Sketch Plan

For

Hidden Hollow
Planned Unit Development (PUD)

Applicants:

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Prepared by:

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Town of Jackson
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Jorgensen Associates, P.C.
Project No. 16016.00

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SECTION 1 - PROJECT BACKGROUND, OVERVIEW, FINDINGS AND RESPONSE TO SUBMITTAL CHECKLIST

A. PROJECT BACKGROUND

Hidden Hollow is a 168-unit workforce housing project located in the heart of the Town of Jackson, Wyoming. The project is being proposed by Hansen and Hansen, LLP (Applicant), owned by brothers Kirk and Jim Hansen. Hansen's also own Conrad & Bischoff, Inc., a local and regional fuel supplier with offices in Jackson, WY, Idaho Falls, ID and Nampa, ID. The Applicant has a track record of creating successful commercial and residential development projects across Idaho. Recently, they had the opportunity to purchase the 10-acre parcel of land from the United States Forest Service (USFS) located at 60 Rosencrans and accessed from North Cache Street. Unlike previous suitors for this parcel who walked away from the opportunity for various reasons, the Applicant purchased this parcel with no contingencies, with the vision and primary goal to build a project that would help provide housing solutions for the Town of Jackson (ToJ). The project team was assembled early this year, and preliminary conversations with various potential community partners has begun which will help project come to fruition faster. This sketch plan application will line out the proposal before the ToJ, its feasibility, and the ownership group' s enthusiasm to collaborate on this potential impact making project. This unique parcel of land is ripe for residential development, and perfectly placed in the ToJ for a project such as this. The goal is to make this project blend in seamlessly, while providing as many units that are possible given the constraints of the zone, the neighborhood, and the capacity of the infrastructure. The project and ownership teams have put forth great effort to answer as many questions as possible in this application, and look forward to moving this project through the process as quickly as possible in order to bring much needed housing units to this community.

B. OWNER & PROJECT TEAM INFORMATION

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C. DEVELOPMENT PROPOSAL

Using the Urban Residential Planned Unit Development (UR-PUD) tool in the Town of Jackson Land Development Regulations (LDRs), the applicant proposes to build 168 dwelling units on this 10 acre parcel of land recently purchased from the USFS. This project will provide a much needed solution to the current workforce housing shortage in the ToJ. 13 of these units will be free market single-family home sites, 20 units will be free market multi-family townhouse units, and 135 units will be built within five multi-family apartment/condominium buildings. All 135 units will have the potential to deed restricted either with Employment Based deed restriction or an Income Based deed restriction, ensuring all 135 units will be rented or sold to the local workforce in perpetuity. This infusion of density into the affordable housing market is the first of its kind and scale, and this particular location provides the best fit as per the Teton County Comprehensive Plan (Comp Plan).

The property is currently accessed by Rosencrans via North Cache. As part of the division of the 10 acres from the USFS' parent parcel, a 40' wide strip was extended with the expectation that Mercill Avenue would be improved and become the primary access point for the parcel. The single-family homes will be placed on the eastern and northern boundaries of the parcel with the multi-family buildings residing in a more central cluster against the commercial uses of the USFS and Wyoming Game and Fish properties. This provides a proper transition from the open spaces of the Elk Refuge to the commercial and traffic corridor of North Cache.

Currently this project is programmed with the potential to provide a much-needed infusion of deed-restricted rental housing product to the Town of Jackson, comprising 80% of the units of the project. Alternatively, 20% of the development units are slated for free market single-family and multi-family townhouses to help fund the project. This presents a unique mix of unit types, affordability, and availability yet to be realized in the ToJ, and fits well within the goals of the Comp Plan. The 13 single family lots will be platted and sold on the free market. The 20 multi-family town houses will be built, platted and sold on the free market. The multi-family buildings will contain all of the affordable housing mitigation generated by this project and a tremendous opportunity for this community to realize even more units to be deed restricted in perpetuity. 27 units shall be Category 1-3 income based deed restricted units to be sold to the local workforce by the Teton County Housing Department. 45 units shall be employment based deed restricted units that will be distributed throughout the five multi-family condo/apt. buildings. The remaining 63 units will be free market units initially. However, they will have the potential to provide units for employee housing mitigation or affordable housing for local employers, organizations, and non-profits in need thereby making Hidden Hollow 80% deed restricted.

D. FINDINGS FOR APPROVAL

I. 8.3.1.C. Sketch Plan - Findings for Approval

1. Is consistent with the desired future character described for the site in the Jackson/Teton County Comprehensive Plan. Complies.

The Hidden Hollow project is within the Comprehensive Plan District 3 – Town Residential Core, Subarea 3.2 – Core Residential. The Town Residential Core District is envisioned to contain a variety of residential densities, a variety of residential types, and a variety of building sizes in order to maintain and meet our Community's Growth Management and Workforce Housing goals.

The Hidden Hollow project contains a total of 168 residential units, comprised of 13 single family homes, 20 townhomes clustered in buildings containing between 3 and 7 units, and 135 condominium units within five individual buildings, each containing 27 units.

This mix represents a variety of residential types and a variety of building sizes on a single ten-acre property, and is consistent with the Community's Growth Management goals. As a previously developed property, it is not located in habitat, scenery and open space (Principle 3.1). The project location, close to services, including school, commercial and recreational amenities, is a suitable location for a Complete Neighborhood and is outside of naturally hazardous areas (Principle 3.2, 3.4 and 4.3). As a property that's long been considered for residential density, the project represents predictable and cooperative growth (Principle 3.3). The project also includes walkable connections within the project and to the overall area in which the project is located (Principle 4.2).

Subarea 3.2 states that redevelopment, revitalization, and reinvestment within the Subarea are highly desirable, and that the future character of the Subarea will include some increased density and larger buildings than in East Jackson. The Subarea vision includes locating multifamily structures on larger residential lots and along mixed use corridors, allowing the density and intensity to be greater than what is found in other areas, with the understanding that parking of these multifamily structures should be minimized and screened as much as possible.

The Hidden Hollow project meets the desired goal of redevelopment, revitalization, and reinvestment, resulting in increased density and larger buildings on larger lots. The project provides 168 residential units of varying types on a ten-acre site that was previously underdeveloped by the Forest Service. The design provides for parking predominantly located in subsurface garages. There are few, if any, sites within Subarea 3.2 that achieve this vision more effectively.

2. ***Achieves the standards and objective of the Natural Resource Overlay (NRO) and Scenic Resources Overlay (SRO), if applicable.*** Not Applicable

   The Hidden Hollow property is not located within the Natural Resource overlay or the Scenic Resource Overlay, and this finding is therefore not applicable.

3. ***Does not have significant impact on public facilities and services, including transportation, potable water and wastewater facilities, parks, schools, police, fire, and EMS facilities;***

   The Hidden Hollow project will provide the required school and park exactions that are designed to ensure development contribute to impacts they have on these services. Public utilities and project utility connections will be designed to ensure the project does not overburden these services. The project is within town limits and is

currently served by police, fire and EMT services. The development will not result in increased impacts on availability of these services.

Included with this submittal is a traffic study on the impacts Hidden Hollow will have on the transportation infrastructure within the Town of Jackson. This study finds that the Hidden Hollow development will have an increased trip generation impact on the North Cache – Mercill intersection. However, this increased impact is mitigated by the fact that this intersection is currently signalized. The increased traffic coming to and from the eastern Mercill extension will flow in a manner that is consistent with the current signalization and will therefore have a reduced impact on the traffic inbound and outbound along North Cache than it would if it were not currently signalized.

There is the potential for a King Street intersection, which will further mitigate this adverse impact to the transportation infrastructure. Multi-modal transportation options are abundant and include several pedestrian and bicycle connections in close proximity to local town commercial services, and within walking distance are the Teton County Recreation Center (Rec Center), The Davey Jackson Elementary School (The School) and the opportunity for pathway connections. Finally, the Town Shuttle "A" Route operated by START flows in both East and West bound directions. It has 4 stops with 30 minute intervals all within a one block walking distance to the Mercill and North Cache Intersection. At Final Development Plan, the project will consider working with START to perhaps reroute these routes through the development.

4. ***Complies with all relevant standards of these LDRs and other Town Ordinances as can be determined by the level of detail of a sketch plan.*** Complies

The purpose of Sketch Plan review is to determine general consistency with the LDRs at a preliminary, conceptual level before development is fully designed with the objective of identifying opportunities to achieve desired community character, development related issues, discuss alternative designs that may better implement the LDRs and identify natural and scenic resource protection requirements.

As presented during the pre-application conference and the subsequent meeting with Town staff, the project is consistent with the purpose and standards of the Urban Residential Zone District. The ten-acre site provides a good deal of flexibility in meeting the zone district standards and is well above the minimum LSR requirement, and well below the maximum Lot Coverage requirement. While there are some areas within the development that meet the minimum setback limitations, the vast majority of the perimeter of the project is set back well beyond this requirement and all individual buildings within the development are setback from one another within the

requirements of the LDRs. The PUD option provides flexibility to other standards and are addressed in PUD findings for approval.

During the pre-application conference, the neighborhood meeting, and a subsequent meeting involving the project team and Town staff, many of these topics were identified. The pre-application conference identified a number of issues that Town staff requested be addressed at Sketch Plan submittal. These included phasing standards of the overall project, the threshold of review under Development Plan requirements, the need for a traffic study and the importance of review by WYDOT, location of snow storage, parking design revisions, addressing proximity of the project to the adjacent elementary school, and the plan for inter-connectedness between adjacent properties, particularly with regard to the King Street terminus connection.

Many of these issues were addressed in revisions to the overall site plan since the time of the pre-application conference. The site plan was revised to address the snow storage needs, the parking concerns, the trail connections, the security of elementary school property, the location of various housing types and the circulation within the development. At a subsequent meeting it was recognized that site plan revisions resulted in an overall improvement to the design and functionality of the project, particularly where trail connections and overall circulation are concerned. The parking layout is improved, as it has been designed to function as a parking lot rather than a combination street/parking lot.

5. ***Is in substantial conformance with all standards or conditions of any prior applicable permits or approvals.*** Not Applicable

   The property was previously owned by the US Forest Service. As such, there are no previous development permits or approvals that are applicable.

II. 8.7.3.D. Planned Unit Development - Findings for Approval

1. ***The extent to which the PUD enhances the implementation of the desired future character for the land of the proposal beyond what could be achieved by base zoning.*** Complies.

   The Hidden Hollow site, designated in the Comprehensive Plan as District 3: Town Residential Core, is envisioned to contain a variety of residential densities, a variety of residential types, and a variety of building sizes in order to maintain and meet our Community's Growth Management and Local Workforce Housing goals.

   Under base zoning, the land could be divided into approximately 87 individual single

family lots. This would result in a single residential type that would contain a single overall residential building size. The density of the overall development would be 8.7 units per acre. In addition, the overall infrastructure requirements would result in an inefficient use of the land and result in high maintenance costs, making the project a less viable option for providing Local Workforce Housing. This base zoning approach would not meet the vision for land within District 3: Town Residential Core as stated above. Under the PUD option, the project will provide for a variety in unit type and building size, as well as the residential density necessary to meet the Community's Growth Management goals.

Redevelopment, revitalization, and reinvestment within the Subarea are highly desirable in Comprehensive Plan Subarea 3.2, and that the future character of the Subarea will include some increased density and larger buildings than in East Jackson. The Subarea vision includes locating multifamily structures on larger residential lots and along mixed use corridors allowing the density and intensity to be greater than what is found in other areas, with the understanding that parking of these multifamily structures should be minimized and screened as much as possible.

The Hidden Hollow Project meets this PUD requirement by virtue of the overall size of the property and the ability for a property of this size to accommodate multifamily structures and provide greater density and intensity without having negative impacts to the surrounding neighborhood. The parking for the project is predominantly located within below grade parking structures, enclosed parking lots, and individual garages, meeting the need for screening parking. The amount of parking is minimized while accommodating the needs of residents. The site plan allows for additional on street parking opportunities should this prove functionally necessary.

2. ***The findings for the applicable PUD option found in Article 4.***

   Please see discussion below under section **4.4.2.E.2. PUD Findings for Approval**.

3. ***The applicable findings for the amendment of an existing PUD or other special project found in 8.2.13.D.*** Not Applicable.

   The land is not subject to a previous PUD approval and therefore this finding is not applicable.

4. The findings of Sec. 8.7.1.; and

Please see discussion below under section **8.7.1.C. LDR Text Amendment Findings for Approval**

5. The findings of Sec. 8.7.2.

Please see discussion below under section **8.7.2.C. Zoning Map Amendment Findings for Approval**

III. 8.7.1.C. LDR Text Amendment Findings for Approval - The advisability of amending the text of these LDRs is a matter committed to the legislative discretion of the Town Council and is not controlled by any one factor. In deciding to adopt or deny a proposed LDR text amendment the Town Council shall consider factors including, but not limited to, the extent to which the proposed amendment:

1. Is consistent with the purposes and organization of the LDRs. Complies.

The purpose and intent of the LDRs is to implement community vision, implement common values of community character, including ecosystem stewardship, growth management, quality of life, implement the illustration of our vision, and have predictable regulations, incentives and allowances.

As discussed elsewhere in this submittal, the Hidden Hollow project is consistent with the community vision for the Core Residential Subarea and implements the illustration of this vision as described in the Comprehensive Plan. The project utilized the predictable regulations, incentives and allowances of the PUD section of the LDRs as described in the PUD findings for approval.

2. Improves the consistency of the LDRs with other provisions of the LDRs. Complies.

The Hidden Hollow project implements the allowances and incentives considered within the PUD section of the LDRs and the allowances and standards of the UR zone district. The developer will provide the Town with a detailed and explicit Master Plan for the PUD that will ensure complete and predictable guidance for reviewing and ensuring compliance with the PUD approvals, and will ensure the consistency and the compliance of this project with the LDRs.

3. Provides flexibility for landowners within standards that clearly define desired character. Complies.

The project utilizes the flexibility of the PUD standards, and provides the basis for a master plan that will guide the construction of the buildings and landscape to be developed over time and achieve the desired character of the area.

4. Is necessary to address changing conditions, public necessity, and/or state or federal legislation. Complies.

Approval of a PUD requires a text amendment to the LDRs to ensure the changing conditions of the property are clearly understood and regulated.

5. Improves implementation of the Comprehensive Plan. Complies.

As discussed elsewhere in this submittal, the project implements the Comprehensive Plan's vision for the Core Residential neighborhood. A text amendment codifying the standards of the project is necessary to ensure implementation of this consistency with the Comprehensive Plan.

6. Is consistent with other adopted Town Ordinances. Complies.

As evidenced herein, the project is consistent with the recently adopted District 2 zoning and, to the knowledge of the applicant, the application is consistent with all Town Ordinances.

IV. 8.7.2.C Zoning Map Amendment Findings for Approval - The advisability of amending the Official Zoning Map is a matter committed to the legislative discretion of the Town Council and is not controlled by any one factor. In deciding to adopt or deny a proposed zoning map amendment the Town Council shall consider factors including, but not limited to, the extent to which the proposed amendment:

1. Is consistent with the purposes and organization of the LDRs. Complies.

The purpose and intent of the LDRs is to implement community vision, implement common values of community character, including ecosystem stewardship, growth management, quality of life, implement the illustration of our vision, and have predictable regulations, incentives and allowances.

As discussed elsewhere in this submittal, the Hidden Hollow project is consistent with the community vision for the Core Residential Subarea and implements the

illustration of this vision as described in the Comprehensive Plan. The project utilized the predictable regulations, incentives and allowances of the PUD section of the LDRs as described in the PUD findings for approval.

2. Improves implementation of the desired future character defined in the Illustration of Our Vision chapter of the Comprehensive Plan. Complies.

As discussed elsewhere in this submittal, the project implements the Comprehensive Plan's vision for the Core Residential neighborhood, as well as the overall vision of the Comprehensive Plan, specifically the principles of Growth Management. A Zoning Map amendment codifying the specific area of the project is necessary to ensure implementation of this consistency with the Comprehensive Plan.

3. Is necessary to address changing conditions or a public necessity. Complies.

Approval of a PUD requires an amendment to the Zoning Map to ensure the changing conditions of the property are clearly understood and regulated.

4. Is consistent with the other adopted Town Ordinances. Complies.

As evidenced herein, and, to the knowledge of the applicant, the application is consistent with all Town Ordinances.

V. 4.4.2.E.2 PUD Findings for Approval - Any PUD-ToJ proposal may be approved only if all of the following findings are made:

a. That the proposed project substantially achieves the stated purposes (as applicable) of this Section, and that it is an appropriate and legitimate application of the PUD-ToJ process. Complies.

The purpose of the Planned Unit Development (PUD) option is to *"permit variation from the strict application of the zoning districts in order to achieve specific community goals that enhance the community's implementation of the Jackson/Teton County Comprehensive Plan. The intent of PUD zones is that large or complex developments under unified control be planned as a single, continuous project with greater design flexibility".*

As a ten-acre site that is under unified control, this property presents an opportunity to develop a project under a single master plan approach. As presented, the project is designed as a complete neighborhood, maximizing variety in unit type, building size and providing for density and intensity of use that does not have a negative impact to

surrounding land uses while minimizing internal infrastructure needs.

More specifically, intent of the PUD Option is to *"provide a mechanism for land development through an overall, unified approach rather than the traditional lot by lot approach. The PUD-ToJ allows for a variety of types of residential development and encourages appropriate mixes of residential product types."* The specific purposes are identified below followed by a discussion of how the Hidden Hollow project addresses each:

1. ***To encourage flexibility, innovation of design and variety of development types in order to promote the most suitable use of a site.***

   The 10-acre site, accessed by a single street and bordered on the east and north by the National Elk Refuge, on the west by state and federal agencies, and on the south by the Kudar Motel and public land owned by the Town of Jackson and the Teton County School District, housing The Davey Jackson Elementary School and Rec Center. Its location in close proximity to commercial services is a singularly unique site within the Town of Jackson.

   Using the PUD option provides the design flexibility to locate the densest residential uses bordering the US Forest Service property, which will be minimally affected by this higher intensity use. The perimeter of the site on the north and east, fronting the Elk Refuge, are planned to contain the lower density single family home and townhome sites. This approach allows for a minimal amount of road infrastructure and to provide necessary parking within below grade and individual unit garages, maximizing the use of the site for the residential and open space uses. The site contains wetlands which are designed to function as amenities and for stormwater runoff treatment purposes.

2. ***To facilitate efficient provision of streets, utilities and municipal services.***

   The project proposes the single access drive from North Cache to the King Street terminus to be the only Town street, limiting the municipal service of street maintenance to only this area. This access is an efficient use of a single town street providing access to the overall development. The interior streets of the development are limited to a single road accessing the single family and townhouse units at the perimeter of the site. The dense apartment buildings are accessed via individual below grade parking access drives, with additional at grade parking being centrally located between the buildings. This centrally located parking area serves as a secondary drive for all residents should the need occur. Additional on-street parking could be accommodated throughout the development.

As a single development, access to utility services for water and sewer service can be consolidated, providing for efficiency in the provision of utilities. In addition, stormwater runoff is primarily handled on site through the use of project infrastructure, including wetland area that can be used as "green infrastructure" to treat the runoff, limiting the need for maintenance costs associated with "grey infrastructure".

3. To provide a functional system of pathways, both on and off site.

The project is designed to provide for pathways and sidewalks within the site, which also connect to existing, planned, and potential pathway connections. Pathway access to the site is from North Cache Street along the Mercill Ave extension.

Secondary access can be provided from the north terminus of King Street. This access provides the opportunity to provide a pathway through the site, between the Forest Service property and the westernmost apartment buildings and allowing access to potential trail systems within the Elk Refuge along the north perimeter of the site and to the Wyoming Game and Fish property along the western boundary of the site.

4. To achieve a compatible land use relationship with the surrounding area.

As discussed above, the site is bordered by the National Elk Refuge, federal and state governmental agencies, the Town of Jackson, Teton County School District, and private lands occupied by a motel.

The proposed development is primarily compatible with these surrounding uses. The least density is along the border of the Elk Refuge, minimizing the impact to natural resources from the development. The densest portion of the development borders the Forest Service land and will have a complementary relationship with the manner in which the Forest Service uses their property.

Residential development is primarily set back from the Recreation Center and the Elementary School maximizing the compatibility of uses. Where necessary, the owner will provide a suitable barrier from the Elementary School and the development to avoid any conflicts. In addition, the applicant proposes to continue the use of this southeast corner as an interpretive area for students.

5. To preserve the unique, natural, scenic, historical and cultural features of a site.

The site is a previously developed parcel and is not within the NRO or the SRO. There are no historical resources on the site. Several old buildings were salvaged by the applicant in the effort to divert waste from the landfill. See Building Reuse & Recycle Memo in Section 8. Additionally, there were a significant number (24) of mature trees onsite that would have been destroyed during the re-development. The applicant hired a reputable contractor skilled in tree relocation to construct a temporary nursery until they could be replanted during execution of the future landscape plan. See Tree Preservation and Temporary Nursey Memo in Section 8.

The most significant natural resource on the site is the existence of wetlands. As detailed in the Environmental Analysis attached in Section 6 of this Sketch Plan application, these wetlands were found in a degraded condition after years of neglect, disconnection from their primary water source (Cache Creek) and were used as a dumping ground by Federal agencies prior to existence of regulations that would otherwise protect these wetlands from such activities. While wetlands will be impacted during this redevelopment, the design provides for minimizing these impacts, and where impacts occur, to re-create wetlands in a manner than will provide for interconnectedness and will maximize the functionality of the wetlands.

6. To develop and preserve usable open space.

The property is within the UR zone district. Under this base zoning, the land is required to provide a minimum of 30% Landscape Surface Ratio. As designed, the project provides a Landscape Surface Ratio of .44, .14 more than is required. Within the landscape surface, significant areas for open space that contain wetlands, a buffer to the Elk Refuge lands, and areas for functional open space such as stormwater detention, snow storage, and pathways. Access to these open spaces are available to all residents of the project and all units have ample access to light and air.

7. To encourage a high quality of design.

The overall site has been designed to maximize the quality of each individual unit while providing a variety of unit types and building sizes. The development will include an overall design theme and will be governed by design guidelines that will ensure the quality of design of individual buildings will match the quality of design of the overall site.

8. To encourage the conservation of energy.

The project will meet all energy efficiency requirements.

9. To promote and encourage affordable housing.

The Hidden Hollow project will, at a minimum, meet all affordable housing mitigation requirements, which will represent a significant number of deed restricted affordable housing units. In addition, the variety of unit types and the provision of a significant portion of the units as condominium units, will present a meaningful opportunity for free market workforce housing, deed restricted as employee based units which will greatly exceed the required affordable housing mitigation required

Currently the project plans provide affordable housing on site for all 59 people required as mitigation. These 59 people will be housed in 27 condominium units located in the Multi-family buildings and will have an income based deed restriction in Categories 1, 2, 3. 45 additional units will be deed restricted as "Employment Based" with no income restriction as per UR-PUD 48 foot height allowance.

While not determined at this point in project planning, the developer is looking to create these excess opportunities through partnerships and agreements with local employers. These conversations, while preliminary, have already begun during this sketch plan process.

b. That the proposed project is in substantial compliance with all applicable standards and criteria of this Section. Complies

As discussed in the overall program for the project and shown on the proposed site plan(s) the project meets the base development standards within the underlying UR Zone District.

The flexible development standards found within the PUD option of the LDRs allow for some flexibility for setbacks, density, height, parking, cross aisles, tandem parking, backing into roads, and standards for public and private streets.

The project meets these requirements. Of particular note, is the manner in which the project meets the flexible standards for parking, height, and density.

The project provides parking in an amount that is necessary and functional to

accommodate the development. This includes one space per one-bedroom condominium, two spaces for two and three apartments, one-quarter spaces per apartment for guest parking, two spaces for each town home and four spaces for each single family home. Considering the project location, in close proximity to commercial services, Town amenities, including Town Square, the Rec Center, and the School, the project is in a location that reduces the need to use a car for all trips to and from the project.

The project does plan to utilize the 48-foot height allowance within the flexible PUD standards. This height does not represent an increase in the number of floors permitted in the underlying zoning, but rather provides the owner with the opportunity to provide below grade parking, as envisioned by the Comprehensive Plan. The single family units and the Townhouse units comply with the height standards. For additional discussion see section **2.3.4.E. Additional Zone-specific Standards.**

Density for the project is 168 units on 10 acres of land. This proposed density is a response to the Comprehensive Plan vision for increased density on larger sites when designed and planned collectively. The PUD density standard articulates that while there is no density standard, it is based on the underlying zoning, the mix of unit types and the character of the surrounding neighborhood. The Hidden Hollow site is uniquely situated to provide increased density while minimizing the impact of the surrounding neighborhood. As discussed elsewhere in this submittal, the neighborhood contains uses and open spaces that will be minimally impacted by the density proposed herein. Furthermore, the mix of unit types, ranging from one bedroom apartments to single family homes will comply with the Comprehensive Plan vision for the Core Residential area.

c. That the proposed project substantially meets the character objectives of preservation or enhancement of the zoning district and neighborhood in which it is to be located. Projects which are found to be out of scale and character with their surroundings will not be approved. Complies

The purpose of the Urban Residential (UR) Zone is to provide for high density residential areas and promote affordable housing types as part of a full range of residential uses in a pedestrian-oriented environment. The Hidden Hollow project achieves this through providing a wide range of residential unit types, many of which will be deed restricted affordable housing and, by their very nature, many of which will be attainable as workforce housing.

The existing neighborhood includes a mix of governmental, institutional, commercial and open space uses. This residential development will not have an adverse impact on

these uses or their character. The project is in compliance with the vision for District 3 Town Residential Core and Subarea 3.2 Core Residential as discussed elsewhere in this report.

d. That streets and intersections serving the project will not be reduced to unacceptable levels of service, nor will the safety of motorists, pedestrians, and cyclists be jeopardized. Complies.

As discussed above, included with this submittal is a traffic study on the impacts Hidden Hollow will have on the transportation infrastructure within the Town of Jackson. This study finds that the Hidden Hollow development will have an increased trip generation impact on the North Cache – Mercill intersection. However, this increased impact is mitigated by the fact that this intersection is currently signalized and the increased traffic coming to and from the eastern Mercill extension will flow in a manner that is consistent with the current signalization and will therefore have a reduced impact on the traffic inbound and outbound along North Cache than it would if it were not currently signalized.

In addition, there is the potential for a King Street intersection which will further mitigate this adverse impact to the transportation infrastructure. Multi-modal transportation options are abundant and include several pedestrian and bicycle connections in close proximity to local town commercial services and within walking distance is the Rec Center, the School and the opportunity for pathway connections. Finally, the Town Shuttle A Route operated by START, flows in both East and West bound directions. It has 4 stops with 30 minute intervals all within a one block walking distance to the Mercill and North Cache Intersection. At Final Development Plan the project will consider working with START to further connect these routes with the development.

The pathway connection will have a beneficial effect on the safety of pedestrians and cyclists by providing an alternative route for these transportation modes for the general public as well as the project residents.

e. That the density and distribution of population resulting from the project will not overburden schools, parks, utilities, or other public services. Complies.

The Hidden Hollow project will provide the required school and park exactions that are designed to ensure developments contribute to impacts they have on these services. Public utilities and project utility connections will be designed to ensure the project does not overburden these services.

f. That all adverse impacts associated with the proposed project are effectively mitigated to the extent possible. Complies.

The project will have minimal adverse impacts to the surrounding neighborhood, as discussed elsewhere in this submittal.

E. PROPOSED DEVELOPMENT PROGRAM

I. Development Summary/Dimensional Limitations

Hidden Hollow Dimensional Limitations			
	PUD: Allowed/Required	**Proposed[4]**	**Complies?**
FAR	0.65 or 268,134 SF	0.49 or 203.029 SF	Yes
LSR	0.3 or 123,754 SF	0.44 or 182,278 SF	Yes
Plant Units	1 per unit & 1 per 12 parking spaces (201)	176[1]	Yes
Maximum Lot Coverage	0.5 or 206,257 SF	0.23 or 94,778 SF	Yes
Minimum Lot Size	15,000 SF	9.46 acres[2]	Yes
Height[3]	48' & 35'	48' or less	Yes
Density	no limit	no limit168 units	Yes
Parking	Flexible	390 spots	Yes
Front Yard Setback	Flexible	12'	Yes
Rear Yard Setback	Flexible	10'	Yes
Side yard Setback	Flexible	5'	Yes
1. Will be addressed using a "value based approach" see Section 4			
2. After dedication of Mercill Avenue to TOJ			
3. UR-PUD-ToJ Height Zone Specific standard - 48' for deed restricted/workforce/affordable/employee housing			
4. The Master plan, attached in Section 3, will dictate what the dimensional limitations for which the PUD will be. The number in this table are what is typically allowed and what Hidden Hollow is proposing to demonstrate compliance.			

II. Maximum Scale of Development

1. Will be determined in the forthcoming Master Plan Document

III. Structure Location and Mass

1. All structure locations can be found on the Proposed Site Plan (L.1) found in Section 10.
2. The massing of the structures is shown in the schematic floor plans and elevations found in Section 8.

IV. Building Design

1. Schematic designs with floor plans and elevations can be found in Section 8.
2. A community geothermal source is being considered for all units to provide heat in the winter and cooling in the summer time. This could significantly reduce the carbon footprint of this project by using less electricity and natural gas on site for the purposes on heating and cooling thereby achieving a major community goal outlined in the Comp Plan.

V. Other Information: A Neighborhood Meeting was conducted at Davey Jackson Elementary on Wednesday, May 26, 2016. A tabulation of the survey and feedback was compiled and attached here in Section 5.

VI. Site Development/ Lot Coverage

1. Shown on the Proposed Site Plan in Section 10

F. PHASING PLAN

I. Phase 1 – Infrastructure and rough grading of site– Projected Start: 11/1/16

II. Phase 2 – Projected Start: 4/1/17

i. Up to two (2) Multi-family Buildings for 54 units, consisting of 27 income based deed restricted condominium units (Affordable Housing Mitigation) 18 employment based deed restricted condominium units (48' Requirement) and 9 Free Market condominium units
ii. 13 "free market" single-family Lots
iii. Up to two (3) buildings with 12 "free market townhouse units"
iv. Finished grading where appropriate.

III. Phase 3 – Projected Start: 4/1/18

i. Up to two (2) Multi-family Buildings for 54 units, consisting of 18 employment based deed restricted condominium units (48' Requirement) and 27 Free Market condominium units
ii. Up to three (3) buildings with 12 "free market townhouse units"
iii. All pedestrian facilities and finished grading where appropriate.

IV. Phase 4 – Projected Start: 4/1/19

i. Up to two (2) Multi-family Buildings for 54 units, consisting of 18 employment based deed restricted condominium units (48' Requirement) and 27 Free Market condominium units

ii. Up to two (3) buildings with 12 "free market townhouse units"
iii. All pedestrian facilities and finished grading where appropriate.

***Note 1**: The calculation of units above will not equal 168. We have proposed a phasing plan that will provide as much flexibility as possible at this time. The required housing mitigation is front loaded in Phase 1 and 2.*
***Note 2**: This phasing plan is a projected timeline. It does not match the master plan phasing plan in Section 3 which is legally binding a requires greater flexibility.*

PROJECTED FINAL COMPLETION DATE 4/1/2020

G. ZONE SPECIFIC STANDARDS

I. 2.3.4.E. Additional Zone Specific Standards

1. PUD-ToJ Height. For a PUD-ToJ proposed in the UR zoning district, structure height may be 48 feet provided the following criteria are met.

a. The following standards apply to the amount of additional floor area achieved through the increase in structure height; however, the actual floor area to which the following standards apply may be distributed throughout the structure.
Complies

i. It shall be deed restricted workforce, affordable, or employee housing with an occupancy restriction;

The additional height will result in additional floor area. All additional floor area will deed restricted with an Employee based deed restriction. This consists of approximately 45 units which will be distributed throughout the five multifamily buildings. The floor area and their exaction location will be discussed at Final Development Plan for multifamily buildings.

ii. It may have an employment and/or price restriction.

See above.

iii. It shall be exempt from the calculation of affordable housing required by Division 7.4, but shall not be used to meet the affordable housing requirement for the project.

This floor area is exempt and not included in our overall housing mitigation calculation. The affordable housing mitigation will be met by deed restricting 27 condominium units with an income based deed restriction.

b. The project shall provide the affordable housing required by Division 7.4 on site. Complies

The Hidden Hollow project will provide affordable housing mitigation in a type and amount that complies with the Affordable Housing regulations found in Division 7.4 of the LDRs.

c. The site shall be at least 2 acres to provide opportunity for sufficient setback from, and building height step down to small scale development. Complies.

The Hidden Hollow site is 10 acres and is designed to provide step down from higher development to lower development within the project and on its perimeter

d. The site shall be served by transit within 1/4 mile. Complies

Transit numerous transit services are located within a ¼ mile of the development.

e. The site shall be within 1/4 mile walking distance from numerous commercial services routinely needed by residents. Complies.

The Town Square, as well as the commercial development along North Cache Street is well within a ¼ mile of the development.

f. The additional building height shall not increase the floor area allowance or decrease the required open space. Complies

The increased height is for the purpose of providing below grade parking and does not increase floor area or decrease required open space – the project is in compliance with both of these requirements.

H. ENVIRONMENTAL STANDARDS

I. Natural Resource Buffers (Wetlands and Water bodies)

1. **Wetlands** – An Aquatic Resources Inventory was conducted by Y2 Consultants in September of 2014. On March 17, 2015 a request for verification of delineated

wetlands was presented to the Department of the Army who verified the delineation in a letter dated April 9, 2015. 0.97 acres of wetlands were found onsite of varying types and functionality. Subsequent to this work, a Zoning Compliance Verification (ZCV) was issued by the ToJ confirming that these wetlands would be regulated by the ToJ in addition to the Department of the Army. It was also found that these wetlands have marginal productivity for habitat and limited connection with a naturally occurring water source since Cache Creek was disconnected nearly 50 years ago. Current ground water monitoring data supports that a portion of these wetlands will be re-classified as agriculturally induced and no longer regulated. This determination has been completed and sent to Tom Johnson of the Army Core of Engineers for final determination. See the letter from Brenda Younkin at Y2 Consultants in Section 7. This development proposal takes into account this determination which will be finalized during the Sketch Plan approval process. All documentation referenced above can be found in Section 7.

2. **Wetland Fill, Enhancement and Mitigation** –Much of which are degraded and semi-productive in terms of value to wildlife. See Aquatic Resources Inventory for details on the conditions of wetlands. The site plan proposes to disturb 0.16 ac of degraded wetlands requiring 2/1 mitigation of 0.32 acres of new enhanced wetlands. There is adequate room to accommodate this mitigation on site and in kind. Currently the mitigation is planned for areas east of the Single family home sites eastern boundary of the property. Future protection of these areas will be include in the Covenants, Conditions and Restrictions for the development. See the map in Section 7 for an accurate map for what wetlands are being impacted.

3. **Wetland Setback** = 30' for naturally occurring and mitigated wetlands – this buffer can be encroached for wetlands that are created as part of mitigation.

II. Wildlife friendly fencing

1. Elk Fence – The fence on the eastern boundary of the parcel is designed to keep Elk from crossing into the property and is 8' in height. This fence is an existing non-conformity that will be allowed to remain.
2. Northern Fence – As part of the development the applicant will work with the Elk Refuge to construct a wildlife friendly fence on the northern boundary of this parcel so the ownership is clearly delineated to visitors of the Elk Refuge Grounds.
3. Southern Fence – Currently there is a dilapidated fence that separates the 10 acre parcel from the Rec Center and the School. The applicant will work with School District and the Town of Jackson to remove this fence. There are no plans to rebuild it.
4. Area A fencing – Fencing will be allowed on the Single family lots in Area A. These fences will be governed by fencing rules contained within the Design Guidelines.

These fencing rules will comply with Town of Jackson LDRs.

III. **Water Quality –** there are no existing streams or water bodies on site. Nonetheless, care will be taken during construction by using Best Management Practices for erosion control and ensure that stormwater runoff does not impact the remaining wetlands or runoff onto adjacent properties. A grading and erosion control permit will be required prior to development, and a Stormwater Pollution Prevention Plan (SWPPP) will be required by the Wyoming Department Environmental Quality (DEQ) since the disturbance will be over 1 acre. A stormwater retention plan will also be detailed in the final development plan.

I. SCENIC STANDARDS

I. **Exterior Lighting Standards** – All exterior lighting will be downcast and abide by the standards in Division 5.3 Scenic Standards and will be more specifically analyzed during building permit.

II. **Scenic Resource Overlay (SRO) Standards** – This site is not within the mapped areas of the Scenic Resource Overlay and therefore this standard is not applicable.

J. NATURAL HAZARD PROTECTION STANDARDS

Floodplains – A portion of this 10-acre parcel is inundated with FEMA Flood Zone A where base flood elevations need determination. This work will be completed and submitted concurrently with the Final Development Plan.

K. LANDSCAPING STANDARDS

All landscaping standards will be complied with at Final Development Plan. This includes the completion of a landscape plan designed and stamped by Landscape Architect licensed in the State of Wyoming. Additionally, 176 plant units are current estimated as the requirement for this project. The landscape plan will detail how this requirement will be met. The plan will also detail how general landscaping standard will be met and a program for installation and maintenance will be provided.

L. SIGNS

No signage is proposed at this time. The master plan will govern signage in perpetuity.

M. GRADING, EROSION CONTROL, STORM WATER

See subsequent Engineer's report in **Section 4** of this application for discussion on these items.

N. ALLOWED USES & REQUIREMENTS

The proposed uses within the Hidden Hollow development include single family detached residential, townhome and condominium uses. These are all either by right or basic uses allowed

within the UR zone district.

O. PARKING AND LOADING STANDARDS

See subsequent Engineer's report in **Section 2** of this application for discussion on these items.

P. SUBDIVISION STANDARDS

1. **Standards applicable to all Subdivisions -** Hidden Hollow with adhere to all standards provided in Section 7.2.2 of the LDRs which include Developer responsibilities, Required permits, installation, working with a professional engineer, oversizing and off-site improvements, and acceptance by Town.
2. **Land Division Standards –** Will comply with Section 7.2.4 below
3. **Condominium and Townhouse Subdivision -** Hidden Hollow with adhere to all standards provided in Section 7.2.4 of the LDRs which include recordation of a Final Plat, adhering to Building and Fire Code, Tenant Notification, Site Compliance, and Townhouse Subdivision which includes common lots, maximum lot sizes and building official review.

Q. AFFORDABLE HOUSING MITIGATION

See Master Plan attached in Section 3 for the Affordable Housing Mitigation Plan.

R. TRANSPORTATION FACILITIES

I. Access to Roads, Streets and Highways - See plan sheets provided in Section 2.
II. Streets Alleys, and Easements- See plan sheets provided in Section 2.

S. REQUIRED UTILITIES

I. Potable Water Supply – See Engineer's Report and plan sheets located in Section 2
II. Sanitary Sewer Systems - See Engineer's Report and plan sheets located in Section 2
III. Irrigation Ditch Systems and Design – No irrigation ditches are currently planned as part of this development. Wetland mitigation and stormwater retention move involve the use of interceptor ditches but the details of those concept will be provided during Final Development Plan.

IV. Fuel Storage Tank – No Fuel storage is currently planned for this project

T. OPERATIONAL STANDARDS

I. Refuse and Recycling - All refuse and recycling will be handled on site, in the garages of the each of the multifamily building, and separately onsite with the Townhomes and Single Family lots.

SECTION 2 – ENGINEER'S REPORT

A. INTRODUCTION

This Sketch Plan Engineer's Report is intended to provide the engineering basis for design and to discuss engineering related issues for the development of the 168 residential units. Supporting infrastructure will be new throughout the project and attached to Town of Jackson infrastructure at specific points intersecting the 10-acre parcel. The basic layout and design elements are shown on the plan set attached in Section 10 and the general engineering items are discussed here.

B. SETTING

Historically the site was hay meadow, rangeland, and natural wetlands adjacent to the Elk Refuge. Over time and under the ownership of the US Forest Service the parcel was developed for seasonal housing that was fairly spread out across the site. Willow, shrub, and meadow grass surround the site and it is intermittently inundated by semi-productive wetlands that have been disturbed by the activities of the USFS. Several grading activities have occurred over time that has disconnected the wetland on site from their original water source, Cache Creek. Specifically, Cache Creek was rerouted through an underground pipeline under North Cache Street to reconnect to Flat creek. The remaining semi-productive wetlands were further disturbed by excavation to create a pond to provide a water supply for livestock. Additionally, recent surveys of the property found a significant amount of trash and debris discarded in the wetland over time, perhaps prior to regulation of such activities. The attached Aquatic Resources Inventory in Section 6 provides a more detailed description of the wetland condition.

Ground water is high and lowers as one works easterly towards the Elk Refuge boundary. Soils are semi-permeable with a high amount of clay and low amount of structural components, thus making construction challenging going forward. The attached Geotechnical Report in Section 6 provides a more detailed description of the soil conditions of the site. There is an 8' high elk fence on the eastern boundary. There are several existing utilities on site

Recently, with the USFS more in need of a new Facility, and less of a need of substantial acreage in the ToJ, they sold 10 acres to the applicant who proposes developing 168 units.

C. GRADING, EROSION CONTROL, DRAINAGE, & STORMWATER

Development on the site leaves extensive green space and natural ground. These areas are sufficient to accommodate storm water runoff. The parcel is relatively flat and underlain by semi-permeable soils. The units are spaced to provide generous landscape areas around the buildings. Significant runoff is expected from the two large building units and the corresponding impervious area compared to the predevelopment calculations. These storm water flows are substantial, but not difficult to manage. The peak storage for the 100-year event is around 4400 cubic feet, and can be handled in a series of two-foot-deep detentions areas placed around the site equaling approximately 2,400 square feet. There are several areas on site that could accommodate these

detention ponds. For aesthetic and the functionality of the project, the storm water will be handled in several locations on site and in aggregate will be able to handle the flow calculated for the impervious areas of this project. The general control strategy is to create many small detention areas throughout the site to intercept runoff before it has an opportunity to concentrate and cause erosion. To do this we will evaluate the major contributors to runoff (i.e. downspouts, roof valleys) and create depressions in the landscape to intercept concentrations of runoff and allow them to infiltrate or, in a bigger event, release at a reduced rate. Preliminary Storm Water Calculations are provided here in Section 4 of the Sketch Plan Submittal.

Prior to grading activities such as installation of roads and utilities, a Grading and Erosion Control Permit will be submitted to the ToJ for approval.

D. SOILS AND SITE CONDITIONS

A geotechnical investigation by Y2 Consultants was published on April 27, 2016. Most importantly to note is the site is presented with soft clays and high ground water making construction of subsurface features such as foundations and garages challenging. Specific recommendations for construction are made within the Geotechnical Report located in Section 5.

E. ROADS AND ACCESS

Access to the site is currently from Rosencrans via North Cache Street, aka Wyoming State Highway 89. Rosencrans is an existing spur road that serves the USFS development and access to the seasonal housing previously on this parcel. Rosencrans will no longer serve this project. Mercill Ave will be the main access to this parcel for the future. On the east side of North Cache, Mercill Ave will be developed in to a two lane, 40-foot-wide road with sidewalks on either side. To match this program on the west would be difficult given that the 10 acre parcel currently only has a 40’ wide flag pole sliver of property for access. At this time a 10’ wide easement is proposed on either side of the 40’ wide sliver making the entire access 60’ wide. From south to north this additional 20’ will provide enough room for a 6’ wide sidewalk, two 10' travel lanes, parking on both sides of the street, a multi-use pathway, and buffer strips. This cross section requires a 10’ wide easement yet to be negotiated with Kudar Motel and a 10' wide easement yet to be negotiated with the USFS.

Both of these neighboring entitties will benefit from collaboration on this access program and the ToJ has offered to help negotiate both options. However, should negotiations fail to produce the proposed cross section the 40’ sliver will provide enough width for access of vehicles and pedestrians using two 10' travel lanes, a 10' wide multi-use pathway, and buffer strips, or a similar cross section providing for the best access configuration given the dimensional constraints.

F. TRAFFIC

Included with this submittal is a traffic study on the impacts Hidden Hollow will have on the transportation infrastructure within the Town of Jackson located in Section 4. This study finds

that the Hidden Hollow development will have an increased trip generation impact on the North Cache – Mercill intersection. However, this increased impact is mitigated by the fact that this intersection is currently signalized. The increased traffic coming to and from the eastern Mercill extension will flow in a manner that is consistent with the current signalization and will therefore have a reduced impact on the traffic inbound and outbound along North Cache than it would if it were not currently signalized.

There is the potential for a King Street intersection along the projects southern boundary. This connection will further mitigate impacts to the transportation infrastructure. Multi-modal transportation options are abundant and include several pedestrian and bicycle connections in close proximity to local town commercial services and within walking distance of the Rec Center and the School. Finally, the Town Shuttle A Route operated by START flows in both East and West bound directions. It has 4 stops with 30-minute intervals all within a one block walking distance to the Mercill and North Cache Intersection. At Final Development Plan the project will consider working with START to perhaps reroute these routes through the development. For more specific details, see the attached Traffic Study in Section 4.

G. PARKING

Parking for this project is currently planned to include one spot per one-bedroom unit, two spots per 2 and 3 bedroom units, and .25 spots per unit for guest parking for the multifamily apartment buildings. The first floor of these buildings, which is situated in the ground by 3 feet, will provide a minimum 28 spaces under each building. This parking will be screened and out of site from the pedestrian view as directed by the Comp Plan. Surface parking for the multi-family apartment buildings will be elevated 5' from existing grade as shown in the attached Site Plan in Section 10 that the grade difference will allow users of the surface parking lot to enter the second floor without the requirement of an elevator or stairs. The single-family lots will have four spots per unit and the multi-family townhomes will have 2 spots per unit. There is also on street parking provided that will have a traffic calming effect and reduce vehicle speeds through the neighborhood. A total of 390 parking spaces are provided on site where under the aforementioned guidelines 345 spaces would be needed.

H. PATHWAYS

A 10' multi-use wide pathway is planned to be parallel to, and on the north side of, Mercill Avenue. This will provide pedestrian and bicycle connectivity from North Cache to the site. At the intersection of King Street this path will turn north and run parallel with the common boundary of the remaining USFS parcel behind two of the multi-family apartment buildings. This 15' strip between the property boundary and the back wall of the building may at first look like a "no mans land" in plan view. There is a gas line easement along this property line and the project team will make efforts to mitigate this area through grading features, landscaping and aesthetic building and window treatments. These efforts will help provide a more human scale to this area in the hopes it will be utilized for more than just a setback. This pathway continues westerly and then

northerly along the western boundary of the site with an eventual connection to pathways planned to cross in to the Wyoming Game and Fish parcel with the help of the ToJ Pathways. Connection with King Street will be essential to link pedestrian and bicycle trips traveling southerly to East Jackson or northerly from the Rec Center and the School. A sidewalk or pedestrian only pathway is planned adjacent to the access road through the site. This sidewalk will continue north through the property past the enhanced wetland feature and off the site to a connection with a future pathway through the Elk Refuge. Finally, on the southern boundary, is an existing nature path used sparingly by the School and Rec Center. This use will be redeveloped and continued with the hope for greater utilization as interpretive learning center in view of the Elk Refuge.

I. WATER & WASTEWATER

Part of the water system work will be extending the ToJ main lines to serve this new development, and therefore a Wyoming Department of Environmental Quality Permit to Construct will be required. The project has three potential connections to ToJ water. Currently the most significant concern is developing enough capacity to provide an adequate firefighting supply to all units. The historical connection to this parcel is through the remaining USFS parcel under Rosencrans Drive. The project will connect to this 8" water line and perform a loop to the 8" main on the intersection with Cache. At this stage we have determined that there is enough pressure to provide for firefighting supply depending on the design required by the Fire Marshall. The applicant with collaborate with the fire marshall to determine the best design for the project which will drive the required flows and pressure.

Wastewater will be routed to and from Mercill Avenue from the 8" main that connects to the manhole that is about 153 east of the intersection with North Cache. The team has been informed by Public Works that sewer lines in this area are nearing capacity and adding 168 units would put additional stress on the system. More capacity would be needed in the future.

These water and wastewater challenges are external to the project, but essential to overcome if Hidden Hollow is to be successful. The project team is optimistic that these challenges can be met in cooperation with all stakeholders, including the ToJ. The permitting documents will be prepared and submitted to the DEQ prior to the first public hearing for the Final Development Plan after Sketch Plan approval. Preliminary estimates of water demand and wastewater generation are provided in Section 5 of this Sketch Plan Application.

J. CABLE UTILITIES AND GAS

Power and Communications lines will be run to all units on the project. Lower Valley Energy Electrical Power, Century Link Communications, Silverstar Fiber-Optic Communications, Lower Valley Energy Natural Gas, and Charter Cable Television and Communication services are all available to this location. Opportunities to connect will be afforded all units pending negotiations with these entities. Further details and specific location of these connections will be developed

during a Final Development Plan.

K. SNOW STORAGE

The required snow storage for this project is 3,723 SF or 0.08 acres. A majority of this area is found on southern boundary just as you enter the site as indicated on Proposed Site Plan shown in Section 6 of this Sketch Plan Application. Additionally, there is adequate room in aggregate throughout the site to handle more than the required snow storage per the LDRS.

L. GROUNDWATER, STREAMS, & RIVERS

High groundwater exists on this parcel. Historic information indicates groundwater elevations fluctuate at it shallowest periodic depths between 2 feet below ground surface on the northwest corner of the lot to about 7 feet below ground surface on the southeast corner of the parcel. Building foundations will need to take in to account the elevation of groundwater and utility installation should be timed to avoid the high cost of dewatering during high groundwater periods.

SECTION 3 – MASTER PLAN

Please Note: The Below Hidden Hollow Planned Unit Development Master Plan is a Draft Master Plan and is submitted to the Town of Jackson for the purposes of providing a document that contains the best information currently available to the applicant regarding the information that is necessary for the PUD Master Plan. It is not to be relied upon as a commitment by the applicant to accommodate or otherwise accomplish the statements made herein. Rather it is a starting point for the Applicant and the Town of Jackson to use in developing a Final Master Plan and is therefore subject to change.

HIDDEN HOLLOW PLANNED UNIT DEVELOPMENT MASTER PLAN

Table of Contents:

D.2. Required Subdivision and Development Permit Options
D.3. Affordable and Employee Housing Standards
D.4. Infrastructure Requirements and Standards
    1. Transportation Plan
    2. Stormwater Management Plan
    3. Water and Sewer Management Plans

Attachments. *see* Section 1.9

Division 1. Hidden Hollow Planned Unit Development

1.1. Title

The title of this document is established by Section _____ of the Town of Jackson Land Development Regulations as “Hidden Hollow Planned Unit Development Master Plan”, and is referred to throughout the document as the ”PUD Master Plan” or “Master Plan” or “HHPUD”.

1.2. Purpose, Background and Intent

A. Purpose

This Master Plan, approved by the Planning Director of the Town of Jackson, Wyoming pursuant to the Town of Jackson Land Development Regulations (LDRs) effective _____, establishes the entitlements, standards and conditions for the development and use of the Hidden Hollow Planned Unit Development (PUD). This Master Plan establishes the zoning for lands within the boundaries of the PUD, which are more precisely defined and depicted Attachment _____.

B. Background

The Hidden Hollow PUD (HHPUD) is located on an approximately 10-acre parcel of land formerly owned by the USFS. The 10 acre HHPUD site is a portion of a larger USFS site that was used as headquarters for the Bridger Teton National Forest. In 2015 the USFS sold the 10 acre Hidden Hollow site to Hansen and Hansen LLP and retained approximately 5.3 acres of land directly west of the Hidden Hollow Site. Prior to the transfer of ownership of the property, the Town of Jackson zoned the Hidden Hollow site Urban Residential (UR).

In July of 2016, Hansen and Hansen submitted a UR-PUD Sketch Plan application for the site that included a proposal for 168 residential units and the infrastructure improvements to support this development. Residential units are a mix of condominium, townhouse and single family units that will provide the Town of Jackson and the overall Teton County community with a much needed solution to the workforce housing shortage within the community. The project includes a dedication to the Town of Jackson of an eastern extension of Mercill Avenue to a point that intersects with a North King Street extension.

The Hidden Hollow UR-PUD entitlements, standards and conditions within this Master Plan represent a variation from the strict application of the Town of Jackson UR zone district and applicable development standards within the Town of Jackson LDRs in order to achieve specific community goals that enhance the community’s implementation of the Jackson/Teton County Comprehensive Plan.

C. Intent (Town of Jackson LDR Section 4.4.2.A.)

The Hidden Hollow Planned Unit Development provides for land development through an overall, unified approach rather than the traditional lot by lot approach. The HHPUD allows for a variety of types of residential development and encourages appropriate mixes of residential product types. The purpose of the HHPUD is:

1. To encourage flexibility, innovation of design and variety of development types in order to promote the most suitable use of a site.
2. To facilitate efficient provision of streets, utilities and municipal services.
3. To provide a functional system of pathways, both on and off site.
4. To achieve a compatible land use relationship with the surrounding area.
5. To preserve the unique, natural, scenic, historical and cultural features of a site.
6. To develop and preserve usable open space.
7. To encourage a high quality of design.
8. To encourage the conservation of energy.
9. To promote and encourage affordable housing.

1.3. Applicability

A. Applicability of Master Plan

This Master Plan applies only to lands within the HHPUD boundaries, as depicted on the Official Zoning District Map and shown within Attachment A of this Master Plan. There also exist separate individual documents that establish land use standards for land areas within the HHPUD. These documents include, but are not limited to the Subdivision Improvements Agreement applicable to these lands, the Hidden Hollow Declaration of Covenants, Conditions and Restrictions, the Hidden Hollow Owners Association bylaws, and the Hidden Hollow Design Guidelines. Refer to these documents for applicability of land use standards contained therein to lands within the HHPUD.

B. Expiration, Extension and Phasing

B.1. Expiration of Resort Master Plan

Time Frame: The Master Plan shall expire five (5) years from the date of approval of this Master Plan unless a sufficient application for approval of a Development Plan is filed with the Planning Department. The approved Master Plan shall expire ten (10) years from the date of approval unless there is commencement of construction or operations of land uses or activities in accordance with a phasing plan approved in conjunction with the approval of a Final Development Plan.

Effect: Upon expiration of the Master Plan, LDR Section 8.7.3.G.2. shall apply.

B.2. Extension

1. The Master Plan expiration date may be extended by the Town Council provided a written request for extension is received at least thirty (30) days prior to expiration of the Master Plan.
2. **Procedure:** The request for extension shall be reviewed by the Town Council at a duly noticed public meeting, by which time a public hearing notice shall be advertised and any necessary information pertinent to the extension request can be made available. The Master Plan shall be deemed extended until the Town Council acts upon the request for extension.
3. **Grounds for Extension:** The grounds for extending the Master Plan approval shall be specified by the Board and shall include, but not be limited to, the following:
    a. **No change in conditions**: Conditions in the community have not substantially changed since the original Master Plan approval. No extension shall be granted if the Town Council finds that changes in the community result in the HHPUD plan being inconsistent with the community's land use patterns, the LDRs, or the community's ability to provide infrastructure and services to accommodate the HHPUD; and
    b. **Good faith efforts**: Activities and investments on the part of landowners within the HHPUD demonstrate good faith efforts in pursuing the development permitted by the Master Plan.
4. **Reconsideration:** If development within the HHPUD fails to proceed in general accordance with the approved phasing plan, the Town Council may require reconsideration of the Master Plan as appropriate.
    a. Amendment: Amendment of the phasing plan shall be appropriate of either an acceptable alternative phasing plan that meets the standards of this Section or a development schedule acceptable to the Town Council for regaining compliance with the original phasing plan in presented.
    b. **Revocation:** Revocation of the Master Plan shall have the effect of forfeiting all rights within the HHPUD to any further development according to the Master Plan and shall be appropriate if:
        i. No material progress has been made in development of the HHPUD for ten (10 consecutive years, or
        ii. There is substantial noncompliance with the performance objectives specified in the conditions of approval, or the monitoring program, and no agreement can be reached between representatives of the landowners within the HHPUD of applicant of record and the Town Council for bringing the HHPUD development into compliance with the standards of this Section.
    c. **Procedure:** The Town Council shall hold a public hearing, in accordance with Sec. 8.7.3. of the LDRs for the purpose of examining the development that has occurred within the

PUD and is consistency with the Master Plan. The Town Council shall issue a determination as to whether the amendment or revocation of the Master Plan is appropriate, in accordance with the above specified standards. Revocation of the Master Plan shall be accomplished by amending the HHPUD area on the Official Zoning Map from Planned Unit Development Zone to the zone that existed prior to the approval of the Master Plan.

B.3. Phasing Requirements

Development within the HHPUD will occur based on market demand and financial opportunities and limitations. Therefore, no explicit phasing timeline for development of individual residential units, townhouses or apartment buildings is required by this Master Plan. This notwithstanding, all development within HHPUD is required to show all infrastructure, including roads, parking, water and wastewater facilities are adequate, pursuant to the Town of Jackson LDR standards, to support the scale and number of dwelling units submitted for building permit. If improvements to infrastructure is required for development of dwelling units in addition to what exists within or is previously developed within HHPUD, such infrastructure improvements must be completed concurrently with or prior to the issuance of a Certificate of Occupancy for any additional dwelling that require infrastructure improvements.

Below is a projected phasing for completion of various phases within HH UR-PUD. They are based on a beginning date of the effective date of this Master Plan

Phase I:

Within 5 years: Road and utility infrastructure within Area D necessary to serve all proposed development is completed.

Within 5 years: All wetland mitigation within Area D is completed.

Within 5 years: All required pathway and transit infrastructure within Area D is completed.

Within 5 years: All required landscaping within Area D is completed.

Within 5 years: All required affordable housing units are complete and have obtained Certificate of occupancy

Within 5 years: Lots within Area A have been subdivided and all infrastructure necessary for their development is completed. An approved subdivision plat for lots within Area A shall be considered completion of development for Area A.

Phase II:

Within 10 years: All units within Area B are completed and have obtained Certificate of Occupancy

Within 10 years: All Units within Area C are completed and have obtained Certificate of Occupancy.

Phasing plan herein is an estimate and may be subject to changes without requiring an amendment to the Master Plan. All development can occur in a shorter time frame than stated above with no exceptions.

A revised phasing plan that incorporates necessary infrastructure improvements, any housing requirements, and a monitoring plan with performance measures as required by this Master Plan and the LDRs shall be approved by the TC independent from or in conjunction with any required Development Plan. The above notwithstanding, in the event that development generates the need for infrastructure improvements and/or mitigation requirements, those improvements and/or requirements must be completed concurrently with the development that generates the infrastructure need or mitigation requirement.

1.4. Relationship Between Regulations and Interpretation

A. Relationship to Land Development Regulations

When this Master Plan refers to the LDRs, or where they are silent and the LDRs are used for guiding the development or use of properties within the boundaries of the PUD, Town of Jackson LDRs version effective on _____, shall apply. Should future amendments to the Town of Jackson LDRs contain less restrictive standards limitations of restrictions, a Property Owner must apply for a Minor Amendment to the Master Plan to change the LDRs referenced in the Master Plan in order to take advantage of the less restrictive standard. See Minor Amendment procedures section of this Master Plan.

B. Interpretation

The Town of Jackson Planning Director shall be responsible for interpreting this Master Plan and shall base his/her interpretation first, on the information contained within this Master Plan, and second, on the clear legislative intent of the Town Council in its approval and adoption of the Hidden Hollow UR-PUD. With the exception of the modification to the basis for interpretation made herein, the provisions of Section 8.6. of the LDRs effective _____ shall govern the findings to be considered in rendering interpretations of this Master Plan, and the procedure for requesting an interpretation of this Master Plan. Pursuant to 8.6. of the LDRs, only a Property Owner within the boundaries of the HHPUD may request an interpretation of this Master Plan.

1.5. Administrative Procedures

A. Subject to Land Development Regulations:

Unless otherwise noted in this document, all provisions of the LDRs dated _____, shall apply. In the event of a contradiction between this Master Plan and the LDRs this Master Plan shall govern and control.

B. Procedures and Requirements to Amend Approved Master Plan

B.1 Major Amendments:

Major Amendments to the Master Plan include any expansion or increase to the overall HH UR-PUD area, density, physical development standards, uses or development or subdivision options that cannot be considered a Minor Amendment. Major Amendments to the Master Plan do not include a reduction in the UR-PUD area, density or intensity of use, or a revision to the physical development standards that decreases the allowable maximum or increases the allowable minimum. Major Amendments to the approved Master Plan do not include any transfer of development rights from one Area of the HH UR-PUD to another Area, if such transfer does not include an expansion to the overall density of the HH UR-PUD. In such cases, the transfer of development rights shall be considered a Minor Amendment and shall be reviewed and approved as a Development Option Plan pursuant to Sections 8.5.2 and 4.4. of the LDRs.

Only a property owner, or authorized agent of a property owner, within the HH UR-PUD may apply for a Major Amendment to the Master Plan. The Major Amendment shall be reviewed and acted upon pursuant to the procedures set forth in Section 8.2.13.D of the LDRs. The amendment shall be subject to all applicable standards of the LDRs.

B.2 Minor Amendments:

Minor amendments to this Master Plan may be approved by the Planning Director. Minor Amendments will require a Pre-application conference pursuant to LDR Section 8.2.1. The Planning Director shall be required to determine sufficiency of the Minor Amendment application within 14 days of submitting the application and render a decision on the application for Minor Amendment within 30 days after the date of sufficiency. The above notwithstanding, the Planning Director may choose to elevate the Minor Amendment pursuant to LDR Section 8.2.9. The minor amendment shall comply with the following standards:

1. The proposed minor amendment does not increase the FAR permitted in Master Plan Section 2.B.1. – Overall PUD and any increase in density proposed is shown to comply with associated parking requirements, through compliance with the specific parking requirements of the LDRs or through independent calculation.

2. The proposed minor amendment does not materially affect other property owners within the HHPUD.

All of the following findings shall be made in order for the Planning Director to approve Minor Amendments:

1. That the minor amendment is consistent with the PUD-PR Division of the Town of Jackson LDRs dated 10/19/15; and

2. That the minor amendment is consistent with the Conditions of Approval of the HH UR-PUD (Reference application number); and

3. That the minor amendment is consistent with the applicable provisions of the LDRs; and

4. That the minor amendment is consistent with the applicable provisions of the Jackson/Teton County Comprehensive Plan in affect at the time of approval of the HH UR-PUD (Reference application number); and

5. That the amendment provides for greater administrative clarity in carrying out the purpose and intent of the Master Plan; and

6. That the minor amendment reflects changes in the regulations or policy of the Town of Jackson.

B.3. Amendments are Included in Master Plan:

Any Major Amendment approved by the Town Council or Minor Amendment approved by the Planning Director shall thereafter become a part of the Master Plan. The Master Plan shall be revised and amended within 1 year of the final approval of the amendment to reflect the entitlements, standards and conditions approved. Any application to the Town of Jackson that acts upon the approved amendment shall not be delayed by the Town of Jackson as a result of this requirement to amend the Master Plan.

Time Frame: All amendments shall be considered a part of the Master Plan unless the Master Plan is not revised and amended within 1 year of the approval of the amendment to reflect the entitlements, standards and conditions of the approved amendment within one year, at which time the amendment shall expire.

1.6. Establishment of Hidden Hollow PUD

This Master Plan establishes the area of land within the Hidden Hollow PUD.

The HHPUD consists of approximately ten (10) acres of land located off North Cache Street in the northern portion of the Town of Jackson. The PUD is bordered on the east by the National Elk Refuge and is bordered by US Forest Service and Wyoming State Department of Fish and Game land to the west, and private property and the Jackson Elementary School, and the Town of Jackson Recreation Center to the South.

The HHPUD consists of three distinct unit types: Detached Single Family Units, Attached Single Family Units (Townhouses) and condominium units. Each of these distinct unit types are located within distinct areas in the HHPUD. In addition, there is an area within the HHPUD that is common area and contains land uses that support and enhance the overall HHPUD, including roads, utilities, maintenance facilities, open spaces, pathways, wetlands and stormwater treatment facilities. Each of these area contain some level of allowable entitlements and standards that differ from or are in some way distinct from those in other areas. Therefore, where applicable, this Master Plan identifies these separate entitlements, standards and conditions based off of specific area designations.

