and Performance Data

Total Depth (ft): 287.00
Static Water Level (ft): 160.00
Pumping Water Level (ft):
Yield (gpm): 130.00
Test Type: AIR
Test Duration: 3.00
Drill Stem Setting (ft):
Recovery Water Level (ft):
Recovery Time (hrs):
Well Notes:

How Drilled: ROTARY
Driller's Name: ALLWEST
Driller License: WWC571
Completion Date (m/d/y): 2/27/1996
Special Conditions:
Is Well Flowing?:
Shut-In Pressure:
Geology/Aquifer: 112ALVM
Well/Water Use: DOMESTIC

Hole Diameter Information

No Hole Diameter Records currently in GWIC.

Annular Seal Information

From	To	Description
0.0	40.0	CEMENT

Casing Information[1]

From	To	Dia	Wall Thickness	Pressure Rating	Joint	Type
-2.0	287.0	8.0				STEEL

Completion Information[1]

From	To	Dia	# of Openings	Size of Openings	Description
287.0	287.0	8.0			OPEN BOTTOM *

Lithology Information

From	To	Description
0.0	95.0	SAND GRAVEL COBBLES
95.0	165.0	GRAVEL LARGE COBBLES
165.0	260.0	GRAVEL SILTY SAND
260.0	287.0	GRAVEL SAND WATER

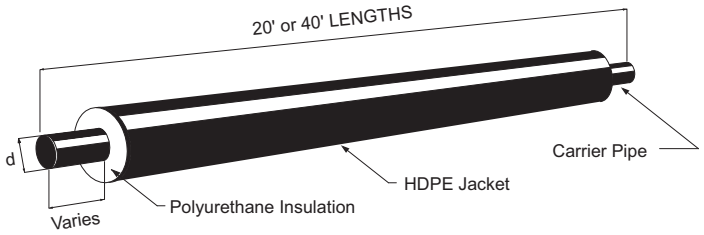
[1] - All diameters reported are **inside** diameter of the casing.

POLYCOR HDPE

HDPE PIPING SYSTEM

POLYCOR HDPE

THERMACOR'S POLYCOR HDPE is a factory-fabricated, pre-insulated piping system for below or above ground distribution of hot and chill water. The system is designed with a High Density Polyethylene (HDPE) carrier pipe, closed cell polyurethane foam insulation, and an HDPE jacket.



Carrier Pipe

- High Density Polyethylene (HDPE)
- SDR 32.5 - SDR 7.3

Polyurethane Insulation

• Density	> 2.0 lbs/ft³
• "K" Factor	≤ 0.16 @ 75°F
• Compressive Strength	> 30 psi
• Closed Cell Content	≥ 90% @ 75°F

Jacket

- High Density Polyethylene (HDPE)

P.O. BOX 79670 · 1670 HICKS FIELD ROAD EAST · FORT WORTH, TEXAS 76179 · 817 / 847-7300 · FAX 817 / 847-7222

SPECIFICATION GUIDE *

GENERAL

All underground and above ground piping materials transporting chill water and hot water shall be **POLYCOR HDPE** as manufactured by **THERMACOR PROCESS INC.** All pre-insulated pipe, fittings, insulating materials, and technical support shall be provided by the Pre-insulated Piping System manufacturer.

SERVICE PIPE

The carrier pipe shall be high density polyethylene (HDPE), conforming to ASTM D-3350. Pipe and fittings are manufactured from extra high molecular weight polyethylene compound and fabricated to Standard Dimensional Ratio (SDR) wall thickness in standard IPS sizes. Available pressure ratings range from 50 psi (SDR-32.5) to 255 psi (SDR-7.3) at 73°F, with operating temperatures from -50°F and lower, to +140°F by applying an appropriate design factor.

INSULATION

Insulation of the service pipe shall be rigid polyurethane foam with a minimum 2.0 lbs/ft³ density, 90% minimum closed cell content, and a "K" factor not higher than .18 at 75°F per ASTM C518. The polyurethane foam shall be CFC-free. The polyurethane foam shall completely fill the annular space between the service pipe and jacket, and shall be bonded to both. Insulation shall be provided to the minimum insulation thickness specified, within manufacturing tolerances.

JACKET

The outer protective jacket shall be High Density Polyethylene (HDPE). The HDPE jacket shall be seamless and pressure-tested for watertight integrity. PVC, FRP, HDUP or tape materials are not allowed.

FITTINGS

Carrier pipe fittings of the same material and pressure rating shall be heat fusion butt-welded to adjacent pipe sections. Fittings that are butt- fusion welded are to be field insulated or, at engineer's option, factory insulated. If fittings are factory manufactured, fittings are pre-insulated using factory PE fitting covers welded to the jackets.

FIELD JOINTS

Service pipe shall be hydrostatically tested as per the Engineer's specification with a factory recommendation of 1.5 times the specified pressure of the system. Straight joint sections shall be insulated using urethane foam to the thickness specified, jacketed with split sleeve, and sealed with a heat shrink sleeve. All joint closures and insulation shall occur at straight sections of pipe. All insulation and jacketing materials shall be furnished by THERMACOR.

INSTALLATION

Installation of the piping system shall be in accordance with the manufacturer's instructions. Factory trained field technicians shall be provided for critical periods of installation, unloading, field joint instruction, and testing.

** For alternate specifications, please contact THERMACOR.*

THERMACOR PROCESS INC.

1670 Hicks Field Road East
Fort Worth, Texas 76179-5248
P.O. Box 79670

Phone (817) 847-7300
Fax (817) 847-7222
www.thermacor.com

Your Authorized THERMACOR Representative Is:

APPENDIX I

Form No. 603 (R 6-84)

RECEIVED 047 23N 19W 7 BCC File No. Lake

MAY 20 1985

MONTANA D.N.R.C.

WELL LOG REPORT CODED

008222

State law requires that this form be filed by the water well driller within 60 days after completio

1. WELL OWNER KALISPELL FIELD OFFICE
Name Richard G. & Marjorie R. Cannon

2. CURRENT MAILING ADDRESS
3100 Nettie
Butte, Montana 59701

3. WELL LOCATION
County Lake
Township 23 N/S Range 19 E/W
SW ¼ SW ¼ NW ¼ Section 7
Lot Govt.Lot 3, 317/ Block
Subdivision Borchers of Finley Point

4. PROPOSED USE Domestic ☒ Stock ☐ Irrigation ☐
Other ☐ specify

5. DRILLING METHOD ____ cable, ____ bored,
____ forward rotary, ____ reverse rotary, ____ jetted,
XX + other (specify) Air Rotary

6. WELL CONSTRUCTION AND COMPLETION

Size of drilled hole	Size and weight of casing	From (feet)	To (feet)	Perforations slots and/or Screen — Kind Size	From (feet)	To (feet)
8"	6 5/8" x .250	+2'4"	38'2"			
6"	4 9/16" OD Sch. 40 PVC	33'	403'	slots 1/4"x 6"	323'	343'
					383'	403'

Was casing left open end? X Yes ____ No
Was a packer or seal used? ____ Yes X No
If so, what material
Was the well gravel packed? ____ Yes X No
Was the well grouted? ____ Yes X No
To what depth?
Material used in grouting
Well head completion: Pitless adapter ____ Yes X No
Top of casing 12 in. or greater above grade X Yes ____ No

7. WHAT IS THE TEMPERATURE OF THE WATER?
52 Degrees Fahrenheit
☐ Measured ☒ Estimated

8. WATER LEVEL
Static water level 98' feet below land surface
If flowing; closed-in pressure ____ psi
____ gpm
Controlled by: ____ valve, ____ reducers,
____ other, (specify)

9. WELL TEST DATA ____ pump ____ bailer
X other, (specify) Air Lift
Pumping water level below land surface:
Est. 300 ft. after 3 hrs. pumping 15 gpm
____ ft. after ____ hrs. pumping ____ gpm

10. WAS WELL PLUGGED OR ABANDONED? ____ Yes X No
If yes, how?

11. DATE COMPLETED 3/29/85

12. WELL LOG (Page 1 of 2)

Depth (ft.) From	To	Formation
0	5	Black soil & scattered gravel.
5	40	Green-gray to gray rock.
40	71	Brown, green & gray rock.
71	80	Dark gray rock w/brown seams.
80	95	Light to dark gray & brown rock.
95	224	Light to dark gray rock.
224	273	Green, brown & gray rock.
273	280	Green and gray rock.
280	285	Light to dark gray rock.
285	294	Green-brown and gray rock.
294	365	Orange-brown, green & gray rock w/white clay & calcite in fractures. 12 GPM total water.
365	403	Light to dark gray rock w/thin brown seams. 15 GPM total water.
		(CONTINUED ON PAGE 2)

(use separate sheet if necessary)

13. DRILLER'S CERTIFICATION PH
This well was drilled under my jurisdiction and this report is true to the best of my knowledge.
April 4, 1985
Date
LIBERTY DRILLING & PUMP COMPANY
Firm Name 3850 Highway 93 South
Kalispell, Montana 59901
Address
William F. Osborne 52
Signature William F. Osborne License No.

MONTANA DEPARTMENT OF NATURAL RESOURCES & CONSERVATION DNRC
32 SOUTH EWING HELENA, MONTANA 59620 444-6610

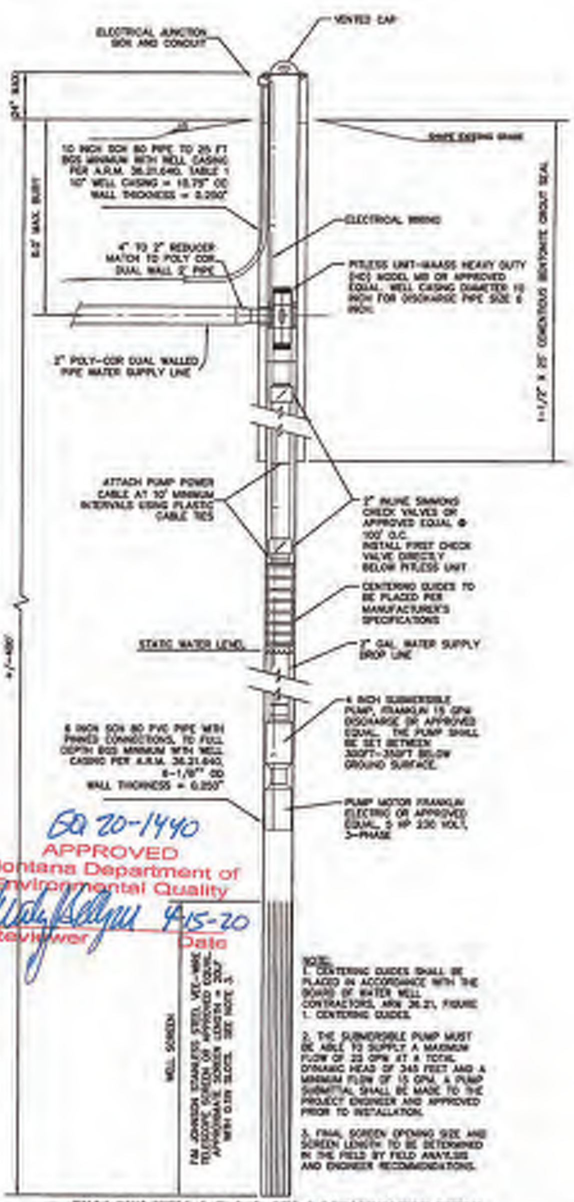
DEPARTMENT — BUREAU COPY

M: 77517

Note:

Wells of this type in this area can be depended upon year after year to produce clear sand free water as long as they are not overpumped, i.e., they should be pumped at rates not in excess of 70 to 80 percent of the tested capacity of the aquifer.

APPENDIX J



EQ 20-1440
APPROVED
Montana Department of
Environmental Quality
[signature] 4-15-20
Reviewer Date

NOTE:

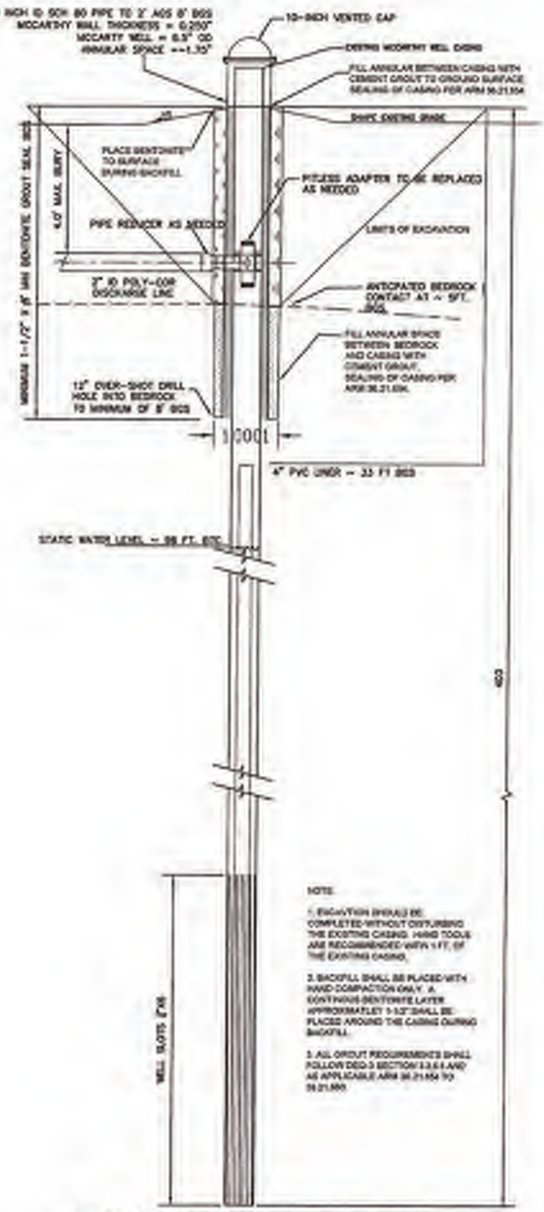
1. CENTERING GUIDES SHALL BE PLACED IN ACCORDANCE WITH THE BOARD OF WATER WELL CONTRACTORS, ARM 36.21, FIGURE 1. CENTERING GUIDES.

2. THE SUBMERSIBLE PUMP MUST BE ABLE TO SUPPLY A MAXIMUM FLOW OF 22 GPM AT A TOTAL DYNAMIC HEAD OF 345 FEET AND A MINIMUM FLOW OF 15 GPM. A PUMP SUBMITTAL SHALL BE MADE TO THE PROJECT ENGINEER AND APPROVED PRIOR TO INSTALLATION.

3. FINAL SCREEN OPENING SIZE AND SCREEN LENGTH TO BE DETERMINED IN THE FIELD BY FIELD ANALYSIS AND ENGINEER RECOMMENDATIONS.

THOA PWS WELL 4, 5, 6, 8, AND 9 CONSTRUCTION DETAIL

SCALE: N.T.S.



NOTE:

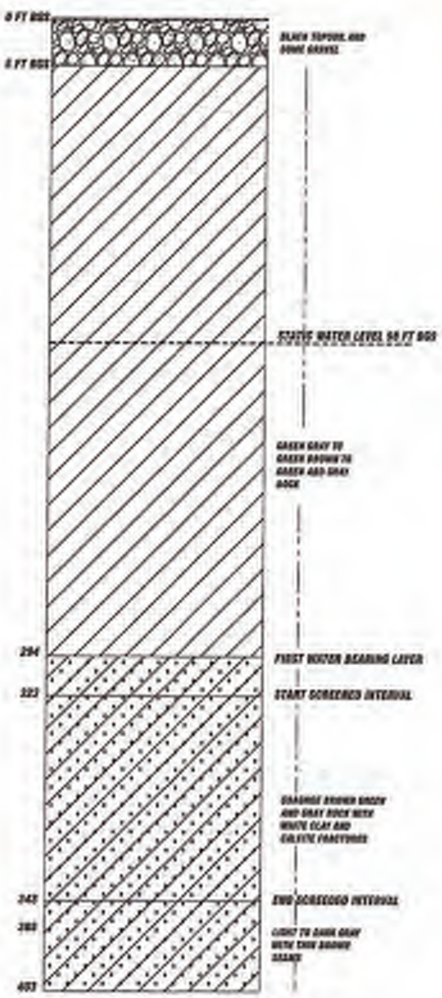
1. EXCAVATION SHOULD BE COMPLETED WITHOUT DISTURBING THE EXISTING CASING. HAND TOOLS ARE RECOMMENDED WITHIN 1 FT. OF THE EXISTING CASING.

2. BACKFILL SHALL BE PLACED WITH HAND COMPACTION ONLY. A CONTINUOUS BENTONITE LAYER APPROXIMATLEY 1-1/2" SHALL BE PLACED AROUND THE CASING DURING BACKFILL.

3. ALL GROUT REQUIREMENTS SHALL FOLLOW DEQ-3 SECTION 3.2.6.4 AND AS APPLICABLE ARM 36.21.654 TO 36.21.660.

MCCARTHY WELL SEAL RECONSTRUCTION DETAIL

SCALE: N.T.S.



MCCARTHY (CANNON) WELL LOG DETAIL

PWS MACCARTHY WELL

SCALE: N.T.S.

TIMBRSHOR HOA

WATER SYSTEM IMPROVEMENTS

FOR

THE TIMBRSHOR HOA

HEI

DRAWING TITLE: WELL DETAILS

SCALE: AS SHOWN

DATE: MARCH 2020

1 OF 1

APPENDIX K

HAFFERMAN ENGINEERING, INC.

Source Water Delineation and Assessment Report and
Public Water Supply Report-5 and Public Water Supply– 6 Report

Timbrshor PWS
Finley Point, Lake County, Montana
Timbrshor HOA

October 30, 2019

Hafferman Engineering Inc.
Kurtis M. Hafferman, P.E.
860 N. Meridian, B-21
Kalispell, Montana 59901
kurt@haffermanengineering.com
(406)-212-0404

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List of Tables

List of Appendix

Acknowledgement
Source Water Delineation and Assessment Report and
Public Water Supply Report-5 and Public Water Supply– 6 Report

PWS Name: **Timbrshor PWS**
PWS Location: **Finley Point, Lake County, Montana**
PWS Owner: **Timbrshor HOA**
Attn. Blake Johnson, President
blake@madrose.com

Report Date: **October 22, 2019**

Contact Person: **Kurtis M. Hafferman, P.E.**
860 N. Meridian, B-21
Kalispell, Montana 59901
kurt@haffermanengineering.com
(406)-212-0404

1. Introduction:

This Source Water Delineation and Assessment (SWDAR) and Public Water Supply-6 (PWS-6) report is being prepared to assess the potential sources of contamination to a new groundwater Public Water Supply created to provide drinking water to an existing subdivision. The Timbrshor – Borchers of Finley Point Condominium Subdivision (Subdivision) is located northeast of the town of Polson, Montana at the north end of Finley Point on the east side of Flathead Lake. The property is physically described as Borchers of Finley Point Lot 3, Section 7, Township 23 North, Range 19 West, P.M., M.; Lake County, Montana.

The Subdivision intends to use one (1) existing well and to develop five (5) other new wells to create six (6) transient, non-community well systems. The system will serve a total of forty-seven (47) connections.

The owner of the all the new systems will be the Timbrshor Homeowners Association (THOA) and the systems will be managed by the Timbrshor/Lake County Water & Sewer District. The Timbrshor/Lake County Water & Sewer District is listed by the State of Montana, Local Government Services, as local government entity number 102414[i]

1.1 Purpose:

The Subdivision was created in July of 1977 and the original Certificate of Subdivision Plat Approval (COSA) number 24-77-K902, of July 27, 1977 specified a surface water (Flathead Lake) water diversion, treatment, storage and distribution system. The system was never constructed and instead the unit owners developed approximately 22 individual points of diversion using submersible pumps and various pipeline withdrawal systems[ii]. On January 9, 2018 the THOA was informed by the Montana Department of Environmental Quality (MDEQ) that the Subdivision failed in the

construction of the approved water system and that thirty (30) of the units must be to be connected to a community water supply system. All these units, whether built or non-built, are required to seek an approvable solution to their water supply. Individual surface water intakes are not allowed by current DEQ Subdivision laws[iii].

The Timbrshor Homeowners Association (THOA) has engaged Hafferman Engineering Inc (HEI) to design, permit and construct a new groundwater well system to meet State requirements and to rewrite the COSA to reflect the changes in the water system. HEI is following the Montana Department of Environmental Quality (MDEQ) Circular 3 Standards for Small Water Systems August 8, 2014 Edition (Cir. 3) In Cir. 3, part 1.1, Design Report, which requires, in part 1.1.6. that the sources of water supply be describe in the design report. The report must include the proposed source or sources of water supply. This section of the Circular goes on to state that a preliminary assessment must be completed for proposed ground water sources that may be under the direct influence of surface water prepared in accordance with Department Circular PWS-5, "Assessment of Ground Water Sources Under the Direct Influence of Surface Water;" and a source water assessment report must be prepared in accordance with Department Circular PWS-6[iv].

In addition, the Safe Drinking Water Act (SDWA) was established by federal government to set drinking water standards and health goals, and the Montana Source Water Protection Program (SWPP) was created to manage the federal program and help protect public water supply systems from sources of contamination. The Federal regulations (Safe Drinking Water Act) and Montana State regulations (Montana Source Water Protection Program) require a PWS-6 report for all new public water supply systems.

The purpose of this report is to provide the PWS-5 report to assess the groundwater sources to determine if they are under the direct influence of surface water and provide the PWS-6 source water delineation and assessment report to meet the design report requirements of Cir. 3, the SDWA, the Montana SWPP.

2. PWS Information:

2.1 Background Information

2.1.1 Location

The Timbrshor – Borchers of Finley Point Condominium Subdivision (Subdivision) is located northeast of the town of Polson, Montana at the north end of Finley Point on the east side of Flathead Lake. The property is physically described as Borchers of Finley Point Lot 3, Section 7, Township 23 North, Range 19 West, P.M., M.; Lake County, Montana. A map of the location of the Subdivision is provided in Appendix A.

The community of Polson is approximately 10.8 miles west of the Subdivision following Montana Highway 35, and Finley Point Road and is approximately a twenty-five-minute drive. The community of Polson is approximately 5,000 people and is the county seat for Lake County[v]. Polson

is the closest source for supplies and resources and has approximately 743 businesses[vi]. Polson is a lake shore community that is located on the Flathead Indian Reservation and is the trading center for one of most fertile farming areas in Montana. This prime cherry growing region is home to dozens of orchards…(and in) the summertime, temperatures range from 80 to 95 degrees[vii].

The Subdivision is on the northwest end of Finley Point on a peninsula near the south end of Flathead Lake. The shore of Flathead Lake makes up the north side boundary of the Subdivision. The west, east and south side of the subdivision is bounded by private rural improved properties and county roads. On the south and west side, the Subdivision is are separated from private land by a shared access from a private road, Snowberry Lane. The subdivision is land locked on the east side by private properties. The elevation of the Subdivision varies from the high point of 2985 ft. (MSL NAVD 1988 datum) on the west side of the subdivision to 2920 ft. in lower areas on the east side and the lowest property boundary is 2898 ft. on the east side.

2.1.2 PWS Subdivision Community

The THOA Subdivision is a condominium property subdivision in which each unit owner owns the property within the drip-line of the roof and deck of the unit and all other property is community owned. The original condominium subdivision consisted of fifty-six (56) building sites, or units, of which seven (7) were eventually listed by either the Lake County Commissioners (LCC) or the developer or both as "not to be developed". The existing list of units includes a total of forty-nine (49) units that are either developed or yet to be developed. One of the 49 dwellings include the original Borchers Lodge (Lodge) structure which is now a single family four-bedroom residence. Of the 49 units, two sites are double or duplex units, leaving a total of 47 developable sites that were used to calculate water demand.

2.1.3. PWS Subdivision Community Served

In November of 2017, the THOA Board requested that MDEQ identify the COSA non-compliant units with the Subdivision. The THOA also requested that the MDEQ consider allowing individual surface water withdrawal and treatment as an option to become COSA complaint. On January 9, 2018 the MDEQ provided the THOA Board with a Memorandum outlining the units in the Subdivision that were and were not COSA complaint. A copy of the MDEQ Memorandum is included in Appendix A.

The THOA, HEI and the MDEQ have identified 30 of the 47 sites that are required to be COSA compliant. The sites are a combination of 13-developed lots with a variety of single and multi-family residences that range in size from 2 to 5-bedroom units and 17-vacant lots. The remaining 17 sites were all developed before the 1977 COSA was approved with a variety of single and multi-family residences and are not subject to MDEQ COSA compliance.

The THOA Board developed a Water Plan intended to meet the current MDEQ regulations and meet the requirements of the THOA by-laws. The THOA Board directed HEI to provide plans and specifications of the construction of an adequate water supply system that would be MDEQ complaint and allow for the rewriting of the Certificate of Subdivision Approval to meet current

regulations. The plan was provided as the scope of work for HEI. The THOA Plan was passed in the 2018 Annual THOA meeting. A copy of the THOA Plan is included in Appendix A. The plan calls for supplying a groundwater system connection for all forty-seven (47) developed or developable sites. A map showing the location of the proposed PWS wells to serve the Subdivision is also included in Appendix A.

2.1.4. PWS Geographic Setting

The mountains to the east of Polson are the Mission Mountains and the Subdivision lies near the foothills area of the Mission range. The Mission area includes part of the north-trending, intermontane valley bounded by the Salish Mountains to the west, the Mission Range to the east, and the Jocko Hills to the south; the northern boundary is the north shore of Flathead Lake and the Polson moraine marks the southern boundary of this setting. The Flathead River empties into Flathead Lake on the north shore 2 miles west of Bigfork. The hills that compose the land south of Polson is known as the Polson moraine which is an accumulation of till and other glacial deposits that was deposited at the most southern end of the Flathead glacier. The Flathead River below Kerr Dam drains the area and marks most of its western boundary. The valley floor generally slopes to the south–southwest toward the Flathead River, away from the Polson moraine and southward to where the Flathead River exits the valley at altitude 2,600 ft[viii].

HEI queried the Montana Digital Atlas (MDA) to identify the protection region boundaries. The MDA parcel identification, the list of wells from the Groundwater Information Center (GWIC) database, the septic density reporting and land use characteristics for a one-mile radius around this setting. The map of the area quired and the report generated for the layers queried within the search area are attached in Appendix B.

The land use near the Subdivision is a mixture of rural improved property, rural vacant property, rural farmsteads which are typically cherry orchards, vacant and improved Confederated Salish and Kootenai Tribal (CSKT) property and rural condominiums associated to the Subdivision. Many of the neighboring properties are used as second homes or seasonal recreational property and are typically occupied from late May until early September.

The predominant commercial operation is cherry orchards and there are three (3) within 0.35 miles of the setting of this property. There are no commercial operations within the Subdivision.

2.1.5 Geologic Setting

The Flathead Lake area is characterized in the Montana Groundwater Assessment Atlas 2 (MGAA 2), Groundwater Resources of the Flathead Lake Area: Flathead, Lake, Sanders and Missoula Counties by "*….high mountain ranges including the Salish Range on the west and the Mission range on the east. The oldest rock unit in the Mission region, the Precambrian Belt Supergroup (1.4 to 1.5 b.y. old), is a thick sequence of metasedimentary rocks that forms the mountains and underlies the valleys throughout the area. The Belt rocks are generally fine-grained clastic rocks (sandstone, siltstone, and mudstone) and carbonate rocks (limestone and dolomite) that have been subjected to low-grade metamorphism. Because the Belt rocks are consistently well-consolidated, and they are*

referred to as a bedrock (in the MGAA 2 report). *Where exposed, they are commonly fractured, and display bedding surfaces*[ix].

Belt Supergroup bedrock is characterized by numerous stratigraphic units composed mainly of metamorphosed siltstones, carbonates and quartz sandstones (Johns 1970, Wilson 1986, and others 1986 and 1992) and minor amounts of igneous rocks (McGimsey 1985). Most bedding thickness range from less than 1 inch in metasiltstones to a few feet to tens of feet in metacarbonates and quartzites[x].

The Subdivision is within the Flathead Lake perimeter area of the east side of Flathead Lake. The land surface on the east and west edges of Flathead Lake rises from the lake surface to mountain peaks. The land surface rises from the east side of the lake to peaks of more than 7,000 ft in the Mission Range. West of the lake, topography has less relief and peaks are generally only about 4,000 ft above sea level. Most development of the ground-water resource is within a few miles of the lake[xi].

The MGAA 2 goes on to state that " *Bedrock underlies all of the surficial deposits and is the primary aquifer in the Flathead Lake perimeter; almost 80 percent of all wells are completed in bedrock. The bedrock aquifer is relatively evenly developed on the east and west sides of the lake; about 1,100 wells have been drilled on the west and about 400 wells on the east (the east side of the lake has about half of the shoreline miles as the west side). The bedrock aquifer produces water from fracture permeability. The occurrence of saturated fractures is variable, causing some wells to be deeper than 1,000 ft, although the overall median depth is 240 ft. Wells are generally deeper on the west side of the lake (median depth 255 ft) than on the east side (median depth 200 ft). ….Yields from the bedrock are not as high as those from the alluvial aquifers but are generally adequate for domestic uses; the maximum reported yield is 850 gpm, and the median is 20 gpm……Despite the difference in median well depths in the bedrock aquifer on either side of the lake, there is little difference in median well yields.*

2.1.6 Hydrogeology

HEI has completed research of well logs near the subdivision and within Finley Point. A list of all well logs researched, and their characteristics is included in Table 3 below. The wells are all noted as having been completed in bedrock as it is close to or at the land surface in most of the Finley Point area. The well logs reference either Belt Supergroup or Middle Belt Carbonate. As shown in Table 3 depths for wells completed in bedrock are variable, ranging from near to 100 to more than 400 ft, but no depth is most common. About 20 percent of wells completed in in the Flathead Lake perimeter in bedrock are more than 500 ft deep.

HEI completed specific hydrogeology research using well logs from two (2) on-site and near-by wells with known performance. HEI used six (6) other well logs from near-by neighboring properties. The well logs used are provided in Appendix C. HEI used the well logs to calculate hydraulic conductivity from the well log pumping test data using the modified Cooper-Jacob Equation (Driscoll, 1986). The hydraulic conductivity is calculated from the transmissivity divided by the aquifer thickness. Aquifer thickness was dependent on whether the well is completed with a

perforated casing, an open bottom or an open hole. The aquifer thickness for a perforated or screened well is the perforation/screen thickness (Morgan, et. al., 2007). The open bottom well is assumed to have a thickness of 10 feet and the open hole is between the bottom of casing and the bottom of borehole.

One well is developed within the Subdivision that serves the McCarthy residence, unit 317. The well has had over 30 years of continuous service and the current owner, Dan McCarthy reports that the well has performed without loss of water. The well was developed by Richard Cannon on March 29, 1985. The well log for the Cannon well is provided in Appendix C. The well was drilled to a total depth of 403 ft. below ground surface (bgs) and water was first encountered at 365 ft. bgs and the static water level (SWL) was 98 ft. bgs. HEI assumes this well is developed in a confined aquifer. The well log reports that there are ¼ in. by 6 in. slots from 323 ft. to 343 ft. The pumping rate was 15 gpm and the pumping water level was 300 ft. bgs after 3 hours. The hydraulic conductivity was found to be low at 1.0 ft./day.

The second well of known performance serves the Novinski property on the east boundary of the subdivision. The current owner Dan Novinski reports that the well has a continuously high flow rate and has been used to irrigate a cherry orchard continuously for several hours without loss of water. The well currently serves a 0.67 acres cherry orchard. The well was developed on June 24, 1998 by Laurry Bishop. The well log is provided in Appendix C. The well was drilled to a total depth of 115 ft. bgs and water was first encountered at 110 ft. bgs and rose to a static water level of 55 ft. bgs. HEI assumes this well is developed in a confined aquifer. The well log reports that there are 0.02 in. factory slots from 95 ft. to 115 ft. The pumping rate was 50 gpm and the pumping water level was 80ft. bgs after 1 hours. The hydraulic conductivity was found to be 90.7 ft./day.

In 2004 Rowland Environmental Consulting (REC) completed research on three (3) wells located 1.6 miles south of the Subdivision at the John Fox well, GWIC ID no. 156680, the Feist well, GWIC 177502 and the Huard well, GWIC 77579. A survey was conducted to obtain static water level and location, data was input into a three-point calculation for groundwater flow direction and groundwater gradient. REC provided a table of hydraulic conductivity values for the group of three wells investigated by REC, also provided a water quality test for background nitrate and the calculations of groundwater flow direction and groundwater gradient. A copy of the REC data is provided in Appendix C.

2.2 Public Water Supply System Demand Information

HEI has determined that these are public water supply system wells, but they are not a community water system. These are a maximum of three (3) year around residents and the other units are seasonal units that do not have occupants for more than 3 to 4 months each year. The wells within the Subdivision are defined by HEI as Transient non-community" (TNC) wells because they will not regularly serve at least 25 of the same persons for at least 6 months a year.

HEI has determined locations for five (5) new TNC groundwater wells and a means to use one (1) existing groundwater well as a TNC well to develop a compliant Public Water Supply system for the

forty-seven (47) individual connections. The HEI defined THOA PWS system wells are designated as Well 4, the McCarthy Well, Well 5, Well 9, Well 6 and Well 8. A map of all well locations and neighboring properties are provided in Appendix C. Also shown in Appendix C is the map of the well location showing the proximity to the septic systems and mixing zones.

It is to be noted that this groundwater well system is designed to meet the domestic water supply needs and is not intended to be used for lawn, garden or other watering outside the residential structure. The peak flow for domestic water supply per connection served is assumed to be 3 gpm.

Table 1 below provides the well name, well location, number of connections served and anticipated water demand including peak flow in gallons per minute (gpm), daily demand in gallons per day and average daily flow in gpm. The distance to the nearest septic system component is shown in the last column.

Table 1: THOA Well Descriptions and Daily Water Demand

Well Name	Location	Connections	Peak Flow (gpm)	Average Daily Demand (gal.)	Average Daily Flow (gpm)	Distance to Nearest WWTS Component
McCarthy	47°46' 12.40" 114°05' 21.35"	4	12	1000	0.694	52 ft. Septic Tank
Well 4*	47°46' 10.77" 114°05' 24.97"	20	60	5000	3.472	100 ft. Drainfield
Well 5	47°46' 10.30" 114°05' 13.59"	5	15	1250	0.868	100 ft. Drainfield
Well 9	47°46' 10.48" 114°05' 14.95"	8	24	2000	1.389	153 ft. Drainfield
Well 6	47°46' 15.70" 114°05' 10.99"	8	24	2000	1.389	255 ft. Septic Tank
Well 8	47°46' 21.07" 114°05' 12.23"	2	6	500	0.347	84 FT. Septic Tank

*Well 4 will require storage tanks and pumps in storage to meet peak demand.

The McCarthy well is the only existing Subdivision well where there is a well log available. There is a well that is developed near to Well 6 on the Novinski property and that well log is also available. The well log for the McCarthy and Novinski property were used to predict the potential depth of the remaining four (4) wells. The well logs are provided in Appendix C.

2.3 General Water Quality

The water quality for the existing McCarthy well was tested in November of 2015 by conducting an analysis of the nitrate and nitrite total. Results showed that the nitrate concentration was 0.13 mg/L and the nitrite was not detectable. In 2004 a nitrate-nitrite test was conducted by Rowland Environmental Consulting (REC) for a well located 1.6 miles south of the Subdivision at the John Fox well, GWIC ID no. 156680. The results showed that the specific conductance was 294

umhos/cm and the total nitrate and nitrite concentration was 0.10 mg/L. In October of 1996, the GWIC conducted a water quality test on the Robert Armine well, GWIC ID no. 77520. A series of water quality tests were conducted including nitrate-nitrite, which was reported as not detectable, the specific conductance was 529 umhos/cm and the field pH was 7.24.

The McCarthy water quality results, the REC water quality results and the Armine well log and water quality test results are provided in Appendix D.

Based on the review of the McCarthy, REC and Armine analytical test results and review of well logs in the general area of the Subdivision, water quality for the deeper wells in the sections near or around section 7, Township 23 North19 West has a low total nitrate-nitrate and the concentrations over time from tests in 1995, 2004 and 2015 show the results have remained consistently low. Based on the Armine well tests in 1996, the pH range is near to neutral and the Fox and Armine wells show specific conductance ranges from approximately 300-500 umhos/cm. Conductivity and salinity have a strong correlation. The Administrative Rules of Montana, section 17.30.1006 Classifications, Beneficial Uses, and Specific Standards For Ground Waters states, in part (1) that Class I ground waters are those ground waters with a natural specific conductance less than or equal to 1,000 umhos/cm at 25ºC.

Therefore, the general water quality for the Subdivision is categorized as Class 1 groundwater and is suitable for the intended purpose to supply domestic water to the Subdivision.

3. Source Water Protection Area Delineation

The aquifer system is confined therefore, in accordance with the SWPP, the delineation for the inventory zone for a TNC well is a 100-foot fixed radius well control zone and 1-mile inventory zone around a TNC public water supply well.

3.1 Method of Defining Aquifer Properties

The method of determining the aquifer characteristics was based on HEI research of well logs and development of hydraulic conductivity from well logs found in the area of the Subdivision. HEI used the hydraulic conductivity values to interpret the nature of groundwater conditions from the table of saturated hydraulic conductivity (*K*) values found in Hydraulics of Groundwater[xii].

HEI also relied on the use of data from previous THOA consultant work by Rowland Environmental Consulting (REC) in 2004. The REC 2004 data is provided in Appendix D. Aquifer characteristics are provided in Table 2 below. Table 3 provides the anticipated aquifer characteristics for well developed in the Subdivision and Table 4. Provides the anticipated well depths and yield.

Table 2. Model Input-Aquifer Characteristic data

Site Name	GWIC ID	TD (ft.)	SWL (ft. bgs)	PWL (ft. bgs)	Geologic Formation	Q (gpm)	Q ft³/day	Drawdown (s) (ft.)	T (ft²/day)	Aquifer Thickness (ft.)	K (ft./day)
Cannon (McCarthy)	77517	403	98	300	Middle Belt Carbonate	15	2888	202	199.68	20	10.0
Bishop (Novinski)	168825	115	55	80	Belt Supergroup	50	9626	25	1813.92	20	90.7
Woodahl	77518	180	20	94	Middle Belt Carbonate	25	4813	74	551.01	10	55.1
Turner	143247	283	8	210	Middle Belt Carbonate	10	1925	202	152.17	10	15.2
McCormick	94427	210	18	100	Belt Supergroup	40	7701	82	704.78	10	70.5
McLaughlin	268468	345	60	340	UNKNW	25	4813	280	225.92	40	5.6
Hern	152788	305	10.5	303	Middle Belt Carbonate	19	3658	292.5	182.55	38.4	4.8
Metz	150667	240	28	150	Middle Belt Carbonate	25	4813	122	394.17	40	9.9
										Average K	32.72
										Average Aquifer Thickness	23.55
										Average Flow Rate	26
										High Flow Rate	50

Table 3. Anticipated THOA PWS Aquifer Characteristics

Aquifer Characteristics	Value range	Reference
Pumping Rate	27 gpm	Cannon and Bishop Well Logs
Porosity	Semi pervious	Reference xiii
Hydraulic Conductivity	30 ft/day	Calculated from Well Log Pumping Data
Aquifer Thickness	10 ft. to 40 ft.	Well Log Research
Hydraulic Gradient	0.0031 ft/ft	REC reference Appendix E SWL Measurements
Groundwater Flow Direction	240◦ WSW	Interpolated from REC Appendix E Map

Table 4 Anticipated THOA PWS Well Depth and Yield

Well Name	Well Elevation (MSL 88 datum)	Total Depth (ft.)	Bottom of Well Elevation (ft. MSL 88 datum)	Distance Below Flathead Lake Full Pool Elevation (2895.6 ft. MSL 88 datum)	Yield (gpm)
McCarthy	2995	405	2590	-305.573	15.0
Well 4*	2994	400	2594	-301.573	15.0
Well 5*	2944	354	2590	-305.573	15.0
Well 9*	2944	354	2590	-305.573	15.0
Well 6**	2958	115	2843	-52.573	50.0
Well 8**	2945	102	2843	-52.573	50.0
	Average Depth	288		Average Pumping Rate	27

*Well Characteristics are Based on McCarthy Well Log

**Well Characteristics Based on Novinski Well Log

HEI research resulted in an average hydraulic conductivity value of 33 ft/day as shown in the Table 3. The maximum reported yield determined by HEI is 50 gym, the average is 27 gpm and the lowest yield was 10 gpm as shown in the Table 5 above. Yields from bedrock wells in the Flathead Lake perimeter have been reported as high as 2,000 gpm[xiii]. These values are consistent with yields from bedrock wells and although these are lower than yields from wells completed in the intermediate and alluvial aquifers, these values will be generally adequate for the anticipated THOA Subdivision domestic purposes.

4. Inventory:

The HEI inventory assessment includes the two inventory zones for the six (6) TNC wells; a 100-foot fixed radius well control zone and 1-mile inventory zone.

The HEI inventory of the 100 ft. well control zone (WCZ) includes the Preliminary Assessment of Aground Water Sources Under the Direct Influence of Surface Water using the MDEQ PWS-5 Preliminary Assessment Worksheet. Copies of the PWS-5 report for each well is provided in Appendix E. The second method of inventory included a map of the individual well system associated to the PWS-5 report showing the well location, the 100 ft. WCZ and any sealed components within the WCZ that will require a deviation from MDEQ rules. The individual WCZ maps are provided in Appendix E. If a deviation is required, the deviation is also included in the PWS-5 report. If there are sealed components in the WCZ, HEI will use increased well construction standards that will specify oversized overshot steel casing to a minimum of 25 ft. bgs with steel liner that has a neat-cement grouted into the collars and exterior bentonite grout seal as a man-made barrier. The required plans and specifications for the individual wells that require man-made barriers are included in the PWS-5 reports.

The method used by HEI to inventory the 1-mile radius was to query the Montana Digital Atlas (MDA). A map of the 1-mile radial distance from each well is provided in Appendix B. As can be seen from the Appendix E map, most of the inventory area is Flathead Lake. Therefore, the search was confined to the 1-mile radial distance on land associated to Finley Point. There are no developments on Bull Island. HEI queried the MDA for septic density, wastewater treatment facilities, parcel information and type, agricultural uses, animal feed operations, EPA regulated facilities, Class V injection wells, stormwater permit sites, for highways, roads, pipelines and public railroads and for general land use. The MDA map report results are provided in Appendix B. Table 5 below provides the summary of the inventory query.

Table 5. MDA Query Summary

Inventory Category	Results
Parcels Queried	Two-hundred and thirty-seven parcels (237) parcels were queried. Seventy-three (73) parcels are rural vacant, rural Tribal Exempt or rural Lake County exempt. The remaining one-hundred and sixty-four (164) parcels are rural improved properties and assumed to have a septic system on each parcel. The area queried land area is 570 acres, 0.89 sq.mi. so the septic density is approximately 3.48 septic systems per acre, 0.0054 septic systems per mi.^{2}
Septic Density	
Animal Feeding Operations	None Located
EPA Regulated Facilities	None Located
Class V Injection Wells	None Located
Wastewater Treatment Systems	Timbrshor WWTS Facility
MPDES Wastewater Discharges	None located
SWPPP Permits/Stormwater	None Located
Highways and County Road	No highways within the area queried. Montana Highway 35 is the nearest public highway but is well outside the inventory area. County roads within the inventory area are N. Finley Point Road, Finley Point Lane, Borchers Lane, West Side Drive, Mission View Road, Hilltop Drive, Peachtree Road, Smuggles Point Road, Camden Lane, Lanier Lane, Lindburg Lane, and Georgia Road, all residential access county roads.
Railroads or Pipelines	None Located
Land Use	Improved rural property, Vacant rural land, rural farmstead (eleven (11) cherry orchards, rural improved and rural vacant CSKT Tribal Land, rural condominiums associated to the THOA Subdivision, Mellett Point Park, Lake County park land,)
Cherry Orchards	Eleven (11)
Groundwater Wells	Fifty-six (56) well logs listed with GWIC. Assumes of the 164 rural developed properties, approximately 108 properties use water from Flathead Lake.

4.1 Susceptibility Assessment:

The wastewater treatment facility is the Timbrshor Public Wastewater Treatment system constructed by Billmayer & Hafferman Inc. (predecessor to HEI). Based on the PWS-6 Hazard Potential table, the septic density is low and is approximately 1.8 unit service connections per acre and will stay low at 2.8 unit service connections per acre at full build out. There are five (5) separate drainfield systems that were recently constructed or reconstructed and three (3) use Level II treatment.

Septic density in the inventory area hazard is moderate at 185 units per sq. mi. If all vacant rural properties are developed it will still be moderate at 260 septic systems per sq.mi. Given the lack of ability to subdivide rural vacant properties in Lake County, it is unlikely that this area will ever become high density. Nitrates and pathogens from septic systems are currently the only major contaminants of concern.

There are no landfills, no major Montana State clean up or EPA Superfund sites, or hazardous spill sites near the inventory region. There are no underground storage tank releases reported for the area. There are eleven (11) cherry orchards of unknown commercial or private ownership but all are either downgradient or located primarily on the east side of the Subdivision.
Cropped agricultural land (cherry orchards) is approximately 25 acres of the inventory area or approximately 4.3% of the land mass.

Because the subdivision water supply wells will be completed in a confined aquifer, the susceptibility to contamination for all hazards is considered low in accordance with the SWPP. Many of the layers overlying the production zone are dense bedrock that create a barrier to contamination. The major contaminants of concern are nitrates and pathogens associated with septic systems; however septic system density is moderate.

Susceptibility is also decreased by the proper completion of the subdivision water supply wells. As discussed in section 4. Inventory, above, if there are sealed components in the WCZ HEI will use increased well construction standards a specify oversized overshot steel casing to a minimum of 25 ft. bgs with steel liner that has a neat-cement grouted into the collars and exterior bentonite grout seal as a man-made barrier.

5. Limitations:

The susceptibility analysis is not based on a rigorous analysis of contaminant transport but relies on indicators of hazards and simple assessments of the effectiveness of barriers. Query of the Montana Digital Atlas (MDA) and the federal Natural Resources Conservation Service (NRCS) data bases provides data as accurate as any other land use or State and County record databases. The MDA and NRCS data bases use data that is not precise but given the rural nature of the inventory region it is unlikely that the MDA or NRCS left out important sources of contamination in the inventory.

The primary contaminant is wastewater effluent or raw sewage in the event of a pump truck spill. It is likely that wells developed in fractured bedrock will have wastewater contaminants that flow at the same speed as water. HEI has developed two barriers to contaminants, wells are developed as much as is possible upgradient from wastewater treatment systems and, as discussed in the PWS-5 reports, HEI will use increased well construction standards as a man-made barrier to potential contaminants. Given the nature of Flathead Lake front and lake view properties that are predominant on Finley Point, it is unlikely that septic density will ever exceed moderate density. Should land development patterns change on Finley Point or new information become available or this report will be periodically updated.

References:

[i] https://svc.mt.gov/doa/lgs#/a_pub State of Montana Local Government Services web site, Public Information, List of Entity Numbers

[ii] Water System Subdivision Approval and Water Rights Analysis at the Borchers of Finley Point Development for the Timbrshor Homeowners Associations, Billmayer & Hafferman Inc., Kurtis M. Hafferman P.E. April 20, 2015

[iii] Memorandum to Jim Cole, Timbrshor Association President cc: Kurt Hafferman, PE, Hafferman Engineering Diana Luke, Lake County Sanitarian, from Emily Gillespie, PE, January 9, 2018, Subject: Timbrshor Association (Borchers at Finley Point) Water System Compliance

[iv] Circular DEQ 3, Standards for Small Water Systems August 8, 2014 Edition, Chapter 1 Submission of Plans, 1.1 Design Report, 1.1.6. Sources of water supply

[v] https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml?src=bkmk US Census Bureau, 2018 Population Estimate

[vi] Ibid; 2102 Survey of Business Owners

[vii] http://www.polsonchamber.com/ Polson Chamber of Commerce, PO Box 667, 402 1st St E, Suite 102, Polson, Montana 59860

[viii] Montana Groundwater Assessment Atlas 2 (MGAA 2), Groundwater Resources of the Flathead Lake Area: Flathead, Lake, Sanders and Missoula Counties, Part A descriptive Overview and Water Quality Data, John LaFave, Larry Smith, and Thomas W. Patton, 2004, Montana Bureau of Mines and Geology, Pg. 48 Mission

[ix] Ibid, MGAA 2 pg. 9

[x] Ibid MGAA 2, Figure 8 pg. 10

[xi]Ibid, MGAA 2, Pg. 62, Flathead Lake Perimeter

[xii]

[xiii] Ibid, MGAA 2 pg. 55

[xiii] Bear, J., 1979. Hydraulics of Groundwater, McGraw-Hill, New York,

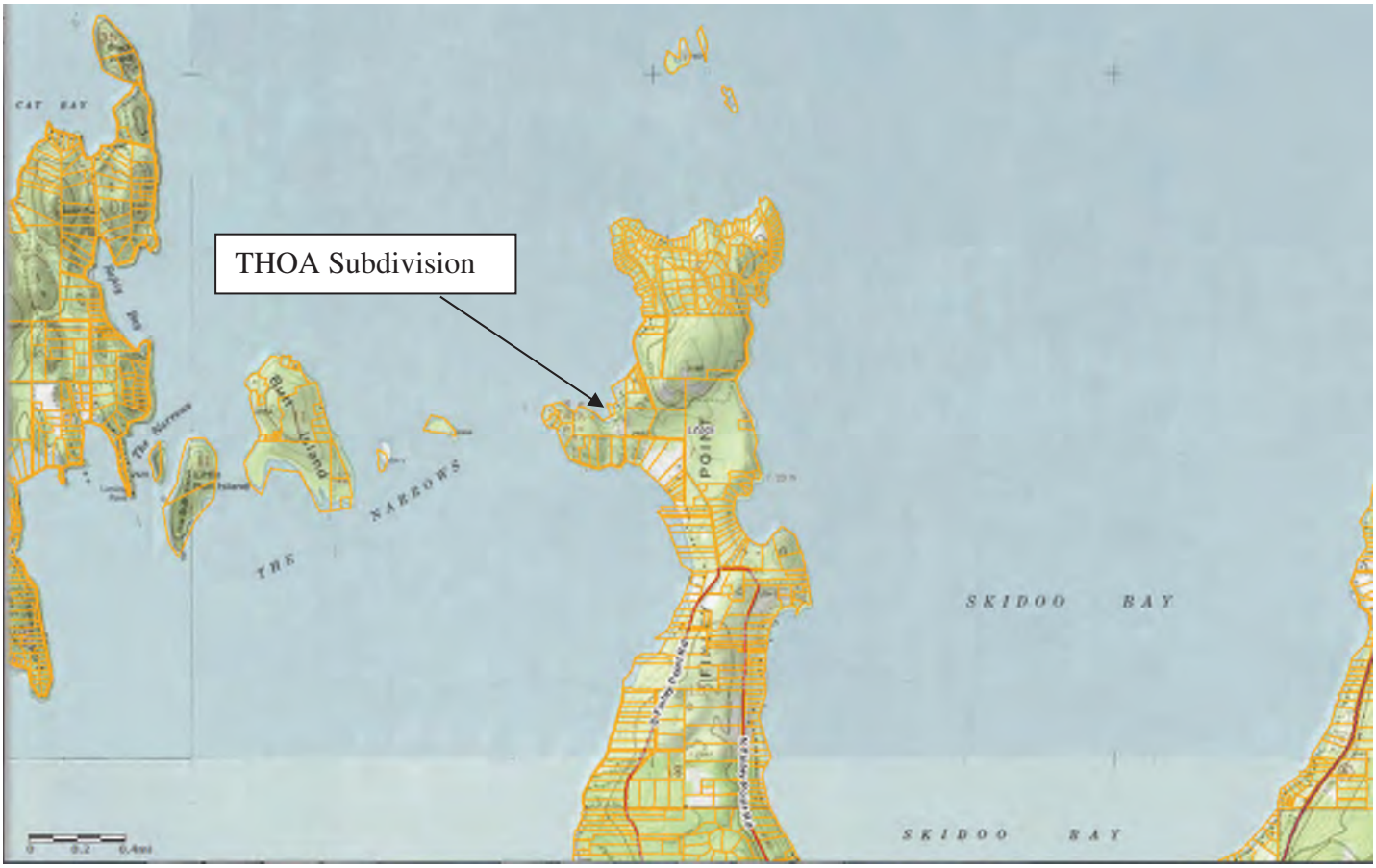
APPENDIX A

MAP OF SUBDIVISON LOCATION

MDEQ MEMORANDUM JANUARY 9, 2018

THOA BOARD SUBDIVISON WATER PLAN

MAP OF PROPOSED WELL LOCATIONS



Timbrshor HOA PWS – 6 Report

Project Location Map

DEQ
Montana Department of Environmental Quality

Memo

TO: Jim Cole, Timbrshor Association President (electronic only)

CC: Kurt Hafferman, PE, Hafferman Engineering (electronic only)

Diana Luke, Lake County Sanitarian (electronic only)

FROM: Emily Gillespie, PE

DATE: January 9, 2018

SUBJECT: **Timbrshor Association (Borchers at Finley Point)**
Water System Compliance

As we previously discussed, I extend my gratitude to the Timbrshor Association for your completion of the wastewater improvements on site.

Additionally, Tim Cole recently inquired about compliance for the water systems onsite. The intent of this memo is to outline the units which are currently in compliance with the original approval and those that are not. For the ones out of compliance, I have listed a few options for coming into compliance.

Units currently in compliance (17): Units 203, 204, 205, 210, 211, 306, 307, 308, 309, 311, 312, 314, 315, 316, 401, 402 and the lodge were outlined as having individual water systems that predated the 24-77-K902 Borchers at Finley Point Water Certificate of Subdivision Approval (dated July 22, 1977). Hence, these lots may remain served by individual water systems.

Units currently out of compliance (38 original, 30 current units): Units 201, 202*, 206, 209, 216, 217**, 219, 301, 302, 305, 317***, 318, 319, 320, 403/404, 406, 408, 409, 410, 411, 412, 413, 414, 416, 417, 418/419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430 were approved to be connected to a Community water supply system. All of these units, whether built or non-built, must seek an approvable solution to their water supply. Individual surface water intakes are not allowed by current DEQ Subdivision laws.

*Shaded units are no longer approved for construction per the "Restriction on Development Lots" agreed to by the Lake County Commissioners on April 16, 2015.

**Unit 217 currently has sanitary restrictions placed on it.

***Unit 317 was inadvertently left off 1977 Water COSA, but shows up in the 1977 Wastewater COSA

Options for compliance:

(1) The 1977 COSA pertaining to water could remain in place. However, since the approved plans for the Community Public Water Supply (PWS) system have expired, new water system plans (prepared by a Professional Engineer) would need to be submitted to DEQ for review and approval as a Community PWS system. This Community PWS system could be served by either groundwater wells or surface water, with appropriate treatment. By not changing the 1977 COSA, the PWS system plans do not require water rights verification. Therefore, compliance with water rights could be delayed until the Salish Kootenai Compact has been resolved.

   a. It is also possible that a Community PWS system designed to supply domestic water only could be served by two (or more) groundwater wells that pump less than 35 gpm and use less than 10 acre-feet volume per year. In that case, simple Notice of Completion water rights certificates could be submitted to DRNC Water Resources Division.

(2) The 1977 COSA could be re-written to allow for individual, shared or multi-user water systems that could be served by groundwater wells that pump less than 35 gpm and 10 acre-feet volume per year. In this scenario, simple Notice of Completion water rights certificates could be submitted to DRNC Water Resources Division for each well.

(3) The 1977 COSA could be re-written to allow for individual or shared cisterns to be filled by a water hauler (or potentially hauled by individual unit owners). No water rights are involved with this scenario.

If you have any questions, please contact me at 406-755-8979 or egillespie@mt.gov.

DRAFT WATER PLAN

As a follow up to the March 24, 2018 special member meeting, we are bringing to the members two plans to address the community's water issues: (1) a Phased Plan supported by a majority of the Board, and (2) an Immediate Plan proposed by Sue Roy. While the two plans have significant differences, particularly financial, they both rely upon the engineering plan that the Board asked HEI to develop (See, attached retainer letter dated May 24, 2018).

All members should have received by now a preliminary well plan from HEI. Please review that plan to see what well your unit has been assigned to, and the approximate costs that you may face if you decide to connect to the well system in the near term. If you have any issues with your well assignment or approximate costs (See, Planning Principles in retainer letter), please advise the Board by Monday, July 10, 2018, so that the Board can confer with HEI to see what, if any, changes may be warranted and/or possible. Also, please understand that HEI's cost estimates may vary significantly from your actual costs. So, please use the cost estimates as rough guides and not as firm price quotes.

Phased Plan

The significant elements of the Phased Plan are as follows:

(1) Since all units at Timbrshor have a 2% interest in common property, all 50 units would be provided with an opportunity to connect to one of the community's nine (9) well locations.

(2) Community well assignments would be permanent rights that would run with the land.

(3) The plan would allow the 13 existing non-compliant units to connect to a well when ordered to do so by the DEQ, and it would allow all other units to connect to a well when, and if, they choose to do so.

(4) Each unit would be responsible for all costs in connecting to its assigned well, and would share well development costs, on a pro rata basis, with the other units in its well group.

(5) In order to develop or connect to a well, members would need to subscribe to the Association's Water Well Agreement. Attached, for your review and comment, is a draft of that agreement. If you have any questions or comments, please let us know. The final form of this document will be prepared by the Association's attorney, Rob Erickson.

(6) This plan would not abridge the property rights of any owner. It would also be able to accommodate whatever members decide over both a near term and long term basis.

(7) Upon approval by the State and County, the plan would result in the lifting of the building moratorium.

(8) The only immediate cost to members would be an assessment of ($750) to each of the 47 developable sites to pay anticipated engineering and legal fees to develop and file a plan that is approved by both the State and County.

(9) The most significant drawback to this plan is that it may take years or never for some undeveloped lots to recover well development costs. That, however, may be a small price to pay to finally free up these lots for development

IMMEDIATE PLAN

The Immediate Plan proposed by Sue Roy is appended as Addendum A.

QUESTIONS AND ANSWERS

Question: Why are only 47 units paying the assessment?

Answer: Three of our 50 units are double lots (216/217, 403/404 and 418/419). Because only one house can be built on those lots, they are treated as a single lot for the purposes of dues and assessments.

Question: Does the Association have an obligation to implement a new water plan and amend the COSA?

Answer: Yes. Since the State and County belatedly linked fixing the water plan to lifting the moratorium, the Association does have a duty to amend the COSA as soon as reasonably possible so that the approximately $802,000 that has been spent on the new community septic system finally attains the objective of lifting the building moratorium.

Question: Will all 50 units participate?

Answer: All 50 units will be included in the new COSA, and 49 units will be given an assignment on a community well. 317 already has a well, and has advised that it does not need another ground water connection.

Question: Can the Association require owners to build wells and develop ground water systems?

Answer: No. Pursuant to Section 11 (f) of the Amended Declaration the Association would only have authority if a regulatory body required immediate compliance (which was the case with the septic project). In the present situation, no units are under an immediate compliance order: the State has advised that 13 units will need to comply in the next 3-5 years or sooner; undeveloped units don't need to comply until they decide to build a house which may be never; and 17 units have been exempted.

Question: Are the "Phased" and "Immediate" plans both voluntary?

Answer: Yes. While the Association does have an obligation to put in place a new water plan to lift the building moratorium, it is up to the members to comply with State water requirements either (1) when ordered to do so by the State, or (2) when they decide to develop their lot, or (3) when they choose to do so.

Question: What happens if a member ignores a State compliance order and refuses to move to the well system?

Answer. The burden and cost of defending against any DEQ enforcement order would be the sole responsibility of the member.

Question: Under the Phased Plan how would well assignments be made permanent?

Answer: Upon approval of the plan and acceptance by the State and County, the Water Well Agreement would be filed with Lake County and it would confer upon all participating units a perpetual right to use their assigned community well to access ground water, and such rights would convey to the unit's successors and assigns. Please note that the Water Well Agreement allows members to connect to their assigned well after it has been built upon the payment of a hook-up fee that would be equivalent to that unit's pro rata share of construction and maintenance costs.

Question: Will all final decisions on this project be made by the Board?

Answer: Yes. While the Board will consider the views and preferences of the members, per long-standing legal advice, the authority to make decisions for the Association rests exclusively with the Board.

Question: Are there circumstances in which further amendments to the water plan and COSA may be necessary?

Answer: Yes. If, for example, the Association adopted the Immediate Plan and members opted out due to cost concerns, in order for those members to utilize a

well system at some time in the future, then there would need to be a repeat of this very expensive COSA amendment process.

Question: What sorts of issues should members be concerned about in reviewing HEI's design and well assignments?

Answer: Issues that you might want to consider include: Is your assigned well in "reasonable proximity" to your unit? If you are one of the 13 existing non-compliant units, are you assigned to a well that has a sufficient number of other members in the same situation that will enable a reasonable sharing of well costs? If you have an undeveloped lot and plan to connect to the well system relatively soon, is there a nearby well with sufficient number of members who also plan to connect relatively soon that would enable a more reasonable sharing of well costs? Might any of the well locations or proposed water lines interfere with your property rights?

Question: In the septic plan units on drain fields C and D paid substantially less than the other owners. Is anything similar being contemplated with the water plan?

Answer. No. That was a one-time event that was attributable to the fact that members on those drain fields received credits for "value in the ground" for septic hardware. No similar situation exists here. Each member is expected to pay its pro rata share of actual well construction expenses, and all expenses to connect their water lines to their assigned well.

WATER WELL AGREEMENT
(DRAFT)

This Water Well Agreement (hereinafter "Agreement") is entered into by and between the Timbrshor Homeowners Association (hereinafter "Timbrshor" or "Association"), and the various members of Timbrshor ("Members") who elect to become part of its new system of water wells.

WITNESSETH

WHEREAS, on (insert date) Timbrshor approved a new water well plan ("Well Plan") whereby all Members were afforded an opportunity to connect their unit ("Unit") to one of the (nine) community wells located on common property;

WHEREAS, the parties wish to define the terms under which Members may build and operate a ground water well system on their Assigned Well (as defined below) to serve their respective Units; and

NOW, THEREFORE, in consideration of the mutual promises herein set forth and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and subject to the conditions and upon the terms hereof, the parties hereto hereby agree as follows:

1. WELLS- Pursuant to the Well Plan, 49 Units (three of which are double lots) have been assigned to one of the (nine) community wells. Each of the wells is identified on Attachment A appended hereto, and the various well assignments are set forth on Attachment B appended hereto (all Units assigned to a particular well are referred to as a "Well Group" or "Well System", and the well assigned to that group is referred to as the "Assigned Well").

2. EXCLUSIVE GROUND WATER SOURCE- Well assignments specified in Paragraph 1 are the exclusive ground water connections for each of the Units. Pursuant to the terms and conditions herein, each Unit shall have a right to build and operate its Assigned Well to provide ground water to its Unit.

3. PURPOSE- It is the responsibility of each Well Group to construct, at their cost and expense, a multi-family water system, including a groundwater well, well casing, pump and controls at the locations for each well specified on Attachment A. The cost of constructing, maintaining and operating such multi-family well water system shall be paid for by each Well Group on a pro rata basis; provided, however, if any Member opts not to join its Well Group until after the applicable well system has been constructed (which could be years or never), then such Member shall be responsible for paying a hook-up

fee equivalent to actual pro rata construction and maintenance costs from inception of the system through the time of joining, plus interest at a rate of (4%) per annum. Such payments shall be distributed, on a pro rata basis, to the Voting Member(s) (as defined below) of the Well Group who paid to construct the applicable "Well System". It is specifically recognized that one Unit may construct the applicable "Well System" in anticipation that other Units may join at a later date or never.

4. WATER LINES- Each Unit shall pay all costs, including water pipes, tanks and meters, to connect its Unit to its Assigned Well.

5. GOVERNANCE- Each Unit that has paid its pro rata share of costs shall be a full voting member of its Well Group ("Voting Member") and entitled to connect to its Assigned Well. At each annual meeting of the Association, Voting Members of each Well Group shall elect a manager whose responsibilities shall include but not be limited to: collecting funds, paying all costs, overseeing maintenance of its Assigned Well, recommending assessments; keeping a record of all actual construction and maintenance costs; reporting such costs to the Association; and otherwise ensuring that the Well Group is in compliance with all legal, regulatory and Association requirements; provided, however, that it is understood and agreed that any such costs and expenses shall not apply to a non-Voting Member.

6. HOA OVERSIGHT- All construction plans for Well Groups and unit water line connections are subject to the prior review and approval of the Timbrshor Board (hereinafter "THOA Board") or its designee. The purpose of such review is to ensure that the applicable Assigned Well and associated water lines are placed at the correct locations, and that they will not interfere with the property rights of any other member.

7. CONTINUING RIGHTS and RECORDATION- This Agreement shall run with the land and be binding upon and inure to the benefits of the heirs, successors and assigns of all the parties hereto, including non-Voting Members. Once the Well Plan and associated COSA are approved by the applicable regulatory bodies, this Agreement shall be filed with Lake County.

8. COMPLIANCE- Each Well Group shall have a continuing obligation to comply with all applicable governmental regulations and any associated rules and regulations adopted by the Association.

9. EASEMENT- Each Well Group shall have an easement across the property of its Voting Members to enable reasonable access for construction, maintenance, operation and repair of the applicable Well System.

10. BREACH- In the event of a breach of this Agreement or significant failure of any Well System, in addition to all other legal remedies, the Association shall

have the right to remedy and repair (collectively "Repair) any situation that poses an imminent risk to a member, member property or common property, and to require all Voting Members of the applicable Well Group to reimburse the Association for the cost of any such Repair.

11. SEVERABILITY- If any provision of this Agreement is found to be invalid or unenforceable, the remainder of this Agreement shall remain in full force and effect.

12. INDEMNIFICATION- The Voting Members of each Well Group shall indemnify and reimburse the Association for any costs and expenses that the Association may incur due to the willful misconduct or gross negligence pertaining to any matter associated with such Well Group, including, but not limited to, the construction of the Well System and water lines, the operation and maintenance of such system and compliance with all legal, regulatory and Association requirements.

13. GOVERNING LAW- This Agreement shall be governed by and construed in accordance with the laws of the State of Montana.

14. COUNTERPARTS- This Agreement may be executed over time in one or more counterparts, each of which will be deemed an original instrument, but all of which together shall constitute one and the same agreement.

15. ENTIRE AGREEMENT- This Agreement and associated documents specified herein constitutes the entire agreement between the parties and cannot be amended in any respect except by a like written instrument that is duly signed and accepted by the parties.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed as of the dates set forth below.

TIMBRSHOR HOMEOWNERS ASSOCIATION DATES

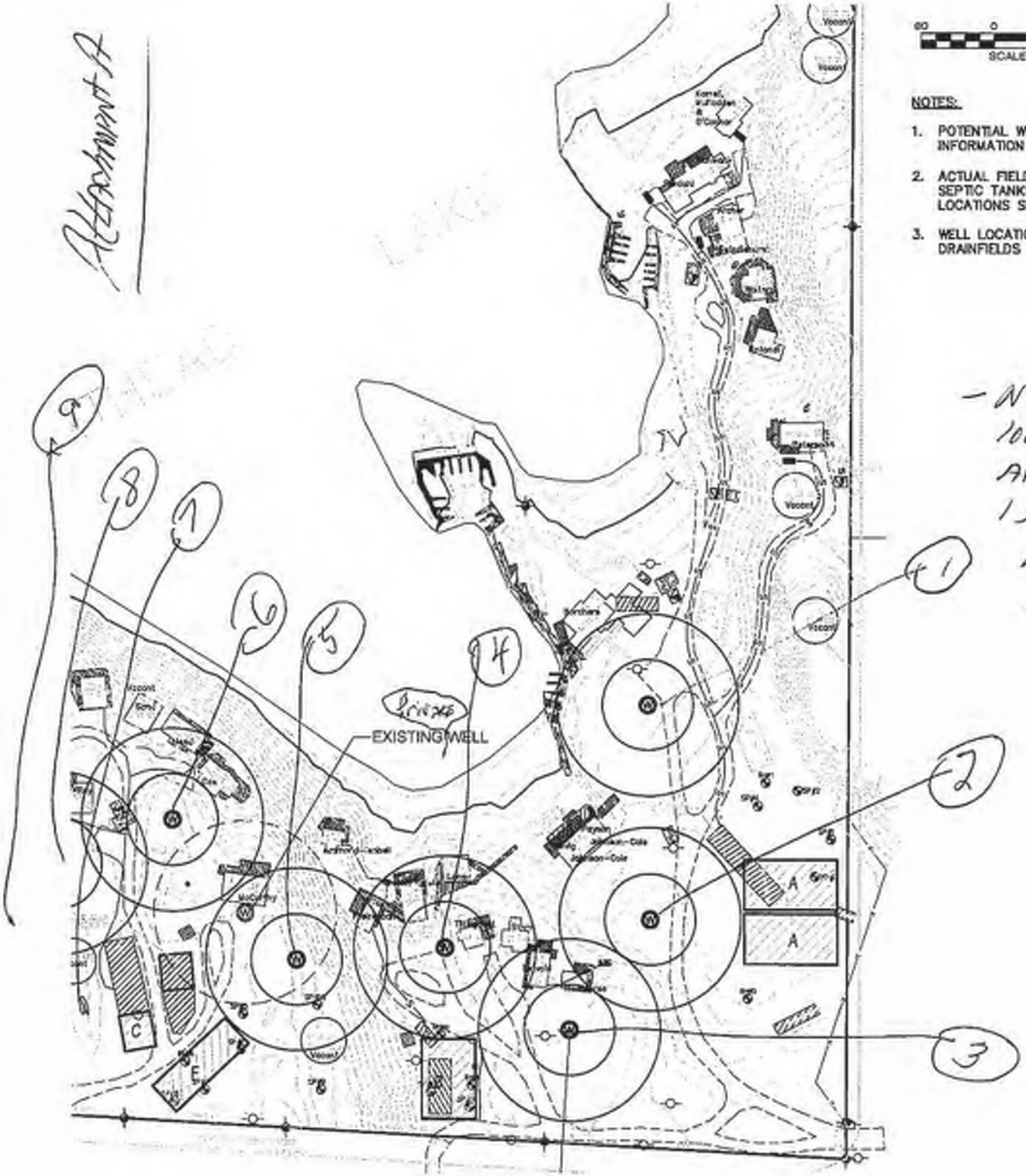
BY:_____ _____

Its Chairman

TIMBRSHOR UNIT OWNERS

(Insert signature lines for 46 units)

Attachment A



NOTE - NPW better well map

NOTES:

1. POTENTIAL WELL LOCATIONS ARE BASED ON EXISTING SURVEY INFORMATION PROVIDED BY TERRITORIAL.
2. ACTUAL FIELD LOCATION OF SEWER LINES AND/OR ADDITIONAL SEPTIC TANKS NOT SHOWN MAY AFFECT THE SUITABILITY OF THE LOCATIONS SHOWN.
3. WELL LOCATIONS ARE BASED ON A 100 FT. SETBACK FROM DRAINFIELDS AND 50 FT. SETBACK FROM SEALED COMPONENTS.

- Nine community well locations are numbered and one private well is identified. All are included in revised COSA.

WELL GROUPS
ATTACHMENT B
DRAFT

WELL GROUP 1
UNITS 1-6

WELL GROUP 2
UNITS 7-11

WELL GROUP 3
UNITS 12-17

WELL GROUP 4
UNITS 18-22

WELL GROUP 5
Units 23-29

WELL GROUP 6
Units 30-35

WELL GROUP 7
Units 36-40

Well Group 8
Units 41-44

Well Group 9
Units 45-46

May 24, 2018

James Cole, Chairman
Timbrshor Homeowners Association
30353 Borchers Lane, Unit 308/309
Polson, MT 59860

RE: Timbrshor Groundwater Well System design, COSA Rewrite

Dear Jim,

Per the THOA Board request, Hafferman Engineering Inc (HEI) is providing the Scope of Work, Estimated Fee and Fee Schedule for obtaining State of Montana Department of Environmental Quality (MDEQ) Condition of Subdivision Approval (COSA) compliance by designing and obtaining approval of an appropriate public water supply (PWS) groundwater well system for the forty-seven (47) units associated to the Timbrshor Subdivision. The rewritten COSA will need to address the water supply for thirty (30) existing and seventeen (17) future units.

HEI will provide a ground water supply design that is in accord with the attached Planning Principles, hereby incorporated by reference. The design will apply to all 47 developable sites and shall consist of a minimum of six (6) and a maximum of nine (9) community wells. It is recognized that unit 317 has an existing well to be included in the plan and addressed in the re-write of the Conditions of Subdivision Approval (COSA).

HEI will work with the THOA Board to locate wells to provide a central well location to accommodate between two (2) and nine (9) units per well so that they are considered as a multi-user water supply well. The design for each well will include public water supply (PWS) well construction standards, a central above ground pump control building or a below ground pump control vault, a series of pressure regulating tanks and pump controls and then a central pipeline manifold to a common location near a common set of units. Individual units will be required, or allowed, to connect to the PWS manifold at a specific location and with specified connection methods. The completed system is intended to provide a safe, reliable domestic drinking water supply for a total of forty-seven (47) units that is designed and constructed to meet State of Montana, Department of Environmental Quality Circular DEQ 3 Standards for Small Water Systems in Montana. The water supply system is planned or intended to be used for domestic drinking water within an assigned unit and is specifically not intended to be used for irrigation.

HEI will submit a rewrite of the Timbrshor COSA to provide the details of each unit's water supply connection location, the description of the well(s) associated to each unit and reference the approved deviations and final DEQ approved plans. HEI will obtain the final COSA, file the approved COSA at the Lake County Clerk and Recorders office and petition and receive the Lake County Commissioners removal of the Borchers of Finley Point Subdivision building moratorium.

HEI will provide the THOA Board with the following information and explanation as near to the beginning of the project as is possible:

1. The number of wells that need a waiver from the DEQ;
2. whether it would be prudent to limit the demand on each well to some number less than nine (9) units;

3. Whether it would be prudent to hold one developable well in reserve for unknown future needs; and,
4. The most realistic time frame that HEI believes the DEQ will allow the 13 existing non-compliant units to remain non-compliant. With respect to the water rights for 39 units that were held for the benefit of THOA, HEI will complete the process of putting those rights into THOA's name within the next 60 days.

The THOA Board also requests that HEI consider and incorporate the following Planning Principles in this proposal:

Principle #1: Overall design for the water plan is to take into account that while not all units are impacted equally by the current water situation as outlined by the State, the community needs a comprehensive plan that ensures all 47 units have the option for connecting to a state-approved groundwater water source which is to be located within a reasonable proximity to their unit.

Principle #2: Consideration to be made in the design for the thirteen (13) existing developed units that have been classified by the State as COSA non-compliant and, due to the State mandated time constraints, will be required to transfer to a State-approved groundwater source within a three to five-year time frame. Consideration being sought is to have alternatives by which such units might be co-located or positioned to construct and connect to the new groundwater system sooner than other units and a phased construction proposal is to be developed which takes into consideration the State-mandated time constraints faced by the thirteen (13) non-COSA compliant units.

Principle #3: In those cases where unit owners have private, independent State based water rights, the water plan needs to document and recognize such to ensure nothing is added to nor taken away from those rights.

Principle #4: Given the community will have up to nine (9) groundwater well locations, THOA is seeking that maximum advantage be made of the various locations available in the design and to ensure assignments are made in such a way as to balance demand, location, and sustainability throughout the community.

Principle #5: It is anticipated that the cost of developing and maintaining each well in accordance with the State requirements (to be noted in the water plan) will be the responsibility of each groundwater well-water group although the community could adopt a different approach. Additionally, the plan needs to address that each unit owner would be responsible for the cost of installing and connecting an approved water line from his/her unit to the assigned water system connection location.

Principle #6: The water plan to provide an acceptable solution for the State and community which allows for the use of surface water for the purposes of irrigation.

Principle #7: The plan and subsequent COSA shall be designed in such a fashion as to require minimal reporting to the State and provide a simplified, low cost operation and maintenance plan for the present and in the future as each member of the community connects units to the approved groundwater well sites.

Principle #8: The plan will include the filing of, or instructions on the filing of, State based water rights for each of the groundwater wells.

The HEI outline of the proposed Scope of Work for this project includes:

Scope of Work THOA Well Locations and PWS Site Analysis

I. Define the number and final location of all the wells that will be developed to serve the THOA.
   a. Well locations will consider both State regulation and convenience of location for each well.
   b. It is assumed that there will need to be a minimum of six (6) and a maximum of nine (9) community well locations.
   c. Specified well locations with assigned units and the approximate costs for each unit to be reviewed and approved by the THOA Board
   d. Specified well locations with assigned units and the approximate costs for each unit shall be completed and ready for THOA's Annual Meeting on June 30, 2018
   e. For the June 30, 2018, THOA Annual Meeting, HEI will provide an explanation for any of the nine (9) community well sites that were not included in the plan
   f. THOA members will be given 30 days to consider the well assignments and approximate costs; within 45 days, the THOA Board shall advise HEI of any changes to the assignments, and the THOA Board may extend such date if more time is needed to fully consider member issues
   g. Following the THOA Board's approval of the plan and/or any revisions thereto, HEI will proceed with the remaining work described herein
II. Complete a PWS 5 report for each well.
   a. The PWS 5 report will address the potential for each well to have a surface water connection. Data supplied with that report includes static water levels of neighboring wells, well logs and the suspected water bearing layer.
   b. HEI will complete the PWS 5 numerical scoring to determine if a well is immediately or directly connected to surface water. HEI does not anticipate having wells that are connected to surface water and more likely than not will pass the PWS 5 analysis.
III. Complete a PWS 6 report for each well.
   a. The PWS 6 report will include an analysis of the susceptibility of the well to nearby contamination sources. HEI will analyze all potential contamination sources in a radius up to 1-mile around each well and describe any potential contamination sources.
      i. Potential contamination sources include other drainfield and septic systems, potential underground storage tanks, above ground storage tanks, and items as small as known trash containers or collection sites.
      ii. It is more likely than not that your own septic tanks and discharge lines will place the greatest potential threat to the wells that needs to be addressed.
IV. Obtain PWS Deviations for Each Well
   a. Separation distances from PWS water supply wells and waste water system components are required to be a minimum of 100 ft. Septic tanks and discharge lines less than 100 ft. will require a deviation from DEQ regulation before the PWS 6 can be submitted.
      i. Susceptibility deviations can be addressed through well construction standards that use double casings at the surface with the interior well casing sealed in either concrete or concrete and bentonite grout mix around the wells to a depth of 20 feet. In almost all cases, MDEQ deviation committee will impose extra sanitary restrictions on a PWS well but typically will approve the PWS 6.
      ii. Deviations will need to be obtained early in the process to be sure any conditions of approval are included in the final design.
V. Upon approval of the deviations, HEI will submit the PWS 5 and PWS 6 for DEQ approval
VI. Upon approval of the PWS 6, HEI will start final design for the pipeline locations and well standards
   a. The final plans will include but are not limited to,

i. The pipeline from the well(s) to the pump control house at each selected location,
ii. The location of future waterlines and details for all the pump controls, pressure tanks and plumbing.
iii. Develop phasing plans for DEQ approval

b. Finalized plans are submitted to MDEQ for approval and will result in permission to drill the well(s) and construct the water system.

VII. Develop a final construction cost estimate for the approved wells and pipeline system
a. Include a cost for each phasing plan to allow incremental development of new units and transition of existing non-COSA compliant units from surface water to the groundwater well system
b. HEI will provide THOA with sample well agreements that would allow for the development of a well by a single user and the recovery of actual costs when other assigned users join at a later date, it being understood that THOA shall be responsible for customizing such documents to meet its requirements
c. HEI will explain in detail any necessary actions necessary to secure water rights for each well when developed and HEI shall provide all necessary forms related thereto.

Scope of Work COSA Rewrite

I. Once the water system plans have been approved by the DEQ, HEI will complete a rewrite of the COSA to address the approved water supply(s) and the unit locations associated to each well(s).
a. Rewrite COSA to describe the change to a groundwater well system,
b. Describe how each well is or will be constructed, specify the flow rate and number of units connected to a well and the location of each unit connection, and any other health regulations
c. The COSA shall also reflect that eight (8) units have private independent rights to extract lake or ground water
d. Provide well sharing agreements to the State of Montana with COSA

II. Submit COSA for review and approval
a. Record final COSA at the Lake County Clerk and Recorder.

III. Petition Lake County to remove the building moratorium.

The DEQ Public Water Supply Division has informed their DEQ enforcement division that the THOA COSA is non-compliant. It's difficult to decide how the enforcement division will react, it is possible they will issue an order to require compliance, but it is unknown how the order will be enforced. Time is of the essence in preventing DEQ compliance enforcement. HEI discussion and coordination with the DEQ enforcement division is not anticipated in the Scope of Work. It is assumed that the THOA Board or their legal representative will reply to and coordinate with any possible DEQ enforcement. HEI can provide consultation or advice on compliance as requested. HEI will assure that they communicate with DEQ at all phases of the project with every intent to prevent, delay or avoid DEQ enforcement.

HEI assumes that all existing units will agree to become COSA complaint within the DEQ required time line. The scope of work does not anticipate assisting the THOA Board with DEQ compliance post COSA rewrite.

Fee Estimate THOA Well Locations and PWS Site Analysis

Our fee to perform the Scope of Work for the Well Locations and PWS Site Analysis is not to exceed $19,950.

This proposal assumes the THOA Board will assign at least one-person from the THOA to provide data, maps or information as requested, assist HEI by reviewing and gaining Board approval of the well locations, other site logistics, DEQ application materials and any of the other areas stated in the Scope of Work above. HEI will deliver to the owner a completed PWS 5 and PWS 6 report for Board approval prior to DEQ submittal which includes but is not limited to review and approval of the application, description of the existing water diversion works, and show that the planned pipeline and distribution system is sufficient to meet the domestic water use and irrigation requirements of the project suitable to meet the DEQ criteria. The foregoing plans will be sufficiently clear to enable THOA to ensure that wells and water lines are constructed at specific locations.

The project will be completed based only on the time required with time billed on an hourly basis. THOA will be invoiced at our standard rates shown on the attached Schedule A for a Principal Engineer or Senior Engineering Technician. HEI will not exceed the quoted fee without prior written approval from THOA.

Fee Estimate THOA COSA Rewrite and Well and Cost Sharing Agreements

Our fee to perform the Scope of Work for the THOA COSA Rewrite is not to exceed $10,250. The project will be completed based only on the time required with time billed on an hourly basis.

This proposal assumes the owner will assign at least one-person from the THOA to provide data, maps or information as requested and assist HEI by reviewing the COSA prior to submittal of the final document to review agencies. This proposal also assumes that the THOA will provide one person to assist HEI in meetings with Lake County required to remove the building moratorium.

The project will be completed based only on the time required with time billed on an hourly basis. THOA will be invoiced at our standard rates shown on the attached Schedule A for a Principal Engineer or Senior Engineering Technician. HEI will not exceed the quoted fee without prior written approval from THOA.

Conditions of Agreement and Compensation

You will be invoiced at our standard rates shown on the attached Schedule A for a Principal Engineer, Senior Engineering Technician or clerical staff. HEI will invoice once each 30-day period. Invoices will provide sufficient detail to clarify the professional fees and associated charges.

Any changes in the Scope of Work resulting from changes in the owner's request or changes in Governmental Review Standards will be promptly called to your attention. Should the Scope of Work require modification, fees will be re-negotiated prior to initiating any changes. In addition to quoted fees, any review and permit fees advanced by Hafferman Engineering, Inc. (HEI) to any County or State agencies paid by HEI are to be reimbursed. State of Montana DEQ review fees are anticipated to be $800 for the for the deviations and the PWS 5 and PWS 6 reports. The COSA review fees are anticipated to be near to $1,500. Parties agree that HEI may invoice for review fee reimbursements on the day, or any time after, they are incurred.

Payment default for more than 30 days from date on the invoice will be a breach of this agreement and may result in termination of services. Payment on invoices due that are past due for 30 days or more shall be assessed 1-1/2% interest per month they are delinquent. In the event suit or collection action in instituted to collect any past due fees invoiced under this agreement, you concur each party will be responsible for any attorney's fees and additional costs the court may determine to be reasonable. In the event the project is suspended, terminated or delayed by the client, HEI shall be entitled to seven (7) days advance written notice and shall be compensated for

all professional services and reimbursable expenses up to the date of termination, suspension or delay. Upon termination and payment to HEI, all plans and work papers shall be promptly forwarded to THOA. The parties agree that the venue and jurisdiction for any action arising under this agreement is Flathead County, Montana and that the laws of the State of Montana govern any proceedings.

HEI carries and shall continue to carry for the term of this agreement professional errors and omissions insurance, professional liability insurance, property damage insurance and automobile insurance. Professional services provided under this agreement shall be performed in a manner consistent with other professionals practicing in the same field and same geographical area as HEI.

All data and plans developed hereunder are for the benefit of THOA and shall not be disclosed to any person or entity excepting only the governmental agencies required to approve the water plan and COSA and to lift the building moratorium and other parties approved in advance by the THOA Board.

HEI will not assign this agreement or subcontract portions of the agreement without written consent.

This scope of work and fee estimate are the entire and only agreement between the parties. No change, alteration or modification of the agreement can be made unless made in writing and signed by both parties. HEI failure to require strict compliance with this agreement shall not be construed as a waiver of any responsibilities or provisions of the agreement and HEI may at any time require strict compliance to the agreement, regardless of previous failure to do so.

The THOA agrees to defend, indemnify and hold HEI harmless against any claim, obligation or liability arising from or related to the performance of services under this agreement resulting from a THOA negligent act, an error or an omission. HEI agrees to defend, indemnify, and hold harmless the THOA from the negligent act, error or omission of HEI.

Project Time Line and Compensation Schedule

Written Time Line Description
Upon execution of the agreement, HEI will begin work immediately. HEI require 30 days to develop the specified well locations and the first draft of the PWS 5 and PWS 6 reports for each well along with the units assigned to each well and the approximate costs as specified in the above scope of work at Section I. Upon THOA Board approval pursuant to the scope of work at Section I, HEI will develop and make a submittal to the State for any deviations from regulations for well separations distance requirements.

State review of the deviations will take up to 30 days from the date of submittal and any requirements or conditions that are made from the deviation committee will be incorporated into the final PWS 5 and PWS 6 reports and the final design. HEI will require 15 days to incorporate the final deviation approvals and conditions in the PWS 6 report and the final PWS 5 and PWS 6 reports will be submitted to the DEQ. A correct and complete determination of the PWS 5 and PWS 6 reports is likely to take 90 days from the date of submittal.

Once the final approval of the PWS 5 and PWS 6 reports is obtained, HEI will begin the final design of the wells, pump control structures and the pipeline and distribution system. HEI anticipates the final design following PWS 5 and PWS 6 approval will take 30 days. HEI anticipates the THOA Board will need two weeks to approve the final plans and, following any modifications, the final plan submittal will be made to DEQ approximately two weeks after THOA Board approval. A correct

Hafferman Engineering Inc.

James Cole, Chairman
Timbrshor Homeowners Association
30353 Borchers Lane, Unit 308/309
Polson, MT 59860

RE: Timbrshor Groundwater Well System design, COSA Rewrite

Owners Concurrence and Authorization to Proceed:

Signature of Owner's Representative

5/24/18
Date

and complete determination of the final THOA Water System Plans is likely to take 90 days from the date of submittal.

Upon receipt of the final plan approval from DEQ HEI will begin the rewrite of the COSA to reflect the new PWS ground water well system. HEI anticipates the COSA rewrite will take two weeks to complete. HEI anticipates DEQ will take 30 days to review and approve the rewritten COSA.

Upon final approval of the rewritten COSA, HEI will work with the THOA Board and/or legal representative to file the COSA at the Lake County Clerk and Recorder. Upon final filing, HEI will meet with the Lake County Commissioners to provide a petition to have the THOA Subdivision Building Moratorium lifted. HEI anticipates that it will require 30 days from final COSA approval to Lake County Commissioners approval of the petition.

Milestones and HEI invoice at the time step:

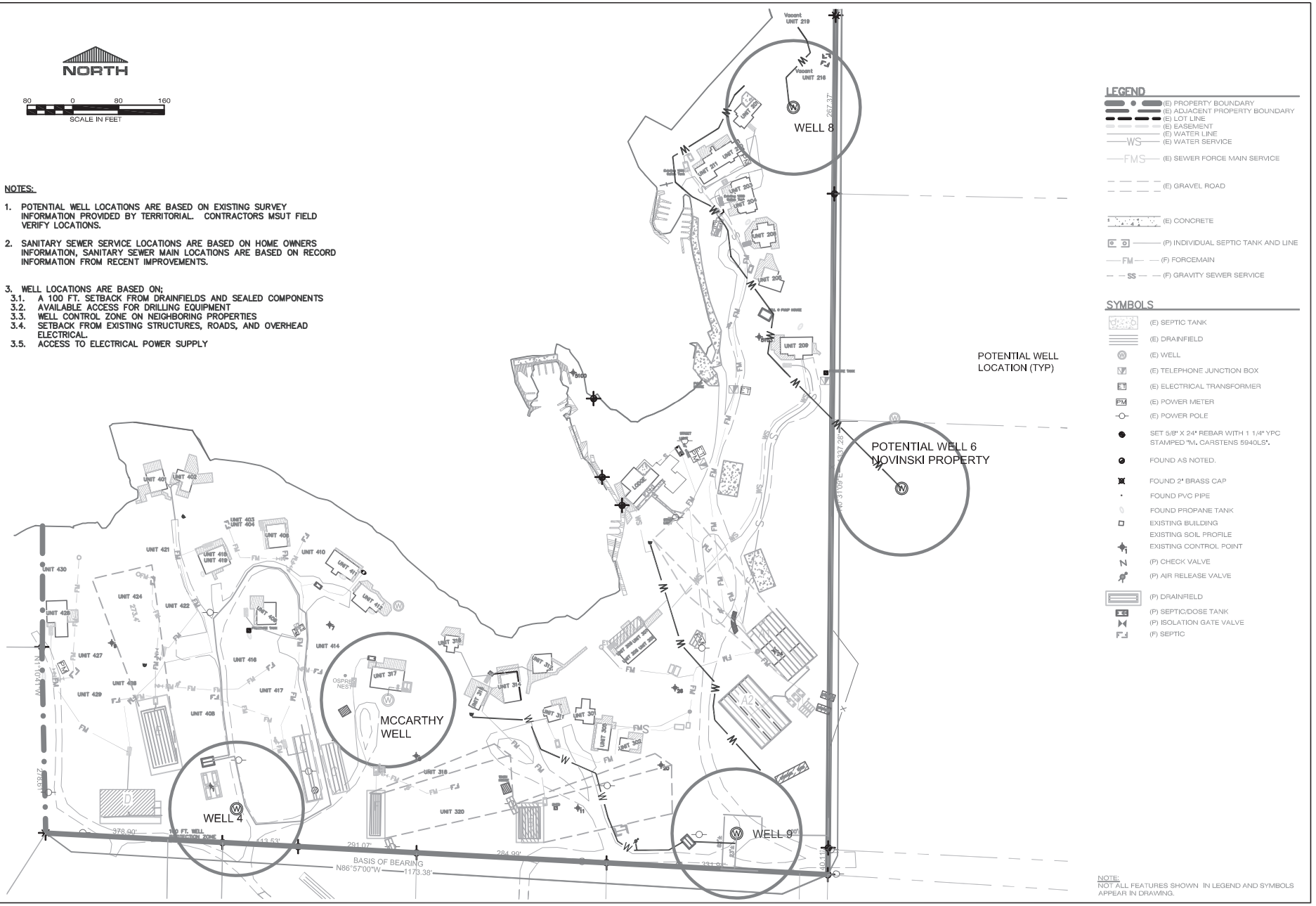
Day 1 to Day30- HEI Well Locations, First Draft PWS 5 and PWS 6	Invoice at day 30 $4500
Day30 to Day 44- THOA Board Review and Approval of Well Location and PWS 5&6 reports	
Day 44 to Day 74- DEQ PWS 5 and PWS 6 deviation submittal	Invoice at day 74 $4500
Day 74 to Day 104 DEQ Deviation Committee Review Approval	
Day 104 to Day 119 Final PWS 5 and PWS 6 with Deviations Submittal	Invoice at Day 119 $4500
Day 119 to Day 209 DEQ PWS 5 and PWS 6 Review and Approval	
Day 209 to Day 239 HEI Final Design	Invoice at Day 239 $6450
Day 239 to Day 329 DEQ plan review and Approval	
Day 329 to 343 COSA rewrite and submittal	Invoice at Day 342 $4500
Day 343 to Day 373 COSA Approval at DEQ	
Day 373 to Day 400 Lift THOA Building Moratorium	Invoice at Day 400 $5350

Should you agree with the Scope of Work and Fee Estimate, please indicate by way of your signature below and return one copy to us. This offering expires in 30 days. HEI is prepared to start this project immediately after receiving the signed proposal. Any delays will extend the project completion dates accordingly.

Please feel free to contact me at the Email, address or telephone numbers shown below. Thank you again for the opportunity to provide this proposal.

Respectfully,
Hafferman Engineering Inc.

Kurt Hafferman, P.E., President



NOTES:

1. POTENTIAL WELL LOCATIONS ARE BASED ON EXISTING SURVEY INFORMATION PROVIDED BY TERRITORIAL. CONTRACTORS MSUT FIELD VERIFY LOCATIONS.
2. SANITARY SEWER SERVICE LOCATIONS ARE BASED ON HOME OWNERS INFORMATION, SANITARY SEWER MAIN LOCATIONS ARE BASED ON RECORD INFORMATION FROM RECENT IMPROVEMENTS.
3. WELL LOCATIONS ARE BASED ON;
   - 3.1. A 100 FT. SETBACK FROM DRAINFIELDS AND SEALED COMPONENTS
   - 3.2. AVAILABLE ACCESS FOR DRILLING EQUIPMENT
   - 3.3. WELL CONTROL ZONE ON NEIGHBORING PROPERTIES
   - 3.4. SETBACK FROM EXISTING STRUCTURES, ROADS, AND OVERHEAD ELECTRICAL.
   - 3.5. ACCESS TO ELECTRICAL POWER SUPPLY

LEGEND

- (E) PROPERTY BOUNDARY
- (E) ADJACENT PROPERTY BOUNDARY
- (E) LOT LINE
- (E) EASEMENT
- (E) WATER LINE
- WS — (E) WATER SERVICE
- FMS — (E) SEWER FORCE MAIN SERVICE
- (E) GRAVEL ROAD
- (E) CONCRETE
- (P) INDIVIDUAL SEPTIC TANK AND LINE
- FM — (F) FORCEMAIN
- SS — (F) GRAVITY SEWER SERVICE

SYMBOLS

- (E) SEPTIC TANK
- (E) DRAINFIELD
- (E) WELL
- (E) TELEPHONE JUNCTION BOX
- (E) ELECTRICAL TRANSFORMER
- PM (E) POWER METER
- (E) POWER POLE
- SET 5/8" X 24" REBAR WITH 1 1/4" YPC STAMPED "M. CARSTENS 5940LS".
- FOUND AS NOTED.
- FOUND 2" BRASS CAP
- FOUND PVC PIPE
- FOUND PROPANE TANK
- EXISTING BUILDING
- EXISTING SOIL PROFILE
- EXISTING CONTROL POINT
- (P) CHECK VALVE
- (P) AIR RELEASE VALVE
- (P) DRAINFIELD
- (P) SEPTIC/DOSE TANK
- (P) ISOLATION GATE VALVE
- (F) SEPTIC

NOTE:
NOT ALL FEATURES SHOWN IN LEGEND AND SYMBOLS APPEAR IN DRAWING.

BY:	DESCRIPTION:	DATE:
	REVISIONS	

DRAWN BY: NJF APPROVED BY: KMF

TIMBRSHOR PWS
WATER SYSTEM IMPROVEMENTS
FOR
TIMBRSHOR HOMEOWNERS ASSOCIATION

SECTION 7, T 23N, R 19W, P.M., M., LAKE COUNTY, MONTANA

HAFFERMAN ENGINEERING, INC.
35 SOUTH MAIN, SUITE B
KALISPELL, MT. 59901
PHONE: (406) 257-8708
FAX: (406) 257-8710
EMAIL: info@hellmyer.com
ONLINE: http://www.hellmyer.com

DRAWING TITLE:
THOA PWS WELL LOCATIONS

SCALE: AS SHOWN

DATE: OCTOBER 2019 | PROJECT NO: T.58.2

DRAWING NUMBER:
1 OF 2

PWS 5_0-ALL WELS-REPORT VERSION.DWG

APPENDIX B

MONTANA DIGITAL ATLAS LAND USE CHARACTERISTICS MAP AND REPORT

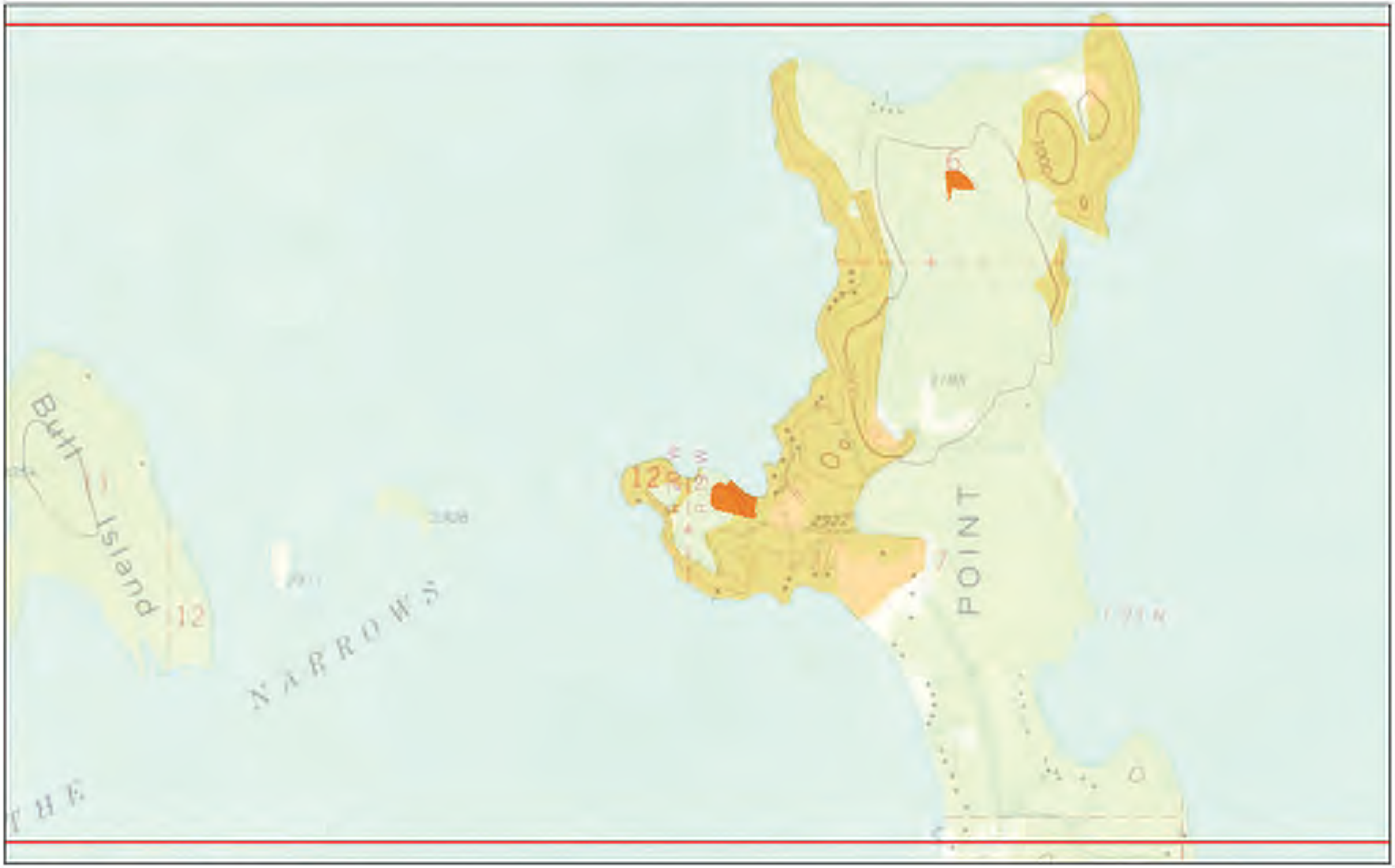
PUBLAND

- Local Government
- CONSERVATIONEASEMENTS
- Parcels
- GWICWELLS_VISUAL

Map created using the Digital Atlas October 27, 2019
http://msl.mt.gov/GIS/Atlas

Montana State Library - Digital Library
(406) 444-5354 | geoinfo@mt.gov | http://msl.mt.gov

Montan



Septic System Density (2010)

- <all other values>
- Municipal System
- High
- Medium
- Low

Map created using the Digital Atlas October 28, 2019
http://msl.mt.gov/GIS/Atlas

Montana State Library - Digital Library
(406) 444-5354 | geoinfo@mt.gov | http://msl.mt.gov

Montana Digital Atlas

10/27/2019

Summary

Clip area: 3,220.26 acres

Owner Parcels

Record Count: 237

	Acres	Building Value	Land Value	Total Value	Cropped Acres	Irrigated Acres	Fallow Acres	Grazing Acres	Wild Hay Acres	Commercial Forest Acres
Total	341.67	$31,658,357	$70,008,583	$101,666,940	15.08	0.00	0.00	21.86	0.00	82.98

Conservation Easements

Record Count: 1

	Acres
Total	67.10

Easement Holder

Total

	Record Count	Acres
Montana Land Reliance	1	67.10

Public Land

Record Count: 7

Owner

Total

	Record Count	Acres
County Government	7	12.03

Groundwater Information Center Wells

Record Count: 56

	Date Completed	Depth	Water Level	Depth Water Enters
Min	3/5/1967	115	4	0
Max	9/12/2018	705	194	640
Average	12/14/1993	339	63	204

Use Type

Total

	Record Count
null	0

Min

	Record Count	Date Completed	Depth	Water Level	Depth Water Enters
null	0	undefined	0	0	0

Max

	Record Count	Date Completed	Depth	Water Level	Depth Water Enters
null	0	undefined	0	0	0

Average

	Record Count	Date Completed	Depth	Water Level	Depth Water Enters
null	0	undefined	0	0	0

Site Type

Total

	Record Count

	Record Count
WELL	56

Min

	Record Count	Date Completed	Depth	Water Level	Depth Water Enters
WELL	56	3/5/1967	115	4	41

Max

	Record Count	Date Completed	Depth	Water Level	Depth Water Enters
WELL	56	9/12/2018	705	194	640

Average

	Record Count	Date Completed	Depth	Water Level	Depth Water Enters
WELL	56	12/14/1993	339	63	293

Owner Parcels

Record Count: 237

Owner Name	Parcel ID	Tax Year	Township	Range	Section	Legal Description	Acres	Address	City, State, Zip	Property Type	Building Value	Land Value	Total Value	Owner Address	Owner City	Owner State	Owner Zip	Levy District	Subdivision	Property ID	Cropped Acres	Irrigated Acres	Fallow Acres	Farmsite Acres	Grazing Acres	W Ha Acı
NICHOLSON ALAN D	15335118103110000	2019	23 N	19 W	18	S18, T23 N, R19 W, TR B-1 COS 4578 (5.08 AC)	5.08	S FINLEY POINT RD	POLSON, MT 59860	IMP_R - Improved Property - Rural	$19,300	$137	$19,437	1 QUARRY LN	HELENA	MT	59601-5100	15-5477-23MC		961705	0.00	0.00	0.00	0.00	5.08	
AKSHUN & AKSHUN INC	15335107401080000	2019	23 N	19 W	07	S07, T23 N, R19 W, C.O.S. 2181, ACRES 6.09, TR IN LT 8	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$214,640	$713,000	$927,640	10555 FIRESTONE BLVD	NORWALK	CA	90650-7409	15-5477-23MC		960992	0.00	0.00	0.00	0.00	0.00	
FINLEY POINT COLORADO LLC	15335107201120000	2019	23 N	19 W	07	FINLEY POINT VILLA SITE, S07, T23 N, R19 W, LOTS 1 & 2 & PT OF LOT 3 BLK 5	10.96	FINLEY POINT LN	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$10,656	$10,656	MAIL TO: WOODYCREEK MANAGEMENT GROUP	DENVER	CO	80206-5200	15-5477-23MC	FINLEY POINT VILLA SITE	960175	4.01	0.00	0.00	0.00	0.00	
FINLEY POINT COLORADO LLC	15335107201010000	2019	23 N	19 W	07	S07, T23 N, R19 W, TR 3 IN LTS 4 & 5 LESS TR	74.65		POLSON, MT 59860	FARM_R - Farmstead - Rural	$760,420	$405,850	$1,166,270	MAIL TO: WOODYCREEK MANAGEMENT GROUP	DENVER	CO	80206-5200	15-5477-23MC		960471	0.00	0.00	0.00	0.00	0.00	
SCHROEDER JAMES G & SHARON L	15335107201070000	2019	23 N	19 W	07	FINLEY POINT VILLA SITE, S07, T23 N, R19 W, BLOCK 3, Lot 1A, TR A-1 BEING PT LOT 1 ON H-1874	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$113,500	$304,000	$417,500	484 PINE HOLLOW RD	STEVENSVILLE	MT	59870-6733	15-5477-23MC	FINLEY POINT VILLA SITE	959357	0.00	0.00	0.00	0.00	0.00	
MCALPIN RANDA	15335107201090000	2019	23 N	19 W	07	FINLEY POINT VILLA SITE, S07, T23 N, R19 W, BLOCK 003, Lot 01C, FINLEY PT VILLA SITE LOT 1-C BLK 3 H-1636	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$53,800	$432,500	$486,300	PO BOX 276	POLSON	MT	59860-0276	15-5477-23MC	FINLEY POINT VILLA SITE	961238	0.00	0.00	0.00	0.00	0.00	
DESILVIA CRAIG & REBECCA TRUST ETAL	15335107402060000	2019	23 N	19 W	07	ODD FELLOWS VILLA, S07, T23 N, R19 W, Lot 7	2.32		POLSON, MT 59860	FARM_R - Farmstead - Rural	$317,730	$3,252	$320,982	31254 FINLEY POINT LN	POLSON	MT	59860-7810	15-5477-23MC	ODD FELLOWS VILLA	959302	0.72	0.00	0.00	1.00	0.60	
BRUNNER CAROL FAMILY TRUST &	15335107301010000	2019	23 N	19 W	07	FINLEY POINT VILLA SITE, S07, T23 N, R19 W, BLOCK 006, Lot 00A, TR A AMND PLAT OF PT LOT 3 AND ALL LOT 4 BLK 6 & PT GOVT LOT 1 OF 12-23-20	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$107,300	$647,000	$754,300	MAIL TO: LERETA/TEXAS OPERATIONS	DALLAS	TX	75235-0605	15-5477-23MC	FINLEY POINT VILLA SITE	959725	0.00	0.00	0.00	0.00	0.00	
MCLAUGHLIN WILLIAM C JR	15335107301030000	2019	23 N	19 W	07	FINLEY POINT VILLA SITE, S07, T23 N, R19 W, BLOCK 006, Lot 003, FINLEY PT VILLA SITE LOT 3 BLK 6 LESS TR	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$242,575	$444,125	$686,700	PO BOX 875	POLSON	MT	59860-0875	15-5477-23MC	FINLEY POINT VILLA SITE	961255	0.00	0.00	0.00	0.00	0.00	
AVERY SARITALIVING TRUST	15335107301040000	2019	23 N	19 W	07	FINLEY POINT VILLA SITE, S07, T23 N, R19 W, BLOCK 006, Lot 002, LT 2	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$93,700	$603,500	$697,200	44489 TOWN CENTER WAY STE D	PALM DESERT	CA	92260-2789	15-5477-23MC	FINLEY POINT VILLA SITE	961147	0.00	0.00	0.00	0.00	0.00	
NOVINSKI DANIEL & CAROLE	15335107201110000	2019	23 N	19 W	07	FINLEY POINT VILLA SITE, S07, T23 N, R19 W, BLOCK 005, Lot 004, & H-2011	8.66		POLSON, MT 59860	IMP_R - Improved Property - Rural	$41,000	$77,034	$118,034	2321 STAGECOACH RD	GRAND ISLAND	NE	68801-7347	15-5477-23MC	FINLEY POINT VILLA SITE	961054	0.00	0.00	0.00	0.00	0.00	

Owner Name	Parcel ID	Tax Year	Township	Range	Section	Legal Description	Acres	Address	City, State, Zip	Property Type	Building Value	Land Value	Total Value	Owner Address	Owner City	Owner State	Owner Zip	Levy District	Subdivision	Property ID	Cropped Acres	Irrigated Acres	Fallow Acres	Farmsite Acres	Grazing Acres	W Ha Acr
STARK LIVING TRUST	15335107101010000	2019	23 N	19 W	07	FINLEY POINT VILLA SITE, S07, T23 N, R19 W, BLOCK 001, Lot 013, FINLEY PT VILLA SITE LOT 13 BLK 1	0.00	30400 FINLEY POINT LN	POLSON, MT 59860	IMP_R - Improved Property - Rural	$197,850	$421,125	$618,975	351Buttonwood Drive	Brea	CA	92821-3520	15-5477-23MC	FINLEY POINT VILLA SITE	961501	0.00	0.00	0.00	0.00	0.00	
ROBINS GOOD MEDICINE ORCHARD LLC	15335118103010000	2019	23 N	19 W	18	S18, T23 N, R19 W, COS 3676 TR A (NENE) ORCHARD 2.47 ACS	2.47	S FINLEY POINT RD	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$3,758	$3,758	4155 FOX FARM RD	MISSOULA	MT	59802-3081	15-5477-23MC		961434	2.47	0.00	0.00	0.00	0.00	
ROTH DONNA E	15335107403020000	2019	23 N	19 W	07	SKIDOO VILLA ESTATES, S07, T23 N, R19 W, Lot 006, LT 6 (COS 4965)	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$116,300	$410,000	$526,300	MAIL TO: ROTH URBAN L JR	CHANDLER	AZ	85226-7800	15-5477-23MC	SKIDOO VILLA ESTATES	961399	0.00	0.00	0.00	0.00	0.00	
VEALE JONATHAN S & MARA	15335118102140000	2019	23 N	19 W	18	S18, T23 N, R19 W, C.O.S. 6349, TR 3 (4.34 AC)	4.34		POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$2,114	$2,114	1723 MADERA DR	MISSOULA	MT	59802-5332	15-5477-23MC		954483	1.34	0.00	0.00	0.00	3.01	
PETERSON SHANE DANIEL & JONDELL RAYANNE	15335106310090000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 146, ACRES 0.7	0.70		POLSON, MT 59860	IMP_R - Improved Property - Rural	$850	$38,030	$38,880	1212 LAKESIDE DR	LOLO	MT	59847-9705	15-5477-23MC	MELLETT POINT NO 2	961074	0.00	0.00	0.00	0.00	0.00	
TURNER DONALD & SUSAN LIVING TRUST	15335107401020000	2019	23 N	19 W	07	S07, T23 N, R19 W, COS 3516 TR B	1.29		POLSON, MT 59860	IMP_R - Improved Property - Rural	$136,679	$40,921	$177,600	5452 E NEW RIVER RD	CAVE CREEK	AZ	85331-9042	15-5477-23MC		961597	0.00	0.00	0.00	0.00	0.00	
COOK GREGORY L	15335107403010000	2019	23 N	19 W	07	SKIDOO VILLA ESTATES, S07, T23 N, R19 W, Lot 007, LT 7	0.08	FINLEY POINT RD	POLSON, MT 59860	IMP_R - Improved Property - Rural	$230	$363,872	$364,102	680 OLIVE RD	SANTA BARBARA	CA	93108-1443	15-5477-23MC	SKIDOO VILLA ESTATES	958356	0.00	0.00	0.00	0.00	0.00	
TURNER ROBERT A	15335107401010000	2019	23 N	19 W	07	S07, T23 N, R19 W, COS 3516 TR A	4.31	TAKE FIVE LN	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$55,719	$55,719	1531 E CLOUD RD	PHOENIX	AZ	85086-9232	15-5477-23MC		961606	0.00	0.00	0.00	0.00	0.00	
COLE PERRY J & MARY JO	15335107403120000	2019	23 N	19 W	07	S07, T23 N, R19 W, COS 4678 TR B	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$133,100	$363,500	$496,600	3652 TORREY VIEW CT	SAN DIEGO	CA	92130-2620	15-5477-23MC		961092	0.00	0.00	0.00	0.00	0.00	
WARD LAKE HOUSE LLC	15335107302090000	2019	23 N	19 W	07	S07, T23 N, R19 W, ACRES 1.068, H-795 TR A ASSR#3050	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$357,580	$402,500	$760,080	PO BOX 16010	MISSOULA	MT	59808-6010	15-5477-23MC		961611	0.00	0.00	0.00	0.00	0.00	
STARK KATHERINE L TRUSTEE OF NARROWS ISLAND TRUST	15335012301040000	2019	23 N	20 W	12	NARROWS VILLA SITE, S12, T23 N, R20 W, BLOCK 003, Lot 1	4.25	NARROWS IS	POLSON, MT 59860	IMP_R - Improved Property - Rural	$58,070	$583,560	$641,630	908 14TH AVE E	POLSON	MT	59860-3627	15-1477-23	NARROWS VILLA SITE	964189	0.00	0.00	0.00	0.00	0.00	
FINLEY POINT COLORADO LLC	15335107201020000	2019	23 N	19 W	07	S07, T23 N, R19 W, PT TR 3 IN LT 4	1.38			FARM_R - Farmstead - Rural	$178,000	$359,029	$537,029	MAIL TO: WOODYCREEK MANAGEMENT GROUP	DENVER	CO	80206-5200	15-5477-23MC		961595	0.00	0.00	0.00	0.00	0.00	
SALISH KOOTENAI COLLEGE FOUNDATION INC	15335012301020000	2019	23 N	20 W	12	NARROWS VILLA SITE, S12, T23 N, R20 W, BLOCK 1, Lot B	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$31,450	$259,020	$290,470	PO BOX 70	PABLO	MT	59855-0070	15-1477-23	NARROWS VILLA SITE	964347	0.00	0.00	0.00	0.00	0.00	
CRAWFORD WILLIAM D & SUSAN D	15335012101020000	2019	23 N	20 W	12	S12, T23 N, R20 W, TR IN LT 1TR A COS 4204	1.62		POLSON, MT 59860	IMP_R - Improved Property - Rural	$182,690	$781,125	$963,815	327 HILLTOP AVE	KALISPELL	MT	59901-2516	15-5477-23MC		961696	0.00	0.00	0.00	0.00	0.00	
WHITING WILLIAM C & CATHERINE L	15335106401010000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 078, LT 78	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$21,260	$421,125	$442,385	33791 FOX LN	POLSON	MT	59860-8568	15-5477-23MC	MELLETT POINT	961227	0.00	0.00	0.00	0.00	0.00	
WOLDORFF MARTIN G & CANSTANCE L	15335012301010000	2019	23 N	20 W	12	NARROWS VILLA SITE, S12, T23 N, R20 W, BLOCK 001, Lot 00A, AMND PLAT LOTS 2 & 3	0.00	BULL ISLAND RD	POLSON, MT 59860	IMP_R - Improved Property - Rural	$139,610	$365,490	$505,100	106 CAMILLE CT	CHAPEL HILL	NC	27516-1182	15-1477-23	NARROWS VILLA SITE	964599	0.00	0.00	0.00	0.00	0.00	
THORSRUD MONTANA PROPERTIES, LLC	15335106407020000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 48, ACRES 0.682	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$234,200	$450,500	$684,700	2265 E CORTE DEL SABIO	TUCSON	AZ	85718-7330	15-5477-23MC	MELLETT POINT	961565	0.00	0.00	0.00	0.00	0.00	
NICHOLSON ALAN D	15335118103030000	2019	23 N	19 W	18	S18, T23 N, R19 W, TR IN LT 2 TR A COS 4349 (2.84 AC)	1.84	31156 S FINLEY POINT RD	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$2,803	$2,803	1 QUARRY LN	HELENA	MT	59601-5100	15-5477-23MC		960219	1.84	0.00	0.00	0.00	0.00	
TRIBAL	15335107201050000	2019	23 N	19 W	07	FINLEY POINT VILLA SITE, S07, T23 N, R19 W, BLOCK 004, Lot 001, LTS 1-2-3 BLK 4 TRIBAL LAND	12.45		POLSON, MT 59860	EP - Exempt Property	$0	$95,605	$95,605	GENERAL DELIVERY	PABLO	MT	59855-9999	15-5477-23MC	FINLEY POINT VILLA SITE	960583	0.00	0.00	0.00	0.00	0.00	
TRIBAL	15335107201100000	2019	23 N	19 W	07	FINLEY POINT VILLA SITE, S07, T23 N, R19 W, BLOCK 003, Lot 002, LOT 2 BLK 3 TRIBAL LAND	4.32		POLSON, MT 59860	TP - Tribal Property	$0	$55,768	$55,768	GENERAL DELIVERY	PABLO	MT	59855-9999	15-5477-23MC	FINLEY POINT VILLA SITE	960584	0.00	0.00	0.00	0.00	0.00	