For the purposes of this Master Plan, the area containing the Detached Single Family Units is identified as Area A, the area containing the Attached Single Family Units is identified as Area B, the area containing the condominium units is identified as Area C, and the common area that contains land uses that support and enhance the overall PUD is identified as Area D. Where no reference is made to a specific Area, the specific entitlements, standards and conditions apply to the overall HHPUD. HHPUD Areas are shown in the exhibit below:

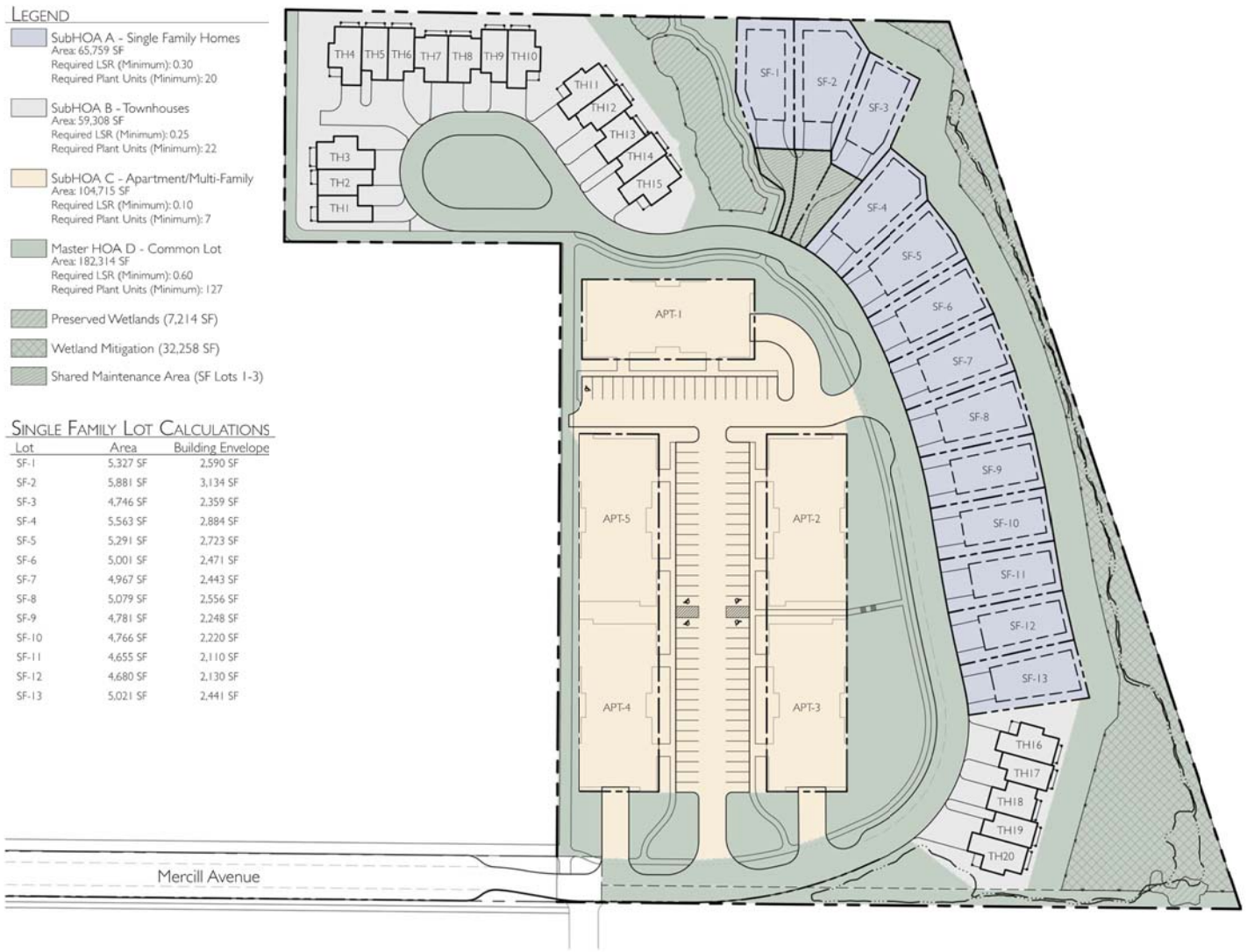
HIDDEN HOLLOW
HOA SUBAREAS
31 AUGUST 2016

LEGEND

- SubHOA A - Single Family Homes
  Area: 65,759 SF
  Required LSR (Minimum): 0.30
  Required Plant Units (Minimum): 20
- SubHOA B - Townhouses
  Area: 59,308 SF
  Required LSR (Minimum): 0.25
  Required Plant Units (Minimum): 22
- SubHOA C - Apartment/Multi-Family
  Area: 104,715 SF
  Required LSR (Minimum): 0.10
  Required Plant Units (Minimum): 7
- Master HOA D - Common Lot
  Area: 182,314 SF
  Required LSR (Minimum): 0.60
  Required Plant Units (Minimum): 127
- Preserved Wetlands (7,214 SF)
- Wetland Mitigation (32,258 SF)
- Shared Maintenance Area (SF Lots 1-3)

SINGLE FAMILY LOT CALCULATIONS

Lot	Area	Building Envelope
SF-1	5,327 SF	2,590 SF
SF-2	5,881 SF	3,134 SF
SF-3	4,746 SF	2,359 SF
SF-4	5,563 SF	2,884 SF
SF-5	5,291 SF	2,723 SF
SF-6	5,001 SF	2,471 SF
SF-7	4,967 SF	2,443 SF
SF-8	5,079 SF	2,556 SF
SF-9	4,781 SF	2,248 SF
SF-10	4,766 SF	2,220 SF
SF-11	4,655 SF	2,110 SF
SF-12	4,680 SF	2,130 SF
SF-13	5,021 SF	2,441 SF



HERSHBERGER DESIGN
LANDSCAPE ARCHITECTURE · PLANNING · URBAN DESIGN

HH UR-PUD Master Plan
8-28-16 Draft

1.7. Definitions to be populated as necessary as Master Plan develops.

Purpose: The purpose of this section is to define words, terms and phrases contained within the Master Plan to explain the relationship between this Master Plan and the Town of Jackson Land Development Regulations. Any term not defined herein shall have the meaning as defined in the Town of Jackson Land Development Regulations effective _____.

Area: Shall mean one or more of the distinct areas within the Overall PUD as shown in Exhibit _____, and include Area A – Detached Single Family Units, Area B – Attached Single Family Units, Area C, Apartment Units, and Area D – Common Area.
Building: Shall mean any structure having a roof supported by columns or walls; and enclosed structure, including tarpaulin structures, designed or used for the housing or enclosures of persons, animals, chattels or property of any kind; or attached appurtenance thereto, but not including an advertising sign board, fence, tepee, tent, or similar temporary structure.
Condominium Unit(s): Shall mean the condominium unit(s) within Area C, which may be developed as traditional one, two and three bedroom condominium units, apartment units and/or as dormitory/studio style units.
Density: Shall mean the number of individual dwelling units, including detached single family, attached single family, apartment, condominium, townhouse, or other type of residential dwelling unit permitted to be constructed or occupied on a lot, site, or other part or portion of the PUD.
Design Guidelines: Shall mean the Hidden Hollow Design Guidelines.
Dwelling Unit: Shall mean any individual dwelling units, including detached single family, attached single family, apartment, condominium, townhouse, or other type of residential dwelling unit permitted to be constructed or occupied on a lot, site, and other part or portion of the PUD.

Floor Area: Shall mean the area of all floors interior to an enclosed building that have at least 5 feet of clearance between floor and ceiling. Floor area shall be measured to the exterior face of the structural members of the wall. Roofed architectural recesses and open covered porches are not considered interior to the building. A building with at least 50% of its perimeter open to the outside shall not be considered enclosed.
Habitable Floor Area – Affordable Housing Units: Shall mean the range of allowable square footage of Affordable Housing Units. The minimum square footage is the actual minimum square footage allowed to be constructed or otherwise provided under the provisions of the Teton County or Town of Jackson Land Development Regulations. Maximum square footage is the maximum amount of square footage which may be credited against the required square footage for a given unit type, regardless of the actual size of the unit provided. The conditions under which reductions may be made are stated below. However, no reduction greater than 20% of the category minimum will be allowed.
Height: Shall mean the vertical distance between the average elevation of the finished grade at the perimeter of a building to the highest point of a building roof. See Attachment 2 for Exhibit showing the method of measuring height within the HHPUD.
Land Development Regulations: Shall mean the Town of Jackson Land Development Regulations effective _____.
Master Plan Shall mean the Entitlements, Standards and Conditions for the Hidden Hollow Planned Unit Development and approved by the Town of Jackson Town Council on _____.
Owners Association: Shall mean the Hidden Hollow Home Owners Association
Property Owner: Shall mean any owner(s) of real property within the Hidden Hollow PUD.
Sales/HOA/Rental Office: Shall mean a sales/HOA/rental office to be located within Area C.
Signage Plan: Shall mean the Signage Plan included within the Hidden Hollow Design Guidelines, which in included herein as Attachment _____.
Single Family Lot: Shall mean any and all of the single family lots located within the boundaries of the Hidden Hollow PUD.
Structure: Shall mean any building, bridge, fence, pole, tower, deck, liquid storage tank, gazebo, pier, dam, culvert, satellite dish, personal wireless telecommunication facilities, or other construction or erection greater than 4 feet in height excluding artwork, such as sculptures.
Townhouse(s): Shall mean Attached Single Family Unit(s) within Area B that may be subdivided as separate units.

1.8. Abbreviations

USFS
PUD
UR
UR-PUD
LDR/LRDs
TC
ToJ
HH
HHPUD
UR-PUD
PUD

1.9. List of Attachments

Attachment 1: Legal Description HHPUD Boundary
Attachment 2: Exhibit Showing Method for Measuring Height within HHPUD
Attachment 3: Hidden Hollow Design Guidelines and Signage Plan
Attachment 4:

Division 2. Standards Applicable the Hidden Hollow UR-PUD

A. Intent and Purpose

The purpose of the Hidden Hollow UR-PUD is to undertake land development through an overall unified approach, rather than a lot by lot approach, allowing for a variety of types of residential development and provide appropriate mixes of residential product types. The intent is to:

1. To encourage flexibility, innovation of design and variety of development types in order to promote the most suitable use of a site.
2. To facilitate efficient provision of streets, utilities and municipal services.
3. To provide a functional system of pathways, both on and off site.
4. To achieve a compatible land use relationship with the surrounding area.
5. To preserve the unique, natural, scenic, historical and cultural features of a site.
6. To develop and preserve usable open space.
7. To encourage a high quality of design.
8. To encourage the conservation of energy.
9. To promote and encourage affordable housing.

B. Physical Development Standards

Standards applicable to the physical development of the PUD are provided within this sub-section. Cross references provided refer to specific sections of the LDRs.

B.1. Structure Location and Mass

	LSR (min)	Lot Coverage (max)	Street Setback (Min)**	Side Setback (Min)**	Rear Setback (min)**	Height (max)	Stories (LO) (Max)	FAR (max)
Overall PUD - All Allowed Uses *	.30	.40	10’	5’	10’	48’	4	.65
Area A – All Allowed Uses *	.30	.40	25’	8’	5’	28’	3	.90
Area B – All Allowed Uses *	.25	.50	12’	5’	10’	28’	3	.95
Area C - All Allowed Uses *	.10	.60	12’	5’	10’	48’	4	1.3
Area D – All Allowed Uses	.60	.30	5’	5’	5’	28’	3	.09

Exceptions: All uses: street/side/rear yard projections, including cornices, canopies, eaves, decks, porches, bay windows, chimneys, patios, and similar architectural features may encroach into any setback not more than 5’.

* Notwithstanding the specific physical development standards identified within each area, the limitations within each Area is permitted to shift to another Area of the HHPUD as long as the limitations within the overall PUD are not exceeded

**Setbacks within Areas B, C and D shall be the horizontal distance, as measured from a physical development to an HHPUD perimeter property line for side and rear setbacks and the horizontal distance, as measured from a physical development to either a HHPUD perimeter property line or a road right-of-way, roadway or vehicular access easement.

***FAR is calculated so that the sum of the sub areas equal the overall PUD (0.65) with most of the excess floor area being located in Area C to facilitate the creation of more workforce housing.

B.2. Maximum Scale of Development

Individual Building (max gross FA):

Area A:	8,000 s.f.
Area B:	No limitation
Area C:	No Limitation
Area D:	8,000 s.f.

B.3. Building Design

All Building Materials:

External surfaces shall be non-reflective. Colors shall blend into terrain using muted colors and earthy hues.

Note: The PUD is subject to certain Hidden Hollow Design Guidelines which may be amended from time to time. Approval of building designs by the Hidden Hollow Design Guidelines is required prior to building permit submittal to The Town of Jackson.

B.4. Site Development

Site Development Setbacks (min)

Side/rear Yard:	½ building setback
Front Yard:	½ building setback'

Exemptions:

Driveways providing access across street yard, and shared parking and driveways and all pathways within the HH UR-PUD.

B.5. Landscaping:

Plant Units (min)

Total – Overall PUD	176 (will be addressed using a value based approach)
Area A:	1.5 per DU
Area B:	1.5 per DU
Area C:	7 Plant Units
Area D:	127 Plant Units

B.6. Fencing:

Height (max)

In Street Yard:	4'
In Side or Rear Yard:	6'

Setback:

Front lot line/R.O.W./Sidewalk	1'
Side or Rear lot line	0'

B.7. Environmental Standards:

Natural Resource Setback (min)	Sec. 5.1.1.
Wetland:	30'
Irrigation Ditch Setback (min)	7.7.4.D.
Irrigation Ditch	15'

Natural Resource Overlay (NRO) Standards LDR Sec. 5.2.1

The PUD is not within the NRO and no NRO standards apply

B.8. Scenic Standards:

Exterior Lighting:	LDR Sec. 5.3.1
Total cut off angle (max)	90
Illumination in footcandles	1.00
Height (max)	15'

Scenic Resource Overlay (SRO) Standards LDR Sec. 5.3.2

The PUD is not within the SRC and no SRO Standards apply

B.9. Natural Hazards to Avoid:

Steep Slopes	LDR Sec. 5.4.1
Development Prohibited:	Slopes >30%
Areas of Unstable Soils:	LDR Sec. 5.4.2
Fault Areas:	LDR Sec. 5.4.3
Floodplains:	LDR Sec. 5.4.4
Wildland Urban Interface	LDR Sec. 5.4.5

B.10. Signs: LDR Div. 5.6

Allowable Signage

No limitation. Subject to Development Plan approvalSign Area

See Hidden Hollow Design Guidelines Signage Plan (Attachment 3). Subject to Development Option Plan approval.

Sign Height:

See Hidden Hollow Design Guidelines Signage Plan (Attachment 3). Subject to Development Option Plan approval.

B.11. Grading, Erosion Control, Stormwater:	
Grading	LDR Sec. 5.7.2
Erosion control	LDR Sec. 5.7.3
Erosion shall be controlled at all times	
Stormwater Management	LDR Sec. 5.7.4
No increase in peak flow rate or velocity across property lines.	

B.12. Required Physical Development Permits

The following identifies the required physical development permits for development within PUD:

Physical Development	Sketch Plan	Development Plan	Dev. Option Plan	Building Permit	DRC Review	Sign permit	Grading permit
Overall PUD	Approved	N/A	N/A	N/A	N/A	N/A	N/A
Area A – All Allowed Physical Development				X			X
Area B – All Allowed Physical Development			X	X			X
Area C – All Allowed Physical Development		X	X	X			X
Area D – All Allowed Physical Development				Per LDRs		X	X

C. Use Standards

Standards applicable to uses within the HH UR-PUD are provided or referenced below. Allowed uses are listed in Master Plan Subsection 2.1.C.1. and in some cases include specific allowances based on individual Areas within the HH UR-PUD. Uses that are not listed are prohibited, unless a similar use determination is made pursuant to LDR section 6.1.2.D.

C.1. Allowed Uses — C.2. Use Requirements

Use	Permit	BSA (min)	Density (max)	Parking (min)	Affordable Housing Requirement
Open Space					
Agriculture	Y	0 ac.	n/a	n/a	Exempt
Residential					
Detached Single Family – Area A Only	Y	0 s.f.	1 unit per lot	2/DU	See Master Plan Sec. 2.D.3.
Attached Single Family – Area B Only	Y	0 s.f.	n/a*	2/DU	See Master Plan Sec. 2.D.3.
Condominium Units – Area C Only	Y	0 s.f.	n/a	1/1br. Unit 2/2&3br. Unit	See Master Plan Sec. 2.D.3.
Dormitory – Area C Only	Y	0 s.f.	n/a	1/1br. Unit	See Master Plan Sec. 2.D.3.
Group Home – Area C Only					

	Y	0 s.f.	n/a	independent calc.	Independent Calc
Commercial					
Local Convenience Commercial – Area C and D Only	B	0 s.f.	n/a	n/a	Exempt
Institutional					
Assembly – Area D Only	C	n/a	n/a	Independent calc.	Exempt
Transportation/Infrastructure					
Utility Facility	C	0 s.f.	n/a	1/employee + 1/stored vehicle	Exempt
Accessory Uses					
Home Occupation	B	0 s.f.	n/a*	n/a	Exempt
Home Business – Area A and B Only	C	0 s.f.	n/a	1/ employee	Exempt
Family Home Daycare Area A and B Only	B	0 s.f.	n/a	1/employee	Exempt
Home Daycare Center – Area C Only	C	0 s.f.	n/a	Independent calc	Exempt
Temporary Uses					
Real Estate Sales Office	Y	0 s.f.	n/a	3.3/1,000 s.f.	Exempt
Temporary Shelter	Y	0 s.f.	1/ valid bld. Permit**	2/DU	Exempt
Temporary Gravel Extraction and Processing	B	0 s.f.	n/a	1/employee	Exempt

Y = Allowed Use, no use permit required, B= Basic Use Permit (LDR Sec. 8.4.1), C= Conditional Use Permit (LDR Section 8.4.2)

C.3. Maximum Scale of Use
Individual Use (floor area) (max)
No limitations apply.

C.4. Operational Standards	LDR Div. 6.4
Outdoor Storage	(Sec. 6.4.1.)
Refuse and Recycling	(Sec 6.4.2.)
Trash and recycling enclosures required	Area B, C and D
Noise	(Sec. 6.4.3.)
Vibration	(Sec. 6.4.4.)
Electrical Disturbances	(Sec. 6.4.5.)
Fire and Explosive Hazards	(Sec. 6.4.6.)

D. Development Options

Standards applicable to development options and subdivision in the overall HH UR-PUD are provided or referenced below.

D.1. Allowed Subdivision Development Options

Option	BSA	Lot Size (min)	Density (Max)	OSR (Min)	LSR (min)	FAR (max)	Lot Coverage (max)	Option Standards
Land Division	n/a	4,000 s,f,	n/a	n/a	Determined by Physical Development			Sec 7.2.3.
Condominium/ Townhouse	n/a	n/a	n/a	n/a	Determined by Physical Development			Sec 7.2.3.

D.2. Required Subdivision and Development Option Permits

Option	Sketch Plan (8.3.1)	Development Plan (8.3.2)	Development Option Plan (8.5.2)	Subdivision Plat (8.5.3)
Any subdivision				
Area A – All Allowed Uses				X
Area B – All Allowed Uses			X	X
Area C – All Allowed Uses		X		X
Area D – All Allowed Uses			X	X

D.3. Affordable and Employee Housing Standards

In a PUD, the LDRs provide flexibility in developing an affordable housing plan in order to appropriately address the needs of the community and the impacts of the development. The applicant for a PUD may propose, and the Town of Jackson may approve, alternative standards for development that are consistent with the purpose and intent of the LDRs.

Affordable Housing Standards for Hidden Hollow PUD(HHPUD).
There are 96 free-market units proposed for the HHPUD: 20 townhouse units in Area B; 13 single family dwelling units in Area A; and 63 condominium units in Area C.

There are 72 deed-restricted units proposed for the HHPUD: 27 income-based deed-restricted units that consist of twelve (12) one-bedroom units, nine (9) two-bedroom units, and six (6) three-bedroom units across Categories I, II, & III as published annually by the Teton County Housing Department(TCHD); and 45 Employee-based deed restricted units that occupy the floor area allowed by 48 foot building height in Area C as per Article 2.3.4.E.1of the LDRs

The total projected population in the HHPUD based on the type and number of units detailed above is 294.75 persons, which creates a requirement to house 59 persons in affordable housing units (294.75*.20 = 59). The final number of persons required to be housed in affordable housing units is subject to change based upon the development permits approved for the townhome area, condominium area and single-family area. The required affordable housing units will be a mix of Category I, Category II and Category III housing units.
The HH PUD includes the approval for the condominium unit buildings within Area C to incorporate forty eight (48) feet of height in the design to allow a single level parking garage below all buildings. Under Article 2.3.4.E.1 of the LDRs, *"a structure's height may be 48 feet provided they meet certain criteria. Specifically, the following apply to the amount of additional floor area achieved through the increase in structure height; however, the actual floor area to which the following standards apply may be distributed throughout the structure. i. It shall be deed restricted workforce, affordable, or employee housing with an occupancy restriction. ii. It may have an employment and/or price restriction. Iii. it shall be exempt from the calculation of affordable housing required by Division 7.4, but shall not be used to meet the affordable housing requirement for project.*

As such, the applicant will use Article 2.3.4.E.1 in this application and designate 45 units to be deed restricted with an employment-based restriction. At this time, the floor area created by the 48 feet height cannot be determined without final architectural plans. It is assumed that each building will contain 27 total units and each floor will have 9 units. Therefore 45 units would be the result of the increase FAR. This is a logical starting point without fully developed architectural plans. At final development plan for Area C, this number will be further refined and a minor amendment to the master plan will be filed with the Planning Department. The foregoing described employment-based units will not be subject to a sales price restriction but the applicant anticipates pricing such units in between Category V and Category VI. If any such unit, or a lot on which such units may be developed is sold to the Town of Jackson, Teton County, local businesses or a 501(c)(3) nonprofit corporations, such units shall count towards the total number of employment-based housing units voluntarily created in consideration of the height approval.

Location and Phasing.
All affordable housing units and employment-based housing units will be provided on-site. It shall be the applicant's responsibility to provide affordable housing pursuant to this Housing Mitigation Plan. If the applicant transfers any land in the HHPUD to a third party, the housing requirement related to that portion of the development shall remain the responsibility of the applicant unless the housing requirement is expressly transferred to another party. However, if any such unit or a lot on which such units may be developed, is sold to the Town of Jackson, Teton County, local businesses or a 501(c)(3) nonprofit corporation, such units shall count towards the total number of employment-based housing units voluntarily created in consideration of the height approval. Although the applicant will be responsible for ensuring that all affordable units are developed, some of the actual construction and ultimate ownership of the units may be assumed by third parties.

The affordable housing units and employment-based units will be constructed within the condominium unit buildings in Area C. The applicant intends to incorporate the required affordable housing units and employment-based units within the first and second floors of the condominium unit buildings located within Area C but the applicant may incorporate such units within the third floor of certain buildings at its sole discretion. At this time, the applicant intends to construct a large portion of the affordable housing units and employment-based housing units within the first phase of construction of buildings in Area C. Notwithstanding the foregoing, the applicant will decide the exact number of affordable housing units and/or employment based units to be incorporated within each building as the construction plan progresses and certain buildings may not include any affordable housing units or employment based units.

A certificate of occupancy for a free market residential unit (single-family units, townhome units or condominium units) will not be issued by the Town of Jackson unless one of the following has occurred: (i) the total cumulative persons housed in affordable housing units for which a building permit has been issued equals or exceeds the total cumulative requirement generated by the free-market residential units that have received certificates of occupancy; or (ii) the applicant has bonded for the outstanding number of required affordable housing units generated by the free-market residential units that have received or are otherwise eligible for certificates of occupancy that the applicant has not be issued a building permit for by the Town of Jackson.

Minimum Sizes and Persons Housed per Unit.
The minimum unit sizes and persons housed per affordable and employee unit are shown below. All units will comply with or exceed all other applicable minimum standards of the Uniform Building Codes and other development codes adopted by the Town of Jackson.

Square Footage Requirements for Ownership Units and Persons Housed**:**

Housing Unit Type	*Min Sq.Ft (20% reduction is permitted)*	*Max Sq.Ft.*	*Persons Housed*
Studio/Dormitory	320 sf /400 sf	600 sf	1.25
One Bedroom	480 sf/600 sf	800 sf	1.75
Two Bedroom	680 sf/850 sf	1,100 sf	2.25
Three Bedroom	960 sf/1,200 sf	1,500 sf	3
Each Add'l Bedroom	120 sf/150 sf	250 sf	1

Notes:
1. These square footage requirements are for Habitable Floor Area – Affordable Housing Units, or interior living area (see Definitions). In addition to the square footage requirements listed in the charts, the developer shall also provide:
• At least ten (10) square feet of enclosed habitable or non-habitable storage space per bedroom.
• Access to outdoor space, such as a deck, patio, or common green space within the development. The square footage of the outdoor space shall be at least two percent of the size of the unit.

2. Minimum square footage is the actual minimum square footage allowed to be constructed or otherwise provided under the provisions of the Town of Jackson Land Development Regulations. Maximum square footage is the maximum amount of square footage which may be credited against the required square footage for a given unit type, regardless of the actual size of the unit provided. The applicant may incorporate reduced square footages for any affordable housing units and/or employment-based units up to 20% (the lower number shown above), at the applicant's sole discretion, because the project will meet the following requirements:

- Above average natural light (more light than minimum borrowed light requirements) – exterior windows in every living space and bedroom;
- Layout with maximized living space – no more than 15 percent of the living space can be stairways and hallways;
- Location within the project – 100 percent above grade.

INITIAL SALES AND PRICING.
The initial sales of the affordable housing units (excluding all employment- based housing units) will be marketed and facilitated by the Housing Authority. The applicant shall market and facilitate the initial sales of all employment-based housing units. The applicant will be responsible for designing and administrating the selection process by which the purchasers of the employment-based housing units are selected.
The initial sales of all affordable housing units and employment-based units shall not be subject to a Housing Authority facilitation fee.
Formula for this HHPUD.
The maximum sales price formula per unit based on category and number of bedrooms is shown below.
The methodology listed below shall determine the formula used to establish the Maximum Sales Prices for the initial sales (as further shown in the examples below). The formula set forth herein shall not change in the future but the

MFI will adjust each year as such amounts are posted annually by HUD, at which time, the sales price amounts will be adjusted to incorporate the new MFI amounts for such year.

A. *Median Family Income*. Each year, the U.S. Department of Housing and Urban Development (HUD) releases Median Family Income ("MFI") figures for Teton County, Wyoming, and the Housing Authority uses this data to determine Household Incomes for the Affordable Housing Units based on Household Size.

B. *Household Size*. The Household Size for determining Maximum Sales Price is based on number of bedrooms in the Affordable Housing Unit as set forth below: a one bedroom unit would equal a one person household, a two bedroom unit would equal a two person household and a three bedroom unit would equal a three person household.

C. *Income Category*. The maximum Household Income for the Category assigned to the Affordable Housing Unit shall be calculated as follows utilizing the Median Family Income published by HUD each year:

Category 1 – 80% of the MFI
Category 2 – 100% of the MFI
Category 3 – 120% of the MFI
Category 4 – 140% of the MFI
Category 5 – 175% of the MFI
Category 6 – 200% of the MFI

The Median Family Incomes for 2016 as published by HUD are as follows:

Income Limit	*1 person*	*2 person*	*3 person*	*4 person*	*5 person*	*6 person*
FY2016	67,800	77,500	87,200	96,800	104,600	112,300

D. *Interest Rate*. An interest rate of 7.5% shall be used to determine the Maximum Sales Price, based on the 8% average interest rate over the last twenty (20) years.

E. *Down Payment*. The Maximum Sales Price shall be calculated assuming a 5% down payment.

F. *Percentage of Income*. The national standard for household affordability is that a household does not pay more than 30% of its gross income toward housing costs. Therefore, monthly payments cannot exceed 30% of the Median Family Income for each Category.

G. *Reduction for HOA, Property Taxes and Insurance Expenses*. Because housing costs include more than the mortgage payment, the percentage of income that can be spent on monthly payments shall be reduced from 30% to 25% to account for HOA fees, property taxes and insurance. Maximum Sales Prices shall not be lowered for parking that is provided in parking garages (provided that each unit has covered garage parking and a separate storage facility) or for HOA dues that exceed $100/month.

The foregoing assumptions departs from the existing formula used by the Housing Authority in two ways. First, the formula does not include a blanket 10% reduction in the MFI. Second, the formula does not include an additional 10% reduction for either a lack of an individual garage (as each unit will have covered parking and the designation of a storage unit) or for HOA fees above $100. Additionally, the current interest rates are the lowest in history (often less than 3%) and are not anticipated to increase prior to the completion of the first phase of the condominium unit area, which is the area where the applicant intends to construct a large portion of the affordable housing units and employment-based units. Finally, we have reduced the 30% monthly payment amount by 5% to 25% to address the HOA, property taxes and insurance expenses.

Examples of Maximum Sales Price Calculations for 2 Bedroom Units utilizing the foregoing formula and parameters with 2016 MFI:

Assumptions for determining affordability for households in each category's income range:

- Using the MFI established by HUD each year
- 2-bedroom unit equals 2-person household
- 5% down payment (3.5% required by Housing Authority)
- 30% of income towards housing costs (includes principal, interest, taxes, insurance and HOA dues)
- 5% of the 30% is taxes, insurance and HOA dues
- 7.5% interest (20 year average to ensure affordability over time)

Category 1 – 80% of Median Income for Teton County – Maximum amount for 2 person household to qualify = $62,000
$62000 x 25% = $15,500 (We use 25% because taxes, insurance, and HOA dues are not included here)
$15,500 / 12 months = $1292 (monthly payment that is affordable to a 2 person family earning Category 1 income)
A home selling for $194,503.97 with a 5% down payment at 7.5% interest has a mortgage payment of $1,292 not including taxes, insurance, and HOA dues.

Category 2 – 100% of Median Income for Teton County – Maximum amount for 2 person household to qualify = $77,500
$77500 x 25% = $19375
$19,375 / 12 months = $1614.58 (monthly payment that is affordable to a 2 person family earning Category 2 income)
A home selling for $243,066.74 with a 5% down payment at 7.5% interest has a mortgage payment of $1,614.58/month not including taxes, insurance, and HOA dues.

Category 3 – 120% of Median Income for Teton County – Maximum amount for 3 person household to qualify = $93000
$93,000 x 25% = $23250
$23250 / 12 months = $1,937.50(monthly payment that is affordable to a 2 person family earning Category 3 income)
A home selling for $291,680.68 with a 5% down payment at 7.5% interest has a mortgage payment of $1,937.50/month not including taxes, insurance, and HOA dues.

Category 5 – 175% of Median Income for Teton County – Maximum amount for 3 person household to qualify = $135,625
$135,525 x 25% = $33,881.25
$33,881.25 / 12 months = $823.44 (monthly payment that is affordable to a 2-person family earning Category 5 income)
A home selling for $440,108.89 with a 5% down payment at a 7.5% interest rate has a mortgage payment of $2,823.44/month not including taxes, insurance, or HOA dues.

Category 6– 200% of Median Income for Teton County – Maximum amount for 2 person household to qualify = $155,000
$155,000 x 25% = $38,750
$38,750 / 12 months = $3229.17 (monthly payment that is affordable to a 3-person family earning Category 6 income)
A home selling for $486,134.98 with a 5% down payment at a 7.5% interest rate has a mortgage payment of $3,229.17/month not including taxes, insurance, or HOA dues.

Hidden Hollow Affordable Housing Pricing

	Income Guidelines				Sales Price & Payment Calculations			
	% MFI	Adjusted Income	25% Income Allowed For Mortgage	Allowed Monthly Payment	Purchase Price	5% Down	Loan Amount	Monthly Payment
Cat 1	80%	$ 62,000.00	$ 15,500.00	$ 1,291.67	$ 194,449.80	$ 9,722.49	$ 184,727.31	$ 1,291.64
Cat 2	100%	$ 77,500.00	$ 19,375.00	$ 1,614.58	$ 243,066.74	$ 12,153.34	$ 230,913.40	$ 1,614.58
Cat 3	120%	$ 93,000.00	$ 23,250.00	$ 1,937.50	$ 291,680.68	$ 14,584.03	$ 277,096.65	$ 1,937.50
Cat 5	175%	$ 135,625.00	$ 33,906.25	$ 2,825.52	$ 425,367.89	$ 21,268.39	$ 404,099.50	$ 2,825.52
Cat 6	200%	$ 155,000.00	$ 38,750.00	$ 3,229.17	$ 486,134.98	$ 24,306.75	$ 461,828.23	$ 3,229.17

Income Assumptions:		Loan Assumptions:	
2016 MFI for 2 Person Household	$77,500.00	30 Year Term	7.5% Interest Rate

- This chart reflects 2016 income calculations and it is not to be relied upon beyond 2016 and is therefore subject to change in subsequent years. The incomes may change, but the formula used in arriving at these numbers, shown above in the examples for each category, will stay the same.

ILSA REQUIREMENTS:
The Housing Authority shall be obligated to utilize all Interstate Land Sales Act exemption provisions required by the applicant, in the applicant's sole discretion, in all purchase contracts for the initial sales of all affordable housing units and employment-based housing units. Additionally, the Housing Authority shall cooperate and comply with all marketing requirements required by the applicant to comply with each of the applicable ILSA exemption requirements.

D.4. Infrastructure Requirements and Standards

1. Transportation Plan:

There is no specific transportation plan for Hidden Hollow PUD. The extension of Mercill Avenue east of North Cache Street intersection with North King Street shall be improved by the developer and dedicated to the Town of Jackson. All other road and pathway infrastructure shall remain private. Standards for private transportation infrastructure within the HH UR-PUS shall comply with the standards of the LDRs or otherwise comply with approved grading permits approving said transportation infrastructure.

2. Stormwater Management Plan

All stormwater shall be handled and accommodated in accordance with Section 5.7.4 of the LDRs.

3. Water and Sewer Management Plans

Need to develop this based on public vs private utility requirements and the rights of the private utility holders to maintain said infrastructure.

D. Additional Zone Specific Standards

1. PUD-ToJ Height. For a PUD-ToJ proposed in the UR zoning district, structure height may be 48 feet provided the following criteria are met.

a. The following standards apply to the amount of additional floor area achieved through the increase in structure height; however, the actual floor area to which the following standards apply may be distributed throughout the structure.

i. It shall be deed restricted workforce, affordable, or employee housing with an occupancy restriction;

The additional height does not result in additional floor area. The additional height is for the purpose of providing below grade parking for the residents that achieves screening of the parking as envisioned by the comprehensive plan.

ii. It may have an employment and/or price restriction.

See above.

iii. It shall be exempt from the calculation of affordable housing required by Division 7.4, but shall not be used to meet the affordable housing requirement for the project.

Not applicable

b. The project shall provide the affordable housing required by Division 7.4 on site. Complies

The Hidden Hollow project will provide affordable housing mitigation in a type and amount that complies with the Affordable Housing regulations found in Division 7.4 of the LDRs.

c. The site shall be at least 2 acres to provide opportunity for sufficient setback from, and building height step down to small scale development. Complies.

The Hidden Hollow site is ten acres and is designed to provide step down from higher development to lower development within the project and on its perimeter

d. The site shall be served by transit within 1/4 mile. Complies

Transit numerous transit services are located within a ¼ mile of the development.

e. The site shall be within 1/4 mile walking distance from numerous commercial services routinely needed by residents. Complies.

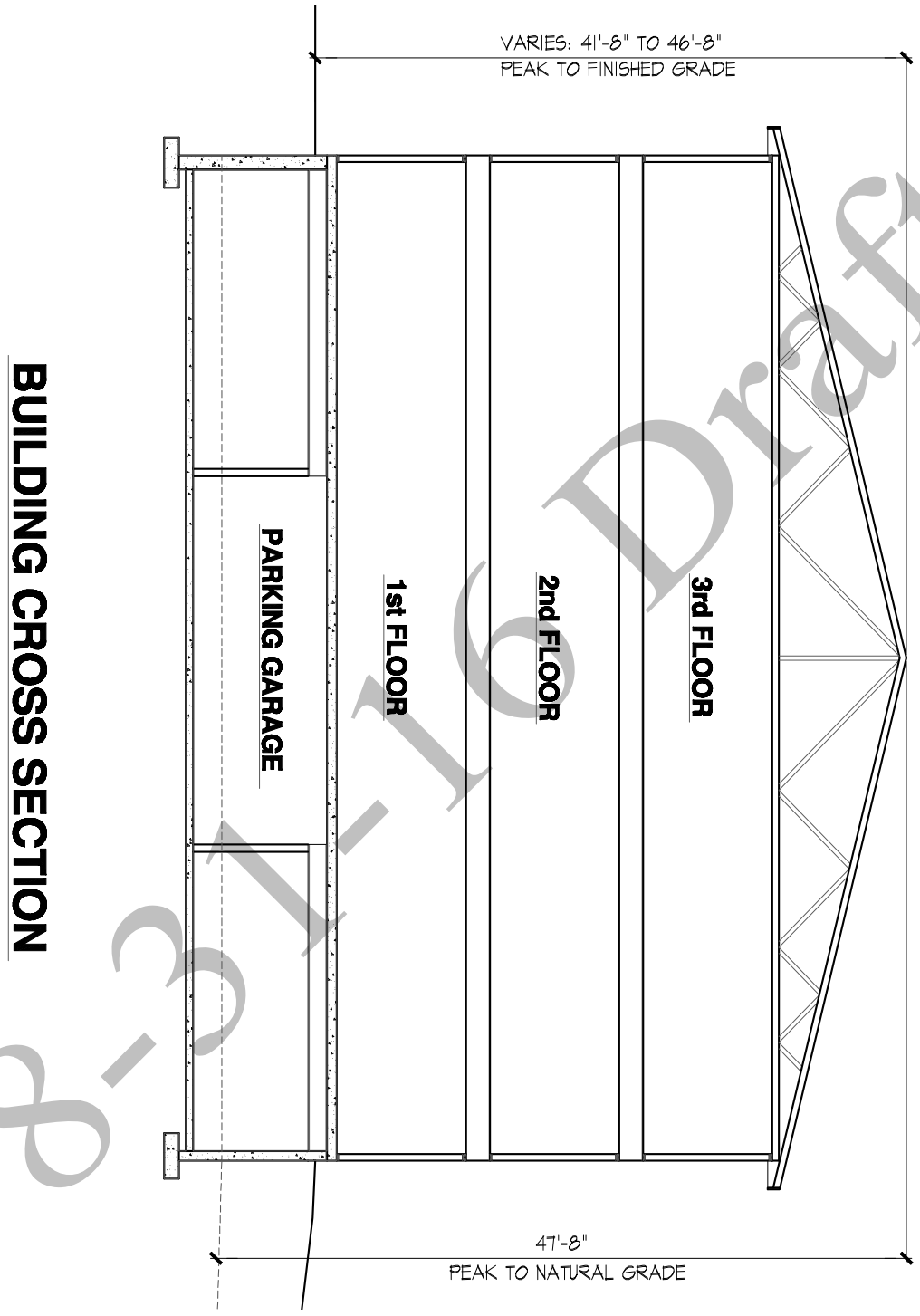
The Town Square, as well as the commercial development along North Cache Street is well within a ¼ mile of the development.

f. The additional building height shall not increase the floor area allowance or decrease the required open space. Complies

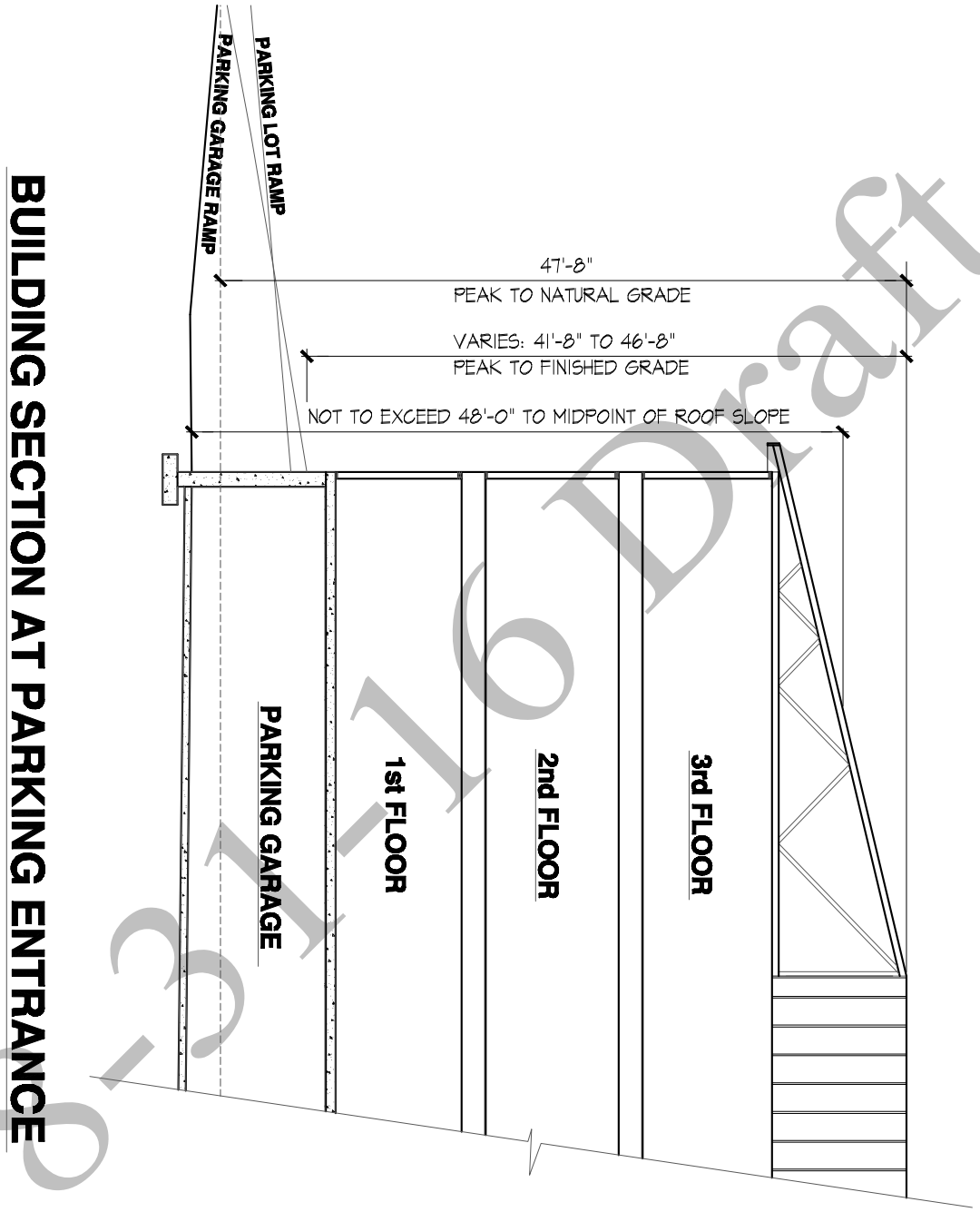
The increased height is for the purpose of providing below grade parking and does not increase floor area or decrease required open space – the project is in compliance with both of there requirements.

Attachment 1
Legal Description of HHPUD Boundary

Attachment 2.1
Exhibit Showing Method for Measuring Height within HHPUD



Attachment 2.2
Exhibit Showing Method for Measuring Height within HHPUD



SECTION 4– ADDITIONAL SUPPORTING INFORMATION

- TRAFFIC IMPACT STATEMENT
- PRELIMINARY WASTEWATER CALCULATIONS
- PRELIMINARY WATER DEMAND CALCULATIONS
- PRELIMINARY STORMWATER CALCULATIONS
- PLANT UNIT SUMMARY
- AFFORDABLE HOUSING MITIGATION CALCULATIONS
- HOUSING MIX AND PARKING CALCULATIONS
- NEIGHBORHOOD MEETING SUMMARY

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Hidden Hollow Sketch Plan
Traffic Impact Statement

Prepared by: Jorgensen Associates, P.C.
July 5, 2016
Project No. 16016

I. INTRODUCTION

Hansen & Hansen, LLP is proposing to construct a residential development in Jackson, Wyoming. The development, currently referred to as the Hidden Hollow Development, is located within the heart of Jackson, Wyoming on a ten acre parcel previously owned by the United States Forest Service. Currently, the property is accessed off of US 189/North Cache Street two blocks north of the Town Square. Jorgensen Associates (Jorgensen) has been contracted to complete a Traffic Impact Statement for Hidden Hollow as part of the Sketch Plan application. The purpose of this Traffic Impact Statement is to assess the expected impacts of the proposed development on the adjacent transportation network. This analysis will focus on preliminary analysis of impacts, including historic land uses, the proposed land use, expected trip generation values, understanding the existing transportation facility, identifying impacted areas and intersections within the network, and identifying potential mitigation options. Included in this report is a description of the continued traffic analysis needed to analyze, quantify, and mitigate traffic impacts of the proposed development. The detailed analysis will be completed in a final Traffic Impact Study (TIS) as part of the Final Development Plant (FDP). The comprehensive traffic analysis will be completed in accordance with the Teton County Land Development Regulations (LDR's) and WYDOT requirements.

II. DATA COLLECTION

This section describes the baseline data recovered for the development of this report.

Data Collection

Jorgensen has corresponded with WYDOT to acquire available traffic data for US 189/North Cache Street. Data sources include:

- WYDOT counter "Route 10B MP 154.480-154.982"
  - Collects July/August data each year and has annual data dating back to 1970. Data is limited to average daily vehicle counts and truck counts. The data is very complete and will aid in basic understandings of traffic growth and expected Average Daily Traffic (ADT) at site.
- WYDOT Intersection Turn Counts
  - North Cache Street & Mercill Avenue Intersection (counts in Jul-2009, Jul-2013, 2014, Sept-2015)
  - North Cache Street & Gill Avenue Intersection (counts in Jul-2009, Jul-2013, 2014, Sept-2015)
- Signal Timings (Cache intersections with both Mercill Avenue and Gill Avenue)

Trip Generation

Trip generation is completed through the use of the Institute of Transportation Engineers (ITE) Trip Generation Manual 9th Edition (ITE Manual) and standard practice *(ITE, 2012)*.

III. STUDY AREA

The proposed "Hidden Hollow" Development is to be located near the heart of Downtown Jackson. It is located approximately 0.26 miles north of historic Town Square at mile post 154.74 along US 189/North Cache Street

Proposed Site Legal Description

PT. NW1/4SW1/4 SEC. 27, TWP. 41, RNG. 116 (MOS T-20F)

The proposed study area begins south of the proposed site to include the Cache Street's intersection with Gill Avenue and extends north to Perry Street. Additionally, the project study area will extend west on East Gill Avenue to include King Street as a potential second access to the proposed development. The study area will be utilized more in TIS as part of the Final Development Plan and may be modified based on a study of the existing traffic signals and coordination with WYDOT.

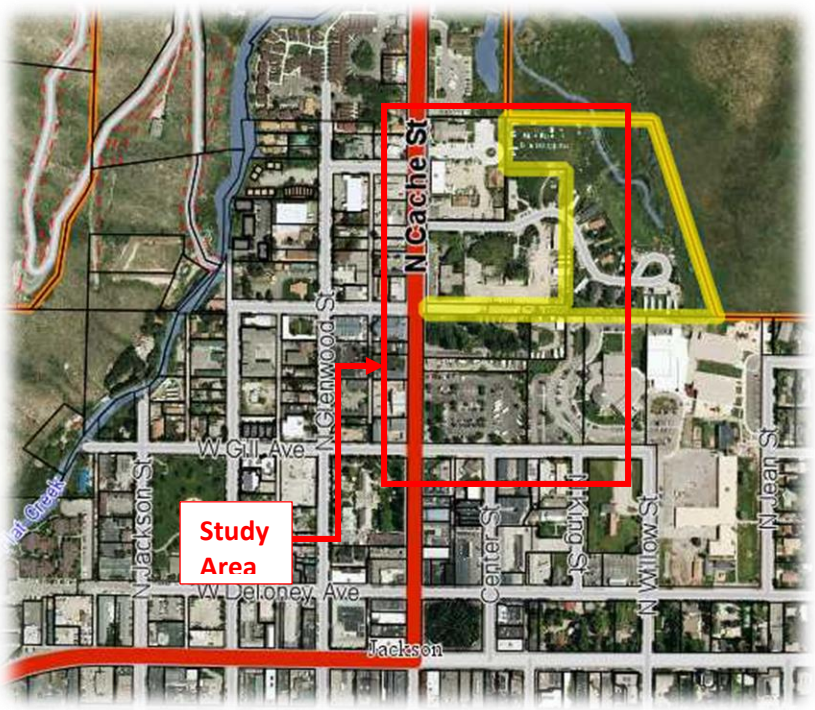

Figure 1: Proposed Site Location – NW1/4SW1/4 Section 27, T41N, R116W, 6th P.M. (Greenwood)

The project bounds incorporate six (6) intersections; two (2) signalized intersections, and four (4) stop controlled intersections. Additionally, several business access points exist within the network. A map of the proposed site can be seen in *Figure 1*. The map is prepared by Greenwood Mapping (from the Teton County Website).

IV. EXISTING LAND USE AND TRANSPORTATION SYSTEM

Existing Land Uses

The existing site is a 10 acre undeveloped lot zoned Urban Rural (UR) in the Town of Jackson. The surrounding area is largely urban development with zoning Auto-Urban Comm. (AC) and Public/Semi-Public Park (P/SP) immediately adjacent to the proposed development. Additionally, zoning nearby to the site includes Auto-Urban Comm. (AC), Single Family (NC) and Urban Commercial (UC). The eastern edge of the proposed development borders the National Elk Refuge owned by the U.S. Fish and Wildlife Service. Historically, the proposed development site was owned by the United States Forest Service and utilized at employee housing. Looking back at aerial photography from 2009, the site housed at least 16 units for housing and appeared to be fleet storage for the U.S. Forest Service. The U.S. Forest Service recently sold the parcel and have since demolished/removed the existing housing structures on the property.

Existing Transportation System

The proposed site has historically been accessed through Rosencrans Lane off of North Cache Street. Inhabitants of the housing would access the site off of North Cache Street approximately midblock from Mercill Ave to Perry Street. The Rosencrans Lane access was a one-way stop-controlled, three-legged intersection. Additionally, access to the U.S. Forest Service building was granted through Rosenscrans Lane and Mercill Avenue. Because Rosencrans Lane was the primary access to the employee housing, all traffic impacts were absorbed into North Cache Street at midblock.

North Cache Street has two (2) signalized intersections within the study area; Mercill Avenue and Gill Avenue. As noted earlier, the study area may need to be broadened during detailed analysis as part of the future Traffic Impact Study. The cross section of North Cache Street changes from a two-lane northbound approach at Gill Avenue to a two-lane with shared left-turn-lane continuing north. North Cache Street currently has road side parking in both directions south of the Gill Avenue intersection and north of the Mercill Avenue Intersection. The block between Gill Avenue and Mercill Avenue does not have road side parking, but does contain and auxiliary right-turn-lane into the downtown parking lot. Overall, Cache Street has a very narrow cross-sectional width.

Currently, North Cache Street suffers from queueing buildups in the late afternoon and during p.m. peak hour times, especially during peak seasonal times. In fact, based on observations, existing traffic demands seems to exceed capacity on southbound Cache Street during these times. The cause for congestion is largely due to the conflict between the increasing afternoon southbound traffic in the segment, and pedestrian volumes downstream near the Town Square. Even though the proposed site is located largely outside of the major pedestrian traffic areas of the Town Square, the impacts of pedestrians on traffic operations on the segment servicing "Hidden Hollow" are substantial. See *Figure 2* and *Figure 3* to see current vehicles and pedestrian counts at the two signalized intersections within the segment. Cross sectional components and detail regarding the operations of existing traffic will be further investigated as part of the Final Development plan.

Existing Traffic

The most recent counts available from WYDOT recorded the 2014 Average Daily Traffic (ADT) of the segment of interest on North Cache Street at 11,883. When reviewing growth back to 2009, very limited traffic growth has been observed within the segment (most likely a result of urban nature and existing buildout). Since 2009, a 0.58% traffic growth was observed. Interpolating based on the observed growth rate, an ADT of 12,020 is expected within the segment in 2016.

WYDOT has completed several "Turning Movement Counts" at the two (2) signalized intersections within the study area. Turn counts are available for 2009, 2013, 2014, and 2015 for each intersection. Counts in 2009 and 2013 were completed in July while the 2015 counts were completed in September. Currently, it is unknown what month the 2014 counts were collected. Because there has been limited growth during the past five years on the segment, the turn counts completed in 2013 give a better representation of peak seasonal traffic on the segment. As noted above, 2013 counts were completed in July, while 2015 counts were completed in September. The measured turn counts for July, 2013 for each intersection are shown in *Figure 2* and *Figure 3.*

North/South Major Approach: North Cache Street **East/West Minor Approach:** Mercill Avenue

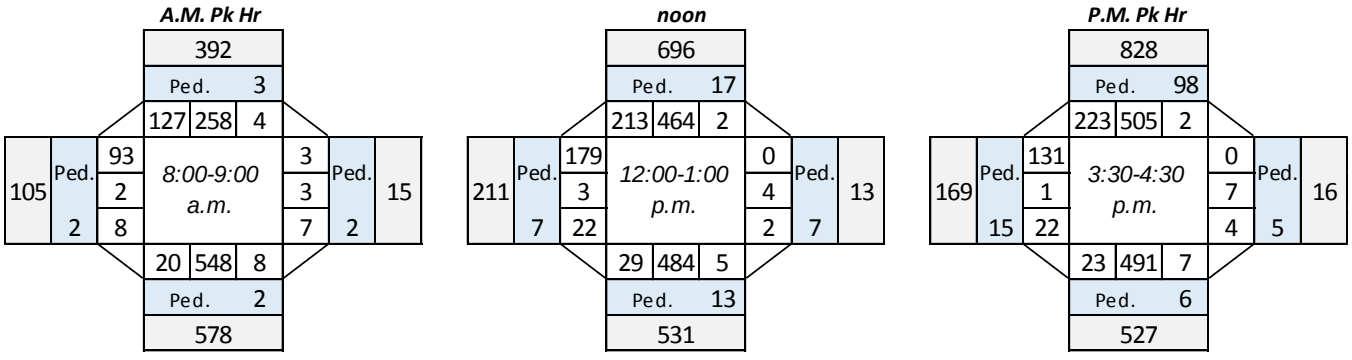

Figure 2: North Cache Street & Mercill Avenue Signalized Intersection Turn Counts - July, 2013 (WYDOT)

North/South Major Approach: North Cache Street **East/West Minor Approach:** Gill Avenue

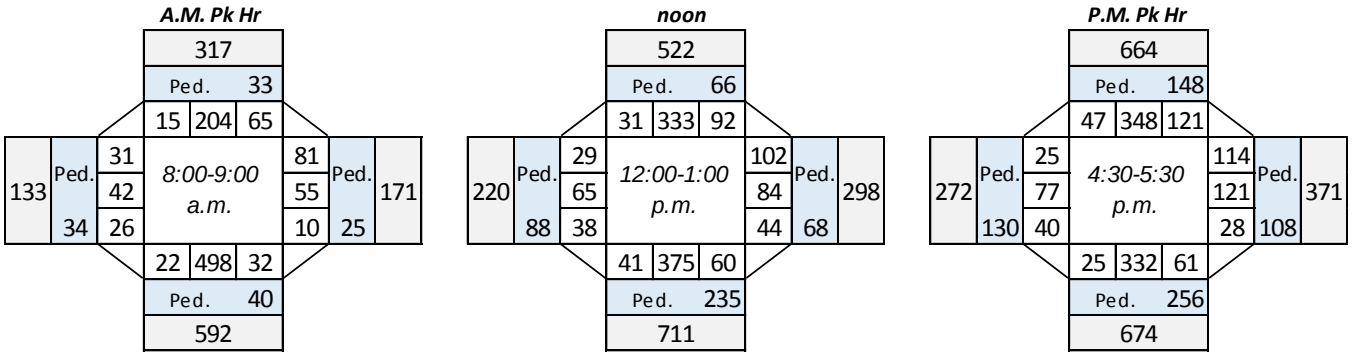

Figure 3: North Cache Street & Gill Avenue Signalized Intersection Turn Counts - July, 2013 (WYDOT)

Through initial conversations with Darin Kaufman of WYDOT, up-to-date turn counts will be needed in order to properly assess the traffic impacts of "Hidden Hollow".

Existing Trip Generation

The ITE Manual 9th Edition was utilized to approximate the trip generation from the employee housing that existed under the historic use of the property. Based on observations of past aerial photography, at least 16 units were located on the property. Jorgensen assumed the use of residential condominiums as the ITE Land Use Category. The approximated results are shown in *Figure 4*. It is assumed that these trip generation values are all impacting the traffic on North Cache Street.

Land Use: **Employee Housing**
ITE Land Use Category: **Residential Condominium/Townhouse**
ITE Land Use Code: **230**
Independent Variable: *Dwelling Units*
Value: 16

Analysis Period		Rate	Trips	Directional Distribution			
				Entering	Exiting	Entering	Exiting
DAILY	Weekday	Ln(T) = 0.87 Ln(X) + 2.46	131	50%	50%	65	65
A.M. Pk Hr (7-9 a.m.)	Weekday	Ln(T) = 0.80 Ln(X) + 0.26	12	17%	83%	2	10
P.M. Pk Hr (4-6 p.m.)	Weekday	Ln(T) = 0.82 Ln(X) + 0.32	13	67%	33%	9	4

Figure 4: Trip Generation Approximation of Historical Employee Housing Use (ITE, 2012)

V. PROPOSED "HIDDEN HOLLOW"

Proposed Land Use

The existing 10 acres site is proposed to house a vast assortment of housing options designed to target affordable housing in the Jackson area. Base on the current "Hidden Hollow Sketch Plan", 135 multi-family units, 20 town homes, and 13 single-family dwellings are proposed. Section 6 of the Sketch Plan Submittal contains the preliminary layout of the proposed site.

From the standpoint of community development, the proposed site is in a prime location. The surrounding area is rich with existing multi-modal transportation options and is located very near to already dense infrastructure. Nearby attractions and commodities include the Town Square (stores, restaurants, etc.), Teton County Recreation Center, Jackson Elementary School, and St. John's Medical Center (& other medical commodities). Having such

great access to such commodities and the existing multi-modal infrastructure in place promotes alternative modes of transportation.

Trip Generation

The ITE Manual 9th edition was utilized in approximating trip generation values for the proposed "Hidden Hollow". For trip generation development, all multi-family units were considered Apartments *(ITE 220)*, town homes were considered Residential Condominium/Townhouse *(ITE 230)*, and the single family dwellings as Single-Family Detached Housing *(ITE 210). Figure 5* includes the trip generation values.

Land Use: **Multi-Unit Apartment/Condominium**
ITE Land Use Category: **Apartment**
ITE Land Use Code: **220**
Independent Variable: *Dwelling Units*
Value: 135

				Directional Distribution			
Analysis Period		*Rate*	*Trips*	*Entering*	*Exiting*	*Entering*	*Exiting*
DAILY	Weekday	*T = 6.06(X) + 123.56*	*942*	50%	50%	471	471
A.M. Pk Hr (7-9 a.m.)	Weekday	*T = 0.49(X) + 3.73*	70	20%	80%	14	56
P.M. Pk Hr (4-6 p.m.)	Weekday	*T = 0.55(X) + 17.65*	92	65%	35%	60	32

Land Use: **Townhomes**
ITE Land Use Category: **Residential Condominium/Townhouse**
ITE Land Use Code: **230**
Independent Variable: *Dwelling Units*
Value: 20

				Directional Distribution			
Analysis Period		*Rate*	*Trips*	*Entering*	*Exiting*	*Entering*	*Exiting*
DAILY	Weekday	*Ln(T) = 0.87 Ln(X) + 2.46*	*159*	50%	50%	79	79
A.M. Pk Hr (7-9 a.m.)	Weekday	*Ln(T) = 0.80 Ln(X) + 0.26*	14	17%	83%	2	12
P.M. Pk Hr (4-6 p.m.)	Weekday	*Ln(T) = 0.82 Ln(X) + 0.32*	16	67%	33%	11	5

Land Use: **Single Family Dwellings**
ITE Land Use Category: **Single-Family Detached Housing**
ITE Land Use Code: **210**
Independent Variable: *Dwelling Units*
Value: 13

				Directional Distribution			
Analysis Period		*Rate*	*Trips*	*Entering*	*Exiting*	*Entering*	*Exiting*
DAILY	Weekday	*Ln(T) = 0.92 Ln(X) + 2.72*	*161*	50%	50%	80	80
A.M. Pk Hr (7-9 a.m.)	Weekday	*T = 0.70(X) + 9.74*	19	25%	75%	5	14
P.M. Pk Hr (4-6 p.m.)	Weekday	*Ln(T) = 0.90 Ln(X) + 0.51*	17	63%	37%	11	6

Combined Trip Generation

				Directional Distribution			
Analysis Period		*Rate*	*Trips*	*Entering*	*Exiting*	*Entering*	*Exiting*
DAILY	Weekday	-	***1261***	50%	50%	630	630
A.M. Pk Hr (7-9 a.m.)	Weekday	-	**103**	20%	80%	21	82
P.M. Pk Hr (4-6 p.m.)	Weekday	-	**125**	65%	35%	81	44

Figure 5: Hidden Hollow Proposed Site - Trip Generation (ITE, 2012)

Based on the trip generation calculations, it can be clearly seen that the proposed development will produce significantly greater trips than existing conditions. However, the trip generation values calculated do little to accommodate for the significant multi-modal options present at the proposed site. Greater investigation will be necessary to determine the impacts of the site location and nearby facilities will have on trip generation. Regardless, the traffic produced by the proposed site will remain significantly higher than existing conditions and consequently will impact the transportation network to a greater degree.

Transportation Access

Primary access for "Hidden Hollow" will be through Mercill Avenue. The site plan proposes the removal of Rosencrans Lane and routing all traffic through the signalized intersection at Mercill Avenue. Removing the midblock access to Rosencrans will improve safety as well as traffic functionality along Cache Street. Because the intersection of Mercill Avenue operates very similarly to a three-legged intersection currently, the intersection possesses a great degree of capacity on the west bound approach where residents will be accessing the site. The analysis of the impacts expected at the intersection of North Cache Street & Mercill Avenue will be completed with the Final Development Plan once a greater degree of data collection can be completed and unknowns minimized.

North King Street Re-alignment/Expansion

In addition to routing site access through the signalized intersection at Mercill Avenue, the site proposes the addition of an access point off of North King Street. Currently North King Street operates as a parking lot access for the Teton County Recreation Center and has an alignment undesirable as a through street for an additional access. As such, the inclusion of an access to "Hidden Hollow" from King Street will be contingent on an alignment change to the existing roadway. Including an additional access to the site will provide some traffic impacts on Cache Street as well as provide for greater access to the site, including emergency access. The feasibility and inclusion of the King Street Access will need to be determined as the team moves through the Final Development Plan. For traffic impact purposes, two separate scenarios for the proposed site will be modeled, one with the King Street Access and another without it. These models will be analyzed as part of the FDP.

Other Considerations

With the construction of the new U.S. Forest Service Building, an understanding of traffic operations and access points for the forest service will be needed in best determining traffic impacts to the adjacent transportation network. Additionally, a greater understanding of multi-modal transportation facilities and operations will improve the accuracy of the impact assessment and the project moves forward.

VI. TRAFFIC IMPACT STUDY NEEDS (as part of FDP)

The following outlines the items to be completed within the Traffic Impact Study to be presented with the Final development Plan.