Owner Name	Parcel ID	Tax Year	Township	Range	Section	Legal Description	Acres	Address	City, State, Zip	Property Type	Building Value	Land Value	Total Value	Owner Address	Owner City	Owner State	Owner Zip	Levy District	Subdivision	Property ID	Cropped Acres	Irrigated Acres	Fallow Acres	Farmsite Acres	Grazing Acres	W Ha Acr
TRIBAL	15335107101020000	2019	23 N	19 W	07	S07, T23 N, R19 W, LOTS 1 THRU 12 & 14, BLK 1	0.00		POLSON, MT 59860	TP - Tribal Property	$0	$0	$0	GENERAL DELIVERY	PABLO	MT	59855-9999	15-5477-23MC		960594	0.00	0.00	0.00	0.00	0.00	0
HOGAN MARSHA ANNE	15335106406030000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 095, LT 95	0.61		POLSON, MT 59860	IMP_R - Improved Property - Rural	$216,711	$37,589	$254,300	275 JAMES RIVER RD	SCOTTSVILLE	VA	24590-3822	15-5477-23MC	MELLETT POINT NO 2	956454	0.00	0.00	0.00	0.00	0.00	0
AKSHUN & AKSHUN INC	15335107401070000	2019	23 N	19 W	07	S07, T23 N, R19 W, C.O.S. 2181, PARCEL TR A, ACRES 2.14, ASSR #0000002525	0.00	31155 FINLEY POINT LN	POLSON, MT 59860	IMP_R - Improved Property - Rural	$423,200	$450,500	$873,700	10555 FIRESTONE BLVD	NORWALK	CA	90650-7409	15-5477-23MC		960998	0.00	0.00	0.00	0.00	0.00	0
STEVE BOYCE LIVING TRUST	15335107401090000	2019	23 N	19 W	07	S07, T23 N, R19 W, TR IN GOVT LOT 8 H-724	0.00	31271 FINLEY POINT RD	POLSON, MT 59860	IMP_R - Improved Property - Rural	$245,600	$447,500	$693,100	1035 LONGSTAFF ST	MISSOULA	MT	59801-3623	15-5477-23MC		957499	0.00	0.00	0.00	0.00	0.00	0
GRIMES ARLIN L	15335107101030000	2019	23 N	19 W	07	FINLEY POINT VILLA SITE, S07, T23 N, R19 W, BLOCK 002, Lot 1-A, ACRES 1.99	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$237,690	$578,000	$815,690	PO BOX 651	DRIGGS	ID	83422-0651	15-5477-23MC	FINLEY POINT VILLA SITE	961191	0.00	0.00	0.00	0.00	0.00	0
SWAN LINDA LEE ETAL	15335107201060000	2019	23 N	19 W	07	FINLEY POINT VILLA SITE, S07, T23 N, R19 W, BLOCK 3, Lot 1A, H-1636	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$88,700	$369,500	$458,200	999 CHESTNUT AVE	HIGHWOOD	MT	59450-8729	15-5477-23MC	FINLEY POINT VILLA SITE	958917	0.00	0.00	0.00	0.00	0.00	0
SCHIPF JOHN LIVING TRUST & ANNETTE LIVING TRUST	15335107201080000	2019	23 N	19 W	07	FINLEY POINT VILLA SITE, S07, T23 N, R19 W, BLOCK 003, ACRES 1.43, H-1636 TR B	1.43		POLSON, MT 59860	IMP_R - Improved Property - Rural	$79,400	$507,500	$586,900	1458 SWAN RANCH LN	HIGHWOOD	MT	59450-8767	15-5477-23MC	FINLEY POINT VILLA SITE	958301	0.00	0.00	0.00	0.00	0.00	0
TAYLOR BOYD A & ROBERTA	15335107403050000	2019	23 N	19 W	07	SKIDOO VILLA ESTATES, S07, T23 N, R19 W, Lot 003, LTS 3-4	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$278,430	$636,500	$914,930	3431 HANNIBAL ST	BUTTE	MT	59701-4523	15-5477-23MC	SKIDOO VILLA ESTATES	961558	0.00	0.00	0.00	0.00	0.00	0
METZ LAKE TRUST	15335107101050000	2019	23 N	19 W	07	FINLEY POINT VILLA SITE, S07, T23 N, R19 W, BLOCK 2, Lot 1-B, ACRES 2.137, AMND PLT OF LT 1	2.14	29973 FINLEY POINT LN	POLSON, MT 59860	IMP_R - Improved Property - Rural	$157,510	$597,500	$755,010	29973 FINLEY POINT LN	POLSON	MT	59860-7815	15-5477-23MC	FINLEY POINT VILLA SITE	961753	0.00	0.00	0.00	0.00	0.00	0
							0.00				$0	$0	$0								0.00	0.00	0.00	0.00	0.00	0
							0.00				$0	$0	$0								0.00	0.00	0.00	0.00	0.00	0
ROTH DONNA E	15335107403030000	2019	23 N	19 W	07	SKIDOO VILLA ESTATES, S07, T23 N, R19 W, Lot 005, LT 5 (COS 4965)	0.00	34259 YELLOW PINE LN	POLSON, MT 59860	IMP_R - Improved Property - Rural	$706,960	$410,000	$1,116,960	MAIL TO: ROTH URBAN L JR	CHANDLER	AZ	85226-7800	15-5477-23MC	SKIDOO VILLA ESTATES	961400	0.00	0.00	0.00	0.00	0.00	0
DANIEL MARIE U	15335012101030000	2019	23 N	20 W	12	S12, T23 N, R20 W, TR IN LOT 1 TR B COS 4204	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$86,500	$456,000	$542,500	MAIL TO: TOM DANIEL	BUTTE	MT	59701-4310	15-5477-23MC		961172	0.00	0.00	0.00	0.00	0.00	0
ROSE TIMOTHY L & KRISTEN R	15335107301050000	2019	23 N	19 W	07	FINLEY POINT VILLA SITE, S07, T23 N, R19 W, BLOCK 006, Lot 001, ACRES 4.08	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$236,640	$800,000	$1,036,640	17404 159TH AVE NE	WOODINVILLE	WA	98072-8100	15-5477-23MC	FINLEY POINT VILLA SITE	957720	0.00	0.00	0.00	0.00	0.00	0
LANSING ANN & HARPER WILLIAM JOSEPH	15335012301050000	2019	23 N	20 W	12	NARROWS VILLA SITE, S12, T23 N, R20 W, BLOCK 001, Lot 1, COS 6501	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$276,500	$536,000	$812,500	PO BOX 59	HELENA	MT	59624-0059	15-1477-23	NARROWS VILLA SITE	964188	0.00	0.00	0.00	0.00	0.00	0
WILLIAMS TERRY J & LINDA	15335107302020000	2019	23 N	19 W	07	FRIENDSHIP VILLAS, S07, T23 N, R19 W, Lot 002	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$220,400	$533,000	$753,400	PO BOX 809	FRENCHTOWN	MT	59834-0809	15-5477-23MC	FRIENDSHIP VILLAS	961233	0.00	0.00	0.00	0.00	0.00	0
ROTH DONNA ETAL	15335107403100000	2019	23 N	19 W	07	S07, T23 N, R19 W, H-1909 IN LT 5	3.49			VAC_R - Vacant Land - Rural	$0	$51,701	$51,701	MAIL TO: ROTH URBAN L JR	CHANDLER	AZ	59860-7800	15-5477-23MC		961559	0.00	0.00	0.00	0.00	0.00	0
MCDONELL KATHERINE	15335012101060000	2019	23 N	20 W	12	S12, T23 N, R20 W, COS 4823 TR B	0.00	SNOWBERRY LN	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$562,100	$562,100	4428 ASHCROFT AVE	CASTLE ROCK	CO	80104-8767	15-5477-23MC		960759	0.00	0.00	0.00	0.00	0.00	0
REDMOND MARJORY M	15335107403080000	2019	23 N	19 W	07	S07, T23 N, R19 W, TR 1 IN LT 5 COS 2900	0.00	34103 CARAWAY LN	POLSON, MT 59860	IMP_R - Improved Property - Rural	$11,220	$410,000	$421,220	3321 OLD POND RD	MISSOULA	MT	59802-3250	15-5477-23MC		961366	0.00	0.00	0.00	0.00	0.00	0
SPICHER DARLENE ETAL	15335107401040000	2019	23 N	19 W	07	S07, T23 N, R19 W, ACRES 2.27, H-391	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$101,260	$434,000	$535,260	3217 S CANYON ST	NAMPA	ID	83686-8379	15-5477-23MC		961492	0.00	0.00	0.00	0.00	0.00	0
J & M FAMILY, LLC	15335107401060000	2019	23 N	19 W	07	S07, T23 N, R19 W, TR IN GOVT LOT 8	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$268,000	$516,500	$784,500	1476 W ELK VIEW CIR	MAPLETON	UT	84664-4808	15-5477-23MC		961120	0.00	0.00	0.00	0.00	0.00	0
MORIARTY PAMELA ANN	15335012101010000	2019	23 N	20 W	12	S12, T23 N, R20 W, C.O.S. 4823, ACRES 2.53, TR A	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$489,120	$809,250	$1,298,370	35172 SNOWBERRY LN	POLSON	MT	59860-7881	15-5477-23MC		961216	0.00	0.00	0.00	0.00	0.00	0

Owner Name	Parcel ID	Tax Year	Township	Range	Section	Legal Description	Acres	Address	City, State, Zip	Property Type	Building Value	Land Value	Total Value	Owner Address	Owner City	Owner State	Owner Zip	Levy District	Subdivision	Property ID	Cropped Acres	Irrigated Acres	Fallow Acres	Farmsite Acres	Grazing Acres	W Ha Acr
FINLEY POINT COLORADO LLC	15335107302030000	2019	23 N	19 W	07	FRIENDSHIP VILLAS, S07, T23 N, R19 W, Lot 003	4.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$95,510	$2,246	$97,756	MAIL TO: WOODYCREEK MANAGEMENT GROUP	DENVER	CO	80206-5200	15-5477-23MC	FRIENDSHIP VILLAS	956343	0.00	0.00	0.00	1.00	3.00	
ZIMMERMAN BRYAN K	15335107302050000	2019	23 N	19 W	07	FRIENDSHIP VILLAS, S07, T23 N, R19 W, LOTS 4-5 2.5 ACRES ORCHARD	7.80		POLSON, MT 59860	FARM_R - Farmstead - Rural	$391,210	$8,758	$399,968	PO BOX 1286	POLSON	MT	59860-1286	15-5477-23MC	FRIENDSHIP VILLAS	960154	2.88	0.00	0.00	2.00	2.92	
BOYCE JOHN R & ANNETTE M LIVING TRUST	15335107401100000	2019	23 N	19 W	07	S07, T23 N, R19 W, ACRES 2.47, H-724 (TR IN GOVT LOT 8) ASSR# 0000002278	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$440,990	$447,500	$888,490	455 COUNTY LINE RD	FLORENCE	MT	59833-6025	15-5477-23MC		957488	0.00	0.00	0.00	0.00	0.00	
BLUE MOON INVESTMENTS LLC	15335107401110000	2019	23 N	19 W	07	S07, T23 N, R19 W, 6603, PARCEL A	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$56,060	$936,500	$992,560	PO BOX 4825	MISSOULA	MT	59806-4825	15-5477-23MC		961724	0.00	0.00	0.00	0.00	0.00	
POMEROY LISA L, CHYENNE & SCOUT	15335107302010000	2019	23 N	19 W	07	FRIENDSHIP VILLAS, S07, T23 N, R19 W, Lot 001, LT 1	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$20,510	$494,000	$514,510	2435 HARKSELL RD	FERNDALE	WA	98248-9764	15-5477-23MC	FRIENDSHIP VILLAS	961126	0.00	0.00	0.00	0.00	0.00	
ROSE TIMOTHY L & KRISTEN R	15335107202020000	2019	23 N	19 W	07	BORCHERS OF FINLEY POINT, S07, T23 N, R19 W, ACRES 0.71, LODGE TRACT & 2% IN COMMON AREA ASSR#0000003154	0.00	BORCHERS LN	POLSON, MT 59860	IMP_R - Improved Property - Rural	$497,297	$554,703	$1,052,000	17404 159TH AVE NE	WOODINVILLE	WA	98072-8100	15-5477-23MC	BORCHERS OF FINLEY POINT	961718	0.00	0.00	0.00	0.00	0.00	
TRIBAL	15335107101040000	2019	23 N	19 W	07	S07, T23 N, R19 W	11.50		POLSON, MT 59860	TP - Tribal Property	$0	$90,950	$90,950	GENERAL DELIVERY	PABLO	MT	59855-9999	15-5477-23MC		960582	0.00	0.00	0.00	0.00	0.00	
DENSON RANCH, LLC	15335011101220000	2019	23 N	20 W	11	IDYLWILD SUBD A, S11, T23 N, R20 W, Lot B2, AMND	1.20			VAC_R - Vacant Land - Rural	$0	$62	$62	361 DENSON RANCH ROAD LEDGER	SHELBY	MT	59474	15-1477-23	IDYLWILD SUBD A	1456253	0.00	0.00	0.00	0.00	0.00	
DENSON RANCH, LLC	15335011101230000	2019	23 N	20 W	11	IDYLWILD SUBD A, S11, T23 N, R20 W, Lot B3, AMND ASSR#0000007047	1.22			VAC_R - Vacant Land - Rural	$0	$63	$63	361 DENSON RANCH ROAD LEDGER	SHELBY	MT	59474	15-1477-23	IDYLWILD SUBD A	1456254	0.00	0.00	0.00	0.00	0.00	
DENISON RANCH. LLC	15335011101200000	2019	23 N	20 W	11	IDYLWILD SUBD A, S11, T23 N, R20 W, Lot B1, AMND ASSR#0000005207	21.43			VAC_R - Vacant Land - Rural	$0	$1,104	$1,104	361 DENSON RANCH ROAD LEDGER	SHELBY	MT	59474	15-1477-23	IDYLWILD SUBD A	964196	0.00	0.00	0.00	0.00	0.00	
MURPHY RYAN O & PADDOCK ELIZABETH LAYNE	15335107402010000	2019	23 N	19 W	07	S07, T23 N, R19 W, C.O.S. 5223, ACRES 5.29, TR 1	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$63,830	$588,750	$652,580	3247 N HOYNE AVE	CHICAGO	IL	60618-6327	15-5477-23MC		961601	0.00	0.00	0.00	0.00	0.00	
VALETT MATHEW B ETAL	15335107402130000	2019	23 N	19 W	07	S07, T23 N, R19 W, C.O.S. 5223, PARCEL TR 2, ACRES 6	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$227,330	$919,000	$1,146,330	1542 MEADOWLARK DR APT 13	GREAT FALLS	MT	59404-3350	15-5477-23MC		961760	0.00	0.00	0.00	0.00	0.00	
RATZBURG DAYLE W & DOREEN L	15335107402050000	2019	23 N	19 W	07	ODD FELLOWS VILLA, S07, T23 N, R19 W, Lot 008, LT 8	1.01		POLSON, MT 59860	IMP_R - Improved Property - Rural	$442,930	$408,949	$851,879	PO BOX 965	POLSON	MT	59860-0965	15-5477-23MC	ODD FELLOWS VILLA	961363	0.00	0.00	0.00	0.00	0.00	
JORDAN LAKE LLC	15335107402030000	2019	23 N	19 W	07	ODD FELLOWS VILLA, S07, T23 N, R19 W, ACRES 1.66, H-433 SE 48' OF LOT 9 ASSR#0000002281	1.66		POLSON, MT 59860	IMP_R - Improved Property - Rural	$14,720	$334,744	$349,464	110 RAMPART DR	BUTTE	MT	59701-4326	15-5477-23MC	ODD FELLOWS VILLA	959224	0.00	0.00	0.00	0.00	0.00	
MISSION LODGE 86 I00F	15335107402020000	2019	23 N	19 W	07	ODD FELLOWS VILLA, S07, T23 N, R19 W, Lot 010, LT 10 & RESERVE	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$145,790	$728,000	$873,790	MAIL TO: KEYSER PAUL	POLSON	MT	59860-7367	15-5477-23MC	ODD FELLOWS VILLA	961203	0.00	0.00	0.00	0.00	0.00	
DENSON RANCH, LLC	15335011101060000	2019	23 N	20 W	11	IDYLWILD SUBD A, S11, T23 N, R20 W, Lot A, ACRES 24.42, OF AMND PLAT OF SUBD 'A'	24.42	BULL ISLAND RD	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$1,258	$1,258	361 DENSON RANCH ROAD LEDGER	SHELBY	MT	59474	15-1477-23	IDYLWILD SUBD A	964197	0.00	0.00	0.00	0.00	0.00	
BEISER KENNETH J & JANET D	15335011101240000	2019	23 N	20 W	11	IDYLWILD SUBD A, S11, T23 N, R20 W, Lot B4, AMND	1.70	BULL ISLAND	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$42,650	$2,590	$45,240	31704 S FINLEY POINT RD	POLSON	MT	59860-7887	15-1477-23	IDYLWILD SUBD A	1456255	1.70	0.00	0.00	0.00	0.00	
FEIST LIMITED PARTNERSHIP	15335107402090000	2019	23 N	19 W	07	ODD FELLOWS VILLA, S07, T23 N, R19 W, Lot 004, LT 4	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$92,800	$404,000	$496,800	PO BOX 8958	MISSOULA	MT	59807-8958	15-5477-23MC	ODD FELLOWS VILLA	961091	0.00	0.00	0.00	0.00	0.00	
FEIST LIMITED PARTNERSHIP	15335107402080000	2019	23 N	19 W	07	ODD FELLOWS VILLA, S07, T23 N, R19 W, Lot 005, ODD FELLOWS VILLA LT 5 (COS 6251)	0.00		POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$404,000	$404,000	PO BOX 8958	MISSOULA	MT	59807-8958	15-5477-23MC	ODD FELLOWS VILLA	961650	0.00	0.00	0.00	0.00	0.00	

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ECKMAN CLARA M TRUST	15335107402040000	2019	23 N	19 W	07	ODD FELLOWS VILLA, S07, T23 N, R19 W, ACRES 1.93, H-433 NW 48' OF LOT 9 ASSR#0000002231	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$299,810	$332,000	$631,810	30996 N FINLEY POINT RD	POLSON	MT	59860-7841	15-5477-23MC	ODD FELLOWS VILLA	956701	0.00	0.00	0.00	0.00	0.00	0
WOOLDRIDGE MONTANA PARTNERSHIP	15335118103050000	2019	23 N	19 W	18	S18, T23 N, R19 W, C.O.S. 5384, PARCEL A, ACRES 1.55, ASSR# 0000002797	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$436,750	$551,000	$987,750	7808 GLENSHANNON CIR	DALLAS	TX	75225-2055	15-5477-23MC		961320	0.00	0.00	0.00	0.00	0.00	0
ANAM CARA REVOCABLE TRUST	15335107301020000	2019	23 N	19 W	07	FINLEY POINT VILLA SITE, S07, T23 N, R19 W, BLOCK 006, ACRES 4.07, TR B AMND PLAT OF PT LOT 3 & ALL LOT 4 BLK 6 & PT GOVT LOT 1 OF 12-23-20	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$4,140	$748,500	$752,640	4740 SOUTH AVE W	MISSOULA	MT	59804-6106	15-5477-23MC	FINLEY POINT VILLA SITE	959736	0.00	0.00	0.00	0.00	0.00	0
DOBBERMAN ERIC J & LISA R LIVING TRUST	15335012101040000	2019	23 N	20 W	12	S12, T23 N, R20 W, TR IN GOVT LOT 1	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$2,100	$393,300	$395,400	4146 SHORELINE DR	SPRING PARK	MN	55384-9641	15-5477-23MC		961549	0.00	0.00	0.00	0.00	0.00	0
STARKE KATHERINE L TRUSTEE NARROWS ISLAND TRUST	15335012301030000	2019	23 N	20 W	12	NARROWS VILLA SITE, S12, T23 N, R20 W, BLOCK 002, Lot 1	1.66	NARROWS IS	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$380,840	$380,840	908 14TH AVE E	POLSON	MT	59860-3627	15-1477-23	NARROWS VILLA SITE	964600	0.00	0.00	0.00	0.00	0.00	0
MERRITT ROY D & NORMA R TRUSTS	15335107302060000	2019	23 N	19 W	07	FRIENDSHIP VILLAS, S07, T23 N, R19 W, Lot 6, ACRES 3.8, ASSR#0000002433	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$209,300	$542,000	$751,300	63 GARDEN CREEK RD	HOT SPRINGS	MT	59845-9312	15-5477-23MC	FRIENDSHIP VILLAS	960186	0.00	0.00	0.00	0.00	0.00	0
							0.00				$0	$0	$0								0.00	0.00	0.00	0.00	0.00	0
MILLER FAMILY REVOCABLE LIVING TRUST	15335118102110000	2019	23 N	19 W	18	S18, T23 N, R19 W, 6349, PARCEL N/A, COS 6349 TR 1 (1 ACRE)	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$332,425	$328,875	$661,300	2343 YALE AVE E	SEATTLE	WA	98102-3309	15-5477-23MC		960848	0.00	0.00	0.00	0.00	0.00	0
YOUNG DWIGHT W & JOAN C	15335107402070000	2019	23 N	19 W	07	ODD FELLOWS VILLA, S07, T23 N, R19 W, Lot 006, LT 6	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$6,030	$404,000	$410,030	1738 W CENTRAL AVE	MISSOULA	MT	59801-5525	15-5477-23MC	ODD FELLOWS VILLA	961533	0.00	0.00	0.00	0.00	0.00	0
EDGAR CHRISTINE S	15335107403060000	2019	23 N	19 W	07	SKIDOO VILLA ESTATES, S07, T23 N, R19 W, Lot 002, LT 2	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$228,150	$400,050	$628,200	PO BOX 17496	MISSOULA	MT	59808-7496	15-5477-23MC	SKIDOO VILLA ESTATES	961331	0.00	0.00	0.00	0.00	0.00	0
VALETT FAMILY LIMITED PARTNERSHIP	15335107402140000	2019	23 N	19 W	07	S07, T23 N, R19 W, C.O.S. 5223, TR 3 (4.43 AC)	4.42		POLSON, MT 59860	VAC_R - Vacant Land - Rural	$10,540	$679,875	$690,415	MAIL TO: LITTELL STEPHEN	EVANSTON	IL	60202-1220	15-5477-23MC		961757	0.00	0.00	0.00	0.00	0.00	0
VEALE JONATHAN S & MARA	15335118102130000	2019	23 N	19 W	18	S18, T23 N, R19 W, C.O.S. 6349, TR 2 (1 ACRE)	1.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$255,350	$2,144	$257,494	1723 MADERA DR	MISSOULA	MT	59802-5332	15-5477-23MC		954481	0.00	0.00	0.00	1.00	0.00	0
EBEL PAMELA MARIE ETAL	15335107402110000	2019	23 N	19 W	07	ODD FELLOWS VILLA, S07, T23 N, R19 W, Lot 002, LT 2	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$68,800	$404,000	$472,800	4116 23RD AVE	MISSOULA	MT	59803-1149	15-5477-23MC	ODD FELLOWS VILLA	959150	0.00	0.00	0.00	0.00	0.00	0
FEIST LIMITED PARTNERSHIP	15335107402100000	2019	23 N	19 W	07	ODD FELLOWS VILLA, S07, T23 N, R19 W, Lot 3, ACRES 1.401	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$166,400	$404,000	$570,400	PO BOX 8958	MISSOULA	MT	59807-8958	15-5477-23MC	ODD FELLOWS VILLA	961659	0.00	0.00	0.00	0.00	0.00	0
ROBINS GOOD MEDICINE ORCHARD LLC	15335118103040000	2019	23 N	19 W	18	S18, T23 N, R19 W, TR IN LT 2 TR 1 STAVE5 TBS	1.36		POLSON, MT 59860	FARM_R - Farmstead - Rural	$242,300	$2,335	$244,635	4155 FOX FARM RD	MISSOULA	MT	59802-3081	15-5477-23MC		961433	0.12	0.00	0.00	1.00	0.24	0
							0.00				$0	$0	$0								0.00	0.00	0.00	0.00	0.00	0
CONDO MASTER	15335107202017777	2019	23 N	19 W	07	BORCHERS OF FINLEY POINT, S07, T23 N, R19 W	19.60			NV - Non-Valued Property	$101,670	$5,336,100	$5,437,770					15-5477-23MC	BORCHERS OF FINLEY POINT	954767	0.00	0.00	0.00	0.00	0.00	0
REDMOND MARJORY M	15335107403090000	2019	23 N	19 W	07	S07, T23 N, R19 W, TR A COS 4678	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$383,190	$759,500	$1,142,690	3321 OLD POND RD	MISSOULA	MT	59802-3250	15-5477-23MC		961365	0.00	0.00	0.00	0.00	0.00	0
MEAD FAMILY TRUST	15335107202017411	2019	23 N	19 W	07	BORCHERS OF FINLEY POINT, S07, T23 N, R19 W, UNIT 411, 2% COMMON AREA INTEREST, ASSR#0000036033	0.02	30357 OSPREY LN	POLSON, MT 59860	KR - Condominium Rural	$255,865	$141,435	$397,300	29029 N SHANNON DR	SAN TAN VLY	AZ	85143-3972	15-5477-23MC	BORCHERS OF FINLEY POINT	954336	0.00	0.00	0.00	0.00	0.00	0
VITT MARTY ANN	15335107302120000	2019	23 N	19 W	07	S07, T23 N, R19 W, S 130 ' OF GOVT LOT 6	0.00			IMP_R - Improved Property - Rural	$13,130	$409,500	$422,630	2303 STAGECOACH TRAIL RD	MANHATTAN	MT	59741-8217	15-5477-23MC		961605	0.00	0.00	0.00	0.00	0.00	0
CRERAR GARY DAVID TRUSTEE	15335107302110000	2019	23 N	19 W	07	S07, T23 N, R19 W, FRAC PART GOVT LOT 6 TR B2 H-1050	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$141,800	$327,500	$469,300	30657 TAKE FIVE LN	POLSON	MT	59860-8966	15-5477-23MC		958973	0.00	0.00	0.00	0.00	0.00	0

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HIAM GARY T & MAUREEN E	15335107302100000	2019	23 N	19 W	07	S07, T23 N, R19 W, TR IN GOVT LOT 6 H-1050 TR B1	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$181,400	$335,000	$516,400	10124 48TH AVE E	TACOMA	WA	98446-4642	15-5477-23MC		961272	0.00	0.00	0.00	0.00	0.00	
HEAD FRANK M JR	15335107302080000	2019	23 N	19 W	07	S07, T23 N, R19 W, TR IN LT 6& E 1/2 LOT 7 H 580	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$82,700	$395,000	$477,700	1730 HELEN AVE	MISSOULA	MT	59801-5937	15-5477-23MC		960982	0.00	0.00	0.00	0.00	0.00	
STEFFES DIANA COX	15335107302070000	2019	23 N	19 W	07	S07, T23 N, R19 W, TR IN LT 6 H-783	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$101,600	$395,000	$496,600	CLARK STEFFES	SOUTH JORDAN	UT	84095-7958	15-5477-23MC		958940	0.00	0.00	0.00	0.00	0.00	
MCKENNA JAMES E &	15335106307060000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 112, LOTS 112-113	1.67	PEACHTREE DR	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$42,783	$42,783	2914 70TH AVE SE	MERCER ISLAND	WA	98040-2611	15-5477-23MC	MELLETT POINT NO 2	961530	0.00	0.00	0.00	0.00	0.00	
ANDERSON MICHAEL W & KELLY S	15335106307070000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 111	0.93	PEACHTREE DR	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$39,157	$39,157	5526 CIRCLE DR	FLORENCE	MT	59833-6636	15-5477-23MC	MELLETT POINT NO 2	961359	0.00	0.00	0.00	0.00	0.00	
NORDBERG FAMILY TRUST	15335106303060000	2019	23 N	19 W	06	MELLETT POINT 016, S06, T23 N, R19 W, Lot 19A, ACRES 0.53, OF AMND PLT OF LOT 19 ASSR#0000002754	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$354,625	$310,875	$665,500	29673 WESTSIDE DR N	POLSON	MT	59860-7869	15-5477-23MC	MELLETT POINT	961271	0.00	0.00	0.00	0.00	0.00	
GANNON FAMILY TRUST	15335106306050000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 037, LT 37	1.04		POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$18	$18	29565 FINLEY POINT LANE	POLSON	MT	59860-8927	15-5477-23MC	MELLETT POINT	961424	0.00	0.00	0.00	0.00	1.04	
SMITH LIVING TRUST	15335106404010000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 060, LOT 60	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$124,800	$316,500	$441,300	28996 FINLEY POINT LN	POLSON	MT	59860-7765	15-5477-23MC	MELLETT POINT	961481	0.00	0.00	0.00	0.00	0.00	
SHAFIZADEH FAMILY LLC	15335106305060000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 031, LOT 31	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$61,400	$426,500	$487,900	1905 MEADOWVIEW CT	MISSOULA	MT	59802-9651	15-5477-23MC	MELLETT POINT	961454	0.00	0.00	0.00	0.00	0.00	
GANNON FAMILY TRUST	15335106306070000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 041, LT 41	3.47	29565 N FINLEY POINT DR	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$61	$61	29565 FINLEY POINT LANE	POLSON	MT	59860-8927	15-5477-23MC	MELLETT POINT	961680	0.00	0.00	0.00	0.00	3.47	
GANNON FAMILY TRUST	15335106306060000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 038, LT 38	3.50	29565 FINLEY POINT RD	POLSON, MT 59860	FARM_R - Farmstead - Rural	$1,641,540	$2,188	$1,643,728	29565 FINLEY POINT LANE	POLSON	MT	59860-8927	15-5477-23MC	MELLETT POINT	961677	0.00	0.00	0.00	1.00	2.50	
BUCKNUM FRANK M	15335106302020000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 2, ACRES 0.72, COS 7069	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$569,300	$410,000	$979,300	29971 WESTSIDE DR S	POLSON	MT	59860-7871	15-5477-23MC	MELLETT POINT	959051	0.00	0.00	0.00	0.00	0.00	
GUY ROBERT & CINDY KAY	15335106309060000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 131	0.92		POLSON, MT 59860	IMP_R - Improved Property - Rural	$253,492	$39,108	$292,600	29963 MISSION VIEW RD	POLSON	MT	59860-7858	15-5477-23MC	MELLETT POINT NO 2	960781	0.00	0.00	0.00	0.00	0.00	
MCGINN SUSAN G &	15335106310010000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 142, LOT 142	0.89	MISSION VIEW RD	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$38,961	$38,961	2719 SE 48TH AVE	PORTLAND	OR	97206-1518	15-5477-23MC	MELLETT POINT NO 2	961033	0.00	0.00	0.00	0.00	0.00	
MALONE PAULA TRUSTEE	15335106301040000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 127A, ACRES 1.46, LOT 126A OF AMND LOTS 126 & 127 MELLET POINT 2 ASSR #0000036193	1.46	GEORGIA RD	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$41,754	$41,754	2700 LANTERN LN	NAPLES	FL	34102-7752	15-5477-23MC	MELLETT POINT NO 2	1432063	0.00	0.00	0.00	0.00	0.00	
KITCHIN JAMES O & MYRNA T	15335106308040000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 123, LOT 123	1.45	GEORGIA RD	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$41,705	$41,705	240 EDITH ST	MISSOULA	MT	59801-3918	15-5477-23MC	MELLETT POINT NO 2	961100	0.00	0.00	0.00	0.00	0.00	
GLYSHAW ADELINE R	15335106310100000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 147, LOT 147	0.63	PEACHTREE DR	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$37,687	$37,687	15 SCHMITT RD	LUSTRE	MT	59225-9620	15-5477-23MC	MELLETT POINT NO 2	960715	0.00	0.00	0.00	0.00	0.00	
LAKE COUNTY	15335106306080000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, PARK MELLET PO INT DEDICATED TO THE PUBLIC	0.15			TP - Tribal Property	$0	$35,311	$35,311	106 4TH AVE E	POLSON	MT	59860-2125	15-5477-23MC	MELLETT POINT	960155	0.00	0.00	0.00	0.00	0.00	
LAKE COUNTY	15335106304040000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, PARK MELLET POINT DEDICATED TO THE PUBLIC FOREVER	2.54			EP - Exempt Property	$0	$47,046	$47,046	106 4TH AVE E	POLSON	MT	59860-2125	15-5477-23MC	MELLETT POINT NO 2	960152	0.00	0.00	0.00	0.00	0.00	
SHAFIZADEH FAMILY LLC	15335106308050000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 124, LOTS 124-125	2.26	GEORGIA RD	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$45,674	$45,674	1905 MEADOWVIEW CT	MISSOULA	MT	59802-9651	15-5477-23MC	MELLETT POINT NO 2	961455	0.00	0.00	0.00	0.00	0.00	

Owner Name	Parcel ID	Tax Year	Township	Range	Section	Legal Description	Acres	Address	City, State, Zip	Property Type	Building Value	Land Value	Total Value	Owner Address	Owner City	Owner State	Owner Zip	Levy District	Subdivision	Property ID	Cropped Acres	Irrigated Acres	Fallow Acres	Farmsite Acres	Grazing Acres	W Ha Acr
LAKE COUNTY	15335106405050000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, PARK MELLET PO INT DEDICATED TO THE PUBLIC FOREVER	3.38			TP - Tribal Property	$0	$51,162	$51,162	106 4TH AVE E	POLSON	MT	59860-2125	15-5477-23MC	MELLETT POINT NO 2	960158	0.00	0.00	0.00	0.00	0.00	
LAKE COUNTY	15335106306010000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, PARK DEDICATED TO THE PUBLIC FOREVER	0.00			EP - Exempt Property	$0	$363,500	$363,500	106 4TH AVE E	POLSON	MT	59860-2125	15-5477-23MC	MELLETT POINT	960153	0.00	0.00	0.00	0.00	0.00	
LAKE COUNTY	15335106402060000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, PARK	0.00			EP - Exempt Property	$0	$365,000	$365,000	106 4TH AVE E	POLSON	MT	59860-2125	15-5477-23MC	MELLETT POINT	960156	0.00	0.00	0.00	0.00	0.00	
WHALEY JAMES H & LISA R	15335106307110000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 118, LOTS 118A-119A	1.16	HILLTOP DR	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$40,284	$40,284	530 N ORANGE ST	MISSOULA	MT	59802-4129	15-5477-23MC	MELLETT POINT NO 2	961055	0.00	0.00	0.00	0.00	0.00	
NOVIS DAVID E & BRIDGET L	15335106406020000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 080, ACRES 1.49	1.49	LANIER LN	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$41,901	$41,901	1590 CORNERSTONE DR	MISSOULA	MT	59802-8611	15-5477-23MC	MELLETT POINT NO 2	959368	0.00	0.00	0.00	0.00	0.00	
MCGINN SUSAN G &	15335106310070000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 142, LOT 144	0.68			VAC_R - Vacant Land - Rural	$0	$37,932	$37,932	2719 SE 48TH AVE	PORTLAND	OR	97206-1518	15-5477-23MC	MELLETT POINT NO 2	961034	0.00	0.00	0.00	0.00	0.00	
KELSIC RICHARD H & LYNDA JILL	15335106309050000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 132, ACRES 0.82	0.82		POLSON, MT 59860	IMP_R - Improved Property - Rural	$301,482	$38,618	$340,100	6853 S MILLER ST	LITTLETON	CO	80127-2918	15-5477-23MC	MELLETT POINT NO 2	960793	0.00	0.00	0.00	0.00	0.00	
KORENBERG ROBERT J & BARBARA A LIVING TRUST	15335106404050000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 54, ASSR# 0000002676	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$327,275	$547,125	$874,400	7769 MISSOULA GO CLUSTER	MISSOULA	MT	59808-5519	15-5477-23MC	MELLETT POINT	961171	0.00	0.00	0.00	0.00	0.00	
MORDOCK TOM & BARBARA REVOCABLE TRUST	15335106405060000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 00C, MELLET POINT #2 LOT C (.74 AC)AMND PLAT	0.74		POLSON, MT 59860	IMP_R - Improved Property - Rural	$164,874	$38,226	$203,100	1087 BAL HARBOR BLVD	PUNTA GORDA	FL	33950-6572	15-5477-23MC	MELLETT POINT NO 2	961747	0.00	0.00	0.00	0.00	0.00	
GRONEBERG THOMAS T & JENNIFER L	15335106310050000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 138, LOT 138	0.75		POLSON, MT 59860	IMP_R - Improved Property - Rural	$219,925	$38,275	$258,200	5515 STUCKY RD	BOZEMAN	MT	59718-9036	15-5477-23MC	MELLETT POINT NO 2	961080	0.00	0.00	0.00	0.00	0.00	
CRAWLEY CHERYL K	15335106309010000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 136, LTS 136-137	1.61		POLSON, MT 59860	IMP_R - Improved Property - Rural	$354,611	$42,489	$397,100	612 LINDEN DR	GREAT FALLS	MT	59404-3539	15-5477-23MC	MELLETT POINT NO 2	960737	0.00	0.00	0.00	0.00	0.00	
MARTIN GARY	15335106304030000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 151	0.56	WESTSIDE DR N	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$37,344	$37,344	3054 68TH AVE SE	MERCER ISLAND	WA	98040-2533	15-5477-23MC	MELLETT POINT NO 2	956443	0.00	0.00	0.00	0.00	0.00	
SOHLBERG KRISTEN	15335106401090000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 108	1.21	PEACHTREE DR	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$40,529	$40,529	18 MARTHAS CT	MISSOULA	MT	59803-1056	15-5477-23MC	MELLETT POINT NO 2	1566273	0.00	0.00	0.00	0.00	0.00	
LITTELL STEPHEN W	15335106304050000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 161, LOT 161	0.67		POLSON, MT 59860	IMP_R - Improved Property - Rural	$8,840	$37,883	$46,723	1217 OAK AVE	EVANSTON	IL	60202-1220	15-5477-23MC	MELLETT POINT NO 2	961140	0.00	0.00	0.00	0.00	0.00	
LAKE COUNTY	15335106302010000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, PARK MELLET POINT DEDICATED TO THE PUBLIC FOREVER	3.18			EP - Exempt Property	$0	$50,182	$50,182	106 4TH AVE E	POLSON	MT	59860-2125	15-5477-23MC	MELLETT POINT	960151	0.00	0.00	0.00	0.00	0.00	
STARK C MAX & CHARLOTTE M	15335106406010000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 092, LTS 92-94 & 97-102 & 105	6.39	GEORGIA RD	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$65,911	$65,911	38475 MOUNTAIN VIEW RD	POLSON	MT	59860-7336	15-5477-23MC	MELLETT POINT NO 2	961499	0.00	0.00	0.00	0.00	0.00	
DIETRICH FREDERICK WALTER	15335106301030000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 127A, ACRES 1.01, AMND LOTS 126 & 127	1.01		POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$72,449	$72,449	2772 KINNICKINNICK RD UNIT C	VAIL	CO	81657	15-5477-23MC	MELLETT POINT NO 2	956487	0.00	0.00	0.00	0.00	0.00	
MILES DONALD R & PAULY R	15335106405040000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 089, LOT 89	0.50		POLSON, MT 59860	IMP_R - Improved Property - Rural	$124,950	$37,050	$162,000	3100 EDWARDS ST	BUTTE	MT	59701-4617	15-5477-23MC	MELLETT POINT NO 2	961510	0.00	0.00	0.00	0.00	0.00	
ROBERTSON DAVID L	15335106403050000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 064, LOT 64	0.00	FINLEY POINT LN	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$316,500	$316,500	1023 EMERALD HILLS DR	BILLINGS	MT	59101-7220	15-5477-23MC	MELLETT POINT	961384	0.00	0.00	0.00	0.00	0.00	
SIEFERT KAREN ETAL	15335106305020000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 27	0.67		POLSON, MT 59860	IMP_R - Improved Property - Rural	$97,460	$515,000	$612,460	1108 WESTMORELAND CIR	WALNUT CREEK	CA	94596-6335	15-5477-23MC	MELLETT POINT	961470	0.00	0.00	0.00	0.00	0.00	

Owner Name	Parcel ID	Tax Year	Township	Range	Section	Legal Description	Acres	Address	City, State, Zip	Property Type	Building Value	Land Value	Total Value	Owner Address	Owner City	Owner State	Owner Zip	Levy District	Subdivision	Property ID	Cropped Acres	Irrigated Acres	Fallow Acres	Farmsite Acres	Grazing Acres	W Ha Acr
HARTE PAULETTE C	15335106407070000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 043, LT 43	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$6,840	$506,700	$513,540	264 SENECA RD	BENTON HARBOR	MI	49022-5637	15-5477-23MC	MELLETT POINT	961175	0.00	0.00	0.00	0.00	0.00	
NOVIS DAVID E & BRIDGET L	15335106407060000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 044, LOT 44	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$180,700	$504,000	$684,700	1590 CORNERSTONE DR	MISSOULA	MT	59802-8611	15-5477-23MC	MELLETT POINT	961458	0.00	0.00	0.00	0.00	0.00	
HUNT DOREL A	15335106401020000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 077, LOT 77	0.00	PEACHTREE DR	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$307,500	$307,500	5448 E 9000N RD	MANTENO	IL	60950-3315	15-5477-23MC	MELLETT POINT	960241	0.00	0.00	0.00	0.00	0.00	
TOLLIVER ANTHONY J	15335106405010000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 00A, ACRES 3.17, LOT A AMND LOT	3.17		POLSON, MT 59860	IMP_R - Improved Property - Rural	$217,467	$50,133	$267,600	29165 FINLEY POINT LN	POLSON	MT	59860-7769	15-5477-23MC	MELLETT POINT NO 2	956476	0.00	0.00	0.00	0.00	0.00	
BENTHAM RANDY	15335106309020000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 135, LT 135	1.35		POLSON, MT 59860	IMP_R - Improved Property - Rural	$94,985	$41,215	$136,200	PO BOX 5352	MISSOULA	MT	59806-5352	15-5477-23MC	MELLETT POINT NO 2	956432	0.00	0.00	0.00	0.00	0.00	
GRONEBERG THOMAS T & JENNIFER L	15335106310040000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 139, LOT 139	0.89			VAC_R - Vacant Land - Rural	$0	$38,961	$38,961	5515 STUCKY RD	BOZEMAN	MT	59718-9036	15-5477-23MC	MELLETT POINT NO 2	961614	0.00	0.00	0.00	0.00	0.00	
HARDY ROBERT E & JANET E LIVING TRUST	15335106302070000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 6A, ACRES 0.74, AMND PLAT OF LTS 6 & 7	0.00	29873 WESTSIDE DR	POLSON, MT 59860	IMP_R - Improved Property - Rural	$235,790	$449,000	$684,790	29873 WESTSIDE DR S	POLSON	MT	59860-7872	15-5477-23MC	MELLETT POINT	959139	0.00	0.00	0.00	0.00	0.00	
SHIPE TILFORD C & MARJORIE W TRUSTEES	15335106303090000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 023, LOT 23	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$129,100	$387,375	$516,475	29619 WESTSIDE DR N	POLSON	MT	59860-7869	15-5477-23MC	MELLETT POINT	961463	0.00	0.00	0.00	0.00	0.00	
SOHLBERG KRISTEN	15335106401050000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 075	1.82	GEORGIA RD	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$417,500	$417,500	18 MARTHAS CT	MISSOULA	MT	59803-1056	15-5477-23MC	MELLETT POINT	961386	0.00	0.00	0.00	0.00	0.00	
TACK BRIAN F & MC CARTER LINDA L	15335106309030000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 134, ACRES 1.36	1.36		POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$41,264	$41,264	914 FOSTER RD	IOWA CITY	IA	52245-1648	15-5477-23MC	MELLETT POINT NO 2	961119	0.00	0.00	0.00	0.00	0.00	
FORD ROBERT K & BONAWEE J	15335106302050000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 005, LT 5	0.00		POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$413,000	$413,000	3710 AMERICAN WAY APT 324	MISSOULA	MT	59808-1927	15-5477-23MC	MELLETT POINT	961305	0.00	0.00	0.00	0.00	0.00	
TATE HERB TRUSTEE &	15335106310030000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 140, LT 140	1.03			VAC_R - Vacant Land - Rural	$0	$39,647	$39,647	MAIL TO: HERB TATE	TIBURON	CA	94920-1823	15-5477-23MC	MELLETT POINT NO 2	961620	0.00	0.00	0.00	0.00	0.00	
DIETRICH FREDERICK WALTER	15335106301020000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 129, ACRES 2.52, AMND LTS 128 & 129	2.52		POLSON, MT 59860	IMP_R - Improved Property - Rural	$267,752	$79,848	$347,600	2772 KINNICKINNICK RD UNIT C	VAIL	CO	81657	15-5477-23MC	MELLETT POINT NO 2	961152	0.00	0.00	0.00	0.00	0.00	
LECKIE ROSS & SARAH	15335106302040000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 004, LT 4	0.00	29957 WESTSIDE DR S	POLSON, MT 59860	IMP_R - Improved Property - Rural	$160,900	$411,500	$572,400	PO BOX 56	POLSON	MT	59860-0056	15-5477-23MC	MELLETT POINT	960308	0.00	0.00	0.00	0.00	0.00	
GUTHRIE WENDELL W & JUDITH L	15335106405030000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 00B, MELLETT POINT #2 LT B AMD PLAT (.589 AC)	0.59		POLSON, MT 59860	IMP_R - Improved Property - Rural	$184,014	$37,486	$221,500	311 MARY AVE	MISSOULA	MT	59801-8701	15-5477-23MC	MELLETT POINT NO 2	961500	0.00	0.00	0.00	0.00	0.00	
TOOLE JOAN TRIMPLE IRREVOCABLE TRUST	15335106303100000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 024, LOT 24	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$106,075	$439,125	$545,200	1604 HARRIS CT	HELENA	MT	59601-5405	15-5477-23MC	MELLETT POINT	961389	0.00	0.00	0.00	0.00	0.00	
SCHOENECKER JO SELVIG REVOCABLE TRUST	15335106304070000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 159, LOT 159	0.57		POLSON, MT 59860	IMP_R - Improved Property - Rural	$150,607	$37,393	$188,000	3054 68TH AVE SE	MERCER ISLAND	WA	98040-2533	15-5477-23MC	MELLETT POINT NO 2	961556	0.00	0.00	0.00	0.00	0.00	
MCNATT SUSAN A	15335106403070000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 062, LOT 62	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$85,125	$337,875	$423,000	29028 FINLEY POINT LN	POLSON	MT	59860-6805	15-5477-23MC	MELLETT POINT	961451	0.00	0.00	0.00	0.00	0.00	
SCHOENECKER JO SLEVIG ETAL	15335106304020000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 152	0.49	WESTSIDE DR N	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$37,001	$37,001	3054 68TH AVE SE	MERCER ISLAND	WA	98040-2533	15-5477-23MC	MELLETT POINT NO 2	960027	0.00	0.00	0.00	0.00	0.00	
FOSTER RODNEY C III & KAREN	15335106304060000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 160, LOT 160	0.66		POLSON, MT 59860	IMP_R - Improved Property - Rural	$334,966	$37,834	$372,800	1345 E 7TH ST APT 112	WHITEFISH	MT	59937-2808	15-5477-23MC	MELLETT POINT NO 2	960959	0.00	0.00	0.00	0.00	0.00	
ROBINSON OWEN B	15335106306040000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 036, LT 36	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$181,200	$410,000	$591,200	MAIL TO: MARJORIE LACY	FLAGSTAFF	AZ	86004-7591	15-5477-23MC	MELLETT POINT	961387	0.00	0.00	0.00	0.00	0.00	
LONG LAKE PROPERTY LLC	15335106306030000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 035, LT 35 1	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$341,800	$410,000	$751,800	8720 ROLLER COASTER RD	MISSOULA	MT	59808-8498	15-5477-23MC	MELLETT POINT	961149	0.00	0.00	0.00	0.00	0.00	

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DE MAROIS ROBERT E & JUDITH E	15335106404080000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 059	0.00	28956 FINLEY POINT LN	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$419,000	$419,000	6 LAGUNA POINT RD	CHICO	CA	95928-3933	15-5477-23MC	MELLETT POINT	1573550	0.00	0.00	0.00	0.00	0.00	0
CANHAM DONALD H & MAYME A REV LIV TRUST DATED JULY 20,2012	15335106404040000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 056, LOT 56	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$94,830	$312,000	$406,830	1802 HILDA AVE	MISSOULA	MT	59801-5913	15-5477-23MC	MELLETT POINT	958012	0.00	0.00	0.00	0.00	0.00	0
DONALD R LEE REVOCABLE TRUST	15335106303110000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 025, LOT 25	0.00	WESTSIDE DR N	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$448,125	$448,125	3137 AVENUE F	BILLINGS	MT	59102-6514	15-5477-23MC	MELLETT POINT	956554	0.00	0.00	0.00	0.00	0.00	0
MALONE PAULA J TRUSTEE	15335106308030000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 122, LOT 122	1.74	GEORGIA RD	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$43,126	$43,126	4301 GULF SHORE BLVD N APT 402	NAPLES	FL	34103-3477	15-5477-23MC	MELLETT POINT NO 2	956498	0.00	0.00	0.00	0.00	0.00	0
KENNEDY PROPERTIES LLC	15335106403060000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 063	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$483,300	$316,500	$799,800	1214 LONGVIEW RD	LAUREL	MT	59044-1864	15-5477-23MC	MELLETT POINT	958034	0.00	0.00	0.00	0.00	0.00	0
9356 BLAINE LLC	15335106404030000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 057	0.00	28956 FINLEY POINT LN	POLSON, MT 59860	IMP_R - Improved Property - Rural	$124,150	$314,250	$438,400	3839 CHANDLER DR NE	MINNEAPOLIS	MN	55421-4410	15-5477-23MC	MELLETT POINT	961106	0.00	0.00	0.00	0.00	0.00	0
PETERSON SHANE DANIEL & JONDELL RAYANNE	15335106310080000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 145, ACRES 0.95	0.95	HILLTOP DR	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$39,255	$39,255	1212 LAKESIDE DR	LOLO	MT	59847-9705	15-5477-23MC	MELLETT POINT NO 2	961075	0.00	0.00	0.00	0.00	0.00	0
KELSIC RICHARD H & LYNDA JILL	15335106301010000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 130, ACRES 1.12	1.12	GEORGIA RD	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$40,088	$40,088	6853 S MILLER ST	LITTLETON	CO	80127-2918	15-5477-23MC	MELLETT POINT NO 2	957511	0.00	0.00	0.00	0.00	0.00	0
JEHLE ALEXANDER B & STACY	15335106305040000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 029, LOT 29	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$87,900	$447,500	$535,400	3109 CUMMINS WAY	MISSOULA	MT	59802-3229	15-5477-23MC	MELLETT POINT	959006	0.00	0.00	0.00	0.00	0.00	0
RIELEY MARY TRUST	15335106305050000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 030	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$101,100	$419,000	$520,100	1723 EUCLID AVE APT 201	HELENA	MT	59601-1904	15-5477-23MC	MELLETT POINT	959039	0.00	0.00	0.00	0.00	0.00	0
HARDY ROBERT E & JANET E LIVING TRUST	15335106302080000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 7A, ACRES 0.75, AMND PLAT OF LTS 6 & 7 ASSR#0000002376	0.00		POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$414,500	$414,500	29873 WESTSIDE DR S	POLSON	MT	59860-7872	15-5477-23MC	MELLETT POINT	959128	0.00	0.00	0.00	0.00	0.00	0
TACK BRIAN F & MCCARTER LINDA L	15335106309040000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 133, ACRES 1.25	1.25		POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$40,725	$40,725	914 FOSTER RD	IOWA CITY	IA	52245-1648	15-5477-23MC	MELLETT POINT NO 2	961094	0.00	0.00	0.00	0.00	0.00	0
HDR ENTERPRISES LLC	15335106310060000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 143, LOT 143	0.64	HILLTOP DR	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$37,736	$37,736	6 SLEEPY HOLLOW RD	CLINTON	MT	59825-9636	15-5477-23MC	MELLETT POINT NO 2	960967	0.00	0.00	0.00	0.00	0.00	0
LABAIR ROB & HOLLY	15335106310020000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 141, LOT 141	1.26		POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$40,774	$40,774	6 SLEEPY HOLLOW RD	CLINTON	MT	59825-9636	15-5477-23MC	MELLETT POINT NO 2	960504	0.00	0.00	0.00	0.00	0.00	0
JACKSON FAMILY TRUST	15335106401030000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 76	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$182,300	$307,500	$489,800	6000 RATTLESNAKE DR	MISSOULA	MT	59802-5204	15-5477-23MC	MELLETT POINT	958951	0.00	0.00	0.00	0.00	0.00	0
GARNAAS MARK F & RENEE B GARNAAS	15335106305070000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 032, LOT 32	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$177,400	$410,000	$587,400	609 W CRESTLINE DR	MISSOULA	MT	59803-2201	15-5477-23MC	MELLETT POINT	960578	0.00	0.00	0.00	0.00	0.00	0
KAMURA RUSSELL L ETAL	15335106305080000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 033, LT 33	0.48		POLSON, MT 59860	IMP_R - Improved Property - Rural	$283,300	$348,500	$631,800	1105 N RUSSELL ST	MISSOULA	MT	59808-1807	15-5477-23MC	MELLETT POINT	961087	0.00	0.00	0.00	0.00	0.00	0
SAMPLE REVOCABLE TRUST	15335106407030000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 047, LOT 47	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$237,720	$419,000	$656,720	34174 CAMDEN LN	POLSON	MT	59860-7758	15-5477-23MC	MELLETT POINT	961560	0.00	0.00	0.00	0.00	0.00	0
THORSRUD MONTANA PROPERTIES, LLC	15335106404060000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 52, ACRES 1.478	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$852,820	$919,500	$1,772,320	2265 E CORTE DEL SABIO	TUCSON	AZ	85718-7330	15-5477-23MC	MELLETT POINT	961480	0.00	0.00	0.00	0.00	0.00	0
WHIPPLE TODD & ASHLEY	15335106403040000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, LT 65	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$269,975	$335,625	$605,600	131 FIRESIDE DR	BOZEMAN	MT	59718-7999	15-5477-23MC	MELLETT POINT	961289	0.00	0.00	0.00	0.00	0.00	0
THORSRUD SURVIVOR'S TRUST	15335106407010000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 50, ACRES 1.87	0.00	LANIER LN	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$512,250	$512,250	2265 E CORTE DEL SABIO	TUCSON	AZ	85718-7330	15-5477-23MC	MELLETT POINT	960870	0.00	0.00	0.00	0.00	0.00	0
HOWARD STANLEY J & ELIZABETH N	15335106305030000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 028, LT 28	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$152,730	$446,000	$598,730	1805 MAURICE AVE	MISSOULA	MT	59801-5901	15-5477-23MC	MELLETT POINT	960397	0.00	0.00	0.00	0.00	0.00	0