1. Consult WYDOT on Transportation Network and Signal Timing/Interaction
2. Collect Turning-Movement Counts at signalized intersections within Study Area
3. Collect Turning-Movement Counts at TWSC Intersection of Gill Avenue and King Street
4. Complete Conditional Survey of existing facilities
5. Analyze Origin-Destination of proposed development
6. Determine existing conditions of transportation network (WYDOT consultations/HCS2010 modelling of existing conditions)
7. Analyze the impacts of multi-modal facilities
8. Analyze the expected impacts to the adjacent traffic network using HCM2010 methodologies (utilize HCS2010 software)
9. Analyze Signal Timings
10. Determine Mitigation Strategies
11. Make Recommendations

VII. CONCLUSIONS

Overall, "Hidden Hollow" greatly increases the trip generation of the proposed site. It is expected, based on preliminary assumptions, that the site will develop 1,216 trips/day on the adjacent transportation network. Of this, it is expected that approximately 103 will take place during the A.M. Peak Hour time while 125 are predicted to take place during the P.M. Peak Hour time (a time already struggling to serve traffic). Though the volumes are high compared to historic trip generation, two key items will aid in the mitigation of traffic impacts caused by the site. First, traffic on North Cache Street will access the site through the existing signalized intersection at Mercill Avenue. This intersection currently resembles the operation of a 3-legged intersection having capacity on the west bound approach accessing the site. Reconfiguring the signal orientation and phasing will likely absorb a portion of the trips generated by the proposed site. Secondly, the possibility of a second access point off of North King Street will absorb a great portion of trips generated by the proposed site. Accessing the site through King Street will likely greatly decrease expected delays for residence. Reduced delays would promote more drivers to access the site off of King Street and then dissipate trips to the remainder of the transportation network. The inclusion of the King Street access will greatly ease the expected impacts on Cache Street.

This report outlines the expected impacts based on trip generation calculations for the proposed "Hidden Hollow" Development. Jorgensen recommends the review of this report under the "Sketch Plan" phase of the project by the appropriate parties. Any concerns regarding the impacts of the proposed site should be discussed and further information can be provided as needed. A detailed analysis of the traffic impacts to the adjacent transportation system will be analyzed as part of the final development plan. This will allow new up-to-date data to be collected at appropriate intersections (July counts would be ideal) as well as some unknowns to be addressed prior to analysis.

If you have any questions, please do not hesitate to contact Jorgensen.

VIII. References

Greenwood Mapping. (2016, 06 27). Teton County GIS. Teton County, Wyoming, U.S.A.

Institute of Transportation Engineers. (2012). *Trip Generation 9th Edition.* ITE.

Kaufman, D. (2016, 06). WYDOT Distric 3 Traffic Engineer. (Jorgensen, Interviewer)

(Adopted October 20, 2014). *Teton County Land Development Regulations (LDRs).* Teton County, WY.

Transportation Research Board. (2010). *HCM2010.* TRB.

Hidden Hollow
Sanitary Sewer Demand Calculations

Date: 31 August 2016
By: AB

Town House Domestic Sewage Flows

	Townhomes			
Unit Type	**Unit A**	**Unit B**	**Unit C**	**Unit D**
Bed	2	3	3	2
# Units	7	7	4	2
Total Bed	14	21	12	4

Total Bedrooms =	51	
Total Flow (150gpd/bed) =	7,650	gpd

Multi-Family Domestic Sewage Flows

	Multi Family		
Unit Type	**1 Bed**	**2 Bed**	**3 Bed**
Bed	1	2	3
# Units	45	60	30
Total Bed	45	120	90

Total Bedrooms =	255	
Total Flow (150gpd/bed) =	38,250	gpd

Single Family Domestic Sewage Flows

	Single Fam
Unit Type	**Allowed**
Bed	4
# Units	13
Total Bed	52

Total Bedrooms =	52	
Total Flow (150gpd/bed) =	7,800	gpd

Total Demand for project =	53,700	gpd

Hidden Hollow
Water System Demand Calculations

Date: 31 August 2016
By: AB

Town House Water Demand Maximum daily flow = 340 gpd/person

Unit Type	Unit A	Unit B	Unit C	Unit D		
Bed	2	3	3	2		
People Per Unit	2.5	3.0	3.0	2.5	Total	
# Units	7	7	4	2	20	Max. Daily Flow
Total Bed	14	21	12	4	51	
Total People	18	21	12	5	56	19,040 gpd

Multi Family Water Demand Maximum daily flow = 340 gpd/person

Unit Type	1 Bed	2 Bed	3 Bed		
Bed	1	2	3		
People Per Unit	2.0	2.5	3.0	Total	
# Units	45	60	30	135	Max. Daily Flow
Total Bed	45	120	90	255	
Total People	90	150	90	330	112,200 gpd

Single Family Water Demand Maximum daily flow = 340 gpd/person
Irrigation = 0.02 ft/day

Bed	4	
People Per Unit	4	
# Units	13	Max. Daily Flow
Total Bed	52	
Total People	52	17,680 gpd

Landscaping Water Demand

Area	143,306	SF
Water Application	1.5	in/week
Required Volume	2,559	CF/day
	19,142	gpd

** Total Site area minus hardscape, buildings, and wetlands*

Maximum Day Domestic Demand =	168,062	gpd	**Sum of Max Daily Demands including irrigation*
Average Day Demand =	54,750	gpd	**Based on 125 GPD/Capita Average no irrigation*
Peak Hour Factor =	3		
Peak Hour Domestic Demand =	350	gpm	**Peak Hour Demand including irrigation*

HIDDEN HOLLOW
WATER MODEL STUDY

JA Project No. 16016.00 BY: AJ

Date: 07/27/2016

WATER SYSTEM SCENARIO #1 - Zone 2	
Demand (gpm)	Pressure (psi)
0	63.8
600	57.6
1000	50.2
1500	37.8
2000	21.9
2200	14.6

Note:

[1] Based on 8" Main from Cache to Project Site via Rosencrans Drive

[2] Based on 8" Main from E. Gill to Project Site via King Street

[3] Additional demand modeled at proposed hydrant at north end of Project Site

WATER SYSTEM SCENARIO #2A - Zone 1	
Demand (gpm)	Pressure (psi)
0	111.3
600	95.0
1000	72.9
1500	34.1
1750	10.2
2000	-16.8

Note:

[1] Based on 8" Main connection to 6" hydrant line on north side of Rec Center/JES

[2] Additional demand modeled at proposed hydrant at north end of Project Site

WATER SYSTEM SCENARIO #2B - Zone 1	
Demand (gpm)	Pressure (psi)
0	111.3
600	99.7
1000	85.0
1500	59.7
2000	26.8
2200	11.6

Note:

[1] Based on new 8" Main connection Teton Ave / Jean St (Gill Addition)

[2] Additional demand modeled at proposed hydrant at north end of Project Site

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Jackson, WY 83002
PH: 307.733.5150
| www.jorgeng.com

HIDDEN HOLLOW

STORMWATER MANAGEMENT MANUAL
RATIONAL METHOD FOR RUNOFF CALCULATIONS
PRE-DEVELOPED FLOW RATE - 100 YEAR

Design Storm Frequency = 100 years

Discharge Rate, d = 0.00 cfs

Surface Type	Area A (ft^2)	Area (acres)	Runoff Coefficient C	Frequency Factor C_f	C x C_f	Calculation Value C'	C' x A (acres)
Asphalt and Concrete	34,860	0.80	0.95	1.25	1.1875	1	0.80
Roofs	12,659	0.29	0.95	1.25	1.1875	1	0.29
Lawn, Heavy, Flat, 2%	40,629	0.93	0.15	1.25	0.1875	0.1875	0.17
Lawn, Heavy, Average, 2 to 7	347,525	7.98	0.20	1.25	0.25	0.25	1.99
		0.00	0	1.25	0	0	0.00
Totals	**435673.00**	**10.00**					**3.46**

Weighted Runoff Coefficient, $C_{wd} = \frac{\Sigma C_j A_j}{\Sigma A_j} = 0.28$

$C_{wd} \times C_f = 0.35$

$C_{wd} \times C_f \times \Sigma A_j = 3.46$

Time of Concentration = 5 minutes

	Water Quantity Calculations		
Rainfall Duration, t (min)	Rainfall Intensity, i (in/hr)	Runoff Volume (ft^3)	Peak Flow (ft^3/sec)
1	0	0.00	0.00
5	3	3144.33	10.39
10	2.33	4884.20	8.07
15	1.9	5974.23	6.58
20	1.65	6917.53	5.72
30	1.3	8175.27	4.50
40	1.08	9055.68	3.74
50	0.95	9957.05	3.29
60	0.82	10313.41	2.84
70	0.74	10858.43	2.56
80	0.65	10900.35	2.25
90	0.61	11508.26	2.11
100	0.56	11738.84	1.94

Peak Flow Rate = 10.39 cfs

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HIDDEN HOLLOW

STORMWATER MANAGEMENT PLAN
RATIONAL METHOD RUNOFF CALCULATIONS
POST-DEVELOPMENT - 100 YEAR EVENT

Design Storm Frequency = 100 years

Discharge Rate, d = 10.39 cfs

Surface Type	Area A (ft^2)	Area (acres)	Runoff Coefficient C	Frequency Factor C_f	C x C_f	Calculation Value C'	C' x A (acres)
Asphalt and Concrete	131,213	3.01	0.95	1.25	1.1875	1	3.01
Roofs	104,716	2.40	0.95	1.25	1.1875	1	2.40
Lawn, Heavy, Flat, 2%	38,719	0.89	0.15	1.25	0.1875	0.1875	0.17
Lawn, Heavy, Average, 2 to 7%	161,025	3.70	0.2	1.25	0.25	0.25	0.92
		0.00	0	1.25	0	0	0.00
Totals	**435673**	**10.00**					**7.52**

Weighted Runoff Coefficient, $C_{wd} = \frac{\Sigma C_j A_j}{\Sigma A_j} = 0.60$

C_{wd} x C_f = 0.75

C_{wd} x C_f x ΣA_j = 7.52

Time of Concentration = 5 minutes

	Water Quantity Calculations				
Rainfall Duration, t (min)	Rainfall Intensity, i (in/hr)	Runoff Volume (ft^3)	Discharge Volume (ft^3)	Site Detention (ft^3)	Peak Flow (ft^3/sec)
5	3	6826.71	3118.35	3708.37	22.57
10	2.33	10604.16	6236.69	4367.47	17.53
15	1.9	12970.75	9355.04	3615.71	14.29
20	1.65	15018.77	12473.39	2545.38	12.41
30	1.3	17749.45	18710.08	-960.63	9.78
40	1.08	19660.93	24946.77	-5285.84	8.12
50	0.95	21617.92	31183.47	-9565.54	7.15
60	0.82	22391.62	37420.16	-15028.54	6.17
70	0.74	23574.91	43656.85	-20081.94	5.57
80	0.65	23665.94	49893.55	-26227.61	4.89
90	0.61	24985.77	56130.24	-31144.47	4.59
100	0.56	25486.39	62366.93	-36880.54	4.21

Water Quantity Storage Required = 4367 ft^3
= 32669 gallons

Peak Flow Rate = 22.57 cfs

Hidden Hollow - Plant Unit Summary

INDIVIDUAL HOA AREAS

HOA Sub-Area	Plant Species	Quantity	Unit Cost	Total Value
SubHOA - A Single Family Lots	Patmore Ash	11	$350	$3,850
	Spruce	18	$1,000	$18,000
	Aspen	27	$320	$8,640
	5'-6' B & B Shrubs	52	$250	$13,000
	5 Gallon Shrubs	219	$35	$7,665
	TOTAL			**$51,155**
SubHOA - B Townhouses	Patmore Ash	12	$350	$4,200
	Spruce	13	$1,000	$13,000
	Aspen	50	$320	$16,000
	Swedish Aspen	10	$320	$3,200
	5'-6' B & B Shrubs	51	$250	$12,750
	5 Gallon Shrubs	215	$35	$7,525
	TOTAL			**$56,675**
SubHOA - C Apartment / Multi-Family	Patmore Ash	32	$350	$11,200
	Spruce	2	$1,000	$2,000
	Swedish Aspen	3	$320	$960
	5'-6' B & B Shrubs	1	$250	$250
	5 Gallon Shrubs	3	$35	$105
	Bike Racks	9	$350	$3,150
	TOTAL			**$17,665**
Master HOA - D Common Lot	Patmore Ash	34	$350	$11,900
	Spruce	55	$1,000	$55,000
	Aspen	97	$320	$31,040
	Swedish Aspen	66	$320	$21,120
	5'-6' B & B Shrubs	271	$250	$67,750
	5 Gallon Shrubs	637	$35	$22,295
	Existing 30'-40' Spruce	15	$7,000	$105,000
	Existing Aspen	9	$2,000	$18,000
	TOTAL			**$332,105**

OVERALL PROJECT

Plant Species	Quantity	Unit Cost	Total Value
Patmore Ash	89	$350	$31,150
Spruce	88	$1,000	$88,000
Aspen	174	$320	$55,680
Swedish Aspen	79	$320	$25,280
5'-6' B & B Shrubs	375	$250	$93,750
5 Gallon Shrubs	1074	$35	$37,590
Existing 30'-40' Spruce	15	$7,000	$105,000
Existing Aspen	9	$2,000	$18,000
Bike Rack	9	$350	$3,150
Total Proposed PU Value			**$457,600**
Total Required PU Value			**$457,600**

PLANT UNIT SUMMARY

1 per Dwelling Unit	168
1 per 12 parking spaces	8
TOTAL	**176**

8/29/2016
Hershberger Design

Affordable Housing Mitigation 8/30/2016

Mitigation Required*			
Bedrooms	**# of Units**	**Person per units**	**People**
studio	0	1.25	0
1	30	1.75	52.5
2	49	2.25	110.25
3	31	3	93
4	13	3.75	39
Total	**123**		**294.75**
		x.20	**59**

*Does not include 45 units with Employee Based Deed Restriction that comprise the additional FAR allowed by the 48' UR-PUD development option

Current Income Mix	**# of Units**			
	Total	MF Condo	TH	SF
Market Units	**96**	63	20	13
Employee Based Units	**45**	45	0	0
Income Based units	**27**	27	0	0
Total	**168**	135	20	13

For Sale Mitigation	**# of Units**	**Person per units**	**People**
1 bed Condo	12	1.75	21
2 bed Condo	9	2.25	20.25
3 bed Condo	6	3	18
Subtotal	**27**	Subtotal	**59.25**

48' UR PUD Mitigation	**# of Units**
1 bed Condo	15
2 bed Condo	20
3 bed Condo	10
Subtotal	**45**

Note: This number will be further refined. The LDRS require that the FAR allowed with 48' height UR-PUD development option must all be "deed restricted'. At this time we don't not have architectural plans for the multifamily building so determining the FAR of the top floor is not possible. We assume each building will contain 27 units and each floor will have 9 units. Therefore 45 units would be the result of the increase FAR is a logical starting point without architectural plans. At final development plan for Area C, this number will be further refined and a minor amendment to the master plan will be filed with the Planning department.

Hidden Hollow **Updated: August 30, 2016**

Housing Mix / Mitigation Calculation

	Multi Family									Townhomes				Single Fam
Unit Type	***1 Bed EB***	***2 Bed EB***	***3 Bed EB***	**1 Bed IB**	**2 Bed IB**	**3 Bed IB**	**1 Bed mkt**	**2 Bed mkt**	**3 Bed mkt**	**Unit A**	**Unit B**	**Unit C**	**Unit D**	
Unit Sq. Ft.	*480*	*680*	*960*	480	680	960	600	850	1,200	2,100	2,675	2,837	1,831	4046 (avg)
# Units	*15*	*20*	*10*	12	9	6	18	31	14	7	7	4	2	13
Bed	*1*	*2*	*3*	1	2	3	1	2	3	2	3	3	2	2
Total Sq. Ft.	*7,200*	*13,600*	*9,600*	5,760	6,120	5,760	10,800	26,350	16,800	14,700	18,725	11,348	3,662	52,604
Required Parking/unit	15	40	20	12	18	12	18	62	28	14	14	8	4	26
Parking Guest (.25/unit)	4	5	3	3	2	2	5	8	4	2	2	1	1	3

Grand Total Units	**168**
Grand Total Bed	**332**
Grand Total Sq. Ft.	**203,029**
Effective FAR*	**0.54**

291	**Total Required Parking**
42	**Total Required Guest Parking**
333	**Grand Total Required Parking**

Notes:

EB=Employment Based	1 bed = 1 spot
IB=Income Based	2, 3 & 4 bed = 2 spots
mkt=market based	.25 per unit for guest

Effective FAR divides total SF by GSA (less the ROW and Wetland Mitigation)

Neighbornood Meeting Summary 5/26/16

Type	First	Last	Email	Address	Phone	Want Emails?	Place on Rental List?	Type of Person	Type of Housing Jackson Needs?	Sale or Rent	Bedrooms	Bathrooms	Rental Price Range	Sales Price Range	1-10 First Impression	Comments
Website	Melanie	Azizi	melanie.azizi@gmail.com													Interested in learning about property
Website	Nick	Braun	braun.nick@gmail.com													Interested in completion time and who the builder is
Website	Mark	Mueller	mueller.cpa@gmail.com													Interested in housing plan prices
Website	Brandon	Harrison	bharrison@rustyparrot.com													Would like information when available re: pre-sales
Website	Mira	Lee	mira@post.harvard.edu													Would like to be on the mailing list
Website	Mark	Paris	mparis@landwellco.com							Sale						Interested in purchasing a townhome
Website	Judith	Weikle	jweikle@tcsd.org													Interested in helping with the project? - Teton County School District
Website	Susan	Baratti	smranch@juno.com													Interested in townhouse pricing
Website	Kara	Eicholzer	ikeh20@aol.com													Interested in townouses and ability to choose finishes, start and end date
Website	Bobby	Thomson	rhthomson3@gmail.com													Employs 7 people in the county, wants to be put in line for one bedroom one bath apartment
Website	Brian	Tanabe	tanabe@bresnan.net													Would like more information on the development
Website	Olga	Johnson	drolga2004@yahoo.com		307.413.7243											Interesed in buying apartment or house on the initial phase - longtime Jackson resident
Paper	Garth	Gillespie	garth@jhexperts.com	1300 Preston Ln	307.413.5243	Yes	Yes	Realtor / Sales	All of the Above	SELLING					9	Please email my wife and I and we will give you some ideas
Paper	Darren	Brugmann	dbrugmann@townofjackson.com	55 Karns Meadow	307.732.8650	Yes	No	Start Bus Director								Start Bus Transit needs consideration for Transit considerations
Paper	Reade & David	Dornan		382 Saddle Butte Dr.	307.734.9400		No	Curious Neighbor							7	Too many people, parking problems, marshy land, landscaping plan
Paper	Justin	Tatosian	jtatosian@gmail.com		307.699.1110	No	No		More affordable, multi family & apartments		2.5	2			9	
Paper	Mary	Gibson	mary@jhalliance.org	Jackson Hole Conservation Alliance	307.733.9417	Yes	No	Non Profit	Affordable 1,2,3	Rent						
Paper	Rosie	Read	rosie.read@ahoo.com	375 S. Willow		Yes	Yes	Curious Neighbor	High Density & Affordable	Sale	2	2	1500 - 2000	400K	8	
Paper	Felicito	Hernandez	felix.da.cat@hotmail.com	755 E Hansen Avenue #108	307.413.5292	Yes	Yes	Curious Neighbor			2 / 1		Open	Open	10	
Paper	Shelby	Read	shelby_combs@yahoo.com	375 S. Willow	317.460.7617	Yes	Yes	Curious Neighbor	Affordable & High Density	Sale	2	2	1500 - 2000	400K	7	
Paper	Sarah	Read		6970 4th Street Kelly WY 83011	307.699.4329	No	No	Curious Neighbor	Affordable Rentals & For Sale							
Paper	John	Spina	jsspina3@gmail.com	655 W Deloney Avenue	303.917.2335	Yes	No	Curious Neighbor	Affordable	Rent	2	0.5	700 - 1000		8	
Paper	Mike	McCormick	mjmccormick313@yahoo.com	P.O. Box 12678					Multi Family	Both	3	2	1400	600K	8	
Paper	David	Vandenberg	david.l.vandenberg@gmail.com		307.690.4113	Yes	Yes	Realtor / Sales / Planning Commision	Affordable & Under 300K	Both					7	
Paper	Ian	Tyree	ian.tyree@gmail.com	P.O. Box 6740	917.415.4846	No	Yes	Curious Neighbor / Local Biz Owner							8	
Paper	Carrie	Kruse	carrie@housingtrustjh.org	JH Housing Trust		Yes	No	Curious Neighbor	Long Term / Stable	Either					8	More storage, guest parking?
Paper	Aaron	Coulter	aaron@geniuspropertysolutionsllc.com	205 E Center Street #C7	650.745.5557	Yes	Yes	Realtor / Sales / Local Biz Owner	Multi Family, Dense, Affordable, Long Term	Both					9	More storage, street parking in front of townhomes
Paper	Jimmy	Resen	jimjam.jr@gmail.com	525 Calter Avenue	330.730.0631	Yes	Yes	Curious Neighbor / In Need of House	Affordable Apartments	Rent	2 / 1	1 / .5	500 - 1500	150K - 300K	8	

Invitation

Hidden Hollow Neighborhood Meeting & Open House

When: **Wednesday, May 25, 2016**

Location: **Davey Jackson Elementary School – Commons Area**
200 North Willow, Jackson, Wyoming

Time: **5:30 – 7:00 pm**

We are pleased to invite our friends, neighbors, and interested public to the Neighborhood Meeting and Open House for Hidden Hollow. Hidden Hollow will be Jackson's newest housing development located on 10 acres of the former Bridger-Teton National Forest Service location, adjacent to the National Elk Refuge.

Hidden Hollow is currently being planned as a mixed residential community, consisting of thirteen (13) single family home sites, twenty (20) attached townhome units, and one hundred twenty (120) stacked multifamily units. The Pre-application Conference with the Town of Jackson took place on May 4, and the developers and design team are working towards the Sketch Plan application and submittal.

Concept drawings of the development will be available to view and comment on. You will have a chance to meet the developers and design team on a personal level, ask questions, and provide opinions. The developers would like your feedback on affordable and workforce housing, and how Hidden Hollow can best integrate this issue and help provide a housing solution.

HIDDEN HOLLOW

Hidden Hollow Open House

Name:_____

Phone:_____

Address:_____

City:_____ State:_____ Zip:_____

Email:_____

Would you like to receive email notices about this project? Yes No

Would you like to be placed on our rental/sales list? Yes No

Are You:

_____Curious Neighbor/Jackson Resident
_____Realtor/Sales Agent
_____Subcontractor/Construction Interest
_____In Need of Housing
_____Local Business Owner

What type of housing does the Town of Jackson most need?

Are you most interested in affordable housing for sale or for rent?

How many bedrooms/bathrooms do you need for your current situation?

Bedrooms	4	3	2	1
Bathrooms	3	2	1	1/2

What is the rental price range you are most interested in?_____

What is the sales price range you are most interested in? _____

On a scale of 1 (low) to 10 (high), what is your first impression of the Hidden Hollow project idea and concept, including housing types and mix?

1 2 3 4 5 6 7 8 9 10

Comments/Suggestions of the Hidden Hollow concept?

HIDDEN HOLLOW

Hidden Hollow Open House

Name:_____

Phone:_____

Address:_____

City:_____ State:_____ Zip:_____

Email:_____

Would you like to receive email notices about this project? Yes No

Would you like to be placed on our rental/sales list? Yes No

Are You:

_____Curious Neighbor/Jackson Resident
_____Realtor/Sales Agent
_____Subcontractor/Construction Interest
_____In Need of Housing
_____Local Business Owner

What type of housing does the Town of Jackson most need?

Are you most interested in affordable housing for sale or for rent?

How many bedrooms/bathrooms do you need for your current situation?

Bedrooms	4	3	2	1
Bathrooms	3	2	1	1/2

What is the rental price range you are most interested in?_____

What is the sales price range you are most interested in? _____

On a scale of 1 (low) to 10 (high), what is your first impression of the Hidden Hollow project idea and concept, including housing types and mix?

1 2 3 4 5 6 7 8 9 10

Comments/Suggestions of the Hidden Hollow concept?

SECTION 5 – GEOTECHNICAL REPORT

April 27, 2016

Zane Powell
Conrad & Bischoff, Inc.
2251 N Holmes Ave
Idaho Falls, ID 84301

Re: Geotechnical Investigation Report the BTNF 10-Acre Site, 60 Rosencrans, Jackson, Wyoming

Dear Mr. Powell,

This geotechnical investigation report describes the test pit, borehole, and geologic conditions observed at the BTNF 10-acre site, which is located at 60 Rosencrans, in Jackson, Wyoming. The purpose of the geotechnical information obtained from the field investigation will be for use in engineering design and development on the property. In total, 6 boreholes and 2 test pits were logged at the site during this investigation and 5 samples were sent in for laboratory testing.

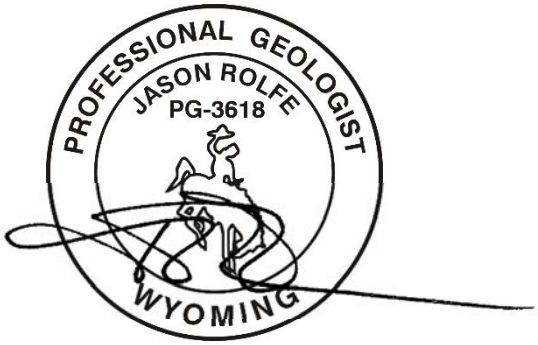
In summary, the 10-acre parcel is covered in 2.5 to 16.5 feet of fine-grained flood plain and swamp deposits, with the thickest deposits occurring at the northwest corner and thinning to the southeast. These fine-grained soils consist of primarily silt and clay with sand. The swamp and flood plain deposits overlie medium dense to dense sandy cobble and gravel alluvium to depths in excess of 40 feet.

Previous groundwater studies indicate that the water table may be reasonably shallow at any time of the year and is affected by irrigation, run-off, flooding in Flat Creek, and other climatic events. In general, the groundwater was shallowest in the northwest and deepest in the south portions of the property. It is likely that the fine-grained soils act as an aquitard and variations in the groundwater will depend on if the aquitard has been breached.

Approximately 2.7 acres of the site are located within a FEMA Special Flood Hazard Area (SPHA) which is considered to be an area with a 1% annual chance flood (100-year flood). According to FEMA Flood Insurance Rate Map 56039C2907D, a base flood elevation has not been determined.

We appreciate the opportunity to work with you on this project and we'll be available to answer questions as the project progresses.

Thank you,

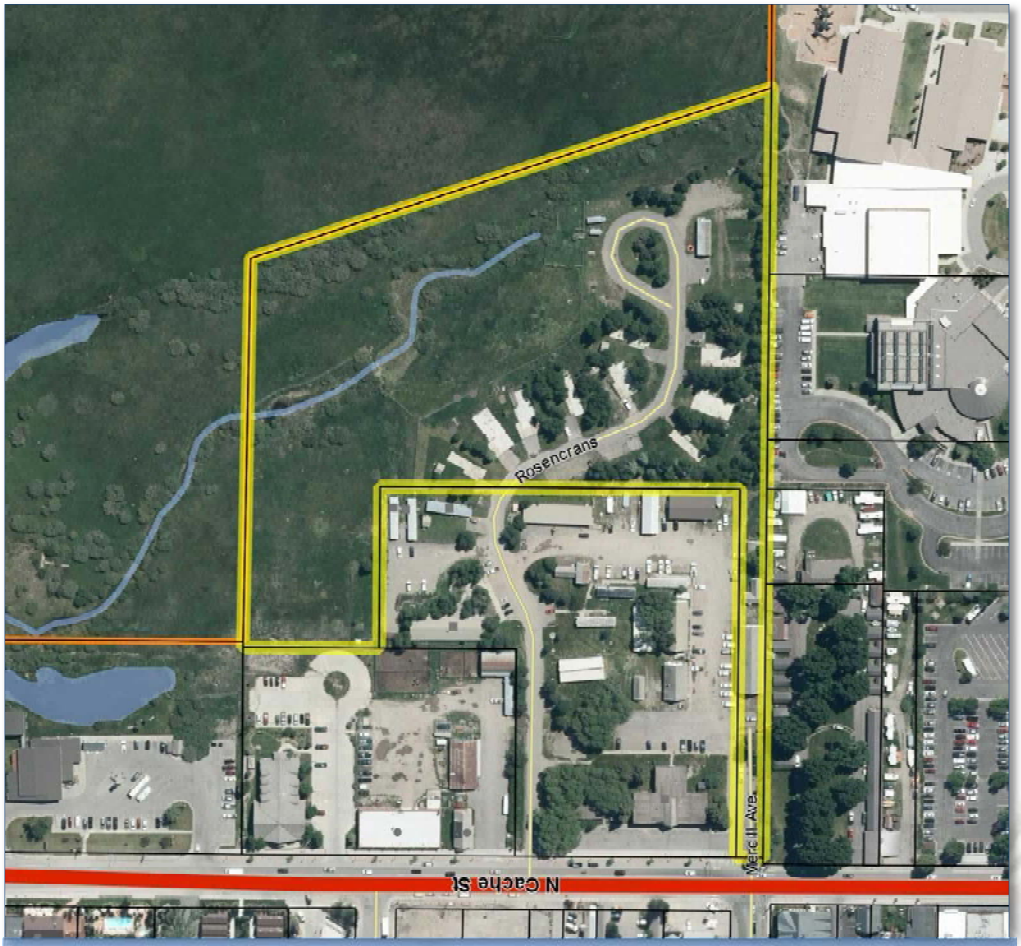


Jason Rolfe, PG
Geologist

Zia Yasrobi, PE
Owner/Manager

GEOTECHNICAL INVESTIGATION REPORT

45 Rosecrans
Teton County, Wyoming



April 28, 2016

Prepared For:
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Conrad & Bischoff
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Prepared By:

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Contents

INTRODUCTION

As authorized by Zane Powell, of Conrad & Bischoff, Y2 Consultants performed a geotechnical site investigation for the 10.0-acre parcel at 60 Rosencrans, located less than a half-mile from the Town Square in Jackson, Wyoming (Figure 1). The purpose of this geotechnical investigation was to identify and log the site soils, groundwater, and site conditions for the use in planning and development of the subject property. In total, 6 boreholes were drilled and 2 test pits were excavated at the project site (Figure 2). In addition to this recent field exploration, 4 previously drilled boreholes and 9 previously installed monitoring wells were reviewed and incorporated into this investigation. The results of the previous studies and the current study are included in this report and its appendices.

SITE DESCRIPTION

The 10-acre subject property was previously part of a larger parcel owned by the Bridger-Teton National Forest and used for employee housing, storage, and other operational purposes. Approximately 4.5 acres were used for housing, 1.7 acres were used for storage, and the remaining 3.8 acres is undeveloped property. The site is relatively flat and has less than approximately 15 vertical feet of relief throughout the parcel. The site has an average elevation of about 6,625 feet above mean sea level and is located in the southwest quarter of Section 27, Township 41N, Range 116W.

The site is bound to the north and east by the National Elk Refuge, and to the west and south by developed Federal, Town, County, and private properties.

At the time of this report, no development drawings were available for review. The parcel is zoned UR (Urban Residential) and it is assumed that the site will be used primarily for single family housing units.

HISTORICAL INFORMATION

According to aerial photos from the Teton County GIS Map Server, development began on the site between 1945 and 1955 and included the maintenance building that is at the southeast corner of the property today. It appears that the site was used primarily as storage for vehicles and equipment until the mid- to late-1980s, when a residential subdivision was constructed on the southern half of the parcel. By the late-1990s, up to 9 trailers were used to house workers on the site and several out buildings were used for maintenance and storage. The northwest corner was primarily used for vehicle, trailer, and equipment parking.

Between 2009 and 2011, a couple of the housing trailers had been demolished, and by 2015, all of the residential trailers, equipment trailers, vehicles, and other items had

been removed. At the time of our investigation, only the original building in the southeast corner and one or two bully barns remained on the site; the concrete pads that the residential trailers were built on also remain.

During the investigation, debris consisting of metal drums, concrete, and other trash was encountered in test pits TP-3 and TP-4, in the southeast corner of the property. It is likely that this area was used to dispose of various construction and other debris throughout the history of the Forest Service's use of the property.

The Bridger-Teton Administration site to the west of the property has been the subject of a clean-up by the Wyoming Department of Environmental Quality's (WDEQ) Leaking Above and Underground Ground Storage Tank (LAUST) program. At least 14 monitoring wells were installed on the adjacent BTNF Administration parcel and another 4 monitoring and air sparge wells were installed on the Kudar Motel parcel to the southwest. It does not appear that any of the WDEQ wells were installed on the subject parcel and it does not appear that the subject parcel was contaminated. A project summary of the LAUST investigation and remediation procedures is included in Appendix C of this report. An environmental assessment of potential contaminants was not included in the Scope of this geotechnical investigation.

PROPOSED DEVELOPMENT

At the time of this report, project drawings were not available for the site. It is assumed that the several single-family, multi-story residences, consisting of typical wood frame construction placed on concrete strip footings, will be built on the site. Teton County has zoned the site as Urban Residential.

PREVIOUS STUDIES

In January, 2008, Nelson Engineering (NE) issued a Geotechnical Investigation report for the same parcel. Their investigation included advancing 4 boreholes at the site, although one was located west of the subject parcel, on BTNF property. The borehole and laboratory data was used to supplement the borehole and laboratory data from this field investigation. The Nelson Engineering report is included as Appendix D of this report.

On June 3rd, 2014, Pierson Land Works installed 9 groundwater monitoring wells on the site. The wells were read 53 times between their installation and May 19th, 2015. The results of that study indicate that the groundwater is shallowest in the northwest and gets progressively deeper to the southeast and east side of the property. Unfortunately, it does not appear that soil or test pit excavation logs were prepared during the

installation of the monitoring wells. A discussion of the groundwater monitoring results is provided in the Groundwater Section of this report.

This report also includes soil data obtained from an additional 4 monitoring wells that were installed by Y2 on January 11th, 2016. These wells were installed along the eastern side of the property and will be used to measure groundwater levels through the 2016 run-off season.

SCOPE OF INVESTIGATION

On January 6th, 2016, a Professional Geologist representing Y2 Consultants directed the excavation, logging, and sampling of 6 exploratory boreholes at the project site. The boreholes were advanced using a Simco 2800 drill rig, which was operated by LK Drilling out of Green River, Wyoming. A total of 124 vertical feet of drilling was executed and 23 Standard Penetration Tests were performed in one day of drilling.

On January 11th, 2016, two test pits were excavated using a Komatsu mini, tracked excavator, which was operated by Westwood Curtis Construction. The purpose of these test pits was to acquire depth to alluvium data for two areas (BH-2 and BH-8) that were not accessible by the truck mounted drill rig.

The boreholes and test pits were distributed as evenly as possible in order to achieve the best practical coverage for the 10-acre parcel., There was approximately 1.0 to 1.5 feet of snow on the ground at the time of the field investigation, which limited the drill rig to paved areas.

The boreholes were generally terminated about 8 feet below the contact between the fine-grained swamp and flood plain deposits and the coarse-grained alluvial gravels and cobbles. The test pits were terminated in the alluvial gravels to establish a depth to a competent bearing surface.

This report contains a summary of the recent field investigation and includes discussions and data provided by previous studies performed at the site, including those by Nelson Engineering, Pierson Land Works, and WDEQ.

GEOLOGIC INFORMATION

GEOLOGIC SETTING

The project site can be found on the Geologic Map of the Jackson Quadrangle, Teton County, Wyoming (Love and Albee, 2004), which contains the location of various rock units, contacts, faults, and other geologic information. According to the map, the site is

covered by Quaternary swamp (Qs), flood plain (Qfp), and minor amounts of alluvial fan (Qf) deposits (Figure 1). Love and Albee describe the units as follows:

> **Flood Plain Deposits:** "Sand, silt, clay, and minor lenses of gravel."
>
> **Swamp Deposits:** "Clay, silt, and fine sand, dark-gray and brown; rich in vegetal debris."
>
> **Aluvial Fan Deposits:** "Water-laid gravel, sand, silt, and clay spreading out from mouths of ravines and canyons; finer-grained debris becomes progressively more abundant toward downstream margin of fan."

The soils encountered in the boreholes and test pits indicate that, due to the similarity in the materials, there may be overlapping and interfingering of the flood plain, swamp, and alluvial fan deposits overlying the alluvial gravels. The precise determination of the origin of the fine-grained materials at the site is extremely difficult to ascertain and will not likely have a strong influence on the engineering characteristics of the soil. Although the geologic mapping is considered to be accurate on a large scale, it is unlikely to provide anything more than a guideline for small scale applications, such as the project site.

In general, swamp deposits are mapped at the surface along the eastern boundary of the site, alluvial fan deposits are mapped in the southeast corner, and flood plain deposits are mapped throughout the rest of the property.

The soils identified in the boreholes and test pits generally agree with the mapping, but also suggest that a mixing of the three materials occurs at the site. For simplicity, the fine-grained materials encountered at the site are considered to be flood plain and swamp deposits.

SEISMICITY

Jackson Hole is located within the Intermountain Seismic Belt (ISB), a zone of seismicity that extends south to Arizona and north into Montana. The ISB is responsible for several large fault zones throughout the Intermountain West and includes the Teton, Hoback, and Grand Valley fault systems. The Teton fault is located approximately 6.5 miles northwest of the project site and is considered to be capable of generating a magnitude 6.9 to 7.5 earthquake. Strong ground motion at the project site can be expected if there is a sizeable earthquake on the Teton or other regional fault. Seismic design criteria, provided by the USGS, are attached in Figure 3 of this report. The property is classified as having Site Class D soils.

SITE SOILS AND ENGINEERING CHARACTERISTICS

In general, the site soils consist of 2.0 to 16.5 feet of fine-grained swamp and flood plain deposits comprised of various amounts of clay, silt, and sand. Laboratory testing classified 4 out of the 5 samples as lean clay with sand, and the remaining sample as a fat clay with sand. Several lenses of brownish black to black soils consistent with swamp deposits were found to be intermixed with brown soils consistent with flood plain deposits. The fine-grained deposits were thickest in the northwest corner of the property and thinnest in the southeast corner of the property, as seen in Figure 2. Additional, detailed soil information is discussed in the Laboratory Section and Appendix B of this report.

The fine-grained swamp and flood plain deposits are likely to have an average dry density of 90 pcf, based on the laboratory test performed by Nelson Engineering, and an internal friction angle of 25 degrees, based on the soil classifications.

The alluvial gravels and cobbles have an average dry density of 135 pounds per cubic foot, an internal friction angle of 35 degrees, and no cohesion.

The USDA Web Soil Survey, classifies approximately 55% percent of the lot (the northeastern half) as Cryaquolls-Cryofibrists complex soils, which consist of poorly draining soils that are prone to flooding. The remaining 45% of the lot (the southwest half) is classified as Greyback gravelly loam, which consists of gravelly loam, very gravelly sandy loam, and very gravelly loamy sand to depths of 5 feet.

As noted above, some trash and debris was discovered during the installation of monitoring wells in the southeast corner of the property, in test pits TP-3 and TP-4. It is very likely that additional debris exists in the vicinity of those 2 monitoring wells and should be removed.

SURFACE WATER AND GROUNDWATER

Groundwater was observed in all of the boreholes, in several of the test pits, and has been documented through the installation of 9 monitoring wells by Pierson Land Works (PLW), and the 4 additional wells by Y2.

On June 3rd, 2014, PLW installed 9 monitoring wells throughout the subject property and monitored them through May 19th, 2015; detailed well readings and a monitoring well location map are included as Appendix E of this report. Their findings indicate that the groundwater is shallowest in the northwest portion of the lot and becomes deeper towards the southeast corner of the parcel. The shallowest readings taken in the northwest corner of the property suggest that the water table is inches below the ground surface at times and is not more than 2 feet deep during the year. The

groundwater in the southeast corner has a minimum depth of 6.8 feet and a maximum depth of 10.3 feet. At least 6 of the 9 monitoring wells had water table elevations of less than 4 feet, which would affect the bearing capacity of shallow footings placed below frost depth. Note that these results are for a specific monitoring period and it is likely that they may rise due to irrigation, spring run-off, flooding, or other climatic events.

The PLW data shows that the groundwater elevation is not tied directly to spring run-off, which is often the case in the Jackson Hole area. Instead, the data suggests that there are other factors, such as irrigation in the National Elk Refuge, possibly flooding and ice damming in Flat Creek, and other climatic events. In other areas, the groundwater typically peaks in the spring and is lowest in the winter, but the PLW data indicates that this is not the case at the subject property.

It is likely that the swamp and flood plain deposits act as an aquitard and that foundations or other construction activities that expose the alluvial gravels may introduce water that was not present prior to the breach. This may also cause differences in the water levels due to lateral changes in the soil types.

The Federal Emergency Management Agency has mapped the northern half of the project (approximately 2.7 acres) as a Special Flood Hazard Area (SFHA), which is considered to be an area with a 1% annual chance flood (100-year flood). According to FEMA Flood Insurance Rate Map 56039C2907D, a base flood elevation has not been determined. Detailed flood mapping and the determination of a base flood elevation was not part of the Scope of this report.

GEOLOGIC HAZARDS

The geologic hazards identified at the property include:

- Strong ground motion in connection with a seismic event;
- Liquefaction from strong ground shaking, unless the buildings and other structures are placed on the alluvial cobbles and gravels or connected to them through deep foundations;
- Flooding, as indicated by FEMA FIRM 56039C2907D;
- Settlement or consolidation in the swamp and flood plain deposits.

LABORATORY TESTING

Laboratory testing was performed on 5 samples obtained from the boreholes advanced on January 6th, 2016 by Y2 Consultants (Appendix B), and was previously performed on 6 samples obtained by Nelson Engineering in 2007 (Appendix D). Laboratory testing on 9 of the 11 samples consisted of soil classification (sieve analyses and Atterberg Limits tests) and the remaining 2 samples were subjected to consolidation tests.

The soil classification tests indicate that most of the soils are lean clays with varying amounts of sand. Atterberg Limits tests show plasticity index values ranging from 12 to 22, which correspond to slightly plastic to medium plastic soils. Of the 7 clayey samples that were tested, only one came back as a fat clay with sand (BH-4-2). The laboratory samples are consistent with swamp and flood plain soils.

The consolidation test results included in the Nelson Engineering report indicate a low compressibility index, although it is not known if these samples were fat or lean clays. For normally consolidated soils, Terzaghi and Peck (1967) developed a method for estimating a compression index (C_c) from the Liquid Limit (LL) of the soils and the equations estimate C_c values from 0.06 to 0.36.

Two of the samples tested by Nelson Engineering (BH 1-6 and BH 3-3) were subjected to sieve analysis, although it is unlikely that coarse-grained samples obtained by means of a 2”-diameter split spoon sampler will return meaningful soil classifications.

GEOTECHNICAL RECOMMENDATIONS

GRADING AND SITE PREPARATION

As previously noted, the site has up to 16.5 feet of fine-grained soils in the northwest corner of the site and as little as 2.0 feet in the southeast corner of the site. The installation of foundation elements and foundation types is likely to depend on the depth to a suitable bearing surface, such as the alluvial gravels and cobbles. The laboratory data suggests that compressible soils exist throughout the site and that placement of foundation elements on these soils may have adverse effects, such as differential settlement over time. In some areas, only a minor amount of over-excavation and replacement with a suitable engineered fill may be required to create a stable and stout bearing surface. In other areas, over-excavation and replacement will be costly and inefficient for the depths needed. The addition of shallow groundwater at almost all times of year may also present a problem in areas where substantial over-excavation is needed. Two options are presented here, one for over-excavation and replacement with engineered fill, and one for deep foundations using helical piers.

Prior to installation of foundation elements, the site should be cleared and grubbed of any vegetation and topsoil. The bottom of the excavation should be compacted using a smooth drum roller to smooth out any voids created during the excavation process.

If any additional areas of trash and debris are uncovered, that material should be completely removed from beneath any foundation elements.

Over-excavation and Replacement with Engineered Fill

In areas with approximately 6.5 or less feet of swamp and flood plain deposits, over-excavation to the alluvial gravel and cobbles and replacement with engineered fill is likely the most cost efficient approach and will yield a solid bearing surface. The engineered fill should be placed in direct contact with the stony alluvial soils and all fine-grained soils should be removed from between the two. A 6.5-foot depth assumes that the footings will be placed 4 feet below the surface for frost protection and that 2.5 feet of material will need to be removed to create a solid engineered fill. If the alluvium is encountered in less than 4 feet (or the final frost-depth), no additional over-excavation is required.

In areas with more than 6.5 feet of swamp and flood plain deposits, 2.5 feet of geogrid reinforced engineered fill is needed below the foundation elements. A geogrid analysis was performed using the site soil information and suggests that for footings buried 4 feet below the ground surface, that 2.5 feet of fine-grained soil will need to be removed and replaced with Mirafi RS580i geogrid (or an approved alternative) and imported granular fill. As seen in Appendix F, the first layer of geogrid will directly contact the native swampy soils and additional layers will be required at 1.25-feet intervals, to 1.25-feet below the spread footing. This design will provide an allowable bearing capacity of 1,967 psf if properly constructed. This design assumes that the clayey soils have a minimum wet density of 105 pcf, the footing is 2 feet in width, and that the minimum length and width of the geogrid is 24.5 feet and 6.5, respectively. If any significant changes are planned, then the geogrid calculations will need to be reanalyzed. This office should evaluate the soils as they are exposed during construction and foundation excavation.

The owner should be aware that over-excavation is likely to extend well below the groundwater surface and that **considerable, long-term, dewatering during construction may be necessary**.

Installation of Helical Piers

Helical piers are a type of deep foundation system that tie into the poured concrete foundation and allows for the residence to “float” over the swamp and flood plain deposits. The piers are screwed into the ground and reach terminus in the dense alluvial gravels and cobbles below the potentially compressible fine-grained soils. This is considered an “end-bearing” foundation system and the load of the foundation bears on the alluvium through the structural piers. The allowable load for the helical piers depends on the size and type of pier used. A qualified structural engineer should be

consulted for final spacing and load design, which greatly depends on the design and types of structures.

Helical piers are recommended under any areas that cannot tolerate differential settlement or consolidation, including: foundations, hardscapes, water features, hot tubs, or similar areas.

Helical piers benefit from their ease of installation in all weather and groundwater conditions, and reduces the amount of over-excavation and replacement with suitable fill materials. Installation for a single-family residence is usually performed in less than 3 days.

Due to the shallow groundwater and potential for compression of the fine-grained soils over time, this office recommends the use of a helical pier system to support any structures constructed where the alluvium is more than 7 feet deep. If helical piers are selected, a qualified observer should be used during the installation of the piers to ensure that proper embedment depth is reached.

COMPACTION

The alluvium and engineered fill will provide a dense and adequate bearing layer and usually requires little effort to reach a suitable compactive state. Gravel and cobble fills generally benefit from the use of a smooth-drum vibratory compactor of suitable size for the lifts being placed; a sheeps-foot roller is not recommended.

Imported “pit run” type materials or on-site native alluvium typically require little moisture to be added and will likely reach 95% compaction (established through ASTM D698) with three full passes of a 1.5-ton (or larger) vibratory compactor. Due to the abundant amount of oversized (>3/4-inch) material in the alluvium and engineered fill, nuclear density readings may be erroneous. Instead, the compacted areas should be observed for signs of deflection and the presence of seams between passes. When the fill ceases to yield and the gravel and cobble starts to break, a suitable compactive state has been reached. Lifts should not exceed 8 inches in uncompacted thickness and should be laid in a horizontal fashion. The use of a hoe-pack, “jumping jack”, or other smaller compactive devices should not be used under structural elements, but may be used under landscaping or against foundation walls. Fills placed for landscaping purposes (but not including hardscapes) should have a minimum compaction of 92%, per ASTM D698.

Y2 is available to meet with the earthwork contractor to establish proper compaction techniques in the field.

SITE DRAINAGE

Final slopes for landscaping, hardscapes, parking areas, or other similar elements should be sloped away from foundation elements. Due to the shallow groundwater, foundation drains may be ineffective during times of peak groundwater. Instead, sumps or other mechanical pumps may be required to keep crawlspaces dry.

CONSTRUCTION DEWATERING

Based on the PLW groundwater data, the site may be subject to water entering the foundation excavations at any time of year, especially for the northwest corner and center of the property. The earthwork contractor will be responsible for sizing and obtaining the proper dewatering pumps to ensure a dry working environment for foundation placement and sub-grade compaction. It is usually more cost-effective and efficient to wait for groundwater levels to subside from their run-off peak, which may be late winter or early spring. Due to irrigation on the National Elk Refuge, groundwater elevations don't appear to follow a normal seasonal cycle, as previously discussed.

SLOPE STABILIZATION AND SHORING

At the time of this report, it does not appear that any slope stabilization will be needed. OSHA classifies the swamp and flood plain deposits as Type A soils and temporary construction slopes should not exceed 3/4H: 1V (53°) or 20 feet in depth. The gravel and cobble alluvium is a Type C soil and temporary construction slopes should not exceed 1.5H: 1V (34°) or 20 feet in depth. The general contractor will be ultimately responsible for making sure that the slopes conform to OSHA standards.

CONSTRUCTION OBSERVATIONS

This office should be present to verify the depths and lateral extents of the soils as they are exposed during site excavation. If any major variations of the soil types are encountered, this office should be notified. A qualified observer should also watch the installation of reinforced engineered fill or helical piers as their installed.

CRAWLSPACE WATERPROOFING

If shallow crawlspaces are designed for the residences, groundwater may appear during times of heavy irrigation, spring run-off, flooding or ice damming on Flat Creek, or climatic events. In that case, waterproofing or sumps may be necessary to protect the crawlspaces from accumulating mold or other problems. Groundwater infiltration may occur during most times of the year and the addition of membranes, waterproof coatings, and other mitigation techniques may not eliminate the potential for leaks or groundwater from upwelling. If possible, crawlspaces should not be installed where the groundwater is excessively shallow.

FOUNDATIONS

SHALLOW FOUNDATIONS

For areas of over-excavation and fill replacement directly onto alluvial gravels and cobbles, a standard continuous strip footing that is 16 inches in width and buried 4 feet below the ground surface, an allowable bearing capacity of 4,000 psf is recommended. This is valid for groundwater depths as shallow as 0.5 feet below the ground surface.

For a standard continuous strip footing buried 4 feet below the ground surface and placed on a geogrid reinforced fill, an allowable bearing capacity of 1,500 psf is recommended.

If the foundation elements are not placed at 4 feet in depth or if the footings will have different dimensions, then please contact this office to rerun the calculations for the new values. These numbers were calculated using Terzaghi's method.

A coefficient of friction against sliding of 0.58 is suggested for concrete placed in alluvial soils or on coarse-grained engineered fill (Terzaghi in Coduto, 2001).

SLAB ON GRADE CONSTRUCTION

If slab on grade construction is to be used, any flood plain deposits or other unsuitable soils should be removed from beneath the slab and replaced with 3 feet of suitable, reinforced engineered fill, as previously noted.

The addition of a 10-mil vapor barrier should be included to reduce moisture and the build-up of radon gas (per ASTM E 1745 Class A).

SEISMIC DESIGN CRITERIA

A summary of the USGS Design Maps report is included as Figure 3 of this report and provides design information from the site. The soil characteristics are based on the average soil data down to 100 feet in depth and the values are computed based on the 2012 International Building Code guidelines. A soil Site Class D was assigned based on the assumed blown count data for the alluvial soils.

LATERAL PRESSURE PARAMETERS

Although the shallow foundations are not expected to develop significant lateral pressures, the table contains parameters that were calculated for the alluvial soils or "pit run" engineered fill using Rankine and Jaky's theory for cohesionless soil. An internal friction value of 35° and unit weight of 135 pcf was assumed for the alluvium. The following is for level backfill:

	Earth Pressure Coefficient	Fluid Pressures (pcf)
At-rest	0.43	58
Active	0.27	37
Passive	3.69	498
Active Seismic	0.33	45
Passive Seismic	3.47	469

CONCLUSION

Three building options are available for the construction of foundation elements for multi-story residences on the project site:

a) Construction of engineered fill directly on the medium dense to dense, sandy gravel and cobble alluvium
b) Construction of a 3-foot thick, geogrid reinforced engineered fill on the swamp and flood plain deposits
c) Construction of shallow foundations on a deep foundation system consisting of helical piers embedded in the alluvium

In our opinion, the installation of helical piers is likely to be the most efficient method and most conservative approach to mitigating the soft clays and shallow groundwater at the site. Helical piers can be installed in all weather conditions and will reduce the amount of dewatering needed during foundation installation. Often times, piers can be more cost efficient due to cheaper earthwork costs, reduced dewatering time, and the need for geogrid and other material costs. If requested, this office is available to arrange for test piers to be drilled at the site which will allow for a more accurate cost estimate of pier installation.

Groundwater was observed throughout the site and data was gathered through most of 2014 and early 2015 to estimate its approximate depth. Due to yearly variations in groundwater elevations, the peak values should not be considered the highest elevations possible. Low readings can occur during years with slow run-off, low snow, low rain, changes in irrigation schedules and volumes, or other factors.

Dewatering during earthwork operations and foundation construction is often costly and may be limited by equipment available in the area. Construction during the late winter or early spring *may* provide more favorable earthwork conditions, although that is not guaranteed.

Shallow crawlspaces or other voids may accumulate groundwater at various times of the year. The addition of a sump may help, but it may be more reasonable to assume that the groundwater may always be present, especially in the northwest corner of the site.

LIMITATIONS

The geotechnical recommendations outlined in this report are based on the limited number of boreholes and test pits installed as part of this project, and the data contained within both the Nelson Engineering and Pierson reports, and assumes that no major variations in the subsurface characteristics exist. Although every attempt to accurately document the soils has been made, the soil conditions are based on this discrete borehole and test pit information, and the lack of subsurface variations cannot be guaranteed. The assumptions made regarding the groundwater elevations are also made on the amount of available field and record data, and should be verified by continued monitoring of the existing wells.

At the time of this report, there were no project drawings available for the future development. This office should be provided a set of final development plans in order to verify that the recommendations made in this report are in accordance with the project specifications. Copies of this report should be made available to the contractors, architects, and engineers working on this project.

The recommendations provided in this report are valid for one year from its issue date and this office should verify site conditions after that time. This report and its figures are applicable only to the aforementioned project site and should not be used for other properties or parcels.

Y2 Consultants appreciates the opportunity to work with you on this project. If you have any additional questions regarding this project, please feel free to contact our office.

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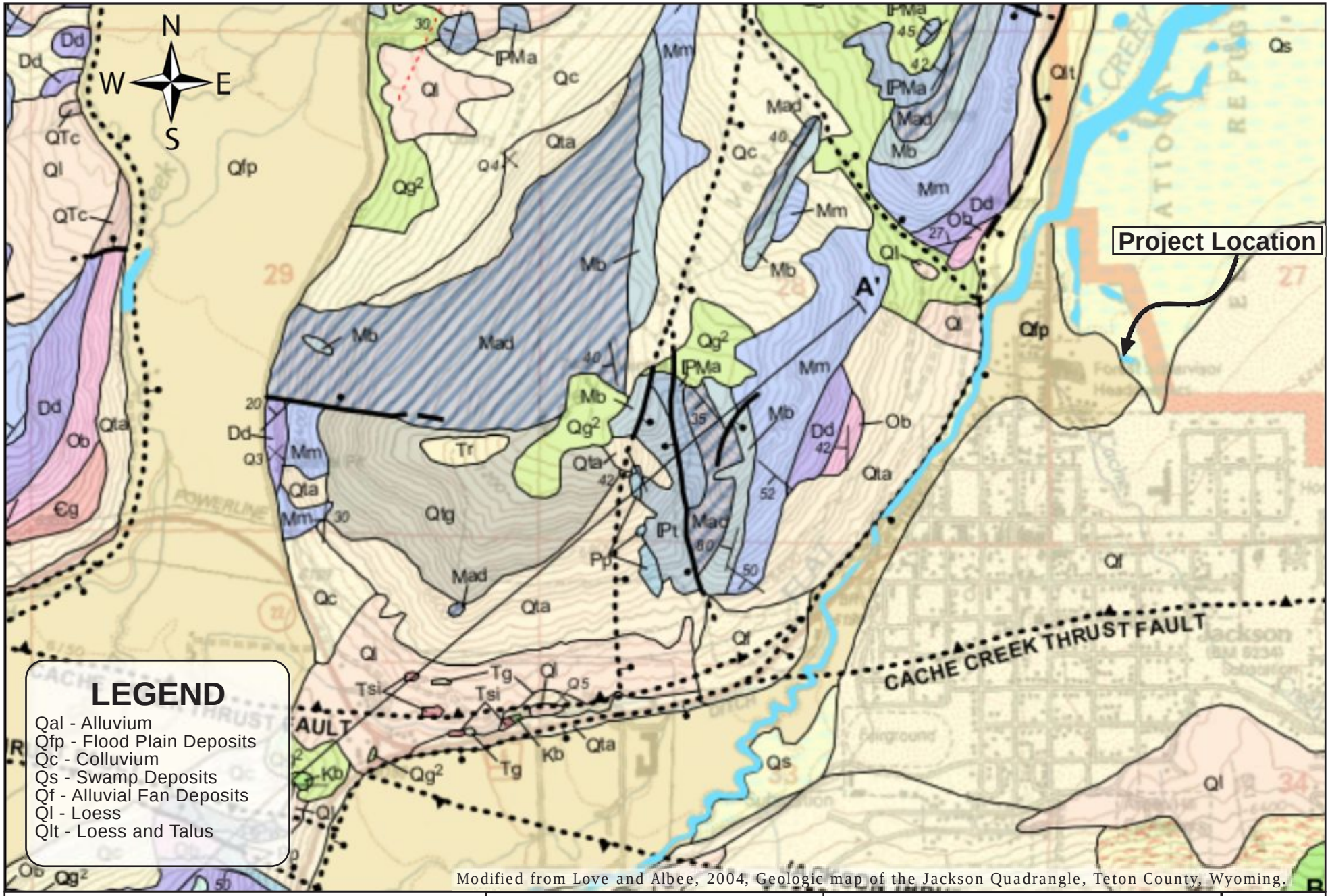
FIGURES



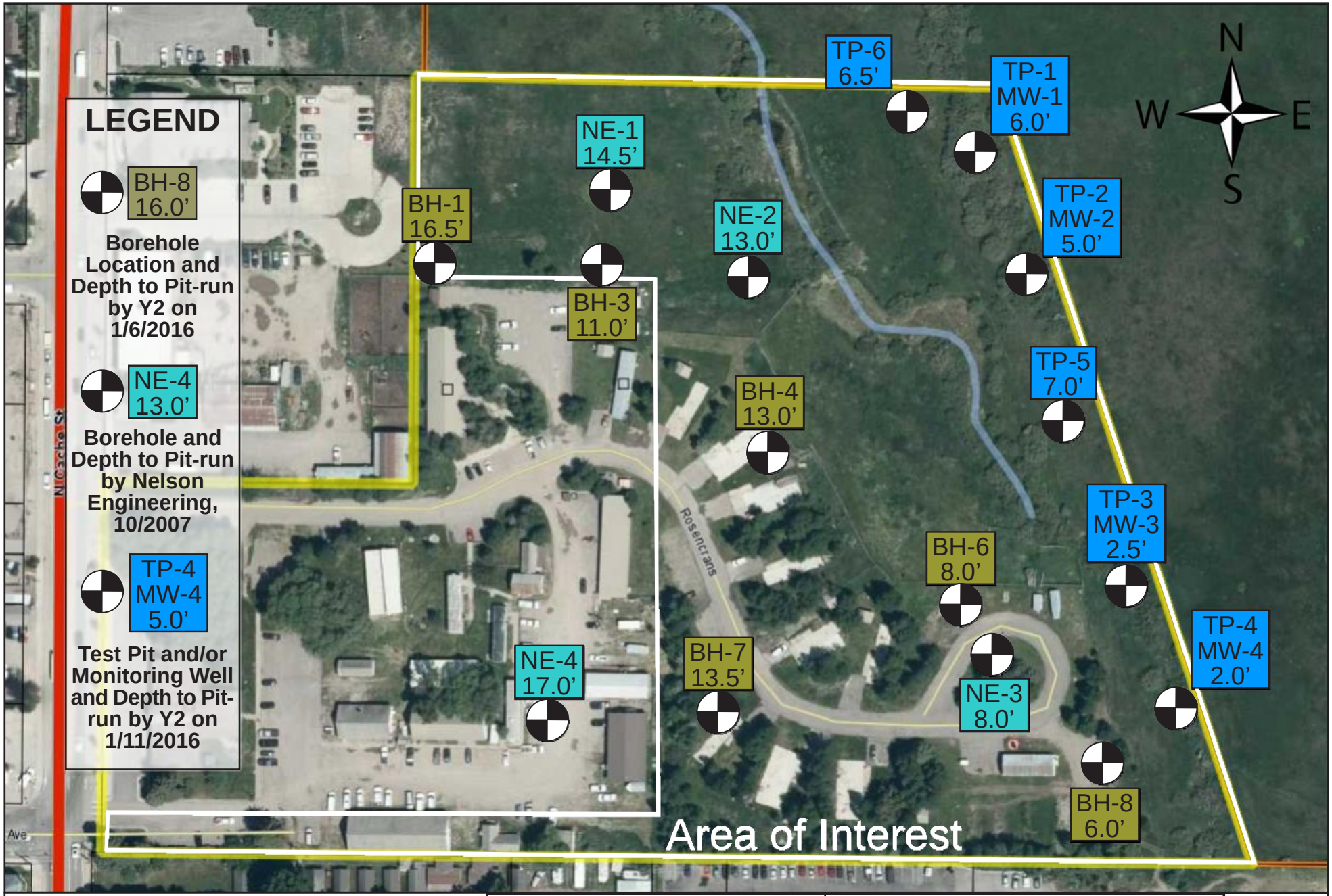
Geologic Location Map
Geotechnical Investigation Report
BTNF 10-acre Site
Jackson, Wyoming

0 1/4 Mile 1/2 Mile

Scale : 1 inch = 1/4 Mile

Y2 Consultants, LLC.
Civil & Structural Engineers
215 East Simpson,
Jackson, WY 83001-2674
307-733-2999
Civil Email: Zia@Y2Consultants.com
Structural Email: Jeff@Y2Consultants.com

FIGURE
1



Borehole, Test Pit, and Monitoring Well Location Map
Geotechnical Investigation Report
BTNF10-acre Site
Jackson, Wyoming

0 130 260

Scale : 1 inch = 130 feet

Y2 Consultants, LLC.
Civil & Structural Engineers
215 East Simpson, Jackson, WY 83001-2674
307-733-2999
Civil Email: Zia@Y2Consultants.com
Structural Email: Jeff@Y2Consultants.com

FIGURE 2

USGS Design Maps Summary Report

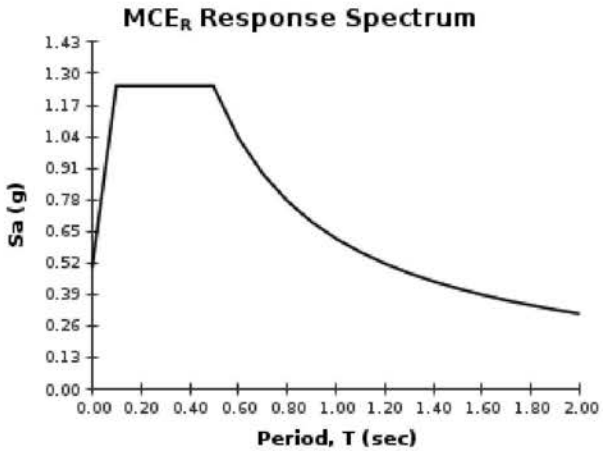
User–Specified Input

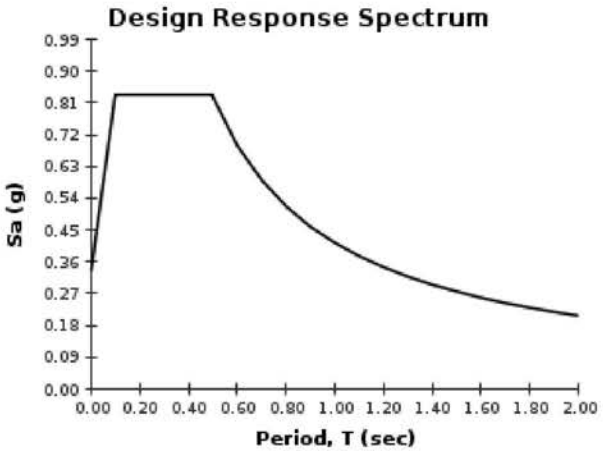
Report Title	BTNF 10-acre Site Thu February 11, 2016 03:08:09 UTC
Building Code Reference Document	2012 International Building Code (which utilizes USGS hazard data available in 2008)
Site Coordinates	43.48484°N, 110.75974°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

USGS–Provided Output

S_S =	1.248 g	S_{MS} =	1.249 g	S_{DS} =	0.833 g
S_1 =	0.377 g	S_{M1} =	0.620 g	S_{D1} =	0.414 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





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APPENDIX A: BOREHOLE AND TEST PIT LOGS

Project:		Project Number:	Client:	Borehole No.
BTNF 10-acres			Conrad & Bischoff	**BH-1**
Site Location:			**Drilling Contractor:**	**Drill Type:**
60 Rosencrans, Jackson, Wyoming			LK Drilling	Simco 2800
Logged By:	**Date**	**Started:**	**Operator:**	**Weather:**
JR		**1/6/2016**	Steve	Light Snow, 20°
Elevation:		**Completed:**	**Groundwater Depth:**	**Total Depth of Borehole:**
~6,225'		**1/6/2016**	~15.0'	26.5'
Borehole Location:			**Monitoring Well Notes:**	
Northwest side of property, see Figure 2			N/A	
Surface Description:			**Other:**	
Snow covered field			Rope and cat head used. 2"-diameter split spoon used for sampling.	

Depth (feet)	SPT Interval	Sample Type and Number	Sample Retrieval	Corrected SPT Values (N60)	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors. **Rock Description:** modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions, other descriptors.	Plasticity Index
1					0.0' - 16.5': FLOOD PLAIN AND SWAMP DEPOSITS - Lean clay with sand, medium brown to dark brown, moist, soft to stiff, slightly to medium plastic, interbedded silts and clays, easy drilling.	
2						
3						
4						
5						
6	■	SS 1-1	18"/18"	4	5.0' - 6.5': Lean clay with sand, medium brown, moist, soft, slightly plastic, easy drilling.	12
7						
8						
9						
10						
11	■	SS 1-2	18"/18"	3	10.0' - 11.5': Lean clay with sand, medium brown, moist, soft, medium plastic, easy drilling.	16
12						
13						
14						
15						
16	■	SS 1-3	18"/18"	14	15.0' - 16.5': Lean clay with sand, medium brown to dark brown, stiff, moist, medium plastic, easy drilling, groundwater at ~15.0' at time of drilling.	
17					16.5' - BOH: ALLUVIUM - Sandy gravel and cobbles, medium brown, medium dense to dense, sand 30%, gravel and cobbles 70%, heavy grinding, moderately difficult drilling.	

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Project:	Project Number:	Client:	Borehole No.
BTNF 10-acres		Conrad & Bischoff	BH-1

Depth (feet)	SPT Interval	Sample Type and Number	Sample Retrieval	Corrected SPT Values (N60)	Lithology	Plasticity Index
18					ALLUVIUM, continued from 16.5'	
19						
20						
21		SS 1-4	2"/18"	10	20.0' - 21.5': Sandy cobbles and gravel, medium dense, wet, fragments in shoe indicate larger clasts than the sampler diameter, moderately difficult drilling.	
22						
23						
24						
25		SS 1-5	4"/18"	48	25.0' - 26.5': Sandy cobbles and gravel, dense, wet, fragments in shoe indicate larger clasts then the sampler diameter, moderately difficult drilling.	
26						
27					Bottom of borehole at 26.5' below the ground surface. Groundwater observed at approximately 15.0' at time of drilling.	
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						

Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors.

Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions, other descriptors.

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Project:	Project Number:	Client:	Borehole No.
BTNF 10-acres		Conrad & Bischoff	BH-3
Site Location:		**Drilling Contractor:**	**Drill Type:**
60 Rosencrans, Jackson, Wyoming		LK Drilling	Simco 2800
Logged By:	**Started:**	**Operator:**	**Weather:**
JR	**1/6/2016**	Steve	Light Snow, 20°
Elevation:	**Completed:**	**Groundwater Depth:**	**Total Depth of Borehole:**
~6,225'	**1/6/2016**	~11.0'	21.5'
Borehole Location:		**Monitoring Well Notes:**	
Middle northwest side of property, see Figure 2		N/A	
Surface Description:		**Other:**	
Snow covered field		Rope and cat head used. 2"-diameter split spoon used for sampling.	

Depth (feet)	SPT Interval	Sample Type and Number	Sample Retrieval	Corrected SPT Values (N60)	Lithology	Plasticity Index
					Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors. **Rock Description:** modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions, other descriptors.	
1					0.0' - 0.5': FILL - Gravel and grass.	
2					0.5' - 11.5': FLOOD PLAIN AND SWAMP DEPOSITS - Lean clay with sand, medium brown to dark brown, moist, soft to stiff, slightly to medium plastic, interbedded silts and clays, easy drilling.	
3					- soft and easy drilling from 3'-5'	
4						
5						
6		SS 3-1	18"/18"	4	5.0' - 6.5': Silty clay, dark brown, moist, soft, slightly to medium plastic, easy drilling.	
7						
8						
9					- continued easy drilling.	
10						
11		SS 3-2	12"/18"	9	10.0' - 11.5': Clayey silt, medium brown, moist, stiff, slightly to medium plastic, easy drilling. - groundwater observed at ~11.0' at time of drilling.	
12					11.5' - BOH: ALLUVIUM - Sandy gravel and cobbles, medium brown, medium dense to dense, sand 30%, gravel and cobbles 70%, heavy grinding, moderately difficult drilling.	
13					- heavy grinding.	
14						
15						
16		SS 3-3	8"/18"	17	15.0' - 16.5': Sandy cobbles and gravel, medium dense, wet, fragments in shoe indicate larger clasts than the sampler diameter, moderately difficult drilling.	
17						

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Project:	Project Number:	Client:	Borehole No.
BTNF 10-acres		Conrad & Bischoff	BH-3

Depth (feet)	SPT Interval	Sample Type and Number	Sample Retrieval	Corrected SPT Values (N60)	Lithology	Plasticity Index
					Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors. **Rock Description:** modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions, other descriptors.	
18					ALLUVIUM, continued from 11.5' - heavy grinding and large rock	
19						
20						
21		SS 3-4	4"/18"	36	20.0' - 21.5': Sandy cobbles and gravel, dense, wet, fragments in shoe indicate larger clasts than the sampler diameter, moderately difficult drilling.	
22					Bottom of borehole at 21.5' below the ground surface. Groundwater observed at approximately 11.0' at time of drilling.	
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						

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Project:		Project Number:	Client:	Borehole No.
BTNF 10-acres			Conrad & Bischoff	**BH-4**
Site Location:			**Drilling Contractor:**	**Drill Type:**
60 Rosencrans, Jackson, Wyoming			LK Drilling	Simco 2800
Logged By:	**Date**	**Started:**	**Operator:**	**Weather:**
JR		**1/6/2016**	Steve	Light Snow, 20°
Elevation:		**Completed:**	**Groundwater Depth:**	**Total Depth of Borehole:**
~6,230'		**1/6/2016**	~8.0'	21.5'
Borehole Location:			**Monitoring Well Notes:**	
Center of property, see Figure 2			N/A	
Surface Description:			**Other:**	
Snow covered field			Rope and cat head used. 2"-diameter split spoon used for sampling.	

Depth (feet)	SPT Interval	Sample Type and Number	Sample Retrieval	Corrected SPT Values (N60)	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors. **Rock Description:** modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions, other descriptors.	Plasticity Index
1					0.0' - 0.5': FILL - Gravel and grass.	
2					0.5' - 13.0': FLOOD PLAIN AND SWAMP DEPOSITS - Lean and fat clays with sand, medium brown to dark brown to black, moist, soft to stiff, slightly to medium plastic, interbedded silts and clays, easy drilling.	
3						
4						
5						
6		SS 4-1	18"/18"	4	5.0' - 6.5': Silty clay, medium to dark brown, moist, soft, slightly plastic, easy drilling.	12
7						
8					- groundwater observed at ~8.0' at time of drilling.	
9					- continued easy drilling.	
10						
11		SS 4-2	18"/18"	4	10.0' - 11.5': Fat clay with sand, dark brown to black, moist to wet, stiff, medium plastic, easy drilling.	22
12						
13					13.0' - BOH: ALLUVIUM - Sandy gravel and cobbles, medium brown, medium dense to dense, sand 30%, gravel and cobbles 70%, heavy grinding, moderately difficult drilling.	
14						
15						
16		SS 4-3	6"/18"	16	15.0' - 16.5': Sandy cobbles and gravel, medium dense, wet, fragments in shoe indicate larger clasts than the sampler diameter, moderately difficult drilling.	
17						

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Project:	Project Number:	Client:	Borehole No.
BTNF 10-acres		Conrad & Bischoff	**BH-4**

Depth (feet)	SPT Interval	Sample Type and Number	Sample Retrieval	Corrected SPT Values (N60)	Lithology	Plasticity Index
					Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors. **Rock Description:** modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions, other descriptors.	
18					ALLUVIUM, continued from 13.0' - steady grinding to 20'.	
19						
20						
21		SS 4-4	3"/18"	24	20.0' - 21.5': Sandy cobbles and gravel, medium dense, wet, fragments in shoe indicate larger clasts than the sampler diameter, moderately difficult drilling, small amount of heave ~0.5'.	
22					Bottom of borehole at 21.5' below the ground surface. Groundwater observed at approximately 8.0' at time of drilling.	
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						

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Project:		Project Number:	Client:	Borehole No.
BTNF 10-acres			Conrad & Bischoff	**BH-6**
Site Location:			**Drilling Contractor:**	**Drill Type:**
60 Rosencrans, Jackson, Wyoming			LK Drilling	Simco 2800
Logged By:	**Date**	**Started:**	**Operator:**	**Weather:**
JR		**1/6/2016**	Steve	Light Snow, 20°
Elevation:		**Completed:**	**Groundwater Depth:**	**Total Depth of Borehole:**
~6,230'		**1/6/2016**	~8.0'	16.5'
Borehole Location:			**Monitoring Well Notes:**	
South center of property, see Figure 2			N/A	
Surface Description:			**Other:**	
Snow covered field			Rope and cat head used. 2"-diameter split spoon used for sampling.	

Depth (feet)	SPT Interval	Sample Type and Number	Sample Retrieval	Corrected SPT Values (N60)	**Lithology** **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors. **Rock Description:** modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions, other descriptors.	Plasticity Index
1					0.0' - 0.5': FILL - Gravel and grass.	
2					0.5' - 8.0': FLOOD PLAIN AND SWAMP DEPOSITS - Lean clay with sand, medium brown to dark brown, moist, soft to firm, slightly to medium plastic, interbedded silts and clays, easy drilling.	
3						
4						
5						
6		SS 6-1	18"/18"	5	5.0' - 6.5': Silty clay, medium to dark brown, moist, firm, slightly to medium plastic, easy drilling.	
7						
8					8.0' - BOH: ALLUVIUM - Sandy gravel and cobbles, medium brown, medium dense to dense, sand 30%, gravel and cobbles 70%, heavy grinding, moderately difficult drilling.	
9						
10						
11		SS 6-2	11"/18"	23	10.0' - 11.5': Sandy cobbles and gravel, medium dense, moist, fragments in shoe indicate larger clasts than the sampler diameter, moderately difficult drilling.	
12					- groundwater observed at ~12.0' at time of drilling.	
13					- heavy grinding from 12'-15'.	
14						
15						
16		SS 4-3	3"/18"	22	15.0' - 16.5': Sandy cobbles and gravel, medium dense, wet, fragments in shoe indicate larger clasts than the sampler diameter, moderately difficult drilling.	
17					Bottom of borehole at 16.5' below the ground surface. Groundwater observed at approximately 12.0' at time of drilling.	

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Project:		Project Number:		Client:	Borehole No.
BTNF 10-acres				Conrad & Bischoff	BH-7
Site Location:				**Drilling Contractor:**	**Drill Type:**
60 Rosencrans, Jackson, Wyoming				LK Drilling	Simco 2800
Logged By:		**Date**	**Started:**	**Operator:**	**Weather:**
JR			**1/6/2016**	Steve	Light Snow, 20°
Elevation:			**Completed:**	**Groundwater Depth:**	**Total Depth of Borehole:**
~6,230'			**1/6/2016**	~10.0'	21.5'
Borehole Location:				**Monitoring Well Notes:**	
Southwest corner of property, see Figure 2				N/A	
Surface Description:				**Other:**	
Snow covered field				Rope and cat head used. 2"-diameter split spoon used for sampling.	

Depth (feet)	SPT Interval	Sample Type and Number	Sample Retrieval	Corrected SPT Values (N60)	Lithology	Plasticity Index
					Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors. **Rock Description:** modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions, other descriptors.	
1					0.0' - 0.5': FILL - Gravel and grass.	
2					0.5' - 13.5': FLOOD PLAIN AND SWAMP DEPOSITS - Lean and fat clays with sand, medium brown to dark brown to black, moist, very soft to soft, slightly to medium plastic, interbedded silts and clays, easy drilling.	
5						
6		SS 7-1	6"/18"	2	5.0' - 6.5': Lean clay with sand, medium to dark brown, moist, very soft, medium plastic, easy drilling, weight of hammer almost pushed the sampler to depth.	17
9					- groundwater observed at ~10.0' at time of drilling.	
10						
11		SS 7-2	18"/18"	3	10.0' - 11.5': Lean clay, dark brown to black, moist, soft, slightly to medium plastic, easy drilling.	
13						
14					13.5' - BOH: ALLUVIUM - Sandy gravel and cobbles, medium brown, medium dense to dense, sand 30%, gravel and cobbles 70%, heavy grinding, moderately difficult drilling.	
15						
16		SS 7-3	6"/18"	30	15.0' - 16.5': Sandy cobbles and gravel, medium dense to dense, wet, fragments in shoe indicate larger clasts than the sampler diameter, moderately difficult drilling.	
17						

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Project:	Project Number:	Client:	Borehole No.
BTNF 10-acres		Conrad & Bischoff	BH-7

Depth (feet)	SPT Interval	Sample Type and Number	Sample Retrieval	Corrected SPT Values (N60)	Lithology	Plasticity Index
18					ALLUVIUM, continued from 13.5'	
19					- steady grinding to 20'.	
20						
21		SS 7-4	5"/18"	43	20.0' - 21.5': Sandy cobbles and gravel, dense, wet, fragments in shoe indicate larger clasts than the sampler diameter, moderately difficult drilling.	
22					Bottom of borehole at 21.5' below the ground surface. Groundwater observed at approximately 10.0' at time of drilling.	
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						

Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors.

Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions, other descriptors.

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Project:	Project Number:	Client:	Borehole No.
BTNF 10-acres		Conrad & Bischoff	**BH-8**
Site Location:		**Drilling Contractor:**	**Drill Type:**
60 Rosencrans, Jackson, Wyoming		LK Drilling	Simco 2800
Logged By:	**Started:**	**Operator:**	**Weather:**
JR	**1/6/2016**	Steve	Light Snow, 20°
Elevation:	**Completed:**	**Groundwater Depth:**	**Total Depth of Borehole:**
~6,235'	**1/6/2016**	~12.5'	16.5'
Borehole Location:		**Monitoring Well Notes:**	
Southeast corner of property, see Figure 2		N/A	
Surface Description:		**Other:**	
Snow covered field		Rope and cat head used. 2"-diameter split spoon used for sampling.	

Depth (feet)	SPT Interval	Sample Type and Number	Sample Retrieval	Corrected SPT Values (N60)	Lithology	Plasticity Index
					Soil Group Name: modifier, color, moisture, density/consistency, grain size, other descriptors. **Rock Description:** modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions, other descriptors.	
1					0.0' - 1.0': FILL - Gravel parking lot.	
2					1.0' - 6.0': FLOOD PLAIN AND SWAMP DEPOSITS - Silty clay with sand, medium brown to dark brown, moist, soft to firm, slightly to medium plastic, interbedded silts and clays, easy drilling.	
5						
6		SS 8-1	8"/18"	11	5.0' - 6.0': Silty clay, medium to dark brown, moist, firm, slightly to medium plastic, easy drilling.	
					6.0' - 6.5': Sandy gravel and cobbles, medium dense, moist, gravel in shoe.	
7					6.0' - BOH: ALLUVIUM - Sandy gravel and cobbles, medium brown, medium dense to dense, sand 30%, gravel and cobbles 70%, heavy grinding, moderately difficult drilling.	
8					- grinding at 6.0'	
10		SS 8-2	11"/18"	19	10.0' - 11.5': Sandy cobbles and gravel, medium dense, dry to moist, fragments in shoe indicate larger clasts than the sampler diameter, moderately difficult drilling.	
11						
12					- heavy grinding at 11.5'	
13					- groundwater observed at ~12.5' at time of drilling.	
15		SS 8-3	6"/18"	37	15.0' - 16.5': Sandy cobbles and gravel, dense, wet, fragments in shoe indicate larger clasts than the sampler diameter, moderately difficult drilling.	
16						
17					Bottom of borehole at 16.5' below the ground surface. Groundwater observed at approximately 12.5' at time of drilling.	

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Project:	Project Number:	Client:	Test Pit No.
BTNF 10-acres	1601.4	Conrad & Bischoff	MW-1
Site Location: 60 Rosencrans, Town of Jackson, Wyoming		**Excavation Contractor:** Westwood Curtis	**Excavator Type:** Komatsu Mini-excavator
Logged By: JR	**Date** **Started:** 1/11/2016	**Operator:** Jerry	**Weather:** Partly Sunny, 10°
Elevation: ~6,225'	**Completed:** 1/11/2016	**Groundwater Depth:** 7.0'	**Total Depth of Test Pit:** 8.0'
Test Pit Location: Northeast corner in wetlands, see Figure 2		**Monitoring Well Notes:** 4"-diam. perforated PVC with filter sock installed to 8'	
Surface Description: Snow covered wetlands		**Other:**	

Depth (feet)	Sample Type	Sample Number	Penetrometer (tons/ sq. foot)	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors. **Rock Description:** modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions, other descriptors.	Approximate Dry Density (pcf)
1–5				0.0' - 6.0': SWAMP DEPOSITS - Sily clay, medium to dark brown, moist, soft, black and gray clay lenses throughout.	90
6–7				6.0' - BOH: ALLUVIUM - Clayey gravel and cobbles, dark brown, wet, dense, moderately easy digging, round to sub-angular clasts of quartzite up to 8 inches in diameter, gravel/cobble 70%, sand 30%, some sloughing.	135
8–14				Bottom of test pit at 8.0' Groundwater observed at 7.0' at time of digging	

Project:	Project Number:	Client:	Test Pit No.
BTNF 10-acres	1601.4	Conrad & Bischoff	MW-2
Site Location:		**Excavation Contractor:**	**Excavator Type:**
60 Rosencrans, Town of Jackson, Wyoming		Westwood Curtis	Komatsu Mini-excavator
Logged By:	**Date** **Started:**	**Operator:**	**Weather:**
JR	**1/11/2016**	Jerry	Partly Sunny, 10°
Elevation:	**Completed:**	**Groundwater Depth:**	**Total Depth of Test Pit:**
~6,225'	**1/11/2016**	5.5'	6.5'
Test Pit Location:		**Monitoring Well Notes:**	
Northeast corner in wetlands, see Figure 2		4"-diam. perforated PVC with filter sock installed to 6.5'	
Surface Description:		**Other:**	
Snow covered wetlands			

Depth (feet)	Sample Type	Sample Number	Penetrometer (tons/ sq. foot)	**Lithology** **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors. **Rock Description:** modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions, other descriptors.	Approximate Dry Density (pcf)
1				0.0' - 5.0': SWAMP DEPOSITS - Clayey silt/ silty clay, medium to dark brown, dry, stiff.	90
2					
3					
4					
5				5.0' - BOH: ALLUVIUM - Sandy gravel and cobbles, dark brown, wet, dense, moderately easy digging, round to sub-angular clasts of quartzite up to 8 inches in diameter, gravel/cobble 70%, sand 30%, some sloughing.	135
6					
7				Bottom of test pit at 6.5' Groundwater observed at 5.5' at time of digging	
8					
9					
10					
11					
12					
13					
14					

Project:	Project Number:	Client:	Test Pit No.
BTNF 10-acres	1601.4	Conrad & Bischoff	MW-3
Site Location:		**Excavation Contractor:**	**Excavator Type:**
60 Rosencrans, Town of Jackson, Wyoming		Westwood Curtis	Komatsu Mini-excavator
Logged By:	**Date** **Started:**	**Operator:**	**Weather:**
JR	**1/11/2016**	Jerry	Partly Sunny, 10°
Elevation:	**Completed:**	**Groundwater Depth:**	**Total Depth of Test Pit:**
~6,230'	**1/11/2016**	N/A	7.0'
Test Pit Location:		**Monitoring Well Notes:**	
Southeast corner in wetlands, see Figure 2		4"-diam. perforated PVC with filter sock installed to 7.0'	
Surface Description:		**Other:**	
Snow covered wetlands			

Depth (feet)	Sample Type	Sample Number	Penetrometer (tons/ sq. foot)	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors. **Rock Description:** modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions, other descriptors.	Approximate Dry Density (pcf)
1				0.0' - 2.5': FILL - Trash and debris with a silty clay matrix, metal, bricks, concrete slabs up to 8" thick.	100
2					
3				2.5' - BOH: ALLUVIUM - Silty sandy gravel and cobbles, medium brown, dry to moist, dense, easy digging, round to sub-angular clasts of quartzite up to 8 inches in diameter, gravel/cobble 70%, sand 30%.	135
4					
5					
6					
7				Bottom of test pit at 7.0' Groundwater not observed at time of digging	
8					
9					
10					
11					
12					
13					
14					

Project:	Project Number:	Client:	Test Pit No.
BTNF 10-acres	1601.4	Conrad & Bischoff	MW-4
Site Location:		**Excavation Contractor:**	**Excavator Type:**
60 Rosencrans, Town of Jackson, Wyoming		Westwood Curtis	Komatsu Mini-excavator
Logged By:	**Date** **Started:**	**Operator:**	**Weather:**
JR	**1/11/2016**	Jerry	Partly Sunny, 10°
Elevation:	**Completed:**	**Groundwater Depth:**	**Total Depth of Test Pit:**
~6,230'	**1/11/2016**	N/A	7.0'
Test Pit Location:		**Monitoring Well Notes:**	
Southeast corner in wetlands, see Figure 2		4"-diam. perforated PVC with filter sock installed to 7.0'	
Surface Description:		**Other:**	
Snow covered wetlands			

Depth (feet)	Sample Type	Sample Number	Penetrometer (tons/ sq. foot)	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors. **Rock Description:** modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions, other descriptors.	Approximate Dry Density (pcf)
1				0.0' - 2.0': FILL - Trash and debris in a clayey silt matrix with trace boulders, dense, boulders up to 2.5' in diameter, metal drum, metal straps, irrigation key.	100
2				2.0' - BOH: ALLUVIUM - Silty sandy gravel and cobbles, medium to orange brown, dry to moist, dense, moderately easy digging, round to sub-angular clasts of quartzite up to 8 inches in diameter, gravel/cobble 70%, sand 30%.	130
3					
4					
5					
6					
7				Bottom of test pit at 7.0' Groundwater not observed at time of digging	
8					
9					
10					
11					
12					
13					
14					

Project:	Project Number:	Client:	Test Pit No.
BTNF 10-acres	1601.4	Conrad & Bischoff	TP-2
Site Location:		**Excavation Contractor:**	**Excavator Type:**
60 Rosencrans, Town of Jackson, Wyoming		Westwood Curtis	Komatsu Mini-excavator
Logged By:	**Date** **Started:**	**Operator:**	**Weather:**
JR	**1/11/2016**	Jerry	Partly Sunny, 10°
Elevation:	**Completed:**	**Groundwater Depth:**	**Total Depth of Test Pit:**
~6,225'	**1/11/2016**	N/A	7.0'
Test Pit Location:		**Monitoring Well Notes:**	
North east property line, see Figure 2		N/A	
Surface Description:		**Other:**	
Snow covered field			

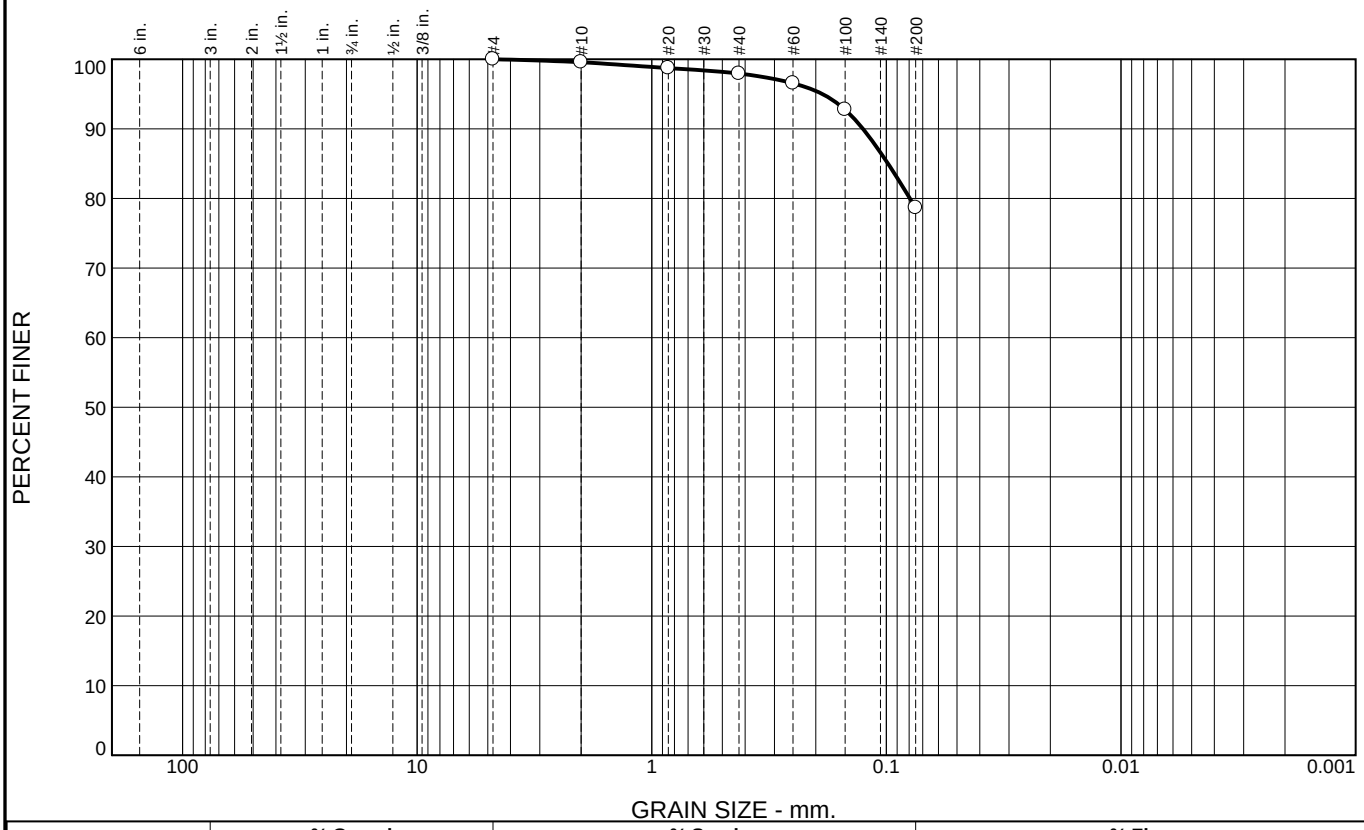
Depth (feet)	Sample Type	Sample Number	Penetrometer (tons/ sq. foot)	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors. **Rock Description:** modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions, other descriptors.	Approximate Dry Density (pcf)
1				0.0' - 6.5': FLOOD PLAIN/SWAMP DEPOSITS - Clayey silt/ silty clay, dark brown, moist, soft.	90
2					
3					
4					
5					
6					
7				6.5' - BOH: ALLUVIUM - Clayey gravel and cobbles, wet, gray brown, dense.	130
8				Bottom of test pit at 7.0' Groundwater not observed at time of digging	
9					
10					
11					
12					
13					
14					

Project:	Project Number:	Client:	Test Pit No.
BTNF 10-acres	1601.4	Conrad & Bischoff	TP-5
Site Location: 60 Rosencrans, Town of Jackson, Wyoming		**Excavation Contractor:** Westwood Curtis	**Excavator Type:** Komatsu Mini-excavator
Logged By: JR	**Date** **Started:** 1/11/2016	**Operator:** Jerry	**Weather:** Partly Sunny, 10°
Elevation: ~6,230'	**Completed:** 1/11/2016	**Groundwater Depth:** N/A	**Total Depth of Test Pit:** 7.5'
Test Pit Location: East side in field, see Figure 2		**Monitoring Well Notes:** N/A	
Surface Description: Snow covered field		**Other:**	

Depth (feet)	Sample Type	Sample Number	Penetrometer (tons/ sq. foot)	Lithology **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors. **Rock Description:** modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions, other descriptors.	Approximate Dry Density (pcf)
1–6				0.0' - 7.0': FLOOD PLAIN/SWAMP DEPOSITS - Silty clay, dark brown to black, moist, soft.	90
7				7.0' - BOH: ALLUVIUM - Clayey gravel and cobbles, brown, moist, dense.	130
8–14				Bottom of test pit at 7.5' Groundwater not observed at time of digging	

APPENDIX B: LABORATORY TEST RESULTS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	2	19	79	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100		
#10	100		
#20	99		
#40	98		
#60	97		
#100	93		
#200	79		

* (no specification provided)

Material Description

Lean Clay with Sand

Atterberg Limits

PL= 16 LL= 28 PI= 12

Classification

USCS= CL AASHTO= A-6(7)

Remarks

F.M.=0.13

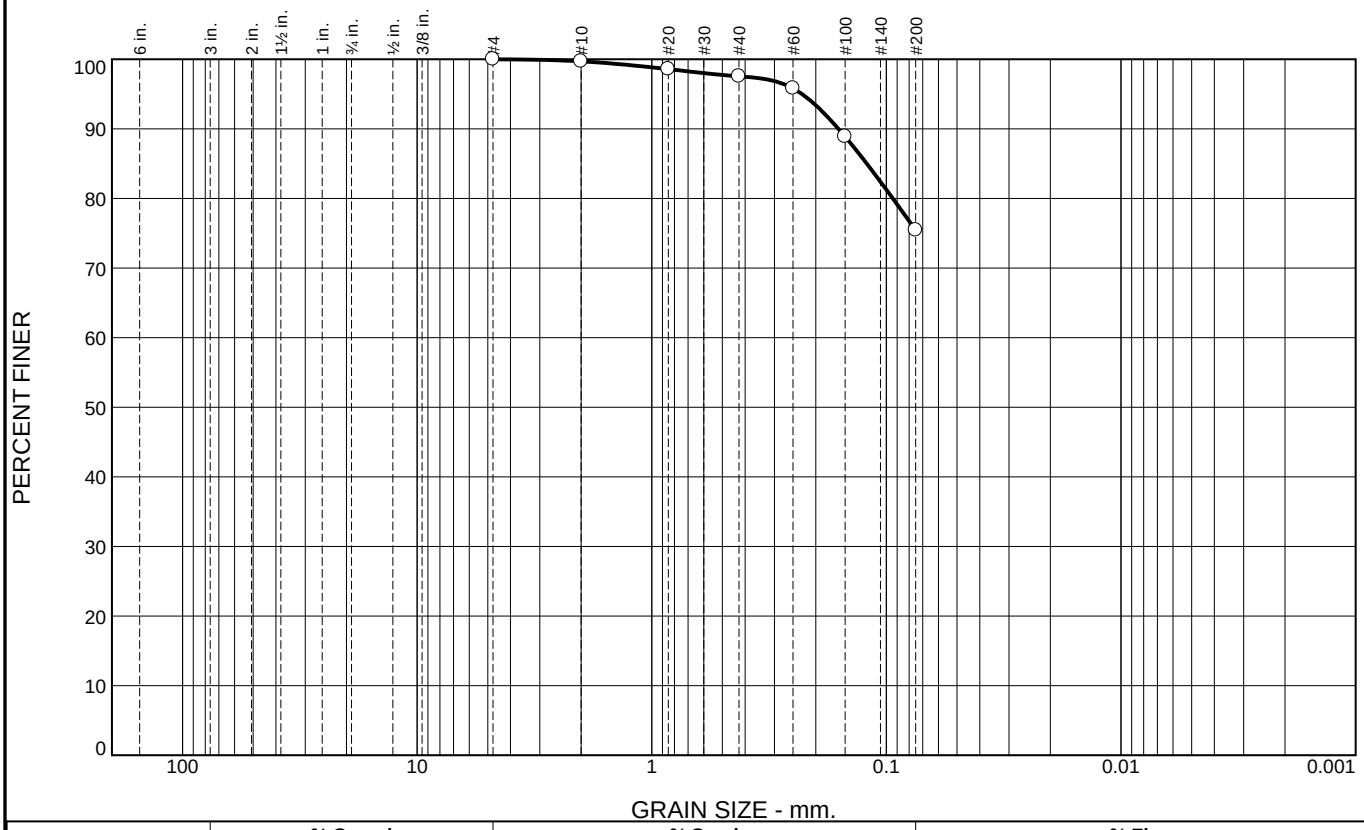
Location: BH-1-1
Sample Number: 18357 **Depth:** 5'-6.5' **Date:** 1-6-16

PIONEER TECHNICAL SERVICES, INC.

Client: Teton Geotechnical
Project: Teton Geotechnical General Testing

Project No: 1501052 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	2	23	75	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100		
#10	100		
#20	99		
#40	98		
#60	96		
#100	89		
#200	75		

* (no specification provided)

Material Description

Lean Clay with Sand

Atterberg Limits

PL= 19 LL= 35 PI= 16

Classification

USCS= CL AASHTO= A-6(11)

Remarks

F.M.=0.17

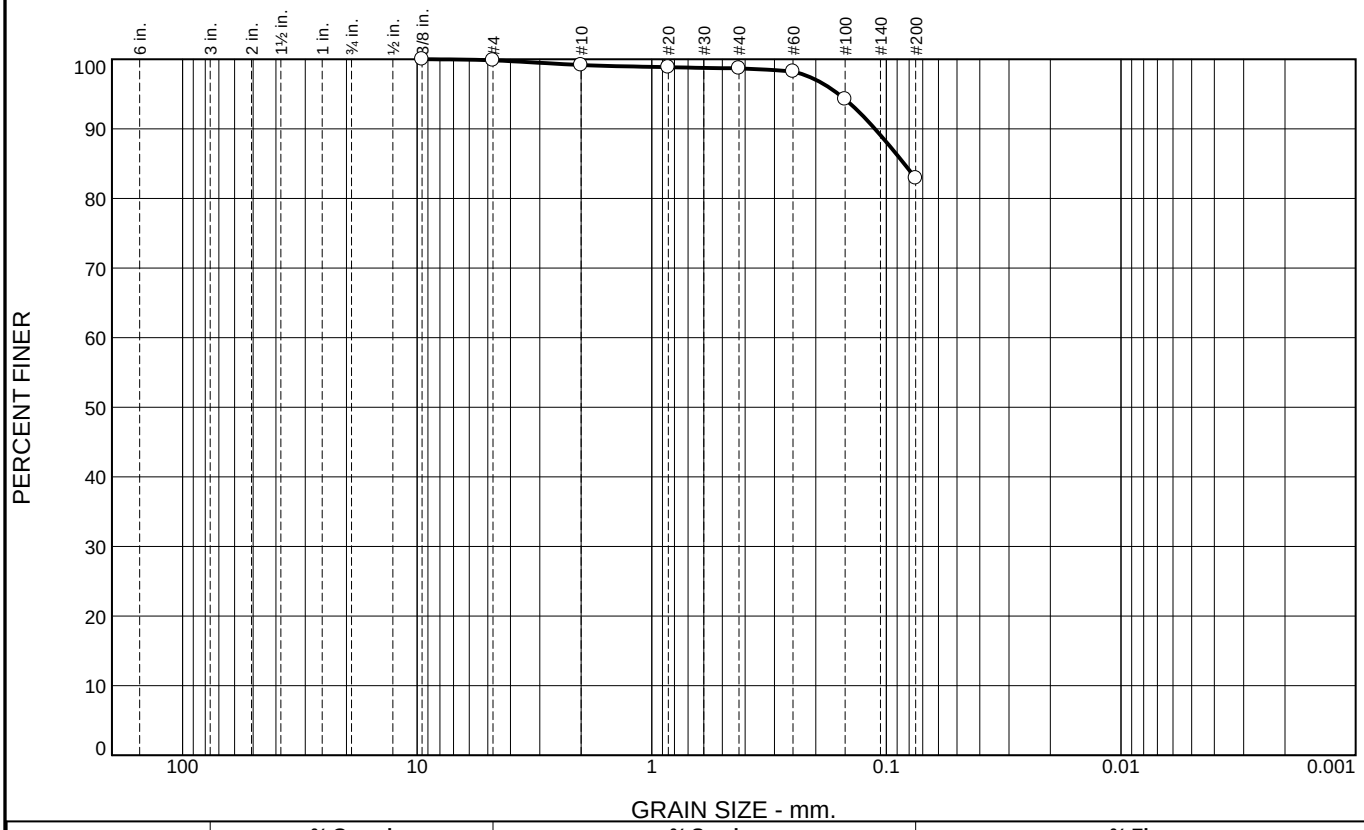
Location: BH-1-2
Sample Number: 18358 **Depth:** 10'-11.5' **Date:** 1-6-16

PIONEER TECHNICAL SERVICES, INC.

Client: Teton Geotechnical
Project: Teton Geotechnical General Testing

Project No: 1501052 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	1	0	16	83	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.375	100		
#4	100		
#10	99		
#20	99		
#40	99		
#60	98		
#100	94		
#200	83		

* (no specification provided)

Material Description

Lean Clay with Sand

Atterberg Limits

PL= 16 LL= 28 PI= 12

Classification

USCS= CL AASHTO= A-6(8)

Remarks

F.M.=0.10

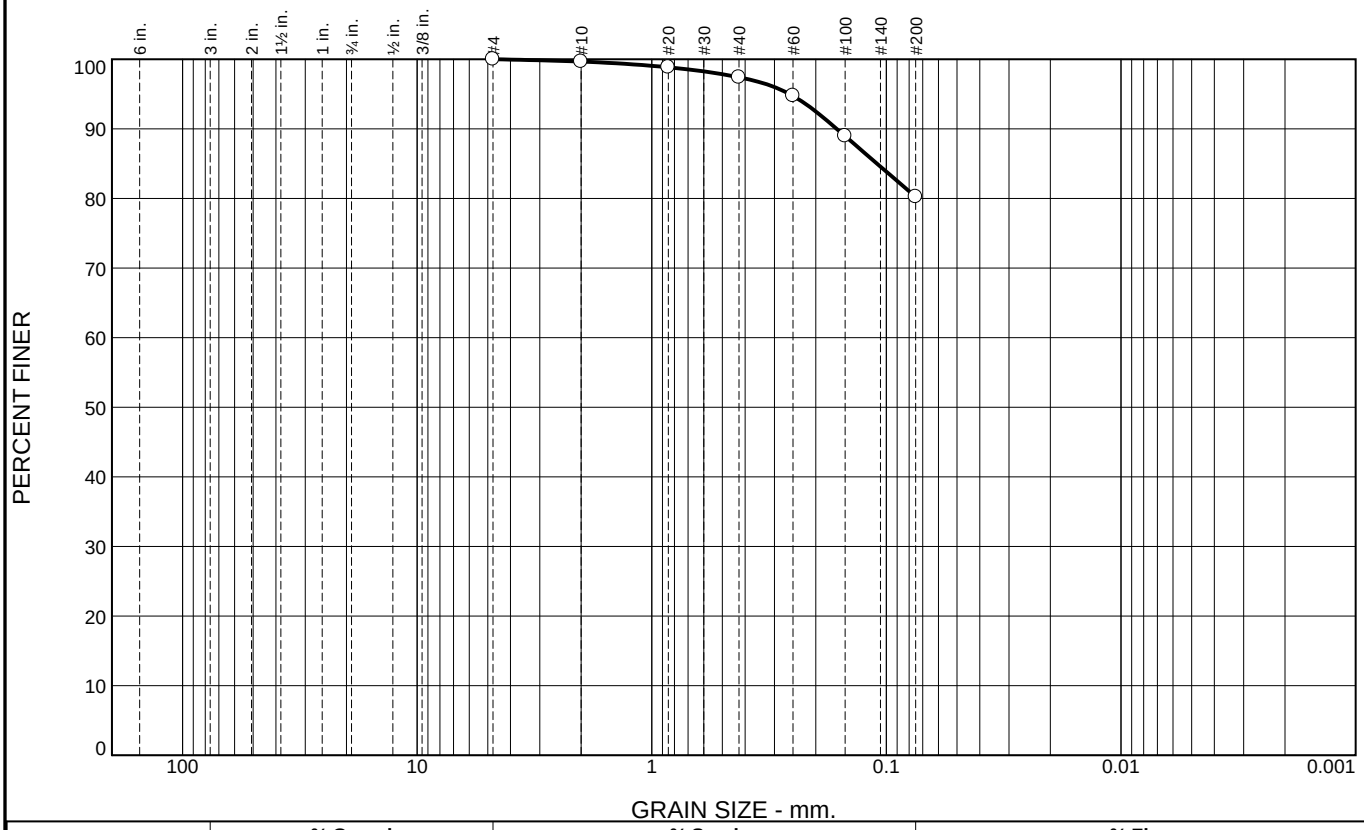
Location: BH-4-1
Sample Number: 18359 **Depth:** 5'-6.5' **Date:** 1-6-16

PIONEER TECHNICAL SERVICES, INC.

Client: Teton Geotechnical
Project: Teton Geotechnical General Testing

Project No: 1501052 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	0	3	17	80	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100		
#10	100		
#20	99		
#40	97		
#60	95		
#100	89		
#200	80		

* (no specification provided)

Material Description

Fat Clay with Sand

Atterberg Limits

PL= 28 LL= 50 PI= 22

Classification

USCS= CH AASHTO= A-7-6(19)

Remarks

F.M.=0.18

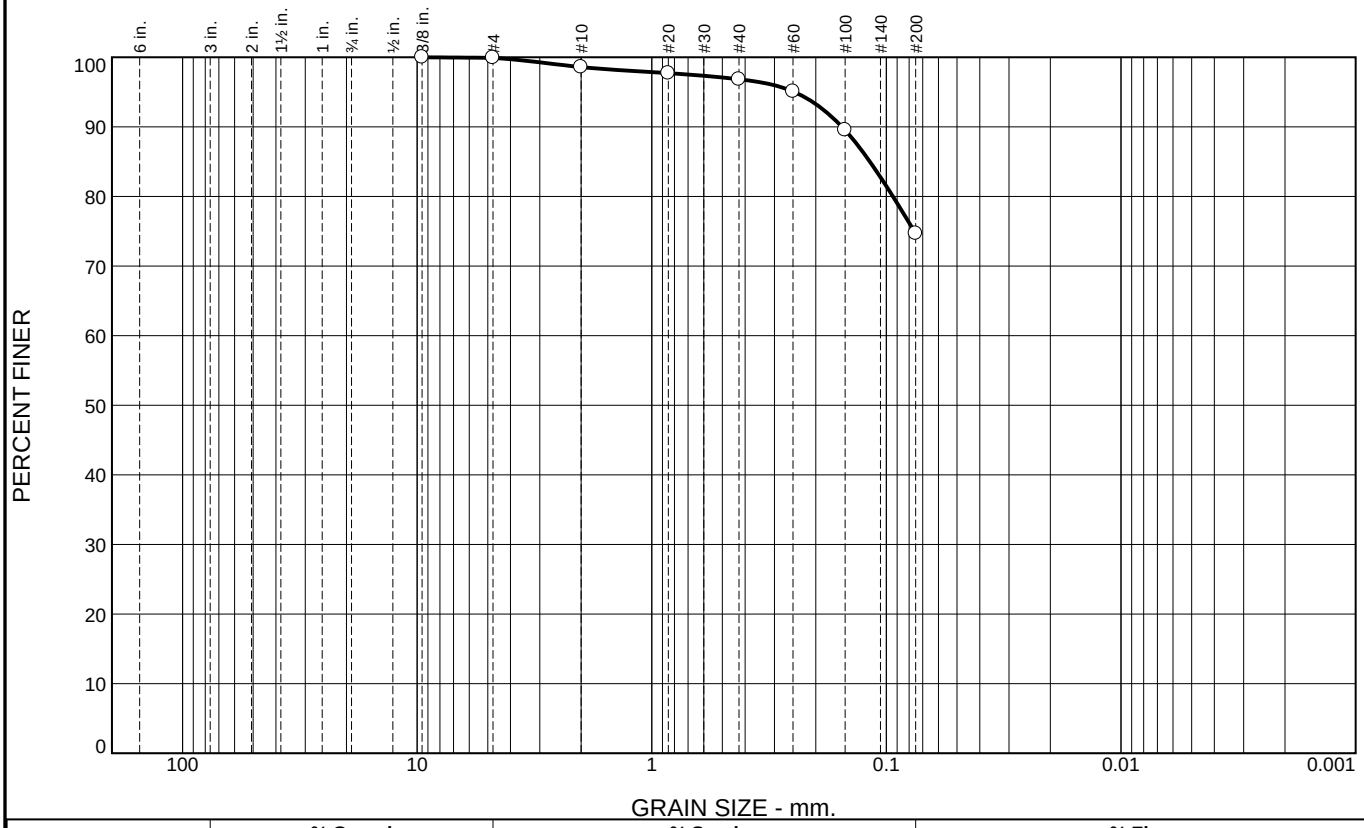
Location: BH-4-2
Sample Number: 18360 **Depth:** 10'-11.5' **Date:** 1-6-16

PIONEER TECHNICAL SERVICES, INC.

Client: Teton Geotechnical
Project: Teton Geotechnical General Testing

Project No: 1501052 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	0	1	2	22	75	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.375	100		
#4	100		
#10	99		
#20	98		
#40	97		
#60	95		
#100	90		
#200	75		

* (no specification provided)

Material Description

Lean Clay with Sand

Atterberg Limits

PL= 20 LL= 37 PI= 17

Classification

USCS= CL AASHTO= A-6(12)

Remarks

F.M.=0.20

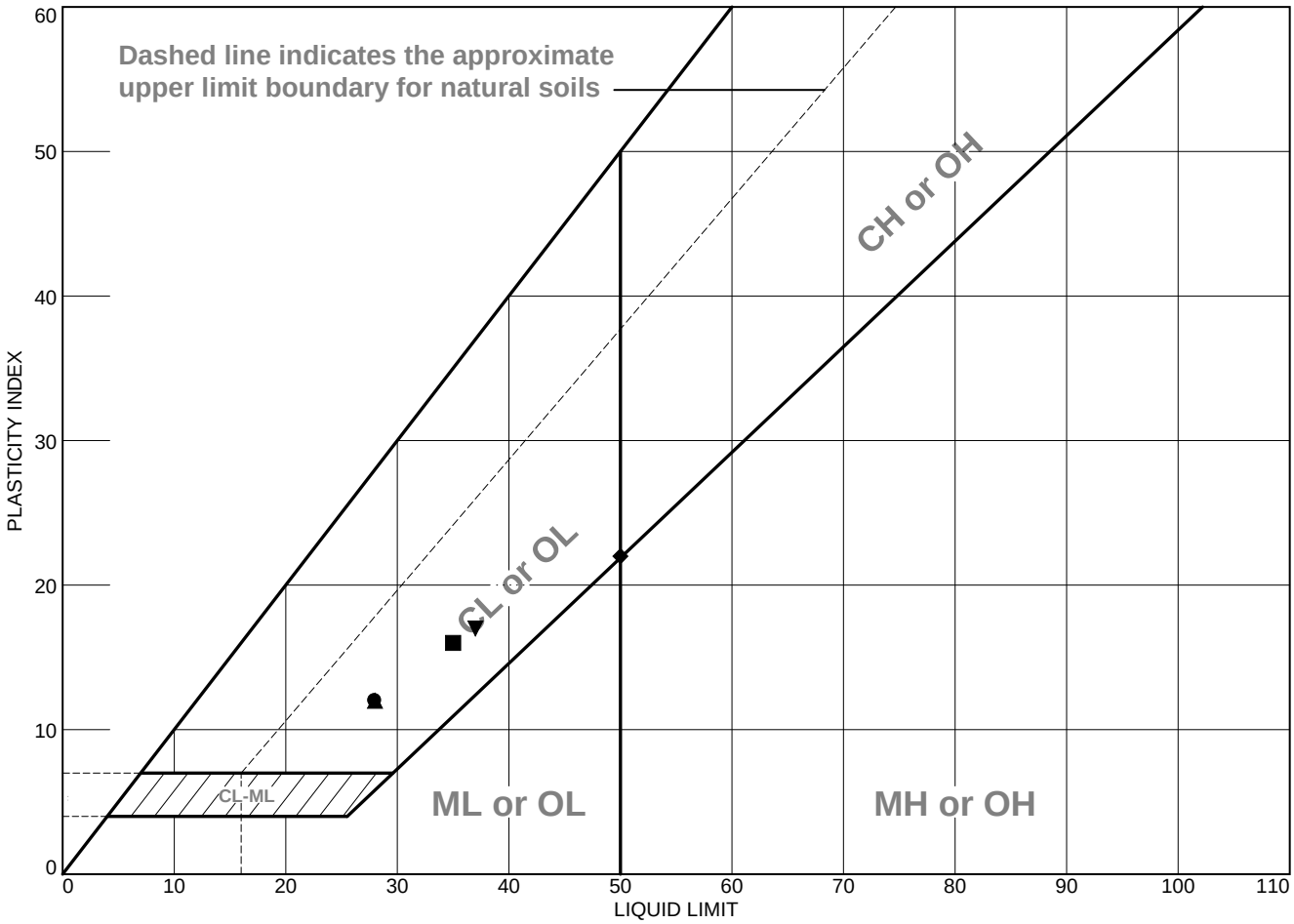
Location: BH-7-1
Sample Number: 18361 **Depth:** 5'-6.5' **Date:** 1-6-16

PIONEER TECHNICAL SERVICES, INC.

Client: Teton Geotechnical
Project: Teton Geotechnical General Testing

Project No: 1501052 **Figure**

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Lean Clay with Sand	28	16	12	98	79	CL
■	Lean Clay with Sand	35	19	16	98	75	CL
▲	Lean Clay with Sand	28	16	12	99	83	CL
◆	Fat Clay with Sand	50	28	22	97	80	CH
▼	Lean Clay with Sand	37	20	17	97	75	CL

Project No. 1501052 **Client:** Teton Geotechnical

Project: Teton Geotechnical General Testing

●**Location:** BH-1-1 **Depth:** 5'-6.5' **Sample Number:** 18357
■**Location:** BH-1-2 **Depth:** 10'-11.5' **Sample Number:** 18358
▲**Location:** BH-4-1 **Depth:** 5'-6.5' **Sample Number:** 18359
◆**Location:** BH-4-2 **Depth:** 10'-11.5' **Sample Number:** 18360
▼**Location:** BH-7-1 **Depth:** 5'-6.5' **Sample Number:** 18361

PIONEER TECHNICAL SERVICES, INC.

Remarks:

Figure

APPENDIX C: WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY LAUST PROJECT RESULTS

7.0 PROJECT RESULTS – BRIDGER-TETON NATIONAL FOREST (BTNF) (0-003112) AND KUDAR MOTEL PROPERTY (0-004296)

The BTNF and Kudar Motel sites are grouped together owing to their close physical proximity. The BTNF building located at 340 North Cache Street is the Supervisor's Office Complex for the Jackson Ranger District of the BTNF. The neighboring Kudar Motel property is located at 260 North Cache Street. Site locations are shown on Figure 2-1b.

7.1 INVESTIGATION RESULTS

The following discussion of investigation results provides an integration of past and current information regarding site background, soil conditions, groundwater conditions, potential receptors, AS/SVE pilot test, and slug tests. A list of investigative activities performed during the ASA is included in the section on Site Background below. Tables 7-1 and 7-2 contain summaries of BTEXNM, TPH-DRO, TPH-GRO, cadmium, chromium, and lead concentrations in soil and groundwater samples from the SSI and ASA investigations. WDEQ recommended SCCs for oral exposure, and MCLs/DWELs for ingestion are included in the tables for comparison. VOCs detected in soil and groundwater samples collected during the 1999 ASA are included in Tables 3-4 and 3-9 (Section 3.0).

7.1.0 Site Background

In June 1989, three 1,000-gallon gasoline USTs were removed from the southeast portion of the BTNF site. One of these tanks was reported by a WDEQ representative to have been leaking at the time of removal. When the USTs were removed, an area 28 feet wide and 35 feet long was excavated to a depth of 8.2 feet bgs to remove contaminated soil. Approximately 320 tons of hydrocarbon contaminated soil was reportedly removed from the site during the UST removal. The location of the former tank basin and other site features is shown on Figure 7-1.

In May 1990, a site investigation was conducted that included the installation and sampling of ten monitoring wells. The locations of seven of these wells (designated "BTNF") are shown on Figure 7-1. Sample results indicated that TPH concentrations in groundwater were elevated in a monitoring well located immediately north of the tank basin (which no longer exists) and in MW-BTNF-10 located 120 feet east of the tank basin. The 1990 study concluded that a UST on

the adjacent Kudar Motel property may have been the source of elevated TPH concentrations in well MW-BTNF-10.

In 1997, as part of the SSI, 11 additional soil borings were advanced at the site with eight of the borings completed as monitoring wells. The borings were advanced to depths of 9 to 15 feet bgs. Site assessment activities performed during the SSI again concluded that the gasoline UST at the Kudar Motel property was the probable source of the petroleum hydrocarbons on the BTNF site. The UST at the Kudar Motel site was removed in August 1997. Multiple holes were reported in the 500-gallon tank at the time of removal. Soil and groundwater impacts including free-phase product were observed in the UST excavation.

The magnitude and extent of petroleum hydrocarbon contamination at the BTNF and Kudar Motel site were not fully defined in previous investigations. Additional investigative activities performed by Dames & Moore for the 1999 ASA included:

- The installation of two additional monitoring wells, MW-315 and MW-316 to define the extent of groundwater contamination.
- The installation of an air sparge well (AS-300) constructed near the Kudar Motel tank basin to conduct an air sparge pilot test.
- The collection of two soil samples from MW-315 and MW-316 to characterize soil conditions.
- The collection of 10 additional groundwater samples to characterize groundwater conditions. Six samples were collected from existing wells (five wells each sampled once and MW-BTNF-10 sampled a second time in January 2000) and four samples from the two new 300-series wells (each sampled twice).
- The performance of two slug tests to evaluate the hydraulic conductivity of aquifer materials.

7.1.0 Soil Conditions

Subsurface soils at the site consist of local gravel fill underlain by clayey silts with roots and other organic materials. A 2- to 3-foot layer of sandy clay with silt and sand was encountered at approximately 5 to 8 feet bgs. A second sandy layer was encountered at about 14 to 18 feet bgs. A geologic cross-section of the site, extending from MW-135 northwest to MW-003, is illustrated on Figure 7-2.

Table 7-1 lists TPH-DRO and TPH-GRO concentrations in soil samples collected during the 1997 SSI and the 1999 ASA. Because the release was primarily gasoline, TPH-DRO was not analyzed in soil samples collected during the SSI. TPH-DRO was not detected in the two soil samples collected for the ASA. TPH-GRO concentrations exceeded the SCC of 30 mg/kg in two soil samples collected during the SSI. TPH-GRO was detected at 98 mg/kg in the ASA soil sample collected at 5 to 7 feet bgs in boring MW-135 near the former UST basin at the Kudar Motel. The sample taken from 5 to 7 feet bgs in boring B-003 located on the BTNF property contained TPH-GRO at 39 mg/kg. TPH-GRO was not detected in soil samples collected from the borings installed during the ASA. Figure 7-3 depicts TPH-DRO and TPH-GRO concentrations in both soil and groundwater samples collected at the site during the 1997 SSI and 1999 ASA. Soil concentrations, along with sample depths, are shown in brackets. Groundwater results are discussed in the following section (Section 7.1.3). The area of remedial focus shown on Figure 7-3 is based on benzene concentrations in groundwater as discussed in Section 7.1.3.

Table 7-1 lists benzene concentrations in soil samples collected during the SSI and the ASA. Benzene was not detected at concentrations in exceedance of the SCC in soil samples collected at the site for the SSI and the ASA. Figure 7-4 depicts benzene concentrations in soil and groundwater samples collected at the site.

Soil samples collected during the SSI and ASA were analyzed for the full suite of EPA Method 8260 VOCs. No VOC concentrations were detected in exceedance of their respective SCCs in the soil samples collected from monitoring wells MW-315 and MW-316 during the 1999 ASA. Table 3-4 (Section 3.0) lists the VOC concentrations in soil samples collected during the 1999 ASA. The SSI data were not integrated into this table but are available in the 1997 SSI report.

Table 7-1 also includes the concentrations of other BTEXNM compounds and metals in soil samples collected during the SSI and ASA. No BTEXNM compounds were detected at concentrations in exceedance of their respective SCCs. No metals were detected in exceedance of their respective SCCs.

7.1.0 Groundwater Conditions

Figure 6-6 (Section 6.0) shows contoured groundwater elevations and the general flow direction for the North Cache area. The BTNF/Kudar Motel site is included on the figure. The

groundwater elevations are from water level measurements taken during the summer 1999 ASA sampling event. The groundwater flow direction is to the west-northwest.

Table 3-8 (Section 3.0) lists casing elevations, dates measured, depths to groundwater, groundwater elevations, maximum elevation difference per well, range of depths to groundwater per site, and the maximum elevation difference in a well per site. Depths to groundwater recorded from July 1997 to January 2000 range from 2.20 to 7.54 feet bgs across the site. Over this time period, the maximum variation in depth to groundwater in a well is 3.02 feet.

Table 7-2 lists TPH-DRO and TPH-GRO concentrations in groundwater samples collected during the 1997 SSI and 1999 ASA. TPH-DRO was analyzed only in groundwater samples collected during the ASA, and detected only in the sample from MW-135 located near the Kudar Motel former tank basin. The TPH-DRO concentration detected in this sample was well below the DWEL of 10,000 µg/L, and may be related to gasoline weathering. TPH-GRO was also detected in MW-135, in exceedance of the 10,000 µg/L DWEL in samples collected during both the SSI and the ASA. The concentration detected in the sample collected for the ASA was 19,000 µg/L, down from a high of 56,000 µg/L detected during the SSI. Figure 7-3 depicts TPH-DRO and TPH-GRO concentrations in groundwater samples collected at the site.

Table 7-2 lists benzene concentrations in groundwater samples collected during the 1997 SSI and 1999 ASA. Benzene was detected in groundwater at concentrations in exceedance of the 5 µg/L MCL during the SSI as follows:

- MW-BTNF-10, located downgradient from the Kudar Motel former tank basin, had a benzene concentration of 37 µg/L;
- MW-003, located north of the BTNF tank basin, had a benzene concentration of 57 µg/L; and
- MW-135 near the Kudar Motel source area had a benzene concentration of 8,200 µg/L.

Benzene was not detected in samples collected from MW-BTNF-10 and MW-003 during the ASA, but was detected in MW-135 at a concentration of 940 µg/L. Figure 7-4 depicts benzene concentrations in groundwater samples collected at the site.

Analysis of the benzene data from groundwater samples collected at the site show a seasonal correlation. That is, many of the higher concentrations were detected in SSI samples collected in

September when groundwater elevations are relatively low. The lower concentrations in samples from the ASA coincide with higher groundwater elevations, indicating that higher seasonal groundwater levels may dilute contaminant concentrations. Because of this apparent seasonal correlation, an additional groundwater sample was collected from MW-BTNF-10 in January 2000 prior to determining whether or not groundwater in the vicinity of that well would require remediation. The analytical results of that sample were below the MDL and are included in Table 7-2.

Table 7-2 lists concentrations of other BTEXNM constituents in groundwater samples collected during the 1997 SSI and 1999 ASA. Of the remaining BTEXNM compounds, toluene was detected in exceedance of its MCL of 1,000 µg/L in all samples (both SSI and ASA) collected from MW-135. The most recent sample collected during the ASA showed a concentration of 1,300 µg/L. Ethylbenzene was also detected in exceedance of its 700 µg/L MCL in MW-135 in samples collected during the SSI. No other samples contained BTEXNM compounds in exceedance of their respective MCLs/DWELs.

Groundwater samples were analyzed for the full suite of EPA Method 8260 VOCs during the SSI and ASA. No additional VOC compounds were detected at concentrations exceeding MCL/DWELs in groundwater collected during the ASA. ASA results are reported in Table 3-9 (Section 3.0). SSI results were not integrated into this table but are available in the 1997 SSI report.

Table 7-2 lists cadmium, chromium, and lead concentrations in groundwater samples collected during the SSI and ASA. Lead was detected in MW-005 at 0.11 mg/L, in exceedance of the 0.05 mg/L MCL, during the SSI. No other groundwater samples from the site contained metal concentrations in exceedance of their respective MCLs.

7.1.0 Potential Receptors

No immediate health or safety hazards were identified at these sites during the SSI and the ASA. No domestic water wells or utilities were identified in the vicinity that could be affected by the BTNF or Kudar Motel source areas.

7.1.0 Air Sparge/Soil Vapor Extraction Pilot Test

An AS well was installed at the site (AS-300) and an AS/SVE pilot test was performed on September 22, 1999 in order to determine whether or not groundwater remediation using those technologies would be feasible in the low permeability soils at the site. For the AS test, a skid-mounted compressor was set up to force air into well AS-300. For the SVE test, a portable skid-mounted blower was set up to pull vacuum on MW-135, chosen as the vapor extraction well. Both test wells were located within the former tank basin. Monitoring wells MW-134, MW-001 and BTNF-10, all located approximately 40 feet from both AS-300 and the vapor extraction well, were used as pressure monitoring points.

Both tests showed no pressure change in the pressure monitoring points. It is believed that the reason is two-fold. First, due to the shallowness groundwater at the site, it was estimated that approximately 6 inches to 1 foot of screen was available in MW-135 through which to pull vapor through the vadose zone. (And, in fact, the water knockout drum between the wellhead and the blower quickly filled with water, requiring the air flow rate to be reduced to a minimum.) Second, the low permeability of the soils, even with greater screen length available, may have precluded any vacuum effect on soils 40 feet distant from the blower.

For the AS test, results seem to indicate an impact limited to the immediate vicinity of the AS well. VOCs and TVPH in the AS well were reduced to nondetectable levels after 20 minutes. DO increased from 20.5 to 21.5 percent during the first 1.5 hours and then remained constant.

7.1.6 Slug Tests

Two slug tests were performed at the BTNF/Kudar Motel site during the 1999 ASA. The slug tests were used to estimate hydraulic conductivity of the subsurface saturated zone. The hydraulic conductivity estimated from the slug test data utilizing three methods, are shown in the table below. A brief discussion of the methods used is provided in Appendix K.

Although different methods were used to calculate the hydraulic conductivity at the site, the average of the values generated using the Bouwer and Rice method for unconfined aquifers was used to estimate the hydraulic conductivity (0.6 ft/day) at the site. The Bouwer and Rice method gave the most conservative estimate and is believed to be the most applicable to actual site conditions.

Estimated Hydraulic Conductivity (ft/day)

Monitoring Well I.D	Bouwer & Rice	Hvorslev	Cooper, et. al.
MW-039	0.5	1.0	1.8
MW-315	0.6	1.1	1.1

7.2 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations in the form of remedial action alternatives are based on site investigation information.

7.2.1 Conclusions

Releases of petroleum hydrocarbons from USTs have affected soils and groundwater at the BTNF/Kudar Motel site.