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GUESS SCOTT & ANNE	15335106402030000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 70A - 70B, ASSR# 0000002385	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$769,825	$351,375	$1,121,200	122 APPLE HOUSE LN	MISSOULA	MT	59802-3331	15-5477-23MC	MELLETT POINT	959269	0.00	0.00	0.00	0.00	0.00	0
BOUTELL PETER S & KIM BOUTELL-BLUDORN	15335106303040000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 017, LOT 17	0.00		POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$318,750	$318,750	6581 LATYSON LN NE	BAINBRIDGE IS	WA	98110-4073	15-5477-23MC	MELLETT POINT	957477	0.00	0.00	0.00	0.00	0.00	0
RIGG CHARLES G & JEAN K TRUSTEES	15335106305010000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 026, LOT 26	0.75		POLSON, MT 59860	IMP_R - Improved Property - Rural	$396,600	$516,500	$913,100	34634 LINDBURG LN	POLSON	MT	59860-7867	15-5477-23MC	MELLETT POINT	961377	0.00	0.00	0.00	0.00	0.00	0
THORSRUD DARCI	15335106407040000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 046, LT 46	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$169,300	$437,000	$606,300	628 S 2ND ST W	MISSOULA	MT	59801-1830	15-5477-23MC	MELLETT POINT	961563	0.00	0.00	0.00	0.00	0.00	0
MCKENNA JAMES E	15335106307050000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 114	0.82	GEORGIA RD	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$38,618	$38,618	2914 70TH AVE SE	MERCER ISLAND	WA	98040-2611	15-5477-23MC	MELLETT POINT NO 2	961621	0.00	0.00	0.00	0.00	0.00	0
NOVIS DAVID E & BRIDGET L	15335106407050000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 045, LOT 45	0.00	34252 CAMDEN LN	POLSON, MT 59860	IMP_R - Improved Property - Rural	$15,950	$391,600	$407,550	1590 CORNERSTONE DR	MISSOULA	MT	59802-8611	15-5477-23MC	MELLETT POINT	959346	0.00	0.00	0.00	0.00	0.00	0
BOUTELL PETER S & KIM BOUTELL-BLUDORN	15335106303030000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 016, LT 16	0.00	29713 WESTSIDE DR N	POLSON, MT 59860	IMP_R - Improved Property - Rural	$109,990	$308,625	$418,615	6581 LATYSON LN NE	BAINBRIDGE IS	WA	98110-4073	15-5477-23MC	MELLETT POINT	957466	0.00	0.00	0.00	0.00	0.00	0
ANDERSON MICHAEL W & KELLY	15335106307080000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 109, LOT 109	1.16		POLSON, MT 59860	IMP_R - Improved Property - Rural	$62,690	$40,284	$102,974	5526 CIRCLE DR	FLORENCE	MT	59833-6636	15-5477-23MC	MELLETT POINT NO 2	961392	0.00	0.00	0.00	0.00	0.00	0
SCHOENECKER JO SELVIG REVOCABLE TRUST	15335106304110000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 158A, AMND PLAT OF LOTS 153, 157 & 158 ASSR#0000036070	0.77	LINDBURG LN	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$38,373	$38,373	3054 68TH AVE SE	MERCER ISLAND	WA	98040-2533	15-5477-23MC	MELLETT POINT NO 2	954382	0.00	0.00	0.00	0.00	0.00	0
MAXWELL KIMBERLY A LIVING TRUST	15335106303070000	2019	23 N	19 W	06	MELLETT POINT 016, S06, T23 N, R19 W, Lot A1, OF AMND PLT OF TRA OF AMND PLT OF LOTS 20 & 21 ASSR#0000002926	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$150,280	$313,000	$463,280	PO BOX 7006	BOZEMAN	MT	59771-7006	15-5477-23MC	MELLETT POINT	961473	0.00	0.00	0.00	0.00	0.00	0
MEANS KENT A & LAVAL S	15335106304010000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 154, LOT 154 MELLETT POINT#2 (.50 AC)	0.50	WESTSIDE DR N	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$37,050	$37,050	3501 DUNCAN DR	MISSOULA	MT	59802-3283	15-5477-23MC	MELLETT POINT NO 2	961304	0.00	0.00	0.00	0.00	0.00	0
ANDERSON MICHAEL L & KELLY	15335106307090000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 110, LT 110	0.93	HILLTOP DR	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$39,157	$39,157	5526 CIRCLE DR	FLORENCE	MT	59833-6636	15-5477-23MC	MELLETT POINT NO 2	961163	0.00	0.00	0.00	0.00	0.00	0
PIERCE KRISTINI P & JOHN	15335106304080000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 155, LOTS 155 & 156 MELLETT POINT #2(.99 AC)	0.99	WESTSIDE DR	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$8,910	$39,451	$48,361	737 LOCUST ST	MISSOULA	MT	59802-3721	15-5477-23MC	MELLETT POINT NO 2	961748	0.00	0.00	0.00	0.00	0.00	0
THORSRUD MONTANA PROPERTIES, LLC	15335106404070000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 51, ACRES 0.622	0.00	FINLEY POINT LN	POLSON, MT 59860	IMP_R - Improved Property - Rural	$24,560	$346,875	$371,435	2265 E CORTE DEL SABIO	TUCSON	AZ	85718-7330	15-5477-23MC	MELLETT POINT	961479	0.00	0.00	0.00	0.00	0.00	0
TABISH GREGORY P & JENNIFER	15335106302110000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 012, LT 12	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$112,000	$432,500	$544,500	3667 MILWAUKEE CT	MISSOULA	MT	59808-5932	15-5477-23MC	MELLETT POINT	961081	0.00	0.00	0.00	0.00	0.00	0
PEEPLES CRAIG A & CHRISTINA B TRUST	15335106403030000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 066, MELLETT POINT LT 66 .47AC	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$256,130	$308,625	$564,755	29080 FINLEY POINT LN	POLSON	MT	59860-6805	15-5477-23MC	MELLETT POINT	961629	0.00	0.00	0.00	0.00	0.00	0
SCHOENECKER ERIC	15335106304090000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 153A, ACRES 0.73, AMND PLAT OF LOTS 153, 157 & 158 ASSR#0000036068	0.73			VAC_R - Vacant Land - Rural	$0	$38,177	$38,177	2122 8TH AVE N APT 501	SEATTLE	WA	98109-2479	15-5477-23MC	MELLETT POINT NO 2	954380	0.00	0.00	0.00	0.00	0.00	0
HOCHHALTER HAROLD ETAL	15335106303020000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 15, ASSR#0000003044	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$93,300	$307,500	$400,800	5017 ORCHARD AVE	MISSOULA	MT	59803-2040	15-5477-23MC	MELLETT POINT	961604	0.00	0.00	0.00	0.00	0.00	0
HAVLOVICK JOSEPH L REV LIVING TRUST	15335106303050000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 018, LOT 18	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$6,330	$308,625	$314,955	36023 S SHORE LN	POLSON	MT	59860-7903	15-5477-23MC	MELLETT POINT	960977	0.00	0.00	0.00	0.00	0.00	0

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WICKS GARY J & SUSAN D	15335106303080000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 022, ACRES 1.78	1.78		POLSON, MT 59860	IMP_R - Improved Property - Rural	$269,975	$278,425	$548,400	29629 WESTSIDE DR N	POLSON	MT	59860-7869	15-5477-23MC	MELLETT POINT	961630	0.00	0.00	0.00	0.00	0.00	
HARDY STEPHEN P & ANGELA M	15335106302090000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 008, LOT 8	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$138,200	$410,000	$548,200	8685 JACOT LN	MISSOULA	MT	59808-9449	15-5477-23MC	MELLETT POINT	961382	0.00	0.00	0.00	0.00	0.00	
STARK C MAX & CHARLOTTE M	15335106402020000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 071, LT 71	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$212,000	$343,500	$555,500	38475 MOUNTAIN VIEW RD	POLSON	MT	59860-7336	15-5477-23MC	MELLETT POINT	961498	0.00	0.00	0.00	0.00	0.00	
GUTHRIE WENDELL W &	15335106403020000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 067, LT 67	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$61,100	$402,400	$463,500	224A INEZ ST	MISSOULA	MT	59801-2306	15-5477-23MC	MELLETT POINT	960892	0.00	0.00	0.00	0.00	0.00	
JETTE LORI J & KENT J PRATT	15335106402050000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 069, LOT 69	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$72,560	$308,625	$381,185	5940 JOLINDA CT	MISSOULA	MT	59803-2948	15-5477-23MC	MELLETT POINT	961355	0.00	0.00	0.00	0.00	0.00	
HOLTZ KRISTIN H REVOCABLE TRUST	15335106302120000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 09A, LT A OF AMEND PLAT LTS 9-11	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$533,300	$483,500	$1,016,800	2920 AUTUMN WOODS DR	CHASKA	MN	55318-1134	15-5477-23MC	MELLETT POINT	961719	0.00	0.00	0.00	0.00	0.00	
HICKEL KENNETH E PERSONAL RESIDENCE TRUST	15335106302100000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 09B, LT B OF AMEND PLAT OF LTS 9-11	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$184,700	$486,500	$671,200	MICHAEL OLSON	BILLINGS	MT	59102-1778	15-5477-23MC	MELLETT POINT	961013	0.00	0.00	0.00	0.00	0.00	
SUSOTT RONALD A & WENDY J	15335106403010000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 068, ACRES 0.47	0.46		POLSON, MT 59860	IMP_R - Improved Property - Rural	$245,300	$409,500	$654,800	29104 FINLEY POINT LN	POLSON	MT	59860-7769	15-5477-23MC	MELLETT POINT	961265	0.00	0.00	0.00	0.00	0.00	
JOHNSTON BERNICE VB & MICHAEL H	15335106403080000	2019	23 N	19 W	06	MELLETT POINT 016, S06, T23 N, R19 W, Lot 061, ASSR# 0000002970	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$155,150	$350,250	$505,400	2439 GILBERT AVE	MISSOULA	MT	59802-3403	15-5477-23MC	MELLETT POINT	961523	0.00	0.00	0.00	0.00	0.00	
BUSEY HENRY W & SARA M	15335106407080000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 042, LOT 42	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$92,350	$309,750	$402,100	34215 LANIER LN	POLSON	MT	59860-6819	15-5477-23MC	MELLETT POINT	957820	0.00	0.00	0.00	0.00	0.00	
IRWIN JANIS M REV LIV TRUST OF 2008	15335106402010000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 72A, AMND PLAT OF LOTS 72 & 73 ASSR#0000002573	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$877,970	$630,250	$1,508,220	29882 SMUGGLERS POINT RD	POLSON	MT	59860-7859	15-5477-23MC	MELLETT POINT	961057	0.00	0.00	0.00	0.00	0.00	
SOHLBERG FAMILY TRUST	15335106401070000	2019	23 N	19 W	06	MELLETT POINT 016, S06, T23 N, R19 W, Lot 74A, AMND PLAT OF LOTS 74 & 79 ASSR#0000002938	0.00	29882 SMUGGLERS POINT RD	POLSON, MT 59860	IMP_R - Improved Property - Rural	$422,600	$443,000	$865,600	5285 ELK RIDGE RD	MISSOULA	MT	59802-5227	15-5477-23MC	MELLETT POINT	961487	0.00	0.00	0.00	0.00	0.00	
							0.00				$0	$0	$0								0.00	0.00	0.00	0.00	0.00	
KIMMEL ARNOLD E & SHERRIE MARIE	15335106302030000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 003, ACRES 0.49, COS 6799	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$327,300	$417,500	$744,800	29963 WESTSIDE DR S	POLSON	MT	59860-7871	15-5477-23MC	MELLETT POINT	961134	0.00	0.00	0.00	0.00	0.00	
TROXEL FAMILY TRUST	15335106306020000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 034, LOT 34	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$192,900	$410,000	$602,900	36254 S SHORE LN	POLSON	MT	59860-7904	15-5477-23MC	MELLETT POINT	961591	0.00	0.00	0.00	0.00	0.00	
CUNNINGHAM STEVEN & ELIZABETH	15335106303120000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 14A, AMND PLAT OF LOTS 13 & 14 ASSR#0000036143	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$385,425	$283,875	$669,300	29737 WESTSIDE DR N	POLSON	MT	59860-7870	15-5477-23MC	MELLETT POINT	954484	0.00	0.00	0.00	0.00	0.00	
LUNDT KRISTOPHER E & JAMIE L	15335106303010000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 13A, AMND PLAT OF LOTS 13 & 14 ASSR#0000003114	0.00		POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$342,375	$342,375	514 AMERICAS WAY # 6042	BOX ELDER	SD	57719-7600	15-5477-23MC	MELLETT POINT	961682	0.00	0.00	0.00	0.00	0.00	
BERGSTROM CHRISTY L & DOUGLAS J	15335106308020000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 121, LOT 121	1.47	GEORGIA RD	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$41,803	$41,803	3620 EDWARD ST NE	SAINT ANTHONY	MN	55418-1553	15-5477-23MC	MELLETT POINT NO 2	961477	0.00	0.00	0.00	0.00	0.00	
STARK C MAX & CHARLOTTE M	15335106308010000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 120, LT 120	1.62	GEORGIA RD	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$42,538	$42,538	38475 MOUNTAIN VIEW RD	POLSON	MT	59860-7336	15-5477-23MC	MELLETT POINT NO 2	961497	0.00	0.00	0.00	0.00	0.00	
KLAUSS JULIE ANN	15335106307010000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 119	0.61	FINLEY POINT LANE	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$37,589	$37,589	4040 LEESBURG LN APT 74	CINCINNATI	OH	45209-1508	15-5477-23MC	MELLETT POINT NO 2	961101	0.00	0.00	0.00	0.00	0.00	

Owner Name	Parcel ID	Tax Year	Township	Range	Section	Legal Description	Acres	Address	City, State, Zip	Property Type	Building Value	Land Value	Total Value	Owner Address	Owner City	Owner State	Owner Zip	Levy District	Subdivision	Property ID	Cropped Acres	Irrigated Acres	Fallow Acres	Farmsite Acres	Grazing Acres	W Ha Acr
WHALEY JAMES H & LISA R	15335106307100000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 117, LT 117	0.81		POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$38,569	$38,569	530 N ORANGE ST	MISSOULA	MT	59802-4129	15-5477-23MC	MELLETT POINT NO 2	961529	0.00	0.00	0.00	0.00	0.00	0.00
HINTZMAN SCOTT	15335106307020000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 118, LOT 118	0.51	GEORGIA RD	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$37,099	$37,099	4949 CLINTON ST	BUFFALO	NY	14224-1737	15-5477-23MC	MELLETT POINT NO 2	961018	0.00	0.00	0.00	0.00	0.00	0.00
MCCRUDDEN DWAYNE D & JULIE R	15335106307030000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 116, LOT 116	0.73		POLSON, MT 59860	IMP_R - Improved Property - Rural	$35,510	$38,177	$73,687	2190 BUTTREY LN	MISSOULA	MT	59802-9503	15-5477-23MC	MELLETT POINT NO 2	961655	0.00	0.00	0.00	0.00	0.00	0.00
COLE JUDITH J FAMILY TRUST	15335106307040000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 115, ACRES 0.72	0.72			VAC_R - Vacant Land - Rural	$0	$38,128	$38,128	1160 MANOR DR	RENO	NV	89509-2525	15-5477-23MC	MELLETT POINT NO 2	961360	0.00	0.00	0.00	0.00	0.00	0.00
ALLEN FREDERICK C JR ETAL	15335106406050000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 096, LOT 96 (.53 AC)	0.53			VAC_R - Vacant Land - Rural	$0	$37,197	$37,197	880 W 18TH ST	SAN PEDRO	CA	90731-4604	15-5477-23MC	MELLETT POINT NO 2	961767	0.00	0.00	0.00	0.00	0.00	0.00
							0.00				$0	$0	$0								0.00	0.00	0.00	0.00	0.00	0.00
							0.00				$0	$0	$0								0.00	0.00	0.00	0.00	0.00	0.00
BORLANG ROGER & SHARON	15335107401050000	2019	23 N	19 W	07	S07, T23 N, R19 W, SOUTH 45.5' OF H-391	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$5,120	$342,500	$347,620	PO BOX 103	GILDFORD	MT	59525-0103	15-5477-23MC		960253	0.00	0.00	0.00	0.00	0.00	0.00
TURNER PATRICIA A	15335107401030000	2019	23 N	19 W	07	S07, T23 N, R19 W, TR IN GOVT LOT 8	0.33		POLSON, MT 59860	IMP_R - Improved Property - Rural	$134,290	$474,617	$608,907	PO BOX 1542	POLSON	MT	59860-1542	15-5477-23MC		961598	0.00	0.00	0.00	0.00	0.00	0.00
LAKE COUNTY	15335107403110000	2019	23 N	19 W	07	SKIDOO VILLA ESTATES, S07, T23 N, R19 W, ACRES 0.587, PARK	0.59			EP - Exempt Property	$0	$37,476	$37,476	106 4TH AVE E	POLSON	MT	59860-2125	15-5477-23MC	SKIDOO VILLA ESTATES	960157	0.00	0.00	0.00	0.00	0.00	0.00
COOK KEESE FAMILY LLC	15335107402120000	2019	23 N	19 W	07	ODD FELLOWS VILLA, S07, T23 N, R19 W, Lot 001, LT 1	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$177,800	$404,000	$581,800	26750 EASTVALE RD	PALOS VERDES PENINSULA	CA	90274-4005	15-5477-23MC	ODD FELLOWS VILLA	958345	0.00	0.00	0.00	0.00	0.00	0.00
FLINK EDGAR F & RITA J	15335107403070000	2019	23 N	19 W	07	SKIDOO VILLA ESTATES, S07, T23 N, R19 W, Lot 001, LT 1	0.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$190,700	$388,000	$578,700	4785 SPURGIN RD	MISSOULA	MT	59804-4511	15-5477-23MC	SKIDOO VILLA ESTATES	958962	0.00	0.00	0.00	0.00	0.00	0.00
SOHLBERG KRISTEN	15335106401040000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 106	0.88	PEACHTREE DR	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$38,912	$38,912	18 MARTHAS CT	MISSOULA	MT	59803-1056	15-5477-23MC	MELLETT POINT NO 2	961385	0.00	0.00	0.00	0.00	0.00	0.00
SOHLBERG KRISTEN	15335106401080000	2019	23 N	19 W	06	MELLETT POINT NO 2, S06, T23 N, R19 W, Lot 107	0.95	PEACHTREE DR	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$39,255	$39,255	18 MARTHAS CT	MISSOULA	MT	59803-1056	15-5477-23MC	MELLETT POINT NO 2	1566272	0.00	0.00	0.00	0.00	0.00	0.00
BULL ISLAND MEMORIES LLC	15335011101160000	2019	23 N	20 W	11	IDYLWILD SUBD A, S11, T23 N, R20 W, Lot 70A, ACRES 1.07, AMND PLT	1.08	BULL ISLAND	POLSON, MT 59860	IMP_R - Improved Property - Rural	$204,630	$422,070	$626,700	PO BOX 5123	MISSOULA	MT	59806-5123	15-1477-23	IDYLWILD SUBD A	1496047	0.00	0.00	0.00	0.00	0.00	0.00
BULL ISLAND RETREAT LLC	15335011101170000	2019	23 N	20 W	11	IDYLWILD SUBD A, S11, T23 N, R20 W, Lot 69, ACRES 0.38, AMND PLT	0.38		POLSON, MT 59860	IMP_R - Improved Property - Rural	$155,540	$219,560	$375,100	201 UNIVERSITY AVE	MISSOULA	MT	59801-4351	15-1477-23	IDYLWILD SUBD A	964185	0.00	0.00	0.00	0.00	0.00	0.00
BULL ISLAND LLC	15335011101180000	2019	23 N	20 W	11	IDYLWILD SUBD A, S11, T23 N, R20 W, Lot 68A, ACRES 0.39, AMND PLT	0.39	BULL ISLAND	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$141,680	$141,680	201 UNIVERSITY AVE	MISSOULA	MT	59801-4351	15-1477-23	IDYLWILD SUBD A	1496048	0.00	0.00	0.00	0.00	0.00	0.00
BULL ISLAND LLC	15335011101190000	2019	23 N	20 W	11	IDYLWILD SUBD A, S11, T23 N, R20 W, Lot 68B, ACRES 0.17, AMND PLT	0.17	BULL ISLAND RD	POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$226,890	$226,890	201 UNIVERSITY AVE	MISSOULA	MT	59801-4351	15-1477-23	IDYLWILD SUBD A	1493042	0.00	0.00	0.00	0.00	0.00	0.00
KENNEDY HOWARD & LOIS TRUSTEES	15335011101210000	2019	23 N	20 W	11	IDYLWILD SUBD A, S11, T23 N, R20 W, POR OF LOT B	1.00		POLSON, MT 59860	IMP_R - Improved Property - Rural	$147,900	$237,600	$385,500	400 N JEFFERSON ST APT 47	WICKENBURG	AZ	85390-3279	15-1477-23	IDYLWILD SUBD A	964272	0.00	0.00	0.00	0.00	0.00	0.00
							0.00				$0	$0	$0								0.00	0.00	0.00	0.00	0.00	0.00
DE MAROIS ROBERT E & JUDITH E	15335106404020000	2019	23 N	19 W	06	MELLETT POINT, S06, T23 N, R19 W, Lot 058	0.00		POLSON, MT 59860	VAC_R - Vacant Land - Rural	$0	$426,500	$426,500	6 LAGUNA POINT RD	CHICO	CA	95928-3933	15-5477-23MC	MELLETT POINT	959246	0.00	0.00	0.00	0.00	0.00	0.00

Conservation Easements

Record Count: 1

Easement Holder	Acres	Easement Date	Deed
Montana Land Reliance	67.10	12/16/1998	Microfilm 395368

Public Land

Record Count: 7

Owner	Acres
County Government	0.61
County Government	3.19
County Government	0.39
County Government	3.38
County Government	2.53
County Government	1.45
County Government	0.48

Groundwater Information Center Wells

Record Count: 56

Site Name	GWIC ID	Use Type	Site Type	Date Completed	Depth	Water Level	Depth Water Enters	Drill Method	Driller	Township	Range	Section	Subsection	Subdivision	Block	Lot	County	Latitude	Longitude	Lat/Lon Datum	Location Method
IRWIN STEPHEN AND J.	77512		WELL	3/19/1984	180	62	41	FORWARD ROTARY	CASTLIO DRILLING	23N	19W	6	DDCA	MELOTT POINT		73	LAKE	47.7786	-114.0733	NAD27	NAV-GPS
HEAD FRANK AND MARY	77515		WELL	4/20/1971	126	10	126	CHURN	CAMP WELL DRILLING	23N	19W	7	CADB	FINLEY POINT		6	LAKE	47.7663	-114.0819	NAD27	NAV-GPS
CANNON RICHARD & M.	77517		WELL	3/29/1985	403	98	323	AIR ROTARY	LIBERTY DRILLING & PUMP CO	23N	19W	7	BCC	BORCHERS OF FINLEY POINT		GOV 3	LAKE	47.7697	-114.0891	NAD27	UNKNOWN
LAVOIE EUGENE E.	77519		WELL	6/24/1983	335	10	0	FORWARD ROTARY	JEROMES DRILLING CO	23N	19W	7	DCBB				LAKE	47.7644	-114.0805	NAD27	MAP
AMRINE, ROBERT Y.,SALLY H., AND BRUCE R.	77520		WELL	11/1/1988	324	26	284	AIR ROTARY	LIBERTY DRILLING & PUMP CO	23N	19W	7	CABB	FRIENDSHIP VILLA		GOV 2	LAKE	47.7686	-114.0847	NAD27	MAP
FARNUM J. BRUCE	77521		WELL	10/22/1982	402	34	0	FORWARD ROTARY	CASTLIO DRILLING	23N	19W	7	CAA	FRIENDSHIP VILLA		4	LAKE	47.7683	-114.0805	NAD27	UNKNOWN
KOHLER MARGARET L.	77523		WELL	2/13/1979	326	4	281	AIR ROTARY	LIBERTY DRILLING & PUMP CO	23N	19W	7	CAAD				LAKE	47.7677	-114.0805	NAD27	UNKNOWN
ROTH URBAN	77525		WELL	4/28/1982	235	60	0	FORWARD ROTARY	O.K.	23N	19W	7	DBDC	SKIDOO VILLA SITES		5-6	LAKE	47.7658	-114.0763	NAD27	MAP
TROXEL GEORGE AND LONG HOWARD	194519		WELL	10/18/1999	415	10	415	ROTARY	CASTLIO DRILLING	23N	19W	6		MELOTT PT		34	LAKE	47.7814	-114.0806	NAD27	MAP
KEAST MIKE AND KIM	241970		WELL	3/11/2008	400	27	360	ROTARY	ALLWEST DRILLING INC	23N	19W	7	CA				LAKE	47.7670	-114.0831	NAD27	TRS-SEC
STEVENSON EVELYN	703355		WELL	5/6/1977	466	123	0	AIR ROTARY	D AND N DRILLING	23N	19W	7	BAAA				LAKE	47.7766	-114.0813	NAD27	UNKNOWN
PURCELL MARY DAWN	77507		WELL	3/28/1987	230	83	190	FORWARD ROTARY	BRAZILL DRILLING	23N	19W	6	CA	MELLET POINT #1		28	LAKE	47.7824	-114.0843	NAD83	TRS-SEC
DAVIES L D AND M R	77508		WELL	5/11/1976	386	15	0	AIR ROTARY	LIBERTY DRILLING & PUMP CO	23N	19W	6	CDB				LAKE	47.7798	-114.0856	NAD83	TRS-SEC
MAXWELL LOWELL & W.	77509		WELL	5/10/1982	441	49	441	AIR ROTARY	LIBERTY DRILLING & PUMP CO	23N	19W	6	DB	MELLETT POINT		54	LAKE	47.7824	-114.0791	NAD83	TRS-SEC
PURCELL JIM	77510		WELL	4/1/1987	445	30	200	FORWARD ROTARY	BRAZILL DRILLING	23N	19W	6	DB	MELLET POINT #1		41	LAKE	47.7824	-114.0791	NAD83	TRS-SEC
GOLLEHON PAUL	77511		WELL	5/5/1978	440	175	0	FORWARD ROTARY	ANDERSON DRILLING	23N	19W	6	DC	MELLETT POINT #2	1	132	LAKE	47.7789	-114.0791	NAD83	TRS-SEC
CRERAR DAVID	77513		WELL	4/14/1981	266	6	206	FORWARD ROTARY	CAMP WELL DRILLING	23N	19W	7				6	LAKE	47.7694	-114.0816	NAD83	TRS-SEC
WARD IRVINE C.	77514		WELL	7/31/1973	140	11	140	FORWARD ROTARY	CAMP WELL DRILLING	23N	19W	7				PART OF 6	LAKE	47.7694	-114.0816	NAD83	TRS-SEC
THIEME FRED E	77516		WELL	5/22/1967	199	5	0	CHURN	CAMP WELL DRILLING	23N	19W	7	DCB			8	LAKE	47.7645	-114.0803	NAD83	TRS-SEC
WOODAHL ROBERT L AND ARLENE R	77518		WELL	12/10/1970	180	20	0	CABLE	LIBERTY DRILLING & PUMP CO	23N	19W	7	BD			GOV'T1-2-7	LAKE	47.7713	-114.0842	NAD83	TRS-SEC
FARNUM FREDA/VINCENT	77522		WELL	3/5/1967	390	27	0	CABLE & AIR ROTARY	LIBERTY DRILLING & PUMP CO	23N	19W	7	CAA	FRIENDSHIP VILLA		4	LAKE	47.7684	-114.0829	NAD83	TRS-SEC
GARY SAMUEL	77526		WELL	7/13/1972	331	59	0	AIR ROTARY	LIBERTY DRILLING & PUMP CO	23N	19W	7	DD			4-5-7	LAKE	47.7635	-114.0738	NAD83	TRS-SEC
REBER, J.B. AND M.E.	77527		WELL	8/20/1971	294	47	0	AIR ROTARY	LIBERTY DRILLING & PUMP CO	23N	19W	7	DD				LAKE	47.7635	-114.0738	NAD83	TRS-SEC
VALETT BRYAN/ GOOD VELMA E	77528		WELL	8/19/1975	116	39	70	AIR ROTARY	LIBERTY DRILLING & PUMP CO	23N	19W	7	DDD				LAKE	47.7625	-114.0725	NAD83	TRS-SEC

Site Name	GWIC ID	Use Type	Site Type	Date Completed	Depth	Water Level	Depth Water Enters	Drill Method	Driller	Township	Range	Section	Subsection	Subdivision	Block	Lot	County	Latitude	Longitude	Lat/Lon Datum	Location Method
TURNER DON	143247		WELL	5/11/1994	283	8	0	ROTARY	CASTLIO DRILLING	23N	19W	7				5B	LAKE	47.7694	-114.0816	NAD83	TRS-SEC
JALLITE NEIL	151779		WELL	7/5/1988	500	185	0		ROBERTS	23N	19W	7		FINLEY POINT		138	LAKE	47.7694	-114.0816	NAD83	TRS-SEC
JOLLITE NEIL	151799		WELL	7/5/1988	505	185	0	UNKNOWN	ROBERTS	23N	19W	7		FINLEY POINT		138	LAKE	47.7694	-114.0816	NAD83	TRS-SEC
HERN ARDELL AND POMEROY LISSA	152788		WELL	6/20/1995	305	11	264	ROTARY	LOCHNER	23N	19W	7	CAB	FRIENDSHIPP VILLA		1	LAKE	47.7684	-114.0855	NAD83	TRS-SEC
MILES DONALD R & PAULY R	146875		WELL	7/31/1994	463	108	393	ROTARY	LIBERTY DRILLING & PUMP CO	23N	19W	6	DA	MELLETT POINT #2		89	LAKE	47.7824	-114.0739	NAD83	TRS-SEC
THORSRUD ED	141372		WELL	5/14/1986	120	18	0	FORWARD ROTARY	CASTLIO DRILLING	23N	19W	6	DBDA	MELLET POINT GVT. LOT 3		46	LAKE	47.7824	-114.0766	NAD83	MAP
GRONEBERG, THOMAS T & JENNIFER L	148605		WELL	7/5/1988	505	185	0	ROTARY	CASTLIO DRILLING	23N	19W	6	DC	MELLETT POINT NO 2		138	LAKE	47.7789	-114.0791	NAD83	TRS-SEC
MCCORMICK, BILL AND BARBARA	148606		WELL	9/21/1994	210	18	0	ROTARY	CASTLIO DRILLING	23N	19W	7	BD	FINELY POINT VILLA			LAKE	47.7713	-114.0842	NAD83	TRS-SEC
METZ MONDELL	150667		WELL	11/22/1994	240	28	200	ROTARY	CASTLIO DRILLING	23N	19W	7	BAB	FINLEY PT VILLA	2	1	LAKE	47.7762	-114.0855	NAD83	TRS-SEC
BISHOP LAURRY	168825		WELL	6/24/1998	115	55	95	ROTARY	CASTLIO DRILLING	23N	19W	7		FINLEY POINT VILL	5	4	LAKE	47.7694	-114.0816	NAD83	TRS-SEC
HARDY BOB	200476		WELL	9/25/2001	158	16	150	ROTARY	CHAMBERS DRILLING COMPANY	23N	19W	6	CD	MELLETT POINT SUBDIVISION		6-7	LAKE	47.7789	-114.0843	NAD83	TRS-SEC
STOVERUD, DALE AND LINDA	210132		WELL	3/22/2004	200	73	180	ROTARY	OKEEFE DRILLING CO	23N	19W	6	C	MELLETT POINT		63	LAKE	47.7806	-114.0869	NAD83	TRS-SEC
I.O.O.F. MISSION LODGE C/O	209521		WELL	3/1/2004	128	43	108	ROTARY	WESTERN WATER WORKS INC	23N	19W	7	DC				LAKE	47.7635	-114.0790	NAD83	TRS-SEC
TACK, BRIAN	216454		WELL	1/26/2005	705	170	640	ROTARY	MAIN HARBOR PUMPS & WELL DRILLING	23N	19W	6	CD				LAKE	47.7789	-114.0843	NAD83	TRS-SEC
BENTHAM, RANDY	227260		WELL	6/23/2006	605	194	540	ROTARY	MAIN HARBOR PUMPS & WELL DRILLING	23N	19W	6	CD				LAKE	47.7786	-114.0809	NAD83	MAP
SCHOENECKER, JO	228915		WELL	9/21/2006	465	86	415	ROTARY	MAIN HARBOR PUMPS & WELL DRILLING	23N	19W	6	C	MELLETT POINT NO. 2		159	LAKE	47.7808	-114.0846	NAD83	MAP
SHATIZADAH DOREEN	250492		WELL	5/29/2009	400	12	360	ROTARY	ALLWEST DRILLING INC	23N	19W	6	CA				LAKE	47.7824	-114.0843	NAD83	TRS-SEC
PEEPLES CRAIG & TINA	250622		WELL	5/26/2009	480	99	450	ROTARY	MAIN HARBOR PUMPS AND WELL DRILLING	23N	19W	6	DDBA	MELLET POINT NO. 1		66	LAKE	47.7801	-114.0729	NAD83	MAP
MITCHELL DENNIS	219916		WELL	6/21/2005	295	76	245	ROTARY	CHAMBERS DRILLING COMPANY	23N	19W	6	C	MELOTT POINT # 2		154	LAKE	47.7806	-114.0869	NAD83	TRS-SEC
STEFFES, DIANA	225011		WELL	5/11/2006	325	7	260	ROTARY	MAIN HARBOR PUMPS & WELL DRILLING	23N	19W	7	CA				LAKE	47.7674	-114.0842	NAD83	TRS-SEC
CABALLERO CATHLEEN	247735		WELL	10/20/2008	320	74	280	ROTARY	ALLWEST DRILLING INC	23N	19W	6	DA				LAKE	47.7824	-114.0739	NAD83	TRS-SEC
ALTMAN CINDY DURAND	254669		WELL	9/7/2002	583	189	563		CASTLIO DRILLING	23N	19W	6	DCC	MELLETT POINT NO. 2		141	LAKE	47.7777	-114.0798	NAD83	MAP
FOSTER ROD	254676		WELL	5/19/2000	600	65	520	ROTARY	CASTLIO DRILLING	23N	19W	6	CACD	MELLETT POINT #2		160	LAKE	47.7808	-114.0840	NAD83	MAP
RATZBURG DAYLE OR DOREEN	258987		WELL	10/22/2010	405	40	385	ROTARY	ACE DRILLING CO.	23N	19W	7	DC				LAKE	47.7635	-114.0790	NAD83	TRS-SEC
MCLAUGHLIN, WILLIAM	268468		WELL	10/2/2012	345	60	305	ROTARY	ALLWEST DRILLING INC	23N	19W	7	CA	FINLEY POINT VILLA SITE	6	3	LAKE	47.7674	-114.0842	NAD83	TRS-SEC
ANDERSON, MIKE OR KELLY	285238		WELL	9/17/2015	580	160	560	ROTARY	ACE DRILLING	23N	19W	6	DC			110	LAKE	47.7789	-114.0791	NAD83	TRS-SEC
NOONAN , DON/ROSHELEAU, KYLE	278055		WELL	8/28/2006	295	78	200	ROTARY	CHAMBERS DRILLING COMPANY	23N	19W	6	CB	MELLETT POINT		A1	LAKE	47.7824	-114.0895	NAD83	TRS-SEC
VALETT FAMILY LIMITED PARTNERSHIP	294080		WELL	9/7/2017	245	76	205	ROTARY	ALLWEST DRILLING INC	23N	19W	7	DD				LAKE	47.7635	-114.0738	NAD83	TRS-SEC

Site Name	GWIC ID	Use Type	Site Type	Date Completed	Depth	Water Level	Depth Water Enters	Drill Method	Driller	Township	Range	Section	Subsection	Subdivision	Block	Lot	County	Latitude	Longitude	Lat/Lon Datum	Location Method
LITTELL STEPHEN W., NEWTON SARAH AND DAVID	297833		WELL	7/24/2018	160	62	120	ROTARY	ALLWEST DRILLING INC	23N	19W	7	DD				LAKE	47.7635	-114.0738	NAD83	TRS-SEC
TAYLOR, BOYD	278002		WELL	5/7/2014	200	30	180		OKEEFE DRILLING CO	23N	19W	7	DB	SKIDOO VILLA ESTATES		003	LAKE	47.7664	-114.0764	WGS84	NAV-GPS
AKSHUN & AKSHUN, INC.	298643		WELL	9/12/2018	441	45	421	DR	OKEEFE DRILLING CO	23N	19W	7	DC				LAKE	47.7636	-114.0803	WGS84	NAV-GPS
NOVIS, DAVID	288673		WELL	7/15/2016	350	30	320	HOLLOWSTEM AUGER DR	OKEEFE DRILLING CO	23N	19W	6	DB	MELLETT POINT		45	LAKE	47.7817	-114.0773	WGS84	NAV-GPS

APPENDIX C

WELL LOGS

WELL LOCATIONS AND NEIGHBORING PROPERTIES MAP

WELL LOCATIONS WITH THOA SEPTIC SYSTEMS AND MIXING ZONES

REC GW FLOW AND GRADIENT DIRECTION, AND K VALUES

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.

Other Options

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Site Name: WOODAHL ROBERT L AND ARLENE R
GWIC Id: 77518

Section 1: Well Owner(s)

1) WOODAHL, ROBERT L. AND ARLENE R. (MAIL)
N/A
HELENA MT N/A [12/10/1970]

Section 2: Location

Township	Range	Section	Quarter Sections
23N	19W	7	SE¼ NW¼

County
LAKE

Geocode

Latitude	Longitude	Geomethod	Datum
47.771329	-114.084181	TRS-SEC	NAD83

Ground Surface Altitude	Ground Surface Method	Datum	Date
2952			

Addition	Block	Lot
		GOV'T1-2-7

Section 3: Proposed Use of Water

DOMESTIC (1)

Section 4: Type of Work

Drilling Method: CABLE
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Thursday, December 10, 1970

Section 6: Well Construction Details

There are no borehole dimensions assigned to this well.

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-2	40.2	6				

There are no completion records assigned to this well.

Annular Space (Seal/Grout/Packer)

There are no annular space records assigned to this well.

Section 7: Well Test Data

Total Depth: 180
Static Water Level: 20
Water Temperature:

Air Test *

25 gpm with drill stem set at _ feet for 2 hours.
Time of recovery _ hours.
Recovery water level _ feet.
Pumping water level 94 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
400MCRB - MIDDLE BELT CARBONATE

From	To	Description
0	0.5	TOPSOIL
0.5	10	TAN CLAY- ROCK AND BOULDERS.
10	53	GRAY ROCK
53	54	TAN AND BROWN ROCK
54	65	DARK GRAY ROCK
65	75	GRAY-GREEN ROCK
75	77	TAN AND BROWN ROCK
77	91	DARK GRAY ROCK
91	116	TAN-GREEN ROCK
116	117	TAN AND BROWN ROCK-IN ALTERNATE LAYERS.SEEPS
117	137	TAN-GREEN ROCK
137	142	TAN AND BROWN ROCK IN ALTERNATE LAYERS.SEEPS
142	150	BROKEN TAN & BROWN ROCK
150	153	TAN AND BROWN ROCK
153	157	BROKEN TAN AND BROWN ROCK

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:
Company: LIBERTY DRILLING & PUMP CO
License No: WWC-52
Date Completed: 12/10/1970

Site Name: WOODAHL ROBERT L AND ARLENE R
GWIC Id: 77518
Additional Lithology Records

From	To	Description
157	180	TAN AND BROWN ROCK

MONTANA WELL LOG REPORT

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Other Options

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Site Name: TURNER DON
GWIC Id: 143247

Section 1: Well Owner(s)

1) TURNER, DON (MAIL)
908 E GRIFFIN DR
BOZEMAN MT 59715 [05/11/1994]

Section 2: Location

Township	Range	Section	Quarter Sections
23N	19W	7	

County
LAKE

Geocode

Latitude	Longitude	Geomethod	Datum
47.769364	-114.08158	TRS-SEC	NAD83

Ground Surface Altitude	Ground Surface Method	Datum	Date

Addition	Block	Lot
		5B

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: Wednesday, May 11, 1994

Section 6: Well Construction Details

There are no borehole dimensions assigned to this well.

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-2	191	6				STEEL
163	183	4				PVC

There are no completion records assigned to this well.

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	23	BENTONITE	

Section 7: Well Test Data

Total Depth: 283
Static Water Level: 8
Water Temperature:

Air Test *

10 gpm with drill stem set at _ feet for 2.5 hours.
Time of recovery _ hours.
Recovery water level _ feet.
Pumping water level 210 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
400MCRB - MIDDLE BELT CARBONATE

From	To	Description
0	1	BLACK DIRT
1	23	GRAY SILTY CLAY & WATER
23	63	SAND & SILTY WATER
63	97	SAND & WATER
97	107	SAND & WATER
107	164	SAND & WATER
164	187	BROKEN GREENISH GRAY ROCK
187	193	HARD GREEN & GRAY ROCK
193	211	HARD GRAY ROCK
211	216	MEDIUM HARD GRAY ROCK W/SEAMS OF WHITE ROCK
216	283	HARD FRACTURED GRAY ROCK W/SEEPS OF WATER

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:
Company: CASTLIO DRILLING
License No: WWC-46
Date Completed: 5/11/1994

Form No. 603 R2-97

WELL LOG REPORT

File No. _____

1. WELL OWNER
Name Laurry Bishop

2. CURRENT MAILING ADDRESS
781 Finley Point Lane
Polson, MT. 59860

3. WELL LOCATION
¼ ¼ ¼ Section 7
Township 23 N S Range 19 E W County Lake
Govn't Lot _____, or Lot 4, Block 5
Subdivision Name Finley Point Villa Sites
Tract Number _____
Latitude _____ Longitude _____

4. PROPOSED USE: Domestic ☒ Stock ☐ Irrigation ☐
Other ☐ specify _____

5. TYPE OF WORK:
New well ☒ Method Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐

6. DIMENSIONS: Diameter of Hole
Dia 10 in. from 0 ft to 20 ft
Dia 6 in. from 20 ft to 115 ft
Dia _____ in. from _____ ft to _____ ft.

7. CONSTRUCTION DETAILS:
Casing: Steel Dia. _____ in. from _____ ft. to _____ ft.
Threaded ☐ Welded ☒ Dia 6 in. from +2 ft to 78 ft
Type A53-B Wall Thickness .250
Casing, Plastic Dia _____ in from _____ ft. to _____ ft.
Threaded ☐ Welded ☒ Dia 4 in. from 75 ft. to 115 ft.

PERFORATIONS: Yes ☒ No ☐
Type of perforator used Factory
Size of perforations .020 in. by continuous in
_____ perforations from 95 ft. to 115 ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

SCREENS: Yes ☐ No ☒
Manufacture's Name _____
Type _____ Model No _____
Dia _____ Slot size _____ from _____ ft to _____ ft.
Dia _____ Slot size _____ from _____ ft. to _____ ft

GRAVEL PACKED: Yes ☐ No ☒ Size of gravel _____
Gravel placed from _____ ft. to _____ ft

GROUTED: To what depth? 20 ft.
Material used in grouting Bentonite

8. WELL HEAD COMPLETION:
Pitless Adapter Yes ☐ No ☐

9. WELL TEST DATA
The information requested in this section is required for all wells. All depth measurements must be from the top of the well casing.
All wells **under 100 gpm** must be tested for a minimum of one hour and provide the following information.
a) Air X Pump _____ Bailer _____
b) Static water level immediately before testing 55 ft. If flowing, closed-in pressure _____ psi _____ gpm
c) Pumping level after one hour 80 ft
d) Recovery level 55 ft. Time of recovery 1 min/hrs.
e) Pumping rate 50 gpm.

conducted continuously at a constant discharge at least as great as the intended appropriation. In addition to the above information, water level data shall be collected and recorded on the Department's "Aquifer Test Data" form.
NOTE: All wells shall be equipped with an access port 1/2 inch minimum or a pressure gauge that will indicate the shut-in pressure of a flowing well. Removable caps are acceptable as access ports

10. PUMPING TEST DATA
a) Static level immediately before testing _____ ft.
b) Depth at which pump is set for test _____ ft
c) Pumping rate _____ gpm.
d) Maximum drawdown _____ ft.
e) Duration of test pumping time _____ hrs/min
recovery time _____ hrs/min
f) Recovery level _____ ft
g) Duration of time to recovery level _____ hrs.

11. PUMP INSTALLATION INFORMATION
Installation depth _____
Actual pumping rate _____
Manufacturer's name _____
Type _____ Model No _____ H P _____

12. WAS WELL PLUGGED OR ABANDONED? Yes ☐ No ☒
If yes, how? _____

13. WELL LOG

Depth (ft.) From	To	Formation
0	13	Tan clay and gravel.
13	78	Soft broken brown rock.
78	110	Med. hard gray rock.
110	115	Fractured brown and grey rock and water.

☐ ADDITIONAL SHEETS ATTACHED

14. YELLOWSTONE CLOSURE AREA: WATER TEMPERATURE _____

15. DATE COMPLETED 6-24-98

16. DRILLER/CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge.

Date 6-29-98
Castlio Drilling Co., Inc.
Firm Name
P.O. Box 159 Polson, MT. 59860
Address

MONTANA WELL LOG REPORT

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Other Options

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Site Name: METZ MONDELL
GWIC Id: 150667
DNRC Water Right: 93080

Section 1: Well Owner(s)

1) METZ, MONDELL (MAIL)
FINLEY PT
POLSON MT 59860 [11/22/1994]

Section 2: Location

Township	Range	Section	Quarter Sections
23N	19W	7	NW¼ NE¼ NW¼

County: LAKE
Geocode:

Latitude	Longitude	Geomethod	Datum
47.77624	-114.085482	TRS-SEC	NAD83

Ground Surface Altitude: **Ground Surface Method**: **Datum**: **Date**:

Addition	Block	Lot
FINLEY PT VILLA	2	1

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: Tuesday, November 22, 1994

Section 6: Well Construction Details

There are no borehole dimensions assigned to this well.

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-1.5	21	6				STEEL
10	240	4				PVC

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
200	240	4			.02IN FACTORY

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	19.5	BENTONITE	

Section 7: Well Test Data

Total Depth: 240
Static Water Level: 28
Water Temperature:

Air Test *

25 gpm with drill stem set at _ feet for 1.5 hours.
Time of recovery _ hours.
Recovery water level _ feet.
Pumping water level 150 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
400MCRB - MIDDLE BELT CARBONATE

From	To	Description
0	2	CLAY
2	50	HARD GRAY ROCK
50	56	FIRM BRONW ROCK
56	144	MEDIUM HARD DARY GRAY ROCK
144	153	HARD GRAY AND BROWN ROCK
153	163	MEDIUM HARD FRACTURED BROWNISH GREEN ROCK (1 GPM)
163	224	MEDIUM HARD GRAY AND GREEN AND BROWN ROCK
224	240	MEDIUM HARD BROKEN BROWN ROCK AND WATER

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:
Company: CASTLIO DRILLING
License No: WWC-46
Date Completed: 11/22/1994

MONTANA WELL LOG REPORT

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Other Options

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Site Name: MCLAUGHLIN, WILLIAM
GWIC Id: 268468

Section 1: Well Owner(s)

1) MCLAUGHLIN, WILLIAM (MAIL)
34819 SNOWBERRY LANE
POLSON MT. 59860 [10/02/2012]

Section 2: Location

Township	Range	Section	Quarter Sections
23N	19W	7	NE¼ SW¼

County
LAKE

Geocode

Latitude	Longitude	Geomethod	Datum
47.767399116	-114.0841814475	TRS-SEC	NAD83

Ground Surface Altitude	Ground Surface Method	Datum	Date

Addition	Block	Lot
FINLEY POINT VILLA SITE	6	3

Section 3: Proposed Use of Water

DOMESTIC (1)
IRRIGATION (2)

Section 4: Type of Work

Drilling Method: ROTARY
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Tuesday, October 2, 2012

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	345	6

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-2	43	6	0.25		WELDED	A53B STEEL
25	345	4		160.0	SOLVENT WELD	PVC-SDR 21

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
305	345	4	80	1/8X6	SAW SLOTS

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	43	BENTONITE	Y

Section 7: Well Test Data

Total Depth: 345
Static Water Level: 60
Water Temperature:

Air Test *

25 gpm with drill stem set at 340 feet for 1 hours.
Time of recovery 0.9 hours.
Recovery water level 60 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
Unassigned

From	To	Description
0	12	SOFT TAN ROCK
12	68	MEDIUM HARD GREEN AND BROWN ROCK
68	115	MEDIUM HARD BLACK AND BROWN ROCK
115	121	FRACT. BLACK AND BROWN ROCK WITH WATER 5 GPM
121	241	MEDIUM HARD BLACK AND BROWN ROCK
241	295	MEDIUM HARD GRAY AND BROWN ROCK
295	340	FRACT. GRAY AND BROWN ROCK WITH WATER 20 GPM
340	345	MEDIUM HARD GRAY AND BROWN ROCK

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: BRAD FORMAN
Company: ALLWEST DRILLING INC
License No: WWC-571
Date Completed: 10/2/2012

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.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/8/2009 2:38:45 PM)

Site Name: MCCORMICK, BILL AND BARBARA
GWIC Id: 148606
DNRC Water Right: 94427

Section 1: Well Owner(s)

1) MCCORMIC, BILL AND BARBARA (MAIL)
29 SNOWBERRY LN FINELY PT RT
POLSON MT 59860 [09/21/1994]

Section 2: Location

Township	Range	Section	Quarter Sections
23N	19W	7	SE¼ NW¼

County LAKE **Geocode**

Latitude	Longitude	Geomethod	Datum
47.771328616	-114.0841814475	TRS-SEC	NAD83

Ground Surface Altitude **Ground Surface Method** **Datum** **Date**

Addition FINELY POINT VILLA **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: Wednesday, September 21, 1994

Section 6: Well Construction Details

There are no borehole dimensions assigned to this well.

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-1	20	6				STEEL
10	21	4				PVC

There are no completion records assigned to this well.

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	20	BENTONITE	

Section 7: Well Test Data

Total Depth: 210
Static Water Level: 18
Water Temperature:

Air Test *

40 gpm with drill stem set at _ feet for 1.5 hours.
Time of recovery _ hours.
Recovery water level _ feet.
Pumping water level 100 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
400BELT - BELT SUPERGROUP

From	To	Description
0	1	BLACK DIRT
1	175	HARD GRAY ROCK
175	177	FRACTURED GRAY & BROWN ROCK & WATER 6-7GPM
177	205	HARD GRAY ROCK
205	207	FRACTURED GRAY & BROWN ROCK & WATER
207	210	HARD GRAY ROCK

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:
Company: CASTLIO DRILLING
License No: WWC-551
Date Completed: 9/21/1994

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.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/8/2009 2:45:20 PM)

Site Name: HERN ARDELL AND POMEROY LISSA
GWIC Id: 152788

Section 1: Well Owner(s)

1) POMEROY, LISSA (MAIL)
417 MINESINGER TRAIL
POLSON MT 59860 [06/20/1995]
2) HERN, ARDELL (MAIL)
417 MINESINGER TRAIL
POLSON MT 59860 [06/20/1995]

Section 2: Location

Township	Range	Section	Quarter Sections
23N	19W	7	NW¼ NE¼ SW¼

County: LAKE
Geocode:

Latitude	Longitude	Geomethod	Datum
47.768381	-114.085482	TRS-SEC	NAD83

Ground Surface Altitude	Ground Surface Method	Datum	Date

Addition	Block	Lot
FRIENDSHIPP VILLA		1

Section 3: Proposed Use of Water

DOMESTIC (1)
STOCKWATER (2)

Section 4: Type of Work

Drilling Method: ROTARY
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Tuesday, June 20, 1995

Section 6: Well Construction Details

There are no borehole dimensions assigned to this well.

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-1.8	22.5	6				STEEL
10	302	4				PVC

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
263.8	302.2	4			3/8 DRILL HOLES

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	22	BENTONITE	

Section 7: Well Test Data

Total Depth: 305
Static Water Level: 10.5
Water Temperature:

Air Test *

19 gpm with drill stem set at _ feet for 1 hours.
Time of recovery _ hours.
Recovery water level _ feet.
Pumping water level 303 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
400MCRB - MIDDLE BELT CARBONATE

From	To	Description
0	1	BLACK DIRT
1	12	TAN CLAY
12	223	SOFT TO MODERATE GRAY ROCK
223	305	MODERATE TO HARD GRAY ROCK WITH LAYERS OF SOFT TO MODERATE BROWN ROCK

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:
Company: LOCHNER
License No: WWC-62
Date Completed: 6/20/1995

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.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/8/2009 2:38:25 PM)

Site Name: CANNON RICHARD & M.
GWIC Id: 77517

Section 1: Well Owner(s)

1) CANNON, RICHARD G AND MARJORIE R (MAIL)
3100 NETTIE
BUTTE MT 59701 [03/29/1985]

Section 2: Location

Township	Range	Section	Quarter Sections
23N	19W	7	SW¼ SW¼ NW¼

County LAKE

Geocode

Latitude	Longitude	Geomethod	Datum
47.7697	-114.0891	UNKNOWN	NAD27

Ground Surface Altitude **Ground Surface Method** **Datum** **Date**

Addition BORCHERS OF FINLEY POINT

Block

Lot GOV 3

Section 3: Proposed Use of Water

DOMESTIC (1)

Section 4: Type of Work

Drilling Method: AIR ROTARY
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Friday, March 29, 1985

Section 6: Well Construction Details

There are no borehole dimensions assigned to this well.

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-2.4	38.2	6				
33	403	4				PVC

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
323	343	4		1/4X6	SLOTS

Annular Space (Seal/Grout/Packer)

There are no annular space records assigned to this well.

Section 7: Well Test Data

Total Depth: 403
Static Water Level: 98
Water Temperature:

Air Test *

15 gpm with drill stem set at _ feet for 3 hours.
Time of recovery _ hours.
Recovery water level _ feet.
Pumping water level 300 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

400MCRB - MIDDLE BELT CARBONATE

From	To	Description
0	5	BLACK SOIL AND SCATTERED GRAVEL
5	40	GREEN-GRAY TO GRAY ROCK
40	71	BROWN- GREEN AND GRAY ROCK
71	80	DARK GRAY ROCK W/BROWN SEAMS
80	95	LIGHT TO DARK GRAY AND BROWN ROCK
95	224	LIGHT TO DARK GRAY ROCK
224	273	GREEN- BROWN AND GRAY ROCK
273	280	GREEN AND GRAY ROCK
280	285	LIGHT TO DARK GRAY ROCK
285	294	GREEN-BROWN AND GRAY ROCK
294	365	ORANGE-BROWN- GREEN AND GRAY ROCK W/WHITE CLAY & CALCITE IN FRACTURES
365	403	LIGHT TO DARK GRAY ROCK W/THIN BROWN SEAMS.