- Subsurface soils at the site consist of local gravel fill underlain by clayey silts with roots and other organic materials. A 2- to 3-foot layer of sandy clay with silt and sand was encountered at approximately 5 to 8 feet bgs. A second sandy layer was encountered at about 14 to 18 feet bgs. Depths to groundwater measured between September 1997 and January 2000 vary from 2.20 to 7.54 feet bgs across the site. The largest variation in measured depths to groundwater in an individual well was 3.02 feet.
- Site soil impacts appear to be minimal and are concentrated in the vicinity of the former tank basin of the Kudar Motel.
- Groundwater impacts at the site are limited to a small radius around MW-003 in the BTNF portion of the site, and to the area surrounding the former tank basin located near the garage of the Kudar Motel site.
- A supplementary groundwater sample collected in January 2000 showed benzene concentrations in the vicinity of MW-BTNF-10 were now below the MDL, as were TPH-DRO and TPH-GRO.

- Slug tests performed at the site (see Section 7.1.6) indicate that site soils exhibit low permeability, thereby reducing the potential effectiveness of AS, SVE, bioventing, GCW and other technologies.

7.2.2 Recommendations

Recommended Remedy: Excavation and enhancement of *In Situ* bioremediation by ORC® Pressure Injection

An AS/SVE system was cited as the presumptive remedy for the BTNF/Kudar Motel site in Dames & Moore's Technical Proposal. Following additional site assessment, Dames & Moore recommends instead *in situ* bioremediation enhanced through the pressure injection of an oxygen supplying agent, such as ORC®, within the area of remedial focus surrounding the Kudar Motel former tank basin. Site monitoring will be required to ascertain the effectiveness of the bioremediation process.

For the remainder of the joint BTNF/Kudar Motel site, Dames & Moore recommends two years of site monitoring, with samples collected semi-annually during high and low water seasons.

Rationale

ORC®pressure injection is recommended over conventional AS/SVE treatment for the following reasons:

- Low permeability soils at the site do not lend themselves well to remediation by conventional AS/SVE treatment or treatment by GCW technology.
- Shallow groundwater depths would make the use of SVE difficult because even horizontally placed wells would likely be submerged in groundwater during the high water season.
- Due to the localized nature of the contamination at the site, excavation and either off site disposal or thermal treatment of the soils in and surrounding the former Kudar Motel tank basin is considered a viable alternative. However, pressure injection of an oxygen source such as ORC® would be much less invasive, less time consuming, and, with only one injection required, less expensive than excavation and soil treatment or disposal.
- Given the localized nature of the contamination and the relatively low level of contaminants at this site, it is expected that one ORC® pressure injection would be

enough to remediate the site to WDEQ/WQD standards. This would make the ORC® alternative the most cost-effective as well as the most technically effective method of remediation.

Figure 7-5 shows the locations of proposed ORC® injection points.

7.3 COST EVALUATION

The remedial plan for the BTNF/Kudar Motel site was based ultimately on considerations other than cost, as explained in Section 7.2 above, although cost was a decision factor. The engineering cost estimation broken out in the table below is expected to be accurate within +/- 30 percent in year 2000 dollars. The expected project life is estimated at two years. Direct costs listed in the table include costs associated with the material and labor required to complete the ORC® injections. Indirect capital costs include engineering design and specification, construction management and contingencies. Operations and maintenance (O&M) costs include only sampling and analysis of selected monitoring wells. Decommissioning and close-out costs include the plugging and abandonment of all monitoring wells on the site and producing a final report.

Activity	Cost Per Activity ($1000)	Number of Units	ORC® Injection ($1000)
Direct Costs	$12	1	$12
Indirect Capital Costs	$10	1	$10
O&M Costs (Annual)	$25	2	$50
Decommissioning and Closeout Costs	$17	1	$17
Salvage Value	$0	0	$0
Project Life (years)	2		
Total Project Cost (year 2000 dollars)			$89

TABLE 7-1
Soil Analytical Results
Bridger-Teton National Forest and Kudar Motel

Boring Number	Date Sampled	Sample Depth (ft)	Benzene (ug/Kg)	Toluene (ug/Kg)	Ethylbenzene (ug/Kg)	m,p-Xylene (ug/Kg)	o-Xylene (ug/Kg)	Naphthalene (ug/Kg)	MTBE (ug/Kg)	TPH-DRO (mg/Kg)	TPH-GRO (mg/Kg)	Cadmium (mg/Kg)	Chromium (mg/Kg)	Lead (mg/Kg)
		SCC	52,000	12,500,000	6,250,000	1,250,000	1,250,000	2,500,000	313,000	100	30	31	313	400
B-001	6/3/97	10-12	<5	<5	<5	<5	<5	<5	<5	NS	<0.5	NS	NS	NS
B-002	6/3/97	7-9	13	<5	140	120	<5	<5	<5	NS	3	NS	NS	NS
B-003	6/3/97	5-7	1,200	280	740	2,800	27	<5	<5	NS	**39**	NS	NS	NS
MW-001	6/3/97	5-7	<5	<5	8	45	<5	<5	<5	NS	<0.5	NS	NS	NS
MW-002	6/4/97	5-7	<5	<5	<5	<5	<5	<5	<5	NS	<0.5	NS	NS	NS
MW-003	6/4/97	5-7	<5	<5	<5	<5	<5	<5	<5	NS	<0.5	NS	NS	NS
MW-004	6/4/97	5-7	<5	<5	<5	<5	<5	<5	<5	NS	<0.5	NS	NS	NS
MW-005	6/5/97	6-8	<5	<5	<5	<5	<5	<5	<5	NS	<0.5	<0.05	6	22
MW-039	6/30/97	4-6	<5	<5	<5	<5	<5	<5	<5	NS	<0.5	NS	NS	NS
MW-134	9/16/97	6-8	<5	<5	<5	<5	<5	<5	<5	NS	<0.5	NS	NS	NS
MW-135	9/17/97	5-7	<250	<250	3,000	2,800	12,000	<250	<250	NS	**98**	<0.05	11	17
MW-315	4/30/99	6.5-7	<5	<5	<5	<5	<5	<5	<5	<10	<0.1	0.2	6.5	6.7
MW-316	4/30/99	6.25-6.75	<5	<5	<5	<5	<5	<5	<5	<9.9	<0.1	0.28	7.8	12

SSC - Soil Cleanup Concentration based on oral ingestion, established by Wyoming DEQ

NS - Not Sampled for indicated compound

TABLE 7-2
Groundwater Analytical Results
Bridger-Teton National Forest and Kudar Motel

Well Number	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	m,p-Xylene (ug/L)	o-Xylene (ug/L)	Naphthalene (ug/L)	MTBE (ug/L)	TPH-DRO (ug/L)	TPH-GRO (ug/L)	Cadmium (mg/L)	Chromium (mg/L)	Lead (mg/L)
	MCL/DWEL	5	1,000	700	10,000	10,000	1,300	200	10,000	10,000	0.005	0.1	0.05
MW-001	7/18/97	<1	<1	<1	<1	<1	<1	<1	NS	<50	NS	NS	NS
	9/25/97	<1	2	<1	3	<1	<1	<1	NS	<50	NS	NS	NS
MW-002	7/18/97	<1	<1	<1	<1	<1	<1	<1	NS	<50	NS	NS	NS
	9/25/97	<1	<1	<1	<1	<1	<1	<1	NS	<50	NS	NS	NS
MW-003	7/18/97	57	3	4	3	5	<1	<1	NS	150	NS	NS	NS
	9/25/97	21	1	<1	<1	<1	<1	<1	NS	340	NS	NS	NS
	09/25/1997A	30	<1	<1	<1	<1	<1	<1	NS	2,600	NS	NS	NS
	6/21/99	<1	<1	<1	<1	<1	<1	<1	<1000	<100	<0.001	0.0015	0.0022
MW-004	7/18/97	<1	<1	<1	<1	<1	<1	<1	NS	<50	NS	NS	NS
	9/25/97	<1	<1	<1	<1	<1	<1	<1	NS	<50	NS	NS	NS
	6/21/99	<1	<1	<1	<1	<1	<1	<1	<1000	<100	0.0034	0.0066	0.017
MW-005	7/18/97	<1	<1	<1	<1	<1	<1	<1	NS	<50	<0.005	<0.005	<0.05
	9/25/97	<1	2	<1	3	2	<1	<1	NS	<50	<0.005	<0.005	0.11
	6/3/99	3.5	<1	<1	<1	2	<1	<1	<1000	<100	0.002	0.029	0.05
MW-039	7/23/97	<1	<1	<1	<1	<1	<1	<1	NS	<50	NS	NS	NS
	9/25/97	<1	<1	<1	<1	<1	<1	<1	NS	<50	NS	NS	NS
MW-134	9/25/97	<1	<1	<1	<1	<1	<1	<1	NS	<50	NS	NS	NS
	09/25/1997A	<1	<1	<1	<1	<1	<1	<1	NS	<50	NS	NS	NS
	10/26/97	1	34	8	40	11	<1	<1	NS	<50	NS	NS	NS
MW-135	9/25/97	8,200	13,000	1,000	8,200	<50	<50	<50	NS	36,000	<0.005	<0.1	<0.05
	09/25/1997A	4,400	7,100	540	4,400	<50	<50	<50	NS	25,000	NS	NS	NS
	10/26/97	5,100	7,900	<20	5,800	2,200	<20	<20	NS	56,000	<0.005	<0.1	<0.05
	6/3/99	940	1,300	140	1,500	340	39	43	4,200	19,000	<0.001	0.0066	0.0025
MW-BTNF-5	9/25/97	<1	<1	<1	<1	<1	<1	<1	NS	<50	NS	NS	NS
	09/25/1997A	<1	<1	<1	<1	<1	<1	<1	NS	<50	NS	NS	NS
MW-BTNF-6	9/25/97	<1	1	<1	<1	<1	<1	<1	NS	<50	NS	NS	NS
MW-BTNF-10	7/18/97	37	<1	<1	<1	<1	<1	<1	NS	<50	NS	NS	NS
	9/25/97	46	8	<1	<1	1	<1	27	NS	<50	NS	NS	NS
	09/25/1997A	100	17	<1	<1	<1	<1	31	NS	120	NS	NS	NS
	6/21/99	<1	<1	<1	<1	<1	<1	1.1	<1000	<100	<0.001	0.0052	0.0052
	1/20/00	<1	<1	<1	<1	<1	<1	2.3	NS	<100	NS	NS	NS
MW-315	6/3/99	<1	<1	<1	<1	<1	<1	<1	<1000	<100	0.0033	0.015	0.0059
	11/2/99	<1	<1	<1	<1	<1	<1	<1	<950	<100	<0.001	<0.001	0.0011
MW-316	6/3/99	<1	<1	<1	<1	<1	<1	<1	<1000	<100	0.0016	0.019	0.021
	11/2/99	<1	<1	<1	<1	<1	<1	<1	<950	<100	<0.001	0.014	0.011

Notes on following table addendum.

TABLE ADDENDUM
Groundwater Analytical Results

MCL - Maximum Contaminant Level, established by US EPA, is in bold type.

DWEL - Drinking Water Equivilent Level, established by Wyoming DEQ, is in regular type.

A - duplicate sample. Original sample names for duplicate samples were standardized to have the suffix A after the well number.

B - replacement well. The suffix B after the well number indicates that the well was replaced.

R - replacement sample. This sample was a duplicate of an original sample which exceeded holding time. The original sample's results were voided. The duplicate now replaces the original.

NS - not sampled.

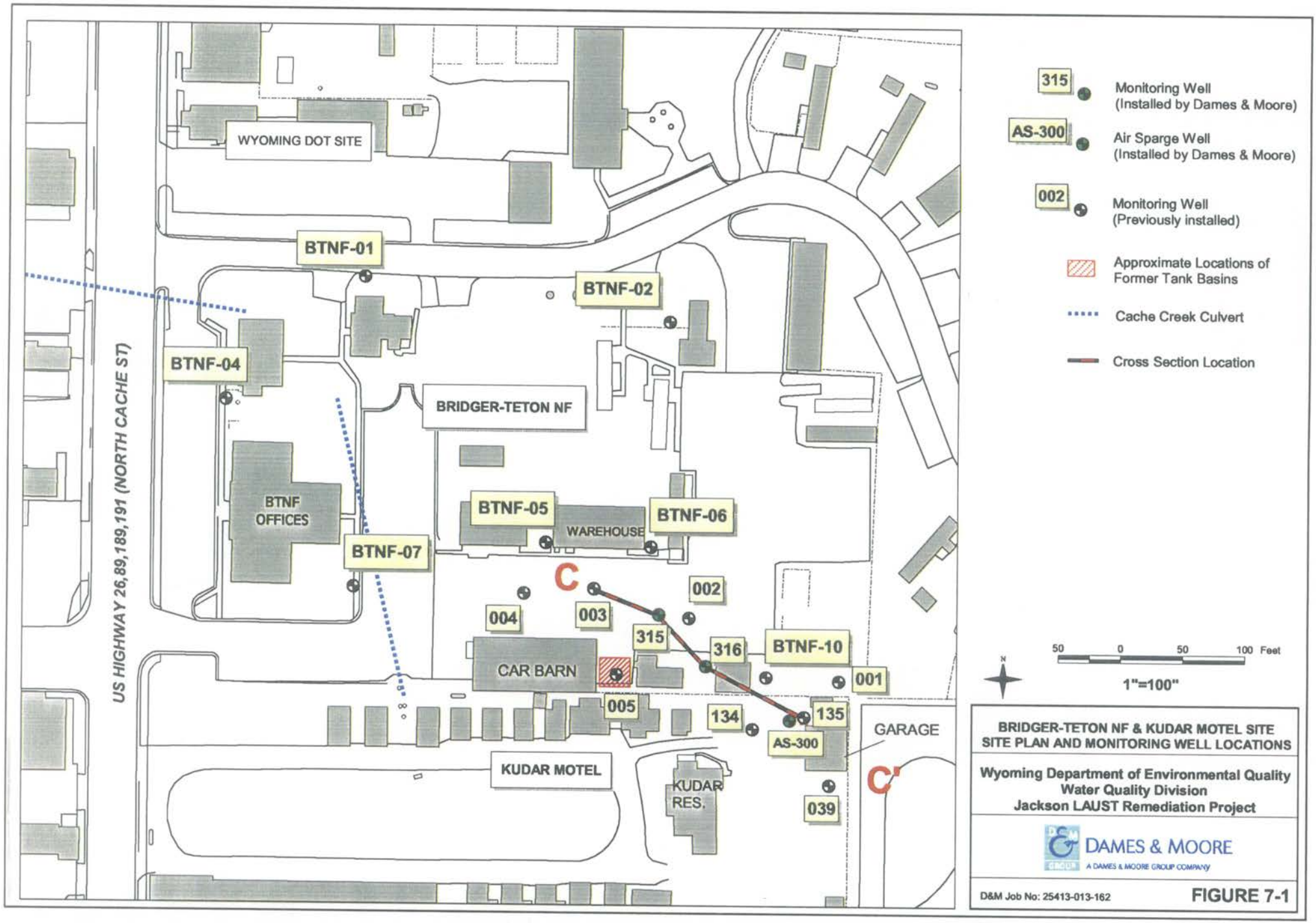
S - shallow well.

D - deep well

W - WDEQ sample analyzed for BTEX only.

* - part of a sample set. This sample set was collected over a period of one or more days due to bottle breakage or other delays; although more than one date is given, the set is considered under one sampling event.

** - anomalous data. These data are considered to be anomalous and were not confirmed nor used in the site evaluation.



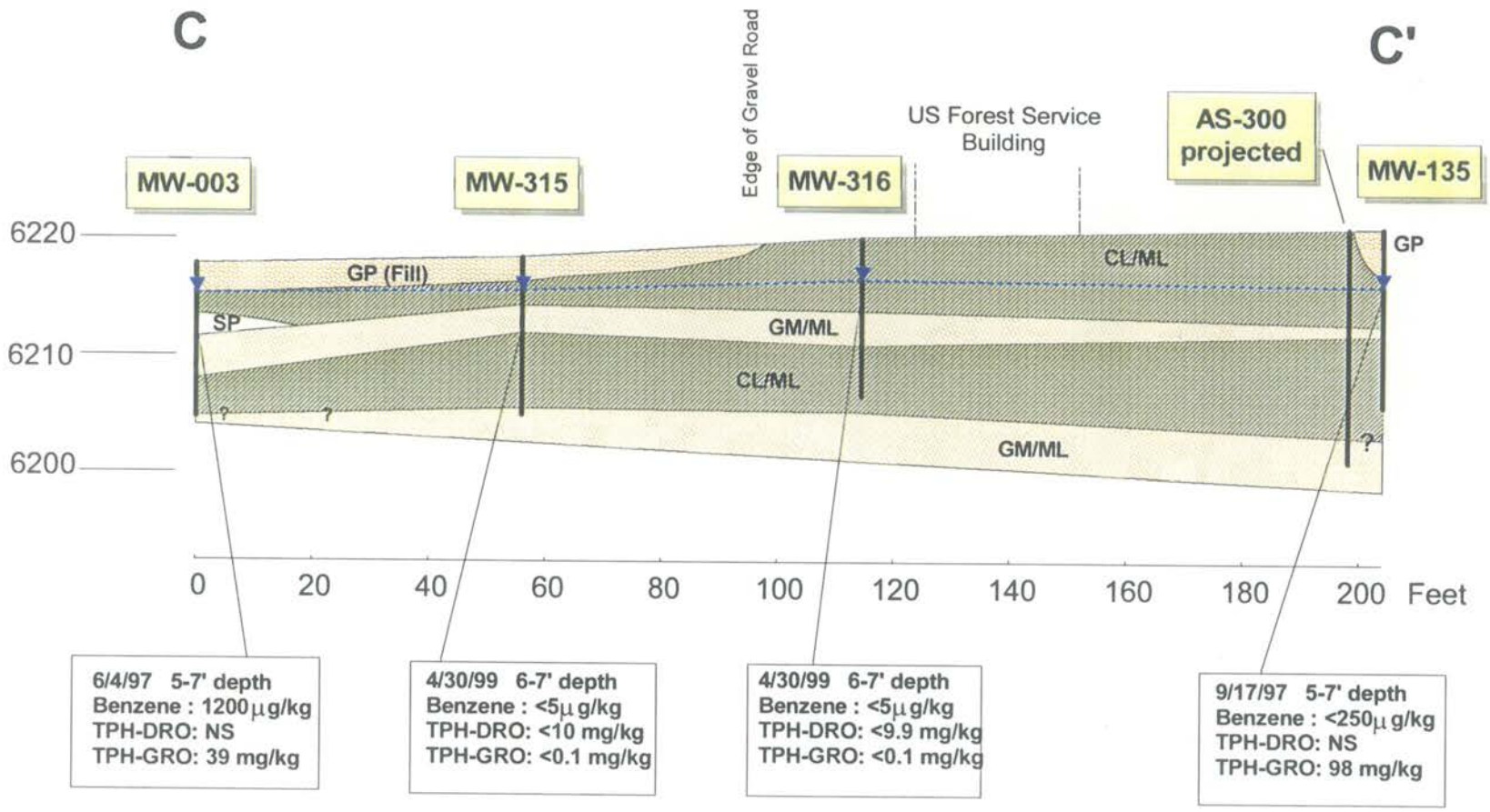
BRIDGER-TETON NF & KUDAR MOTEL SITE
SITE PLAN AND MONITORING WELL LOCATIONS

Wyoming Department of Environmental Quality
Water Quality Division
Jackson LAUST Remediation Project

DAMES & MOORE
A DAMES & MOORE GROUP COMPANY

D&M Job No: 25413-013-162

FIGURE 7-1



Horizontal Scale in Feet (1"=30')
Vertical Exaggeration: 2X

Description of Units

- CL/ML — Brown and Brown-Gray Clayey Silt, Brown-Gray Clay with Organics and Roots
- GM/ML — Yellowish Red to Brown Silty Gravel, Sandy Silt, Clayey Silt, Sand and Gravel with Silt
- SP — Brown-Gray Sand
- GP — Gravel, Sandy Gravel

▼ Groundwater Level (June 1999)

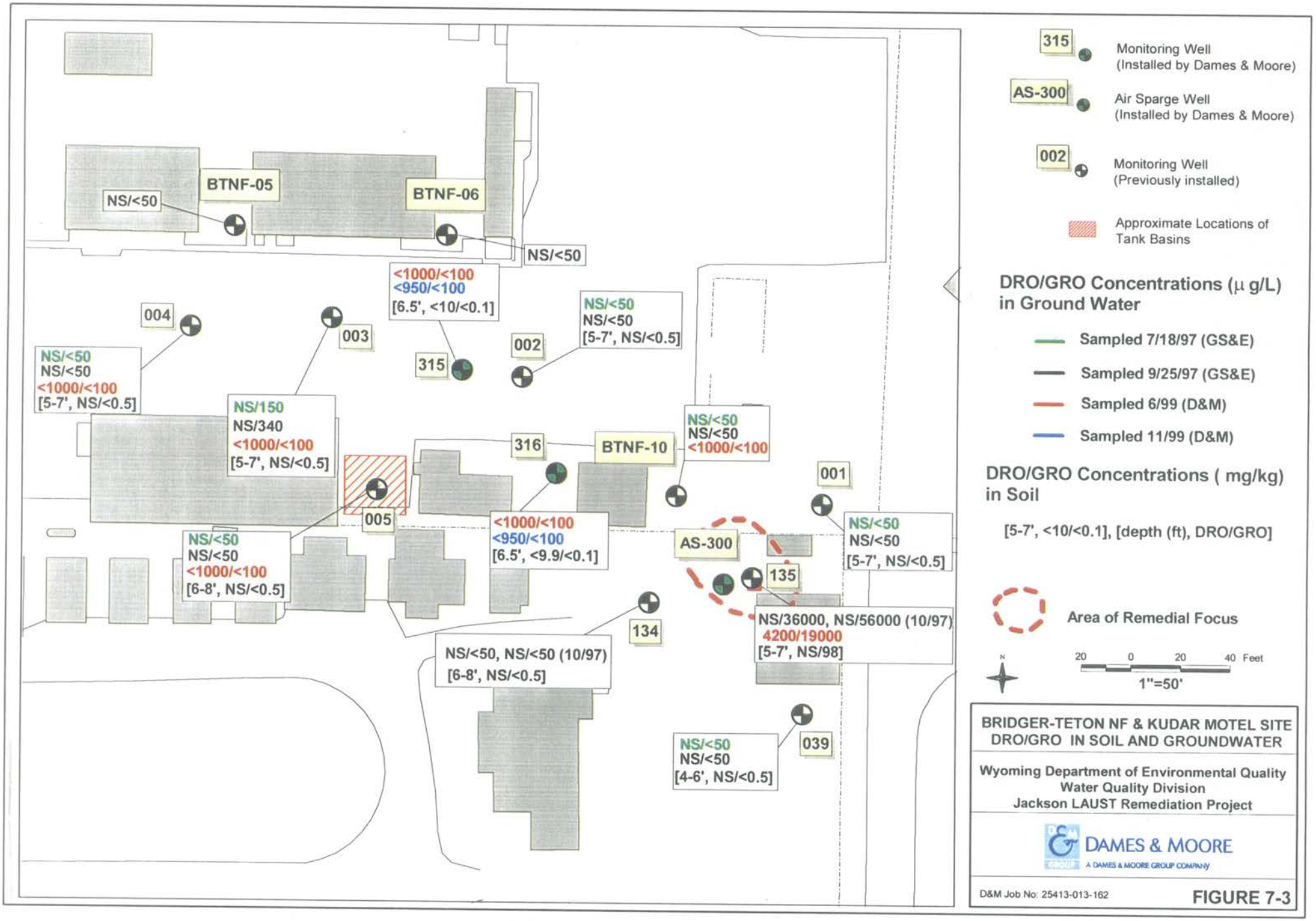
BRIDGER-TETON NF & KUDAR MOTEL SITE
GEOLOGIC CROSS SECTION C - C'

Wyoming Department of Environmental Quality
Water Quality Division
Jackson LAUST Remediation Project

DAMES & MOORE
A DAMES & MOORE GROUP COMPANY

D&M Job No: 25413-013-162

FIGURE 7-2



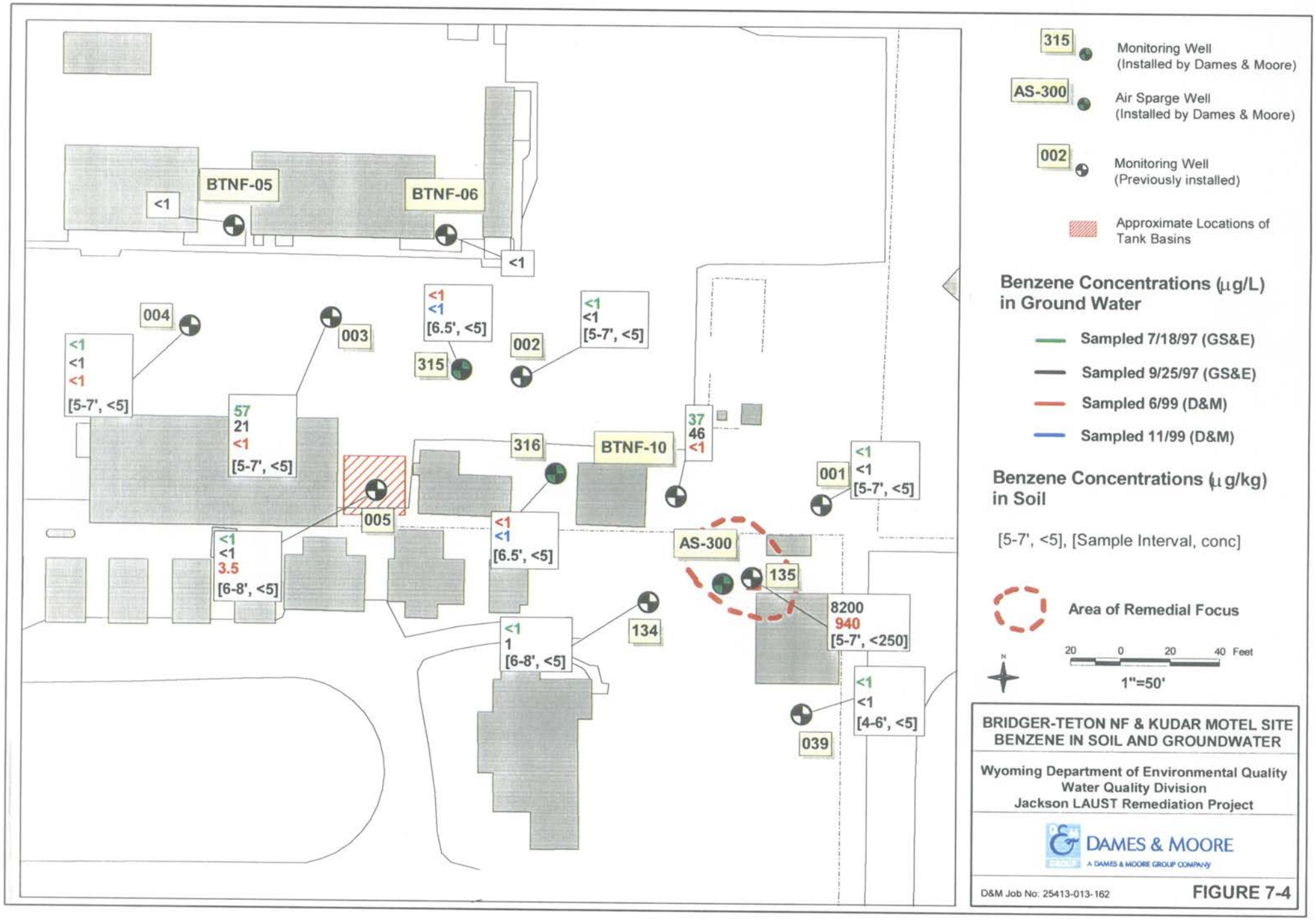
BRIDGER-TETON NF & KUDAR MOTEL SITE
DRO/GRO IN SOIL AND GROUNDWATER

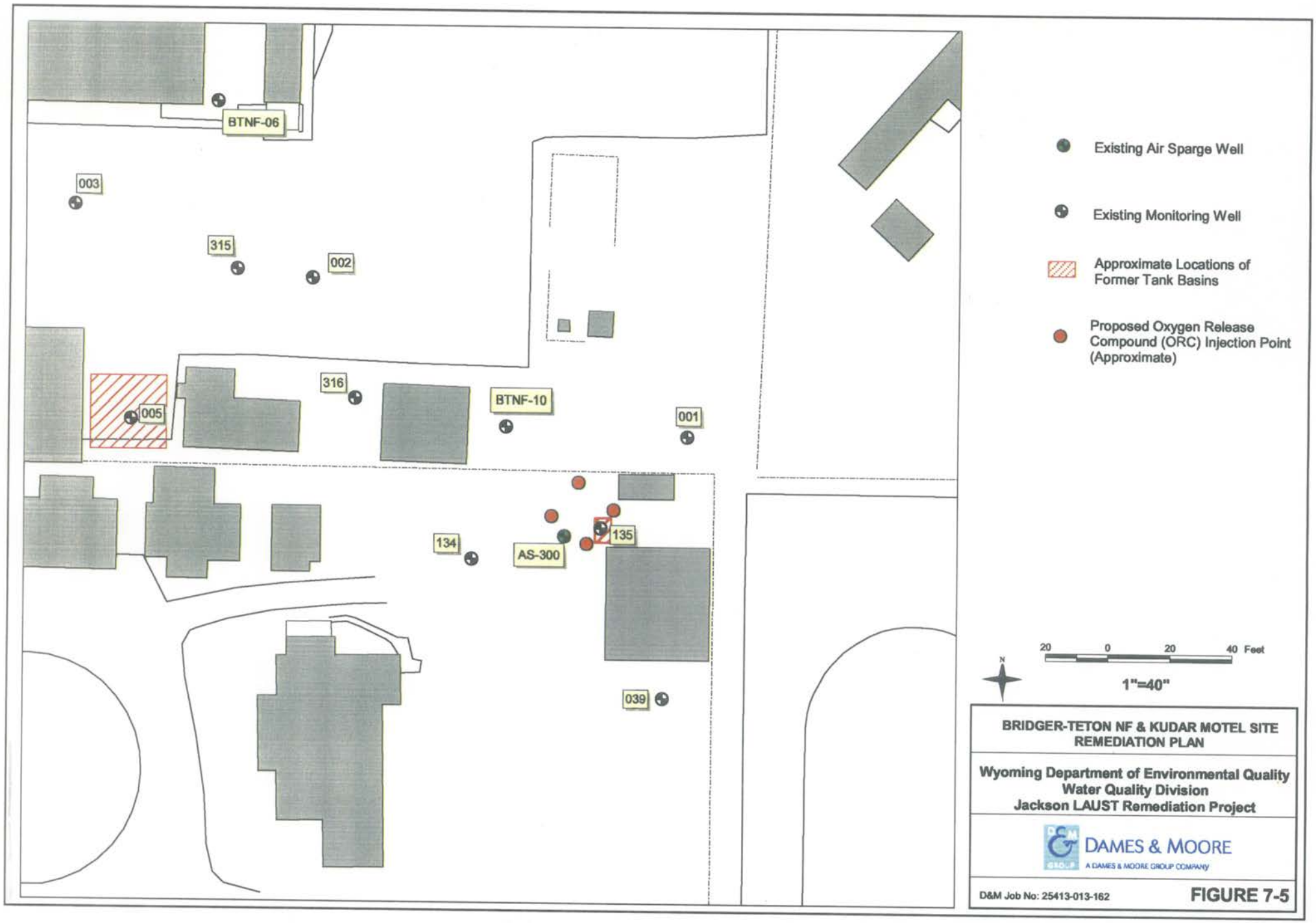
Wyoming Department of Environmental Quality
Water Quality Division
Jackson LAUST Remediation Project

DAMES & MOORE
A DAMES & MOORE GROUP COMPANY

D&M Job No: 25413-013-162

FIGURE 7-3


315
Monitoring Well
(Installed by Dames & Moore)
AS-300
Air Sparge Well
(Installed by Dames & Moore)
002
Monitoring Well
(Previously installed)
Approximate Locations of
Tank Basins
Benzene Concentrations (µg/L)
in Ground Water
Sampled 7/18/97 (GS&E)
Sampled 9/25/97 (GS&E)
Sampled 6/99 (D&M)
Sampled 11/99 (D&M)
Benzene Concentrations (µg/kg)
in Soil
[5-7', <5], [Sample Interval, conc]
Area of Remedial Focus
20 0 20 40 Feet
1"=50'
BTNF-05
BTNF-06
BTNF-10
AS-300
004
003
002
315
316
005
001
135
134
039
<1
[5-7', <5]
<1
[6.5', <5]
57
21
[6-8', <5]
3.5
1
8200
940
[5-7', <250]
37
46
[4-6', <5]
BRIDGER-TETON NF & KUDAR MOTEL SITE
BENZENE IN SOIL AND GROUNDWATER
Wyoming Department of Environmental Quality
Water Quality Division
Jackson LAUST Remediation Project
DAMES & MOORE
A DAMES & MOORE GROUP COMPANY
D&M Job No: 25413-013-162
FIGURE 7-4



BRIDGER-TETON NF & KUDAR MOTEL SITE REMEDIATION PLAN

Wyoming Department of Environmental Quality
Water Quality Division
Jackson LAUST Remediation Project

DAMES & MOORE
A DAMES & MOORE GROUP COMPANY

D&M Job No: 25413-013-162

FIGURE 7-5

APPENDIX D: NELSON ENGINEERING GEOTECHNICAL REPORT

GEOTECHNICAL INVESTIGATION

BRIDGER/TETON NATIONAL FOREST
SUPERVISORS OFFICE
JACKSON, WYOMING

PREPARED
FOR
CASE, Lowe & HART, INC.

PREPARED
BY
NELSON ENGINEERING
JACKSON, WYOMING

JANUARY 2008
Project No. 07-238-01

TABLE OF CONTENTS

EXECUTIVE SUMMARY

A geotechnical investigation has been performed at the USFS Bridger/Teton property in Jackson Wyoming as part of a feasibility study for the construction of one or two story commercial buildings. The purpose of the investigation was to ascertain subsurface conditions and provide geotechnical recommendations for each of four proposed sites located on the property. A single boring was advanced at each site to ascertain subsurface conditions. Information from the borings was evaluated and laboratory testing was performed to ascertain soil properties. The results of the testing and analysis were used to prepare deep and shallow foundation recommendations.

At the western three boring sites, subsurface conditions consisted of soft swamp soils to greater than 13 feet in depth overlying dense alluvial gravel and cobble deposits. At the eastern boring location, swamp deposits extended to shallower depth. Shallow groundwater was found at all four sites; the estimated seasonal peak depth to groundwater is two feet for the eastern three sites and five feet for the western site.

At Sites 1, 2, and 4 the settlement of underlying compressible soils limits the size and load that may be applied to shallow footings. For these sites, heavy multi-story structures can be supported by pile foundations that transfer the load to underlying dense alluvial deposits. Light, single story structures may be supported by shallow spread footings bearing on placed geotextile reinforced structural fill. At Site 3, the shallow depth to dense alluvium will minimize the thickness of compressible soils beneath spread footings. Both single and multi-story structures in this area can utilize shallow spread footings.

Our project experience in the area, coupled with the subsurface conditions found in BH-3, leads us to believe that competent bearing soils will be found at shallower depths throughout the eastern edge of the compound. Larger structures located in this area may be founded on conventional shallow spread footings at a considerably lower cost than structures placed on pile foundations in the central and western parts of the compound. Additional borings to ascertain the depth to alluvial soils beneath the building footprint are advised for each structure contemplated.

A cost opinion for driven and screw piles is given on a per kip of load basis. Clearly, lighter materials of construction will result in cost savings for all sites, with a considerable savings occurring at the eastern sites where deep foundations will not be required.

GENERAL AND PROJECT DESCRIPTION

This is a report of a geotechnical investigation performed at the Bridger Teton National Forest Service compound located at 45 Rosencrans Street, in Jackson, Wyoming. The goal of the investigation was to evaluate deep and shallow foundation alternatives for one or two story commercial buildings at four locations within the property.

SCOPE OF SERVICES

The scope of services for this investigation was to perform field, laboratory, and engineering investigations necessary to provide foundation recommendations for one or two story commercial buildings at 4 sites within the USFS property in Jackson Wyoming. The purpose of the field investigation was to determine subsurface soils characteristics and groundwater depths at the site. Geotechnical laboratory testing was performed to obtain mechanical soil properties and to verify and provide a check on the field estimates of soil type and groundwater conditions. The results of the field and laboratory investigations were utilized in an engineering analysis resulting in foundation recommendations. Cost opinions for the types of foundations recommended were then prepared. Specific recommendations for utilities, pavement sections, parking areas, and drainage/water conveyance were not within the scope of work outlined for this project.

SITE CONDITIONS

Description

The Forest Service property is an 11 acre parcel located in the northern part of Jackson Wyoming. The project is located in the valley of Flat Creek. The valley is approximately one mile in width and is bounded on the west by East Gros Ventre Butte and the Gros Ventre Mountains to the east.

The compound is occupied by asphalt paved and gravel streets, residences, multiple equipment storage and office buildings, and undeveloped wetlands and meadows. Local topography is generally flat with a gentle slope of approximately one percent descending from southeast to northwest towards Flat Creek. Cache Creek runs in a buried conduit from southeast to northwest through the southeastern portion of area the project. Various underground utilities traverse the site.

Four sites, labeled Site 1-4 corresponding to Borehole numbering, were selected for this subsurface investigation. These sites are located in the central and eastern portions of the compound as shown on the Site Location Map in the Appendix. Wayne Clayton of the BT NF directed the borings to be advanced at the locations shown.

Geology

The site is within the "Geologic Map of the Jackson Quadrangle" (Love, J.D. and Albee, H.F. 1972). Surficial deposits are mapped as "Q_{fp}, Flood Plain Deposits". Quaternary swamp deposits are mapped in the northern portion and flood plain and alluvial fan deposits in the southern areas of the compound. The stratigraphy observed in the borings consists of swamp deposits underlain by alluvial fan facies at depth. The swamp deposits are described as "clays, silts and fine sand, dark-gray and brown, rich in vegetal debris"; this description resembles soils identified in the upper reaches of the borings. Alluvial fan deposits are described as "gravel, sand, silt and clay"; this description is similar to soils identified at depth in the borings.

Seismic Hazard

Jackson Hole and the project site are located within the Intermountain Seismic Belt, a zone extending from southern Utah through eastern Idaho and western Montana, and encompassing western Wyoming and the Teton Range (Smith and Arabasz, 1991). Faults active within the Quaternary period indicated on the "Map of Quaternary Faults and Folds in Wyoming" (Machette et al, 2001) near the project site include the Teton Fault, East Gros Ventre Fault, Philips Canyon Faults, Hoback Fault, and secondary faults in the Jackson Hole Valley. In particular, the Teton Fault is thought to be capable of producing major earthquakes of a magnitude of six or greater. The postulated trace of the Teton Fault, as mapped by Love et. al., passes about six miles to the west of the project. Multiple minor earthquakes with epicenters near the site have occurred in recent years (USGS Database).

Previous Investigation

In 2002, Nelson Engineering performed a geotechnical study for the area immediately to the south of USFS parcel. Borings in the Kudar Motel property abutting the USFS compound on the south, revealed subsurface profiles similar to those encountered in this investigation. The soil profiles were described as follows:

Surficial soils consisted of soft, moist silts (ML), silty clays (ML-CL), and clays (CL) to depths of five to seven feet. Below this depth, soils were composed of interbedded swamp deposits that extend to depths ranging from seventeen to twenty one feet. Soil types included lean clays (CL), fat clays, (CH), silts, (ML), organic silts (OL), sandy silts, (ML), silty sands, (SM), peat, and sandy gravels (GP). The deposits of each soil type ranged from less than one inch to several feet in thickness in apparent random fashion. These types of soils are typically deposited as lenses that vary in width, length, and thickness. Standard penetration tests within these soils indicated soft to very soft consistency for the fine-grained soils. Coarse-grained soils densities were loose to medium dense in most cases. Saturated soils were first encountered at a depth of approximately five to eight feet in these borings. Soils below this elevation were not uniformly saturated indicating that less permeable soils within the deposits form aquitards such that a continuous aquifer is not formed. Underlying the softer soils are strata of dense to very dense coarse-grained soils composed of poorly graded gravels (GP). These underlying gravels contained varying percentages of silt and clays and were mostly found in a saturated condition.

Drilling indicated the presence of larger cobbles and boulders in these deposits in most of the borings.

Field Investigations

On October 17, 2007 four borings, BH-1 through BH-4, were advanced at the four locations selected by the US Forest. Boring locations and elevations were determined by standard survey methods. Monitoring wells were installed in Borings BH-1, BH-2, and BH-3 to enable long term monitoring of groundwater levels.

All borings were drilled with a truck-mounted Central Mine Equipment CME-75 rotary drill rig operated by Haztech Drilling of Meridian, Idaho. The drilling procedure for borings utilized a 7.75-inch O.D., 3.25-inch I.D. hollow stem auger. Sampling was accomplished at specific depths as directed by the field engineer. Three types of samplers were used to obtain samples in a boring. These are, in order of increasingly undisturbed sampling: 1) split-spoon samplers, 2) California-type samplers, and 3) thin-walled samplers (Shelby tubes).

Mr. Darrell Robbins, a Staff Geologist at Nelson Engineering, logged the borings and directed the sampling. Field logs were prepared that recorded the observations of the field engineer. The soil classification, moisture condition, and presence of organics or other notable features were recorded in the field logs. Groundwater observations were made at the time of the drilling based on field observations of soil moisture conditions. Observations concerning density or consistency were derived from the SPT values. Undisturbed and disturbed samples were sealed in the field and transported to testing laboratories for further testing. Field observations, corrected SPT values, and laboratory testing results are presented both on the boring logs and in the test result presentation sheets in the Appendix.

The stratification lines shown on the boring logs represent the approximate boundary between soil types. The actual in-situ transition may be either gradual or abrupt. Due to the nature and depositional characteristics of natural soils and fills, care should be taken in interpolating subsurface conditions beyond the location of the borings. Soil conditions can change rapidly in both the lateral and vertical directions. Groundwater conditions shown on the logs are only for the dates indicated. Monitoring well levels presented on the logs are from readings taken on November 7, 2007.

The subsurface conditions were interpreted from the described borings at the site. The soil properties inferred from the field and laboratory analyses, supported by our experience, formed the basis for developing our conclusions and recommendations.

Laboratory Investigations

Samples obtained during the field investigation were taken to the laboratory where they were visually classified in accordance with ASTM Test Method D-2487-93, which is based on the Unified Soils Classification System. Representative samples were selected for testing to determine the physical properties of the in-place soils and to estimate engineering properties. Engineering properties of concern at this location include bearing capacity, settlement characteristics,

liquefaction under seismic loading, drainage characteristics, and site-specific construction recommendations that are influenced by soil type and condition.

Laboratory testing was conducted to provide additional information to determine the suitability of the soils for use as foundation materials and to verify field observations and classification estimates. The finalized laboratory observations were used to: 1) estimate soil strength and compressibility characteristics for bearing capacity determinations, 2) estimate consolidation characteristics, and 3) determine soils properties pertinent to determining the soil profile type for seismic determinations according to the INTERNATIONAL Uniform Building Code. Specific tests included Atterberg Limits Tests - ASTM Designation D4318, Grain Size Analysis - ASTM Designation C117 & C136, Soil Moisture Content Determinations - ASTM Designation D2216, and Soil Classification - ASTM Designation D2487, and One-Dimensional Consolidation - ASTM Designation D2435.

The soil samples stored in our laboratory will be discarded after 30 days from the date this report is submitted unless we receive a specific request to retain them.

SUBSURFACE CONDITIONS

Soil profiles in each of the borings consisted of swamp deposits overlying dense alluvial gravel and cobbles. Surficial soils consisted of medium stiff to stiff, moist silts (ML), silty clays (ML-CL), and clays (CL) to depths of 7 to 10 feet. Underlying the surficial silts and clays were swamp deposits. Soil types included lean clays (CL), silts, (ML), organic silts (OL), sandy silts, (ML), silty sands, (SM), peat, and sandy gravels (GP). The deposits of each soil type ranged from less than one inch to several feet in thickness in apparent random fashion. These types of soils are typically deposited as lenses that vary in width, length, and thickness. Standard penetration tests within these soils correspond to very soft to medium stiff consistency. Thin lenses of sands and gravels were found within the swamp soil profile. These lenses likely indicate flood deposits from Cache Creek or periods when the Cache Creek alluvial fan advanced into the swampy region to the north. Swamp deposits extended to 13 to 17 foot depth in the eastern sites, and to about 8 feet depth in BH-3.

Underlying alluvium in the form of dense gravels and silty gravels were encountered immediately below the softer fine grained swamp deposits in all of the borings. Drilling indicated the presence of larger cobbles and boulders throughout the deposits to the bottom of the borings. A soft clay deposit was encountered in BH-1 at 50 feet depth. The thickness of this deposit is not known, however it is below the zone of influence of the foundation elements recommended for the project. Gravels extended to the bottom depth of each of the other borings at approximately 40 feet.

Groundwater

Groundwater was encountered in each of the borings. Saturated soils were first encountered at depths of three to seven feet. Swamp deposits below this elevation were not uniformly saturated indicating that less permeable soils within the deposits form aquitards such that a continuous

aquifer is not formed. A continuous aquifer is indicated in the underlying gravels and cobbles, which were saturated throughout.

Water levels measured in the monitoring wells on November 7, 2007 are given in Table 1 below.

Table 1 Groundwater Elevations 11/7/2007

MW #	GS ELEV. (ft.)	Water Depth BGS (ft.)	Water Surface Elevation
1	6216.8	3.2	6213.6
2	6218.8	3.6	6215.1
3	6221.8	7.2	6214.6

Groundwater elevation will rise seasonally and in response to snowmelt and after significant rainfall events. The magnitude of these fluctuations is estimated to be less than five feet, with peak elevation during wet years likely to within two feet of the ground surface.

ENGINEERING ANALYSIS AND RECOMMENDATIONS

Seismic Design Parameters

The International Building Code, 2003 Table 1615.1.1 designates site class by determining soil properties in the top 100 feet. The depth of borings in this investigation was not sufficient to determine the required information in this interval. Parameters found within the depth of the borings are commensurate with Site Class D with denser conditions found at depth in most of the borings. It is likely that boring or geophysical investigations of the top 100 feet would result in a finding of Site Class C. For this report, site Class D must be selected per paragraph 1615.1.1 and from the data available. Seismic coefficients and design spectra per the IBC should be determined using Site Class and a Latititude of 43.48° and Longitude of -110.76°..

Foundation Recommendations

Engineering analysis and recommendations are separated into those for the soil profiles found in BH-1, BH-2, and BH-4 (Western Sites) where deeper swamp deposits were found and for the area adjacent to BH-3 (Eastern Site) with shallow depth to competent gravels. Bottom of foundation depth for frost protection of 3 to 4 feet below existing grade is assumed for all spread footings.

Western Sites: Spread Footings

One story wood frame or metal structures can be supported on conventional spread footings. A net allowable bearing capacity of **1500** psf can be accepted if three feet of soft silt and clay soils are overexcavated and the overexcavated material replaced with geogrid reinforced structural fill. Over-excavation shall extend three feet beyond the perimeter of the footings. Geogrid reinforcement shall consist of Propex 2006 (or approved equal) geotextile placed on the native

subgrade and Tensar BX6100 (or approved equivalent) placed within the structural fill 2 feet below footing grade. Footing width is limited to a maximum width of **2 feet** for continuous footings and maximum dimension of **4 feet for isolated footings**. Construction of larger footings can lead to increased settlement. The net allowable soil pressure includes dead load plus maximum live load. The above loading and footing dimensions are associated with a maximum total settlement of **1.5 inches** and a maximum differential settlement between footings of **0.75 inches.** Lateral loads may be resisted by a coefficient of friction of 0.25 at the footing and a lateral passive bearing pressure of 130 psf per foot of depth. The above recommendations assume a depth of footing 3 feet below existing ground and structural fill depth 6 feet below existing ground.

Western Sites: Deep Foundations

Multi-story, steel, masonry, and concrete buildings should be supported by deep foundation systems conveying structural loads to dense alluvial deposits. Deep foundation systems considered in this report are: micro-piles, steel screw piles, conventional driven steel piles, and helical-piers. Drilled piers or caissons were not evaluated due to necessity to case holes below the water table. Systems analyzed will require a grade beam system to convey loads to pile or pier elements. The recommendations and load limits given below should be considered preliminary for use in conceptual designs and cost estimations.

Driven 1.2 software was used to analyze two types of piles using conservative assumptions for soil conditions. Software output files are given in the Appendix. The results show a single 12 X 53 H Pile driven to about 33 feet depth, seated in underlying gravels, will develop an ultimate working axial load capacity of 95 kips. Utilizing a Factor of Safety of 3.0, the working load for this pile type is 32 kips. Using the same assumptions, a 12 inch diameter closed pipe pile will develop a working load of 96 kip. Settlement for individual piles at these working loads is calculated to be less than 0.25 inches.

Piles should be designed to resist seismic lateral loading based on a constant of modulus of horizontal sub-grade reaction, n_h of 5 Tons/cubic foot for swamp soils and 40 Tons/cubic foot for the underlying gravels. Computations for lateral loading on piles shall consider seismic loading for both base shear at the pile cap and at the surface of the deep gravel deposits. Piles should conform to all applicable material specifications in WYDOT Standard Specifications for Road and Bridge Construction. Accepted driving methods and wave analysis procedures should be utilized to determine pile capacities and to prevent pile damage during installation. A program of verification load testing during construction can replace or supplement wave analysis. Driven pile design for a specific project should consist of a parametric study utilizing structural loads, various pile types, and variable depths/load capacities. The optimum configuration should be determined based on the minimum material and installation costs that adequately support loading.

Helical pier systems can be expected to develop axial working loads of 25 to 40 or more kips. Vertical, axially loaded helical piers do not have a sufficient section modulus to sustain lateral seismic loading. Therefore, lateral loading must be accommodated by the use of helical piers installed angled from the vertical to take up lateral loads. Angled piers would be installed at appropriate locations to provide lateral bracing for random seismic directional loading. Placement

of angled piers is dependent on structural geometry and loading. Helical pier systems should be installed by an experienced contractor specializing in helical pier installation according to manufacturer's specifications.

Screw piles have been used successfully and economically in the Town of Jackson on two major projects in the past year. These piles are circular steel sections with auger type or "screw" blades welded on to the pile tips. Screw pile load testing, both uplift and compression, on these projects has been satisfactory. Screw piles can be expected to develop axial working loads of 25 to greater than 100 kips dependent on size. Axial load capacity for screw piles is very similar to driven piles with the point area corresponding to the auger diameter, therefore enabling larger axial load capacity with much smaller steel sections. Load testing of installed piles to verify assumed loads is mandatory for this type of installation. Vertical, axially loaded screw piles do not generally have a sufficient section modulus to sustain lateral seismic loading. In most cases, lateral loading must be accommodated by the installation of battered piles.

Eastern Site

Structures may be supported on conventional spread footings. A net allowable bearing capacity of **3000** psf can be accepted if three feet of soft silt and clay soils are overexcavated and the overexcavated material replaced with structural fill. Over-excavation shall extend three feet beyond the perimeter of the footings. Propex 2006 (or approved equal) geotextile shall be placed on the native subgrade beneath the structural fill. Footing width is limited to a maximum width of **3 feet** for continuous footings and maximum dimension of **10 feet for isolated footings**. Construction of larger footings can lead to increased settlement. The net allowable soil pressure includes dead load plus maximum live load. The above loading and footing dimensions are associated with a maximum total settlement of **1 inch** and a maximum differential settlement between footings of **0.5 inches.** Lateral loads may be resisted by a coefficient of friction of 0.25 at the footing and a lateral passive bearing pressure of 130 psf per foot of depth. The above recommendations assume a depth of footing 3 feet below existing ground and structural fill depth to 6 feet below existing ground.

DEEP FOUNDATION COST OPINION

Driven pile installation is not a common occurrence in Jackson Wyoming. Therefore, the RS MEANS Building Construction Cost manual, Western Edition, 2006 was used to estimate this cost. The installed cost of driven 12X53 H Piles is listed at $30 per linear foot. Typically, construction costs involving specialty contractors who mobilize from several hundred miles are about double that of the average quoted in the Means Manual. Therefore, we estimate the cost of driven piles to be about $65 per kip. Screw piles bids of about $50 per kip can be expected. Deep foundation grade beams represent a construction cost roughly equivalent that of spread footings, therefore the deep foundation cost per kip is the additional cost represented by the need for deep foundations.

CONSTRUCTION CONSIDERATIONS

Earthwork and Site Grading

Excavation work and heavy equipment access may prove very difficult when wet conditions exist. Placement of imported gravel with a thickness of 2 to 3 feet supported and/or reinforced by geotextile will be required to provide reasonable functional access to construction sites.

General recommendations for earthwork suitability, placement, and compaction procedures are provided below.

- Within the building footprints and areas to be paved, all organic material, undocumented fill, and debris should be stripped and removed. Loose and disturbed native soils should be scarified, moisture-conditioned, and compacted. Finish surfaces should be sloped away from foundations per the plans and specifications.

- Fill materials should not be placed, spread, or compacted while the ground is frozen or during unfavorable weather conditions. Fill materials should be at the proper moisture content prior to compaction and should contain no frozen soil.

- **Structural Fill** shall consist of imported or site gravels (USCS classification GW or GP) with the following characteristics: 4 inch maximum particle size with no more than 40% oversize (greater than ¾") and no more than 5% fines passing the #200 sieve.

  Structural fill shall be placed in layers of not more than 8 inches in thickness. Each layer of structural fill should be moisture conditioned to within 2% of optimum moisture content and compacted to a minimum density of 95% of the maximum dry density as determined by ASTM Designation D 698. Maximum density of material containing more than 30% oversize (greater than ¾" diameter) cannot be determined by use of the ASTM Designation D 698. In this case, a field maximum density may be determined by a test strip method. The material shall be compacted at or near optimum moisture content and a field density test shall be taken after each pass of the compaction equipment. This sequence shall continue until the maximum field density is achieved. This maximum field density shall be used for subsequent field compaction tests. Enough density tests should be taken to monitor proper compaction.

- **Clean Angular Fill**-Imported angular rock may be placed as structural fill in wet or submerged excavations. Angular rock fill shall have the following characteristics: 4 inch maximum particle size with no more than 5% passing the #4 sieve and no more than 2% fines. In areas with standing water, angular rock fill shall extend a minimum of 6 inches above the water surface.

- Excavations for retaining walls and foundations should conform to the applicable OSHA and Wyoming safety standards. Over-excavations and utility trenches should be laid back to safe slopes or properly shored. Excavations and shoring operations should be conducted in accordance with the most recent versions of the OSHA Construction Standards for Excavations, Part 1926, Subpart P and Wyoming Public Works Standard Specifications. Safety of construction personnel

is the responsibility of the contractor. Excavations for utilities shall be shored if the proper slope cannot be maintained.

GENERAL COMMENTS

This report represents feasibility level geotechnical recommendations for four potential building sites. When specific locations and structure types are identified, site specific geotechnical investigations should be conducted and project specific foundation recommendations prepared.

WARRANTY AND LIMITING CONDITIONS

The field observations and research reported herein are considered sufficient in detail and scope to form a reasonable basis for the purposes cited above. Nelson Engineering warrants that the findings and conclusions contained herein have been promulgated in accordance with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics, and engineering geology, only for the site described in this report. No other warranties are implied or expressed.

These engineering methods have been developed to provide the client with information regarding apparent or potential engineering conditions relating to the subject property within the scope cited above and are limited to the conditions observed at the time of the site visit and research. There is a distinct possibility that conditions may exist which could not be identified within the scope of the investigation or which were not apparent during the site investigation. The report is also limited to the information available at the time it was prepared. In the event additional information is provided to Nelson Engineering following this report, it will be forwarded to the client in the form received for evaluation by the client. This report was prepared for use by the United States Forest Service and Case, Lowe, and Hart. The conclusions and recommendations presented in this report are based on the agreed-upon scope of work outlined in the report and the contract for professional services between Client and Nelson Engineering ("Consultant"). Use or misuse of this report, or reliance upon the findings hereof by any parties other than the Client, is at their own risk. Neither the Client nor Consultant may make any representation of warranty to such other parties as to the accuracy or completeness of this report or the suitability of its use by such other parties for any purpose whatsoever, known or unknown, to the Client or Nelson Engineering. Neither the United States Forest Service nor Nelson Engineering shall have any liability to, or indemnifies or holds harmless third parties for any losses incurred, by the actual or purported use or misuse of this report. No other warranties are implied or expressed.

Philip Gyr PE
Geotechnical Engineer

APPENDIX

DRAWINGS

COORDINATES ARE NAD 83
WYOMING WEST EL. NGVD
1929 WITH A 1968
SUPPLEMENTAL
ADJUSTMENT

0 80 160

U.S. HIGHWAY 26,89,189,191

CACHE STREET

WYOMING
GAME & FISH
COMMISSION

ROSENCRANS

FOREST SERVICE ADMINISTRATIVE SITE

BH-1
N1416554.18
E2444988.73
ELEV: 6216.8

BH-2
N1416495.47
E2445108.30
ELEV: 6218.8

BH-3
N14096.41
E2445366.04
ELEV: 6221.8

BH-4
N1416055.44
E2444933.90
ELEV: 6219.6

LEGEND
BOREHOLE LOCATION

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BHLOC.DWG

U. S. Department of Agriculture
FOREST SERVICE Engineering
Intermountain Region 4
BRIDGER-TETON NATIONAL FOREST

DESIGN BY: N/A CHECK: N/A
DRAWING BY: P GYR CHECK:
APPROVED: DIRECTOR, ENGINEERING DATE

PROJECT No. 07-238-01
DRAWING 1
SHEET 1 OF 1

JACKSON SUPERVISORS OFFICE
GEOTECHNICAL SURVEY

BOREHOLE LOCATION MAP

BORING LOGS

PROJECT NAME: BTNFSO	**DRILL HOLE No. 1**		PAGE: 1 OF 3
DATE STARTED / FINISHED: 10/17/2007	DRILLER: HAZTECH		
LOGGED BY: DR/PG	DRILL TYPE: CME 75		
BOREHOLE LOCATION/ELEVATION: NORTH VEHICLE PARKING LOT	HOLE DIAMETER: 7.75"		
	HAMMER TYPE: 140# AUTOMATIC		

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WELL LOG	GRAPHIC LOG	DEPTH (FT)	SAMPLES: DRIVE	SAMPLES: UNDISTURBED	SAMPLES: BULK	SAMPLE ID	RECOVERY (%)	MATERIAL DESCRIPTION	LIQUID LIMIT	PLASTIC LIMIT	SPT (N60)	DRY DENSITY (PCF)	MOISTURE (%)	REMARKS
								SMOOTH EASY DRILLING FROM G.S.–2'. CUTTINGS ARE MOIST DK BROWN SILT, ML						FLAT GRASSY FIELD
		2				BH1–1 2" SS	11	MOIST DK BROWN SILT, ML, POOR RETURN			8			VERY SMOOTH EASY DRILLING FROM 2'
▽		3						WATER LEVEL 3.2 FT, MEASURED 11/7/2007						
		5				BH1–2 2" SS	72	MOIST TO SATURATED GREY/RED LEAN CLAY, CL, WITH ORGANICS, GLEYED, SATURATED SAND SEAM AROUND 0.5" THICK AT BOTTOM OR RUN	38	18	5		31.6	
		10				BH1–3 3" ST	96	0 PSI FROM 0"–18", 150 PSI FROM 18"–27" BOTTOM IS SATURATED GRAY SILTY SAND, SM, OCCASIONAL GRAVELS						
		13				BH1–4 2" SS	50	SATURATED GREY SILT WITH SAND, ML, OCCASIONAL FINE GRAVELS, GLEYED			10			DR GRAVELS, LOOSE AND EASY FROM 13.5'
		15				BH1–5 2" SS	33	SATURATED GREY TO BROWN WELL GRADED GRAVEL WITH SILT AND SAND, GW–GM, DENSE			27			DR STIFFER SMOOTH DRILLING FROM 14'
		17												DR LENSES OF GRAVEL FROM 15'–20'
		20				BH1–6 2" SS	50	SATURATED GRAY TO BROWN WELL GRADED GRAVEL WITH SILT AND SAND, GW–GM, DENSE, GREATER AMOUNT OF COARSE GRAINS THAN ABOVE	17	17	47		9.9	

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DEPTH (FT)	SAMPLES: DRIVE	SAMPLES: UNDISTURBED	SAMPLES: BULK	SAMPLE ID	RECOVERY (%)	MATERIAL DESCRIPTION	LIQUID LIMIT	PLASTIC LIMIT	SPT (N60)	DRY DENSITY (PCF)	MOISTURE (%)	REMARKS
22												INTERMITTENT THIN GRAVEL LENSES, SMOOTH DRILLING
23												
24												
25	X			BH1-7 2" SS	50	SATURATED BROWN WELL GRADED GRAVEL WITH SILT AND SAND, GW-GM, DENSE, ~2" SEAM OF FINE SAND WITH SILT AT BOTTOM OF SAMPLE			29			
26	X											SMOOTH DRILLING INTERMITTENT BIT GRINDING
27												
28												
29												
30	X			BH1-8 2" SS	50	SATURATED BROWN TO GREY WELL GRADED GRAVEL WITH SILT AND SAND, GW-GM, VERY DENSE, ~2" SEAM OF BROWN TO DK BROWN WEATHERED SHALE AT BOTTOM OF SAMPLE			49			
31	X											HARD LENS FROM ~31'-32'
32												
33												
34												
35	X			BH1-9 2" SS	56	SATURATED BROWN TO GREY WELL GRADED GRAVEL WITH SILT AND SAND, GW-GM, VERY DENSE, A FEW SMALL FRAGMENTS OF ABOVE SHALE			46			SMOOTH DRILLING INTERMITTENT BIT GRINDING
36	X											
37												
38												
39												
40	X			BH1-10 2" SS	44	SATURATED BROWN TO GREY WELL GRADED GRAVEL WITH SILT AND SAND, GW-GM, VERY DENSE, FRACTURED COBBLES AT BOTTOM OF SAMPLE			52			SMOOTH DRILLING INTERMITTENT BIT GRINDING FROM 40'-44'
41	X											
42												
43												
44												

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		44												EASY DRILLING, SOFTER SOILS 44'–50'
		45				BH1–11 2" SS	17	SATURATED BROWN SANDY LEAN CLAY, SM OR CL, VERY STIFF			24			
		46												
		47												
		48												
		49												
		50				BH1–12 3" CS		MOIST TO SATURATED GREY TO OLIVE GREY LEAN CLAY AT BOTTOM OF SAMPLE TO SANDY LEAN CLAY AT TOP OF SAMPLE, CL			6			
		51						BOH=51.5'						
		52						MONITORING WELL INSTALLED						
		53						8.4' BGS, 1.25" DIAMETER PVC PIPE SLOTS EVERY 4" FROM 1' TO 8.4'						
		54												
		55												
		56												
		57												
		58												
		59												
		60												
		61												
		62												
		63												
		64												
		65												
		66												

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PROJECT NAME: **BTNFSO**	**DRILL HOLE No. 2** PAGE: 1 OF 2
DATE STARTED / FINISHED: **10/17/2007**	DRILLER: **HAZTECH**
LOGGED BY: **DR**	DRILL TYPE: **CME 75**
BOREHOLE LOCATION/ELEVATION: **SEE LOCATION MAP**	HOLE DIAMETER: **7.75"**
	HAMMER TYPE: **140# AUTOMATIC**

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												GRASSY GROUND SURFACE
2	X			BH2-1 2" SS	33	SLIGHTLY MOIST BROWN LEAN CLAY TO SILTY CLAY, CL OR CL-ML STIFF			13			EASY DRILLING FROM 0'-13'
3						WATER LEVEL 3.6 FT, MEASURED 11/7/2007						
5	X			BH2-2 2" SS	67	SATURATED BROWN LEAN CLAY, CL, MEDIUM STIFF			5			
10	X			BH2-3 2" SS	39	SATURATED GRAY TO BROWN LEAN CLAY WITH SAND AND GRAVEL, CL, MEDIUM DENSE			19			
13												OCCASIONAL GRAVEL LENSES STARTING AT 13'
15	X			BH2-4 2" SS	56	SATURATED GREY TO BROWN WELL GRADED GRAVEL WITH SILT AND SAND, GW-GM, DENSE			24			
17												DR STIFFER DRILLING IN GRAVEL LENSES AT 17'
20	X			BH2-5 2" SS	50	SATURATED GREY TO BROWN WELL GRADED GRAVEL WITH SILT AND SAND, GW-GM, DENSE			59			

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PROJECT NAME: BTNFSO

DRILL HOLE No. 2

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		22	X					SATURATED GREY TO BROWN WELL GRADED GRAVEL WITH SILT AND SAND, GW–GM, DENSE						MODERATELY DIFFICULT GRAVELLY DRILLING FROM 20'–30'
		23												
		24												
		25												
		26												
		27												
		28												
		29												
		30	X			BH2–6 2" SS	39	SATURATED GREY TO BROWN WELL GRADED GRAVEL WITH SILT AND SAND, GW–GM, DENSE			42			MODERATELY DIFFICULT GRAVELLY DRILLING FROM 30'–35'
		31	X											
		32												
		33												
		34												
		35												
		36												
		37												GRINDING COBBLES FROM 37'–39'
		38												
		39												
		40	X			BH2–7 2" SS	39	SATURATED GREY TO BROWN WELL GRADED GRAVEL WITH SILT AND SAND, GW–GM, DENSE			50/5"			
		41	X											
								BOH=41.5'						
		42						MONITORING WELL INSTALLED						
		43						8.4' BGS, 1.25" DIAMETER PVC PIPE SLOTS EVERY 4" FROM 1' TO 8.4'						
		44												

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PROJECT NAME: BTNFSO	**DRILL HOLE No. 3**	PAGE: 1 OF 2
DATE STARTED / FINISHED: 10/17/2007	DRILLER: HAZTECH	
LOGGED BY: DR	DRILL TYPE: CME 75	
BOREHOLE LOCATION/ELEVATION: SEE LOCATION MAP	HOLE DIAMETER: 7.75"	
	HAMMER TYPE: 140# AUTOMATIC	

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														GRASSY GROUND SURFACE
		2–3	X			BH3–1 2" SS	44	MOIST BROWN TO DK BROWN SANDY SILT, MEDIUM STIFF, ML, ORGANICS RETURNED			6			SMOOTH EASY DRILLING FROM 0'–5'
		5–6	X			BH3–2 2" SS		MOIST BROWN SILTY CLAY, CL–ML, MEDIUM STIFF			6			
▽		7						WATER LEVEL 7.2 FT, MEASURED 11/7/2007						
		8												GRAVELLY DRILLING AT 8'
		10–11	X			BH3–3 2" SS	56	SATURATED LT BROWN WELL GRADED GRAVEL WITH SILT AND SAND, GW–GM, DENSE, FRACTURED GRAVELS RETURNED, FILGC	19	19	34		10.6	
		12–14												MODERATELY DIFFICULT DRILLING THROUGH SAND AND GRAVEL LENSES FROM 10'–15'
		15–16	X			BH3–4 2" SS	33	SATURATED LT BROWN WELL GRADED GRAVEL WITH SILT AND SAND, GW–GM, VERY DENSE, FRACTURED GRAVELS RETURNED, FILGC			39			
		17–19												MODERATELY DIFFICULT DRILLING, GRINDING ON OCCASIONAL COBBLES FROM 15'–20'
		20–21	X			BH3–5 2" SS	33	SATURATED LT BROWN WELL GRADED GRAVEL WITH SILT AND SAND, GW–GM, VERY DENSE, FRACTURED GRAVELS RETURNED, FILGC			50/5"			

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CLIENT: CASE, LOWE, AND HART, INC.
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PROJECT NAME: BTNFSO

DRILL HOLE No. 3

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WELL LOG	GRAPHIC LOG	DEPTH (FT)	SAMPLES: DRIVE	SAMPLES: UNDISTURBED	SAMPLES: BULK	SAMPLE ID	RECOVERY (%)	MATERIAL DESCRIPTION	LIQUID LIMIT	PLASTIC LIMIT	SPT (N60)	DRY DENSITY (PCF)	MOISTURE (%)	REMARKS
		22	X					SATURATED LT BROWN WELL GRADED GRAVEL WITH SILT AND SAND, GW-GM, VERY DENSE, FRACTURED GRAVELS RETURNED, FILGC						MODERATELY DIFFICULT DRILLING WITH BIT GRINDING ON COBBLES FROM 20'-30'
		23												
		24												
		25												
		26												
		27												
		28												
		29												
		30	X			BH3-6 2" SS	33	SATURATED LT BROWN WELL GRADED GRAVEL WITH SILT AND SAND, GW-GM, VERY DENSE, POSSIBLY GRAVEL WITH SAND			47			
		31	X											
		32												MODERATELY DIFFICULT DRILLING WITH BIT GRINDING FROM 30'-40'
		33												
		34												
		35												
		36												
		37												
		38												
		39												
		40	X			BH3-7 2" SS	50	SATURATED LT BROWN WELL GRADED GRAVEL WITH SILT AND SAND, GW-GM, VERY DENSE			50/5"			
		41	X											
								BOH=41.5'						
		42						MONITORING WELL INSTALLED						
		43						8.1' BGS 1.25" DIAMETER PVC SLOTS EVERY 4" FROM 1.0' TO 8.1'						
		44												

NELSON ENGINEERING
P.O. BOX 1599, JACKSON WYOMING (307) 733-2087

CLIENT: CASE, LOWE, AND HART, INC.
OGDEN, UTAH

PROJECT NAME: BTNFSO		**DRILL HOLE No. 4**	PAGE: 1 OF 2
DATE STARTED / FINISHED: 10/17/2007		DRILLER: HAZTECH	
LOGGED BY: DR		DRILL TYPE: CME 75	
BOREHOLE LOCATION/ELEVATION: SEE LOCATION MAP		HOLE DIAMETER: 7.75"	
		HAMMER TYPE: 140# AUTOMATIC	

This log is part of a report prepared by Nelson Engineering for this project and should be read with the report. This summary applies only at the location of the boring and at the time of the drilling. Subsurface conditions may differ at other locations and may change at this location with passage of time. The data presented is a simplification of actual conditions encountered.