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:
Company: LIBERTY DRILLING & PUMP CO
License No: WWC-52
Date Completed: 3/29/1985

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.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View scanned well log (7/8/2009 2:31:07 PM)

Site Name: BISHOP LAURRY
GWIC Id: 168825

Section 1: Well Owner(s)

1) BISHOP, LAURRY (MAIL)
781 FINLEY POINT LN
POLSON MT 59860 [06/24/1998]

Section 2: Location

Township	Range	Section	Quarter Sections
23N	19W	7	

County
LAKE

Geocode

Latitude	Longitude	Geomethod	Datum
47.769364	-114.08158	TRS-SEC	NAD83

Ground Surface Altitude	Ground Surface Method	Datum	Date

Addition	Block	Lot
FINLEY POINT VILL	5	4

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: Wednesday, June 24, 1998

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	20	10
20	115	6

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-2	78	6				STEEL
75	115	4				PVC

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
95	115	4		0.020	FACTORY SLOTTED

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	20	BENTONITE	

Section 7: Well Test Data

Total Depth: 115
Static Water Level: 55
Water Temperature:

Air Test *

50 gpm with drill stem set at _ feet for 1 hours.
Time of recovery _ hours.
Recovery water level _ feet.
Pumping water level 80 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
400BELT - BELT SUPERGROUP

From	To	Description
0	13	TAN CLAY & GRAVEL
13	78	SOFT BROKEN BROWN ROCK
78	110	MED HARD GRAY ROCK
110	115	FRACTURED BROWN & GRAY ROCK & WATER

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:
Company: CASTLIO DRILLING
License No: WWC-46
Date Completed: 6/24/1998

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.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps
View hydrograph for this site
View field visits for this site
View water quality for this site
View scanned well log (7/8/2009 2:45:29 PM)

Site Name: AMRINE, ROBERT Y.,SALLY H., AND BRUCE R.
GWIC Id: 77520
DNRC Water Right: 73982

Section 1: Well Owner(s)

1) AMRINE, ROBERT Y AND SALLY H AND R BRUCE (MAIL)
687 FINLEY POINT RD
POLSON MT 59860 [11/01/1988]

Section 2: Location

Township	Range	Section	Quarter Sections
23N	19W	7	NW¼ NW¼ NE¼ SW¼

County: LAKE
Geocode:

Latitude	Longitude	Geomethod	Datum
47.7686	-114.0847	MAP	NAD27

Ground Surface Altitude	Ground Surface Method	Datum	Date
2920			

Measuring Point Altitude	MP Method	Datum	Date Applies
2920			10/24/1996

Addition: FRIENDSHIP VILLA
Block:
Lot: GOV 2

Section 3: Proposed Use of Water

DOMESTIC (1)

Section 4: Type of Work

Drilling Method: AIR ROTARY
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Tuesday, November 1, 1988

Section 6: Well Construction Details

There are no borehole dimensions assigned to this well.

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-2.9	37.7	6				
24	324	4				PVC

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
284	304	4		1/4X4	SLOTS

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	37.7	PURE CEMENT	

Section 7: Well Test Data

Total Depth: 324
Static Water Level: 26
Water Temperature:

Air Test *

20 gpm with drill stem set at _ feet for 5 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

USE 2 CRESCENT WRENCHES TO LOOSEN CAP SAMPLING PT - HYDRANT 7 YDS W. OF WELL.

Section 9: Well Log

Geologic Source

400MCRB - MIDDLE BELT CARBONATE

From	To	Description
0	0.5	TOPSOIL
0.5	17	GRAY ROCK
17	29	LIGHT TO DARK GRAY- GREEN-BROWN & GRAY-BROWN ROCK IN ALTERNATE LAYERS
29	41	GRAY ROCK
41	46	GRAY AND GRAY-BRAOWN ROCK IN ALTERNATE LAYERS
46	79	LIGHT TO DARK GRAY AND GRAY-BROWN ROCK IN ALTERNATE LAYERS.
79	95	BROWN- GREEN-BROWN & GRAY ROCK IN ALTERNATE LAYERS
95	107	LIGHT TO DARK GRAY ROCK
107	121	FRACTURED GREEN-BROWN-YELLOW-BROWN & GRAY ROCK IN ALTERNATE LAYERS. SEEP OF WATER.
121	156	LIGHT TO DARK GRAY ROCK
156	168	LIGHT TO DARK GRAY- GREEN-GRAY & GREEN-BROWN ROCK IN ALTERNATE LAYERS.
168	192	GRAY ROCK
192	248	LIGHT TO DARK GRAY ROCK & ORANGE-BROWN ROCK IN ALTERNATE LAYERS
248	263	GRAY- GREEN-GRAY & LIGHT BROWN ROCK IN ALTERNATE LAYERS
263	275	GRAY ROCK

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:
Company: LIBERTY DRILLING & PUMP CO
License No: WWC-52

Date Completed: 11/1/1988

Site Name: AMRINE, ROBERT Y.,SALLY H., AND BRUCE R.
GWIC Id: 77520
Additional Lithology Records

From	To	Description
275	283	GRAY- GREEN-GRAY & YELLOW-BROWN ROCK IN ALTERNATE LAYERS
283	291	LIGHT TO MEDIUM GRAY ROCK
291	324	FRACTURED GRAY- GREEN-GRAY & YELLOW-BROWN ROCK IN ALTERNATE LAYERS

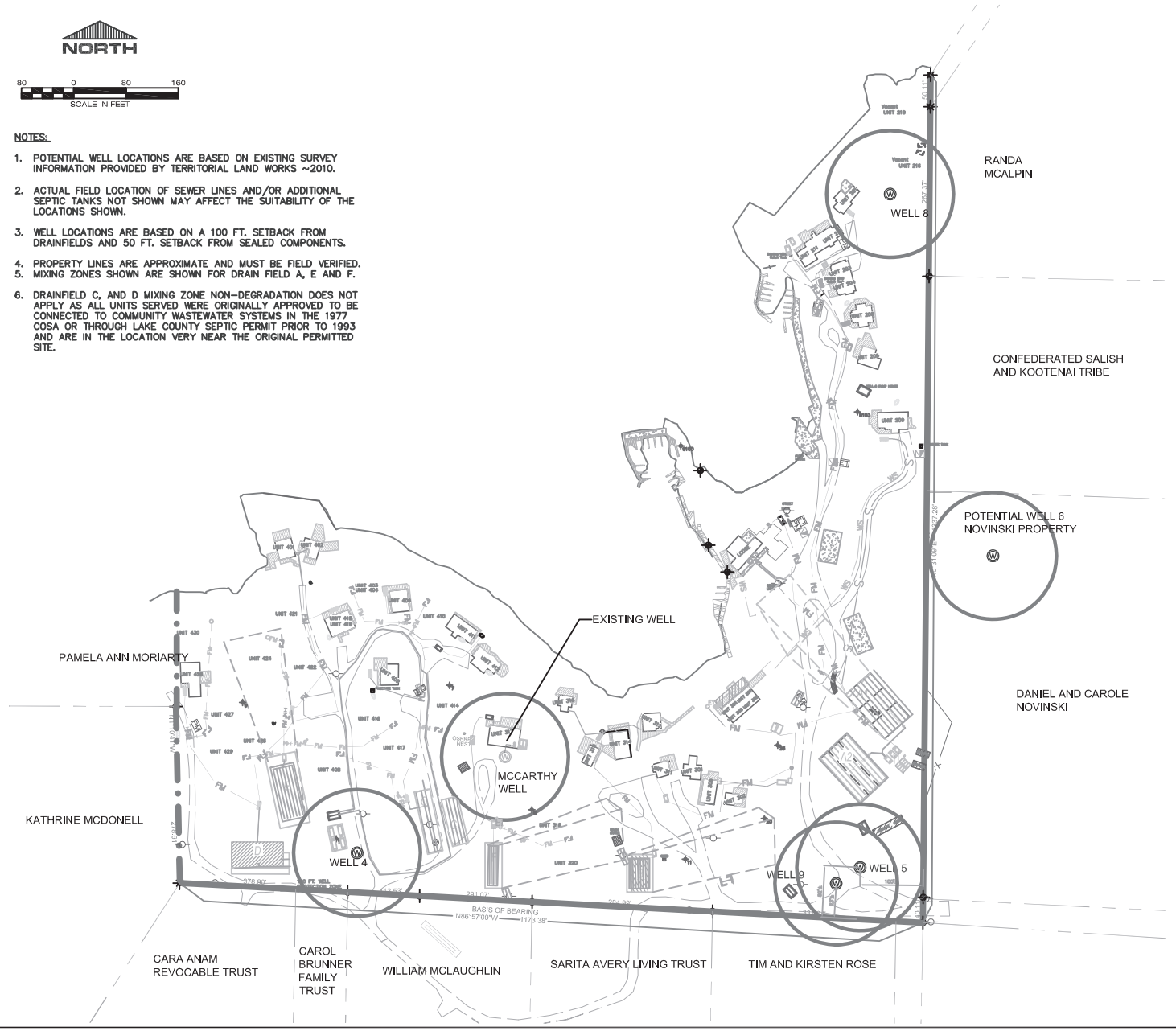
HAFFERMAN ENGINEERING, INC.

Client Name: Timbrshor HOA
HEI Account No.: T.58.2
Date: 10/22/2019
Assignment: Hafferman
Project description: K values from Well Logs

T=33.6 (Q/s)^0.67
Q= pumpimg rate ft³/day
s= drawdown ft.

K = T* Aquifer Thickness

Site Name	GWIC ID	TD	SWL	PWL	Formation	Q (gpm)	Q ft³/day	Drawdown (s) ft.	T	Aquifer Thickness (ft.)	K (ft./day)
Cannon (McCarthy)	77517	403	98	300	Middle Belt Carbonate	15	2888	202	199.68	20	10.0
Bishop (Novinski)	168825	115	55	80	Belt Supergroup	50	9626	25	1813.92	20	90.7
Woodahl	77518	180	20	94	Middle Belt Carbonate	25	4813	74	551.01	10	55.1
Turner	143247	283	8	210	Middle Belt Carbonate	10	1925	202	152.17	10	15.2
McCormick	94427	210	18	100	Belt Supergroup	40	7701	82	704.78	10	70.5
McLaughlin	268468	345	60	340	UNKNW	25	4813	280	225.92	40	5.6
Hern	152788	305	10.5	303	Middle Belt Carbonate	19	3658	292.5	182.55	38.4	4.8
Metz	150667	240	28	150	Middle Belt Carbonate	25	4813	122	394.17	40	9.9
										Average K	**32.72**



NOTES:

1. POTENTIAL WELL LOCATIONS ARE BASED ON EXISTING SURVEY INFORMATION PROVIDED BY TERRITORIAL LAND WORKS ~2010.
2. ACTUAL FIELD LOCATION OF SEWER LINES AND/OR ADDITIONAL SEPTIC TANKS NOT SHOWN MAY AFFECT THE SUITABILITY OF THE LOCATIONS SHOWN.
3. WELL LOCATIONS ARE BASED ON A 100 FT. SETBACK FROM DRAINFIELDS AND 50 FT. SETBACK FROM SEALED COMPONENTS.
4. PROPERTY LINES ARE APPROXIMATE AND MUST BE FIELD VERIFIED.
5. MIXING ZONES SHOWN ARE SHOWN FOR DRAIN FIELD A, E AND F.
6. DRAINFIELD C, AND D MIXING ZONE NON-DEGRADATION DOES NOT APPLY AS ALL UNITS SERVED WERE ORIGINALLY APPROVED TO BE CONNECTED TO COMMUNITY WASTEWATER SYSTEMS IN THE 1977 COSA OR THROUGH LAKE COUNTY SEPTIC PERMIT PRIOR TO 1993 AND ARE IN THE LOCATION VERY NEAR THE ORIGINAL PERMITTED SITE.

LEGEND

- (E) PROPERTY BOUNDARY
- (E) ADJACENT PROPERTY BOUNDARY
- (E) LOT LINE
- (E) EASEMENT
- (E) WATER LINE
- WS (E) WATER SERVICE
- FMS (E) SEWER FORCE MAIN SERVICE
- (E) GRAVEL ROAD
- (E) CONCRETE
- (P) INDIVIDUAL SEPTIC TANK AND LINE
- FM (P) FORCEMAIN
- SS (F) GRAVITY SEWER SERVICE

SYMBOLS

- (E) SEPTIC TANK
- (E) DRAINFIELD
- (E) WELL
- (E) TELEPHONE JUNCTION BOX
- (E) ELECTRICAL TRANSFORMER
- PM (E) POWER METER
- (E) POWER POLE
- SET 5/8" X 24" REBAR WITH 1 1/4" YPC STAMPED "M. CARSTENS 5940LS".
- FOUND AS NOTED.
- FOUND 2" BRASS CAP
- FOUND PVC PIPE
- FOUND PROPANE TANK
- EXISTING BUILDING
- EXISTING SOIL PROFILE
- EXISTING CONTROL POINT
- (P) CHECK VALVE
- (P) AIR RELEASE VALVE
- (P) DRAINFIELD
- (P) SEPTIC/DOSE TANK
- (P) ISOLATION GATE VALVE
- (F) SEPTIC

NOTE:
NOT ALL FEATURES SHOWN IN LEGEND AND SYMBOLS APPEAR IN DRAWING.

BY	DESCRIPTION:	DATE:
	REVISIONS	OCTOBER 2019

DRAWN BY: NJF | APPROVED BY: KMH

TIMBRSHOR WATER SYSTEM DEVELOPMENT PLAN

FOR

TIMBRSHOR HOMEOWNERS ASSOCIATION

SECTION 7, T.23N., R.19W., P.M., LAKE COUNTY, MONTANA

HAFFERMAN ENGINEERING, INC.
35 SOUTH MAIN, SUITE B
KALISPELL, MT. 59901
PHONE: (406) 257-8708
FAX: (406) 257-8710
EMAIL: info@billmeyer.com
ONLINE: http://www.billmeyer.com

DRAWING TITLE:
WELL, PROPERTY AND MIXING ZONES

SCALE: AS SHOWN

DATE: OCTOBER 2019 | PROJECT NO: T.58.2

DRAWING NUMBER:
2 OF 2

PSS S_S-ALL WELS-REPORT VERSION.DWG

Conductivity (K) Calculations

	Huard Well GWIC 77579	Feist Well GWIC 77579	Fox Well GWIC 77579
Q=pumping rate (gpm)	40.00	25.00	130.00
s= drawdown (feet)	32.00	22.00	127.00
Equation #1 T=33.6(Q/s)^0.67			
T=Transmissivity	1323.85	1241.95	1157.98
Qa=pumping rate in gpm	40.00	25.00	130.00
Q=pumping rate in Ft3/day	7700.00	4812.50	25025.00
s=drawdown (ft)	32.00	22.00	127.00

Equation #2: K=T/b

				Average
K = hydraulic conductivity (feet/day)	132.38	124.20	115.80	124.13
T= transmissivity (square feet/day)	1323.85	1241.95	1157.98	
b = aquifer thickness (feet)	10.00	10.00	10.00	

(this can be equal to the screened interval or approximately 10 feet if well is finished at the bottom of drill hole with an open casing with no perforated screened interval)

Montana Bureau of Mines and Geology
Ground-Water Information Center Site Report
HUARD D R

Plot this site on a topographic map

Location Information

GWIC Id: 77579
Location (TRS): 23N 19W 19
County (MT): LAKE
DNRC Water Right: 18821
PWS Id:
Block: 1
Lot: 5
Addition: ALSON VILLA

Source of Data: LOG
Latitude (dd): 47.7395
Longitude (dd): -114.0807
Geomethod: TRS-SEC
Datum: NAD27
Altitude (feet):
Certificate of Survey:
Type of Site: WELL

Well Construction and Performance Data

Total Depth (ft): 120.00
Static Water Level (ft): 48.00
Pumping Water Level (ft): 80.00
Yield (gpm): 40.00
Test Type: PUMP
Test Duration: 3.00
Drill Stem Setting (ft):
Recovery Water Level (ft):
Recovery Time (hrs):
Well Notes:

How Drilled: FORWARD ROTARY
Driller's Name: OKEEFE
Driller License: WWC008
Completion Date (m/d/y): 4/24/1978
Special Conditions:
Is Well Flowing?:
Shut-In Pressure:
Geology/Aquifer: 112DRFT
Well/Water Use: DOMESTIC

Hole Diameter Information

No Hole Diameter Records currently in GWIC.

Annular Seal Information

No Seal Records currently in GWIC.

Casing Information[1]

From	To	Dia	Wall Thickness	Pressure Rating	Joint	Type
0.0	120.0	6.0				STEEL

Completion Information[1]

From	To	Dia	# of Openings	Size of Openings	Description
120.0	120.0	6.0			OPEN BOTTOM *

Lithology Information

From	To	Description
0.0	40.0	SAND- GRAVEL
40.0	60.0	SILTY SAND
60.0	115.0	CLAY- SAND- SILT
115.0	120.0	GRAVEL

[1] - All diameters reported are **inside** diameter of the casing.

Montana Bureau of Mines and Geology
Ground-Water Information Center Site Report
FEIST STEVE & LINDA

Plot this site on a topographic map

Location Information

GWIC Id: 177502
Location (TRS): 23N 19W 19 AD
County (MT): LAKE
DNRC Water Right:
PWS Id:
Block:
Lot: 1
Addition:

Source of Data: LOG
Latitude (dd): 47.7413
Longitude (dd): -114.0725
Geomethod: TRS-SEC
Datum: NAD27
Altitude (feet):
Certificate of Survey:
Type of Site: WELL

Well Construction and Performance Data

Total Depth (ft): 168.00
Static Water Level (ft):
Pumping Water Level (ft): 22.00
Yield (gpm): 25.00
Test Type: AIR
Test Duration: 1.00
Drill Stem Setting (ft):
Recovery Water Level (ft): 9.00
Recovery Time (hrs): 0.08
Well Notes:

How Drilled: ROTARY
Driller's Name: JEROME
Driller License: WWC002
Completion Date (m/d/y): 4/9/1999
Special Conditions:
Is Well Flowing?:
Shut-In Pressure:
Geology/Aquifer: 112ALVM
Well/Water Use: DOMESTIC

Hole Diameter Information

No Hole Diameter Records currently in GWIC.

Annular Seal Information

No Seal Records currently in GWIC.

Casing Information[1]

From	To	Dia	Wall Thickness	Pressure Rating	Joint	Type
-2.0	168.0	6.0				STEEL

Completion Information[1]

From	To	Dia	# of Openings	Size of Openings	Description
168.0	168.0	6.0			OPEN BOTTOM *

Lithology Information

From	To	Description
0.0	12.0	SAND & GRAVEL
12.0	70.0	SILTY SAND WITH WATER CLAY LAYERS
70.0	158.0	SILTY SAND WITH WATER THIN GRAVEL LAYERS
158.0	168.0	SAND & GRAVEL WITH WATER

[1] - All diameters reported are **inside** diameter of the casing.

Montana Bureau of Mines and Geology
Ground-Water Information Center Site Report
FOX JOHN

Plot this site on a topographic map

Location Information

GWIC Id: 156680
Location (TRS): 23N 19W 18 AB
County (MT): LAKE
DNRC Water Right:
PWS Id:
Block:
Lot:
Addition: FINLEY POINT ESTATES

Source of Data: LOG
Latitude (dd): 47.7598
Longitude (dd): -114.0783
Geomethod: TRS-SEC
Datum: NAD27
Altitude (feet):
Certificate of Survey:
Type of Site: WELL

Well Construction and Performance Data

Total Depth (ft): 287.00
Static Water Level (ft): 160.00
Pumping Water Level (ft):
Yield (gpm): 130.00
Test Type: AIR
Test Duration: 3.00
Drill Stem Setting (ft):
Recovery Water Level (ft):
Recovery Time (hrs):
Well Notes:

How Drilled: ROTARY
Driller's Name: ALLWEST
Driller License: WWC571
Completion Date (m/d/y): 2/27/1996
Special Conditions:
Is Well Flowing?:
Shut-In Pressure:
Geology/Aquifer: 112ALVM
Well/Water Use: DOMESTIC

Hole Diameter Information

No Hole Diameter Records currently in GWIC.

Annular Seal Information

From	To	Description
0.0	40.0	CEMENT

Casing Information[1]

From	To	Dia	Wall Thickness	Pressure Rating	Joint	Type
-2.0	287.0	8.0				STEEL

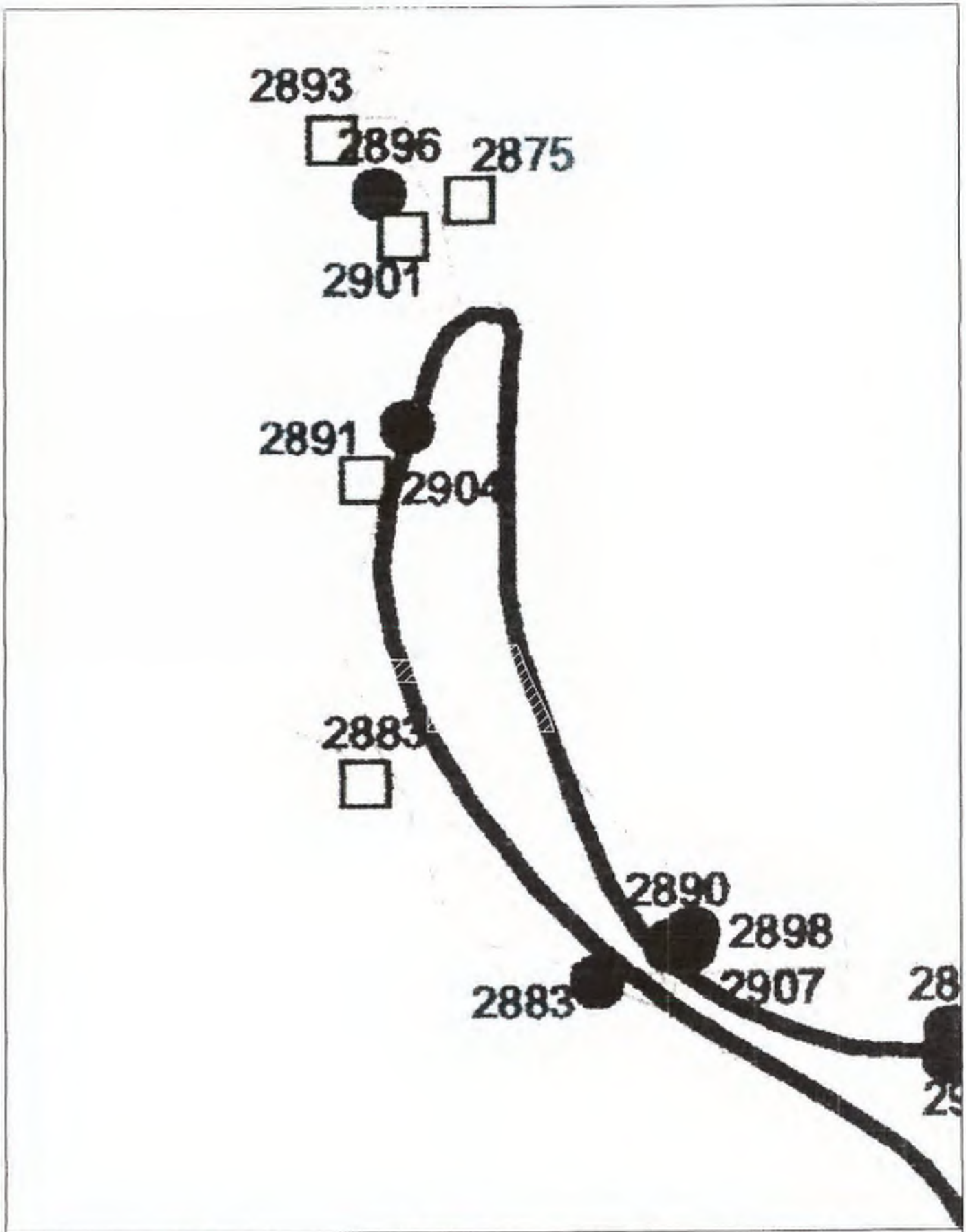
Completion Information[1]

From	To	Dia	# of Openings	Size of Openings	Description
287.0	287.0	8.0			OPEN BOTTOM *

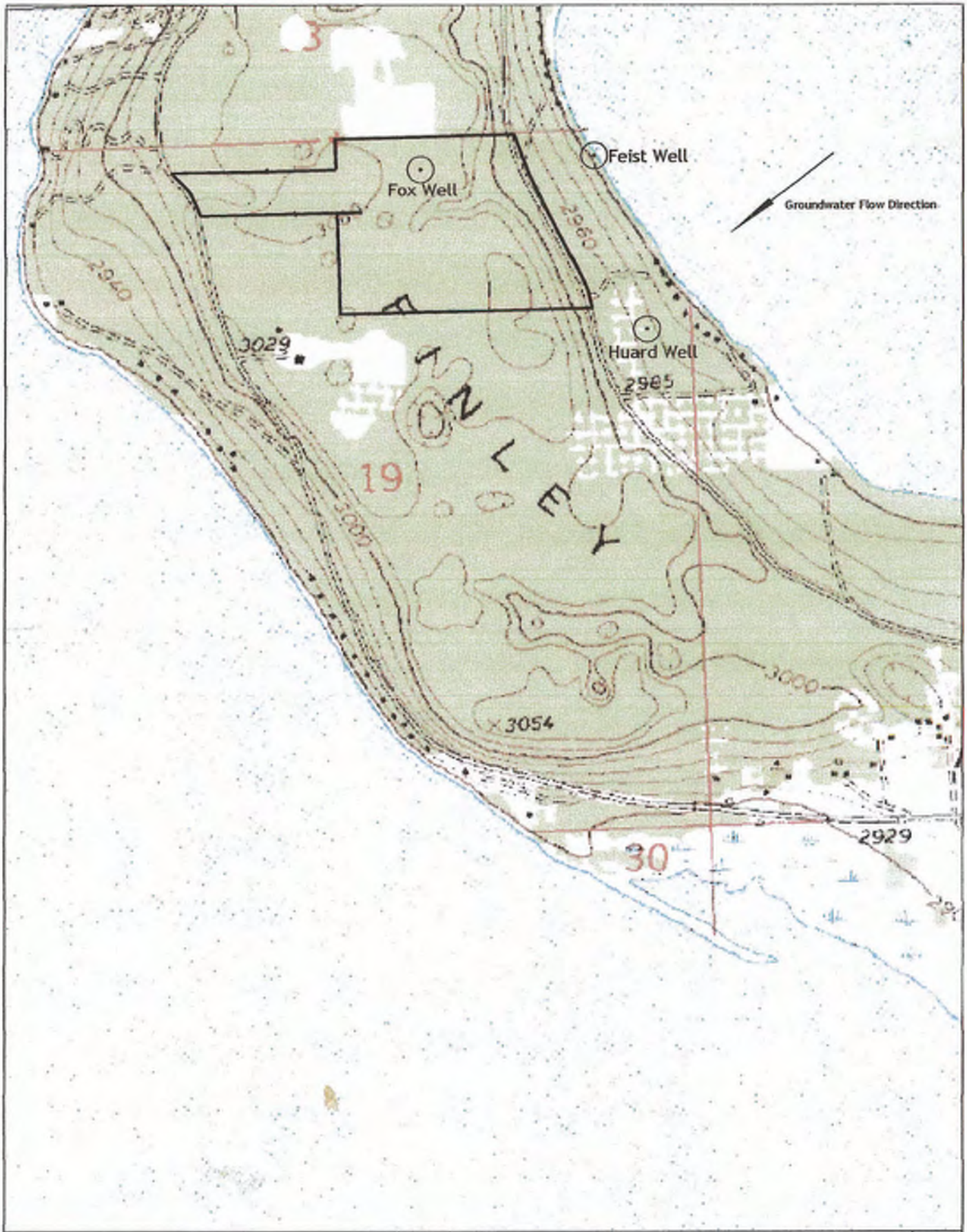
Lithology Information

From	To	Description
0.0	95.0	SAND GRAVEL COBBLES
95.0	165.0	GRAVEL LARGE COBBLES
165.0	260.0	GRAVEL SILTY SAND
260.0	287.0	GRAVEL SAND WATER

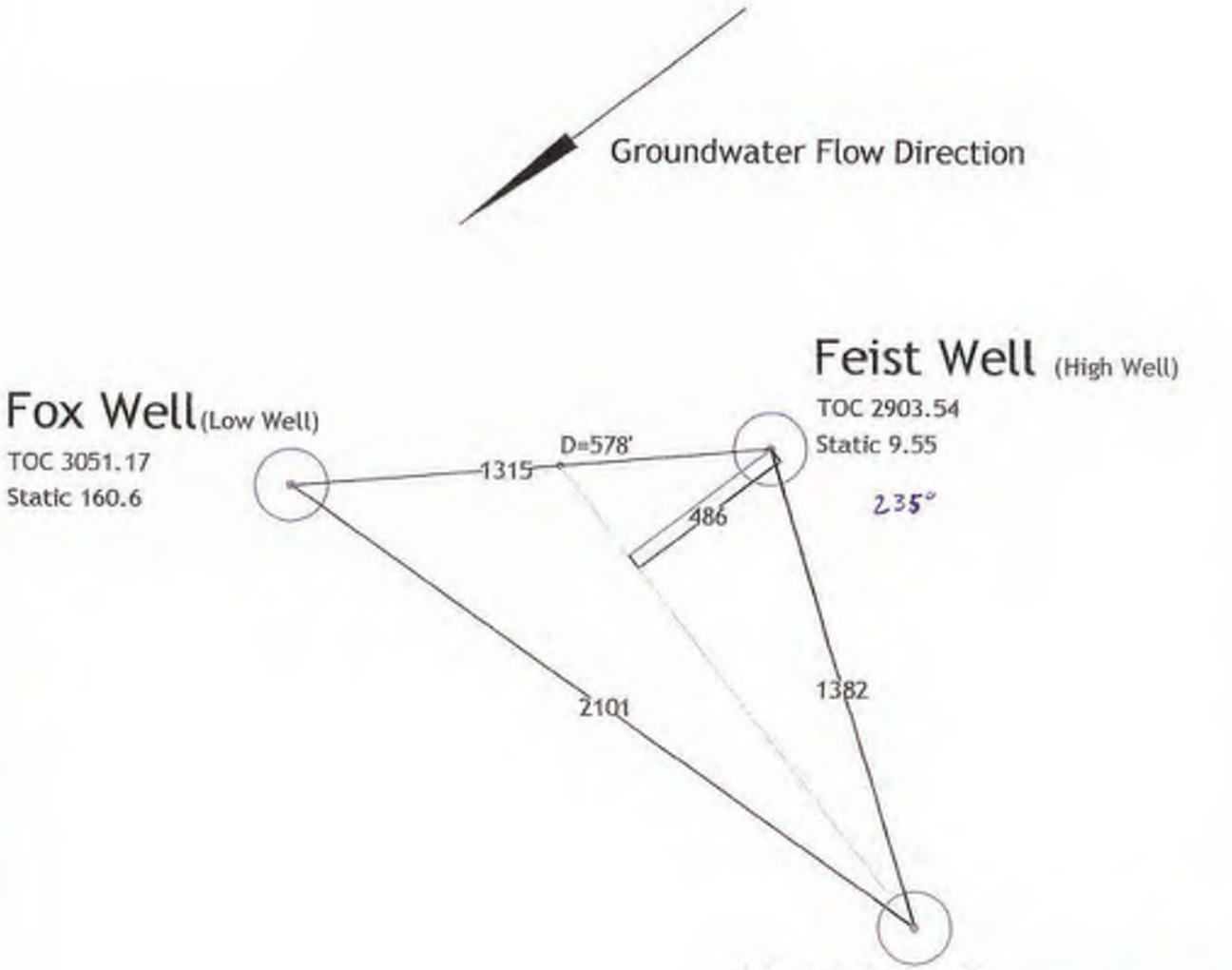
[1] - All diameters reported are **inside** diameter of the casing.



REC Rowland Environmental Consulting Inc.	SIZE A	Potentiometric Surface Map of the Southern Part of the Flathead Lake Area by John L. LaFave
	SCALE 1"=2000'	Finley Point Estates T. 23N, R19W, Section 19



Rowland Environmental Consulting, Inc.	SIZE A	A Portion of the East Bay USGS Quadrangle	REV
	SCALE 1"=1000'	Rewrite of Finley Point Estates	Contour Interval = 20'



Rowland Environmental Consulting, Inc.	SIZE A	Groundwater Flow Determination	REV
	SCALE 1"=50'	Calculated Using Appendix H of How to Perform a Nondegradation Analysis	

FINLEY POINT ESTATES

Hydraulic Gradient calculations*

static rank	well identifcation	well elevation	static	static elevation	horizonal distance in feet	
high	Feist Well	2903.54	9.55	2893.99	high to mid	1381.23
intermediate	Huard Well	2940.28	47.80	2892.48	mid to low	2101.37
low	Fox Well	3051.17	160.60	2890.57	high to low	1314.93

A=	3.41	ft
B=	385.61	ft
C=	1.50	ft
D=	578.42	ft
E=	486.00	ft
X=	578.42	ft
Hydraulic grad.	**0.0031**	ft/ft

High static water level=(HSWE) Horizonal distance=(HD)
Intermediate water level=(ISWE) Low water level=(LSWE)

A= (hswe)-(lswe) B=(hd) between (hswe), (lswe) /A
C= (hswe)-(iswe) D=B*C=horizonal distance between the (hswe) and (lswe)=to (iswe)
X=distance D from hswe to lswe plotted on line Draw a line from iswe to X =static water level of iswe
groundwater flow= draw a line perpenducular to the iswe contour line through hswe
E=distance along ground water flow line from hswe to iswe contour line
Hydraulic gradient = C/E ft/ft

* Calculations based on Appendix H of "How to perform a Nondegradation Analysis"

Finley Point Estates				
Lot #	Lg	L	W	Mixing Zone Length
2	180	190	7	500
3	180	190	7	500
4	180	190	7	200
5	180	190	7	100
6	180	190	7	200
7	180	190	7	500
8	190	190	7	500
9	70	190	7	200
10	130	190	7	100
11	170	190	7	100
12	60	190	7	100
13	160	190	7	100
14	135	190	7	200
15	160	190	7	100

Lg Length of Primary Drainfield as Measured Perpendicual to groundwater flow

L Length of Primary Drainfield's Long Axis

W Width of Primary Drainfield's Short Axis

APPENDIX D

MCCARTHY WATER QUALITY RESULTS,

REC WATER QUALITY RESULTS

ARMINE WATER QUALITY RESULTS

ANALYTICAL REPORT

Montana Environmental Laboratory LLC
1170 N. Meridian Rd., P.O. Box 8900, Kalispell, MT 59904-1900
Phone: 406-755-2131 Fax: 406-257-5359 www.melab.us

Dan Nelson
Hafferman Engineering
P.O. Box 1891
Kalispell, MT 59903

PWS ID:
Project: Timbrshr/McCarthy Res

Client Sample ID: Spigot - Center Rear of Home **Lab ID:** 1510514-01
Matrix: DRINKING WATER **Collected:** 11/02/2015 14:18 **Received:** 11/03/2015 8:40

Analyses	Result	Units	RL	MCL	Method	Prepared	Analyzed	Analyst
Nitrate	**0.13**	mg/L	0.01	10	E353.2		11/06/2015 14:01	GDM
Nitrate + Nitrite, Total	**0.13**	mg/L	0.01	10	E353.2		11/06/2015 14:01	GDM
Nitrite	**ND**	mg/L	0.01	1	E353.2		11/06/2015 14:01	GDM

MCL = Maximum Contaminant Limit ND = Not Detected
RL = Reporting Limit

MEL REVIEW: _____

ANALYTICAL REPORT

Montana Environmental Laboratory LLC

Prepared for:

Rowland Environmental Consulting
P.O. Box 171
Polson, MT 59860

ORDER#: G0401098

Location: Finley Point Estates (Fox Well : 154680) **Matrix:** DRINKING WATER **Date Collected:** 02/12/2004
Date Received: 02/13/2004
PWS ID:
Lab ID: 0401098-01

Test Parameters

Parameter	Result	Units	MDL	MCL	Method	Date Analyzed	Analyst
Conductivity	294	umhos	.1		2510 B	02/13/2004	JWH
Nitrate + Nitrite, Total	0.10	mg/L	0.01	10	353.2	02/13/2004	JWH

MCL = Maximum Contaminant Limit
MDL = Minimum Detection Limit
ND = Not Detected
NR = Not Regulated

MEL REVIEW: TAK

Ground-Water Information Center Water Quality Report

Site Name: AMRINE, ROBERT Y.,SALLY H., AND BRUCE R.

Report Date: 10/22/2019

Compare to Water Quality Standards

Location Information

Sample Id/Site Id:	1997Q0505 / 77520	Sample Date:	10/24/1996 12:00:00 PM
Location (TRS):	23N 19W 07 CABB	Agency/Sampler:	MBMG / SVM
Latitude/Longitude:	47° 46' 6" N 114° 5' 4" W	Field Number:	77520
Datum:	NAD27	Lab Date:	4/21/1997
Altitude:	2920	Lab/Analyst:	MBMG / TSH
County/State:	LAKE / MT	Sample Method/Handling:	PUMPED / 4220
Site Type:	WELL	Procedure Type:	DISSOLVED
Geology:	400MCRB	Total Depth (ft):	324
USGS 7.5' Quad:	BULL ISLAND 7 1/2'	SWL-MP (ft):	NR
PWS Id:		Depth Water Enters (ft):	284
Project:	GWCP02		

Major Ion Results

	mg/L	meq/L		mg/L	meq/L
Calcium (Ca)	93.800	4.681	Bicarbonate (HCO3)	361.100	5.918
Magnesium (Mg)	19.500	1.605	Carbonate (CO3)	0.000	0.000
Sodium (Na)	7.100	0.309	Chloride (Cl)	<.5	0.000
Potassium (K)	0.747	0.019	Sulfate (SO4)	7.300	0.152
Iron (Fe)	0.391	0.014	Nitrate (as N)	<.25 P	0.000
Manganese (Mn)	0.003	0.000	Fluoride (F)	<1.	0.000
Silica (SiO2)	18.400		Orthophosphate (as P)	<.25	0.000
Total Cations		6.660	**Total Anions**		6.070

Trace Element Results (痢/L)

Aluminum (Al):	<30.	Cesium (Cs):	NR	Molybdenum (Mo):	<10.	Strontium (Sr):	161.000
Antimony (Sb):	<2.	Chromium (Cr):	<2.	Nickel (Ni):	3.800	Thallium (Tl):	NR
Arsenic (As):	<1.	Cobalt (Co):	<2.	Niobium (Nb):	NR	Thorium (Th):	NR
Barium (Ba):	48.700	Copper (Cu):	<2.	Neodymium (Nd):	NR	Tin (Sn):	NR
Beryllium (Be):	<2.	Gallium (Ga):	NR	Palladium (Pd):	NR	Titanium (Ti):	<10.
Boron (B):	<30.	Lanthanum (La):	NR	Praseodymium (Pr):	NR	Tungsten (W):	NR
Bromide (Br):	<250.	Lead (Pb):	<2.	Rubidium (Rb):	NR	Uranium (U):	NR
Cadmium (Cd):	<2.	Lithium (Li):	15.000	Silver (Ag):	<1.	Vanadium (V):	<5.
Cerium (Ce):	NR	Mercury (Hg):	NR	Selenium (Se):	<1.	Zinc (Zn):	939.000
						Zirconium (Zr):	<20.

Field Chemistry and Other Analytical Results

**Total Dissolved Solids (mg/L):	325.07	Field Hardness as CaCO3 (mg/L):	NR	Ammonia (mg/L):	NR
**Sum of Diss. Constituents (mg/L):	508.24	Hardness as CaCO3:	314.48	T.P. Hydrocarbons (痢/L):	NR
Field Conductivity (痠hos):	524	Field Alkalinity as CaCO3 (mg/L):	336	PCP (痢/L):	NR
Lab Conductivity (痠hos):	549	Alkalinity as CaCO3 (mg/L):	296.08	Phosphorus, TD (mg/L):	NR
Field pH:	7.24	Ryznar Stability Index:	6.013	Field Nitrate (mg/L):	NR
Lab pH:	8.1	Sodium Adsorption Ratio:	0.1718	Field Dissolved O2 (mg/L):	NR
Water Temp (蚓):	10.4	Langlier Saturation Index:	1.044	Field Chloride (mg/L):	NR
Air Temp (蚓):	NR	Nitrite (mg/L as N):	NR	Field Redox (mV):	134.5
Nitrate + Nitrite (mg/L as N)	NR	Hydroxide (mg/L as OH):	NR	Lab, Dissolved Organic Carbon (mg/L):	NR
Total Kjeldahl Nitrogen (mg/L as N)	NR	Lab, Dissolved Inorganic Carbon (mg/L):	NR	Lab, Total Organic Carbon (mg/L):	NR
Total Nitrogen (mg/L as N)	NR	Acidity to 4.5 (mg/L CaCO3)	NR	Acidity to 8.3 (mg/L CaCO3)	NR
As(III) (ug/L)	NR	As(V) (ug/L)	NR	Total Susp Solids (mg/L)	NR

Additional Parameters

Alkalinity Fld (CaCO3)	336.000	Phosphate T Dis (mg/L - P)	L.2	Redox Potential (Mv)	134.500
Thallium Diss. (ug/L-Tl)	L5				

Sample Condition: CLEAR

Field Remarks:

Lab Remarks:

Notes

Explanation: **mg/L** = milligrams per Liter; **痢/L** = micrograms per Liter; **ft** = feet; **NR** = No Reading in GWIC

Qualifiers: **A** = Hydride atomic absorption; **E** = Estimated due to interference; **H** = Exceeded holding time; **J** = Estimated quantity above detection limit but below reporting limit; **K** = Na+K combined; **N** = Spiked sample recovery not within control limits; **P** = Preserved sample; **S** = Method of standard additions; **U** = Undetected quantity below detection limit; * = Duplicate analysis not within control limits; ** = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

APPENDIX E

PWS-5 REPORTS WITH THOA PWS SYSTEM MAPS

PWS-5 A.R.M. RULE DEVIATION REQUESTS

WELL CONSTRUCTION STANDARDS

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

Metcalf Building 1520 East Sixth Avenue P.O. Box 200901 Helena, MT 59620-0901

PRELIMINARY ASSESSMENT WORKSHEET

Preliminary Assessment of Ground Water Sources that may be Under the Direct Influence of Surface Water

PWS System and Source Facility Information					
PWS Name:	TIMBERSHOR SUBDIVISION PWS			**PWS ID#:** (MT000nnnn)	
Type (C, NTNC, NC):	TNC	**County:**	LAKE	**Population Served:**	50
Source Facility Name:	THOA WELL 4	**SDWIS Facility ID:** (WL00n,SP00n,IG00n)		**Date:** (m/d/yy)	10/25/19

COMPUTE PA SCORE **Mark (X) ONE** option that applies and **enter option index pts** at right					Points
A. TYPE OF STRUCTURE					
Spring (40) ___	Horizontal Well (40) ___	Well (0) **X**			**0**
B. HISTORICAL PATHOGENIC ORGANISM CONTAMINATION: History or suspected outbreak of Giardia, or other pathogenic organisms associated with surface water, with current system configuration.					
Yes (40) ___	No (0) **X**				**0**
C. HISTORICAL MICROBIOLOGICAL CONTAMINATION:					
I) Record of **acute** (boil order or fecal positive sample) MCL violations of the Total Coliform Rule during the last 3 years. **Number of violations:**					
None (0) **X**	One (5) ___	Two (10) ___	Three (15) ___		**0**
II) Record of **non-acute** (two coliform positive samples in one month) MCL violations of the Total Coliform Rule during the last 3 years. **Number of violations:**					
None or One (0) **X**	Two (5) ___	Three (10) ___	Turbidity Complaints (DEQ verified) (5) ___		**0**
D. HYDROLOGICAL FEATURES: Horizontal distance between surface water & source.					
> 250 ft (0) **450**	175 - 250 ft (10) ___	100 - 174 ft (20) ___	< 100 ft (40) ___		**0**
E. WELL SEAL: Poorly constructed well (uncased, or annular space not sealed to depth of at least 18 feet below land surface), or casing construction is unknown.					
Yes (15) ___	No (0) **X**				**0**
F. WELL INTAKE CONSTRUCTION: In wells tapping unconfined or semi-confined aquifers, the depth below land surface to top of perforated interval or screen is:					
>100 ft (0) **X**	50-100 ft (5) ___	25-49 ft (10) ___	0-24 ft (15) ___	Unkn (15) ___	**0**
G. STATIC WATER LEVEL: In wells tapping unconfined or semi-confined aquifers, the depth to static water level below land surface is:					
>100 ft (0) ___	50-100 ft (5) **100**	25-49 ft (10) ___	0-24 ft (15) ___	Unkn (15) ___	**5**
H. WELL CAP CONSTRUCTION: Poor sanitary seal, or seal without acceptable material.					
Yes (15) ___	No (0) **X**				**0**
TOTAL PA SCORE (Right click in cell to right and select Update Field.)					**5**

Continued other side ...

PRELIMINARY ASSESSMENT WORKSHEET (continued)

I. PRELIMINARY ASSESSMENT DETERMINATION	Mark (X) ONE
1. PASS: Source is not under the direct influence of surface water.	X
2. FAIL: Well must undergo further GWUDISW analysis.	___
3. FAIL: Spring, must undergo further GWUDISW analysis.	___
4. FAIL: Well or horizontal well less than 100 feet from surface water, **must undergo further GWUDISW analysis.**	___
5. FAIL: Well **will** PASS if well construction deficiencies (section E or F) are repaired.	___
6. FAIL: Well **may** PASS if well construction details (section E, F, or G) become available.	___

ANALYST INFORMATION AND COMMENTS	
NAME:	KURTIS M. HAFFERMAN P.E. - HAFFERMAN ENGINEERING
AFFILIATION:	THOA PROJECT ENGINEER

COMMENTS

WELL 4 DEVELOPMENT IS BASED ON A NEARBY WELL, THE WELL LOG DEVELOPED ON MARCH 29, 1985 BY RICHARD CANNON, GWIC WELL LOG 77517. THE WELL WAS DRILLED BY LIBERTY DRILLING, ONE OF THE MORE REPUTABLE DRILLING OPERATIONS IN THE AREA SO THE WELL LOG IS ASSUMED TO BE ACCURATE.

GROUNDWATER WAS ENCOUNTERED NEAR 323 FT. BGS AND THE STATIC WATER LEVEL IS 98 FT BGS. BECAUSE OF THE LACK OF WATER BEARING LAYERS UNTIL ENCOUNTERING WATER WELL BELOW GROUND SURFACE. IT IS ASSUMED THE AQUIFER IS CONFINED UNDER NUMEROUS OVER LAYING BEDROCK LAYERS.

WATER QUALITY WAS TESTED IN NOVEMEBR 2015 AND THE NITRATE CONCENTRATION WAS 0.13 MG/L. I

WELL ELEVATIONS FOR WELL 4 AND WATER QUALITY RESULTS ARE INTERPOLATED FROM THE CANNON WELL LOG.

THE WELL CONTROL ZONE FOR WELL 4 CROSS ONTO A NEIGHBORING PROPERTY. THE SOUTH NEIGHBOR WILLIAM MCLAUGHLIN, REFUSED TO SIGN THE WCZ AGREEMENT. A DEVIATION FROM THE FULL 100 FT. WCZ IS REQUESTED. THE PROPOSED DEVIATION IS ATTACHED. PLANS AND SPECIFICATIONS FOR THE WELL CONSTRUCTION TO INCLUDE A MANMADE BARRIER OF CEMENT GROUNT IS ALSO ATTACHED.

Electronic Entry Instructions: Open the WORD document template (DOT) as a WORD document (DOC) with an appropriate name and location. The document is protected from all edits other than form entry. Enter the requested information in the form fields and tab forward between fields. All character entries will be converted to upper case. In the Compute PA Score table for questions A through H, mark with an X the one option which applies to each, then enter the score corresponding to that option in the field to the right under the Points column. When scores A-H have been entered right click on the Total PA Score field and select Update Field. The total score will be computed. Select the PA Determination option by marking with an X. Fill out the Analyst Information and Comments table. Save the document with your entries.

Montana Department of Environmental Quality

PUBLIC WATER SUPPLY DEVIATION REQUEST

Project Name: **Timbrshor Subdivision WELL #4**

EQ

Engineer Name: **Kurtis M. Hafferman, P.E.**

Circular: **DEQ-3 Standards for Small Water Systems**

STANDARD: EXISTING STANDARD: Circular DEQ -3 Standards for Small Water Systems, August 8, 2014 Edition,

Chapter 3 – Source Development, 3.2.3.2 Continued protection, Continued protection of the well site from potential sources of contamination must be provided either through zoning, easements, deed notices, leasing, or other means acceptable to MDEQ. Easements and deed notices must be filed with the County Clerk and Recorders Office. Such protection must extend for at least 100-foot radius around the well (well isolation zone). In addition, separation distances between proposed wells and potential sources of contamination must be defined and justified by the applicant in accordance with Section 1.1.6 of this circular. The well isolation zone of a proposed or existing well may not be in a groundwater mixing zone as defined by ARM 17.30.517 and also may not include easements that would conflict with the proposed use. Fencing of the site may be required by MDEQ.

PROPOSED STANDARD:

Chapter 3 – Source Development, Section 3.2.3.2 Continued Protection

3.2.3.2 Continued protection of the well site from potential sources of contamination must be provided either through zoning, easements, deed notices, leasing, or other means acceptable to MDEQ. Easements and deed notices must be filed with the County Clerk and Recorders Office. Such protection***, where possible,*** must extend for at least 100-foot radius around the well (well isolation zone). In addition, separation distances between proposed wells and potential sources of contamination must be defined and justified by the applicant in accordance with Section 1.1.6 of this circular. The well isolation zone of a proposed or existing well may not be in a groundwater mixing zone as defined by ARM 17.30.517 and also may not include easements that would conflict with the proposed use. Fencing of the site may be required by MDEQ.

3.2.3.2.1 Exceptions; when a new well is proposed and when the MDEQ has been consulted about well locations and the well isolation zone extends beyond the property-line on which the well is proposed, a deviation from Chapter 3 Source Development, Section 3.2.3.2 Continued Protection, can be granted to the required 100-foot radius well protection zone and/or the configuration of the zone if;

1. The proposed well location has been approved by MDEQ,
2. There are no sources of potential contamination; sewer lines, septic tanks, drain fields, mixing zones, holding tanks, and any structures used to covey or retain industrial, storm, or sanitary waste, state or federal highway rights-of-way, and any other sources of potential contamination as described in Chapter 3 Source Development, Section 1.1.6 (d) within the well isolation zone,
3. The well lies up-gradient from that portion of the well isolation zone in which the deviation is being requested, And
4. All efforts to change zoning, acquire an easement, deed notice, lease or other means acceptable by MDEQ have been exhausted and no agreement can be reached with the owners of the property(s) impacted by the well isolation zone of the proposed well.

JUSTIFICATION: *attach additional information as necessary*

The Timbrshor Subdivision has been determined to have 13 existing units that are using water from a COSA non-compliant water system. During development from 1977 until 2009, units could be constructed within the Timbrshor Subdivision and were not prevented from installing COSA non-compliant individual or multi-user surface water diversions from Flathead Lake for domestic water use. In 2003 Lake County informed the developer, Borchers of Finley Point and the Timbrshor Subdivision Homeowners Association (THOA) that new unit construction would not be permitted until a COSA compliant wastewater treatment system (WWTS) was installed. The County acknowledged that there was also a COSA non-complaint water system that was installed but, acknowledging that any issues with water rights associated to subdivision would be involved in the CSKT water right compact, instructed the developer and the THOA to proceed with the WWTS plans, approvals and construction.

As soon as the costs of the WWTS were known and assessed, the developer filed for bankruptcy and the Timbrshor

Homeowners Association (THOA) was the only party left to resolve the issues with a COSA non-compliant WWTS and water system. As the remaining owners, the THOA were immediately incumbered with not only the regulatory responsibility but a substantial financial responsibility to correct the developers COSA violations. Between 2013 and 2016 the THOA spent over $550,000 to address the more urgent of the health issues by completing the WWTS.

When the record drawings were filed in 2016 at Lake County, the THOA requested the County lift the building moratorium. The County contacted the DEQ who then informed the THOA that new unit construction would not be allowed until final approval of a COSA complaint water system. The THOA met with the DEQ, developed a plan that would more likely than not meet both the DNRC water right and DEQ regulations and the THOA water requirements. The THOA has retained Hafferman Engineering, Inc. and is now in the process of developing the plans and specifications for a transient non-community, multi-user, multiple groundwater well, domestic water supply and distribution system.

The THOA are again the parties affected by the building moratorium, and again are immediately incumbered with the financial responsibility to correct the developers COSA violations. The THOA is financially incumbered and cannot raise enough additional funds to afford the community surface water system contemplated in the original COSA, nor can they afford the extravagance of a dual well and storage system given the extreme difficulty to trench and bury water lines. HEI has had numerous conversations with MDEQ's Kalispell office and an email received from Emily Gillespie P.E. on September 24th, 2018 indicated, "TPW-4 Well Location-requires no deviations requests. This well could be pursued for an individual, shared, multi-user or public well (using standard submittal process).

There are no known sources of contamination on the neighboring property; septic systems, mixing zones, wastewater disposal systems, sewer lines, holding tanks, lift stations, French drains, class V injection wells, or any structures used to convey or retain industrial, storm or sanitary waste, within the well isolation zone for the proposed Well 4 well and the well lays up-gradient from the adjacent property to be impacted by the isolation zone. The area of the well isolation zone on the adjoining property is on the road, Snowberry Lane or the Timbrshor access road and cannot be otherwise used or developed.

Approximately 30% of the TPW-4 well isolation zone extends into 34819 Snowberry Lane who's legal description is Lot 3, Block 6 Finley Point Villa Site, Section 7, Township 23 N, Range 19 W, Lake County, Montana. This property is owned by William McLaughlin. After numerous attempts to negotiate a well control zone agreement with Mr. McLaughlin to allow the well isolation zone to encroach onto the property, Mr. McLaughlin has rejected all offers and therefore a deviation from 3.2.3.2 is necessary in order to proceed.

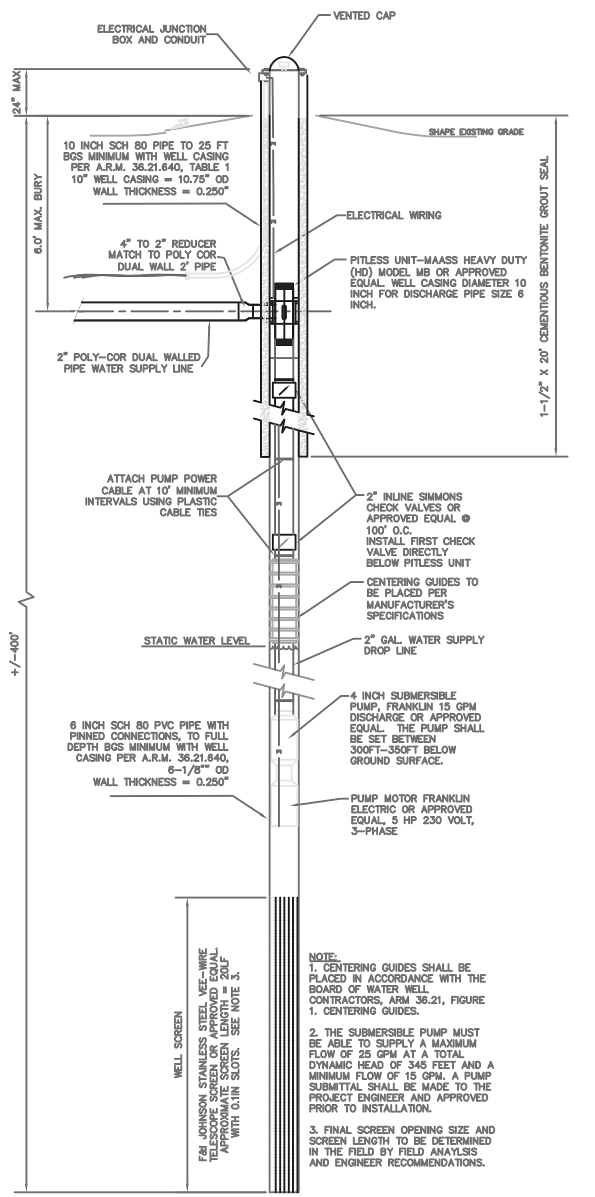
In accordance with ARM 17.38.101 (e), I certify that strict adherence to the above standard is not necessary to protect public health and the quality of state waters.