WELL LOG	GRAPHIC LOG	DEPTH (FT)	SAMPLES: DRIVE	SAMPLES: UNDISTURBED	SAMPLES: BULK	SAMPLE ID	RECOVERY (%)	MATERIAL DESCRIPTION	LIQUID LIMIT	PLASTIC LIMIT	SPT (N60)	DRY DENSITY (PCF)	MOISTURE (%)	REMARKS
		1												GRAVEL PARKING AREA
		2	X			BH4-1 2" SS	67	MOIST MEDIUM BROWN LEAN CLAY, CL, MEDIUM STIFF TO STIFF			7			EASY DRILLING FROM 0'–15'
		3	X											
		4												
		5		X		BH4-2 3" ST	100	0 PSI FROM 0"–12", 25 PSI FROM 12"–24" MOIST TO SATURATED MEDIUM BROWN LEAN CLAY, CL						
		6		X										
		7	X			BH4-3 2" SS	50	SATURATED MEDIUM BROWN LEAN CLAY, CL, MEDIUM STIFF			8			
		8	X											
		9												
		10	X			BH4-4 2" SS	39	SATURATED MEDIUM BROWN LEAN CLAY, CL, SOFT	37	18	1		38.5	
		11	X											
		12												
		13												
		14												
		15	X			BH4-5 2" SS	33	MOIST BROWN SANDY LEAN CLAY, CL, STIFF, TRACE OF GRAVEL AT END OF SPOON AT 16.5'			12			
		16	X											
		17												MODERATELY DIFFICULT DRILLING IN GRAVEL FROM 17'–20'
		18												
		19												
		20	X			BH4-6 2" SS	67	SATURATED LT BROWN WELL GRADED GRAVEL WITH SILT AND SAND, GW–GM, VERY DENSE			45			MODERATELY DIFFICULT DRILLING, SOME BIT GRINDING FROM 20'–30'
		21	X											

NELSON ENGINEERING
P.O. BOX 1599, JACKSON WYOMING (307) 733–2087

CLIENT: CASE, LOWE, AND HART, INC.
OGDEN, UTAH

PROJECT NAME: BTNFSO

DRILL HOLE No. 4

This log is part of a report prepared by Nelson Engineering for this project and should be read with the report. This summary applies only at the location of the boring and at the time of the drilling. Subsurface conditions may differ at other locations and may change at this location with passage of time. The data presented is a simplification of actual conditions encountered.

WELL LOG	GRAPHIC LOG	DEPTH (FT)	SAMPLES: DRIVE	SAMPLES: UNDISTURBED	SAMPLES: BULK	SAMPLE ID	RECOVERY (%)	MATERIAL DESCRIPTION	LIQUID LIMIT	PLASTIC LIMIT	SPT (N60)	DRY DENSITY (PCF)	MOISTURE (%)	REMARKS
		22	X					SATURATED LT BROWN WELL GRADED GRAVEL WITH SILT AND SAND, GW–GM, VERY DENSE						
		23												
		24												
		25												
		26												
		27												
		28												
		29												
		30	X			BH4–7 2" SS	50	SATURATED LT BROWN WELL GRADED GRAVEL WITH SILT AND SAND, GW–GM, VERY DENSE			29			
		31	X											
		32												MODERATELY DIFFICULT DRILLING, SOME BIT GRINDING FROM 30'–40'
		33												
		34												
		35												
		36												
		37												
		38												
		39												
		40	X			BH4–8 2" SS	50	SATURATED LT BROWN WELL GRADED GRAVEL WITH SILT AND SAND, GW–GM, VERY DENSE			50/5"			
		41						BOH=41'						
		42												
		43												
		44												

NELSON ENGINEERING
P.O. BOX 1599, JACKSON WYOMING (307) 733–2087

CLIENT: CASE, LOWE, AND HART, INC.
OGDEN, UTAH

LABORATORY TEST RESULTS

Soil Classification Report
Nelson Engineering
P.O Box 1599
430 South Cache
Jackson, WY 83001
(307) 733-2087

Project:	BTSO
Job Number	07-238-01
Sample ID:	BH1-2
Visual ID:	Lean Clay

Sampled By:	DR
Date:	
Tested By:	AP
Date:	10/26/2007

Standard Sieve No.	Particle Size (mm)	Tare Weight (g)	Sample + Tare (g)	Sample Weight (g)	Cumulative % Retained	Percent Passing
#4	4.75	113.66	113.66	0.00	0%	100%
#10	2.00	113.66	113.92	0.26	0%	100%
#40	0.425	113.66	118.28	4.62	2%	98%
#100	0.15	113.66	120.05	6.39	5%	95%
#200	0.075	113.66	118.32	4.66	7%	93%
Pan	0	113.66	336.21	222.55	100%	0%
		Total Weight of Sample (g)		**238.5**		

Moisture Content	
Wet Wt + Tare (g)	427.56
Dry Wt. + Tare (g)	352.16
Wt of Water (g)	75.40
Tare Wt. (g)	113.68
Dry Wt. (g)	238.48
Moisture Content	31.6%
Wash	
Wet Wt. + Tare (g)	
Pre Wash Dry (g)	238.48
Post Wash Dry (g)	15.93
Tare Wt. (g)	113.68
Wt.Of Minus #200 =	222.55

Unified Soils Classification: Lean Clay (CL)

Gravel	**0%**
Sand	**7%**
Fines	**93%**

Liquid Limit:	**38**
Plastic Limit:	**18**
Plasticity Index:	**20**

In-Situ Moisture Content	**31.6%**

Soil Classification Report
Nelson Engineering
P.O Box 1599
430 South Cache
Jackson, WY 83001
(307) 733-2087

Project:	BTSO
Job Number	07-238-01
Sample ID:	BH4-4
Visual ID:	Lean Clay with Sand

Sampled By:	DR
Date:	
Tested By:	AP
Date:	10/26/2007

Standard Sieve No.	Particle Size (mm)	Tare Weight (g)	Sample + Tare (g)	Sample Weight (g)	Cumulative % Retained	Percent Passing
#4	4.75	109.42	109.42	0.0	0%	100%
#10	2.00	109.42	109.76	0.3	0%	100%
#40	0.425	109.42	111.37	2.0	1%	99%
#100	0.15	109.42	117.11	7.7	2%	98%
#200	0.075	109.42	115.83	6.4	4%	96%
Pan	0	109.42	544.02	434.6	100%	0%
		Total Weight of Sample (g)		**451.0**		

Moisture Content	
Wet Wt + Tare (g)	734.16
Dry Wt. + Tare (g)	560.44
Wt of Water (g)	173.72
Tare Wt. (g)	109.45
Dry Wt. (g)	450.99
Moisture Content	38.5%
Wash	
Wet Wt. + Tare (g)	
Pre Wash Dry (g)	450.99
Post Wash Dry (g)	16.39
Tare Wt. (g)	109.45
Wt.Of Minus #200 =	434.60

Unified Soils Classification: Lean Clay (CL)

Gravel	**0%**
Sand	**4%**
Fines	**96%**

Liquid Limit:	**37**
Plastic Limit:	**18**
Plasticity Index:	**19**

In-Situ Moisture Content	**38.5%**

Soil Classification Report
Nelson Engineering
P.O Box 1599
430 South Cache
Jackson, WY 83001
(307) 733-2087

Project:	BTSO
Job Number	07-238-01
Sample ID:	BH 1-6
Visual ID:	Brown silty gravel with sand

Sampled By:	SR
Date:	
Tested By:	AP/SM
Date:	10/29/2007

Standard Sieve No.	Particle Size (mm)	Tare Weight (g)	Sample + Tare (g)	Sample Weight (g)	Cumulative % Retained	Percent Passing
1.5"	38	113.9	113.86	0.00	0.00%	100.00%
1"	25	113.9	151.45	37.59	4.86%	95.14%
3/4"	18.75	113.9	211.88	98.02	17.55%	82.45%
1/2"	12.5	113.9	113.86	0.00	17.55%	82.45%
3/8"	9.5	113.9	113.86	0.00	17.55%	82.45%
#4	4.75	113.9	368.25	254.39	50.46%	49.54%
#10	2.00	113.9	214.35	100.49	63.47%	36.53%
#40	0.425	113.9	236.63	122.77	79.35%	20.65%
#100	0.15	113.9	197.91	84.05	90.23%	9.77%
#200	0.075	113.9	152.88	39.02	95.28%	4.72%
Pan	0	113.9		36.49	100.00%	0.00%
		Total Weight of Sample (g)		**772.8**		

Moisture Content	
Wet Wt + Tare (g)	963.1
Dry Wt. + Tare (g)	886.5
Wt of Water (g)	76.6
Tare Wt. (g)	113.7
Dry Wt. (g)	772.8
Moisture Content	9.9%
Wash	
Wet Wt. + Tare (g)	963.1
Pre Wash Dry (g)	772.8
Post Wash Dry (g)	
Tare Wt. (g)	113.7
Wt.Of Minus #200 =	36.5

Soil Classification: Well graded gravel with silt and sand (GW-GM)

Gravel	**50%**
Sand	**45%**
Fines	**5%**

Liquid Limit:	**17**
Plastic Limit:	**17**
Plasticity Index:	**0**

In-Situ Moisture Content	**9.9%**

Particle Size	
D60=	**6**
D30=	**1.425**
D10=	**0.15**
Cu=	**40**
Cc=	**2**

Soil Classification Report
Nelson Engineering
P.O Box 1599
430 South Cache
Jackson, WY 83001
(307) 733-2087

Project:	BTSO
Job Number	07-238-01
Sample ID:	BH 3-3
Visual ID:	Brown silty gravel with sand

Sampled By:	DR
Date:	
Tested By:	AP/SM
Date:	10/29/2007

Standard Sieve No.	Particle Size (mm)	Tare Weight (g)	Sample + Tare (g)	Sample Weight (g)	Cumulative % Retained	Percent Passing
1.5"	38	109.7	109.69	0.00	0.00%	100.00%
1"	25	109.7	109.69	0.00	0.00%	100.00%
3/4"	18.75	109.7	169.63	59.94	11.77%	88.23%
1/2"	12.5	109.7	109.69	0.00	11.77%	88.23%
3/8"	9.5	109.7	109.69	0.00	11.77%	88.23%
#4	4.75	109.7	336.86	227.17	56.40%	43.60%
#10	2.00	109.7	162.16	52.47	66.71%	33.29%
#40	0.425	109.7	175.95	66.26	79.72%	20.28%
#100	0.15	109.7	150.30	40.61	87.70%	12.30%
#200	0.075	109.7	136.73	27.04	93.01%	6.99%
Pan	0	109.7		35.56	100.00%	0.00%
		Total Weight of Sample (g)		**509.1**		

Moisture Content	
Wet Wt + Tare (g)	672.6
Dry Wt. + Tare (g)	618.5
Wt of Water (g)	54.1
Tare Wt. (g)	109.5
Dry Wt. (g)	509.1
Moisture Content	10.6%
Wash	
Wet Wt. + Tare (g)	672.6
Pre Wash Dry (g)	509.1
Post Wash Dry (g)	
Tare Wt. (g)	109.5
Wt.Of Minus #200 =	35.6

Soil Classification: Well graded gravel with silt and sand (GW-GM)

Gravel	**56%**
Sand	**37%**
Fines	**7%**

Liquid Limit:	**19**
Plastic Limit:	**19**
Plasticity Index:	**0**

In-Situ Moisture Content	**10.6%**

Particle Size	
D60=	**6.5**
D30=	**1.5**
D10=	**0.1075**
Cu=	**60**
Cc=	**3**

CONSOLIDATION TEST DATA

Client: Nelson Engineering
Project: 07-238-01
Project Number:

Sample Data

Source:
Sample No.:
Elev. or Depth: **Sample Length(in./cm.):**
Location: BH 1-3 10-10.3'
Description:
Liquid Limit: **Plasticity Index:**
USCS: **AASHTO:** **Figure No.:**
Testing Remarks:

Test Specimen Data

TOTAL SAMPLE	BEFORE TEST	AFTER TEST
Wet w+t = 167.27 g.	Consolidometer # = 1	Wet w+t = 155.85 g.
Dry w+t = 134.64 g.		Dry w+t = 135.17 g.
Tare Wt. = 71.98 g.	Spec. Gravity = n/a	Tare Wt. = 64.91 g.
Height = .79 in.	Height = .79 in.	
Diameter = 2.50 in.	Diameter = 2.50 in.	
Weight = 106.12 g.	Defl. Table = n/a	
Moisture = 52.1 %	Ht. Solids = 0.0000 in.	Moisture = 29.4 %
Wet Den. = 104.9 pcf	Dry Wt. = 69.78 g.	Dry Wt. = 70.26 g.*
Dry Den. = 69.0 pcf	Void Ratio = n/a	Void Ratio = n/a
	Saturation = n/a	

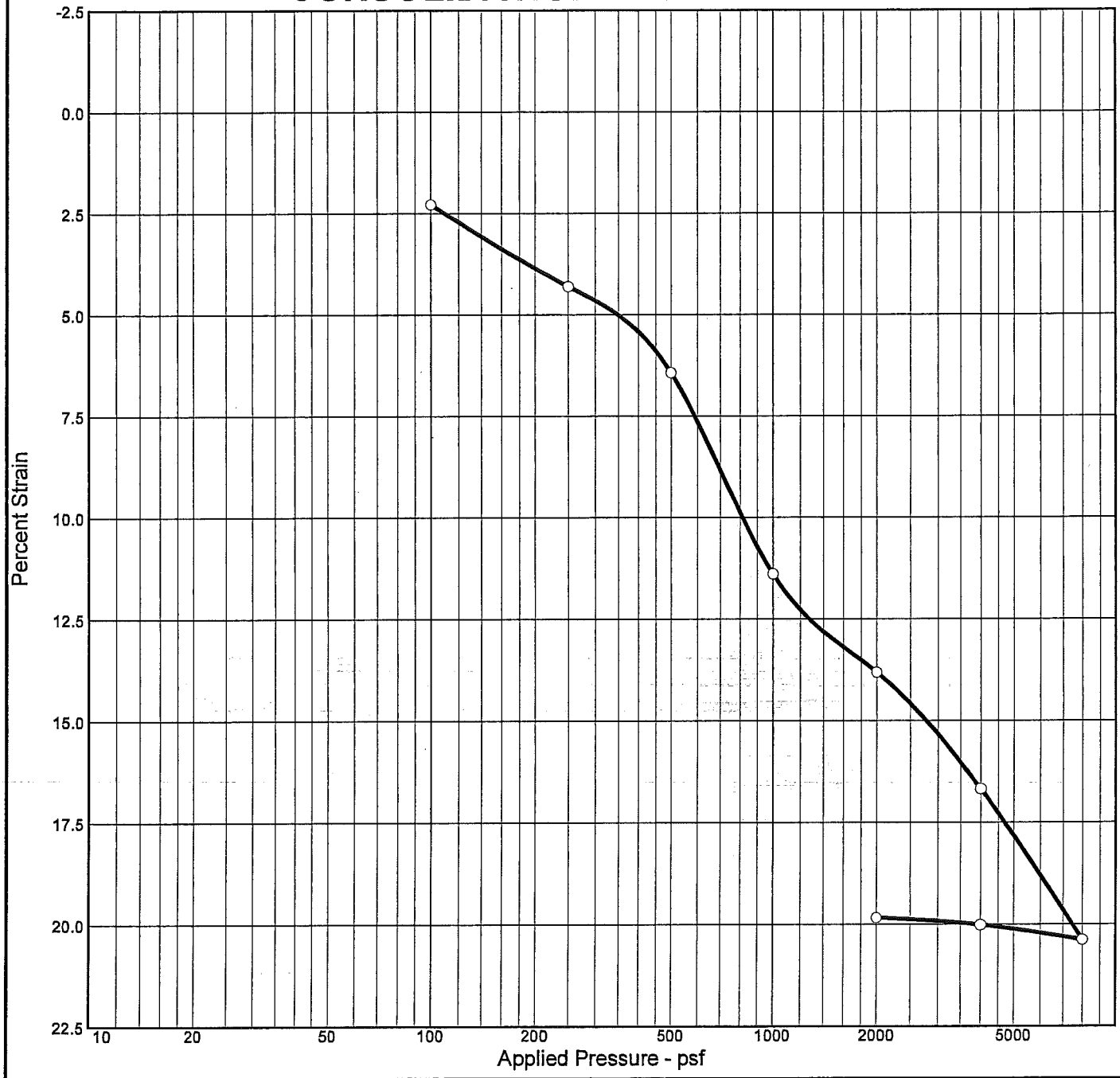
*** Final dry weight used in calculations**

End-of-Load Summary

Pressure (psf)	Final Dial (in.)	Machine Defl. (in.)	C_v (ft.^{2}/day)	C_α	Void Ratio	% Compression /Swell
start	0.04000					
100	0.05790	0.00000				2.3 Comprs.
250	0.07380	0.00000				4.3 Comprs.
500	0.09050	0.00000				6.4 Comprs.
1000	0.12940	0.00000				11.4 Comprs.
2000	0.14840	0.00000				13.8 Comprs.
4000	0.17090	0.00000				16.7 Comprs.
8000	0.20000	0.00000				20.4 Comprs.
4000	0.19710	0.00000				20.0 Comprs.
2000	0.19570	0.00000				19.8 Comprs.

C_c = 0.00 P_c = 695 psf

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	Initial Void Ratio
Saturation	Moisture							
	52.1 %	69.0					695	

MATERIAL DESCRIPTION	USCS	AASHTO

Project No. **Client:** Nelson Engineering

Project: 07-238-01

Location: BH 1-3 10-10.3'

Remarks:

PIEDMONT ENGINEERING, INC.
1215 Apple's Way - Belgrade, MT 59714
Ph. 406-388-8578 - Fax 406-388-8579

Figure

CONSOLIDATION TEST DATA

Client: Nelson Engineering
Project: 07-238-01
Project Number:

Sample Data

Source:
Sample No.:
Elev. or Depth: **Sample Length(in./cm.):**
Location: BH 4-2 6.5-6.7'
Description:
Liquid Limit: **Plasticity Index:**
USCS: **AASHTO:** **Figure No.:**
Testing Remarks:

Test Specimen Data

TOTAL SAMPLE		BEFORE TEST		AFTER TEST	
Wet w+t	= 161.53 g.	Consolidometer #	= 1	Wet w+t	= 170.53 g.
Dry w+t	= 140.17 g.			Dry w+t	= 156.98 g.
Tare Wt.	= 71.79 g.	Spec. Gravity	= n/a	Tare Wt.	= 65.02 g.
Height	= .79 in.	Height	= .79 in.		
Diameter	= 2.50 in.	Diameter	= 2.50 in.		
Weight	= 120.35 g.	Defl. Table	= n/a		
Moisture	= 31.2 %	Ht. Solids	= 0.0000 in.	Moisture	= 14.7 %
Wet Den.	= 119.0 pcf	Dry Wt.	= 91.70 g.	Dry Wt.	= 91.96 g.*
Dry Den.	= 90.7 pcf	Void Ratio	= n/a	Void Ratio	= n/a
		Saturation	= n/a		

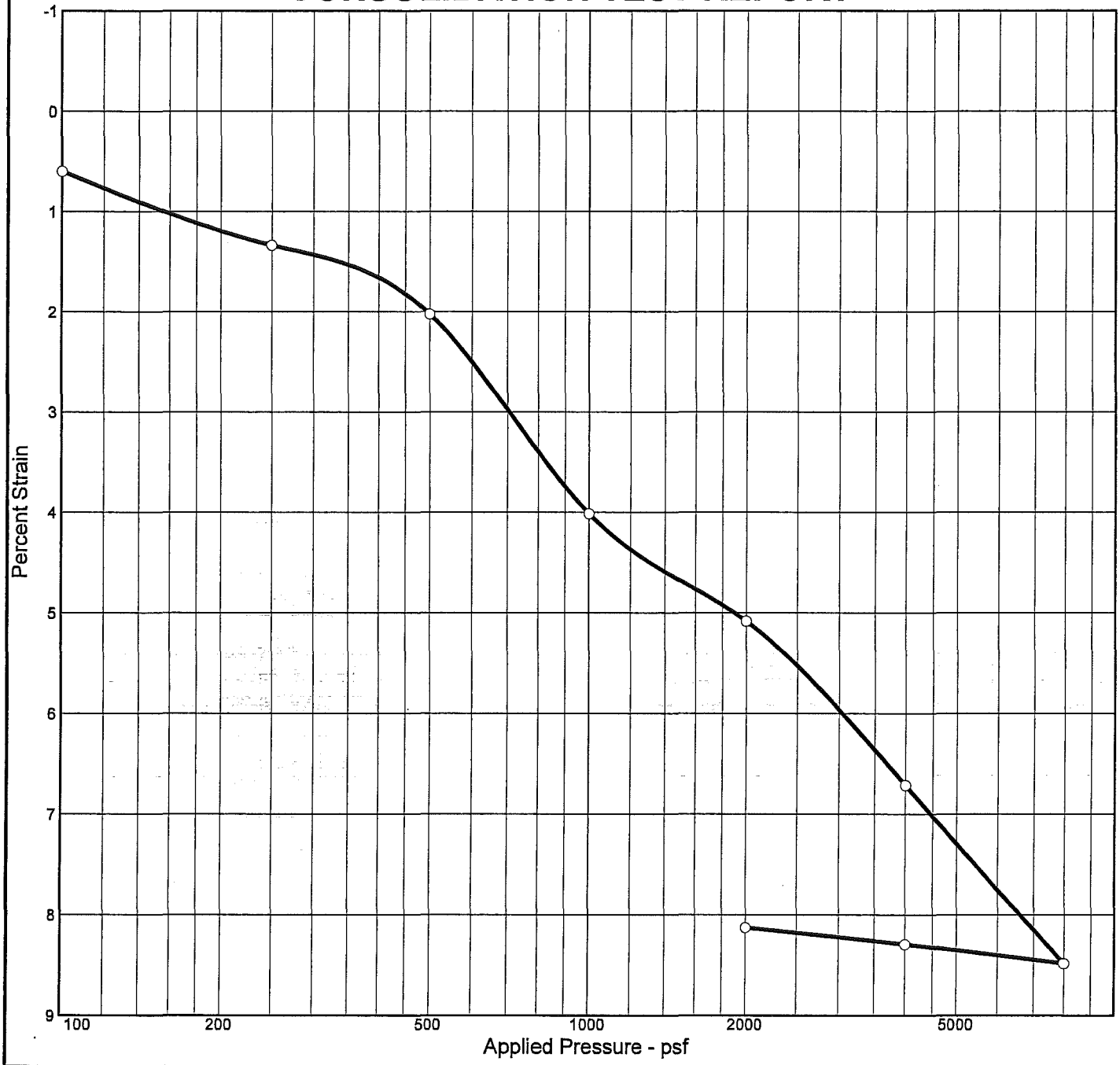
*** Final dry weight used in calculations**

End-of-Load Summary

Pressure (psf)	Final Dial (in.)	Machine Defl. (in.)	C_v (ft.^{2}/day)	C_α	Void Ratio	% Compression /Swell
start	0.04000					
100	0.04470	0.00000				0.6 Comprs.
250	0.05050	0.00000				1.3 Comprs.
500	0.05590	0.00000				2.0 Comprs.
1000	0.07150	0.00000				4.0 Comprs.
2000	0.07990	0.00000				5.1 Comprs.
4000	0.09270	0.00000				6.7 Comprs.
8000	0.10660	0.00000				8.5 Comprs.
4000	0.10510	0.00000				8.3 Comprs.
2000	0.10380	0.00000				8.1 Comprs.

C_c = 0.00 P_c = 713 psf

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	Initial Void Ratio
Saturation	Moisture							
	31.2 %	90.7					713	

MATERIAL DESCRIPTION	USCS	AASHTO

Project No. **Client:** Nelson Engineering

Project: 07-238-01

Location: BH 4-2 6.5-6.7'

Remarks:

PIEDMONT ENGINEERING, INC.
1215 Apple's Way - Belgrade, MT 59714
Ph. 406-388-8578 - Fax 406-388-8579

Figure

PILE CAPACITY RESULTS

DRIVEN 1.2

GENERAL PROJECT INFORMATION

Filename:
Project Name: BTSO
Project Client: USFS
Computed By: GYR
Project Manager: GYR

Project Date: 11/19/2007

PILE INFORMATION

Pile Type: H Pile - HP12X53
Top of Pile: 1.00 ft
Perimeter Analysis: Box
Tip Analysis: Pile Area

ULTIMATE CONSIDERATIONS

Water Table Depth At Time Of:	- Drilling:	3.00 ft
	- Driving/Restrike	3.00 ft
	- Ultimate:	3.00 ft
Ultimate Considerations:	- Local Scour:	0.00 ft
	- Long Term Scour:	0.00 ft
	- Soft Soil:	17.00 ft

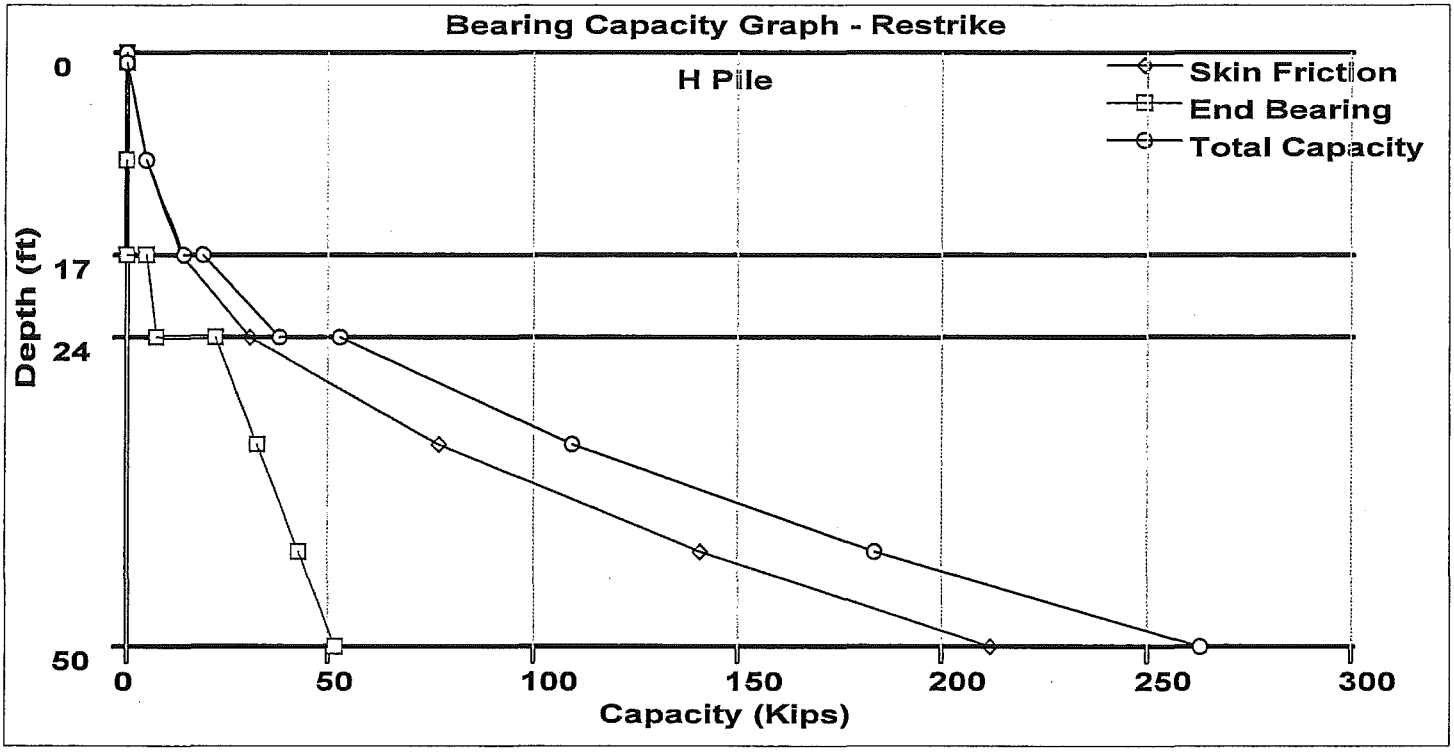
ULTIMATE PROFILE

Layer	Type	Thickness	Driving Loss	Unit Weight	Strength	Ultimate Curve
1	Cohesive	17.00 ft	0.00%	110.00 pcf	300.00 psf	T-80 Clay
2	Cohesionless	7.00 ft	0.00%	125.00 pcf	35.7/35.7	Nordlund
3	Cohesionless	26.00 ft	0.00%	135.00 pcf	40.7/40.7	Nordlund

ULTIMATE - SUMMARY OF CAPACITIES

Depth	Skin Friction	End Bearing	Total Capacity
0.01 ft	0.00 Kips	0.00 Kips	0.00 Kips
0.99 ft	0.00 Kips	0.00 Kips	0.00 Kips
1.00 ft	0.00 Kips	0.00 Kips	0.00 Kips
9.01 ft	0.00 Kips	0.00 Kips	0.00 Kips
16.99 ft	0.00 Kips	0.00 Kips	0.00 Kips
16.99 ft	0.00 Kips	0.00 Kips	0.00 Kips
17.00 ft	0.00 Kips	0.29 Kips	0.29 Kips
17.01 ft	0.02 Kips	5.40 Kips	5.42 Kips
23.99 ft	16.58 Kips	7.75 Kips	24.33 Kips
24.01 ft	16.65 Kips	22.24 Kips	38.90 Kips
33.01 ft	63.22 Kips	32.37 Kips	95.59 Kips
42.01 ft	127.06 Kips	42.49 Kips	169.55 Kips
49.99 ft	198.10 Kips	51.47 Kips	249.57 Kips

Filename:


Bearing Capacity Graph - Restrike
H Pile
Skin Friction
End Bearing
Total Capacity
Depth (ft)
0
17
24
50
0
50
100
150
200
250
300
Capacity (Kips)

DRIVEN 1.2

GENERAL PROJECT INFORMATION

Filename: C:\PROGRA~1\DRIVEN\BTSO12.DVN
Project Name: BTSO
Project Date: 11/19/2007
Project Client: USFS
Computed By: GYR
Project Manager: GYR

PILE INFORMATION

Pile Type: Pipe Pile - Closed End
Top of Pile: 0.00 ft
Diameter of Pile: 12.00 in

ULTIMATE CONSIDERATIONS

Water Table Depth At Time Of:	- Drilling:	3.00 ft
	- Driving/Restrike	3.00 ft
	- Ultimate:	3.00 ft
Ultimate Considerations:	- Local Scour:	0.00 ft
	- Long Term Scour:	0.00 ft
	- Soft Soil:	17.00 ft

ULTIMATE PROFILE

Layer	Type	Thickness	Driving Loss	Unit Weight	Strength	Ultimate Curve
1	Cohesive	17.00 ft	0.00%	110.00 pcf	100.00 psf	T-80 Clay
2	Cohesionless	7.00 ft	0.00%	125.00 pcf	35.7/35.7	Nordlund
3	Cohesionless	26.00 ft	0.00%	135.00 pcf	40.7/40.7	Nordlund

ULTIMATE - SKIN FRICTION

Depth	Soil Type	Effective Stress At Midpoint	Sliding Friction Angle	Adhesion	Skin Friction
0.01 ft	Cohesive	N/A	N/A	0.00 psf	0.00 Kips
9.01 ft	Cohesive	N/A	N/A	0.00 psf	0.00 Kips
16.99 ft	Cohesive	N/A	N/A	0.00 psf	0.00 Kips
16.99 ft	Cohesionless	0.00 psf	0.00	N/A	0.00 Kips
17.00 ft	Cohesionless	0.00 psf	0.00	N/A	0.00 Kips
17.01 ft	Cohesionless	996.71 psf	20.97	N/A	0.02 Kips
23.99 ft	Cohesionless	1215.19 psf	20.97	N/A	13.04 Kips
24.01 ft	Cohesionless	1434.96 psf	23.94	N/A	13.10 Kips
33.01 ft	Cohesionless	1761.66 psf	23.94	N/A	51.85 Kips
42.01 ft	Cohesionless	2088.36 psf	23.94	N/A	104.97 Kips
49.99 ft	Cohesionless	2378.04 psf	23.94	N/A	164.08 Kips

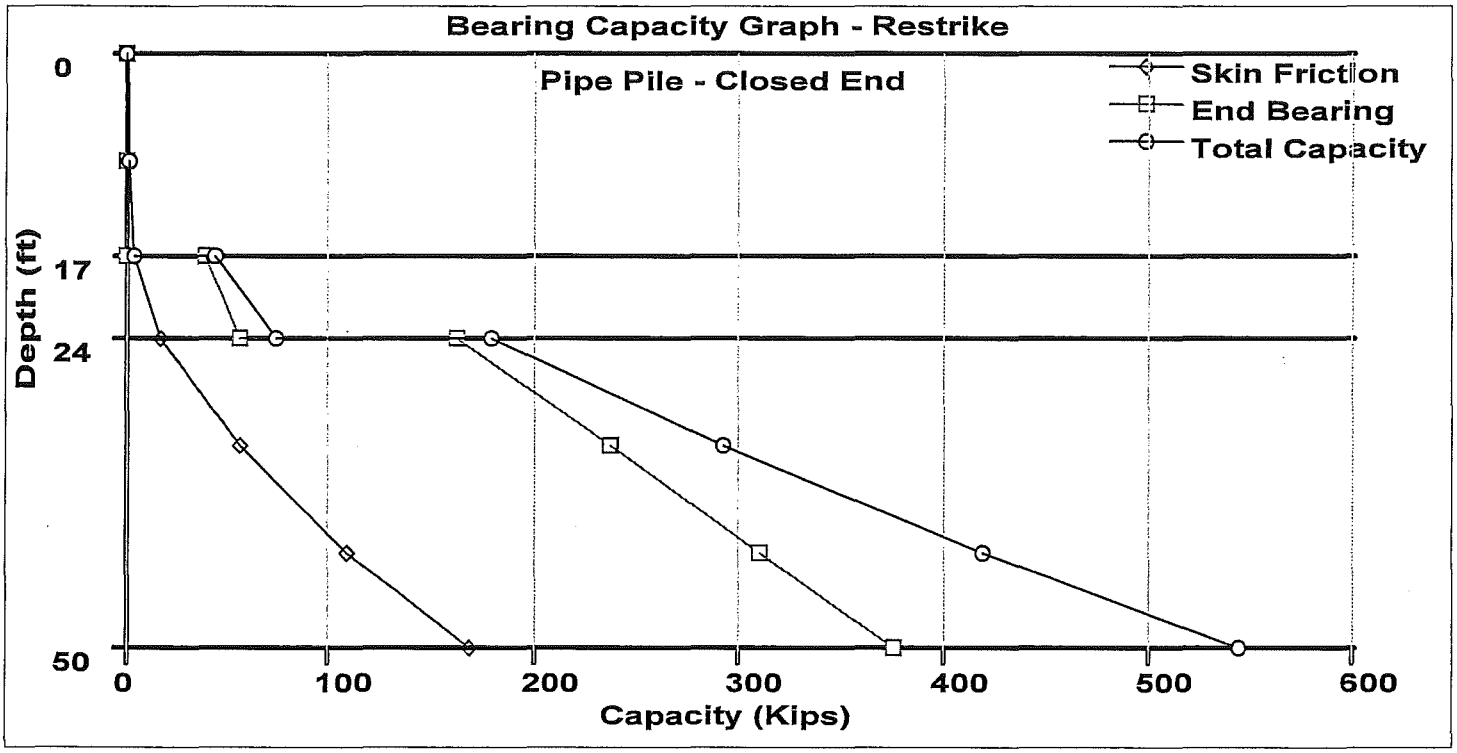
ULTIMATE - END BEARING

Depth	Soil Type	Effective Stress At Tip	Bearing Cap. Factor	Limiting End Bearing	End Bearing
0.01 ft	Cohesive	N/A	N/A	N/A	0.00 Kips
9.01 ft	Cohesive	N/A	N/A	N/A	0.00 Kips
16.99 ft	Cohesive	N/A	N/A	N/A	0.00 Kips
16.99 ft	Cohesionless	0.00 psf	0.00	0.00 Kips	0.00 Kips
17.00 ft	Cohesionless	996.40 psf	0.00	0.71 Kips	0.71 Kips
17.01 ft	Cohesionless	997.03 psf	73.09	107.61 Kips	39.43 Kips
23.99 ft	Cohesionless	1433.97 psf	73.09	107.61 Kips	56.53 Kips
24.01 ft	Cohesionless	1435.33 psf	189.80	375.87 Kips	162.30 Kips
33.01 ft	Cohesionless	2088.73 psf	189.80	375.87 Kips	236.18 Kips
42.01 ft	Cohesionless	2742.13 psf	189.80	375.87 Kips	310.06 Kips
49.99 ft	Cohesionless	3321.47 psf	189.80	375.87 Kips	375.57 Kips

ULTIMATE - SUMMARY OF CAPACITIES

Depth	Skin Friction	End Bearing	Total Capacity
0.01 ft	0.00 Kips	0.00 Kips	0.00 Kips
9.01 ft	0.00 Kips	0.00 Kips	0.00 Kips
16.99 ft	0.00 Kips	0.00 Kips	0.00 Kips
16.99 ft	0.00 Kips	0.00 Kips	0.00 Kips
17.00 ft	0.00 Kips	0.71 Kips	0.71 Kips
17.01 ft	0.02 Kips	39.43 Kips	39.44 Kips
23.99 ft	13.04 Kips	56.53 Kips	69.57 Kips
24.01 ft	13.10 Kips	162.30 Kips	175.40 Kips
33.01 ft	51.85 Kips	236.18 Kips	288.03 Kips
42.01 ft	104.97 Kips	310.06 Kips	415.03 Kips
49.99 ft	164.08 Kips	375.57 Kips	539.65 Kips

Filename: C:\PROGRA~1\DRIVEN\BTSO12.DVN



APPENDIX E: GROUNDWATER MEASUREMENTS

MAP EXPLANATION

- T41N R116W S27- 10 ac parcel
- Upland
- Wetland

Wetland Type

- Palustrine Emergent
- Palustrine Scrub-Shrub
- Palustrine Unconsolidated Bottom
- Well Points

0 25 50 100 150 200
Feet

MW-2GS
MW-3GS
MW-1GS
MW-4GS
MW-9GS
MW-8GS
MW-5GS
MW-6GS
MW-7GS
S1
S2
S6
S7
S3
S8
S4
S5
S10
S9
S11
S12
S13
S14
1
2
3
4
5
6
7

SCALE:

1:1,120

COORDINATE SYSTEM:

NAD83 Wyoming West

1 inch = 93 feet

DRAWING TITLE:

2013 Aerial with Delineated Wetlands, Sample Plots and Groundwater Monitoring Wells

PROJECT:

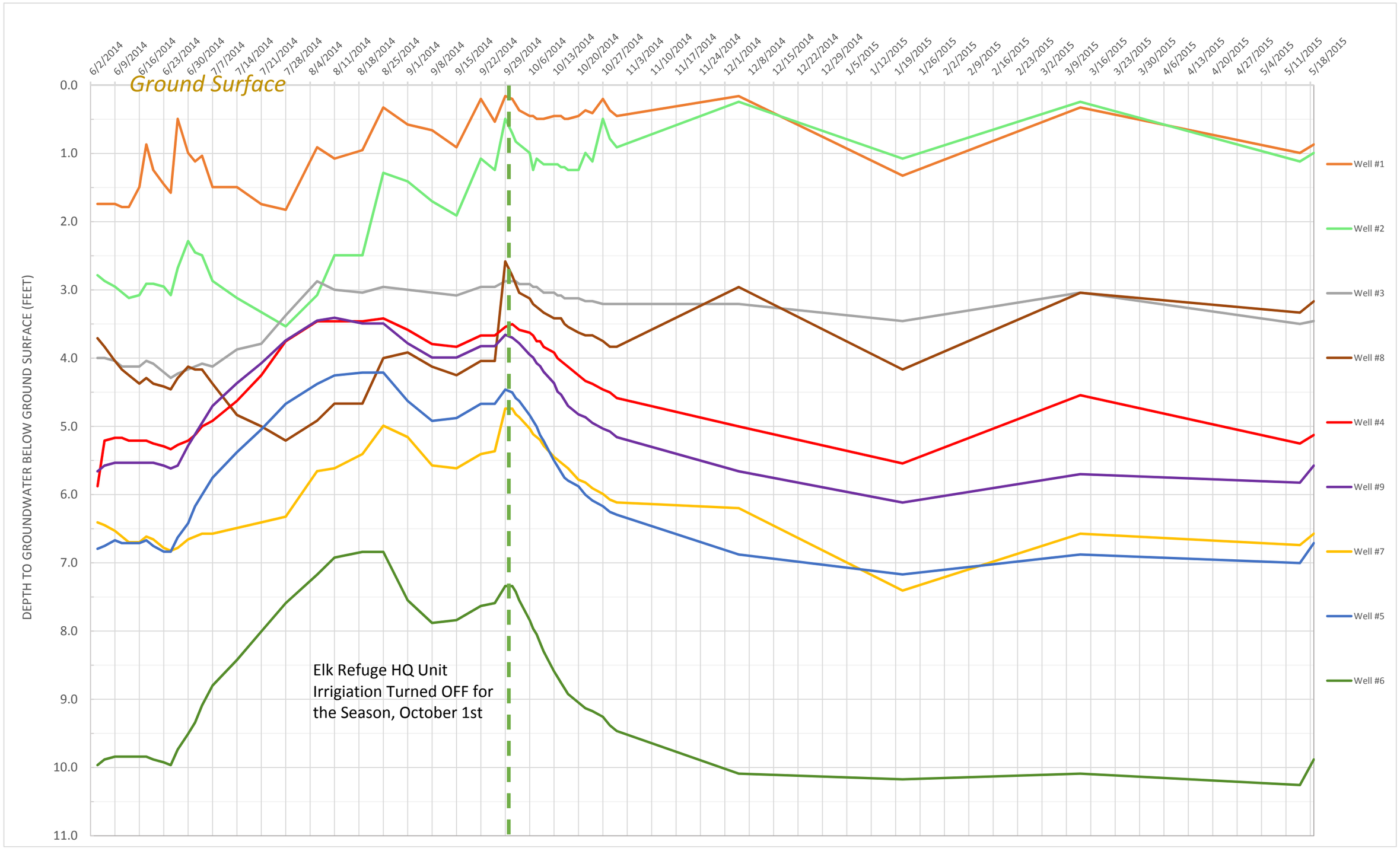
BTNF Admin Site
S27, T41N, R116W
Teton County, Wyoming

Y2 Consultants
Civil, Structural & Environmental Engineering
215 East Simpson, Jackson, WY 83001

12/1/2014

GROUND WATER LEVELS (GROUND LEVEL TO WATER LEVEL)

DATE	Well # 1 (FT)	Well # 2 (FT)	Well # 3 (FT)	Well # 4 (FT)	Well # 5 (FT)	Well # 6 (FT)	Well # 7 (FT)	Well # 8 (FT)	Well # 9 (FT)
Top of Pipe to Ground Level	1.59	1.59	1.71	1.54	1.58	1.66	1.51	1.50	1.55
06/03/14	1.74	2.74	6.37	4.96	7.12	7.89	10.76	10.73	5.95
06/04/14	1.74	2.79	4.00	5.88	6.80	9.97	6.41	3.71	5.66
06/06/14	1.74	2.87	4.00	5.21	6.75	9.88	6.45	3.83	5.58
06/09/14	1.74	2.95	4.04	5.17	6.67	9.84	6.53	4.04	5.53
06/11/14	1.79	3.04	4.12	5.17	6.71	9.84	6.62	4.17	5.53
06/13/14	1.79	3.12	4.12	5.21	6.71	9.84	6.70	4.25	5.53
06/16/14	1.49	3.08	4.12	5.21	6.71	9.84	6.70	4.38	5.53
06/18/14	0.87	2.91	4.04	5.21	6.67	9.84	6.62	4.29	5.53
06/20/14	1.24	2.91	4.08	5.25	6.75	9.88	6.66	4.38	5.53
06/23/14	1.45	2.95	4.21	5.29	6.84	9.92	6.78	4.42	5.58
06/25/14	1.58	3.08	4.29	5.34	6.84	9.97	6.82	4.46	5.62
06/27/14	0.49	2.68	4.23	5.27	6.63	9.74	6.78	4.29	5.58
06/30/14	0.99	2.29	4.17	5.21	6.42	9.51	6.66	4.13	5.28
07/02/14	1.12	2.45	4.12	5.13	6.17	9.34	6.62	4.17	5.12
07/04/14	1.04	2.49	4.08	5.00	6.00	9.09	6.57	4.17	4.95
07/07/14	1.49	2.87	4.12	4.92	5.75	8.80	6.57	4.38	4.70
07/14/14	1.49	3.12	3.87	4.63	5.38	8.42	6.49	4.83	4.37
07/21/14	1.74	3.33	3.79	4.25	5.05	8.01	6.41	5.00	4.08
07/28/14	1.83	3.54	3.37	3.75	4.67	7.59	6.32	5.21	3.74
08/06/14	0.91	3.08	2.87	3.46	4.38	7.17	5.66	4.92	3.45
08/11/14	1.08	2.49	3.00	3.46	4.25	6.92	5.62	4.67	3.41
08/19/14	0.95	2.49	3.04	3.46	4.21	6.84	5.41	4.67	3.49
08/25/14	0.33	1.29	2.96	3.42	4.21	6.84	4.99	4.00	3.49
09/01/14	0.58	1.41	3.00	3.59	4.63	7.55	5.16	3.92	3.78
09/08/14	0.66	1.70	3.04	3.79	4.92	7.88	5.57	4.13	3.99
09/15/14	0.91	1.91	3.08	3.84	4.88	7.84	5.62	4.25	3.99
09/22/14	0.20	1.08	2.96	3.67	4.67	7.63	5.41	4.04	3.83
09/26/14	0.54	1.24	2.96	3.67	4.67	7.59	5.37	4.04	3.83
09/29/14	0.16	0.49	2.87	3.54	4.46	7.34	4.74	2.58	3.66
10/01/14	0.20	0.70	2.87	3.50	4.50	7.34	4.74	2.79	3.70
10/02/14	0.29	0.83	2.87	3.54	4.59	7.42	4.82	2.92	3.74
10/03/14	0.37	0.87	2.92	3.59	4.63	7.55	4.87	3.04	3.78
10/06/14	0.45	0.99	2.92	3.63	4.84	7.84	5.03	3.13	3.95
10/07/14	0.45	1.24	2.96	3.67	4.92	7.97	5.12	3.21	3.99
10/08/14	0.49	1.08	2.96	3.75	5.00	8.05	5.16	3.25	4.08
10/09/14	0.49	1.12	3.00	3.75	5.13	8.17	5.20	3.29	4.12
10/10/14	0.49	1.16	3.04	3.84	5.21	8.30	5.28	3.33	4.20
10/13/14	0.45	1.16	3.04	3.92	5.50	8.59	5.45	3.42	4.37
10/14/14	0.45	1.16	3.08	4.00	5.59	8.67	5.49	3.42	4.49
10/15/14	0.45	1.20	3.08	4.04	5.67	8.76	5.53	3.42	4.53
10/16/14	0.49	1.20	3.12	4.09	5.75	8.84	5.57	3.50	4.62
10/17/14	0.49	1.24	3.12	4.13	5.80	8.92	5.62	3.54	4.70
10/20/14	0.45	1.24	3.12	4.25	5.88	9.05	5.78	3.63	4.83
10/22/14	0.37	0.99	3.17	4.34	6.00	9.13	5.82	3.67	4.87
10/24/14	0.41	1.12	3.17	4.38	6.09	9.17	5.91	3.67	4.95
10/27/14	0.20	0.49	3.21	4.46	6.17	9.26	5.99	3.75	5.03
10/29/14	0.37	0.79	3.21	4.50	6.25	9.38	6.07	3.83	5.08
10/31/14	0.45	0.91	3.21	4.59	6.30	9.47	6.12	3.83	5.16
12/05/14	0.16	0.24	3.21	5.00	6.88	10.09	6.20	2.96	5.66
01/21/15	1.33	1.08	3.46	5.54	7.17	10.17	7.41	4.17	6.12
03/13/15	0.33	0.24	3.04	4.54	6.88	10.09	6.57	3.04	5.70
05/15/15	0.99	1.12	3.50	5.25	7.00	10.26	6.74	3.33	5.83
05/19/15	0.87	0.99	3.46	5.13	6.71	9.88	6.57	3.17	5.58


Ground Surface
DEPTH TO GROUNDWATER BELOW GROUND SURFACE (FEET)
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
6/2/2014
6/9/2014
6/16/2014
6/23/2014
6/30/2014
7/7/2014
7/14/2014
7/21/2014
7/28/2014
8/4/2014
8/11/2014
8/18/2014
8/25/2014
9/1/2014
9/8/2014
9/15/2014
9/22/2014
9/29/2014
10/6/2014
10/13/2014
10/20/2014
10/27/2014
11/3/2014
11/10/2014
11/17/2014
11/24/2014
12/1/2014
12/8/2014
12/15/2014
12/22/2014
12/29/2014
1/5/2015
1/12/2015
1/19/2015
1/26/2015
2/2/2015
2/9/2015
2/16/2015
2/23/2015
3/2/2015
3/9/2015
3/16/2015
3/23/2015
3/30/2015
4/6/2015
4/13/2015
4/20/2015
4/27/2015
5/4/2015
5/11/2015
5/18/2015
Elk Refuge HQ Unit Irrigiation Turned OFF for the Season, October 1st
Well #1
Well #2
Well #3
Well #8
Well #4
Well #9
Well #7
Well #5
Well #6

APPENDIX F: MIRAFI GEOGRID WORKSHEETS

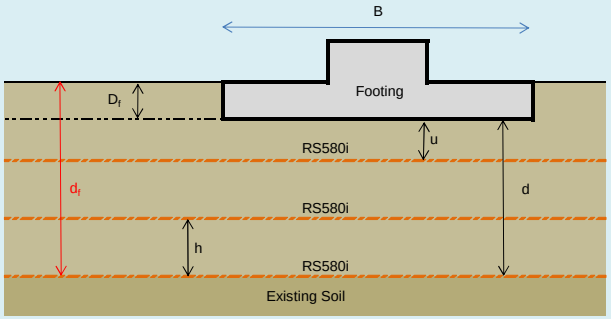
BTNF 10-Acre Site
60 Rosencrans
Jackson, WY
(Revised_01)

GRF - Continuous Footing
2 ft. x 20 ft.

Bearing Capacity Reinforced with Geosynthetic

LTRC Project No. 04-02GT (Recommendations page 157-158)

Tensile Modulus @ 5% Strain (MARV), J =	87,600	lbs/ft
Tensile force in the i^{th} layer of reinforcement, T_i =	2190	lbs/ft
Soil Type - Clay or Sand	CL	(CL or SM)
Shape	RE	(choose SQ, RE)
Footing Width, B =	2	ft
Footing Length, L =	20	ft
Embedment depth of footing, D_B (aka D_f) =	4	ft
existing cohesion, c =	150	lb/ft^2
phi of existing soil below reinforced zone, phi, ϕ =	0	deg
γ soil existing =	105	lb/ft^3
Depth of water, D_w =	2	ft
ϕ (reinforced soil) =	34	deg
γ reinforced soil =	134	lbs/ft^3
Factor of Safety, FS =	2.5	(2.5 - typical)
C_i =	0.9	
gamma concrete =	145	lbs/ft^3
Numer of layers of Reinforcing Geosynthetic, N =	2	layers
Soil weight displaced by concrete footing, q =	580	lbs/ft^2
unit adhesion, c_a =	90.00	(typ 0 - 250, c_a=C_a/d_f, assume C_a=C)
K_s, punching shear coefficient =	0.8768	(typ 1-6.5, lower for clay and higher for granular)
Vertical Spacing of Reinforcement, h =	1.25	ft (Authors suggest 6 in. ≤ h ≤ 18 in.)
Top Reinforcement Layer Spacing, u =	1.25	ft (Authors concluded 0.33 * B below footing as optimum depth)



Depth of Bottom Reinforcement Layer, d_f =	**6.5 ft**
Thickness of GRF Layer, d =	**2.5 ft**
Minimum Width of Geosynthetic Reinforcement, B_{GRF} =	**6.5 ft**
Minimum Length of Geosynthetic Reinforcement, L_{GRF} =	**24.5 ft**

LTRC Project No. 04-02GT (Recommendations page 157-158)

Clay Ultimate reinforced bearing capacity, $q_{u(R)}$ =	4917	lb/ft^2 for strip footing (EQ 17)
Clay Allowable reinforced bearing capacity $q_{a(R)}$ =	**1967**	
Clay Ultimate reinforced bearing capacity $q_{u(R)}$ =		lb/ft^2 for square footing (EQ 18)
Clay Allowable reinforced bearing capacity $q_{a(R)}$ =		
Sand Ultimate reinforced bearing capacity $q_{u(R)}$ =		lb/ft^2 for strip footing (EQ 28)
Sand Allowable reinforced bearing capacity $q_{a(R)}$ =		
Sand Ultimate reinforced bearing capacity $q_{u(R)}$ =		lb/ft^2 for square footing (EQ 32)
Sand Allowable reinforced bearing capacity $q_{a(R)}$ =		

reinforced $q_{a(R)}$ =	***1967 lb/ft^2***
unreinforced q_a =	***558 lb/ft^2***
	252.1 % Increase !!

BEARING CAPACITY OF SHALLOW FOUNDATIONS
Meyerhof Method

Units of Measurement			E SI or E	**Meyerhof Results** (Vertical Load)	
				Bearing Capacity	
Foundation Information				**q ult =**	**1,396 lb/ft^2**
Shape	RE	SQ, CI, CO, or RE		**q a =**	**558 lb/ft^2**
B =	2	ft			
L =	20	ft		**N_c =**	**5.14**
D =	4	ft		s_c =	1.02
				d_c =	1.40
Soil Information				**N_q =**	**1.00**
c =	150	lb/ft^2		s_q =	1.00
ϕ =	0	deg		d_q =	1.00
γ =	105	lb/ft^3		**N_γ =**	**0.00**
Dw =	2	ft	(Assumed)	s_γ =	1.00
				d_γ =	1.00
Factor of Safety				γ' =	42.6
F =	2.5			Kp =	1
				B/L =	0.1
Meyerhof Computations				D/B =	2
				$\sigma_{zD'}$ =	295.2
Unit conversion	1000				
γ_w =	62.4			*Allowable Column Load*	
ϕ (radians)	0			**P =**	-1 k
$W_{footing}$	23200				
γ conc	145				

Sack 2015 ver 17

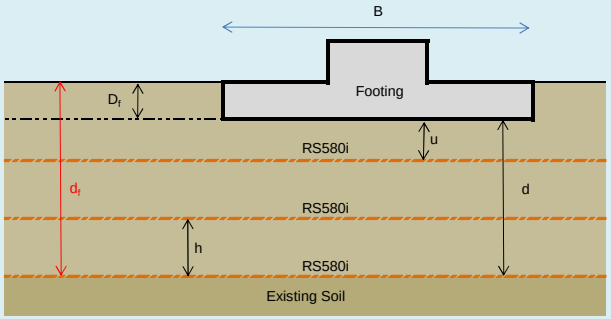
BTNF 10-Acre Site
60 Rosencrans
Jackson, WY
(Revision_01)

GRF - Column Footing
4 ft. x 4 ft.

Bearing Capacity Reinforced with Geosynthetic

LTRC Project No. 04-02GT (Recommendations page 157-158)

Tensile Modulus @ 5% Strain (MARV), J =	87,600	lbs/ft
Tensile force in the i^{th} layer of reinforcement, T_i =	2190	lbs/ft
Soil Type - Clay or Sand	CL	(CL or SM)
Shape	SQ	(choose SQ, RE)
Footing Width, B =	4	ft
Footing Length, L =	4	ft
Embedment depth of footing, D_B (aka D_f) =	4	ft
existing cohesion, c =	150	lb/ft^2
phi of existing soil below reinforced zone, phi, ϕ =	0	deg
γ soil existing =	105	lb/ft^3
Depth of water, D_w =	2	ft
ϕ (reinforced soil) =	34	deg
γ reinforced soil =	134	lbs/ft^3
Factor of Safety, FS =	2.5	(2.5 - typical)
C_i =	0.9	
gamma concrete =	145	lbs/ft^3
Numer of layers of Reinforcing Geosynthetic, N =	2	layers
Soil weight displaced by concrete footing, q =	580	lbs/ft^2
unit adhesion, c_a =	90.00	(typ 0 - 250, c_a=C_a/d_f, assume C_a=C)
K_s, punching shear coefficient =	0.8768	(typ 1-6.5, lower for clay and higher for granular)
Vertical Spacing of Reinforcement, h =	1.25	ft (Authors suggest 6 in. ≤ h ≤ 18 in.)
Top Reinforcement Layer Spacing, u =	1.25	ft (Authors concluded 0.33 * B below footing as optimum depth)



Depth of Bottom Reinforcement Layer, d_f =	**6.5 ft**
Thickness of GRF Layer, d =	**2.5 ft**
Minimum Width of Geosynthetic Reinforcement, B_{GRF} =	**8.5 ft**
Minimum Length of Geosynthetic Reinforcement, L_{GRF} =	**8.5 ft**

LTRC Project No. 04-02GT (Recommendations page 157-158)

Clay Ultimate reinforced bearing capacity, $q_{u(R)}$ =		lb/ft^2 for strip footing (EQ 17)
Clay Allowable reinforced bearing capacity $q_{a(R)}$ =		
Clay Ultimate reinforced bearing capacity $q_{u(R)}$ =	4926	lb/ft^2 for square footing (EQ 18)
Clay Allowable reinforced bearing capacity $q_{a(R)}$ =	**1970**	
Sand Ultimate reinforced bearing capacity $q_{u(R)}$ =		lb/ft^2 for strip footing (EQ 28)
Sand Allowable reinforced bearing capacity $q_{a(R)}$ =		
Sand Ultimate reinforced bearing capacity $q_{u(R)}$ =		lb/ft^2 for square footing (EQ 32)
Sand Allowable reinforced bearing capacity $q_{a(R)}$ =		

reinforced $q_{a(R)}$ =	***1970 lb/ft^2***
unreinforced q_a =	***562 lb/ft^2***
	250.5 % Increase !!

BEARING CAPACITY OF SHALLOW FOUNDATIONS
Meyerhof Method

Units of Measurement			E SI or E	**Meyerhof Results** (Vertical Load)	
				Bearing Capacity	
Foundation Information				**q ult =**	**1,405 lb/ft^2**
Shape	SQ	SQ, CI, CO, or RE		**q a =**	**562 lb/ft^2**
B =	4	ft			
L =	4	ft		**N_c =**	**5.14**
D =	4	ft		s_c =	1.20
				d_c =	1.20
Soil Information				**N_q =**	**1.00**
c =	150	lb/ft^2		s_q =	1.00
ϕ =	0	deg		d_q =	1.00
γ =	105	lb/ft^3		**N_γ =**	**0.00**
Dw =	2	ft	(Assumed)	s_γ =	1.00
				d_γ =	1.00
Factor of Safety				γ' =	42.6
F =	2.5			Kp =	1
				B/L =	1
Meyerhof Computations				D/B =	1
				$\sigma_{zD'}$ =	295.2
Unit conversion	1000				
γ_w =	62.4			*Allowable Column Load*	
ϕ (radians)	0			**P =**	0 k
$W_{footing}$	9280				
γ conc	145				

SECTION 6 – ENVIRONMENTAL ANALYSIS

Tyler Sinclair, Planning Director
Town of Jackson Planning & Building Department
P.O. Box 1687
Jackson, Wyoming 83001

July 18, 2016

Reference: 60 Rosencrans PUD—Environmental Analysis

Dear Mr. Sinclair,

On behalf of Hansen & Hansen, LLP., Y2 Consultants, LLC has prepared the attached Environmental Analysis, Application in reference to a conceptual development sketch plan and mitigation plan on a 10.0-acre parcel, physically addressed as 60 Rosencrans and legally known as PT. N1/4SW1/4 SEC. 27, TWP. 41, RNG. 116 (PIDN: 22-41-16-27-3-00-032) in the Town of Jackson, Teton County, Wyoming.

Original correspondences regarding this Environmental Analysis can be sent to Hansen & Hansen, LLP. (PO Box 50106, Idaho Falls, ID 83405) and Y2 Consultants, LLC (P.O. Box 2674, Jackson, Wyoming 83001). If you have any questions or need any more information, please contact me at 307-733-2999.

Sincerely,

Brenda K Younkin

Brenda Younkin
Owner
Tel: 307-733-2999
Brenda@Y2Consultants.com

[Attachment: Environmental Analysis]

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ENVIRONMENTAL ANALYSIS

60 ROSENCRANS, PLANNED UNIT DEVELOPMENT

PIDN: 22-41-16-27-3-00-032

located within

T. N1/2SW1/4 SEC. 27, TWP. 41, RNG. 116

TETON COUNTY, WYOMING

July 18, 2016

Prepared For:

Hansen & Hansen
PO Box 50106
Idaho Falls, ID 83405

Prepared By:

Y2 Consultants, LLC.
Natural Resource Services
Civil, Structural & Environmental Engineering
P.O. Box 2674, 215 East Simpson, Jackson, WY 83001-2674
307-733-2999 | www.Y2Consultants.com

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Contents

Figures

Tables

Maps

INTRODUCTION, BACKGROUND & METHODS

Proposed development in Town of Jackson, Wyoming, is subject to environmental analysis to assess any potential adverse effects on existing sensitive wildlife species, conflicts with migration routes, or disturbance to wetlands and suitable wildlife habitat (Div. 5.2.1, Town of Jackson LDRs, 2016).

Y2 Consultants LLC. was hired by Hansen & Hansen, LLC. to prepare the herein Environmental Analysis (EA) on a 10.0-acre parcel, physically addressed as 60 Rosencrans and legally known as PT. N1/2SW1/4 SEC. 27, TWP. 41, RNG. 116 (PIDN: 22-41-16-27-3-00-032; formerly described as 45 Rosencrans, BRIDGER TETON NATIONAL FOREST ADMIN. SITE) in Teton County, Wyoming.

This analysis is conducted under Town of Jackson Land Development Regulations (LDRs) and serves to inform permit and application submittal in association with proposed development through identification of the presence and distribution of sensitive wildlife species, associated habitats, and protected resources within and in the vicinity of the project area.

The project parcel is not located within the Natural Resources Overlay (NRO) or the Scenic Resources Overlay (SRO), as defined in the Town of Jackson Land Development Regulations (LDRs) and is zoned Urban Residential (UR) by the Town of Jackson. However, for the purposes of this EA we are applying NRO Town of Jackson LDRs since it borders NRO lands such as the National Elk Refuge.

This Environmental Analysis is provided as requested following a pre-application meeting (P16-031) with Town of Jackson staff, on May 4, 2016, and as required by the Town of Jackson Planning Department (TJPD).

METHODOLOGY

Numerous site visits occurred on the property starting in 2014 and continuing through the development of this report. The purpose of repeated visits was to identify existing definitional wetlands, functionality and degradation of said wetlands, hydrological support of wetlands and examine other natural resources presented herein. Well data collection has been extensive in order to determine influence of adjacent irrigation practices to wetlands on site.

GENERAL SITE CONDITIONS

LOCATION & PHYSIOGRAPHY

The project area consists of a 10.0-acre parcel (previously part of a larger 15.3-acre parcel owned by the Bridger Teton National Forest (BTNF), identified as the BRIDGER TETON NATIONAL FOREST ADMIN. SITE in Town and County records). The project area is located approximately 0.2 miles north of Jackson in Teton County, Wyoming (T41N, R116W, Section 27;

Jackson, Wyoming Quadrangle; Appendix A – Map 1). Access to the property is gained by traveling north from Jackson on US Highway 26/89 on North Cache Street.

The project area has an average elevation of 6,218 ft and is characterized by relatively flat terrain formed during the deposition of gravel throughout the valley 60-80 million years ago by major ancestral watercourses. Melting glaciers and the accompanying scouring effects of runoff leveled the valley and deposited silt, clay, and loams throughout the area. Drainage within the project area generally trends slightly southeasterly (Pierson Land Works, 2014).

SOILS

Soil types mapped within the project area by the Natural Resources Conservation Service (NRCS) include Cryaquolls-Cryofibrists and Greyback gravelly loam with 0-3 percent slopes (Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture, 2014). Cryaquolls-Cryofibrists soils are listed as hydric for Teton County (Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture, 2014; Appendix A – Map 2).

Cryaquolls-Cryofibrists soils are generally in seep areas surrounding springs and old stream oxbows (Young, 1982). They formed in alluvium at elevations of 6,000 to 7,000 feet and slope less than 1 percent. Permeability in these soils is moderate to slow. The available water capacity is moderate to high. The water table is at or near the surface during most of the year. Roots penetrate to a depth of 60 inches or more. Surface runoff is very slow and erosion potential is slight. Profiles of Cryaquolls-Cryofibrists are variable (Young, 1982). This soil type comprises approximately 35% of the study site.

Greyback gravelly loam (0-3 percent slopes) comprises the majority of the parcel. This is a very deep, somewhat excessively drained soil (Young, 1982). It formed in alluvium at elevations of 6,000 to 7,000 feet. The typical profile of Greyback soil is a surface layer of grayish brown gravelly loam 13 inches thick with a sub layer of very gravelly sandy loam (Young, 1982). Permeability is moderately rapid and the available water capacity is low (Young, 1982). Roots penetrate to a depth of 60 inches or more (Young, 1982). Surface runoff is very slow and erosion hazard slight (Young, 1982).

Table 1. Soil Type Summary for 60 Rosencrans, Teton County, Wyoming.

MAP UNIT SYMBOL	MAP UNIT NAME	% OF PROJECT AREA
12	Cryaquolls-Cryofibrists	*57%*
14	Greyback Gravelly Loam with 0-3	*43%*

HABITAT INVENTORY

WATERBODIES, WETLANDS & FLOODPLAINS

WATERBODIES/STREAMS & RIVERS

Surface hydrologic features within and near the project area consist of Flat Creek and Cache Creek (Appendix A – Map 3).

Flat Creek is the largest adjacent water feature which flows southwesterly approximately 0.1 mile west of the project area. Flat Creek originates at an elevation of about 9,600 ft. in the Bridger-Teton National Forest in the Gros Ventre Mountains east of the refuge and drains approximately 120 square miles. The Creek enters the National Elk Refuge approximately 3 miles north of the project area, and then continues to flow toward the west through the town of Jackson to its confluence with the Snake River. Flows vary seasonally due to runoff, input of irrigation water diverted from the Gros Ventre River, diversions by irrigators, and losses to infiltration. The porous nature of refuge soils through which a section of Flat Creek flows causes high infiltration losses and results in a seasonally dry channel bed in this area (U.S. Fish and Wildlife Service, National Elk Refuge , 2009).

Cache Creek is a perennial stream that originates in Cache Creek Basin flowing through the town of Jackson to its confluence with Flat Creek. Cache Creek has many watercourses in the region, has a snowmelt-dominated hydrograph where mean monthly discharge ranges from 0.11 m^3/s during base flow in February to 1.4 m^3/s during snowmelt runoff in June (Galbraith, Svalberg, & Tart, 1998). Historic aerial photography shows that a portion of Cache Creek at one point (prior to 1967) flowed through the east portion of the project area; however, as levels of development, re-alignments and diversions have increased over the past half century as the town has grown, the relic channel no longer has a direct connection to Flat Creek through the project area.

WETLANDS

The National Wetlands Inventory (NWI) mapping indicates the presence of one small Freshwater Pond within the project area. Several other similar wetlands are indicated to occur adjacent to the study area.

A routine Aquatic Resources Inventory (ARI) was conducted on the 10-acre portion of the Bridger Teton National Forest (BTNF) Administration Site in Teton County, Wyoming in September 2014 by Y2 Consultants LLC. The purpose of the study was to determine if any wetlands, as per wetland definitions in the 1987 U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual (U.S. Army Corps of Engineers, 1987), occurred within the project area; and if present, to determine the locations and boundaries of all wetlands within the project area.

Both natural conditions and, to a larger degree, anthropogenic land alterations and activities have influenced the creation, perpetuation and expansion of wetlands within the project area. Existing proximate and adjacent land uses, which consist of agricultural activities, are at least 5 years old and are defined by the 1987 USACE Manual as "normal circumstance". Field data collected during the 2014 study confirmed the presence of one freshwater ponded area as well as the presence of six definitional wetlands, comprising approximately 0.97 acres (9.7%) of the project area (Appendix A, Map 4). The U.S. Army Corps of Engineers verified mapped boundaries of the described wetlands on April 9 of 2015.

Three general groupings of wetland types were found within the property according to Cowardin et al. classification: Palustrine Emergent Wetlands, Palustrine Scrub-Shrub and Palustrine Unconsolidated Bottom wetlands.

Wetlands on the site are primarily agriculturally-induced via irrigation from the National Elk Refuge. Functionality assessment identified highly disturbed and degraded wetlands with a "low" rating for uniqueness and limited diversity of wetland vegetation. Human influences on the site include expanding the historic Cache Creek channel to create a stock pond for livestock, extensive livestock grazing, conversion of native wetland species to non-native and cultivated grasses and subsequent introduction and continued expansion of weed populations. Debris dumping including metal scraps and concrete slabs has also occurred on the site and within wetlands.

Agricultural activities have widened the remnant Cache Creek channel that is on the parcel and widened the associated wetland areal extent. Evidence of widening is supported by comparison of the channel width within the project area with that directly downstream of the site on the National Elk Refuge (NER), which has not experienced as heavy utilization or alteration (see Appendix A – Map 13). Average cross-sectional width, as determined by aerial analysis, for the remnant channel within the lower NER is approximately 17 ft. in length, whereas in the much more heavily disturbed and irrigation influenced 60 Rosencrans PUD site, the average width is approximately 40 feet.

Further anthropogenic influence is evident by a stock pond which was created via damming of the Cache Creek channel. Aerial analysis shows that the conversion occurred sometime between 1945 and 1955.

Town Planners verified that of the definitional wetlands, all of the wetlands were deemed to be degraded. Wetlands on the property associated with the stock pond (Palustrine unconsolidated bottom wetlands), were found to be clearly anthropogenic in origin, and are therefore not protected under the LDRs (ZCV P15-026). Encroachment into the 30-ft. wetland buffer is permitted for degraded wetlands, with no mitigation requirement (Town of Jackson,

2016) Mitigation is required on a 2:1 basis when developing degraded wetlands, and 30-foot buffers shall be provided around all wetlands created for mitigation.

Town Planners further verified that some of the acreage of definitional wetlands was irrigation-induced (see Appendix A, Map 4). No mitigation is required for wetland expansion area associated within irrigation-induced wetlands. At the time of this report, the irrigation-induced wetlands on site were determined by the Town to be the "area associated with the damning of the relic Cache Creek Channel" beyond the assumed original 17-foot wide relic Cache Creek Channel (ZCV P15-026) (See Appendix A- Map 13).

Hydrologic analysis is ongoing for the Palustrine Scrub-Shrub wetlands identified on the site. For the purposes of this report, the wetlands will be assumed herein to also be irrigation induced for calculations and covertype descriptions. Assumptions are based on well data collected to date of printing of this report as detailed below.

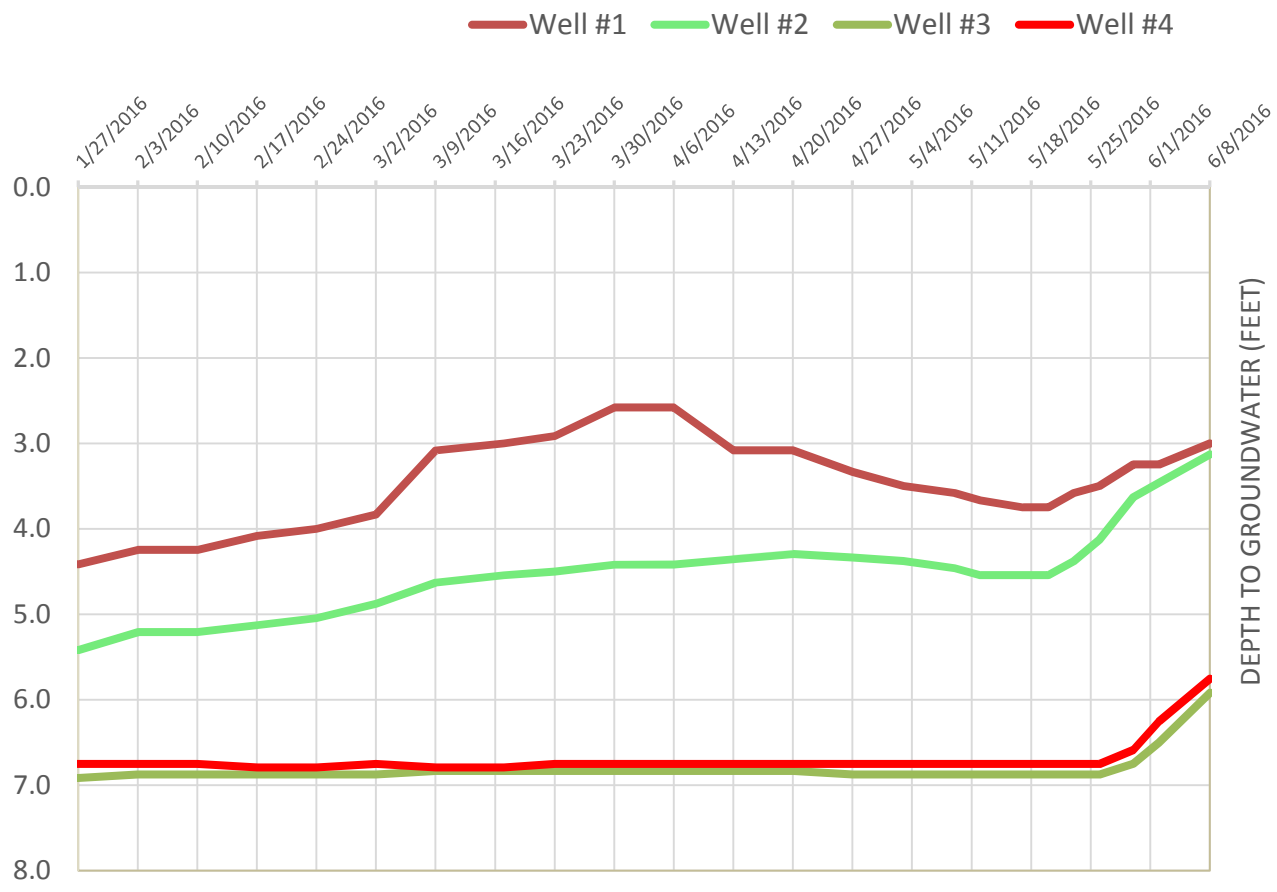

Figure 1. Groundwater trends from water wells located with the scrub-shrub definitional wetlands; collected January, 27 2016-June 8, 2016 at 60 Rosencrans, Town of Jackson, Wyoming.

The groundwater monitoring data collected in 2016 thus far indicates ground water levels deeper than 24 inches from the ground surface (Figure 1). Interpretation of the current data indicates that in the absence of irrigation, surface soils in the scrub-shrub wetlands would not be inundated or saturated to the surface for a sufficient duration (i.e., 5% of the growing season, or 2 weeks, per the USACE 1987 Wetland Delineation Manual and the NRCS Wets Tables) to develop hydric soils and support hydric vegetation typically adapted for life in periodically anaerobic soil conditions.

Wetland Descriptions by Cowardin Type

Palustrine Emergent – These wetlands exist in the remnant Cache Creek channel and along the fringe of a freshwater pond within the study area (Appendix A, Map 4). They make up a total of 0.52 acres of the total wetland area on the 10-acre portion of the project area. These features no longer receive direct surface flow contribution from Cache Creek and are now solely irrigation induced from adjacent NER fields and seep derived. The area surrounding these wetland sites have been substantially disturbed by agricultural and development activities that have widened the remnant channel form and wetland areal extent, further the wetlands have received direct influence from damming and other irrigation activities; hence all of these wetlands have been deemed degraded and all area beyond a width of 17 feet have been identified as irrigation induced (Appendix A, Map 4) (ZCV P15-026).

Palustrine Unconsolidated Bottom – This surface water, shallow pond, feature on the site was created through conversion of Cache Creek from a free flowing creek to a pond via damming, assumedly for stock purposes. Aerial analysis shows that the conversion occurred sometime between 1945 and 1955. Extent of the Palustrine Unconsolidated Bottom aquatic feature and associated fringe wetlands has continued from that time to be influenced and dimensionally increased by irrigation activities from adjacent upland pastures on the National Elk Refuge. Acreage beyond a width of 17 feet from the centerline of the feature have been identified as irrigation induced (Appendix A, Map 4) (ZCV P15-026).

Palustrine Scrub-Shrub – Three, generally isolated scrub-shrub wetlands totaling 0.45 acres are positioned in depressional areas or within the relic Cache Creek to Flat Creek connector channel (Appendix A, Map4). These features are primarily surface-water depressional collecting areas. While some portions of the depressions are clearly uplands other portions are slightly lower in elevation and are conducive to wetland formation and maintenance; the depression outlets are weakly defined and generally trend northward. Any direct surface connectivity is limited due to both natural and anthropomorphic berms. The remnant channels in which these wetlands are positioned are no longer a conduit for water due to upstream diversions that have been in place for over fifty years. No springs or seeps appear to influence these areas. The area surrounding some of this area has particularly been degraded by dumping and through

agricultural activities. Concrete slabs, rusted metal scraps and vegetation slash piles comprise the debris that has been dumped in these depressional features. These features have been deemed degraded by the Town (ZCV P15-026). Although hydrologic analysis is ongoing during the time of this report, the wetlands are suspected to be solely sustained hydrologically by irrigation water from adjacent NER fields and will be identified as thus for this analysis.

TEN YEAR FLOODPLAINS

Portions of the project area fall within FEMA Flood Zone A of the Flood Hazard Boundary Map (FHBM) (Appendix A, Map 3). The lowest portions of the project area are thus subject to a one percent (1%) or greater chance of flooding, in any given year, from floodwaters from Flat Creek.

VEGETATIVE COVER TYPES

Certain vegetative covertypes are protected through the LDRs of the Town of Jackson. The Land Development Regulations rank the relative values of vegetative covertypes to wildlife by assigning an ordinal rank ranging from 0 (lowest value) to 10 (highest value). Property proposed for physical development, use, development option, or subdivision that contains protected vegetative covers are required to be designed to protect as many of the identified resources as possible. Land identified as being located within the NRO and/or SRO receives the highest priority. Impact to, or conversion of a vegetative covertype to a lower ordinal ranking, within the NRO or SRO, requires mitigation on a 2:1 areal or plant unit basis.

Five vegetative covertypes and two non-vegetated covertype were identified by Y2 environmental scientists, in the project area (Table 2, Appendix A, Map 5).

Table 2. Summary of cover types, 60 Rosencrans, Town of Jackson, Wyoming.

COVER TYPE	TOJ ORDINAL RANKING	AREA (ACRES)	% OF PARCEL
WETLANDS, EMERGENT WETLAND, DEGRADED	9	0.336	3%
MESIC, OTHER MESIC TYPES, TALL SHRUB	8	0.614	6%
MESIC, OTHER MESIC TYPES, TALL FORB	3	0.542	5%
NONMESIC, DISTURBED, GRASSLAND	1	3.287	33%
WETLANDS, SCRUB-SHRUB WETLAND, IRRIGATION INDUCED	nr	0.442	4%
WETLANDS, EMERGENT WETLAND, IRRIGATION INDUCED	nr	0.139	1%
SHALLOW STOCK POND	nr	0.041	0%
DISTURBED/DEVELOPED	nr	4.584	46%

(nr = no ranking)

Mesic Tall Shrub

The project area has several stands of mesic tall shrub covertype. Plant species occurring in this community include chokecherry (*Prunus virginiana*), serviceberry (*Amelanchier alnifolia*), and Douglas hawthorn (*Crataegus douglasii*). There are 0.614 acres (6% of the tract) of mesic tall shrub habitat within the project area. Mesic tall shrub habitats in the Town are given a habitat value of 8 (Table 2, Appendix A- Map 5).

Mesic Tall Forb

Tall forb covertypes are dominated by forbs such as *Senecio, Mertensia, Heracleum, Angelica*, with trees and/or shrubs consisting of less than 10% canopy cover. This covertype makes up 5% of the cover area and is generally located on the eastern portion of the property past the second set of fencing (Table 2, Appendix A- Map 5).

Nonmesic Disturbed Grassland

A disturbed (non-irrigated) pasture/grassland covertype occurs through the central portion of the project area (Appendix A- Map 5). Historically, it is assumed that this pasture was mechanically cleared of mesic tall shrubs; extant vegetation consists of a mixture of domestic pasture grasses and weedy herbaceous species. The pasture area totals about 3.287 acres in size (33% of the parcel). Overall, disturbed nonmesic grasslands receive the lowest relative value ranking of all habitat types in the Town (i.e., an ordinal ranking of 1). This low ranking reflects the amount of alteration and disturbance to this community, the lack of plant and structural diversity associated with this habitat type, the limited number of wildlife species relying on this habitat type, the amount of disturbance related to the covertype and the abundance of this habitat type. (Table 2, Appendix A- Map 5).

Disturbed/ Developed Area

Although not technically a covertype, disturbed areas include land altered by human use, development, or natural disturbances, and comprise approximately 4.584 acres (46%) of the project area (Table 2, Appendix A- Map 5). Areas of disturbance mapped in the project area include building pads, landscaped lawn areas, intensely used corrals, roadways, utility features, and more. Disturbed areas have no ordinal ranking.

WILDLIFE HABITATS

The Town of Jackson is internationally known for the abundant wildlife that results from the County's location in the Greater Yellowstone Ecosystem and its proximity to Grand Teton National Park, Yellowstone National Park, and the Bridger-Teton National Forest (Town of Jackson, 2016). Although all wildlife species are important, premier species with significant biological, ecological, economic, educational and aesthetic values to Town of Jackson include: elk, mule deer, moose, bald eagles, trumpeter swans, and cutthroat trout. These species and

their respective habitats are protected through Town of Jackson Land Development Regulations (Town of Jackson, 2016) in order to assure their continued survival in Teton County.

Vegetative communities found within the project area represent habitat for a variety of birds and mammals, some of which have been classified as these premier species in the Town of Jackson Land Development Regulations (Town of Jackson, 2016).

In addition, neotropical migratory birds and amphibians are addressed in this section because they are considered sensitive species and are often used as ecological indicators by various land management agencies. Each species of concern is addressed below.

A listing of protected habitat types and presence of the type within ½ mile of the project area are identified in Table 3.

Table 3. Habitat Types and presence within ½ mile of study area.

HABITAT TYPE	PRESENCE ON THE PROPERTY	PRESENCE WITHIN ½ MILE OF PROPERTY
BALD EAGLE NESTING HABITAT	no	no
BALD EAGLE CRUCIAL WINTER HABITAT	no	no
MULE DEER MIGRATION ROUTES	no	no
MULE DEER CRUCIAL WINTER RANGE	no	yes
MOOSE CRUCIAL WINTER HABITAT	no	no
ELK MIGRATION ROUTES	no	no
ELK CRUCIAL WINTER RANGE	no	yes
TRUMPETER SWAN CRUCIAL WINTER HABITAT	no	yes
TRUMPETER SWAN NESTING HABITAT	no	yes
SNAKE RIVER CUTTHROAT SPAWNING HABITAT	no	no

Bald Eagle Nesting Areas, Nests & Crucial Winter Habitat

The bald eagle was removed from the Endangered Species list in 2007. It continues to be monitored by the U.S. Fish and Wildlife Service (FWS), and is still protected by the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act and the Lacey Act. The bald eagle population in the Greater Yellowstone area is considered “significant” by FWS. In the Jackson area, bald eagles generally range along the Snake River riparian corridor and its larger tributaries. Prime nesting habitat consist of uneven-aged stand of riparian forest with old-growth attributes and perching possibilities near these larger watercourses or waterbodies. (5.2.1.B.3, Town of Jackson LDRs, 2016). Land Development Regulations protect nesting bald eagles by prohibiting development within 660 feet of standing/occupied, active, or inactive nests, and also protects known perch and roost trees regarded as crucial winter habitat.

The nearest known Bald Eagle nest to the property is approximately 0.86 miles to the north (Appendix A – Maps 6), which was verified to be occupied in 2015-2016 (Location Identity: Elk Refuge/GV Butte, WGFD, S. Patla, *pers. comm.,* 2016). There are no known Bald Eagle nests directly on the property.

The location of this property adjacent to the National Elk Refuge, and the subsequent potential presence of winter carrion in the area suggests possible winter Bald Eagle habitat, however the lack of perch trees and known nests directly on the property minimize probability of the parcel for winter habitat and it is not designated as so.

Crucial Mule Deer Migration Routes & Winter Range

Crucial mule deer winter range generally consists of xeric and mesic sagebrush-grasslands and mixed shrub types which are used during the crucial winter months by the mule deer 8 out of every 10 years (Town of Jackson, 2016). This crucial winter range is limited in Town of Jackson and occurs at low elevations where shrub scrub-grassland habitat types are located. As crucial winter range is essential to the survival of mule deer and mule deer find food and/or cover on those sites during the most inclement and difficult winter weather conditions because of their physiographic and vegetative characteristics, these habitats are protected by Town of Jackson through LDRs (Sec 5.2.1.B, Town of Jackson LDRs, 2016).

The project area does not contain crucial mule deer winter range; however, Wyoming Game and Fish Department has identified crucial mule deer winter range within ½ mile of the project area (Appendix A – Map 7). Moderate amounts of deer sign (i.e., pellet groups, tracks, trails, and beds) were evident and scattered throughout the project area during site visits.

Mule deer use migration corridors to migrate between summer and winter ranges 8 out of every 10 years (5.2.1.B.3, Town of Jackson LDRs, 2016). Mule deer migration routes generally remain consistent through a general area but can be altered by significant human disturbance. Only a few very important migration routes have been identified as crucial in Town of Jackson (5.2.1.B.3, Town of Jackson LDRs, 2016). These WGFD designated mule deer migration routes are not present on the property; a tall (approx. 10 ft) wildlife fence along the east edge of the parcel prevents movement onto or from the National Elk Refuge.

Crucial Moose Winter Habitat

Crucial moose winter habitat generally includes primarily palustrine-shrub willow and cottonwood, palustrine-forested cottonwood, highly mesic forest-cottonwood, and cottonwood/spruce, upland forest-subalpine fir habitat types, and secondarily xeric and mesic sagebrush-grasslands and mixed shrub types (Town of Jackson, 2016). As crucial moose winter habitat is essential to the survival of the moose, these habitats are protected under the Town of Jackson LDRs. (5.2.1.B.3, Town of Jackson LDRs, 2016).

The property has limited value for moose habitat. A tall (approx. 10 ft) wildlife fence along the east edge of the parcel prevents movement onto or from the National Elk Refuge.

Crucial Elk Migration Routes & Winter Range

The elk, or "wapiti," is a large ungulate and a member of the deer family. Teton County supports one of the largest elk herds in North America (approximately 15,000 animals) and the presence of these animals attracts visitors from all over the world (Town of Jackson, 2016). Crucial winter ranges and elk migration routes are essential to the survival of these animals and hence are protected under the Town of Jackson LDRs (Sec 5.2.1.B, Town of Jackson LDRs, 2016).

Crucial elk winter range consists primarily of xeric and mesic sagebrush grasslands mixed shrub mesic and xeric open grassland and agricultural meadows (5.2.1.B.3, Town of Jackson LDRs, 2016).

This property is directly adjacent to the National Elk Refuge; however, crucial winter habitat is not mapped on the parcel as a tall elk fence along the east edge of the parcel prevents movement onto or from the Refuge. No mapped migration routes are present within the project area.

Trumpeter Swan Nests & Winter Habitat

Due to their low reproductive potential and continued threats to nesting and winter habitat, trumpeter swans are a Threatened Species under the Federal Endangered Species Act. The Wyoming Game and Fish Department presently classifies trumpeter swans as a "Priority 1 non-game management species," a designation given to species which are vulnerable to extirpation or significant population declines in Wyoming (Town of Jackson, 2016). Recent estimates indicate that less than 10,000 trumpeter swans reside in North America (Town of Jackson, 2016). The Greater Yellowstone Ecosystem is home for the Tri-state subpopulation of trumpeter swans and is the largest breeding area for trumpeter swans in the lower 48 states (Town of Jackson, 2016).

Because the trumpeter swan does not migrate from Teton County during winter, as waterfowl normally do, maintenance of its winter habitat is crucial to its survival and are protected under the Town of Jackson LDRs. Winter habitat for swans generally consists of water areas of palustrine-aquatic bed and unconsolidated shore and bottoms, with soft, sub-surface substrates of greater than 2 inches in depth, winter water depths of less than 4.3 feet, watercourse channels of 50 feet or more, and banks with little or no shrubbery or tree cover and gradual slopes (Town of Jackson, 2016). These habitats attract trumpeter swans 8 out of every 10 years (Town of Jackson, 2016).

Most of the habitat for swans in this project vicinity, both nesting and wintering, occurs to the north on the National Elk Refuge Flat Creek marsh, within ½ mile of the project area (WGFD, S.

Patla, *email. comm*., 2016). Starting in mid-November, hundreds of newly arriving migrant Canadian swans and resident swans stage on the NER main marsh for a few weeks before it freezes (WGFD, S. Patla, *email. comm*., 2016).

Swans are also documented to move frequently between wetland habitats on the refuge to sites along the Snake River south of Wilson as the amount of open water fluctuates on the Flat Creek marsh during the late fall (Nov to mid Dec) and in late winter (mid- Feb through March) winter depending upon temperature (WGFD, S. Patla, *email. comm*., 2016). According to the Wyoming Game and Fish, the main flyway appears to be south from the refuge above and near the project area, southwest toward the Snake River.

The lack of open water and the height of the elk fence on the east side of the parcel make it unlikely that trumpeter swans use the project area despite its proximity to Flat Creek marsh.

Snake River Cutthroat Trout Spawning Areas

The Snake River fine-spotted cutthroat trout is indigenous to Teton County. It only inhabits the upper reaches of the Snake River in Wyoming and extreme eastern Idaho, Jackson Lake, and the Palisades Reservoir (Town of Jackson, 2016). Critical spawning areas are protected in Teton County in order to maintain a viable population of cutthroat trout.

Wetland features on site are not considered, or connected to, critical habitat or spawning areas for Snake River fine-spotted cutthroat trout.

Migratory Birds

Migratory birds include raptors, passerines, and shorebirds that breed in North America but migrate to Mexico, and Central and South America for the winter. In Wyoming, 162 bird species are considered neotropical migrants (Nicholoff, 2003) with peak migration periods occurring from May through June and again in late August through early October. Nesting is typically initiated in May and June and potential nesting habitat includes native grasslands, shrublands, and aspen and coniferous forest stands.

Many migrant waterfowl and passerines as well as nesting birds use the willow and wetland habitats and wet/dry meadows on, and adjacent to, the project area (WGFD, S. Patla, *email. comm*., 2016).

Amphibians

Amphibian species such as the western chorus frogs (*Pseudacris triseriata*), boreal toads (*Anaxyrus boreas*), and tiger salamanders (*Ambystoma tigrinum*) are of special concern in Teton County to many land management agencies. Generally, these species are found with riparian zones which have the presence of coarse woody debris (fallen logs left on the ground) and stagnant backwaters.

The presence of several springs and associated wetland fringes provides the opportunity for amphibians to be present within the project area.

DEVELOPMENT IMPACT ASSESSMENT

DESCRIPTION OF THE PROPOSAL

The development plan for 60 Rosencrans creates a combination of single and multi-family residences on the parcel. A Preferred Alternative and two additional alternatives are proposed in order to complete a comprehensive environmental analysis (Appendix A – Map 10 & 11). Further at the time of this report, as indicated above, hydrologic influences on some of the scrub-shrub definitional wetlands continues to be analyzed but will be assumed to be irrigation induced for calculations in this report. In both alternatives, special attention has been given to placing possible development away from the most functional wetland features on the site with impacts to wetlands occurring in priority, on the more disturbed and agriculturally induced wetlands.

The current preferred draft sketch plan includes 13 single family homes, 20 attached units and 135 apartments (Appendix A – Map 10).

IMPACTS TO WATERBODIES, WETLANDS & FLOODPLAINS

WATERBODIES/STREAMS & RIVERS

No stream or rivers will be impacted under the preferred alternative.

WETLANDS

Development in the preferred plan is slated to primarily impact the less functional and more degraded wetland area (See

Table 4 for a breakdown of wetland acreage proposed for impact with the preferred alternative).

TEN YEAR FLOODPLAINS

Portions of the proposed development sketch plan falls within FEMA Flood Zone A (Appendix A, Map 3).

IMPACTS TO VEGETATIVE COVERTYPES

The proposed Sketch Plan will impact several vegetated covertypes as delineated in

Table 4 below.

Table 4. Summary of proposed Sketch Plan impacts by cover types, 60 Rosencrans Parcel, Town of Jackson, Wyoming.

COVER TYPE	TOJ ORDINAL RANKING	AREA IMPACTED (ACRES)
WETLANDS, EMERGENT WETLAND, DEGRADED	9	0.192
MESIC, OTHER MESIC TYPES, TALL SHRUB	8	0.332
MESIC, OTHER MESIC TYPES, TALL FORB	3	0.333
NONMESIC, DISTURBED, GRASSLAND	1	3.00
WETLANDS, SCRUB-SHRUB WETLAND, IRRIGATION INDUCED	nr	0.082
WETLANDS, EMERGENT WETLAND, IRRIGATION INDUCED	nr	0.139
SHALLOW STOCK POND	nr	0.041
DISTURBED/DEVELOPED	nr	4.318

IMPACTS TO WILDLIFE

Impact Definitions

Future development occurring within the project area may have adverse effects on species and resources that are protected by Town and County Land Development Regulations. The following assessment of environmental consequences, of the proposed development, was conducted through analysis of different impacts, duration of impact, and intensity of impact.

Impact Measures - Four impact measures are examined for wildlife. These include habitat loss, mortality, habitat fragmentation, and human-caused disturbance.

- Habitat Loss - Implementation and perpetuation of all or part of the project would result in a direct loss of habitat.
- Mortality - Implementation and perpetuation of all or part of the project would result in the death(s) of individuals.
- Habitat Fragmentation - Implementation and perpetuation of all or part of the project would result in the fragmentation of habitat.
- Human-caused Disturbance - Implementation and perpetuation of all or part of the project would result in the displacement of individual animals.

Intensity of Impact - Impact thresholds are defined in Table 5.

Table 5. Impact threshold definitions.

Impact threshold definitions				
Measures	Negligible	Minor	Moderate	Major
Habitat Loss, Mortality, Habitat Fragmentation, Human-caused Disturbance	- A small number of individual animals and/or a small amount of their respective habitat may be adversely affected via direct or indirect impacts associated with a given alternative. - Populations would not be affected or the effects would be below a measurable level of detection. - Mitigation measures are not warranted.	- Adverse impacts to individual animals and/or their respective habitats would be more numerous and detectable. - Populations would not be affected or the effects would be below a measurable level of detection. - Mitigation measures may be needed and would be successful in reducing adverse effects.	- Effects to individual animals and their habitat would be readily detectable, with consequences occurring at a local population level. - Mitigation measures would likely be needed to reduce adverse effects and would likely be successful.	- Effects to individual animals and habitat would be obvious and have substantive consequences on a regional population level. - Extensive mitigation measures would be needed to reduce any adverse effects and their success would not be guaranteed.

Duration of Impact - A short-term impact would have a duration less than or equal to 3 years and a long term impact would have a duration greater than 3 years following implementation.

Bald Eagle Nesting Areas, Nests & Crucial Winter Habitat Impacts

As described above, the nearest known Bald Eagle nest to the property is approximately 0.86 miles to the north (Appendix A – Map 6) and there are no known Bald Eagle nests directly on the property. The location of this property adjacent to the National Elk Refuge, and the subsequent potential presence of winter carrion in the area suggests possible winter Bald Eagle habitat, however the lack of perch trees and known nests directly on the property minimize probability of the parcel for winter habitat and it is not designated as so.

Hence, potential impacts of the preferred Sketch Plan, to bald eagles, are expected to be negligible, adverse and long-term, as the project is expected to only potentially have indirect, yet permanent, effects to a small number of individual bald eagles due to human-caused disturbance, with expected impacts projected to be below a measurable level of detection.

Crucial Mule Deer Migration Routes & Winter Range Impacts

Given that the project area does not contain crucial mule deer winter range; but that crucial mule deer winter range is mapped within ½ mile of the project area (Appendix A – Map 7),

potential impacts of the preferred Sketch Plan, to mule deer, are expected to be negligible, adverse and long-term. Given the large amount of disturbance and human presence that has occurred on the property for decades, the continuation of presence and enlargement of disturbance is expected to impact a small number of individuals which may use the area as a resting or transition zone.

Crucial Moose Winter Habitat Impacts

Potential impacts of the preferred Sketch Plan to Moose are expected to be negligible, adverse and long-term, as the property has limited value for moose habitat given the large amount of historic disturbance and human presence already occurring on the property, and as a tall (approx. 10 ft.) wildlife fence exists along the east edge of the parcel preventing movement onto or from the National Elk Refuge.

Crucial Elk Migration Routes & Winter Range Impacts

Potential impacts of the proposed Sketch Plan to Elk are expected to be negligible, adverse and long-term as the property as a tall (approx. 10 ft.) wildlife fence exists along the east edge of the parcel preventing movement onto or from the National Elk Refuge.

Trumpeter Swan Nests & Winter Habitat Impacts

As described in the wildlife habitat description section of this report, most of the habitat for swans in the project vicinity, both nesting and wintering, occurs to the north on the National Elk Refuge Flat Creek marsh, within ½ mile of the project area. No known nests occur within the project area (WGFD, S. Patla, *email. comm*., 2016). However, given that a large population of migrant Canadian swans and resident swans stage on the adjacent National Elk Refuge marsh for a few weeks before it freezes in the fall, and that swans are documented to use the area as a flyway, as they move between wetland habitats on the refuge to sites along the Snake River south of Wilson; potential impacts of the proposed Sketch Plan, to Trumpeter Swans, are expected to be minor, adverse and long-term. Effects to swan populations are expected to be below a measurable level of detection.

Snake River Cutthroat Trout Spawning Area Impacts

Wetland features on site are not considered critical habitat or spawning areas for Snake River fine-spotted cutthroat trout and hence no impact to the species is expected.

ENDANGERED PLANT AND VERTEBRATE SPECIES

In addition to species of special concern identified in the Town of Jackson Land Development Regulations, the regulations require that all animals and plants listed under the Endangered Species Act as threatened or endangered be analyzed as part of an EA.

Each species and its likelihood of occurrence, that have been documented in Teton County and could potentially occur within the project area are provided in Table 6 below. Although 4 other listed plant species occur in Wyoming, these plants (i.e., Ute Ladies'-tresses (*Spiranthes*

diluvialis Sheviak), Colorado butterfly plant (*Gaura neomexicana coloradensis*), blowout penstemon (*Penstemon haydenii*), and desert yellowhead (*Yermo xanthocephalus*)) have very specific habitat requirements and ranges outside of Teton County.

Table 6. Summary of Threatened & Endangered Species Likely to Occur in Teton County, WY (USFWS, 2015).

ANIMAL SPECIES	STATUS	LIKELIHOOD OF OCCURRENCE IN PROJECT AREA
Grizzly bear (*Ursus arctos horribilis*)	Threatened	Unlikely (no habitat)
Canadian Lynx (*Lynx canadensis)*	Threatened	Unlikely (no habitat)
Gray wolf (*Canis lupus*)	Experimental population	Possible
Greater sage grouse *(Centrocercus urophasianus)*	Removed as candidate, but still regulated at this time under state of Wyoming executive order 2011-5	Unlikely (no habitat)
Whitebark pine (*Pinus albicaulis)*	Candidate	Unlikely (low elevation)
Yellow-billed cuckoo (western) *(Coccyzus americanus occidebtalis)*	Candidate	Possible

GRIZZLY BEAR

The project area lies in an area that is not prioritized for grizzly bear monitoring or recovery. The most suitable habitat for grizzly bears occurs in areas with large tracts of undisturbed habitat and minimal human presence. The core population of grizzly bears in the region is centered in Yellowstone National Park.

The project area is located in proximity to relatively extensive disturbance associated with humans, reducing any suitability for grizzly bear occupation. Denning conditions are similarly unfavorable.

CANADA LYNX

Distribution and abundance of this species is constrained by that of the snowshoe hare, their major prey. In the Greater Yellowstone Area, lynx are found primarily in spruce-fir and lodgepole pine forests at elevations between approximately 8,000-10,00 feet. Human disturbance also restricts the presence of lynx.

Canada lynx are not expected to occur on or in the vicinity of the project area based on the low elevation, proximity to human activity, and lack of appropriate habitat in this location.

The U.S. Forest Service designated critical habitat for the Canada lynx and it does not include the property.

GRAY WOLF

The subspecies of the northern Rocky Mountain wolf was initially listed as an endangered species in 1973 (38 Federal Register 14678). The existing population, designated experimental under section 10(j) of the Endangered Species Act (although treated as a threatened species in a national park or national wildlife refuge), was reintroduced into uninhabited areas of its historic range to recover the species. Population goals for the wolf recovery program in Wyoming, Montana, and Idaho were met in 2002, and all 3 states supported viable recovered wolf populations at that time. The Northern Rockies population of gray wolves was delisted in April 2009. However, due in part to the lack of an approved state management plan in Wyoming, a temporary injunction and subsequent ruling from the US Fish and Wildlife Service restored the threatened species status.

There has been no critical habitat designated for northern Rocky Mountain gray wolves.

Wolves have been documented on the adjacent National Elk Refuge in recent years, however, wolves do not permanently reside within the project and it is unlikely that the site would be used for movement in their range due the proximity to extensive human use and wildlife fencing restricting movement into the property from the refuge.

YELLOW-BILLED CUCKOO

This bird relies on Cottonwood trees and riparian systems for breeding and is considered 'critically imperiled' in Wyoming. Although this property contains significant riparian areas, the cover requirements for the bird are not met, making it unlikely the species will be found on the property.

SETBACKS/BUFFERS

The Town of Jackson has designated setbacks and buffers to protect any negative impact on waterbodies, floodplains, wetlands and crucial wildlife habitat. The proposed developable area and entire property complies with all setbacks (Table 7).

Table 7. Summary of applicable Town of Jackson Setback and Buffer Distances.

WATERCOURSE AND WETLAND SETBACKS	SETBACK DISTANCE (FT)
WETLANDS	*30*
WILDLIFE BUFFERS	**BUFFER DISTANCE (FT)**
BALD EAGLE NEST AREA	*330/66O*

ALTERNATIVE SITE DESIGN ANALYSIS

An alternative development design was analyzed as part of this EA in order to determine if a feasible alternative to the proposed action existed. The focus of the alternative analysis was to assess the relative impacts of the alternative actions on protected natural resources, in general, and wetlands in particular.

ALTERNATIVE ACTION

The alternative action involved the relocation of the larger northwestern apartment unit into two separate units and associated sidewalk, landscape and pavement alterations (Appendix A-Map 11).

COMPARISON OF IMPACTS TO STREAMS & RIVERS

Neither the preferred or the alternative action will have an impact on protected streams or rivers.

COMPARISON OF IMPACTS TO WETLANDS

The total wetland area of disturbance for non-irrigation induced, degraded wetlands associated with the alternative action 1 will be approximately 0.228 acres, a 15% increase in total impacts when compared to the proposed action (0.192 acres). Total wetland area of disturbance for non-irrigation induced, degraded wetlands associated with alternative action 2 would be 0.29 acres, or a 34% increase in total impacts when compared to the Proposed Alternative. These calculations and acreages are based on the assumption that the scrub-shrub wetlands are deemed to be irrigation induced as described above.

COMPARISON OF IMPACTS TO COVERTYPES

The total area of disturbance associated with the alternative action 1 would be 8.309 acres, and total disturbance for alternative action 2 would be 8.438 acres. acres. This assumes that all land within all building envelopes were to be disturbed by development, and this likely overestimates development impacts for both actions. Impact differences between proposed and alternative actions are outlined below in Table 8 on a Cover Type-specific basis.

Table 8. Comparison of impacts to cover types by alternatives, 60 Rosencrans Parcel, Town of Jackson, Wyoming.

COVER TYPE	TETON COUNTY Ordinal RANKING	Proposed Alternative Area Impacted (Acres)	Alt 1 Area Impacted (Acres)	Percent INCREASE WITH ALT 1	Alt 2 Area Impacted (Acres)	Percent INCREASE WITH ALT 2
Wetlands, Emergent Wetland, Degraded	9	0.192	0.225	15%	0.29	34%
Mesic, Other Mesic Types, Tall Shrub	8	0.332	0.343	3%	0.412	19%
Mesic, Other Mesic Types, Tall Forb	3	0.333	0.316	-5%	0.323	-3%
Nonmesic, Disturbed, Grassland	1	3	2.871	-4%	2.891	-4%
Wetlands, Scrub-Shrub Wetland, Irrigation Induced	nr	0.082	0.206	60%	0.208	61%
Wetlands, Emergent Wetland, Irrigation Induced	nr	0.139	0.139	-3%	0.139	0%
Shallow Stock Pond	nr	0.041	0.041	0%	0.041	0%
Disturbed/Developed	nr	4.318	4.168	-3%	4.134	-4%
		8.437	8.309		8.438	

CONCEPTUAL MITIGATION PLAN

All alternatives propose development within degraded wetlands on the site. As per the P15-026, Zoning Compliance Verification response, compensatory mitigation will be required on the site at a 2:1 basis for any development within degraded wetlands (no mitigation is required for development into irrigation induced wetlands or for the "wetland expansion area associated with the damning of the relic Cache Creek Channel, but mitigation is required for the estimated 17-foot width of the relic Cache Creek Channel over which it was damned and expanded").

The following conceptual mitigation plan offers details on the compensatory mitigation proposed for impacts, as required, to the degraded wetlands associated with future development of the site and based off of the preferred, proposed alternative herein.

Mitigation – Goals & Objectives

Wetland impacts in association with the proposed development will be mitigated on an area basis, on-site, by creating at least twice the area of wetlands as those impacted by the chosen action. Mitigation efforts will affect a total area of 0.384 acres for the proposed Preferred Plan.

Mitigation –Target Conditions

Wetland functions are inherent self-sustaining properties of a wetland ecosystem that exist in the absence of society, and relate to ecological significance without regard to subjective human

values (Berglund & McEldowney, 2008). Wetland values are benefits that derive from either one or more functions and the physical characteristics associated with a wetland (Berglund & McEldowney, 2008).

All proposed wetland mitigation areas will be designed to be rated as Category II or better wetlands in terms of functionality, based off of Montana Department of Fish, Wildlife & Parks (MFWP) wetland evaluation method for highway projects in Montana (Berglund & McEldowney, 2008). To achieve this, mitigated wetlands will target specifically high functional ratings for: general wildlife habitat, short and long term surface water storage, and production/export of food chain support. This functionality will be accomplished through the installation of a year round water source to add hydrologic support the establishment of a multi-layer diverse vegetative community and elimination of all noxious weeds.

Mitigation—Methods

On-site, in-kind mitigation is proposed for this project. Two general areas lend themselves ecologically to, and are available for, mitigation efforts with the current proposed development plans (See Appendix A, Map 12).

Mitigation efforts will consist of the development of high quality emergent wetlands, with some scrub-shrub species, and the installation of a permanent water source to support the wetland into perpetuity.

For wetland establishment, approximately 8-12 inches of screened fine material and soil will be installed to provide a suitable growing medium for planted vegetation. Compost may be imported and mixed into the soil to add organic content and create soil that more closely mimics that found in existing wetlands in the vicinity. The finished grade of the mitigation wetlands will be designed to be saturated for most of the growing season to ensure adequate hydrologic support for planted wetland vegetation. Finished grades will have slight micro-topographic changes (less than 6 inches in elevation) scattered throughout to encourage the development of a mosaic of a diverse, herbaceous vegetation community in the understory.

The planting effort will involve priority transplanting of salvaged native wetland vegetation from other areas of the property and then secondarily will involve seeding with native plant species (i.e. *Juncus spp., Carex spp., Calamagrostis Canadensis, and Deschampsia cespitosa*), and/or the installation of native, nursery-grown wetland sod, wetland plugs, and large balled and burlapped shrubs.

Planting locations for each species will be based on hydrologic tolerance and specified by Y2 Consultants, LLC. Depending on the timing of the project, dormant willow cuttings may be installed to supplement the shrub planting effort.

Mitigation—Maintenance Plan

Temporary fencing around individual trees and shrubs or along the perimeter of the mitigation area will be constructed following plantings in order to protect and assist in establishment of all mitigation plantings. If small containerized shrubs are utilized, these areas will be fenced with 6-foot high temporary fencing that is of sufficient strength to exclude ungulates from the mitigation areas for three (3) years or until all planted vegetation is fully established. Mitigation plantings will be monitored to determine if adaptive management is necessary.

Mitigation—Weed control plan

In preparation of the Zoning Compliance Verification, associated Aquatic Resource Inventories and other environmental analysis, various non-native invasive species were identified on the properties and within the proposed wetland mitigation sites. Growth of noxious weeds are also to be expected as a result of conducting ground-disturbing activities and other mitigation-related activities. Hence, weed control will be contracted and performed for a period of three (3) years following enhancement plan completion.

Mitigation – Monitoring Plan

Monitoring in combination with adaptive management (a systematic approach for improving resource management by evaluating existing conditions in relation to stated mitigation objectives and quickly implementing new techniques if an objective is not being met) provides a sound process for ensuring stated mitigation objectives are met and overall success of the Habitat Enhancement and Mitigation Plan.

The project's monitoring plan is detailed in

Table 9, which outlines duration of monitoring by element, associated monitoring responsibility, final target conditions, and the adaptive management strategy that will be followed if the target condition is not met within the assessment period.

Overall measurement of success will be based on the creation of 0.384 acres of emergent wetlands, and the establishment of 75% success of planted shrubs and trees across all mitigation areas.

Table 9. Monitoring plan for habitat enhancement and mitigation efforts.

ITEM	DURATION	RESPONSIBLE PARTY	TARGET CONDITION	ADAPTIVE MANAGEMENT STRATEGY
Wetland Creation	3 yrs; annual assessment during growing season	Y2 Consultants to assess	Hydrology and vegetation in newly created wetland areas will meet USACE defined wetland criteria	If hydrology is insufficient, manipulate as needed to achieve goals. If hydrophytic vegetation is insufficient, re-seed and/or plant additional shrubs/trees, add/repair exclosure fencing
Shrub/Tree Plantings	3 yrs; annual assessment during growing season	Y2 Consultants to assess	75% survival of planted shrubs/trees	Plant additional shrubs, add/manipulate hydrology, add/repair exclosure fencing
Noxious Weeds	3 yrs; annual assessment during growing season	Y2 Consultants to assess	Less than 10% of relative abundance of non-native invasive or noxious weeds	Herbicide application and/or hand removal

Annual monitoring reports will be prepared and submitted to the Town of Jackson by December, 31 of each monitoring year after establishment. At the end of the monitoring period, a final report will be produced and a final assessment of mitigation success will be made.

CONCLUSION

Proposed and alternative actions were analyzed as part of an EA in order to determine and compare environmental impacts associated with two different actions. The analysis showed that the preferred development plan would reduce the direct and indirect impacts to wetlands. For these reasons, the preferred development plan appears to comply better with the spirit of the LDRs.

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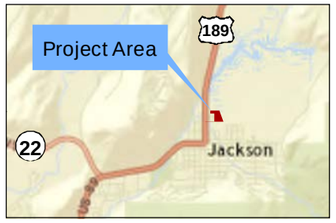
APPENDIX A – MAPS

MAP EXPLANATION



Project

County Platted Parcels

0 500 1,000 2,000 3,000

Feet

N W E S 4/27/2016	SCALE: 1:16,000 COORDINATE SYSTEM: NAD83 Wyoming West	DRAWING TITLE: **Vicinity and Topography** PROJECT: 60 Rosencrans S27, T41N, R116W Teton County, Wyoming

Y2 Consultants
Natural Resources
Civil, Structural &
Environmental Engineering
215 East Simpson, Jackson, WY 83001

Map 1. Vicinity and Topography of the 60 Rosencrans Parcel, Teton County, Wyoming.

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4/27/2016

SCALE: 1:1,320

COORDINATE SYSTEM: NAD83 Wyoming West

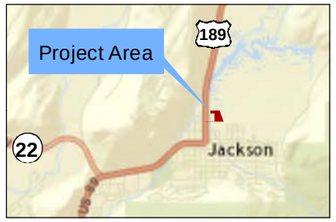
DRAWING TITLE: **2015 Aerial with Soil Types**

PROJECT: 60 Rosencrans
S27, T41N, R116W
Teton County, Wyoming

Y2 Consultants
Natural Resources
Civil, Structural &
Environmental Engineering
215 East Simpson, Jackson, WY 83001

Map 2. Soil types mapped for the 60 Rosencrans Parcel, Teton County, Wyoming.

MAP EXPLANATION



County Identified Surface Water

FEMA Flood Zones

- AE
- A
- AH
- AO

0 90 180 360 540
Feet

Flat Creek

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4/27/2016

SCALE: 1:2,952

COORDINATE SYSTEM: NAD83 Wyoming West

DRAWING TITLE: **Surface Hydrologic Features**

PROJECT: 60 Rosencrans
S27, T41N, R116W
Teton County, Wyoming

Y2 Consultants
Natural Resources
Civil, Structural &
Environmental Engineering
215 East Simpson, Jackson, WY 83001

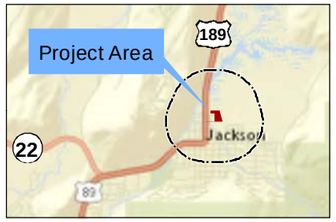
Map 3. Surface Hydrology, 60 Rosencrans Parcel, Teton County, Wyoming.

N W E S 6/9/2016	SCALE: 1:1,238 COORDINATE SYSTEM: NAD83 Wyoming West	DRAWING TITLE: **Aquatic Resource Inventory** PROJECT: 60 Rosencrans S27, T41N, R116W Teton County, Wyoming

Y2 Consultants
Natural Resources
Civil, Structural & Environmental Engineering
215 East Simpson, Jackson, WY 83001

Map 4. Aquatic Resource Inventory findings on the 60 Rosencrans Parcel, Teton County, Wyoming.

MAP EXPLANATION



Project Area

Cover Type

- Wetlands, Emergent, Degraded (9)
- Mesic, Other Mesic Types, Tall Shrub (8)
- Mesic, Other Mesic Types, Tall Forb (3)
- Nonmesic, Disturbed, Grassland (1)
- Wetlands, Scrub-Shrub, Irrigation Induced (0)
- Shallow Stock Pond (0)
- Wetlands, Emergent, Irrigation Induced (0)
- Disturbed/Developed (0)

0 35 70 140 210
Feet

N W E S

6/7/2016

SCALE: 1:1,131

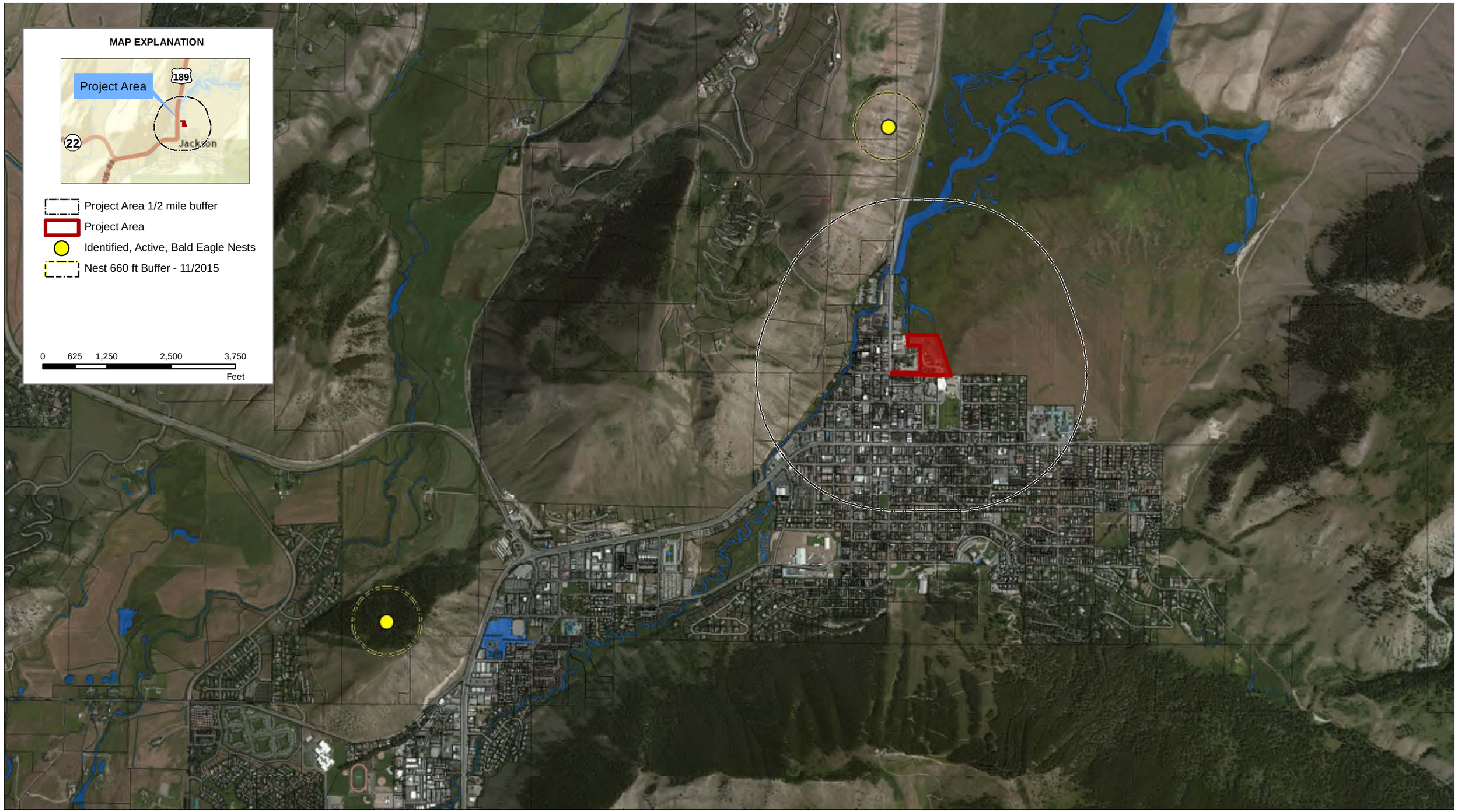
COORDINATE SYSTEM: NAD83 Wyoming West

DRAWING TITLE: **VEGETATIVE COVER TYPES**

PROJECT: 60 Rosencrans
S27, T41N, R116W
Teton County, Wyoming

Y2 Consultants
Natural Resources
Civil, Structural &
Environmental Engineering
215 East Simpson, Jackson, WY 83001

Map 5. Project area covertypes, 60 Rosencrans Parcel, Teton County, Wyoming.



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4/30/2016

SCALE: 1:20,656

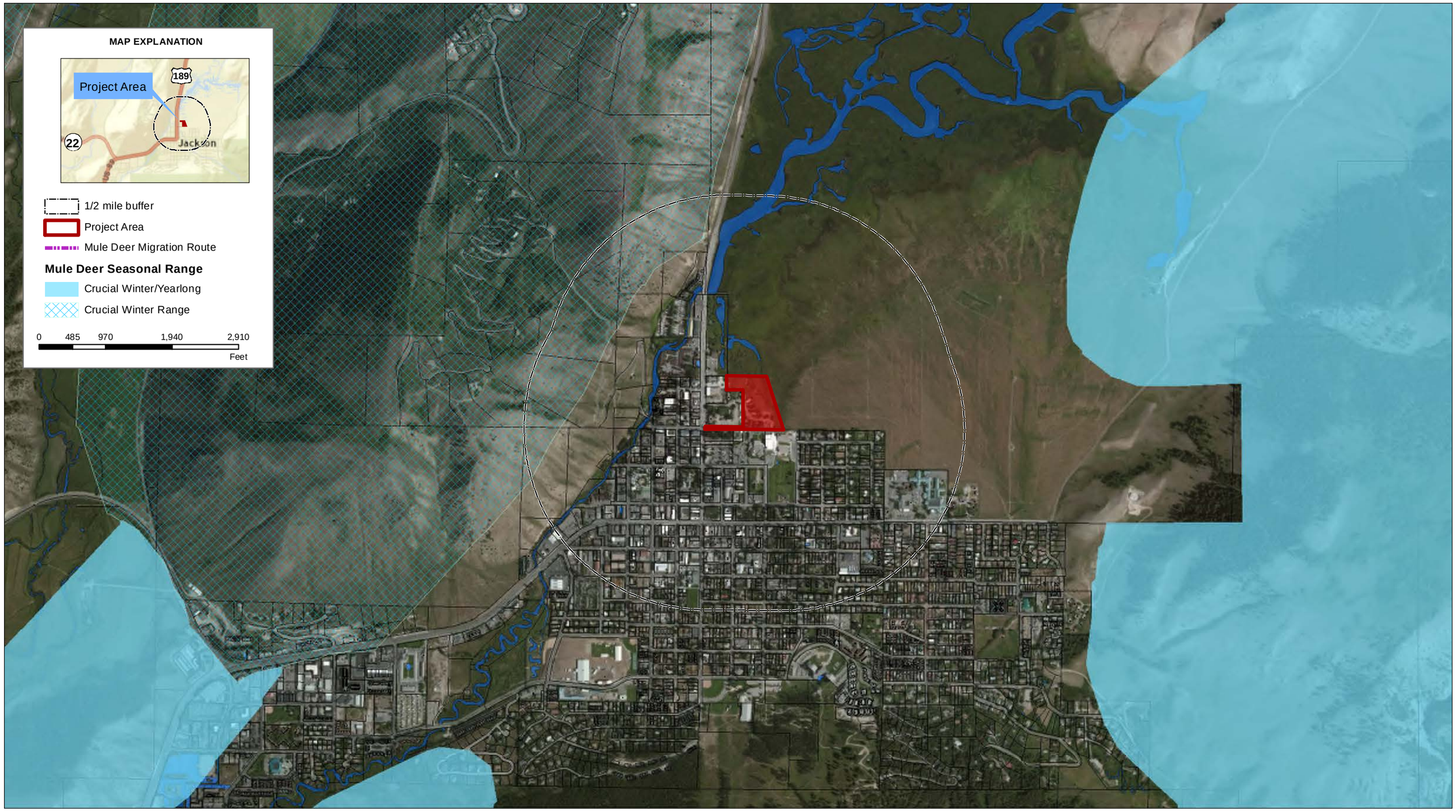
COORDINATE SYSTEM: NAD83 Wyoming West

DRAWING TITLE: **BALD EAGLE NESTS AND HABITAT**

PROJECT: 60 Rosencrans
S27, T41N, R116W
Teton County, Wyoming

Y2 Consultants
Natural Resources
Civil, Structural &
Environmental Engineering
215 East Simpson, Jackson, WY 83001

Map 6. Bald eagle Nests and Habitat in the vicinity of 60 Rosencrans Parcel, Teton County, Wyoming.