(Signature of Professional Engineer)

11-30-2019
(Date Signed)

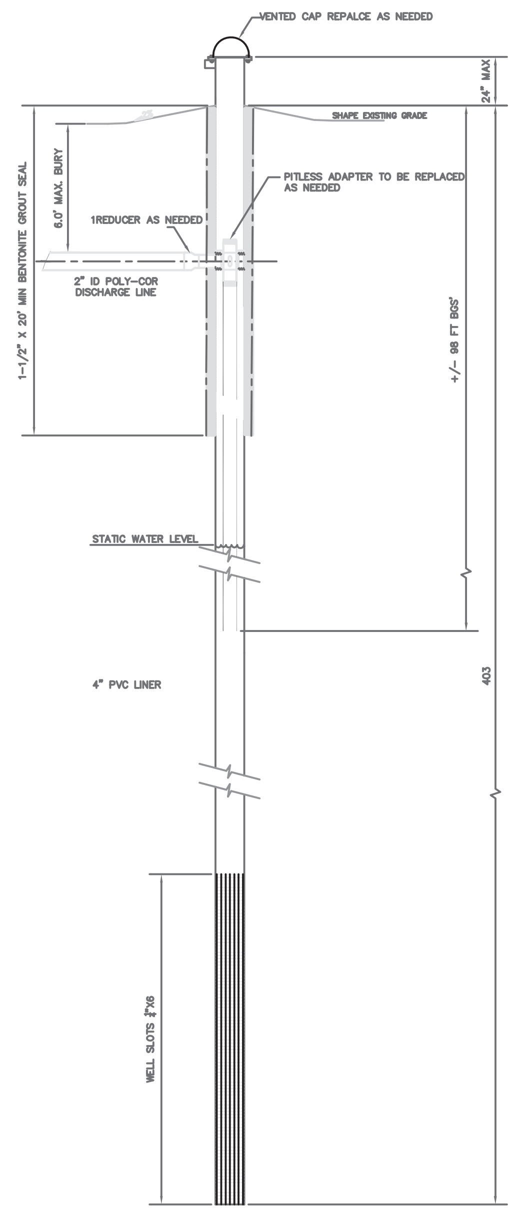
Montana P.E. Number PEL-PE-LIC-10457

For Department Use Only:
Review Engineer's Recommendation:



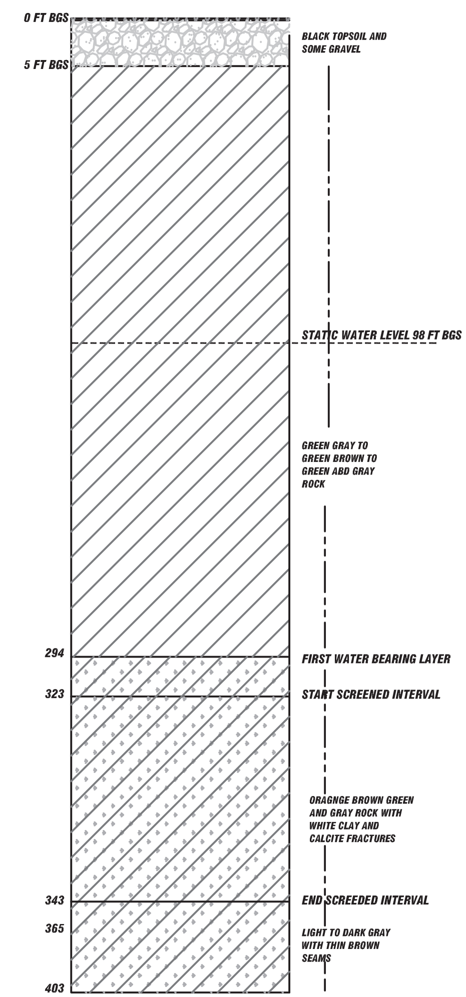
THOA PWS WELL 4, 5, 6, 8, AND 9 CONSTRUCTION DETAIL

SCALE : N.T.S.



MCCARTHY WELL SEAL RECONSTRUCTION DETAIL

SCALE : N.T.S.



MCCARTHY (CANNON) WELL LOG DETAIL
PWS MACCARTHY WELL

SCALE : N.T.S.

REVISIONS

DATE:	DESCRIPTION:	BY
10/1/19	DRAFT DESIGN DRAWINGS	NJF
10/3/19	DRAFT CONSTRUCTION	NJF
10/19/19	PITLESS AND WATER LINES	KMH
10/24/19	RE-ISSUED FOR REVIEW	KMH
10/30/19	SUBMITTAL	KMH

DRAWN BY: | APPROVED BY: KMH

TIMBRSHOR HOA
WATER SYSTEM IMPROVEMENTS
FOR
THE TIMBRSHOR HOA

SECTION 7, T.23N., R.19W., P.M., M., FLATHEAD COUNTY, MONTANA

HAFFERMAN ENGINEERIG, INC.
860 N. MERIDIAN SUITE B 21
KALISPELL, MT. 59901
PHONE: (406) 257-8708
FAX: (406) 257-8710
EMAIL: info@billmayer.com
ONLINE: http://www.billmayer.com

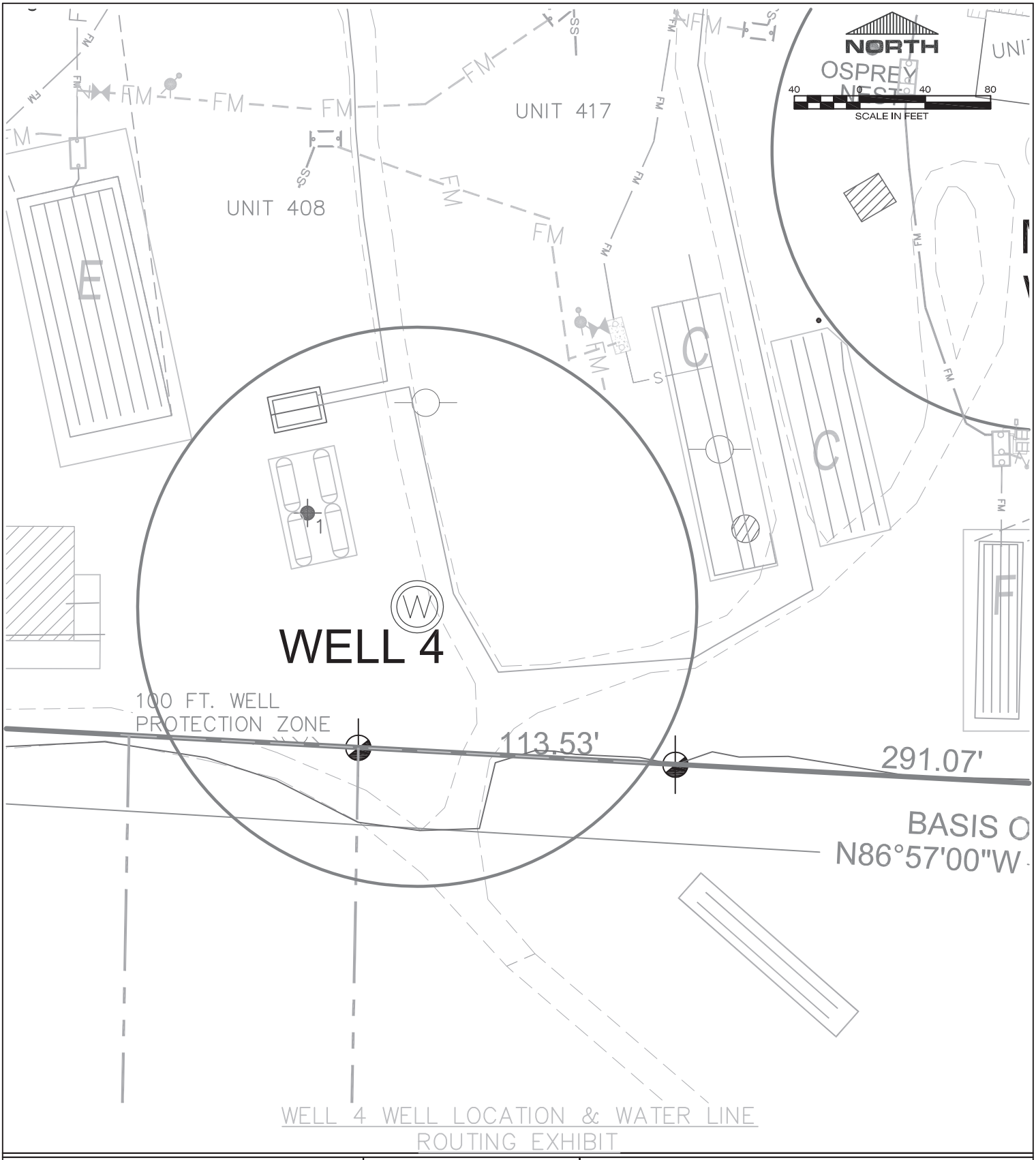
DRAWING TITLE: **WELL DETAILS**

SCALE: AS SHOWN

DATE: OCTOBER 2019 | PROJECT NO: T.58.2

DRAWING NUMBER: **1 OF 1**

PWS WELL DETAILS.DWG



WELL 4 WELL LOCATION & WATER LINE ROUTING EXHIBIT

HAFFERMAN ENGINEERING, INC.
P.O. BOX 1891
KALISPELL, MT 59901-1891
PHONE: 406-257-8708
FAX: 406-257-8710
EMAIL: info@billmayer.com
ONLINE: www.billmayer.com

DRAWING TITLE:

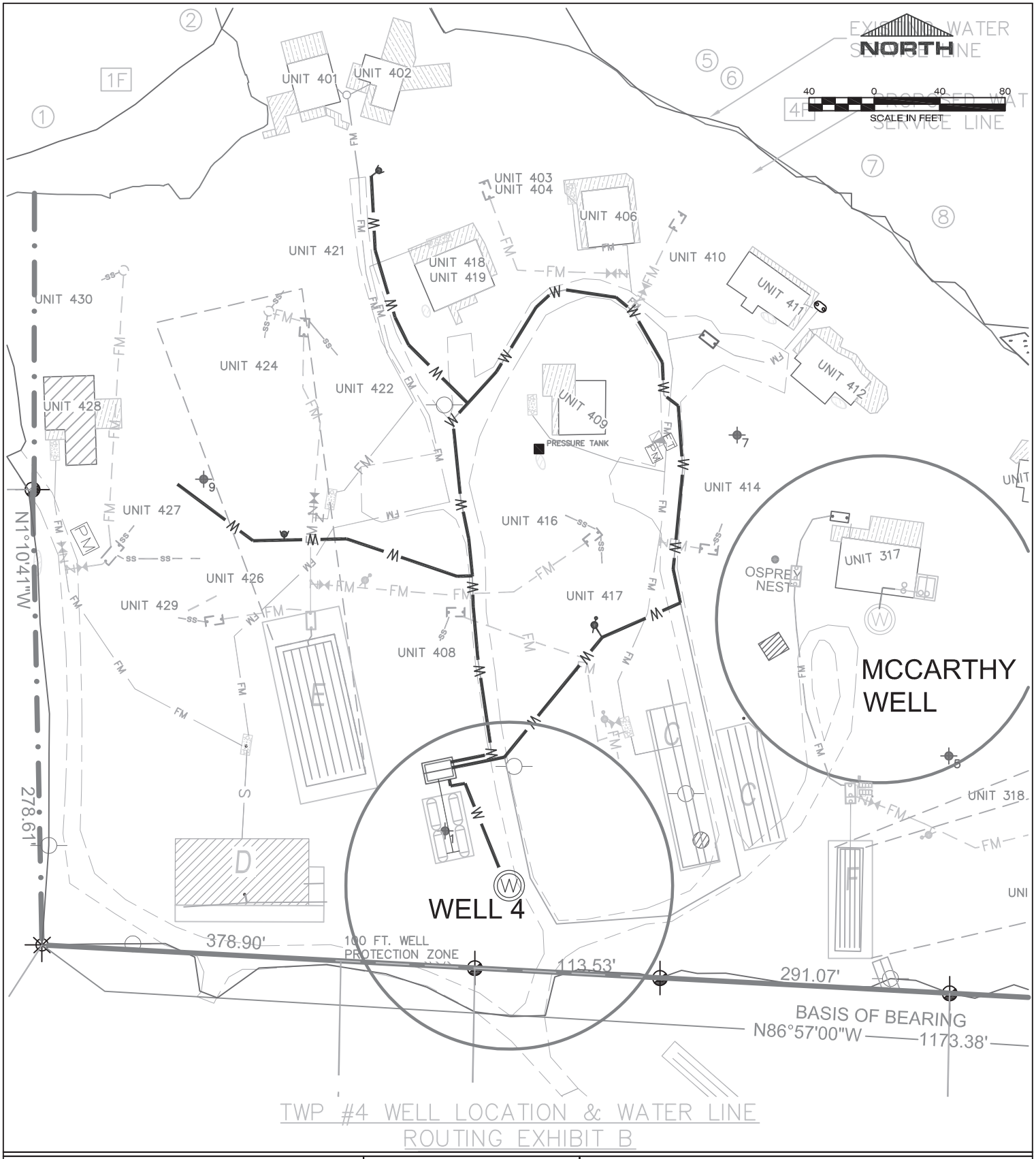
TIMBRSHOR WELL 4 PROTECTION ZONE

FOR

TIMBRSHOR HOA

SECTION 7
T23N, R 19W, PM, M., LAKE COUNTY, MONTANA

DATE:	PROJECT NUMBER:	SCALE:	SHEET:
OCT. 25 2019	T.58.2	AS SHOWN	1 OF 1
FILE LOCATION: S:\LAND PRO...\T.58.2\DWG	DRAWN BY: NJF	APPROVED BY: KMH	



TWP #4 WELL LOCATION & WATER LINE ROUTING EXHIBIT B

HAFFERMAN ENGINEERING, INC.
P.O. BOX 1891
KALISPELL, MT 59901-1891
PHONE: 406-257-8708
FAX: 406-257-8710
EMAIL: info@billmayer.com
ONLINE: www.billmayer.com

DRAWING TITLE:

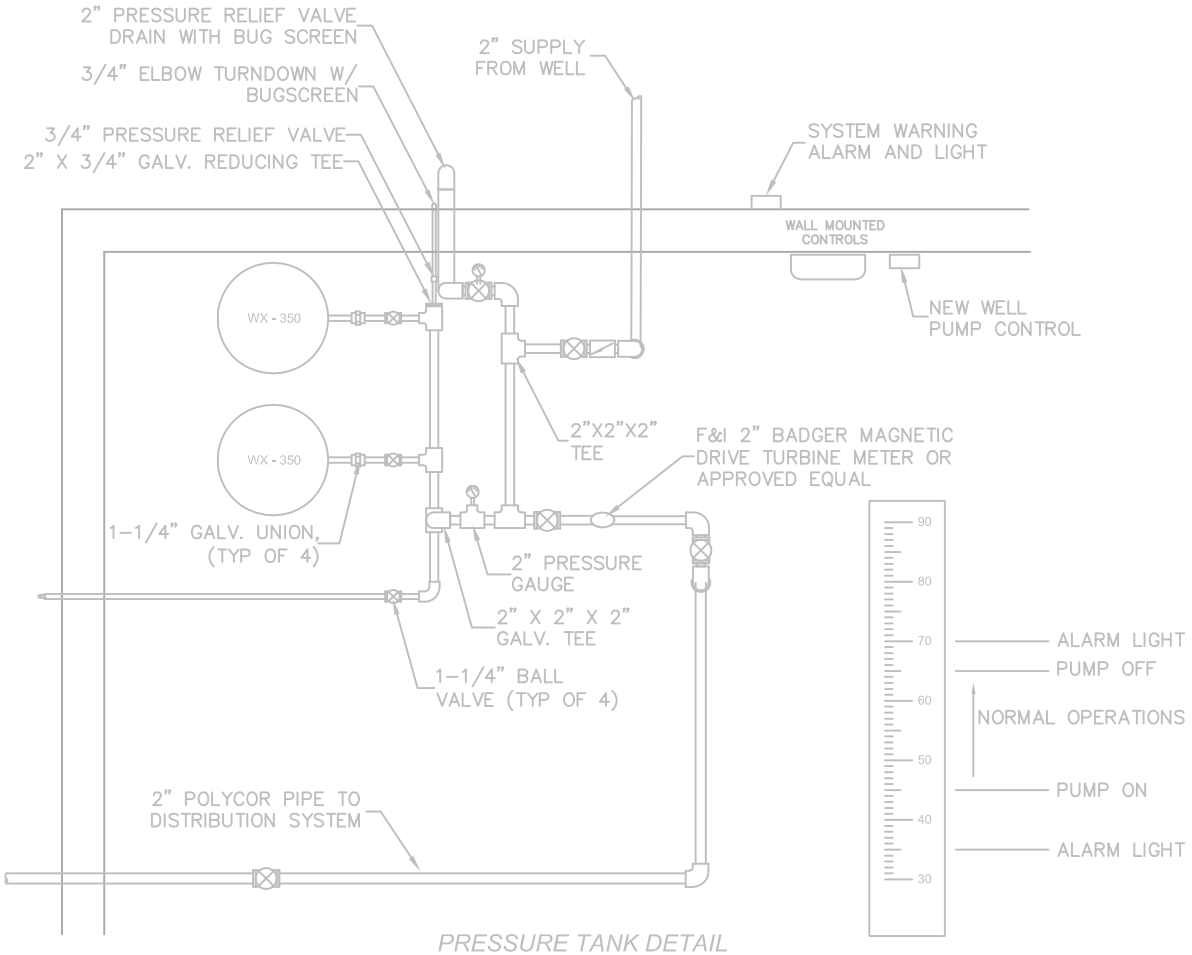
TIMBRSHOR WELL #4 PROTECTION ZONE

FOR

TIMBRSHOR HOA

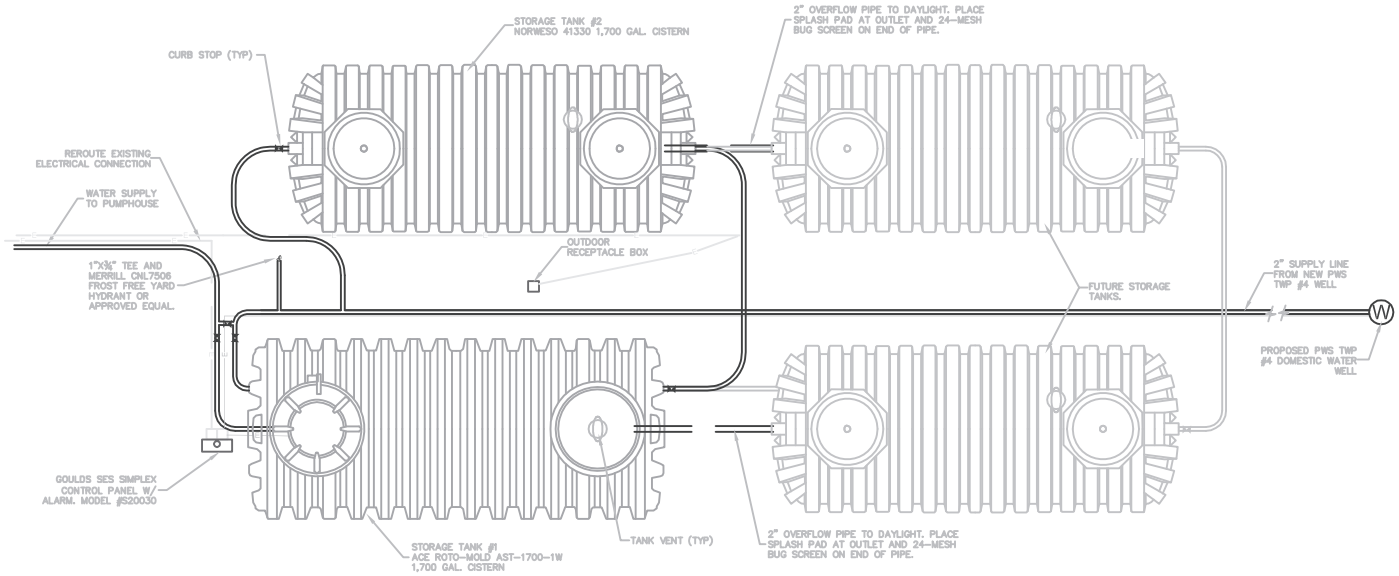
SECTION 7
T23N, R 19W, PM, M., LAKE COUNTY, MONTANA

DATE:	PROJECT NUMBER:	SCALE:	SHEET:
NOV 19, 2018	T.58.2	AS SHOWN	2 OF 4
FILE LOCATION: S:\LAND PRO...\T.58.2\DWG	DRAWN BY: NJF	APPROVED BY: KMH	



PRESSURE TANK DETAIL

NTS



WATER STORAGE LAYOUT DETAIL

NTS

WELL 4 EQUIPMENT ROOM DETAIL EXHIBIT

HAFFERMAN ENGINEERING, INC.
P.O. BOX 1891
KALISPELL, MT 59901-1891
PHONE: 406-257-8708
FAX: 406-257-8710
EMAIL: info@billmayer.com
ONLINE: www.billmayer.com

DRAWING TITLE:

WELL 4 STORAGE AND PIPING DETAILS

FOR

TIMBRSHOR HOA

SECTION 7
T23N, R 19W, PM, M., LAKE COUNTY, MONTANA

DATE:	PROJECT NUMBER:	SCALE:	SHEET:
NOV 19, 2018	T.58.2	AS SHOWN	3 OF 4
FILE LOCATION: S:\LAND PRO...\T.58.2\DWG	DRAWN BY: NJF	APPROVED BY: KMH	

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

Metcalf Building 1520 East Sixth Avenue P.O. Box 200901 Helena, MT 59620-0901

PRELIMINARY ASSESSMENT WORKSHEET

Preliminary Assessment of Ground Water Sources that may be Under the Direct Influence of Surface Water

PWS System and Source Facility Information					
PWS Name:	TIMBERSHOR SUBDIVISION PWS			**PWS ID#:** (MT000nnnn)	
Type (C, NTNC, NC):	TNC	**County:**	LAKE	**Population Served:**	15
Source Facility Name:	THOA WELL 5	**SDWIS Facility ID:** (WL00n,SP00n,IG00n)		**Date:** (m/d/yy)	10/25/19

COMPUTE PA SCORE — Mark (X) ONE option that applies and enter option index pts at right					Points
A. TYPE OF STRUCTURE					
Spring (40) ___	Horizontal Well (40) ___	Well (0) **X**			**0**
B. HISTORICAL PATHOGENIC ORGANISM CONTAMINATION: History or suspected outbreak of Giardia, or other pathogenic organisms associated with surface water, with current system configuration.					
Yes (40) ___	No (0) **X**				**0**
C. HISTORICAL MICROBIOLOGICAL CONTAMINATION:					
I) Record of **acute** (boil order or fecal positive sample) MCL violations of the Total Coliform Rule during the last 3 years. **Number of violations:**					
None (0) **X**	One (5) ___	Two (10) ___	Three (15) ___		**0**
II) Record of **non-acute** (two coliform positive samples in one month) MCL violations of the Total Coliform Rule during the last 3 years. **Number of violations:**					
None or One (0) **X**	Two (5) ___	Three (10) ___	Turbidity Complaints (DEQ verified) (5) ___		**0**
D. HYDROLOGICAL FEATURES: Horizontal distance between surface water & source.					
> 250 ft (0) **450**	175 - 250 ft (10) ___	100 - 174 ft (20) ___	< 100 ft (40) ___		**0**
E. WELL SEAL: Poorly constructed well (uncased, or annular space not sealed to depth of at least 18 feet below land surface), or casing construction is unknown.					
Yes (15) ___	No (0) **X**				**0**
F. WELL INTAKE CONSTRUCTION: In wells tapping unconfined or semi-confined aquifers, the depth below land surface to top of perforated interval or screen is:					
>100 ft (0) **X**	50-100 ft (5) ___	25-49 ft (10) ___	0-24 ft (15) ___	Unkn (15) ___	**0**
G. STATIC WATER LEVEL: In wells tapping unconfined or semi-confined aquifers, the depth to static water level below land surface is:					
>100 ft (0) ___	50-100 ft (5) **80**	25-49 ft (10) ___	0-24 ft (15) ___	Unkn (15) ___	**5**
H. WELL CAP CONSTRUCTION: Poor sanitary seal, or seal without acceptable material.					
Yes (15) ___	No (0) **X**				**0**
TOTAL PA SCORE (Right click in cell to right and select Update Field.)					**5**

Continued other side ...

I. PRELIMINARY ASSESSMENT DETERMINATION	**Mark (X) ONE**
1. PASS: Source is not under the direct influence of surface water.	X
2. FAIL: Well must undergo further GWUDISW analysis.	___
3. FAIL: Spring, must undergo further GWUDISW analysis.	___
4. FAIL: Well or horizontal well less than 100 feet from surface water, **must undergo further GWUDISW analysis.**	___
5. FAIL: Well **will** PASS if well construction deficiencies (section E or F) are repaired.	___
6. FAIL: Well **may** PASS if well construction details (section E, F, or G) become available.	___

ANALYST INFORMATION AND COMMENTS	
NAME:	KURTIS M. HAFFERMAN P.E. - HAFFERMAN ENGINEERING
AFFILIATION:	THOA PROJECT ENGINEER

COMMENTS

WELL 5 DEVELOPMENT IS BASED ON A INTERPOLATION BETWEEN TWO NEARBY WELLS BASED ON DISTANCE AND ELEVATION. THE WELLS ARE THE RICHARD CANNON, GWIC WELL LOG 77517 AND THE LAURRY BISHOP WELL LOG, GWIC 168825 . THE CANNON WELL WAS DRILLED BY LIBERTY DRILLING, ONE OF THE MORE REPUTABLE DRILLING OPERATIONS IN THE AREA SO THE WELL LOG IS ASSUMED TO BE ACCURATE. THE BISHOP WELL WAS DRILL BY CASTILO DRILLING, ANOTHER LOCAL, LONG STANDING DRILLER WITH A GOOD REPUTATION AND THE WELL LOG IS ASSUMED TO BE ACCURATE.

GROUNDWATER IN CANNON WAS ENCOUNTERED NEAR 403 FT. BGS AND THE STATIC WATER LEVEL IS 98 FT BGS. GROUNDWATER IN BISHOP WAS ENCOUNTERED AT 110 FT. BGS AND THE SWL IS 55 FT BGS. BECAUSE OF THE LACK OF WATER BEARING LAYERS UNTIL ENCOUNTERING WATER, WELL BELOW GROUND SURFACE, IT IS ASSUMED THE AQUIFER IS CONFINED UNDER NUMEROUS OVER LAYING BEDROCK LAYERS. GROUNDWATER IN WELL 5 IS ANTICIPATED TO BE NEAR TO 80 FT BGS WITH A TOTAL DEPTH NEAR TO 182 FT BGS.

WATER QUALITY WAS TESTED IN THE CANNON WELL ON NOVEMEBR 2015 AND THE NITRATE CONCENTRATION WAS 0.13 MG/L.

THE WELL CONTROL ZONE FOR WELL 5 CROSSES ONTO A NEIGHBORING PROPERTY. THE SOUTH NEIGHBOR TIM AND KIRSTEN ROSE, REFUSED TO SIGN THE WCZ AGREEMENT. A DEVIATION FROM THE FULL 100 FT. WCZ IS REQUESTED. THE PROPOSED DEVIATION IS ATTACHED. PLANS AND SPECIFICATIONS FOR THE WELL CONSTRUCTION TO INCLUDE A MANMADE BARRIER OF NEAT CEMENT GROUNT IS ALSO ATTACHED.

Electronic Entry Instructions: Open the WORD document template (DOT) as a WORD document (DOC) with an appropriate name and location. The document is protected from all edits other than form entry. Enter the requested information in the form fields and tab forward between fields. All character entries will be converted to upper case. In the Compute PA Score table for questions A through H, mark with an X the one option which applies to each, then enter the score corresponding to that option in the field to the right under the Points column. When scores A-H have been entered right click on the Total PA Score field and select Update Field. The total score will be computed. Select the PA Determination option by marking with an X. Fill out the Analyst Information and Comments table. Save the document with your entries.

Montana Department of Environmental Quality

PUBLIC WATER SUPPLY DEVIATION REQUEST

Project Name: **Timbrshor Subdivision Well 5**

EQ

Engineer Name: **Kurtis M. Hafferman, P.E.**

Circular: **DEQ-3 Standards for Small Water Systems**

STANDARD: EXISTING STANDARD: Circular DEQ -3 Standards for Small Water Systems, August 8, 2014 Edition,

Chapter 3 – Source Development, 3.2.3.2 Continued protection, Continued protection of the well site from potential sources of contamination must be provided either through zoning, easements, deed notices, leasing, or other means acceptable to MDEQ. Easements and deed notices must be filed with the County Clerk and Recorders Office. Such protection must extend for at least 100-foot radius around the well (well isolation zone). In addition, separation distances between proposed wells and potential sources of contamination must be defined and justified by the applicant in accordance with Section 1.1.6 of this circular. The well isolation zone of a proposed or existing well may not be in a groundwater mixing zone as defined by ARM 17.30.517 and also may not include easements that would conflict with the proposed use. Fencing of the site may be required by MDEQ.

PROPOSED STANDARD:

Chapter 3 – Source Development, Section 3.2.3.2 Continued Protection

3.2.3.2 Continued protection of the well site from potential sources of contamination must be provided either through zoning, easements, deed notices, leasing, or other means acceptable to MDEQ. Easements and deed notices must be filed with the County Clerk and Recorders Office. Such protection***, where possible,*** must extend for at least 100-foot radius around the well (well isolation zone). In addition, separation distances between proposed wells and potential sources of contamination must be defined and justified by the applicant in accordance with Section 1.1.6 of this circular. The well isolation zone of a proposed or existing well may not be in a groundwater mixing zone as defined by ARM 17.30.517 and also may not include easements that would conflict with the proposed use. Fencing of the site may be required by MDEQ.

3.2.3.2.1 Exceptions; when a new well is proposed and when the MDEQ has been consulted about well locations and the well isolation zone extends beyond the property-line on which the well is proposed, a deviation from Chapter 3 Source Development, Section 3.2.3.2 Continued Protection, can be granted to the required 100-foot radius well protection zone and/or the configuration of the zone if;

1. The proposed well location has been approved by MDEQ,
2. There are no sources of potential contamination; sewer lines, septic tanks, drain fields, mixing zones, holding tanks, and any structures used to covey or retain industrial, storm, or sanitary waste, state or federal highway rights-of-way, and any other sources of potential contamination as described in Chapter 3 Source Development, Section 1.1.6 (d) within the well isolation zone,
3. The well lies up-gradient from that portion of the well isolation zone in which the deviation is being requested, And
4. All efforts to change zoning, acquire an easement, deed notice, lease or other means acceptable by MDEQ have been exhausted and no agreement can be reached with the owners of the property(s) impacted by the well isolation zone of the proposed well.

JUSTIFICATION: *attach additional information as necessary*

The Timbrshor Subdivision has been determined to have 13 existing units that are using water from a COSA non-compliant water system. During development from 1977 until 2009, units could be constructed within the Timbrshor Subdivision and were not prevented from installing COSA non-compliant individual or multi-user surface water diversions from Flathead Lake for domestic water use. In 2003 Lake County informed the developer, Borchers of Finley Point and the Timbrshor Subdivision Homeowners Association (THOA) that new unit construction would not be permitted until a COSA compliant wastewater treatment system (WWTS) was installed. The County acknowledged that there was also a COSA non-complaint water system that was installed but, acknowledging that any issues with water rights associated to subdivision would be involved in the CSKT water right compact, instructed the developer and the THOA to proceed with the WWTS plans, approvals and construction.

As soon as the costs of the WWTS were known and assessed, the developer filed for bankruptcy and the Timbrshor

Homeowners Association (THOA) was the only party left to resolve the issues with a COSA non-compliant WWTS and water system. As the remaining owners, the THOA were immediately incumbered with not only the regulatory responsibility but a substantial financial responsibility to correct the developers COSA violations. Between 2013 and 2016 the THOA spent over $550,000 to address the more urgent of the health issues by completing the WWTS.

When the record drawings were filed in 2016 at Lake County, the THOA requested the County lift the building moratorium. The County contacted the DEQ who then informed the THOA that new unit construction would not be allowed until final approval of a COSA complaint water system. The THOA met with the DEQ, developed a plan that would more likely than not meet both the DNRC water right and DEQ regulations and the THOA water requirements. The THOA has retained Hafferman Engineering, Inc. and is now in the process of developing the plans and specifications for a transient non-community, multi-user, multiple groundwater well, domestic water supply and distribution system.

The THOA are again the parties affected by the building moratorium, and again are immediately incumbered with the financial responsibility to correct the developers COSA violations. The THOA is financially incumbered and cannot raise enough additional funds to afford the community surface water system contemplated in the original COSA, nor can they afford the extravagance of a dual well and storage system given the extreme difficulty to trench and bury water lines. HEI has had numerous conversations with MDEQ's Kalispell office with Emily Gillespie P.E. The general discussion was this well could be pursued for an individual, shared, multi-user or public well (using standard submittal process).

There are no known sources of contamination on the neighboring property; septic systems, mixing zones, wastewater disposal systems, sewer lines, holding tanks, lift stations, French drains, class V injection wells, or any structures used to convey or retain industrial, storm or sanitary waste, within the well isolation zone for the proposed Well 5 well and the well lays up-gradient from the adjacent property to be impacted by the isolation zone. The area of the well isolation zone on the adjoining property is on the road, Snowberry Lane or the Timbrshor access road and cannot be otherwise used or developed.

Approximately 10% of the Well 5 well isolation zone extends into the property of who's legal description is Finley Point Villa Site, Finley Point Villa Site, S07, T23 N, R19 W, Block 006, Lot 001, lake County, Montana. This property is owned by Timothy L. and Kristen R. Rose. After numerous attempts to negotiate a well control zone agreement with Mr. and Mrs. Rose to allow the well isolation zone to encroach onto the property, the Rose's have rejected all offers and therefore a deviation from 3.2.3.2 is necessary in order to proceed.

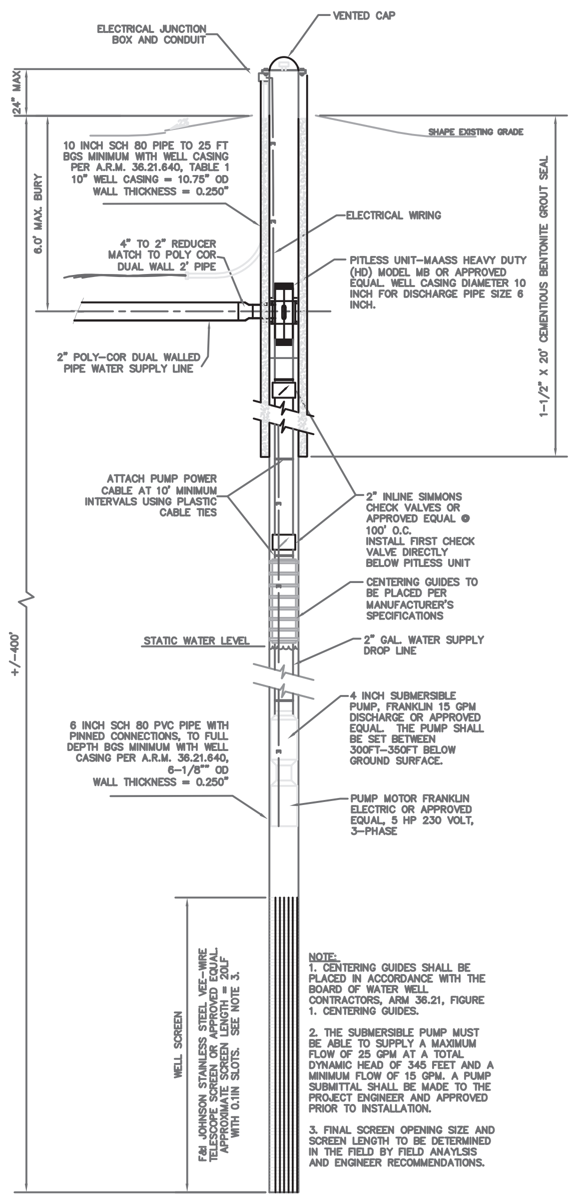
In accordance with ARM 17.38.101 (e), I certify that strict adherence to the above standard is not necessary to protect public health and the quality of state waters.

(Signature of Professional Engineer)

10-30-2019
(Date Signed)

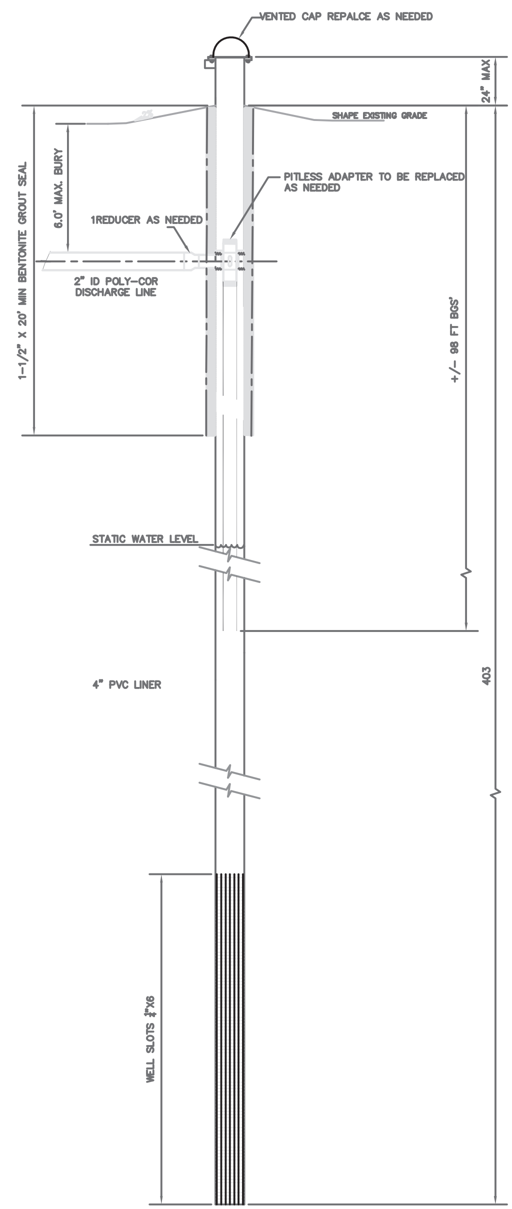
Montana P.E. Number PEL-PE-LIC-10457

For Department Use Only:
Review Engineer's Recommendation:



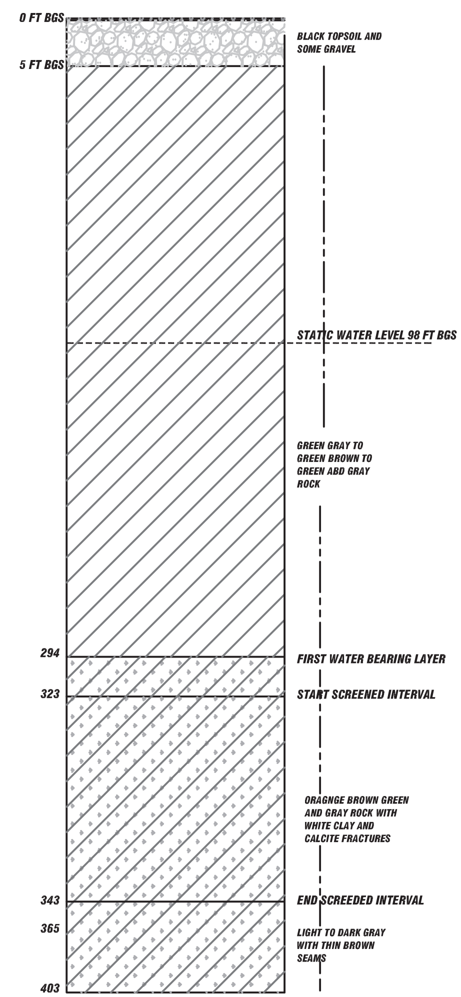
THOA PWS WELL 4, 5, 6, 8, AND 9 CONSTRUCTION DETAIL

SCALE : N.T.S.



MCCARTHY WELL SEAL RECONSTRUCTION DETAIL

SCALE : N.T.S.



MCCARTHY (CANNON) WELL LOG DETAIL
PWS MACCARTHY WELL

SCALE : N.T.S.

REVISIONS

DATE:	DESCRIPTION:	BY
10/1/19	DRAFT DESIGN DRAWINGS	NJF
10/3/19	DRAFT CONSTRUCTION	NJF
10/19/19	PITLESS AND WATER LINES	KMH
10/24/19	RE-ISSUED FOR REVIEW	KMH
10/30/19	SUBMITTAL	KMH

DRAWN BY: [illegible] APPROVED BY: KMH

TIMBRSHOR HOA
WATER SYSTEM IMPROVEMENTS
FOR
THE TIMBRSHOR HOA

SECTION 7, T.23N., R.19W., P.M., M., FLATHEAD COUNTY, MONTANA

HAFFERMAN ENGINEERIG, INC.
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PHONE: (406) 257-8708
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EMAIL: info@billmayer.com
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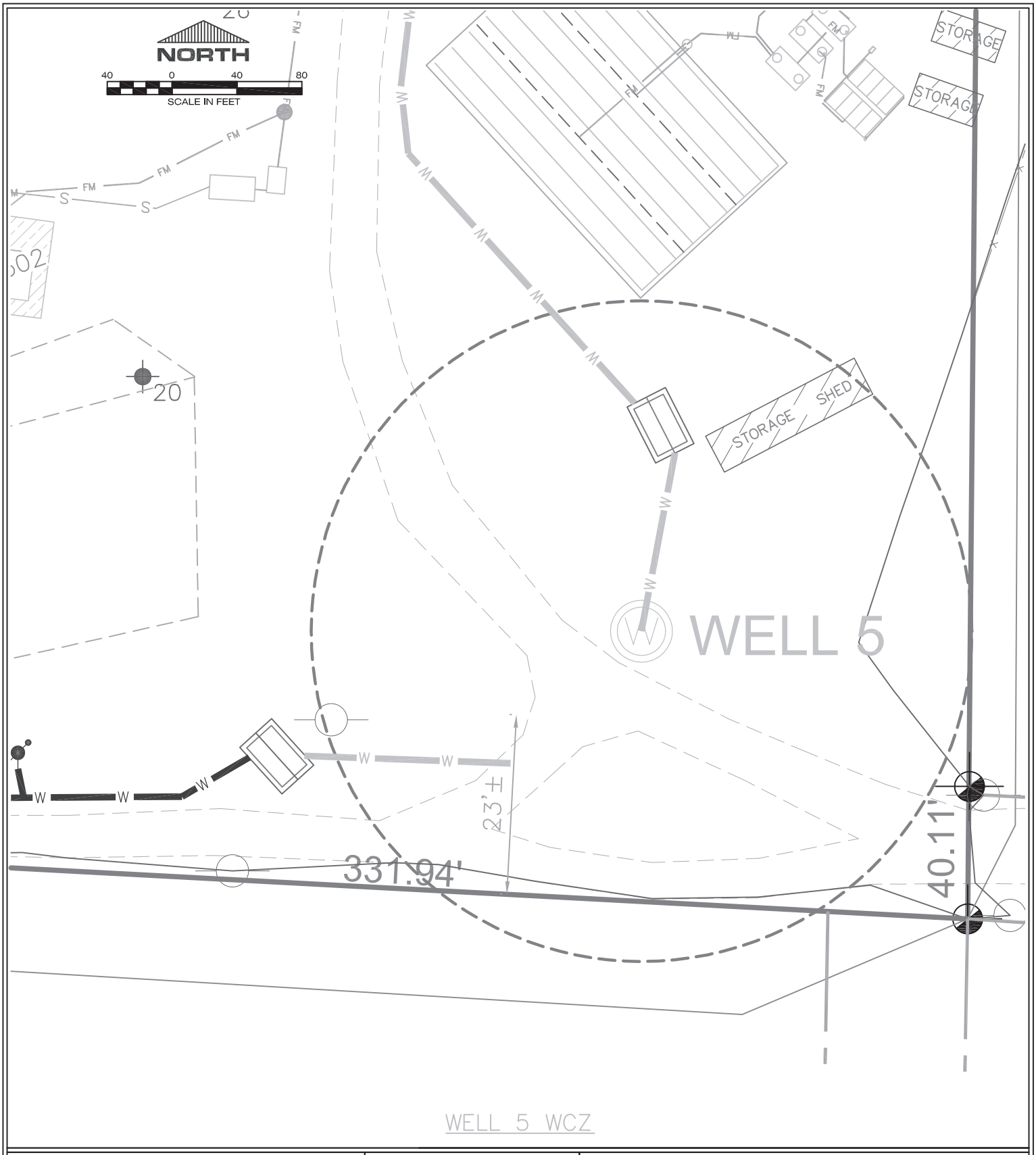
DRAWING TITLE: **WELL DETAILS**

SCALE: AS SHOWN

DATE: OCTOBER 2019 | PROJECT NO: T.58.2

DRAWING NUMBER: **1 OF 1**

PWS WELL DETAILS.DWG



WELL 5 WCZ

HAFFERMAN ENGINEERING, INC.
P.O. BOX 1891
KALISPELL, MT 59901-1891
PHONE: 406-257-8708
FAX: 406-257-8710
EMAIL: info@billmayer.com
ONLINE: www.billmayer.com

DRAWING TITLE:

TIMBERSHOR WELL 5 PROTECTION ZONE

FOR

TIMBRSHOR HOA

SECTION 7
T23N, R 19W, PM, M., LAKE COUNTY, MONTANA

DATE:	PROJECT NUMBER:	SCALE:	SHEET:
DEC 7, 2018	T.58.2	AS SHOWN	2 OF 2
FILE LOCATION: S:LAND PRO...\T.58.2\DWG	DRAWN BY: NJF	APPROVED BY: KMH	

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

Metcalf Building 1520 East Sixth Avenue P.O. Box 200901 Helena, MT 59620-0901

PRELIMINARY ASSESSMENT WORKSHEET

Preliminary Assessment of Ground Water Sources that may be Under the Direct Influence of Surface Water

PWS System and Source Facility Information					
PWS Name:	TIMBERSHOR SUBDIVISION PWS			**PWS ID#:** (MT000nnnn)	
Type (C, NTNC, NC):	TNC	**County:**	LAKE	**Population Served:**	20
Source Facility Name:	THOA WELL 6	**SDWIS Facility ID:** (WL00n,SP00n,IG00n)		**Date:** (m/d/yy)	8/5/2019

COMPUTE PA SCORE — Mark (X) ONE option that applies and enter option index pts at right					Points
A. TYPE OF STRUCTURE					
Spring (40) ___	Horizontal Well (40) ___	Well (0) **X**			**0**
B. HISTORICAL PATHOGENIC ORGANISM CONTAMINATION: History or suspected outbreak of Giardia, or other pathogenic organisms associated with surface water, with current system configuration.					
Yes (40) ___	No (0) **X**				**0**
C. HISTORICAL MICROBIOLOGICAL CONTAMINATION:					
I) Record of **acute** (boil order or fecal positive sample) MCL violations of the Total Coliform Rule during the last 3 years. **Number of violations:**					
None (0) **X**	One (5) ___	Two (10) ___	Three (15) ___		**0**
II) Record of **non-acute** (two coliform positive samples in one month) MCL violations of the Total Coliform Rule during the last 3 years. **Number of violations:**					
None or One (0) **X**	Two (5) ___	Three (10) ___	Turbidity Complaints (DEQ verified) (5) ___		**0**
D. HYDROLOGICAL FEATURES: Horizontal distance between surface water & source.					
> 250 ft (0) **340**	175 - 250 ft (10) ___	100 - 174 ft (20) ___	< 100 ft (40) ___		**0**
E. WELL SEAL: Poorly constructed well (uncased, or annular space not sealed to depth of at least 18 feet below land surface), or casing construction is unknown.					
Yes (15) ___	No (0) **X**				**0**
F. WELL INTAKE CONSTRUCTION: In wells tapping unconfined or semi-confined aquifers, the depth below land surface to top of perforated interval or screen is:					
>100 ft (0) **X**	50-100 ft (5) ___	25-49 ft (10) ___	0-24 ft (15) ___	Unkn (15) ___	**0**
G. STATIC WATER LEVEL: In wells tapping unconfined or semi-confined aquifers, the depth to static water level below land surface is:					
>100 ft (0) ___	50-100 ft (5) **55**	25-49 ft (10) ___	0-24 ft (15) ___	Unkn (15) ___	**5**
H. WELL CAP CONSTRUCTION: Poor sanitary seal, or seal without acceptable material.					
Yes (15) ___	No (0) **X**				**0**
TOTAL PA SCORE (Right click in cell to right and select Update Field.)					**5**

Continued other side ...

PRELIMINARY ASSESSMENT WORKSHEET (continued)

I. PRELIMINARY ASSESSMENT DETERMINATION	Mark (X) ONE
1. PASS: Source is not under the direct influence of surface water.	X
2. FAIL: Well must undergo further GWUDISW analysis.	
3. FAIL: Spring, must undergo further GWUDISW analysis.	
4. FAIL: Well or horizontal well less than 100 feet from surface water, **must undergo further GWUDISW analysis.**	
5. FAIL: Well **will** PASS if well construction deficiencies (section E or F) are repaired.	
6. FAIL: Well **may** PASS if well construction details (section E, F, or G) become available.	

ANALYST INFORMATION AND COMMENTS	
NAME:	KURTIS M. HAFFERMAN P.E. - HAFFERMAN ENGINEERING
AFFILIATION:	THOA PROJECT ENGINEER

COMMENTS

WELL 6 DEVELOPMENT IS BASED ON A INTERPOLATION OF THE NEARBY LAURRY BISHOP WELL LOG, GWIC 168825 . THE BISHOP WELL WAS DRILL BY CASTILO DRILLING, ANOTHER LOCAL, LONG STANDING DRILLER WITH A GOOD REPUTATION AND THE WELL LOG IS ASSUMED TO BE ACCURATE.

GROUNDWATER IN BISHOP WAS ENCOUNTERED AT 110 FT. BGS AND THE SWL IS 55 FT BGS. BECAUSE OF THE LACK OF WATER BEARING LAYERS UNTIL ENCOUNTERING WATER, WELL BELOW GROUND SURFACE, IT IS ASSUMED THE AQUIFER IS CONFINED UNDER NUMEROUS OVER LAYING BEDROCK LAYERS. GROUNDWATER IN WELL 6 IS ANTICIPATED TO BE NEAR TO 50 FT BGS WITH A TOTAL DEPTH NEAR TO 115 FT BGS.

WATER QUALITY WAS TESTED IN THE CANNON WELL ON NOVEMEBR 2015 AND THE NITRATE CONCENTRATION WAS 0.13 MG/L. THE BISHOP WELL IS ANTICPATED TO HAVE NEARLY THE SAME WATER QUALITY.
THE WELL CONTROL ZONE FOR WELL 5 IS ENTIRLEY CONTAINED ON THE NOVISNSKI PROPERTY. NOVINSKI HAS AGREED TO A WCZ, AN EASMENT AND RIGHT OF WAY FOR ACCESS. PLANS AND SPECIFICATIONS FOR THE WELL CONSTRUCTION TO INCLUDE A STANDARD BENTONTITE GROUNT IS ALSO ATTACHED.

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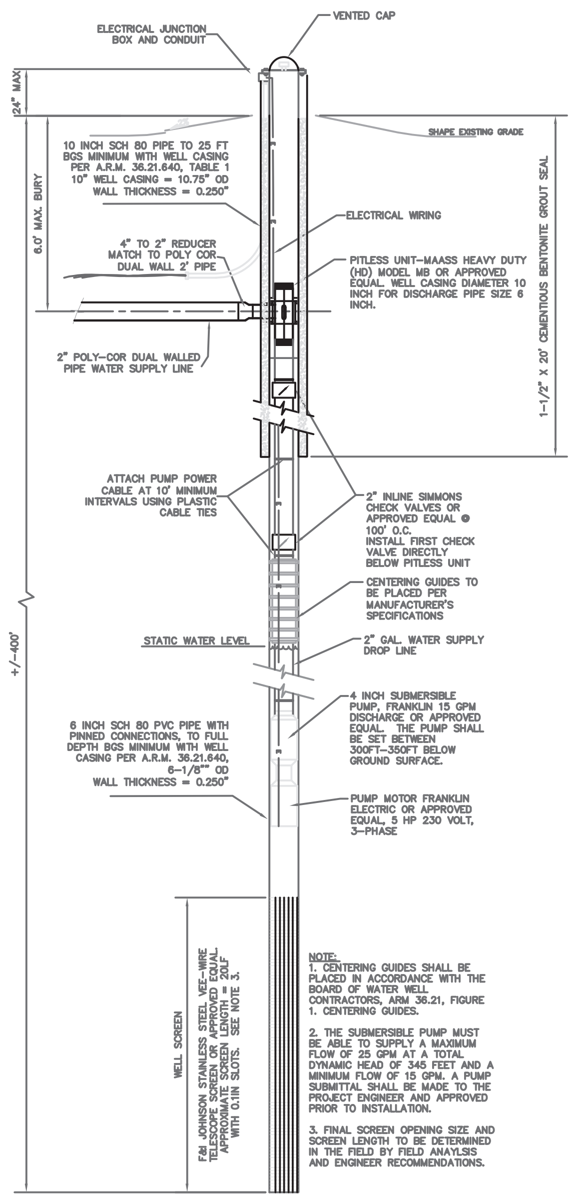
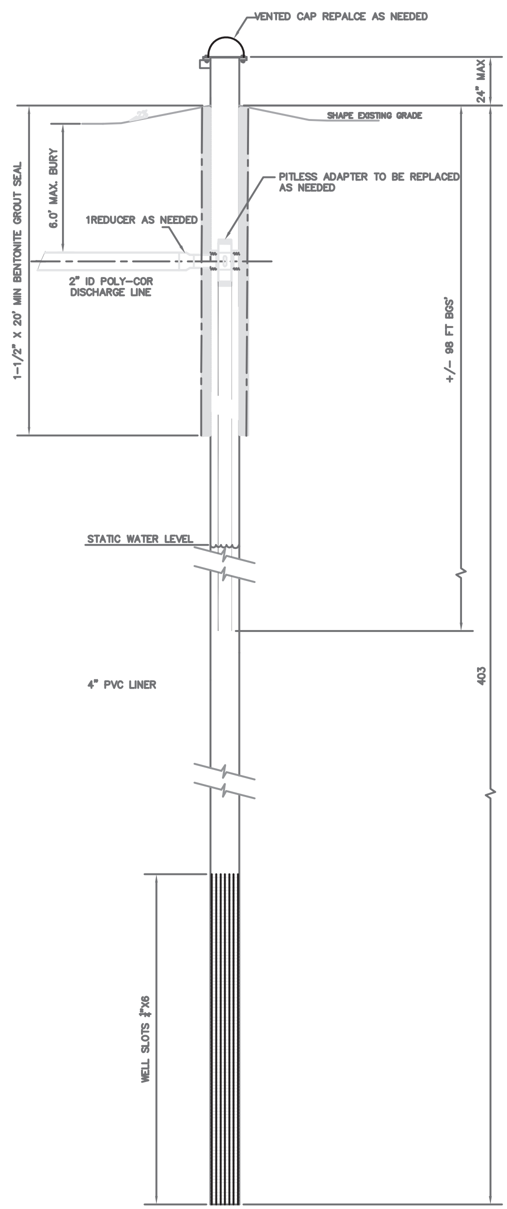


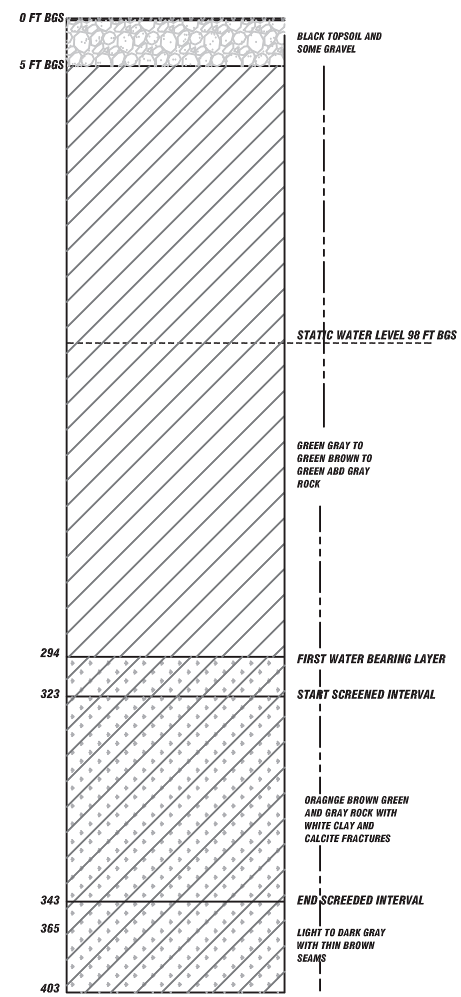
THOA PWS WELL 4, 5, 6, 8, AND 9 CONSTRUCTION DETAIL

SCALE : N.T.S.



MCCARTHY WELL SEAL RECONSTRUCTION DETAIL

SCALE : N.T.S.



MCCARTHY (CANNON) WELL LOG DETAIL

PWS MACCARTHY WELL

SCALE : N.T.S.

REVISIONS

DATE:	DESCRIPTION:	BY
10/1/19	DRAFT DESIGN DRAWINGS	NJF
10/3/19	DRAFT CONSTRUCTION	NJF
10/19/19	PITLESS AND WATER LINES	KMH
10/24/19	RE-ISSUED FOR REVIEW	KMH
10/30/19	SUBMITTAL	KMH

DRAWN BY: [illegible] APPROVED BY: KMH

TIMBRSHOR HOA
WATER SYSTEM IMPROVEMENTS
FOR
THE TIMBRSHOR HOA

SECTION 7, T.23N., R.19W., P.M., M., FLATHEAD COUNTY, MONTANA

HAFFERMAN ENGINEERIG, INC.
860 N. MERIDIAN SUITE B 21
KALISPELL, MT. 59901
PHONE: (406) 257-8708
FAX: (406) 257-8710
EMAIL: info@billmayer.com
ONLINE: http://www.billmayer.com

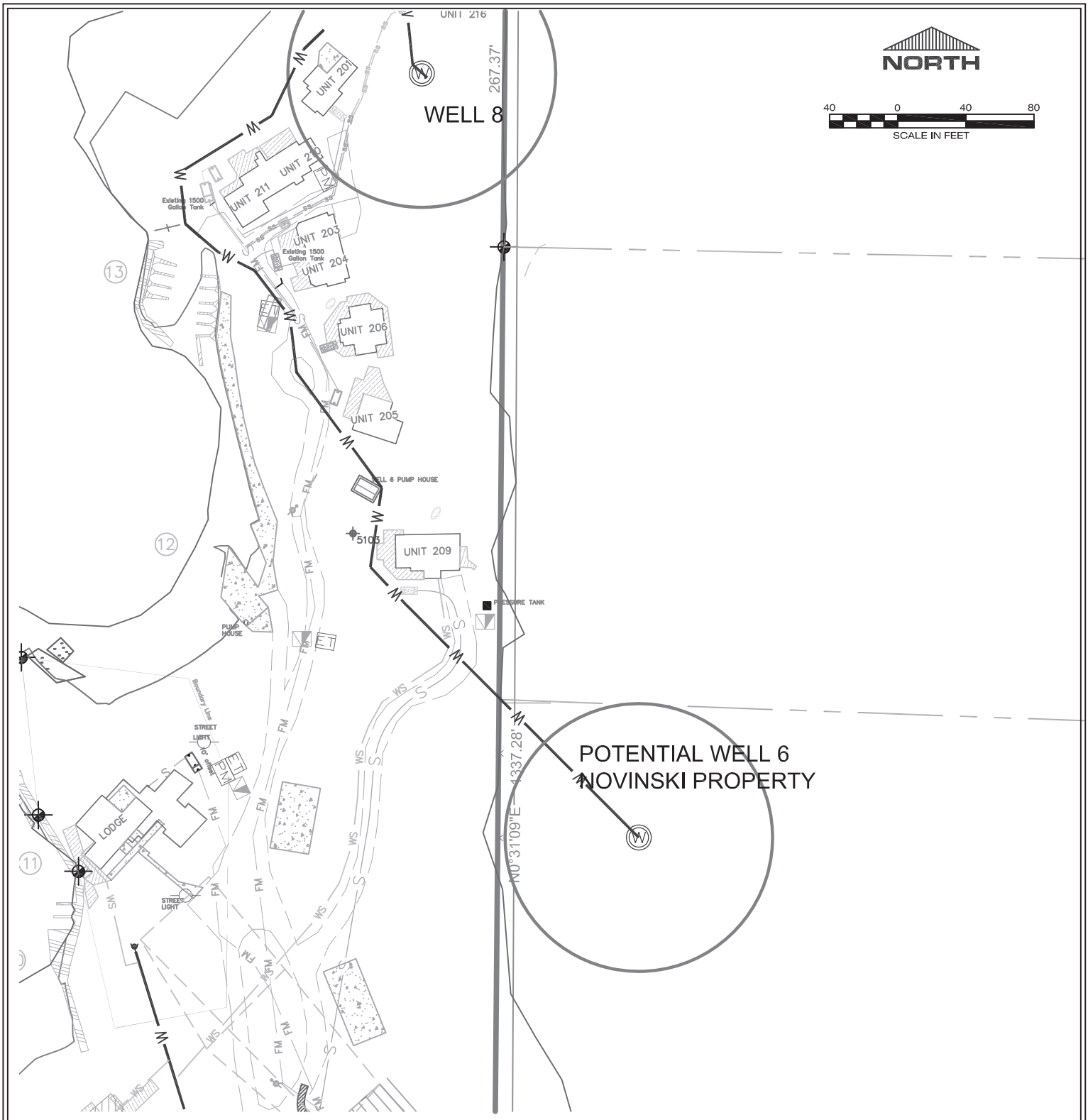
DRAWING TITLE: **WELL DETAILS**

SCALE: AS SHOWN

DATE: OCTOBER 2019 | PROJECT NO: T.58.2

DRAWING NUMBER: **1 OF 1**

PWS WELL DETAILS.DWG



WELL 6 WELL LOCATION & WATER LINE ROUTING AND WCZ

HAFFERMAN ENGINEERING, INC.
P.O. BOX 1891
KALISPELL, MT 59901-1891
PHONE: 406-257-8708
FAX: 406-257-8710
EMAIL: info@billmayer.com
ONLINE: www.billmayer.com

DRAWING TITLE:

TIMBRSHOR WELL 6 PROTECTION ZONE

FOR

TIMBRSHOR HOA

SECTION 7
T23N, R 19W, PM, M., LAKE COUNTY, MONTANA

DATE:	PROJECT NUMBER:	SCALE:	SHEET:
DEC 6, 2018	T.58.2	AS SHOWN	2 OF 2
FILE LOCATION: S:\LAND PRO...\T.58.2\DWG	DRAWN BY: NJF	APPROVED BY: KMH	

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

Metcalf Building 1520 East Sixth Avenue P.O. Box 200901 Helena, MT 59620-0901

PRELIMINARY ASSESSMENT WORKSHEET

Preliminary Assessment of Ground Water Sources that may be Under the Direct Influence of Surface Water

PWS System and Source Facility Information					
PWS Name:	TIMBERSHOR SUBDIVISION PWS			**PWS ID#:** (MT000nnnn)	
Type (C, NTNC, NC):	NC	**County:**	LAKE	**Population Served:**	5
Source Facility Name:	THOA WELL 8	**SDWIS Facility ID:** (WL00n,SP00n,IG00n)		**Date:** (m/d/yy)	8/5/2019

COMPUTE PA SCORE — Mark (X) ONE option that applies and enter option index pts at right					Points
A. TYPE OF STRUCTURE					
Spring (40) ___	Horizontal Well (40) ___	Well (0) **X**			**0**
B. HISTORICAL PATHOGENIC ORGANISM CONTAMINATION: History or suspected outbreak of Giardia, or other pathogenic organisms associated with surface water, with current system configuration.					
Yes (40) ___	No (0) **X**				**0**
C. HISTORICAL MICROBIOLOGICAL CONTAMINATION:					
I) Record of **acute** (boil order or fecal positive sample) MCL violations of the Total Coliform Rule during the last 3 years. **Number of violations:**					
None (0) **X**	One (5) ___	Two (10) ___	Three (15) ___		**0**
II) Record of **non-acute** (two coliform positive samples in one month) MCL violations of the Total Coliform Rule during the last 3 years. **Number of violations:**					
None or One (0) **X**	Two (5) ___	Three (10) ___	Turbidity Complaints (DEQ verified) (5) ___		**0**
D. HYDROLOGICAL FEATURES: Horizontal distance between surface water & source.					
> 250 ft (0) ___	175 - 250 ft (10) ___	100 - 174 ft (20) **165**	< 100 ft (40) ___		**20**
E. WELL SEAL: Poorly constructed well (uncased, or annular space not sealed to depth of at least 18 feet below land surface), or casing construction is unknown.					
Yes (15) ___	No (0) **X**				**0**
F. WELL INTAKE CONSTRUCTION: In wells tapping unconfined or semi-confined aquifers, the depth below land surface to top of perforated interval or screen is:					
>100 ft (0) **X**	50-100 ft (5) ___	25-49 ft (10) ___	0-24 ft (15) ___	Unkn (15) ___	**0**
G. STATIC WATER LEVEL: In wells tapping unconfined or semi-confined aquifers, the depth to static water level below land surface is:					
>100 ft (0) ___	50-100 ft (5) **57**	25-49 ft (10) ___	0-24 ft (15) ___	Unkn (15) ___	**5**
H. WELL CAP CONSTRUCTION: Poor sanitary seal, or seal without acceptable material.					
Yes (15) ___	No (0) **X**				**0**
TOTAL PA SCORE (Right click in cell to right and select Update Field.)					**25**

Continued other side ...

PRELIMINARY ASSESSMENT WORKSHEET (continued)

I. PRELIMINARY ASSESSMENT DETERMINATION	Mark (X) ONE
1. PASS: Source is not under the direct influence of surface water.	X
2. FAIL: Well must undergo further GWUDISW analysis.	___
3. FAIL: Spring, must undergo further GWUDISW analysis.	___
4. FAIL: Well or horizontal well less than 100 feet from surface water, **must undergo further GWUDISW analysis.**	___
5. FAIL: Well **will** PASS if well construction deficiencies (section E or F) are repaired.	___
6. FAIL: Well **may** PASS if well construction details (section E, F, or G) become available.	___

ANALYST INFORMATION AND COMMENTS

NAME:	KURTIS M. HAFFERMAN P.E. - HAFFERMAN ENGINEERING
AFFILIATION:	PROJECT ENGINEER

COMMENTS

WELL 8 DEVELOPMENT IS BASED ON A INTERPOLATION OF THE NEARBY LAURRY BISHOP WELL LOG, GWIC 168825 . THE BISHOP WELL WAS DRILL BY CASTILO DRILLING, ANOTHER LOCAL, LONG STANDING DRILLER WITH A GOOD REPUTATION AND THE WELL LOG IS ASSUMED TO BE ACCURATE.

GROUNDWATER IN BISHOP WAS ENCOUNTERED AT 110 FT. BGS AND THE SWL IS 55 FT BGS. BECAUSE OF THE LACK OF WATER BEARING LAYERS UNTIL ENCOUNTERING WATER, WELL BELOW GROUND SURFACE, IT IS ASSUMED THE AQUIFER IS CONFINED UNDER NUMEROUS OVER LAYING BEDROCK LAYERS. GROUNDWATER IN WELL 8 IS ANTICIPATED TO BE TOTAL DEPTH NEAR TO 109 FT BGS. WITH A SWL GREAT THAN 50 FT BGS.

WATER QUALITY WAS TESTED IN THE CANNON WELL ON NOVEMEBR 2015 AND THE NITRATE CONCENTRATION WAS 0.13 MG/L. THE BISHOP WELL IS ANTICPATED TO HAVE NEARLY THE SAME WATER QUALITY AND IT IS ASSUMED TO BE THE SAME IN WELL 8.

THE WELL CONTROL ZONE FOR WELL 8 CROSSES ONTO A NEIGHBORING PROPERTY. THE SOUTH NEIGHBOR RANDA MCALPIN, REFUSED TO SIGN THE WCZ AGREEMENT. A DEVIATION FROM THE FULL 100 FT. WCZ IS REQUESTED. THE PROPOSED DEVIATION IS ATTACHED. THERE WILL BE 2-CONNECTIONS PROPOSED FOR THIS WELL SO THIS WELL IS ANTICPATED TO BE A SHARED WELL. THERE IS TWO (2) SEPTIC TANKS AND EFFLUENT LINES WITHIN 84 FT. OF THE WELL. A DEVIATION FROM SEALED COMPONENETS IN THE WCZ IN ATTACHED. PLANS AND SPECIFICATIONS FOR THE WELL CONSTRUCTION TO INCLUDE A MANMADE BARRIER OF NEAT CEMENT GROUNT IS ALSO ATTACHED.

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Montana Department of ENVIRONMENTAL QUALITY

PUBLIC WATER SUPPLY DEVIATION REQUEST

Project Name: Timbrshor Subdivision Timbrshor Well 8

EQ

Engineer Name: Kurtis M. Hafferman, P.E.

Circular: **DEQ-3 Standards for Small Water Systems**

STANDARD: EXISTING STANDARD: Circular DEQ -3 Standards for Small Water Systems, August 8, 2014 Edition,

Chapter 3 – Source Development, Section 3.2.3 Location, 3.2.3.1 Well location, MDEQ must be consulted prior to design and construction regarding a proposed well location as it relates to required separation between existing and potential sources of contamination and ground water development. Wells must be located at least 100 feet from sewer lines, septic tanks, holding tanks, and any structure used to convey or retain industrial, storm, or sanitary waste; and from state or federal highway rights-of-way.

PROPOSED STANDARD:

Chapter 3 – Source Development, Section 3.2.3 Location

3.2.3.1 Well location, MDEQ must be consulted prior to design and construction regarding a proposed well location as it relates to required separation between existing and potential sources of contamination and ground water development. When possible, wells must be located at least 100 feet from sewer lines, septic tanks, holding tanks, and any structure used to convey or retain industrial, storm, or sanitary waste; and from state or federal highway rights-of-way.

3.2.3.1.1 Exceptions; When a new well is proposed and when the MDEQ has been consulted about well locations and there is exposed bedrock within the subdivision and bedrock excavation and blasting are required to install effluent lines or septic tanks and existing site development and other logistical issues such buried electrical and communications utilities and existing parking areas make well locations difficult, a deviation from Chapter 3 – Source Development, Section 3.2.3, Location, , 3.2.3.1 can be granted to allow the proposed well to be located near existing sewer lines and septic tanks that cannot be moved or otherwise relocated if;

1. The new well will be constructed for a transient, non-community population, and the PWS-5 analysis shows the well is not GUISW and,
2. The well will be constructed to the appropriate PWS and Board of Water Well Contractor standards and will include an outside protective casing of at least 2-inches larger diameter than the proposed water well casing, drilled to a minimum of 25 ft. below the ground surface (bgs) and standing at least 1.5 ft. above the ground surface and the outside protective casing is sealed on the exterior of the casing with a sanitary seal of cementitious bentonite grout that extends to the surface and,
3. The water well casing is installed to the proposed aquifer and extends fully to the surface and is 0.5 ft. above the top of the outer casting, is centered within ±0.25 inches inside the outer casing, and the annular space from 25 ft. bgs to the top of the outer casing is filled with a cementitious grout and then sealed at the top of the outer casing to inner casing with a welded or bolted sanitary seal cap and,
4. Any existing single-family residential sewer lines within the Well Control Zone (WCZ) or any future sewer lines installed within the WCZ will be excavated and replaced with either Poly-Cor dual walled pipe or Schedule 80 pipe that is bedded in a free draining pea gravel to assure adequate bedding was achieved to at least 8-inches above the invert of the pipe to provide adequate drainage. In addition, the trench for the single-family residential sewer lines are graded to drain to the outside of the 100 feet well protection zone as soon as is possible and have been statically tested at 60 psi for 24-hours to assure the pipe is leak free at the time of installation,
5. The water quality of the well will be tested three (3) times each year for nitrate, nitrite and nitrate+nitrite total and compared to the allowable water quality maximum contaminate limit (MCL) of 10 mg/L. Current water quality tests for a neighboring sample wells are 0.13 mg/L, non-detect and 0.13 mg/L respectively. A value of 7 mg/L or greater for any of the three test values will require a response by the THOA and water quality testing will be required daily. A value of 10 mg/L or greater will be considered a violation of the proposed standard and water use from the Well 8 must cease immediately. Improvement of water quality must result in three test values that are equal to or below 7 mg/l. Water quality tests will occur on May 1st on July 1st and on October 1st of each year; corresponding to the seasonal arrival, peak use and end of season for most of the unit owners.

JUSTIFICATION: ***attach additional information as necessary***

The Timbrshor Subdivision has been determined to have 13 existing units that are using water from a COSA non-compliant water system; surface water of Flathead Lake and one well. During development from 1977 until 2009, units could be constructed within the Timbrshor Subdivision and were not prevented from installing COSA non-compliant individual or multi-user surface water diversions from Flathead Lake for domestic water use. In 2010 Lake County informed the developer, Borchers of Finley Point and the Timbrshor Subdivision Homeowners Association (THOA) that new unit construction would not be permitted until a COSA compliant wastewater treatment system (WWTS) was installed. The County acknowledged that there was also a COSA non-complaint water system that was installed but, acknowledging that any issues with water rights associated to subdivision would be involved in the CSKT water right compact, instructed the developer and the THOA to proceed with the WWTS plans, approvals and construction.

As soon as the costs of the WWTS were known and assessed, the developer filed for bankruptcy and the Timbrshor Homeowners Association (THOA) was the only party left to resolve the issues with a COSA non-compliant WWTS and water system. As the remaining owners, the THOA were immediately incumbered with not only the regulatory responsibility but a substantial financial responsibility to correct the developers COSA violations. Between 2013 and 2016 the THOA spent over $550,000 to address the more urgent of the health issues by completing the WWTS.

When the record drawings were filed in 2016 at Lake County, the THOA requested the County lift the building moratorium. The County contacted the DEQ who then informed the THOA that new unit construction would still not be allowed until final approval of a COSA complaint water system. The THOA met with the DEQ, developed a plan that would more likely than not meet both the DNRC water right and DEQ regulations and the THOA water requirements. The THOA is now in the process of developing the plans and specifications for a transient non-community, multi-user, multiple groundwater well, well system.

The THOA are again the parties affected by the building moratorium, and again are immediately incumbered with the financial responsibility to correct the developers COSA violations. The THOA is financially incumbered and cannot raise enough additional funds to afford the community surface water system contemplated in the original COSA, nor can they afford the extravagance of a dual well and storage system given the extreme difficulty to trench and bury water lines. A risk and cost analysis completed by Hafferman Engineering Inc. (HEI) shows that a series of six (6) individual wells could be constructed near to the planned or existing units to reduce the cost of pipelines and extensive pressure distribution system. The results of the risk analysis show if extraordinary sanitary seals are installed on the outside of the water well casing and if seasonal water quality tests are conducted then septic tanks and effluent lines can be placed closer than 100 ft from a transient non-community well that is a regulated public water supply. If the wells are approved at the locations contemplated both the immediate concerns of the 13 COSA non-complaint owners can be resolved and future unit owners can plan for development.

When the WWTS was designed, preliminary groundwater well locations were made and the new drainfields, replacement drainfields, new effluent lines and new septic tanks were placed as far could reasonably be accommodated from the one existing and five (5) other potential well locations. There is a significant amount of exposed bedrock within the subdivision and at many areas, rock excavation and blasting are required to install effluent lines or septic tanks. In addition, site development (unit locations) and other logistical issues such as other buried utilities and existing parking areas make well locations difficult. Because the remaining septic tanks and effluents lines cannot be moved due to these site constraints, the THOA is requesting the deviations and proposed replacement standards.

MDEQ has been consulted about the location for this new well. Because there are existing septic tanks and effluent lines that would be impractical to relocate and because it has been determined that this is the only location within the Timbrshor Subdivision where Well 8 can be located that can be accessed by a well drilling truck, and, due to anticipated bedrock excavation, and it is located as near to the water service connection points as is possible, then a deviation is warranted.

It will be specified that the PWS Well 8 will be constructed to the extraordinary standards of the proposed standard for Chapter 3 – Source Development, Section 3.2.3 Location, 3.2.3.1 parts 1. to 5. Including all PWS and Board of Water Well Contractor standards for a sanitary seal on the outside protective casing and the inner water well casing that extends to the surface.

There are no existing residential sewer lines located in the WCZ of Well 8. There is two (2) septic tanks planned within the WCZ and two (2) effluent lines from the units. Any new residential sewer lines will be excavated, and either Poly-Cor dual walled pipe will be used, or pipes will be Schedule 80 PVC which is bedded in a free draining pea gravel to assure adequate bedding around the entire pipe up to at least 8-inches above the pipe. The trench for the single-family residential sewer lines is 2.0 ft. bgs and 4.0 ft. lower than the top of the well casing and the sewer line will be graded to drain directly to the outside of the 100 feet well protection zone. The effluent pipe is a 1-1/2-inch pipe and will be filled with water and pressure tested to 60 psi for 24-hours.

When the extra ordinary well construction standards are implemented for Well 8, and the current existing sewer lines are excavated and replaced with either Poly Cor dual walled pipe or schedule 80 pipe bedded in pea gravel and graded to drain directly to the outside as well protection zone, when each of the effluent pipes within the WCZ are pressure tested to 60 psi for 24 hours and Well 8 has three water quality tests taken each year then the deviation from the existing standard is justified.

In accordance with ARM 17.38.101 (e), I certify that strict adherence to the above standard is not necessary to protect public health and the quality of state waters.

(Signature of Professional Engineer)

10-30-2019
(Date Signed)

Montana P.E. Number PEL-PE-LIC-10457

For Department Use Only:
Review Engineer's Recommendation:

Montana Department of Environmental Quality

PUBLIC WATER SUPPLY DEVIATION REQUEST

Project Name: **Timbrshor Subdivision Well 8**

EQ

Engineer Name: **Kurtis M. Hafferman, P.E.**

Circular: **DEQ-3 Standards for Small Water Systems**

STANDARD: EXISTING STANDARD: Circular DEQ -3 Standards for Small Water Systems, August 8, 2014 Edition,

Chapter 3 – Source Development, 3.2.3.2 Continued protection, Continued protection of the well site from potential sources of contamination must be provided either through zoning, easements, deed notices, leasing, or other means acceptable to MDEQ. Easements and deed notices must be filed with the County Clerk and Recorders Office. Such protection must extend for at least 100-foot radius around the well (well isolation zone). In addition, separation distances between proposed wells and potential sources of contamination must be defined and justified by the applicant in accordance with Section 1.1.6 of this circular. The well isolation zone of a proposed or existing well may not be in a groundwater mixing zone as defined by ARM 17.30.517 and also may not include easements that would conflict with the proposed use. Fencing of the site may be required by MDEQ.

PROPOSED STANDARD:

Chapter 3 – Source Development, Section 3.2.3.2 Continued Protection

3.2.3.2 Continued protection of the well site from potential sources of contamination must be provided either through zoning, easements, deed notices, leasing, or other means acceptable to MDEQ. Easements and deed notices must be filed with the County Clerk and Recorders Office. Such protection***, where possible,*** must extend for at least 100-foot radius around the well (well isolation zone). In addition, separation distances between proposed wells and potential sources of contamination must be defined and justified by the applicant in accordance with Section 1.1.6 of this circular. The well isolation zone of a proposed or existing well may not be in a groundwater mixing zone as defined by ARM 17.30.517 and also may not include easements that would conflict with the proposed use. Fencing of the site may be required by MDEQ.

3.2.3.2.1 Exceptions; when a new well is proposed and when the MDEQ has been consulted about well locations and the well isolation zone extends beyond the property-line on which the well is proposed, a deviation from Chapter 3 Source Development, Section 3.2.3.2 Continued Protection, can be granted to the required 100-foot radius well protection zone and/or the configuration of the zone if;

1. The proposed well location has been approved by MDEQ,
2. There are no sources of potential contamination; sewer lines, septic tanks, drain fields, mixing zones, holding tanks, and any structures used to covey or retain industrial, storm, or sanitary waste, state or federal highway rights-of-way, and any other sources of potential contamination as described in Chapter 3 Source Development, Section 1.1.6 (d) within the well isolation zone,
3. The well lies up-gradient from that portion of the well isolation zone in which the deviation is being requested, And
4. All efforts to change zoning, acquire an easement, deed notice, lease or other means acceptable by MDEQ have been exhausted and no agreement can be reached with the owners of the property(s) impacted by the well isolation zone of the proposed well.

JUSTIFICATION: *attach additional information as necessary*

The Timbrshor Subdivision has been determined to have 13 existing units that are using water from a COSA non-compliant water system. During development from 1977 until 2009, units could be constructed within the Timbrshor Subdivision and were not prevented from installing COSA non-compliant individual or multi-user surface water diversions from Flathead Lake for domestic water use. In 2003 Lake County informed the developer, Borchers of Finley Point and the Timbrshor Subdivision Homeowners Association (THOA) that new unit construction would not be permitted until a COSA compliant wastewater treatment system (WWTS) was installed. The County acknowledged that there was also a COSA non-complaint water system that was installed but, acknowledging that any issues with water rights associated to subdivision would be involved in the CSKT water right compact, instructed the developer and the THOA to proceed with the WWTS plans, approvals and construction.

As soon as the costs of the WWTS were known and assessed, the developer filed for bankruptcy and the Timbrshor

Homeowners Association (THOA) was the only party left to resolve the issues with a COSA non-compliant WWTS and water system. As the remaining owners, the THOA were immediately incumbered with not only the regulatory responsibility but a substantial financial responsibility to correct the developers COSA violations. Between 2013 and 2016 the THOA spent over $550,000 to address the more urgent of the health issues by completing the WWTS.

When the record drawings were filed in 2016 at Lake County, the THOA requested the County lift the building moratorium. The County contacted the DEQ who then informed the THOA that new unit construction would not be allowed until final approval of a COSA complaint water system. The THOA met with the DEQ, developed a plan that would more likely than not meet both the DNRC water right and DEQ regulations and the THOA water requirements. The THOA has retained Hafferman Engineering, Inc. and is now in the process of developing the plans and specifications for a transient non-community, multi-user, multiple groundwater well, domestic water supply and distribution system.

The THOA are again the parties affected by the building moratorium, and again are immediately incumbered with the financial responsibility to correct the developers COSA violations. The THOA is financially incumbered and cannot raise enough additional funds to afford the community surface water system contemplated in the original COSA, nor can they afford the extravagance of a dual well and storage system given the extreme difficulty to trench and bury water lines. HEI has had numerous conversations with MDEQ's Kalispell office with Emily Gillespie P.E. The general discussion was this well could be pursued for an individual, shared, multi-user or public well (using standard submittal process).

There are no known sources of contamination on the neighboring property; septic systems, mixing zones, wastewater disposal systems, sewer lines, holding tanks, lift stations, French drains, class V injection wells, or any structures used to convey or retain industrial, storm or sanitary waste, within the well isolation zone for the proposed Well 8 well and the well lays up-gradient from the adjacent property to be impacted by the isolation zone. The area of the well isolation zone on the adjoining property is on the road, Snowberry Lane or the Timbrshor access road and cannot be otherwise used or developed.

Approximately 10% of the Well 5 well isolation zone extends into the property of who's legal description is Finley Point Villa Site, S07, T23 N, R19 W, Block 003, Lot 01c, Finley Pt Villa Site Lot 1-C Blk 3 H-1636 Lake County, Montana. This property is owned by Randa McAlpin, Polson, Montana After numerous attempts to negotiate a well control zone agreement with Mrs. McAlpin and then her son David McAlpin, to allow the well isolation zone to encroach onto the property, the McAlpin's have rejected all offers and therefore a deviation from 3.2.3.2 is necessary in order to proceed.

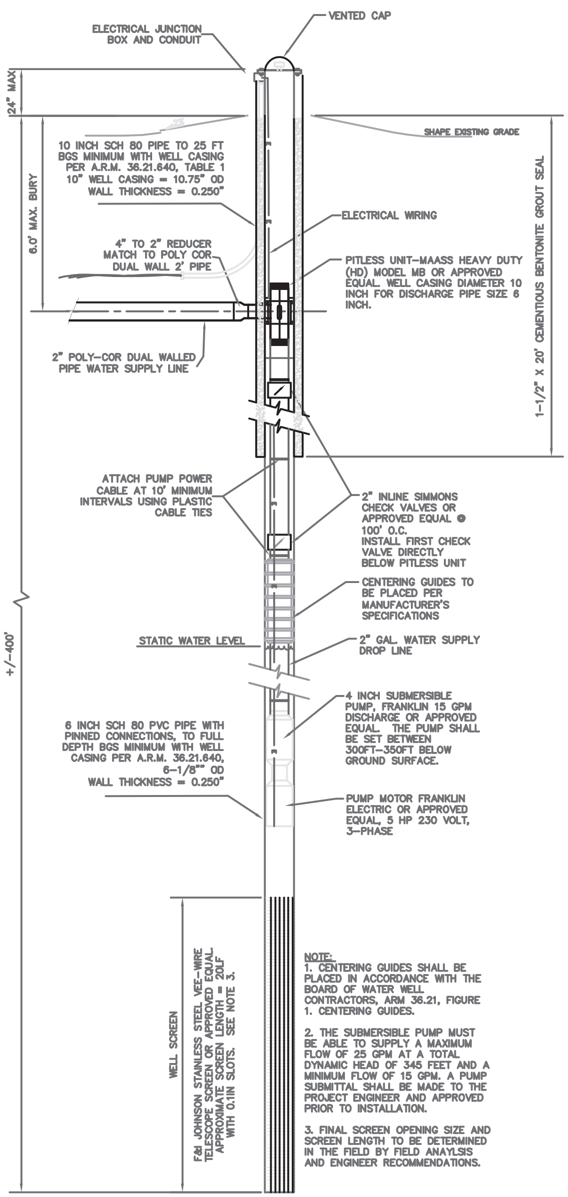
In accordance with ARM 17.38.101 (e), I certify that strict adherence to the above standard is not necessary to protect public health and the quality of state waters.

(Signature of Professional Engineer)

10-30-2019
(Date Signed)

Montana P.E. Number PEL-PE-LIC-10457

For Department Use Only:
Review Engineer's Recommendation:



THOA PWS WELL 4, 5, 6, 8, AND 9 CONSTRUCTION DETAIL

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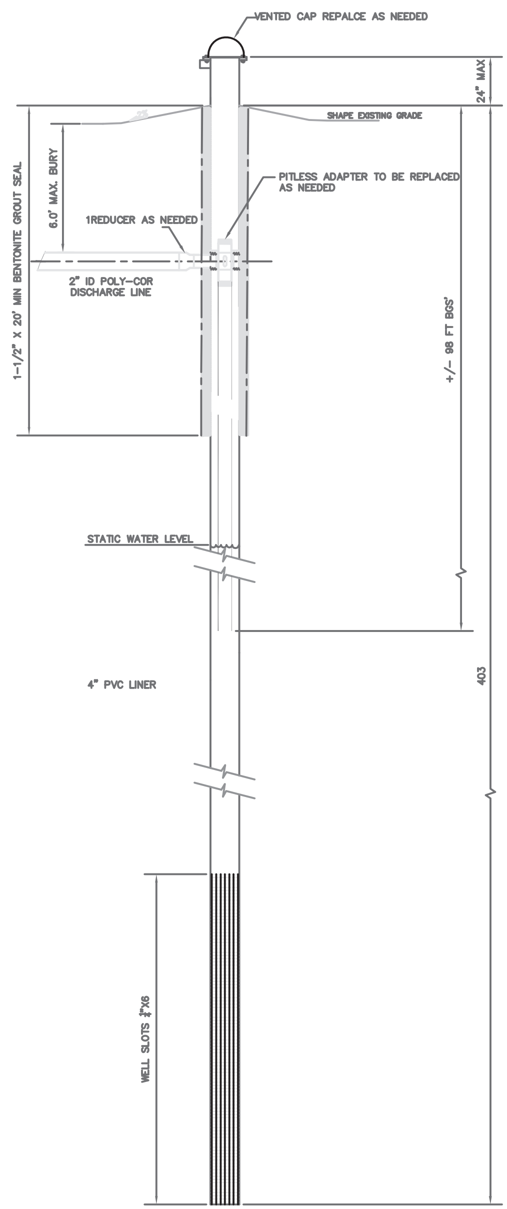

MCCARTHY WELL SEAL RECONSTRUCTION DETAIL

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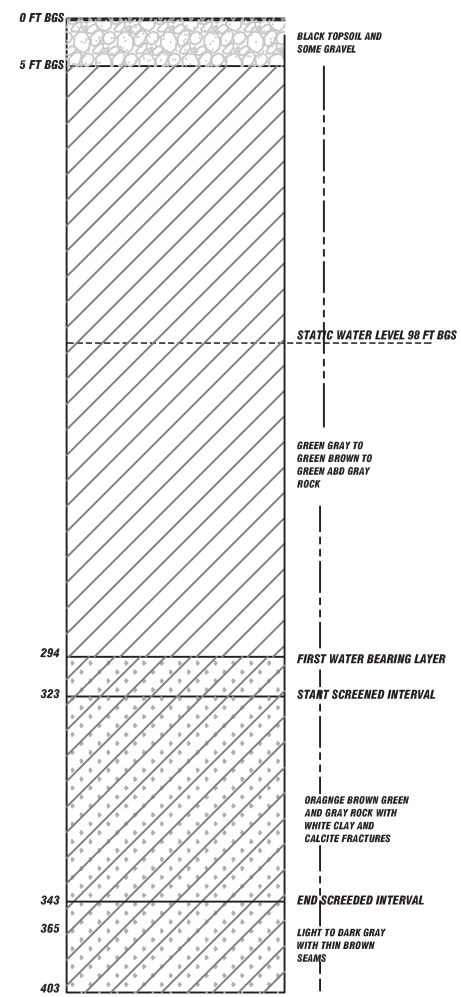

MCCARTHY (CANNON) WELL LOG DETAIL

PWS MACCARTHY WELL

SCALE : N.T.S.

REVISIONS

DATE:	DESCRIPTION:	BY
10/1/19	DRAFT DESIGN DRAWINGS	NJF
10/3/19	DRAFT CONSTRUCTION	NJF
10/19/19	PITLESS AND WATER LINES	KMH
10/24/19	RE-ISSUED FOR REVIEW	KMH
10/30/19	SUBMITTAL	KMH

DRAWN BY: DANIEL APPROVED BY: KMH

TIMBRSHOR HOA
WATER SYSTEM IMPROVEMENTS
FOR
THE TIMBRSHOR HOA

SECTION 7, T.23N., R.19W., P.M., M., FLATHEAD COUNTY, MONTANA

HAFFERMAN ENGINEERIG, INC.
860 N. MERIDIAN SUITE B 21
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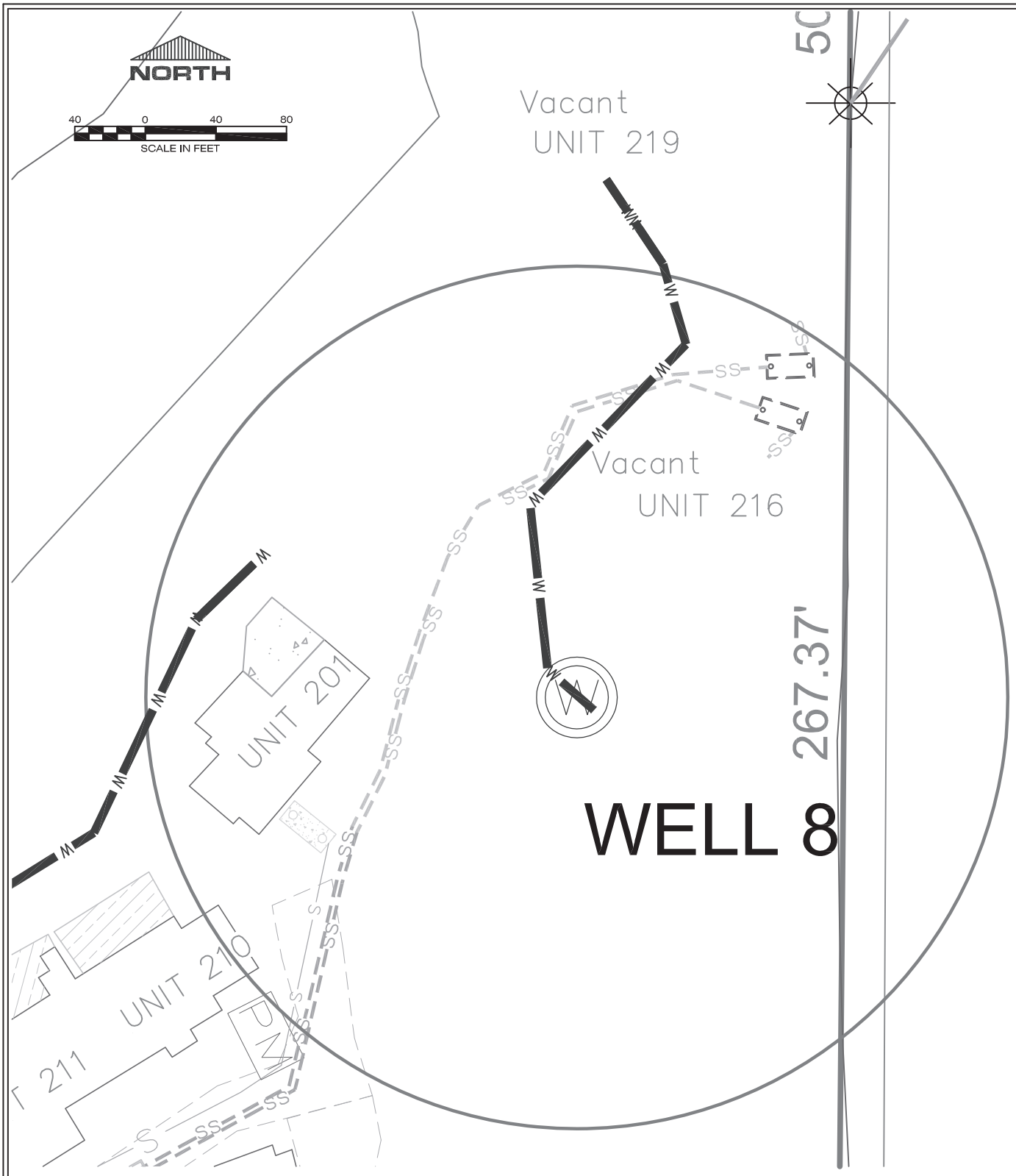
DRAWING TITLE: **WELL DETAILS**

SCALE: AS SHOWN

DATE: OCTOBER 2019 | PROJECT NO: T.58.2

DRAWING NUMBER: **1 OF 1**

PWS WELL DETAILS.DWG



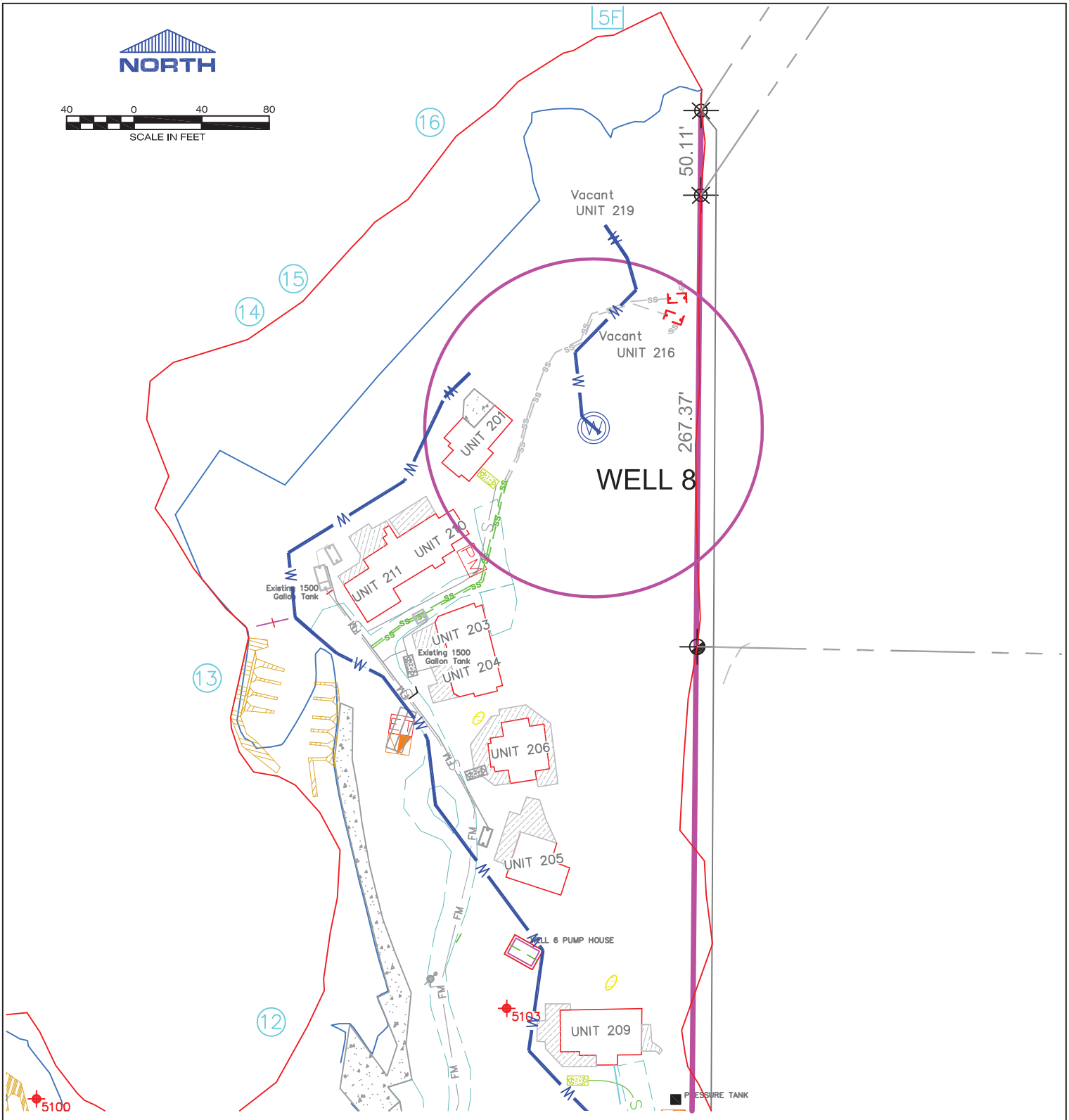
WELL 8 WELL LOCATION & WATER LINE ROUTE AND WCZ

HAFFERMAN ENGINEERING, INC.
P.O. BOX 1891
KALISPELL, MT 59901-1891
PHONE: 406-257-8708
FAX: 406-257-8710
EMAIL: info@billmayer.com
ONLINE: www.billmayer.com

DRAWING TITLE:
TIMBRSHOR WELL #8 PROTECTION ZONE
FOR
TIMBRSHOR HOA

SECTION 7
T23N, R 19W, PM, M., LAKE COUNTY, MONTANA

DATE:	PROJECT NUMBER:	SCALE:	SHEET:
DEC 6, 2018	T.58.2	AS SHOWN	1 OF 2
FILE LOCATION: S:\LAND PRO...\T.58.2\DWG	DRAWN BY: NJF	APPROVED BY: KMH	



WELL 8 WELL LOCATION & WATER LINE ROUTE AND WCZ

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ONLINE: www.billmayer.com

DRAWING TITLE:

TIMBRSHOR WELL #8 PROTECTION ZONE

FOR

TIMBRSHOR HOA

SECTION 7
T23N, R 19W, PM, M., LAKE COUNTY, MONTANA

DATE:	PROJECT NUMBER:	SCALE:	SHEET:
DEC 6, 2018	T.58.2	AS SHOWN	1 OF 2
FILE LOCATION: S:\LAND PRO...\T.58.2\DWG	DRAWN BY: NJF	APPROVED BY: KMH	

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

Metcalf Building 1520 East Sixth Avenue P.O. Box 200901 Helena, MT 59620-0901

PRELIMINARY ASSESSMENT WORKSHEET

Preliminary Assessment of Ground Water Sources that may be Under the Direct Influence of Surface Water

PWS System and Source Facility Information					
PWS Name:	TIMBERSHOR SUBDIVISION PWS			**PWS ID#:** (MT000nnnn)	
Type (C, NTNC, NC):	NC	**County:**	LAKE	**Population Served:**	15
Source Facility Name:	THOA WELL 9	**SDWIS Facility ID:** (WL00n,SP00n,IG00n)		**Date:** (m/d/yy)	8/5/19

COMPUTE PA SCORE — Mark (X) ONE option that applies and enter option index pts at right					Points
A. TYPE OF STRUCTURE					
Spring (40) ___	Horizontal Well (40) ___	Well (0) **X**			**0**
B. HISTORICAL PATHOGENIC ORGANISM CONTAMINATION: History or suspected outbreak of Giardia, or other pathogenic organisms associated with surface water, with current system configuration.					
Yes (40) ___	No (0) **X**				**0**
C. HISTORICAL MICROBIOLOGICAL CONTAMINATION:					
I) Record of **acute** (boil order or fecal positive sample) MCL violations of the Total Coliform Rule during the last 3 years. **Number of violations:**					
None (0) **X**	One (5) ___	Two (10) ___	Three (15) ___		**0**
II) Record of **non-acute** (two coliform positive samples in one month) MCL violations of the Total Coliform Rule during the last 3 years. **Number of violations:**					
None or One (0) **X**	Two (5) ___	Three (10) ___	Turbidity Complaints (DEQ verified) (5) ___		**0**
D. HYDROLOGICAL FEATURES: Horizontal distance between surface water & source.					
> 250 ft (0) **395**	175 - 250 ft (10) ___	100 - 174 ft (20) ___	< 100 ft (40) ___		**0**
E. WELL SEAL: Poorly constructed well (uncased, or annular space not sealed to depth of at least 18 feet below land surface), or casing construction is unknown.					
Yes (15) ___	No (0) **X**				**0**
F. WELL INTAKE CONSTRUCTION: In wells tapping unconfined or semi-confined aquifers, the depth below land surface to top of perforated interval or screen is:					
>100 ft (0) ___	50-100 ft (5) **X**	25-49 ft (10) ___	0-24 ft (15) ___	Unkn (15) ___	**5**
G. STATIC WATER LEVEL: In wells tapping unconfined or semi-confined aquifers, the depth to static water level below land surface is:					
>100 ft (0) ___	50-100 ft (5) **80**	25-49 ft (10) ___	0-24 ft (15) ___	Unkn (15) ___	**5**
H. WELL CAP CONSTRUCTION: Poor sanitary seal, or seal without acceptable material.					
Yes (15) ___	No (0) **X**				**0**
TOTAL PA SCORE (Right click in cell to right and select Update Field.)					**10**

Continued other side ...

PRELIMINARY ASSESSMENT WORKSHEET (continued)

I. PRELIMINARY ASSESSMENT DETERMINATION	Mark (X) ONE
1. PASS: Source is not under the direct influence of surface water.	X
2. FAIL: Well must undergo further GWUDISW analysis.	___
3. FAIL: Spring, must undergo further GWUDISW analysis.	___
4. FAIL: Well or horizontal well less than 100 feet from surface water, **must undergo further GWUDISW analysis.**	___
5. FAIL: Well **will** PASS if well construction deficiencies (section E or F) are repaired.	___
6. FAIL: Well **may** PASS if well construction details (section E, F, or G) become available.	___

ANALYST INFORMATION AND COMMENTS

NAME: KURTIS M. HAFFERMAN P.E. - HAFFERMAN ENGINEERING

AFFILIATION: THOA PROJECT ENGINEER

COMMENTS

WELL 9 DEVELOPMENT IS BASED ON A INTERPOLATION BETWEEN TWO NEARBY WELLS BASED ON DISTANCE AND ELEVATION. THE WELLS ARE THE RICHARD CANNON, GWIC WELL LOG 77517 AND THE LAURRY BISHOP WELL LOG, GWIC 168825 . THE CANNON WELL WAS DRILLED BY LIBERTY DRILLING, ONE OF THE MORE REPUTABLE DRILLING OPERATIONS IN THE AREA SO THE WELL LOG IS ASSUMED TO BE ACCURATE. THE BISHOP WELL WAS DRILL BY CASTILO DRILLING, ANOTHER LOCAL, LONG STANDING DRILLER WITH A GOOD REPUTATION AND THE WELL LOG IS ASSUMED TO BE ACCURATE.

GROUNDWATER IN CANNON WAS ENCOUNTERED NEAR 403 FT. BGS AND THE STATIC WATER LEVEL IS 98 FT BGS. GROUNDWATER IN BISHOP WAS ENCOUNTERED AT 110 FT. BGS AND THE SWL IS 55 FT BGS. BECAUSE OF THE LACK OF WATER BEARING LAYERS UNTIL ENCOUNTERING WATER, WELL BELOW GROUND SURFACE, IT IS ASSUMED THE AQUIFER IS CONFINED UNDER NUMEROUS OVER LAYING BEDROCK LAYERS. GROUNDWATER IN WELL 9 IS ANTICIPATED TO BE NEAR TO 80 FT BGS WITH A TOTAL DEPTH NEAR TO 182 FT BGS.

WATER QUALITY WAS TESTED IN THE CANNON WELL ON NOVEMEBR 2015 AND THE NITRATE CONCENTRATION WAS 0.13 MG/L.

THE WELL CONTROL ZONE FOR WELL 9 CROSSES ONTO A NEIGHBORING PROPERTY. THE SOUTH NEIGHBOR TIM AND KIRSTEN ROSE, REFUSED TO SIGN THE WCZ AGREEMENT. A DEVIATION FROM THE FULL 100 FT. WCZ IS REQUESTED. THE PROPOSED DEVIATION IS ATTACHED. PLANS AND SPECIFICATIONS FOR THE WELL CONSTRUCTION TO INCLUDE A MANMADE BARRIER OF NEAT CEMENT GROUNT IS ALSO ATTACHED.

Electronic Entry Instructions: Open the WORD document template (DOT) as a WORD document (DOC) with an appropriate name and location. The document is protected from all edits other than form entry. Enter the requested information in the form fields and tab forward between fields. All character entries will be converted to upper case. In the Compute PA Score table for questions A through H, mark with an X the one option which applies to each, then enter the score corresponding to that option in the field to the right under the Points column. When scores A-H have been entered right click on the Total PA Score field and select Update Field. The total score will be computed. Select the PA Determination option by marking with an X. Fill out the Analyst Information and Comments table. Save the document with your entries.

Montana Department of Environmental Quality

PUBLIC WATER SUPPLY DEVIATION REQUEST

Project Name: **Timbrshor Subdivision Well 9**

EQ

Engineer Name: **Kurtis M. Hafferman, P.E.**

Circular: **DEQ-3 Standards for Small Water Systems**

STANDARD: EXISTING STANDARD: Circular DEQ -3 Standards for Small Water Systems, August 8, 2014 Edition,

Chapter 3 – Source Development, 3.2.3.2 Continued protection, Continued protection of the well site from potential sources of contamination must be provided either through zoning, easements, deed notices, leasing, or other means acceptable to MDEQ. Easements and deed notices must be filed with the County Clerk and Recorders Office. Such protection must extend for at least 100-foot radius around the well (well isolation zone). In addition, separation distances between proposed wells and potential sources of contamination must be defined and justified by the applicant in accordance with Section 1.1.6 of this circular. The well isolation zone of a proposed or existing well may not be in a groundwater mixing zone as defined by ARM 17.30.517 and also may not include easements that would conflict with the proposed use. Fencing of the site may be required by MDEQ.

PROPOSED STANDARD:

Chapter 3 – Source Development, Section 3.2.3.2 Continued Protection

3.2.3.2 Continued protection of the well site from potential sources of contamination must be provided either through zoning, easements, deed notices, leasing, or other means acceptable to MDEQ. Easements and deed notices must be filed with the County Clerk and Recorders Office. Such protection***, where possible,*** must extend for at least 100-foot radius around the well (well isolation zone). In addition, separation distances between proposed wells and potential sources of contamination must be defined and justified by the applicant in accordance with Section 1.1.6 of this circular. The well isolation zone of a proposed or existing well may not be in a groundwater mixing zone as defined by ARM 17.30.517 and also may not include easements that would conflict with the proposed use. Fencing of the site may be required by MDEQ.

3.2.3.2.1 Exceptions; when a new well is proposed and when the MDEQ has been consulted about well locations and the well isolation zone extends beyond the property-line on which the well is proposed, a deviation from Chapter 3 Source Development, Section 3.2.3.2 Continued Protection, can be granted to the required 100-foot radius well protection zone and/or the configuration of the zone if;

1. The proposed well location has been approved by MDEQ,
2. There are no sources of potential contamination; sewer lines, septic tanks, drain fields, mixing zones, holding tanks, and any structures used to covey or retain industrial, storm, or sanitary waste, state or federal highway rights-of-way, and any other sources of potential contamination as described in Chapter 3 Source Development, Section 1.1.6 (d) within the well isolation zone,
3. The well lies up-gradient from that portion of the well isolation zone in which the deviation is being requested, And
4. All efforts to change zoning, acquire an easement, deed notice, lease or other means acceptable by MDEQ have been exhausted and no agreement can be reached with the owners of the property(s) impacted by the well isolation zone of the proposed well.

JUSTIFICATION: *attach additional information as necessary*

The Timbrshor Subdivision has been determined to have 13 existing units that are using water from a COSA non-compliant water system. During development from 1977 until 2009, units could be constructed within the Timbrshor Subdivision and were not prevented from installing COSA non-compliant individual or multi-user surface water diversions from Flathead Lake for domestic water use. In 2003 Lake County informed the developer, Borchers of Finley Point and the Timbrshor Subdivision Homeowners Association (THOA) that new unit construction would not be permitted until a COSA compliant wastewater treatment system (WWTS) was installed. The County acknowledged that there was also a COSA non-complaint water system that was installed but, acknowledging that any issues with water rights associated to subdivision would be involved in the CSKT water right compact, instructed the developer and the THOA to proceed with the WWTS plans, approvals and construction.

As soon as the costs of the WWTS were known and assessed, the developer filed for bankruptcy and the Timbrshor

Homeowners Association (THOA) was the only party left to resolve the issues with a COSA non-compliant WWTS and water system. As the remaining owners, the THOA were immediately incumbered with not only the regulatory responsibility but a substantial financial responsibility to correct the developers COSA violations. Between 2013 and 2016 the THOA spent over $550,000 to address the more urgent of the health issues by completing the WWTS.

When the record drawings were filed in 2016 at Lake County, the THOA requested the County lift the building moratorium. The County contacted the DEQ who then informed the THOA that new unit construction would not be allowed until final approval of a COSA complaint water system. The THOA met with the DEQ, developed a plan that would more likely than not meet both the DNRC water right and DEQ regulations and the THOA water requirements. The THOA has retained Hafferman Engineering, Inc. and is now in the process of developing the plans and specifications for a transient non-community, multi-user, multiple groundwater well, domestic water supply and distribution system.

The THOA are again the parties affected by the building moratorium, and again are immediately incumbered with the financial responsibility to correct the developers COSA violations. The THOA is financially incumbered and cannot raise enough additional funds to afford the community surface water system contemplated in the original COSA, nor can they afford the extravagance of a dual well and storage system given the extreme difficulty to trench and bury water lines. HEI has had numerous conversations with MDEQ's Kalispell office with Emily Gillespie P.E. The general discussion was this well could be pursued for an individual, shared, multi-user or public well (using standard submittal process).

There are no known sources of contamination on the neighboring property; septic systems, mixing zones, wastewater disposal systems, sewer lines, holding tanks, lift stations, French drains, class V injection wells, or any structures used to convey or retain industrial, storm or sanitary waste, within the well isolation zone for the proposed Well 9 well and the well lays up-gradient from the adjacent property to be impacted by the isolation zone. The area of the well isolation zone on the adjoining property is on the road, Snowberry Lane or the Timbrshor access road and cannot be otherwise used or developed.

Approximately 10% of the Well 5 well isolation zone extends into the property of who's legal description is Finley Point Villa Site, Finley Point Villa Site, S07, T23 N, R19 W, Block 006, Lot 001, lake County, Montana. This property is owned by Timothy L. and Kristen R. Rose. After numerous attempts to negotiate a well control zone agreement with Mr. and Mrs. Rose to allow the well isolation zone to encroach onto the property, the Rose's have rejected all offers and therefore a deviation from 3.2.3.2 is necessary in order to proceed.

In accordance with ARM 17.38.101 (e), I certify that strict adherence to the above standard is not necessary to protect public health and the quality of state waters.

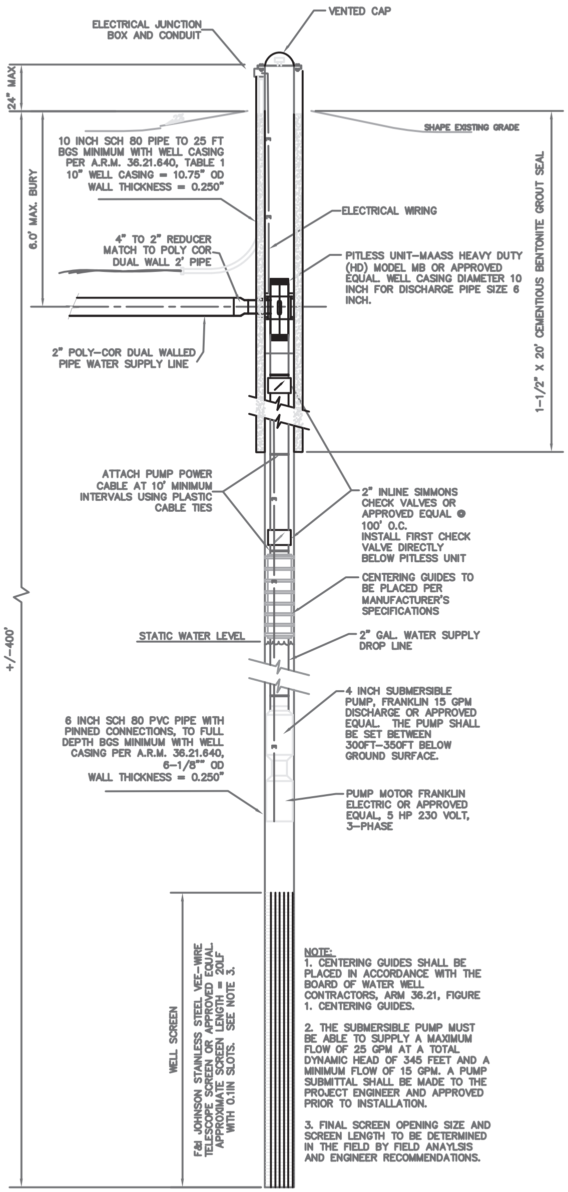
(Signature of Professional Engineer)

10-30-2019
(Date Signed)

Montana P.E. Number PEL-PE-LIC-10457

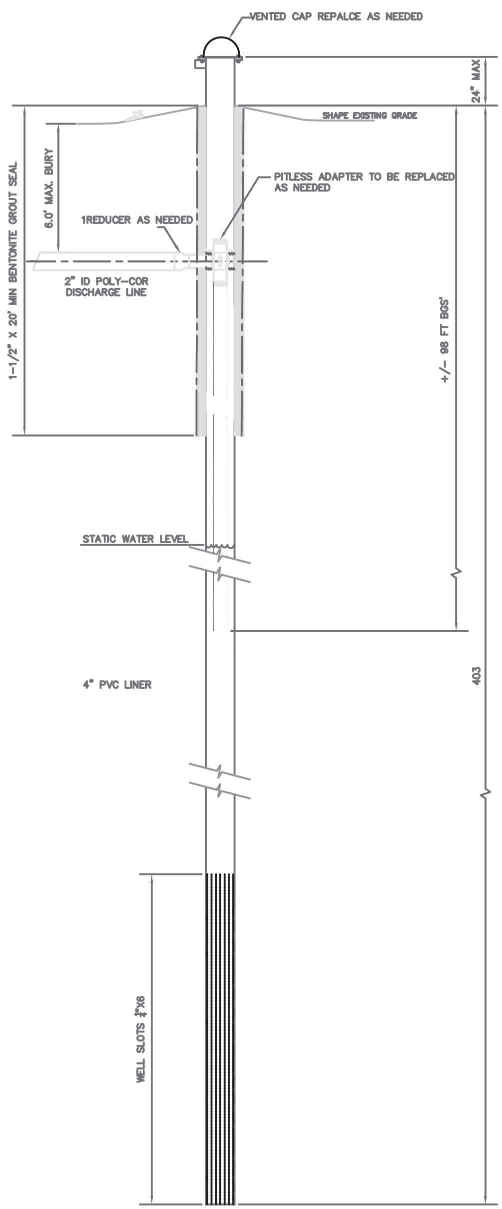
PE Stamp

For Department Use Only:
Review Engineer's Recommendation:



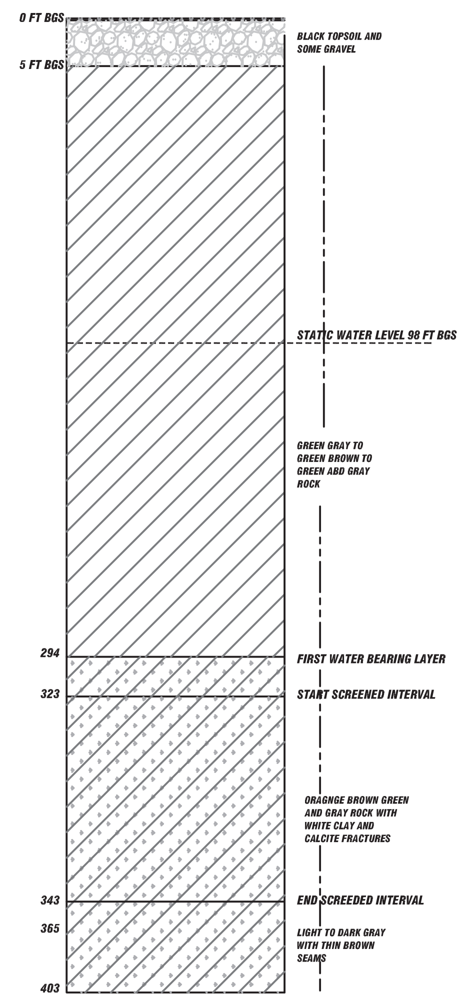
THOA PWS WELL 4, 5, 6, 8, AND 9 CONSTRUCTION DETAIL

SCALE : N.T.S.



MCCARTHY WELL SEAL RECONSTRUCTION DETAIL

SCALE : N.T.S.



MCCARTHY (CANNON) WELL LOG DETAIL
PWS MACCARTHY WELL

SCALE : N.T.S.

REVISIONS

DATE:	DESCRIPTION:	BY
10/1/19	DRAFT DESIGN DRAWINGS	NJF
10/3/19	DRAFT CONSTRUCTION	NJF
10/19/19	PITLESS AND WATER LINES	KMH
10/24/19	RE-ISSUED FOR REVIEW	KMH
10/30/19	SUBMITTAL	KMH

DRAWN BY: DANIEL APPROVED BY: KMH

TIMBRSHOR HOA
WATER SYSTEM IMPROVEMENTS
FOR
THE TIMBRSHOR HOA

SECTION 7, T.23N., R.19W., P.M., M., FLATHEAD COUNTY, MONTANA

HAFFERMAN ENGINEERIG, INC.
860 N. MERIDIAN SUITE B 21
KALISPELL, MT. 59901
PHONE: (406) 257-8708
FAX: (406) 257-8710
EMAIL: info@billmayer.com
ONLINE: http://www.billmayer.com

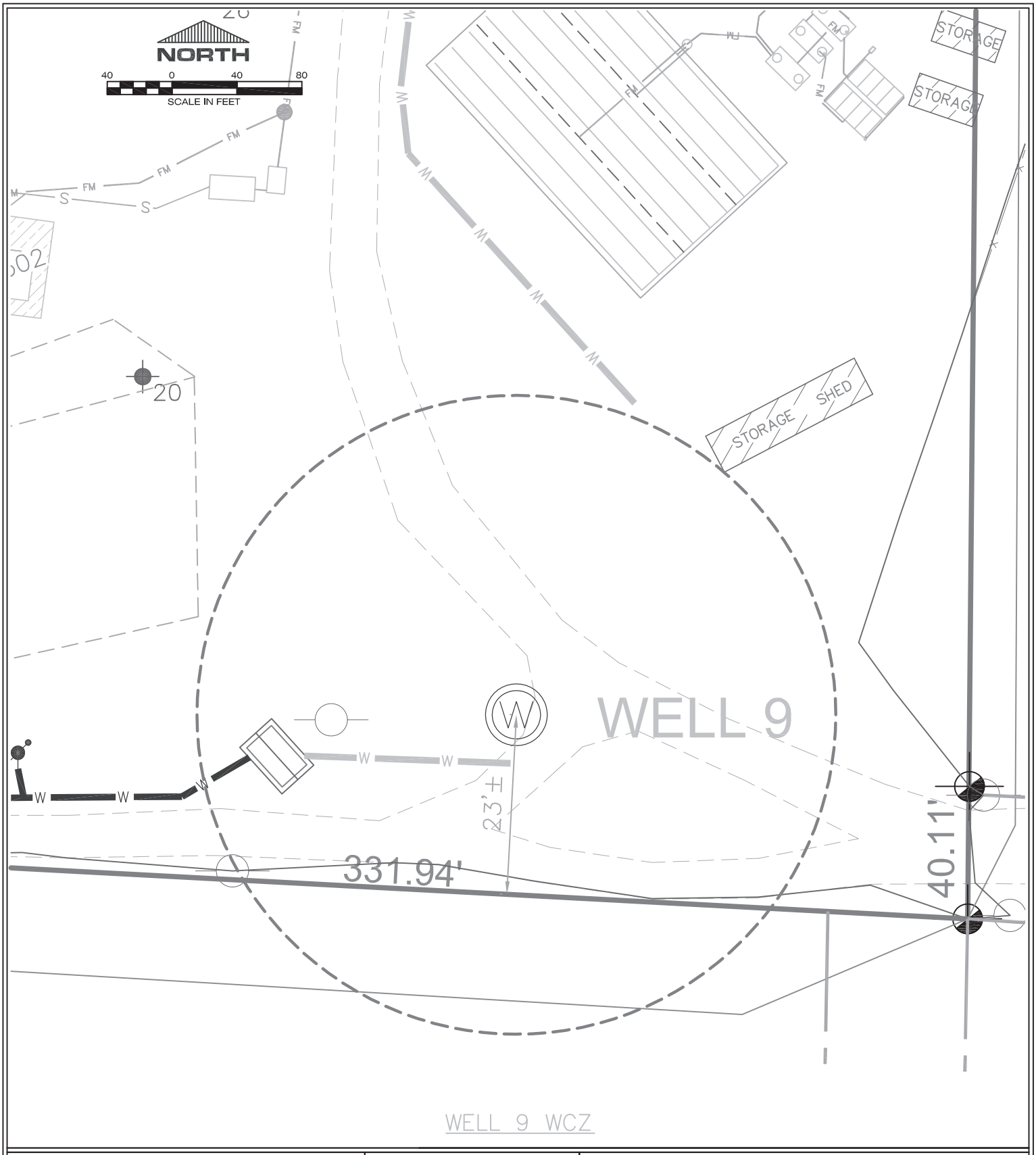
DRAWING TITLE:
WELL DETAILS

SCALE: AS SHOWN

DATE: OCTOBER 2019 | PROJECT NO: T.58.2

DRAWING NUMBER:
1 OF 1

PWS WELL DETAILS.DWG



WELL 9 WCZ

HAFFERMAN ENGINEERING, INC.
P.O. BOX 1891
KALISPELL, MT 59901-1891
PHONE: 406-257-8708
FAX: 406-257-8710
EMAIL: info@billmayer.com
ONLINE: www.billmayer.com

DRAWING TITLE:

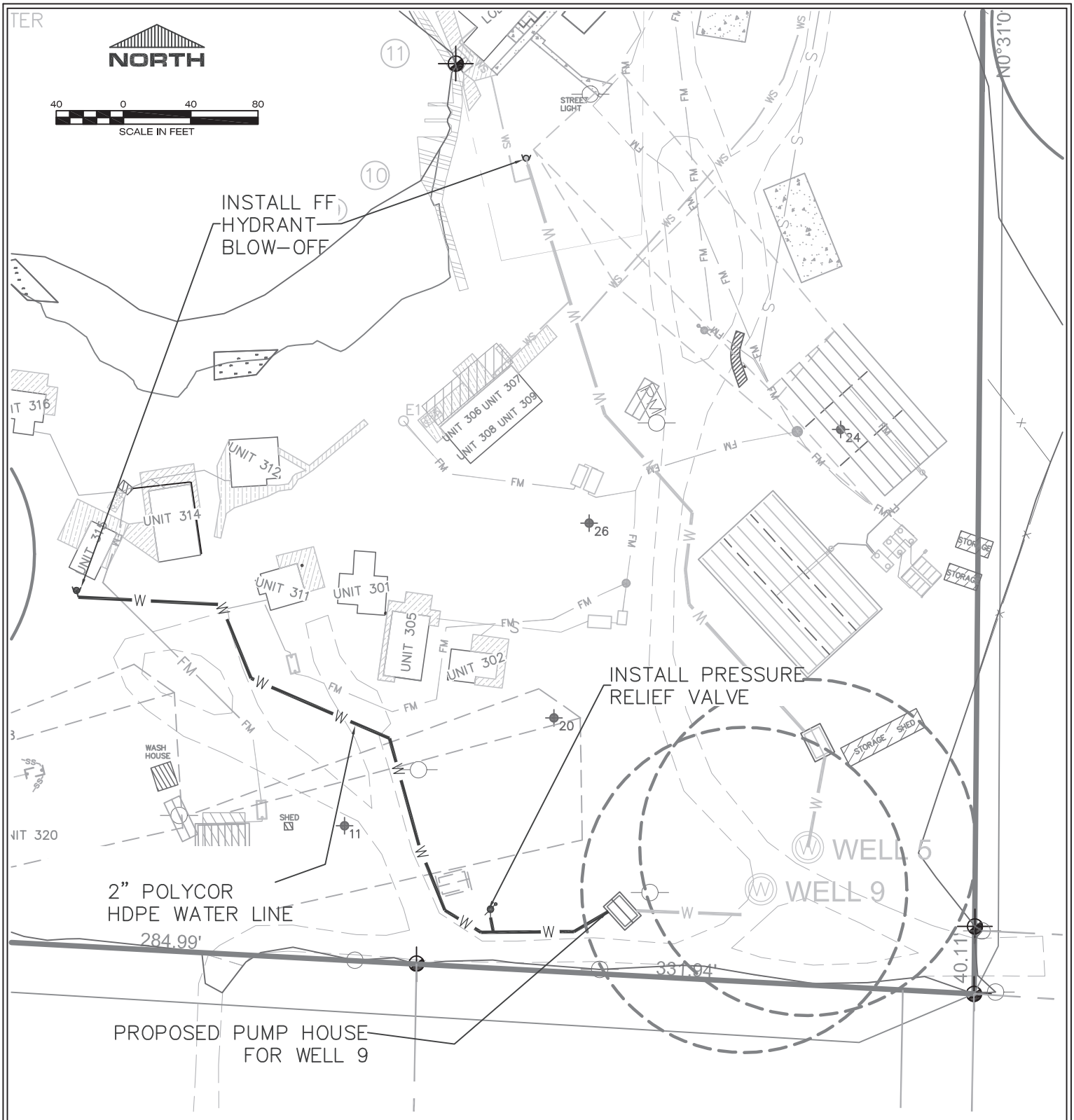
TIMBERSHOR WELL 9 WELL PROTECTION ZONE

FOR

TIMBRSHOR HOA

SECTION 7
T23N, R 19W, PM, M., LAKE COUNTY, MONTANA

DATE:	PROJECT NUMBER:	SCALE:	SHEET:
DEC 7, 2018	T.58.2	AS SHOWN	2 OF 2
FILE LOCATION: S:LAND PRO...\T.58.2\DWG	DRAWN BY: NJF	APPROVED BY: KMH	



WELL 9 AND WELL 5 WELLL CONTROL ZONE AND WATER LINE ROUTING

HAFFERMAN ENGINEERING, INC.
P.O. BOX 1891
KALISPELL, MT 59901-1891
PHONE: 406-257-8708
FAX: 406-257-8710
EMAIL: info@billmayer.com
ONLINE: www.billmayer.com

DRAWING TITLE:

TIMBRSHOR WELL 9 AND WELL 5

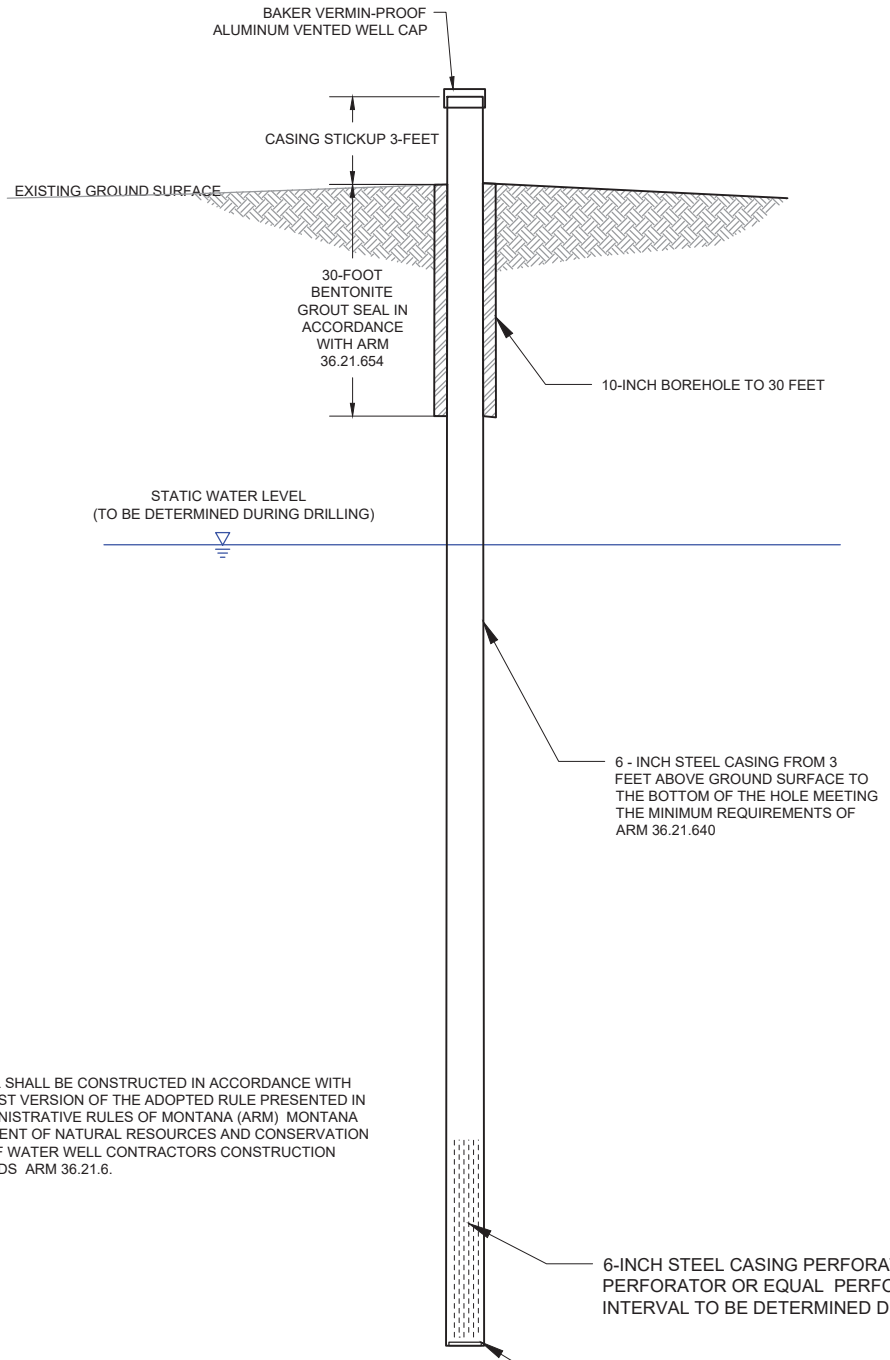
FOR

TIMBRSHOR HOA

SECTION 7
T23N, R 19W, PM, M., LAKE COUNTY, MONTANA

DATE:	PROJECT NUMBER:	SCALE:	SHEET:
DEC 7, 2018	T.58.2	AS SHOWN	1 OF 2
FILE LOCATION: S:LAND PRO...\T.58.2\DWG	DRAWN BY: NJF	APPROVED BY: KMH	

APPENDIX L



NOTES:
THE WELL SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST VERSION OF THE ADOPTED RULE PRESENTED IN THE ADMINISTRATIVE RULES OF MONTANA (ARM) MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION BOARD OF WATER WELL CONTRACTORS CONSTRUCTION STANDARDS ARM 36.21.6.

TIMBRSHOR PUBLIC WATER SUPPLY	**PUBLIC WATER SUPPLY WELL SPECIFICATIONS**	FIGURE **1**

UPDATE TIME: 11:02 AM
GLORENSON\HEL\20210525\C:\USERS\GLORENSON\DROPBOX\TIMBRSHOR ASSOCIATION\WELL SPECIFICATIONS.DWG

Hydrometrics, Inc.
Consulting Scientists and Engineers

Form No. 603 (R 6-84)

RECEIVED 047 23N 19W 7 BCC File No. Jake

MAY 20 1985

MONTANA D.N.R.C.

WELL LOG REPORT CODED

State law requires that this form be filed by the water well driller within 60 days after completio

008222

1. WELL OWNER KALISPELL FIELD OFFICE
Name Richard G. & Marjorie R. Cannon

2. CURRENT MAILING ADDRESS
3100 Nettie
Butte, Montana 59701

3. WELL LOCATION
County Lake
Township 23 N/S Range 19 E/W
SW ¼ SW ¼ NW ¼ Section 7
Lot Govt.Lot 3, 317/ Block
Subdivision Borchers of Finley Point

4. PROPOSED USE Domestic ☒ Stock ☐ Irrigation ☐
Other ☐ specify

5. DRILLING METHOD ____ cable, ____ bored,
____ forward rotary, ____ reverse rotary, ____ jetted,
XX other (specify) Air Rotary

6. WELL CONSTRUCTION AND COMPLETION

Size of drilled hole	Size and weight of casing	From (feet)	To (feet)	Perforations slots and/or Screen — Kind Size	From (feet)	To (feet)
8"	6 5/8" x .250	+2'4"	38'2"			
6"	4 9/16" OD Sch. 40 PVC	33'	403'	slots 1/4"x 6"	323'	343'
					383'	403'

Was casing left open end? X Yes ____ No
Was a packer or seal used? ____ Yes X No
If so, what material
Was the well gravel packed? ____ Yes X No
Was the well grouted? ____ Yes X No
To what depth?
Material used in grouting
Well head completion: Pitless adapter ____ Yes X No
Top of casing 12 in. or greater above grade X Yes ____ No

7. WHAT IS THE TEMPERATURE OF THE WATER?
52 Degrees Fahrenheit
☐ Measured ☒ Estimated

8. WATER LEVEL
Static water level 98' feet below land surface
If flowing; closed-in pressure ____ psi
____ gpm
Controlled by: ____ valve, ____ reducers,
____ other, (specify)

9. WELL TEST DATA ____ pump ____ bailer
X other, (specify) Air Lift
Pumping water level below land surface:
Est. 300 ft. after 3 hrs. pumping 15 gpm
____ ft. after ____ hrs. pumping ____ gpm

10. WAS WELL PLUGGED OR ABANDONED? ____ Yes X No
If yes, how?

11. DATE COMPLETED 3/29/85

12. WELL LOG (Page 1 of 2)

Depth (ft.) From	To	Formation
0	5	Black soil & scattered gravel.
5	40	Green-gray to gray rock.
40	71	Brown, green & gray rock.
71	80	Dark gray rock w/brown seams.
80	95	Light to dark gray & brown rock.
95	224	Light to dark gray rock.
224	273	Green, brown & gray rock.
273	280	Green and gray rock.
280	285	Light to dark gray rock.
285	294	Green-brown and gray rock.
294	365	Orange-brown, green & gray rock w/white clay & calcite in fractures. 12 GPM total water.
365	403	Light to dark gray rock w/thin brown seams. 15 GPM total water.
		(CONTINUED ON PAGE 2)

(use separate sheet if necessary)

13. DRILLER'S CERTIFICATION PH
This well was drilled under my jurisdiction and this report is true to the best of my knowledge.
April 4, 1985
Date
LIBERTY DRILLING & PUMP COMPANY
Firm Name
3850 Highway 93 South
Kalispell, Montana 59901
Address
William F. Osborne 52
Signature William F. Osborne License No.

MONTANA DEPARTMENT OF NATURAL RESOURCES & CONSERVATION DNRC
32 SOUTH EWING HELENA, MONTANA 59620 444-6610

DEPARTMENT — BUREAU COPY

M: 77517

Note:

Wells of this type in this area can be depended upon year after year to produce clear sand free water as long as they are not overpumped, i.e., they should be pumped at rates not in excess of 70 to 80 percent of the tested capacity of the aquifer.

Wallace 23N 19W 7BD Lake

Form No. 603 (R 2-89)

WELL LOG REPORT

File No. 76Q-0094497

109578

State law requires that the Bureau's copy be filed by the water well driller within 60 days after completion of the well.

1. WELL OWNER
Name Bill & Barbra McCormick

2. CURRENT MAILING ADDRESS
29 Snowberry Ln., Finley Pt. Rt.
Polson, Mnt. 59860

3. WELL LOCATION
S½ ¼ SE ¼ NW ¼ Section 7
Township 23N N/S Range 19W E/W County Lake
Govt Lot _____ or Lot _____ Block _____
Subdivision Name Finley Point Villa
Tract Number 1

4. PROPOSED USE: Domestic ☒ Stock ☐ Irrigation ☐
Other ☐ specify _____

5. TYPE OF WORK:
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☒ Jetted ☐

6. DIMENSIONS: Diameter of Hole
Dia. 10 in. from 0 ft. to 20 ft.
Dia. 6 in. from 20 ft. to 210 ft.
Dia. _____ in. from _____ ft. to _____ ft.

7. CONSTRUCTION DETAILS:
Casing: Steel Dia. 6 from +1½ ft. to 20 ft.
Threaded ☐ Welded ☒ Dia. _____ from _____ ft. to _____ ft.
Type A53-B Wall Thickness .250
Casing: Plastic Dia. 4 from 10 ft. to 210 ft.
Weight 160# Dia. _____ from _____ ft. to _____ ft.
PERFORATIONS: Yes ☒ No ☐
Type of perforator used factory
Size of perforations .020 in. by continous in.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
SCREENS: Yes ☐ No ☒
Manufacturer's Name _____
Type _____ Model No. _____
Dia. _____ Slot size _____ from _____ ft. to _____ ft.
Dia. _____ Slot size _____ from _____ ft. to _____ ft.
GRAVEL PACKED: Yes ☐ No ☒ Size of gravel _____
Gravel placed from _____ ft. to _____ ft.
GROUTED: To what depth? 20 ft.
Material used in grouting bentonite

8. WELL HEAD COMPLETION:
Pitless Adapter ☐ Yes ☐ No

9. PUMP (if installed)
Manufacturer's name _____
Type _____ Model No. _____ HP. _____

10. WELL TEST DATA
The information requested in this section is required for all wells. All depth measurements shall be from the top of the well casing.
All wells under 100 gpm must be tested for a minimum of one hour and provide the following information:
a) Air X Pump _____ Bailer _____
b) Static water level immediately before testing 18 ft. If flowing; closed-in pressure _____ psi. _____ gpm.
Flow controlled by: _____ valve, _____ reducers, _____ other (specify) _____
c) Depth at which pump is set for test 205
d) The pumping rate: 40 gpm.
e) Pumping water level 100 ft. at 1½ hrs. after pumping began.
f) Duration of test: Pumping time 1½ hrs.
g) Recovery time ½ hrs.
h) Recovery water level 18 ft. at ½ hrs. after pumping stopped.
Wells intended to yield 100 gpm or more shall be tested for a period of 8 hours or more. The test shall follow the development of the well, and shall be conducted continuously at a constant discharge at least as great as the intended appropriation. In addition to the above information, water level data shall be collected and recorded on the Department's "Aquifer Test Data" form.
NOTE: All wells shall be equipped with an access port ½ inch minimum or a pressure gauge that will indicate the shut-in pressure of a flowing well. Removable caps are acceptable as access ports.

11. WAS WELL PLUGGED OR ABANDONED? ____ Yes X No
If yes, how? _____

12. WELL LOG

Depth (ft.) From	To	Formation
0	1	Blk. dirt
1	175	Hard gray rock
~~175~~	~~177~~	
175	177	Fractured gray & brown rock & water (6-7 gpm)
177	205	Hard gray rock
205	207	Fractured gray & brown rock & water
207	210	Hard gray rock

PLY

RECEIVED
OCT 3 1994
MONTANA D.N.R.C.
KALISPELL REGIONAL OFFICE

ATTACH ADDITIONAL SHEETS IF NECESSARY

13. DATE COMPLETED ~~9-28~~ 9-21-94

14. DRILLER/CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge.

9-28-94
Date

Castlio Drilling Company, Inc.
Firm Name

P.O. Box 159, Polson, Mt. 59860
Address

Kelly Castlio 551
Signature License No.

MONTANA DEPARTMENT OF NATURAL RESOURCES & CONSERVATION
1520 EAST SIXTH AVENUE HELENA, MONTANA 59620-2301 444-6610

DNRC

BM

M: 148606

DEPARTMENT - BUREAU COPY

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.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps

Site Name: SARITALIVING, AVERY
GWIC Id: 311400

Section 1: Well Owner(s)

1) SARITALIVING, AVERY (MAIL)
48901 US HIGHWAY 93 STE A
POLSON MT 59860 [11/10/2020]
2) SARITALIVING, AVERY (WELL)
34739 SNOWBERRY LANE
POLSON MT 59860 [11/10/2020]

Section 2: Location

Township	Range	Section	Quarter Sections
23N	19W	7	SW¼ SW¼

County: LAKE **Geocode:**

Latitude	Longitude	Geomethod	Datum
47.763469616	-114.0893851975	TRS-SEC	NAD83

Ground Surface Altitude: **Ground Surface Method:** **Datum:** **Date:**

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: Tuesday, November 10, 2020

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	340	6

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-2	55	6	0.25		WELDED	A53B STEEL

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
40	340	4		1/2"	DRILLED HOLES

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	10	BETONITE	Y

Section 7: Well Test Data

Total Depth: 340
Static Water Level: 10
Water Temperature: 12.22 °C

Air Test *

20 gpm with drill stem set at 320 feet for 1 hours.
Time of recovery 1 hours.
Recovery water level 10 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

Unassigned

From	To	Description
0	5	SAND
5	22	WET SAND AND CLAY
22	40	BROKEN ROCK
40	240	GREY ROCK
240	340	ROCK WITH FRACTURES AND WATER

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: DAVE BICK
Company: ACE DRILLING
License No: WWC-630
Date Completed: 11/10/2020

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.

Other Options

Return to menu
Plot this site in State Library Digital Atlas
Plot this site in Google Maps

Site Name: MCLAUGHLIN, WILLIAM
GWIC Id: 268468

Section 1: Well Owner(s)

1) MCLAUGHLIN, WILLIAM (MAIL)
34819 SNOWBERRY LANE
POLSON MT. 59860 [10/02/2012]

Section 2: Location

Township	Range	Section	Quarter Sections
23N	19W	7	NE¼ SW¼

County: LAKE
Geocode:

Latitude	Longitude	Geomethod	Datum
47.767399116	-114.0841814475	TRS-SEC	NAD83

Ground Surface Altitude: **Ground Surface Method:** **Datum:** **Date:**

Addition	Block	Lot
FINLEY POINT VILLA SITE	6	3

Section 3: Proposed Use of Water

DOMESTIC (1)
IRRIGATION (2)

Section 4: Type of Work

Drilling Method: ROTARY
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Tuesday, October 2, 2012

Section 6: Well Construction Details

Borehole dimensions

From	To	Diameter
0	345	6

Casing

From	To	Diameter	Wall Thickness	Pressure Rating	Joint	Type
-2	43	6	0.25		WELDED	A53B STEEL
25	345	4		160.0	SOLVENT WELD	PVC-SDR 21

Completion (Perf/Screen)

From	To	Diameter	# of Openings	Size of Openings	Description
305	345	4	80	1/8X6	SAW SLOTS

Annular Space (Seal/Grout/Packer)

From	To	Description	Cont. Fed?
0	43	BENTONITE	Y

Section 7: Well Test Data

Total Depth: 345
Static Water Level: 60
Water Temperature:

Air Test *

25 gpm with drill stem set at 340 feet for 1 hours.
Time of recovery 0.9 hours.
Recovery water level 60 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

Unassigned

From	To	Description
0	12	SOFT TAN ROCK
12	68	MEDIUM HARD GREEN AND BROWN ROCK
68	115	MEDIUM HARD BLACK AND BROWN ROCK
115	121	FRACT. BLACK AND BROWN ROCK WITH WATER 5 GPM
121	241	MEDIUM HARD BLACK AND BROWN ROCK
241	295	MEDIUM HARD GRAY AND BROWN ROCK
295	340	FRACT. GRAY AND BROWN ROCK WITH WATER 20 GPM
340	345	MEDIUM HARD GRAY AND BROWN ROCK

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: BRAD FORMAN
Company: ALLWEST DRILLING INC
License No: WWC-571
Date Completed: 10/2/2012

APPENDIX M

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
Metcalf Building
1520 East Sixth Avenue
P.O. Box 200901
Helena, MT 59620-0901

PRELIMINARY ASSESSMENT WORKSHEET

Preliminary Assessment of Ground Water Sources that may be Under the Direct Influence of Surface Water

SYSTEM NAME Well 5/9 PWS ID# N/A

SOURCE NAME Wells No. 5 & 9 COUNTY _____

DATE 10/18/21 NC TNC NTNC C POPULATION _____

Index Points

A. TYPE OF STRUCTURE (Circle ONE that Applies)

Spring 40
Horizontal Well 40
Well 0

B. HISTORICAL PATHOGENIC ORGANISM CONTAMINATION

History or suspected outbreak of Giardia, or other pathogenic organisms associated with surface water with current system configuration 40
No history or suspected outbreak of Giardia or other pathogenic organisms 0

C. HISTORICAL MICROBIOLOGICAL CONTAMINATION

Record of acute (boil order or fecal positive sample) MCL violations of the Total Coliform Rule during the last 3 years (Circle ONE that Applies)

No violations 0
One violation 5
Two violations 10
Three violations 15

Record of non-acute (two coliform positive samples in one month) MCL violations of the Total Coliform Rule during the last 3 years (Circle ONE that Applies)

One violation or none 0
Two violations 5
Three violations 10
DEQ-verified complaints about turbidity 5

D. HYDROLOGICAL FEATURES

Horizontal distance between surface water and the source:
Greater than 250 feet 0
175 - 250 feet 10

100 - 174 feet 20
Less than 100 feet 40

E. WELL SEAL

Poorly constructed well (uncased, or annular space not sealed to depth of at least 18 feet below land surface),
or casing construction is unknown ..... 15 N/A

F WELL INTAKE CONSTRUCTION

In wells tapping unconfined or semi-confined aquifers, with a depth below land surface to top, of perforated interval or screen greater than 100 feet 0
50 - 100 feet 5
25 - 49 feet 10
0 - 24 feet 15
Unknown 15

G. STATIC WATER LEVEL

In wells tapping unconfined or semi-confined aquifers, depth to static water level below
land surface greater than 100 feet 0
50 - 100 feet ..... 5 Based on McCarthy Well
25 - 49 feet 10
0-24 feet 15
Unknown 15

H. WELL CAP CONSTRUCTION

Poor sanitary seal, or seal without acceptable material 15

TOTAL SCORE 5 < 40

I. PRELIMINARY ASSESSMENT DETERMINATION (Circle **ONE** that Applies)

1. PASS: Source is not under the direct influence of surface water.
2. FAIL: Well must undergo further GWUDISW analysis.
3. FAIL: Spring, must undergo further GWUDISW analysis.
4. FAIL: Well or horizontal well less than 100 feet from surface water, must undergo further GWUDISW analysis.
5. FAIL: Well will PASS if well construction deficiencies (section E or F) are repaired.
6. FAIL: Well may PASS if well construction details (section E, F, or G) become available.

ANALYST Robert Karl Kingery, P.E, CFM

ANALYST AFFILIATION Hydrometrics, Inc.

COMMENTS: _____

APPENDIX N

ATTACHMENT A

DEVIATION NUMBER _____

PUBLIC WATER AND SEWAGE SYSTEM DEVIATION REQUEST

FOR DEVIATIONS SUBMITTED BY A PROFESSIONAL ENGINEER

Sanitation in Subdivision and Public Water Supply Acts

Project Name: Timbrshor Public Water System-Well 5/9 DEQ or EQ Number (if known):_____

Engineer Name: Hydrometrics, Inc.

Circular/Rule:

- ☒ DEQ-1 Water Works
- □ DEQ-2 Wastewater Facilities
- ☒ DEQ-3 Small Water Systems
- □ DEQ-4 Subsurface Wastewater Treatment
- □ DEQ-8 Subdivision Storm Drainage
- □ DEQ-10 Springs for Public Water Systems
- □ ARM 17.36
- □ ARM 17.30

STANDARD OR RULE NUMBER: DEQ Circular 1 Sections 8.8.2 & 8.8.4, DEQ Circular 3 Section 8.4.1 & 8.4.3

EXISTING STANDARD/RULE LANGUAGE:

Potable water mains and sanitary sewer mains (including force mains) must be separated by at least 10 horizontal feet. (Note that this is paraphrased to summarize the requirements stated separately in each Circular Section).

PROPOSED STANDARD/RULE LANGUAGE:

A horizontal separation distance of less than 10 feet will be allowable between existing sanitary sewer mains (including force mains) and potable water mains, if necessary.

JUSTIFICATION: ***attach additional information as necessary***

See attached.

In accordance with ARM 17.38.101 (4) (j), I certify that strict adherence to the above standard is not necessary to protect public health and the quality of state waters.

_____

(Signature of Professional Engineer) (Date *PE Stamp* Signed)

Montana P.E. Number_____

For Department Use Only:
Review Engineer's Recommendation:

Hydrometrics, Inc.
consulting scientists and engineers

MEMORANDUM

DATE: February 4, 2022

TO: *Montana Department of Environmental Quality*

FROM: *Greg Lorenson, P.E.; Hydrometrics, Inc.*
Karl Kingery, P.E., CFM; Hydrometrics, Inc.

SUBJECT: Timbrshor Public Water System – Well 5/9
Deviation Request – Horizontal Separation between Sanitary Sewer Main and Potable Water Main

This memorandum provides the technical basis to support a deviation request to allow for less than 10 feet of separation between an existing sanitary sewer main and a proposed potable water main for the Well No. 5/9 Public Water System (PWS) on the Timbrshor property. Additional information regarding the PWS is provided in the Well No. 5/9 Public Water Supply Design Report (Report). This memorandum is an attachment to the Deviation Request form required by the Montana Department of Environmental Quality (DEQ).

Background

DEQ Circular 1 states in Section 8.8.2 that:

> Water mains must be laid at least 10 feet horizontally from any existing or proposed gravity sanitary or storm sewer, septic, tank, or subsoil treatment system. The distance must be measured edge to edge. If the minimum horizontal separation as described above cannot be obtained, the design engineer shall submit a request for a deviation along with a description of the problem and justifying circumstances. If the deviation is granted, the sewer must be designed and constructed with the following minimum conditions:
>
> a. Sewers must be constructed of slip-on or mechanical joint pipe complying with public water supply design standards and be pressure tested to a minimum of 150 psi to assume water tightness;
> b. Sewer services utilizing in-line fittings and extending to the property lines, or beyond must be installed and tested in the area of the

encroachment. Saddles are not acceptable.

Additionally, Section 8.8.4 of DEQ Circular 1 states that,

> There must be at least a 10-foot horizontal separation between water mains and sanitary sewer force mains. There must be an 18-inch vertical separation at crossings, as required in Section 8.8.3.

This language is echoed in DEQ Circular 3 Sections 8.4.1 and 8.4.3, respectively.

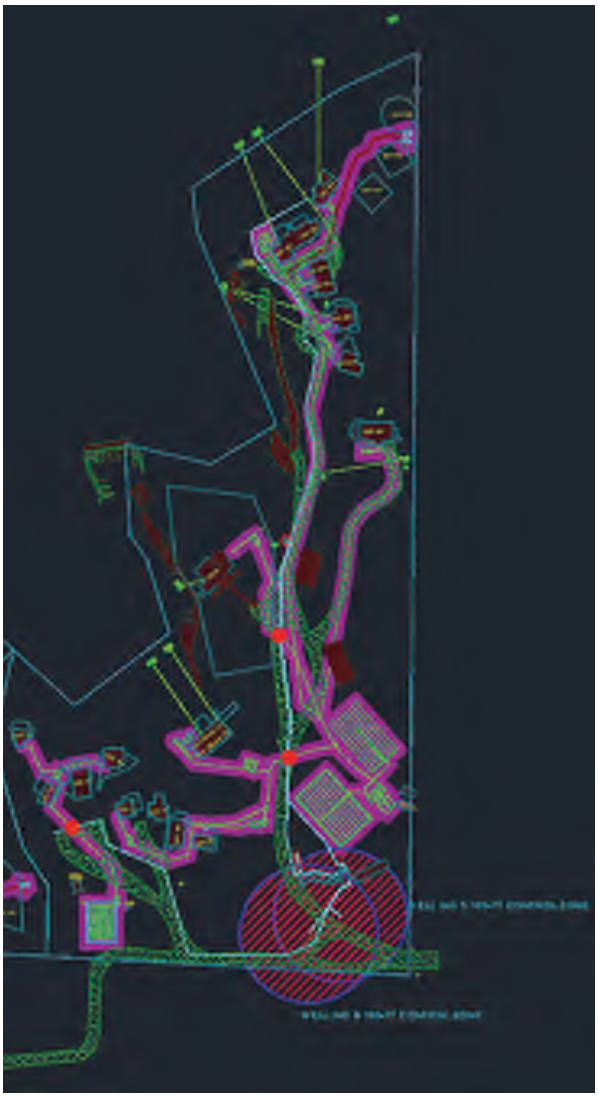
Due to the location and alignment of existing sanitary sewer mains and site constraints, providing more than 10 horizontal feet of separation between the exiting sanitary sewer main and the proposed potable water main is not feasible. Approval of this deviation request will allow the water mains of the Well 5/9 PWS to be located within 10 horizontal feet of existing sanitary sewer mains and force mains.

Wastewater Systems and Site Conditions

There are a large number of existing wastewater facilities within the Well No. 5/9 PWS service area. Many of these facilities have been in place for more than 50 years and their exact location and depth are currently unknown. Figure 1 shows the existing and proposed wastewater facilities highlighted in purple.

Bedrock throughout the service area is also very shallow. Bedrock depth varies within the service area between 0 and 4 feet. There are many locations where the bedrock is exposed. Construction of the water mains is expected to require a significant amount of bedrock excavation.

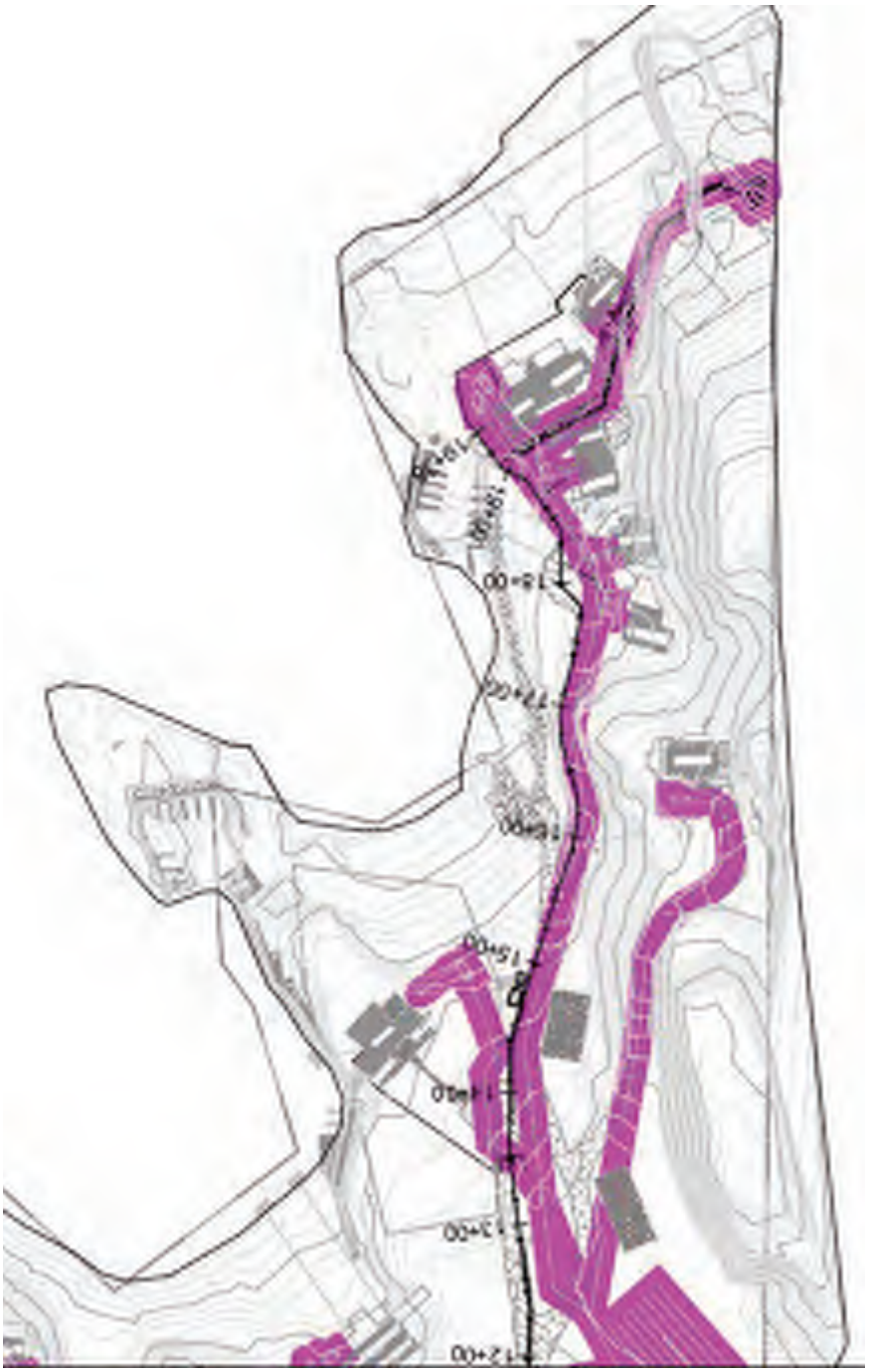
FIGURE 1. WASTEWATER SYSTEM LOCATIONS



Proposed Water Main Alignment

Due to the location of existing wastewater facilities, and existing lots, the area north of the Lodge along Borchers Ln from water main station 14+00 to 19+38 is an area where it is not possible to separate the potable water main from the existing sanitary sewer main by more than 10 horizontal feet. This is an area where there is a narrow road, high cliffs on one side of the road and the lake on the other, as well as shallow bedrock. The existing sanitary sewer main does not follow the alignment of the road. At some locations, the sewer line is on the east side of the road, in others, the west side of the road and in many places, is in the center of the road. The road is approximately 12 feet wide in this area. There is not a feasible alternate route for the water main to be constructed along and there are locations where the water main will need to be within 10 feet of the existing sanitary sewer main. Figure 2 shows this area with the 10-foot buffer around the existing sanitary sewer mains shown in purple.

FIGURE 2. NARROW HORIZONTAL SEPARATION AREA



Mitigative Measures

In order to prevent cross-contamination of the water main in areas of close horizontal separation, multiple mitigative measures will be implemented. These methods are shown on Sheets 2 and 4 of the plans and are described below.

- The contractor will be requested to mark all utilities prior to construction to limit the length of distance that the sanitary sewer mains and the potable water mains will be within 10-feet of each other. Re-alignment of the water main prior to construction will occur if necessary to minimize the length of water main within that 10-foot zone.
- The water main will not be constructed in the same trench as the sanitary sewer mains. These will be kept separate. Due to the nature of the existing ground being largely bedrock, in most or all areas where the sanitary sewer main is closer than 10-feet away from the potable water main, there will be naturally low-permeability bedrock separating the two trenches.
- The potable water main will be constructed so that it has a watertight jacket pipe surrounding rigid foam insulation, which in turn surrounds the main HDPE pipe. This watertight jacket pipe will provide a physical barrier around the main carrier pipe should any leaking wastewater come into the potable water main trench.

Summary

This deviation is necessary for the construction of the public water system, as it is not possible to maintain 10-feet of separation between the potable water mains and the sanitary sewer systems at all locations. While the contractor will attempt to provide 10-feet of horizontal separation between the water and sanitary sewer mains, if it is not possible due to site constraints, the mitigative measures described above have been included in the design and will be constructed to prevent cross-contamination of the potable water main by the sanitary sewer system.

ATTACHMENT A

DEVIATION NUMBER _____

PUBLIC WATER AND SEWAGE SYSTEM DEVIATION REQUEST

FOR DEVIATIONS SUBMITTED BY A PROFESSIONAL ENGINEER

Sanitation in Subdivision and Public Water Supply Acts

Project Name: Timbrshor Public Water System-Well 5/9 DEQ or EQ Number (if known):_____

Engineer Name: Hydrometrics, Inc.

Circular/Rule:

□ DEQ-1 Water Works
□ DEQ-2 Wastewater Facilities
□ DEQ-3 Small Water Systems
□ DEQ-4 Subsurface Wastewater Treatment
□ DEQ-8 Subdivision Storm Drainage
□ DEQ-10 Springs for Public Water Systems
☒ ARM 17.36
□ ARM 17.30

STANDARD OR RULE NUMBER: ARM 17.36.323

EXISTING STANDARD/RULE LANGUAGE:

Unless a waiver is granted by the department pursuant to ARM 17.36.601, sewer mains that cross water mains must be laid with a minimum vertical separation distance of 18 inches between the mains.

PROPOSED STANDARD/RULE LANGUAGE:

A vertical separation distance of between 6 inches and 18 inches will be allowable, if necessary.

JUSTIFICATION: ***attach additional information as necessary***

See attached.

In accordance with ARM 17.38.101 (4) (j), I certify that strict adherence to the above standard is not necessary to protect public health and the quality of state waters.

_____
(Signature of Professional Engineer) (Date *PE Stamp* Signed)

Montana P.E. Number_____

For Department Use Only:
Review Engineer's Recommendation:

Hydrometrics, Inc.

consulting scientists and engineers

MEMORANDUM

DATE: February 4, 2022

TO: *Montana Department of Environmental Quality*

FROM: *Karl Kingery, P.E., CFM; Hydrometrics, Inc.*
Greg Lorenson, P.E.; Hydrometrics, Inc.

SUBJECT: Timbrshor Public Water System – Well 5/9
Deviation Request – Sanitary Sewer Separation

This memorandum provides the technical basis to support a deviation request to allow for between 6 and 18-inches of separation between sanitary sewer mains and the proposed water mains for the Well 5/9 Public Water System (PWS) on the Timbrshor property. Additional information regarding the PWS is provided in the Well 5/9 Public Water Supply Design Report (Report). This memorandum is an attachment to the Deviation Request form required by the Montana Department of Environmental Quality (DEQ).

Background

The Administrative Rules of Montana (ARM) 17.36.323 (9) states that:

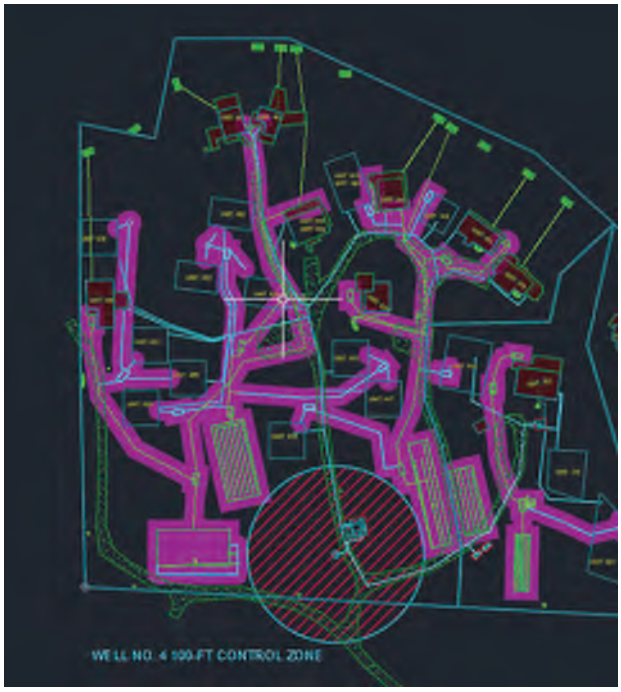
> Unless a waiver is granted by the department pursuant to ARM 17.36.601, sewer mains that cross water mains must be laid with a minimum vertical separation distance of 18 inches between the mains.

Due to the location of existing sanitary sewer mains and the shallow nature of the bedrock in the area, providing more than 18-inches of separation between water and sanitary sewer mains at crossings within the Well No. 5/9 PWS service area may not be possible. Approval of this deviation request will allow the water mains of the Well No. 5/9 PWS to be between 6 and 18 inches of sanitary sewer mains at crossings

Wastewater Systems and Site Conditions

There are a large number of existing wastewater facilities within the Well 5/9 PWS service area. Many of these facilities have been in place for more than 50 years and their exact location and depth are currently unknown. Figure 1 shows the existing and proposed sanitary sewer facilities highlighted in purple.

FIGURE 1. PROPOSED WELL LOCATION



Bedrock throughout the service area is also very shallow. Bedrock depth varies within the service area between 0 and 4 feet. There are many locations where the bedrock is exposed. Construction of the water mains is expected to require a significant amount of bedrock excavation.

Sanitary Sewer Crossing Locations

Due to the location of existing wastewater facilities, there are several locations where it will be necessary for the water mains to cross either existing or proposed sanitary sewer mains. The locations of these crossings are shown in Figure 2.

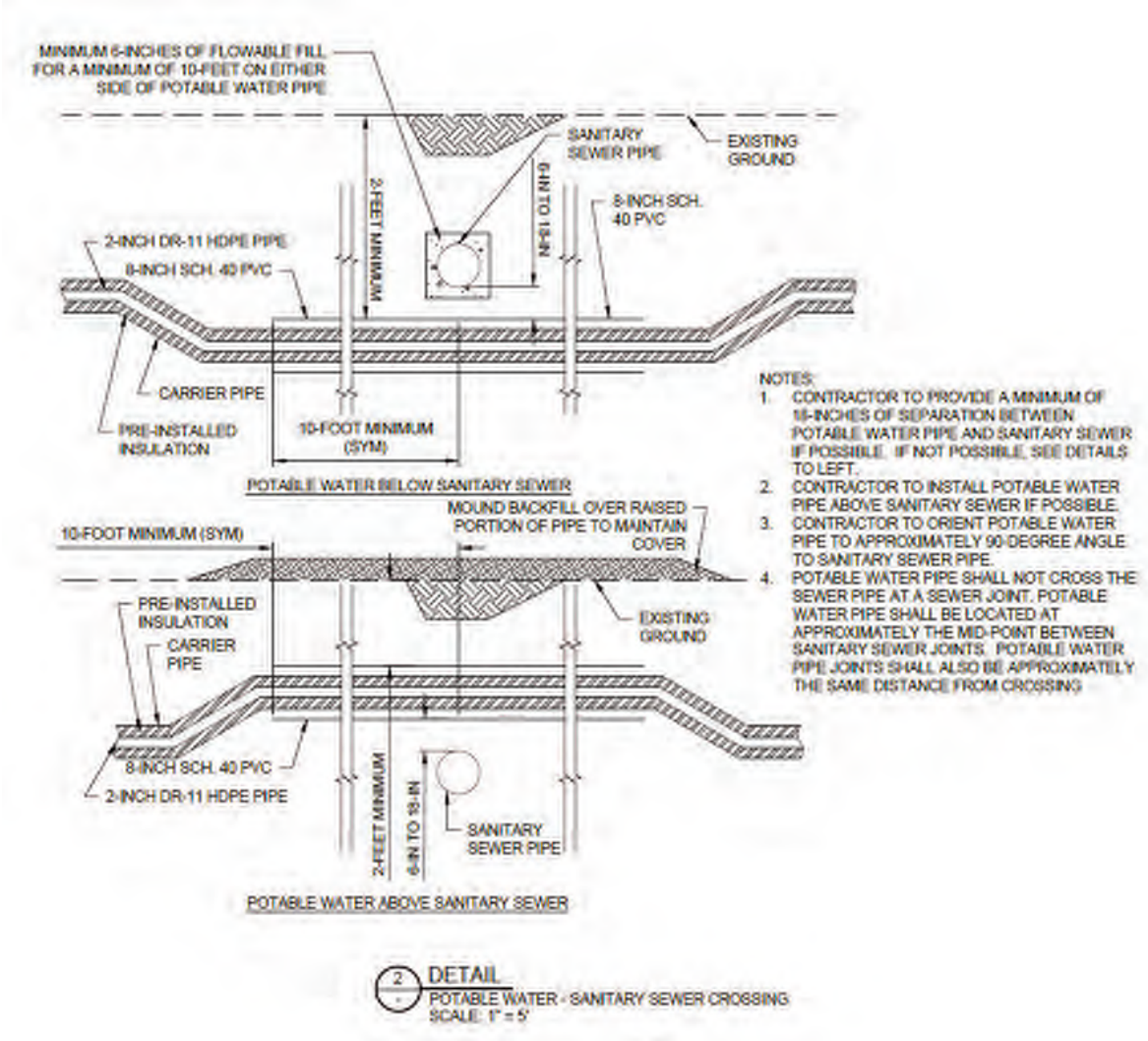
FIGURE 2. PWS SANITARY SEWER CROSSINGS

Mitigative Measures

The risk for cross-contamination of the water mains will be mitigated through several redundant methods. These methods are shown on Sheet 5 of the Plans, are described below, and are shown in Figure 3.

- The insulated HDPE pipe will have a pressure tested, watertight HDPE jacket around the insulation. This jacket will function as a carrier pipe for the main water main.
- The contractor will attempt on providing a minimum of 18-inches of separation between the potable water pipe and the sanitary sewer pipe if possible.
    - If that is not possible, a second 8-inch diameter PVC Sch. 40 Carrier pipe will be sleeved over the water main for at least 10-feet on either side of the crossing.
- The Contractor will install the potable water pipe above the sanitary sewer pipe if possible.
    - If that is not possible, 6-inches of flowable fill will be installed around the sanitary sewer pipe for at least 10-feet on either side of the crossing.
- The Contractor will orient the potable water pipe as close to 90-degrees to the sanitary sewer pipe as possible and will also attempt to locate the potable water pipe at the mid-point between sanitary sewer joints.

FIGURE 3. POTABLE WATER - SANITARY SEWER CROSSING DETAIL



There are no areas in the Well 5/9 PWS where the sanitary sewer will need to run parallel to and be within 10 feet of the water mains.

Summary

This deviation is necessary for the construction of the public water system, as it may not be possible to maintain 18-inches of separation between the potable water mains and the sanitary sewer systems at all crossing locations. While the contractor will attempt to provide 18-inches of separation between the water and sanitary sewer mains, if it is not possible due to site constraints, additional mitigative measures have been included in the design and will be constructed to prevent cross-contamination of the potable water main by the sanitary sewer system.