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4/27/2016

SCALE: 1:15,465

COORDINATE SYSTEM: NAD83 Wyoming West

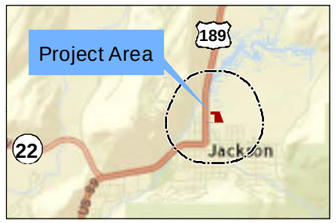
DRAWING TITLE: **MULE DEER MIGRATION & WINTER RANGE**

PROJECT: 60 Rosencrans
S27, T41N, R116W
Teton County, Wyoming

Y2 Consultants
Natural Resources
Civil, Structural &
Environmental Engineering
215 East Simpson, Jackson, WY 83001

Map 7. Mule deer migration and Winter Range in the vicinity of 60 Rosencrans Parcel, Teton County, Wyoming.

MAP EXPLANATION



1/2 mile buffer

Project Area

Elk Migration Route (2008)

Elk Seasonal Range

Crucial Winter/Yearlong

Crucial Winter Range

0 485 970 1,940 2,910

Feet

N

W E

S

4/27/2016

SCALE: 1:15,465

COORDINATE SYSTEM: NAD83 Wyoming West

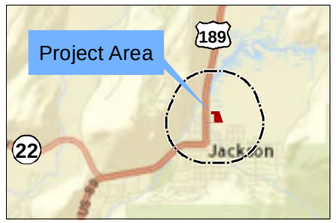
DRAWING TITLE: **ELK MIGRATION & WINTER RANGE**

PROJECT: 60 Rosencrans
S27, T41N, R116W
Teton County, Wyoming

Y2 Consultants
Natural Resources
Civil, Structural &
Environmental Engineering
215 East Simpson, Jackson, WY 83001

Map 8. Elk migration and Winter Range in the vicinity of 60 Rosencrans Parcel, Teton County, Wyoming.

MAP EXPLANATION



Project Area 1/2 mile buffer

Project Area

Tumpeter Swan Nests

0 625 1,250 2,500 3,750

Feet

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4/30/2016

SCALE: 1:20,656

COORDINATE SYSTEM: NAD83 Wyoming West

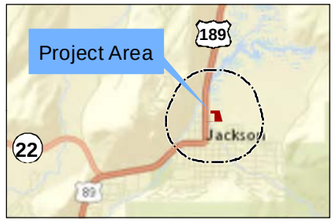
DRAWING TITLE: **TRUMPETER SWAN NESTS**

PROJECT: 60 Rosencrans
S27, T41N, R116W
Teton County, Wyoming

Y2 Consultants
Natural Resources
Civil, Structural &
Environmental Engineering
215 East Simpson, Jackson, WY 83001

Map 9. Trumpeter Swan nest in the vicinity of the 60 Rosencrans Parcel, Teton County, Wyoming.

MAP EXPLANATION



Project Area

Preferred - Draft Concept

- Apartment
- Attached Units
- Landscaping
- Pavement
- Sidewalk
- Single Family Unit
- Extents of Disturbance
- Raised Wetland Viewing Boardwalk

0 35 70 140 210
Feet

N W E S

6/3/2016

SCALE: 1:1,143

COORDINATE SYSTEM: NAD83 Wyoming West

DRAWING TITLE: **Preferred Alternative - Draft Concept Design**

PROJECT: 60 Rosencrans
S27, T41N, R116W
Teton County, Wyoming

Y2 Consultants
Natural Resources
Civil, Structural &
Environmental Engineering
215 East Simpson, Jackson, WY 83001

Map 10. Proposed Draft, Preferred Alternative Concept Design for the 60 Rosencrans Parcel, Teton County, Wyoming.

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6/3/2016

SCALE: 1:1,143

COORDINATE SYSTEM: NAD83 Wyoming West

DRAWING TITLE: **Alternative 1 - Draft Concept Design**

PROJECT: 60 Rosencrans
S27, T41N, R116W
Teton County, Wyoming

Y2 Consultants
Natural Resources
Civil, Structural &
Environmental Engineering
215 East Simpson, Jackson, WY 83001

Map 11. Alternative 1 Concept Design for the 60 Rosencrans Parcel, Teton County, Wyoming.

N W E S 6/6/2016	SCALE: 1:1,143 COORDINATE SYSTEM: NAD83 Wyoming West	DRAWING TITLE: **Alternative 2 - Wetland Area Impacts** PROJECT: 60 Rosencrans S27, T41N, R116W Teton County, Wyoming

Y2 Consultants
Natural Resources
Civil, Structural &
Environmental Engineering
215 East Simpson, Jackson, WY 83001

Map 12. Concept Design 2 for the 60 Rosencrans Parcel, Teton County, Wyoming.

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6/9/2016

SCALE: 1:1,101

COORDINATE SYSTEM: NAD83 Wyoming West

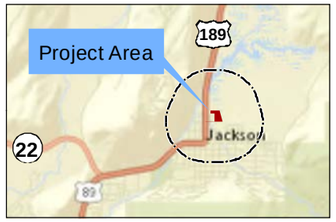
DRAWING TITLE: **CONCEPTUAL WETLAND MITIGATION AREA**

PROJECT: 60 Rosencrans
S27, T41N, R116W
Teton County, Wyoming

Y2 Consultants
Natural Resources
Civil, Structural &
Environmental Engineering
215 East Simpson, Jackson, WY 83001

Map 13. Conceptual Wetland Mitigation Area for 60 Rosencrans Parcel, Teton County, Wyoming.

MAP EXPLANATION



Project Area

Channel Cross-Sections by Location

60 Rosencrans PUD

NER

0 45 90 180 270

Feet

N

W E

S

6/9/2016

SCALE: 1:1,422

COORDINATE SYSTEM: NAD83 Wyoming West

DRAWING TITLE: **Cross-Sectional Widths by Location**

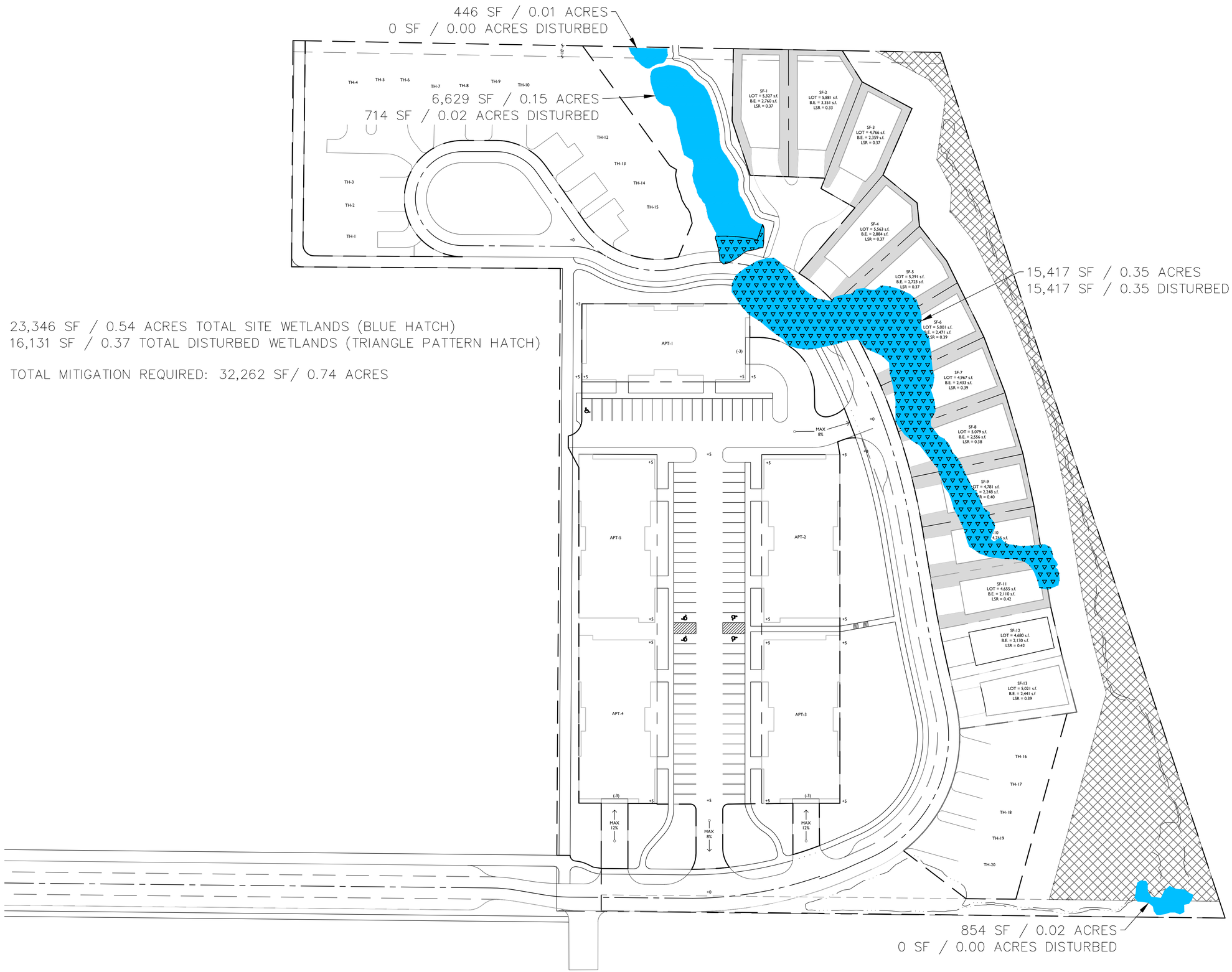
PROJECT: 60 Rosencrans
S27, T41N, R116W
Teton County, Wyoming

Y2 Consultants
Natural Resources
Civil, Structural &
Environmental Engineering
215 East Simpson, Jackson, WY 83001

Map 14. Channel cross-sectional widths by location for 60 Rosencrans Parcel, Teton County, Wyoming.

SECTION 7 – WETLAND INFORMATION

- **WETLAND MAP DATED 8-30-16**
- **AQUATIC RESOURCES INVENTORY**
- **DEPARTMENT OF ARMY VERIFICATION**
- **ZONING COMPLIANCE VERIFICATION**
- **GROUNDWATER LETTER TO TYLER SINCLAIR**



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DRAWN BY: HS
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JOB #: 15-123

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Ph: 307-733-2999

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60 Rosencrans
Jackson, Wyoming

WETLANDS

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Y2 Consultants, LLC.
Natural Resources
Civil, Structural &
Environmental Engineering

Thomas B. Johnson, P.E.
U.S. Army Corps of Engineers
Wyoming Regulatory Office
2232 Dell Range Boulevard, Suite 210
Cheyenne, Wyoming 82009

March 17, 2015

Reference: Bridger Teton National Forest Administration Site—Aquatic Resources Inventory

Dear Mr. Johnson,

On behalf of Bear Development, Y2 Consultants, LLC has prepared the attached Draft Aquatic Resources Inventory (ARI) report for your review in reference to 10.0 acres of a larger 15.3 acre parcel, the Bridger Teton National Forest Administration Site in Teton County, Wyoming. The parcel is currently owned by the United States Forest Service and is under contract to Bear Development (c/o S.R. Mills, Bear Development, 4011 80th Street, Kenosha, WI 53142).

The ARI report is attached, and the inventory revealed that about 0.97 acres of the study area conformed to wetland definitional criteria per the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0). Delineated wetlands were classified as palustrine emergent or palustrine scrub-shrub**.** Please review the enclosed report and verify the results.

Original correspondences regarding this Aquatic Resources Inventory can be sent to Ms. Tricia O'Connor, Forest Supervisor, U.S. Forest Service, Bridger-Teton National Forest, P.O. Box 1888, Jackson, Wyoming 83001, with copies of your correspondence(s) sent to Bear Development (c/o S.R. Mills, Bear Development, 4011 80th Street, Kenosha, WI 53142) and Y2 Consultants, LLC (P.O. Box 2674, Jackson, Wyoming 83001). If you have any questions or need any more information please contact me at 307-733-2999.

Sincerely,

Brenda K Younkin

Brenda Younkin
Owner
Tel: 307-733-2999
Brenda@Y2Consultants.com

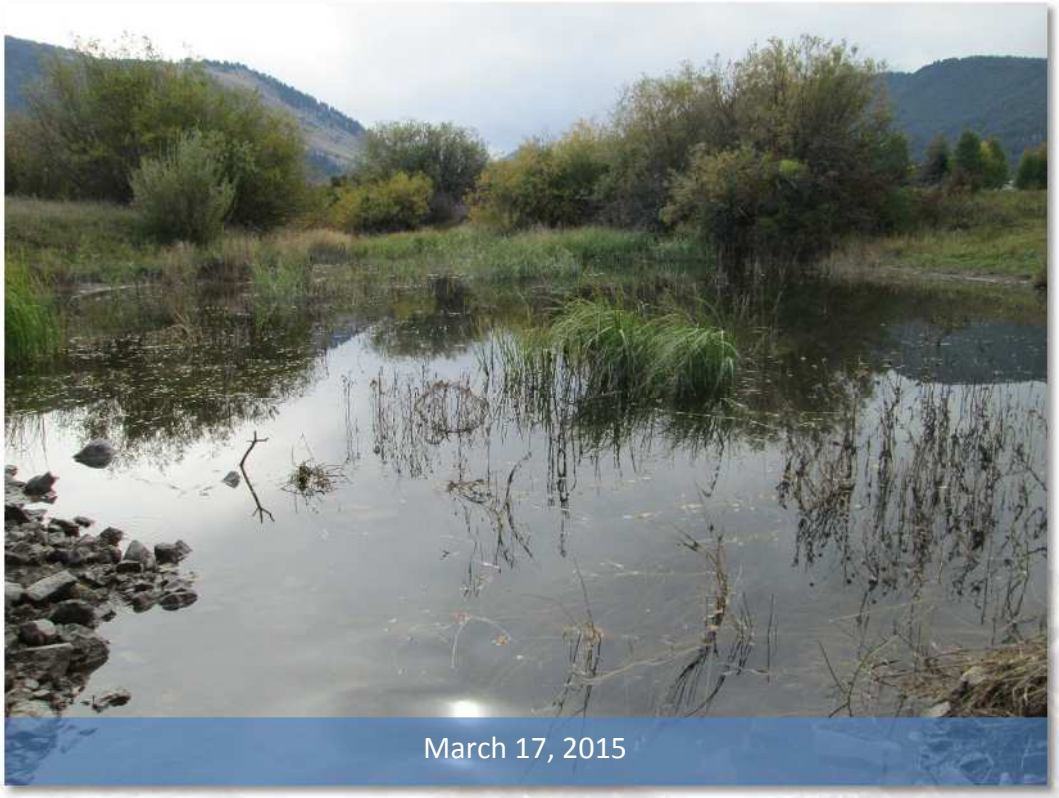
[Attachment: Aquatic Resources Inventory]

AQUATIC RESOURCES INVENTORY

10 acre Study Area

located within

T. N1/2SW1/4 SEC. 27, TWP. 41, RNG. 116
BRIDGER TETON FOREST SERVICE ADMINISTRATION SITE
TETON COUNTY, WYOMING



March 17, 2015

Prepared For:
S.R. Mills
Bear Development
4011 80th Street
Kenosha, WI 53142

Prepared By:

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EXECUTIVE SUMMARY

A routine Aquatic Resources Inventory (ARI) was conducted on a 10 acre portion of the Bridger Teton National Forest (BTNF) Administration Site in Teton County, Wyoming in September 2014. The delineation was conducted by wetland scientist staff for Y2 Consultants, LLC at the request of Pierson Land Works, LLC.

The purpose of the study was to determine if any wetlands, as per wetland definitions in the 1987 U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual (U.S. Army Corps of Engineers, 1987), occurred within the project area; and if present, to determine the locations and boundaries of all wetlands within the project area. Final determination of wetland presence, boundaries, and jurisdiction under Section 404 of the Federal Clean Water Act is the privilege and responsibility of the USACE.

WETLANDS

DEFINITION OF A WETLAND & WETLAND PROTECTION

Wetlands according to the USACE under the Clean Water Act are defined as areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (U.S. Army Corps of Engineers, 1987).

Topographically, wetlands are transitional areas between well-drained uplands and permanently or periodically flooded aquatic habitats. Wetlands serve important ecosystem functions. Such ecological functions include food chain production, unique habitat, nesting and spawning sites, rearing and resting landscapes for aquatic and land species. They also provide function through protection of adjacent areas from erosion, storage for storm and flood waters, natural recharge where ground and surface water are interconnected and natural water filtration and purification functions.

WETLAND PROTECTION

Given that wetlands provide beneficial services considered valuable—as a result of their inherent and unique ecological characteristics—and because of the tremendous threats to existing wetland resources, the federal government enacted the Clean Water Act in 1972. The Act, specifically Section 404, grants protection to "Waters of the United States, including wetlands" and prohibits activities that convert wetlands to upland or open water environments. Depending on the purpose of a project and characteristics of a specific wetland, some impacts enhancements and alterations may be allowed, but only after project evaluation and permit issuance by the ACOE and other local agencies.

Other federal agencies are also involved in regulations associated with Section 404 of the Clean Water Act. The U.S. Fish and Wildlife Service reviews wetland permit applications to evaluate any potential impacts a project may have on species listed as threatened or endangered under the Endangered Species Act. The U.S. Environmental Protection Agency also reviews all permit applications submitted to the ACOE and holds the legal authority to enforce wetland regulations.

The Town of Jackson, Wyoming, has further enacted wetland protection measures. The Town of Jackson's Land Development Regulations (LDRs), require a 30-foot setback from all jurisdictional wetlands (Jackson, Teton County, 2014). Within this setback zone no development is allowed unless no other alternatives exist. Wetlands that are irrigation induced are not protected by the LDRs (Jackson, Teton County, 2014).

DETERMINATION AND DELINEATION

Site-specific wetland identification and delineation requires the evaluation of three wetland parameters, specifically vegetation, soils, and hydrology. All three parameters must meet the specific definitional criteria described in the ACOE Wetland Delineation Manual (U.S. Army Corps of Engineers, 1987).

Wetland Vegetation & Indicators

To meet wetland vegetation criteria, an area must be dominated by plants adapted for survival in saturated soil conditions (i.e. hydrophytes). All plants known to occur in or near wetlands have been assigned a wetland indicator status. This status generally reflects the frequency at which a particular species occurs in a wetland as outlined below:

Wetland indicator status	Frequency of occurrence in a wetland
Upland (UPL)	< 1%
Facultative-upland (FACU)	1%-33%
Facultative (FAC)	> 33%-67%
Facultative-wetland (FACW)	> 67%-99%
Obligate wetland (OBL)	> 99%-100%

Wetland Soils & Indicators

A wetland or hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper horizons. Hydric soil characteristics develop over long periods of time. Indicators of hydric soils include such characteristics as a dull blue-gray color (gleyed) and/or reddish brown speckles or nodules (ferrous iron concentrations). In order to meet definitional criteria, these hydric soil indicators must be at or near the soil surface (U.S. Army Corps of Engineers, 1987).

Wetland Hydrology & Indicators

Wetland hydrology refers to the presence of water at or above the soil surface for a sufficient period of the year to significantly influence the plant types and soils that occur in the area. An area is required to be inundated or saturated to the surface for at least 5% of the growing season in most years (U.S. Army Corps of Engineers, 1987). Both running water (lotic) and standing water (lentic) as well as ground water, surface water, and intermittent water can support wetlands. Lotic wetlands are associated with creek, stream, and river channels and floodplains, while lentic wetlands are associated with lakes, vernal pools, ponds, seeps, marshes, and bogs.

Although both "definitional" and "jurisdictional" wetlands meet specific vegetative, soil, and hydrologic criteria, the latter are wetlands determined by ACOE personnel as subject to the regulations inherent in Section 404 of the Clean Water Act. Determination of a definitional wetland is a technical process, while determination of a jurisdictional wetland is a decision based on an examination of the driving forces, current conditions, and relationship of a definitional wetland in relation to its surroundings.

BTNF ADMIN. SITE STUDY AREA

LOCATION AND PHYSIOGRAPHY

The ARI project area consists of a 10 acre portion of a 15.3 acre parcel owned by the BTNF, identified as the "Admin. Site" in Town and County records and will hence be utilized for describing the study area for this report. The project area is located approximately 0.2 miles north of Jackson in Teton County, Wyoming (T41N, R116W, Section 27; Jackson, Wyoming Quadrangle; Appendix A – Map 1). Access to the property is gained by traveling north from Jackson on US Highway 26/89 on North Cache Street.

The project area has an average elevation of 6,218 ft and is characterized by relatively flat terrain formed during the deposition of gravel throughout the valley 60-80 million years ago by major ancestral watercourses. Melting glaciers and the accompanying scouring effects of runoff leveled the valley and deposited silt, clay, and loams throughout the area. Drainage within the project area generally trends slightly southeasterly (Pierson Land Works, 2014).

LAND USE

The 10 acre study portion of the 15.3 acre BTNF Admin. parcel has been heavily disturbed by human activity. Historic uses include livestock grazing, ranching and development of permanent and semi-permanent structures and corrals. Approximately 4.5 acres have been

developed with roads, utility installations and concrete pads for semi-permanent housing structures. A portion of the site continues to be grazed by horses throughout various portions of the summer and mowing occurs within the upland field on the site. Damming, berming and other manipulation activities have occurred within the riparian zones for over fifty years (Appendix A – Map 9). Historic dumping is evident in portions of the parcel with debris including large metal scraps and cement blocks (See Appendix B). To the north and east, the site is bordered by the National Elk Refuge. A tall (>8 ft) wildlife fence runs along the eastern extent of the property and excludes winter grazing by elk. A secondary barbed-wire fence runs from north to south within the parcel, set back approximately 80ft from the east boundary. Various horse and man-utilized trails run throughout the property. Many of the grasses are non-native agricultural species and a few cultivated shrubs are present.

SURFACE HYDROLOGY

Surface hydrologic features within the project area consist of Flat Creek and Cache Creek (Appendix A – Map 3).

Flat Creek is the largest adjacent water feature which flows southwesterly approximately 0.1 mile west of the project area. Flat Creek originates at an elevation of about 9,600 ft. in the Bridger-Teton National Forest in the Gros Ventre Mountains east of the refuge and drains approximately 120 square miles. The Creek enters the National Elk Refuge approximately 3 miles north of the project area, and then continues to flow toward the west through the town of Jackson to its confluence with the Snake River. Flows vary seasonally due to runoff, input of irrigation water diverted from the Gros Ventre River, diversions by irrigators, and losses to infiltration. The porous nature of refuge soils through which a section of Flat Creek flows causes high infiltration losses and results in a seasonally dry channel bed in this area (U.S. Fish and Wildlife Service, National Elk Refuge , 2009).

Cache Creek is a perennial stream that originates in Cache Creek Basin flowing through the town of Jackson to its confluence with Flat Creek. Cache Creek as many watercourses in the region, has a snowmelt-dominated hydrograph where mean monthly discharge ranges from 0.11 m^3/s during base flow in February to 1.4 m^3/s during snowmelt runoff in June (Galbraith, Svalberg, & Tart, 1998). Historic aerial photography shows that a portion of Cache Creek at one point (prior to 1967) flowed through the east portion of the project area; however, as levels of development, re-alignments and diversions have increased over the past half century as the town has grown, the relic channel no longer has a direct connection to Flat Creek through the project area.

ADJACENT IRRIGATION ACTIVITIES

Irrigation activities proximate to the study area include both flood irrigation and hand line sprinkler irrigation within the National Elk Refuge (NER), which directly abuts the BTNF site on the north and east. Congress established the National Elk Refuge in 1912 as a "winter game (elk) reserve." In 1927 the Refuge purpose was expanded to, "…for grazing of, and as a refuge for, American elk and other big game animals…" (U.S. Fish and Wildlife Service, National Elk Refuge , 2009). Historically, the refuge was first flood irrigated for agricultural use by homesteaders, and then later after the establishment of the Refuge irrigation was initiated to increase standing forage for wintering elk. In the time period between 1996 and 2009, it was documented that the NER irrigated an average of 930 agricultural acres per year (U.S. Fish and Wildlife Service, National Elk Refuge , 2009). Overall, the Refuge has about 105 cubic feet per second (cfs) of adjudicated water rights for about 7,500 acres of irrigable land. The major water rights pertain to the Gros Ventre River (5.0 cfs), Flat Creek (74.4 cfs), Cache Creek (7.2 cfs), and Nowlin Creek (4.4 cfs) (U.S. Fish and Wildlife Service, National Elk Refuge , 2009). Much of the irrigation that occurs in the southern part of the NER occurs directly proximate and upslope from the study area in the Headquarters Unit (296 acres). Their current water use diverts 2.74 cfs from Cache Creek for irrigation of this unit.

PROJECT AREA SOILS

Soil types mapped within the project area include Cryaquolls-Cryofibrists and Greyback gravelly loam with 0-3 percent slopes (Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture, 2014). Cryaquolls-Cryofibrists soils are listed as hydric for Teton County (Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture, 2014; Appendix A – Map 4).

Cryaquolls-Cryofibrists soils are generally in seep areas surrounding springs and old stream oxbows (Young, 1982). They formed in alluvium at elevations of 6,000 to 7,000 feet and slope less than 1 percent. Permeability in these soils is moderate to slow. The available water capacity is moderate to high. The water table is at or near the surface during most of the year. Roots penetrate to a depth of 60 inches or more. Surface runoff is very slow and erosion potential is slight. Profiles of Cryaquolls-Cryofibrists are variable (Young, 1982). This soil type comprises approximately 35% of the study site.

Greyback gravelly loam (0-3 percent slopes) comprises the majority of the parcel. This is a very deep, somewhat excessively drained soil (Young, 1982). It formed in alluvium at elevations of 6,000 to 7,000 feet. The typical profile of Greyback soil is a surface layer of grayish brown gravelly loam 13 inches thick with a sub layer of very gravelly sandy loam (Young, 1982). Permeability is moderately rapid and the available water capacity is low (Young, 1982). Roots

penetrate to a depth of 60 inches or more (Young, 1982). Surface runoff is very slow and erosion hazard slight (Young, 1982).

PROJECT AREA VEGETATION COVERTYPES

The upland herbaceous communities on the parcel are dominated by non-native pasture grasses and forbs typical of meadows and disturbed areas. Drier dominants include Kentucky bluegrass (*Poa pratensis*), common timothy (*Phleum pratense*), white clover (*Trifolium repens*), common dandelion (*Taraxacum officinale*), and smooth brome (*Bromus inermis*). Understory dominants on more hydric sites include Creeping meadow foxtail (*Alopecurus arundinaceus*) Baltic rush (*Juncus balticus*), beaked sedge (*Carex utriculata*), Nebraska sedge (*Carex nebrascensis*), meadow foxtail (*Alopecurus pratensis*), golden cup potentilla (*Potentilla gracilis*) and Northern bedstraw (*Galium boreale*). Various willows (*Salix* spp.) border most depressional areas and water features.

CLIMATE

The 'growing season' for Jackson (WETs Station, Jackson, WY4910) according to the United States Department of Agriculture(USDA) WETS table is between 37-47 days (based off of years of record from 1971-2000) (NRCS, 2004). Average temperature annually is just 39°F and average precipitation is 16.78 inches.

PRIOR DELINEATIONS

The larger 15.3 acre BTNF Admin Site has been the subject of prior delineations. The most recent know delineation was conducted in 2009 by the Bridger-Teton National Forest which was submitted in 2011 (USACE reference number unknown). The delineation's findings determined 1.37 acres (estimated for this report by georeferencing the .pdf version of the submitted map in ArcMap 10.0) of the parcel met the definition of a wetland with five isolated wetlands identified (Appendix A – Map 10). Analysis performed for the current inventory identified slightly less (.97) total acreage of definitional wetlands. Vegetation identified within the study area were generally similar, however; hydric soil indicators across the parcel appeared to differ slightly in terms of characterization.

BTNF ADMIN. SITE WETLAND DELINEATION

METHODS

This Aquatic Resources Inventory was completed according to a USACE Wyoming Regulatory Office Aquatic Resources Inventory Guidance memo dated May 10, 2011. The ARI included a routine wetland delineation using the 1987 USACE Wetland Delineation Manual and the Western Mountains, Valleys, and Coast Regional Supplement.

Preliminary data for the wetland delineation were gathered from several sources prior to the onsite inspection including the US Fish and Wildlife Service's National Wetlands Inventory (NWI) mapping, the Teton County soil survey (Young, 1982), the Teton County Hydric Soils List (Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture, 2014), the U.S. Army Corps of Engineers 2014 National Wetland Plant List, version 3.24 (Lichvar, R.W., M. Butterwick, N.C. Melvin, and W.N. Kirchner, 2014) and aerial photography (Teton Conservation District).

Onsite inspection was conducted September 15-17, 2014. Field data associated with the wetland delineation were collected from fourteen (14) sample plots distributed as to be representative of vegetative communities and topographical variation found in the project area. Wetland boundaries were mapped using a resource grade Trimble GPS unit. Survey results were corrected using SBAS (Satellite Based Augmentation Systems) such that collected data is accurate to less than 3 meters. Wetland boundaries have been digitally mapped onto color aerial photography using ArcGIS 10.3 and are included herein. Photographic documentation of the wetlands on the property was also collected and is presented in Appendix B.

RESULTS

The National Wetlands Inventory (NWI) mapping indicates the presence of one small Freshwater Pond within the project area (Appendix A – Map 5). Several other similar wetlands are indicated to occur adjacent to the study area. Since NWI maps only show a rough estimate of the presence and geographic extent of wetland communities in a given area, NWI data should not be considered an accurate depiction of the wetland communities on the study area.

Field data collected during this study confirmed the presence of one freshwater ponded area as well as the presence of six definitional wetlands. Subsequent delineation and mapping of wetland boundaries revealed that approximately .97 acres (9.7%) of the project area conformed to the definitional criteria for wetlands as per the 1987 USACE Manual and the

Regional Supplement. Six (6) of the sample plots met all three wetland criteria and were determined to be wetlands, while the remaining eight (8) sample plots did not and were determined to be uplands (Table 1). Wetland locations and sample plots are depicted in Appendix A – Map 6. The following describes the vegetation, soils and hydrology of these aquatic sites and adjacent uplands.

Vegetation – Wetland vegetation on the Study Area consisted of herbaceous and scrub/shrub stratum. Wetland vegetation was dominated by *Salix spp., Carex utriculata, Carex nebrascensis, Glyceria grandis, Phalaris arundinacea, Elymus repens, Alopecurus arundinaceus, Equisetum hyemale, Juncus balticus, Potentilla gracilis, Symphyotrichm lanceolatum and Poa pratensis*. A complete list of plant species found at sample plots are listed on the respective data sheets (Appendix E).

Soils – Soil types occurring on the project area are presented in Appendix A— Map 4. Hydric indicators for soils found in delineated wetlands exhibited gleyed or low chroma color, redox concretions, and a listing on the local and national hydric inclusions soils list. Soil characteristics associated with the 14 sample plots are presented on the respective data sheets (Appendix D).

Hydrology – Subsurface wetland hydrological indicators observed in wetlands include saturation and oxidized rhizospheres in the upper 12 inches of the soil profile, topographical drainage patterns, geographic patterns and dry season water tables. Hydrologic indicators associated with the 14 sample plots are presented on the respective data sheets (Appendix D).

The site investigation was performed during the dry season, which indicates that ground water and surface water elevations are lower compared to wetter times of the year. Higher water tables and surface waters provide the wetland hydrology in the Study Area during the growing season from May through August.

Table 1. Summary of individual sample plots and wetland criteria for the 10 acre BTNF Admin. Site.

Sample Point	Hydrophytes	Hydric Soils	Wetland Hydrology	Wetland Determination
S1	Y	Y	Y	Y
S2	Y	N	N	N
S3	Y	N	N	N
S4	Y	Y	Y	Y
S5	Y	Y	Y	Y
S6	Y	Y	N	N
S7	Y	N	N	N
S8	Y	N	N	N
S9	Y	Y	Y	Y

S10	Y	N	N	N
S11	Y	Y	Y	Y
S12	Y	N	N	N
S13	Y	N	Y	N
S14	Y	Y	Y	Y

Wetland Types – Palustrine Emergent (PEM1) and Scrub-Shrub (PSS1) wetland types were found to be present as classified according to the Cowardin et al. (1979) classification system. Palustrine refers to wetlands that are not tidal. Emergent wetlands are characterized by erect, rooted, herbaceous hydrophytic plants, excluding mosses and lichens (Cowardin, 1979). According to the standard definition, wetland vegetation must be present for most of the growing season in most years and is usually dominated by perennial plants. Palustrine emergent wetlands may exist in a variety of geomorphic settings and water regimes, both of which strongly influence plant species composition. Palustrine emergent wetlands within the project area occur along relict channels and make up 0.52 acres of the total .97 acres of wetlands. The Class scrub-shrub wetland made up, 0.45 acres and is described by areas dominated by woody vegetation less than 6 m (20 feet) tall. The species in this class include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions (Cowardin, 1979).

DESCRIPTIONS OF SPECIFIC AQUATIC RESOURCES

Both natural conditions and, to a larger degree, anthropogenic land alterations and activities have influenced the creation, perpetuation and expansion of wetlands within the project area. Existing proximate and adjacent land uses, which consist of agricultural activities, are at least 5 years old and are defined by the 1987 USACE Manual as “normal circumstance”. For the purposes of this report wetlands have been lumped into 2 general groupings. A listing of wetlands and a discussion of specific characteristics of the individual wetland groups is provided below.

Table 2. Summary of individual aquatic resource areas (ac), and corresponding classification, BTNF Admin Site, Teton County, Wyoming.

Aquatic Resource Inventory ID	Acres	Aquatic Resource Type	Cowardian Classification	Sample Point IDs
1	0.01	Palustrine Emergent	PEM1	

2	0.15	Palustrine Emergent	PEM1	S1,2,3,6,7,8
3	0.35	Palustrine Emergent	PEM1	S4,5,9,10
4	0.08	Freshwater Pond/Palustrine Unconsolidated Bottom	PUB3	n/a
5	0.13	Palustrine Scrub-Shrub	PSS1	S12
6	0.03	Palustrine Scrub-Shrub	PSS1	S13
7	0.29	Palustrine Scrub-Shrub	PSS1	S14
total acreage	*1.05*			

ARI ID 1, 2 and 3 – This group of wetlands are considered Palustrine Emergent wetlands (Cowardin, 1979) and exist in the remnant Cache Creek channel and along the fringe of a freshwater pond (Appendix A – Map 7). They make up a total of 0.52 acres of the total wetland area on the 10 acre portion of the BTNF Administration Site. These features no longer receive direct surface flow contribution from Cache Creek and appear to be hydrologically supported by groundwater upwelling.

The area surrounding these wetland sites have been substantially disturbed by agricultural activities that have widened the remnant channel form and potentially the wetland areal extent. Evidence of widening is supported by comparison of the channel width within the Admin. Site with that directly downstream of the site on the National Elk Refuge (NER), which has not experienced as heavy utilization or alteration (See Appendix A – Map 8). Average cross-sectional width, as determined by aerial analysis, for the remnant channel within the lower NER is approximately 17 ft. in length, whereas in the much more heavily disturbed and irrigation influenced BTNF Admin. site, the average width is approximately 40 feet.

ARI ID 4 – This is a surface water feature defined as a Palustrine Unconsolidated Bottom type (Cowardin, 1979), or more simply by the National Wetland Inventory, a freshwater pond. The surface water feature on the site was created through conversion of Cache Creek from a free flowing creek to a pond via damming, assumedly for stock purposes. Aerial analysis shows that the conversion occurred sometime between 1945 and 1955 (Appendix A – Map 9).

ARI ID 5, 6, & 7 – Three, generally isolated scrub-shrub wetlands totaling 0.45 acres are positioned in depressional areas or within the relic Cache Creek to Flat Creek connector channel. At the time of the delineation, the wetlands appeared to be primarily surface-water depressional collecting areas. While some portions of the depressions are clearly uplands other

portions are slightly lower in elevation and are conducive to wetland formation and maintenance, the depression outlets are weakly defined and generally trend northward. Any direct surface connectivity is limited due to both natural and anthropomorphic berms. The remnant channels in which these wetlands are positioned are no longer a conduit for water due to upstream diversions that have been in place for over fifty years. No springs or seeps appear to influence these areas (Appendix A-Map 7).

The area surrounding wetlands 5 and 6 in particularly has been heavily degraded by dumping and through agricultural activities. Concrete slabs, rusted metal scraps and vegetation slash piles comprise the debris that has been dumped in these depressional features.

WETLAND FUNCTIONALITY

In order to more fully characterize and determine ecosystem functionality and values of wetlands within the study site, a Wetland Assessment was performed on all definitional wetlands identified within the Aquatic Resource Inventory. The wetland assessment employed herein is based off of Montana Department of Fish, Wildlife & Parks (MFWP) wetland evaluation method for highway projects in Montana (Berglund & McEldowney, 2008) and has been altered so as to be relevant for this study. The Montana Wetland Assessment Method (MWAM) was primarily designed to address highway and other linear projects; however, MWAM applicability is not limited to transportation corridors. It has been and can be applied to a variety of other project types (Berglund & McEldowney, 2008). The WMAM is designed to evaluate wetland functions and values, and is not intended to delineate wetland boundaries.

Objectives of this assessment are to:

- Meet the needs of local regulatory agencies in terms of rating wetland functions and values for the disturbance-related projects and mitigation projects;
- Minimize subjectivity and variability between evaluators;
- Allows for comparison of different wetland types;
- Provides a means of rating wetlands to facilitate the prioritization of impact avoidance and minimization measures; and
- Incorporates current and relevant information on wetland functions.

OVERVIEW

Wetland functions are inherent self-sustaining properties of a wetland ecosystem that exist in the absence of society, and relate to ecological significance without regard to subjective human values (Berglund & McEldowney, 2008). The USACE Regulatory Division must consider impacts to wetland functions when evaluating section 404b of the Clean Water Act permit applications. Values are benefits that derive from either one or more functions and the physical characteristics associated with a wetland (Berglund & McEldowney, 2008).

MWAM assessments result in a relative rating for up to 12 functions and values. This rating provides no information on the rate at which an applicable function (i.e. flood attenuation, sediment/nutrient/toxicant retention and removal, production export, groundwater discharge/recharge et.) is performed. The actual rate at which a "measureable" function is performed is dependent on site specific conditions, requires specialized equipment and repeated measurements, and is beyond the scope of this methodology or report (Berglund & McEldowney, 2008).

Depending on the wetland being evaluated, up to 12 functions/values can be evaluated through the use of MWAM, including:

- Habitat for federally listed or proposed threatened or endangered plant or animals
- Habitat for plants or animals listed as Species of Concern by the State's Natural Heritage Program
- General wildlife habitat
- General fish habitat
- Flood attenuation
- Long and short-term surface water storage
- Sediment/nutrient/toxicant retention and or/removal
- Sediment/shoreline stabilization
- Production export/terrestrial and aquatic food chain support
- Groundwater discharge/recharge
- Uniqueness
- Recreation/education potential

Based off a scoring of various factors relating to the site specific functions/values present, the wetland can be categorized in one of four ways.

Category I wetlands are of exceptionally high quality and are generally rare to uncommon in the state or are important from a regulatory standpoint. Category I wetlands can: provide primary habitat for federally listed or proposed threatened or endangered species; represent a high quality example of a rare wetland type; provide irreplaceable ecological functions (e.g., are not replaceable within a human lifetime if at all); exhibit exceptionally high flood attenuation capability and provide many functions and values. Category II wetlands are more common than Category I wetlands, and are those that provide habitat for sensitive plants or animals, function at very high levels for wildlife/fish habitat, are unique in a given region, or are assigned high ratings for many of the assessed functions and values. Category III wetlands are more common and generally less diverse than Category I and II wetlands. They can provide some quality functions and values, but not to the level that Category I and II wetlands do. Category IV

wetlands are generally small, isolated and lack vegetative diversity. These sites provide little in the way of wildlife habitat and are often directly or indirectly disturbed (Berglund & McEldowney, 2008).

In assessment of function and values for the BTNF Administration site in Teton County, Wyoming, all appropriate MWAM functions/values were evaluated.

In terms of habitat functioning, duration of surface water, vegetated class cover, levels of disturbance, adjacent upland food sources, and uniqueness of habitat were all.

No species receiving protection under the provisions of the Endangered Species Act are expected to reside within the property boundaries or within its immediate vicinity.

Habitat potential and utilization for plants or animals listed by Wyoming as a species of concern was also assessed. No known vascular or nonvascular plant species from the Wyoming Plant Species of Concern List (2012) in the Wyoming natural Diversity Database is present within the study site (WYNDD, 2012). No recorded observations are available for any other mammals on site that are listed as a Mammal Species of Concern in the Wyoming Natural Diversity Database.

Five wildlife species are designated as 'Species of Concern' by Teton County in the Land Development Regulations: Trumpeter Swans (*Cygnus buccinators*), Bald Eagle (*Haliaeetus leucocephalus*), Snake River fine-spotted cutthroat trout (*Oncorhynchus clarki behnkei*), Mule Deer (*Odocoileus hemionus*), Moose (*Alces alces*) and Elk (*Cervus Canadensis*) (Jackson-Teton County, 1994)). None of these species are likely to use the property's, primarily agricultural, habitat extensively primarily due to its proximity to urban development and wildlife fencing.

Given the degraded wetland habitat and minimal open water on the study site, Trumpeter Swans are not expected to utilize the project area, preferring the high quality habitat and open water north of the parcel on the National Elk Refuge (NER). No known bald eagle nests are located near the project site and there is no protected crucial winter foraging habitat for eagles within the project area (WGFD, 2011). Other species (elk and mule deer) may minimally utilize the property as a movement corridor from the high density developed town area to the National Elk Refuge; however, the extensive wildlife fencing put in place by the NER heavily dissuades this movement from east to west into the study parcel.

Wetland features on site are not considered critical habitat or spawning areas for Snake River fine-spotted cutthroat trout.

Overall vegetation and wildlife habitat was given 'low' ratings rating according to metrics utilized in the WMAM (see Function & Value Variables A, B and C of the WMAM Assessment Form in Appendix G).

Physical function evaluation was rated slightly higher. The ability of the wetland area to retain sediments and retain and remove excess nutrients and toxicants was given a 'high' rating (0.9 actual functional points) for its ability to receive these pollutants through influx of surface or ground water or direct input.

Short term and long term surface water storage was assessed for the potential of the wetlands to capture, retain and make available surface water originating from flooding, precipitation, upland sheetflow or subsurface groundwater flow. Given the low acreage of wetlands in the study area and that surface water in the wetlands are seasonal/intermittent, the surface water storage rating is considered 'low' (0.3 actual functional points).

Groundwater discharge and recharge potential function/value were assessed by observations of springs on the property, the presence of an outlet, but no inlet for wetland areas and by duration of saturation from groundwater discharge; corresponding to a 'medium' rating.

SUMMARY AND CONCLUSIONS

An aquatic resource inventory and routine wetland delineation was conducted on a 10 acre portion of the BTNF Admin. Site in Teton County, Wyoming. Field data collected from 14 sample plots showed that approximately .97 ac of the project area conformed to the definitional criteria for wetlands as per the ACOE Wetland Delineation Manual.

In completion of the wetland assessment (based off of the MWAM), the .97 acres of definitional wetlands identified within the 10 acre BTNF Administrative Site are considered Category IV wetlands (see attached assessment form in Appendix G). A category IV rating indicates overall reduced functioning/value, little usable habitat, degraded from disturbance, a lack of uniqueness for the landscape in the region and diminished plant community compositions. This rating includes an assessment of all wetland areas including those assumed to be irrigation induced, ponded or otherwise impounded and degraded.

REGULATORY REQUIREMENTS

Pursuant to the approval by the USACE of the said delineation, on-site wetlands and their associated buffers may constrain the development potential within the project area. Any development plans must address impacts to the wetlands, waterways, and their associated buffers, and permits will be required to fill or modify wetlands or other waters of the U.S. The Town of Jackson, Wyoming, further requires wetland permits via the LDRs. Wetlands that are irrigation induced do not require a permit by the Town (Jackson, Teton County, 2014). Both permitting agencies require that a wetland fill permit applicant demonstrate that wetlands have been avoided or impacts minimized to the maximum extent practicable.

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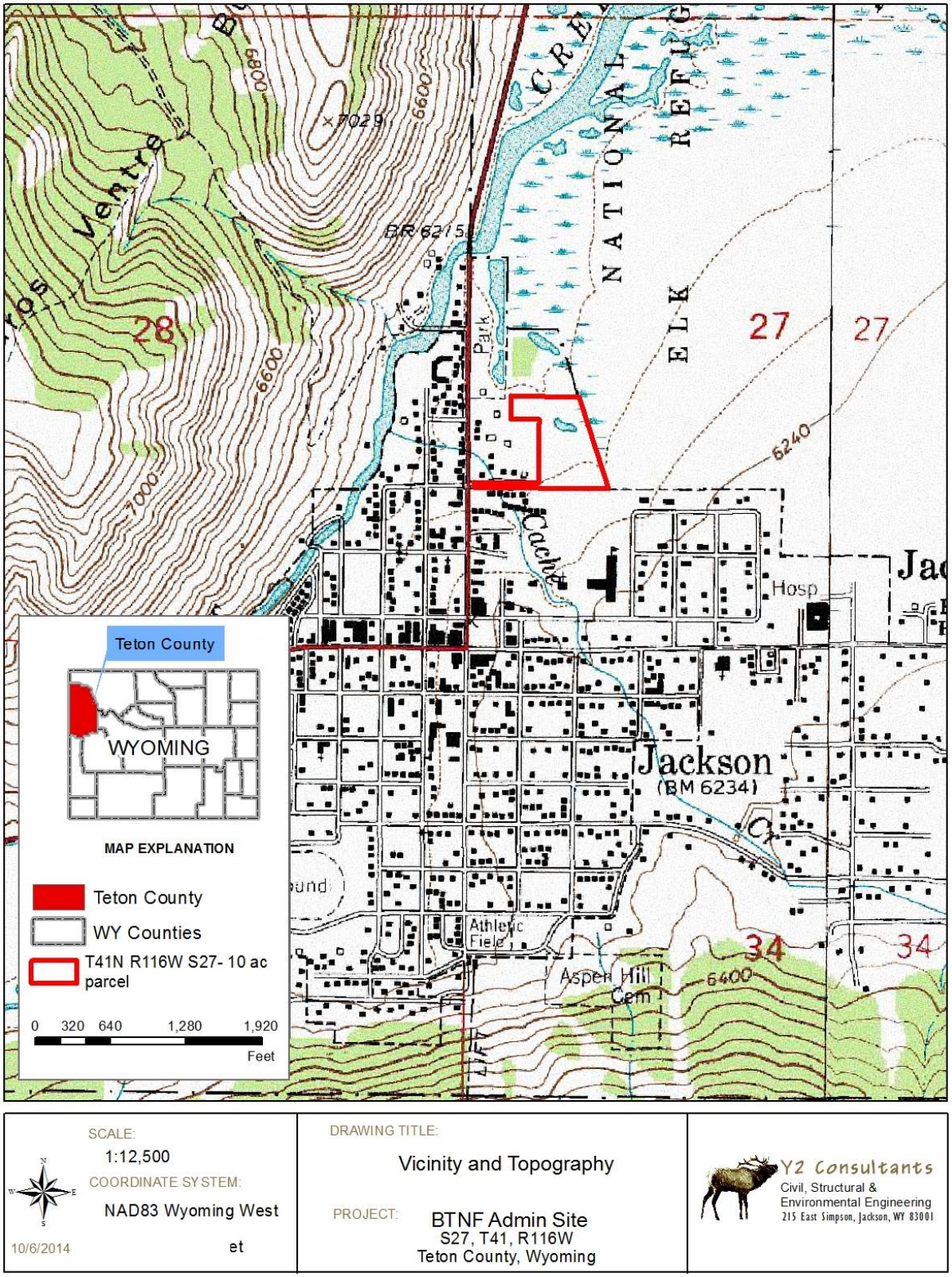
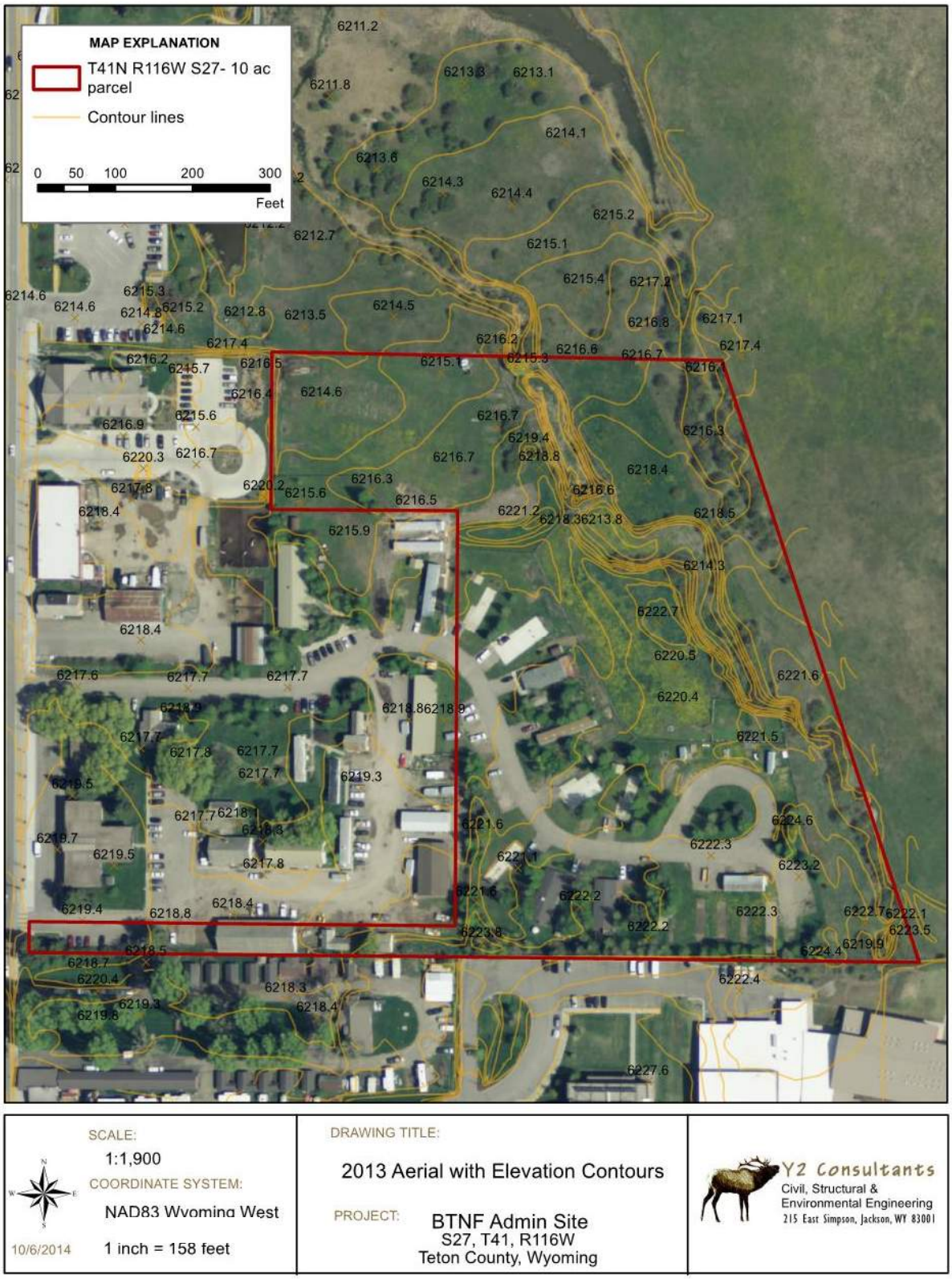
APPENDIX A – MAPS

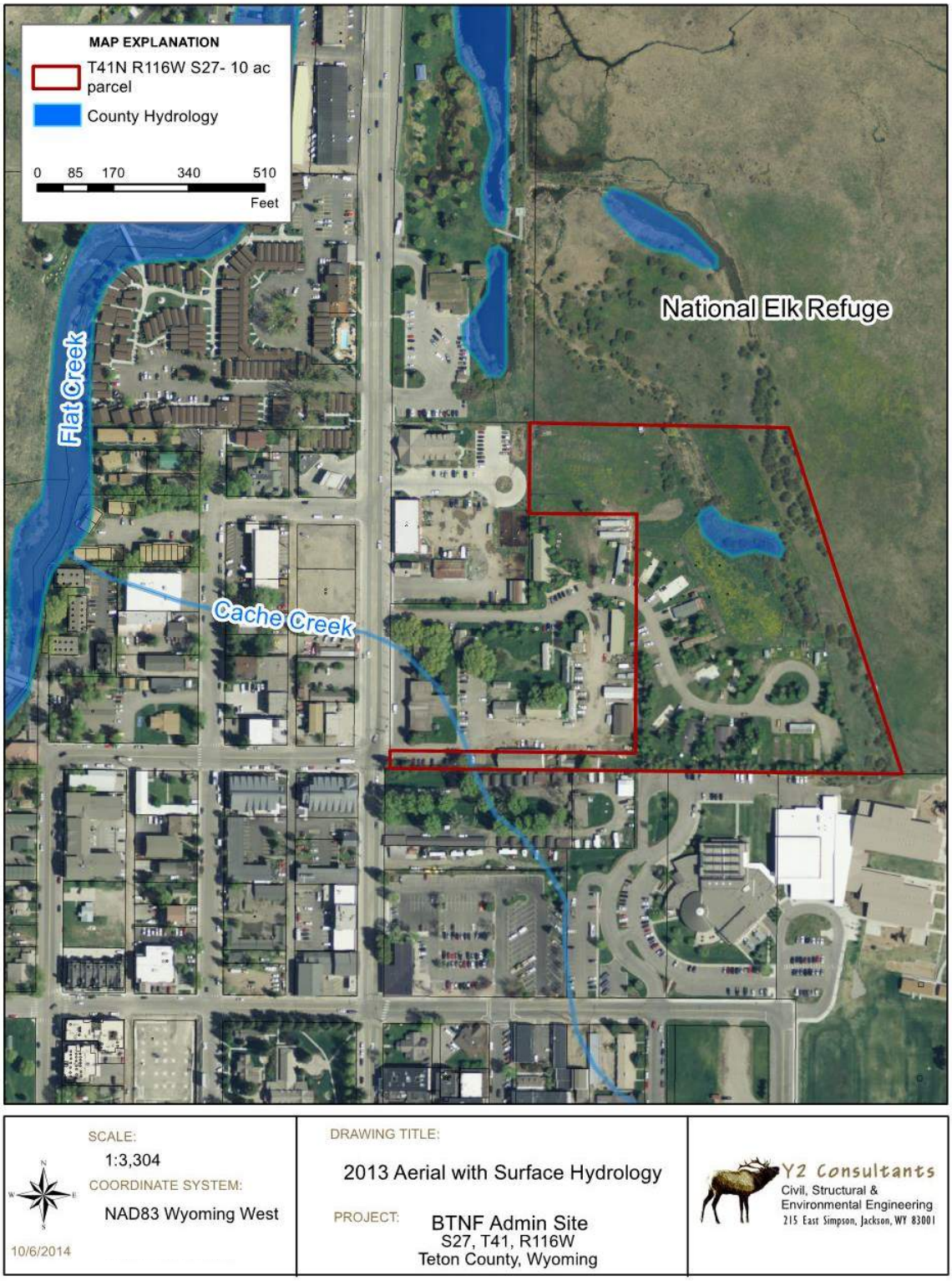
LIST OF MAPS



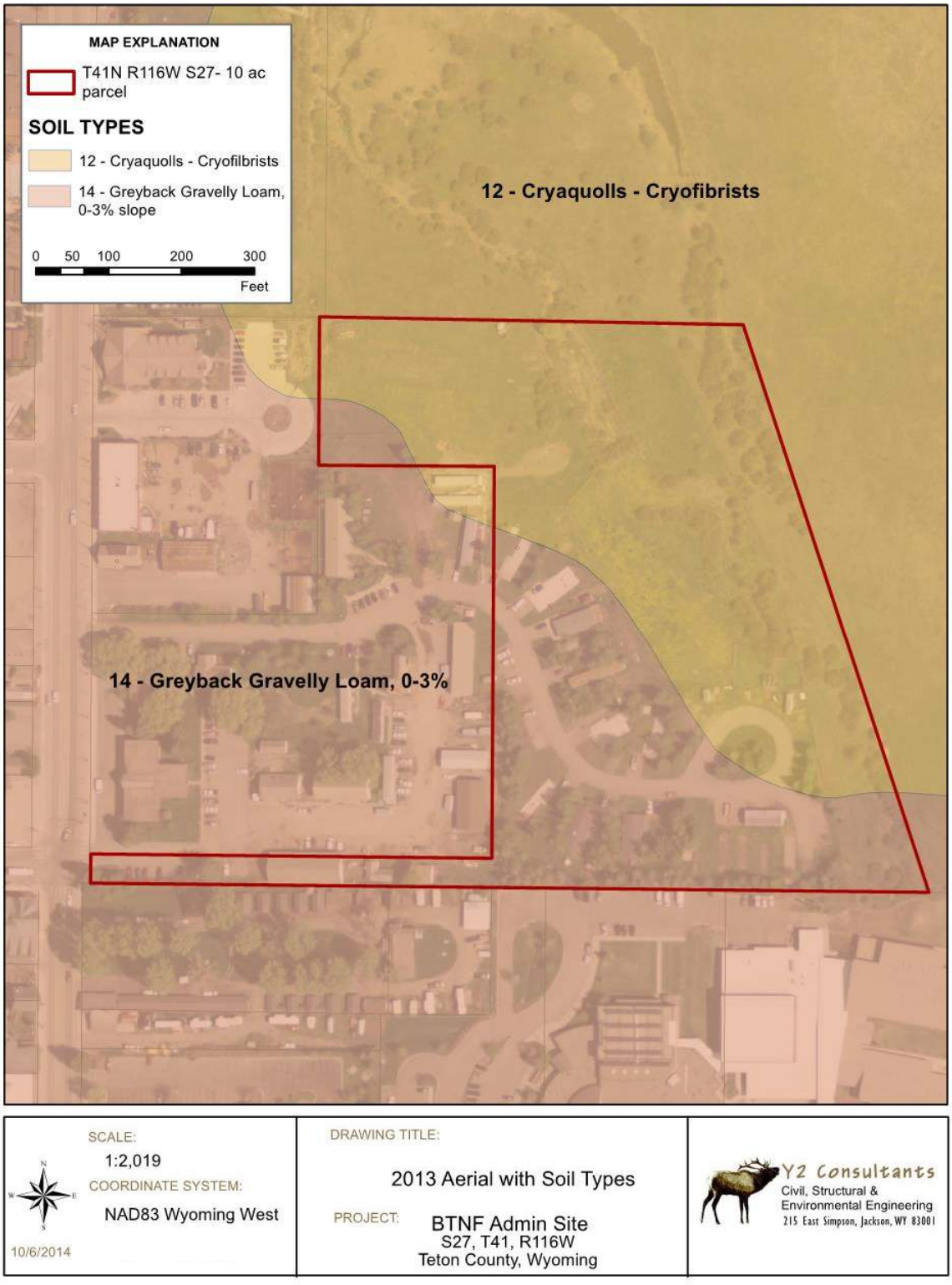
Map 1. Vicinity and Topography



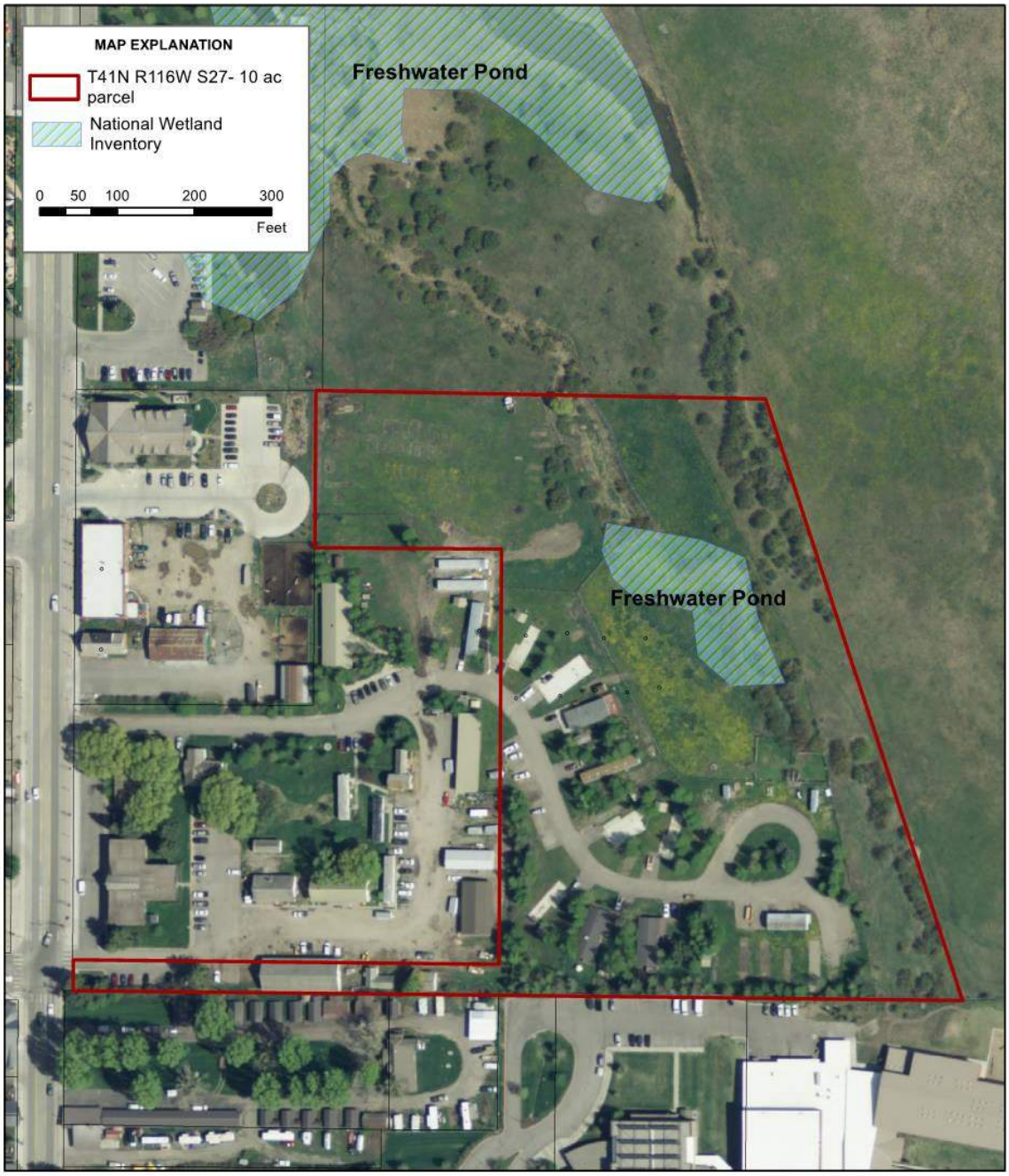
Map 2. Elevation Contours



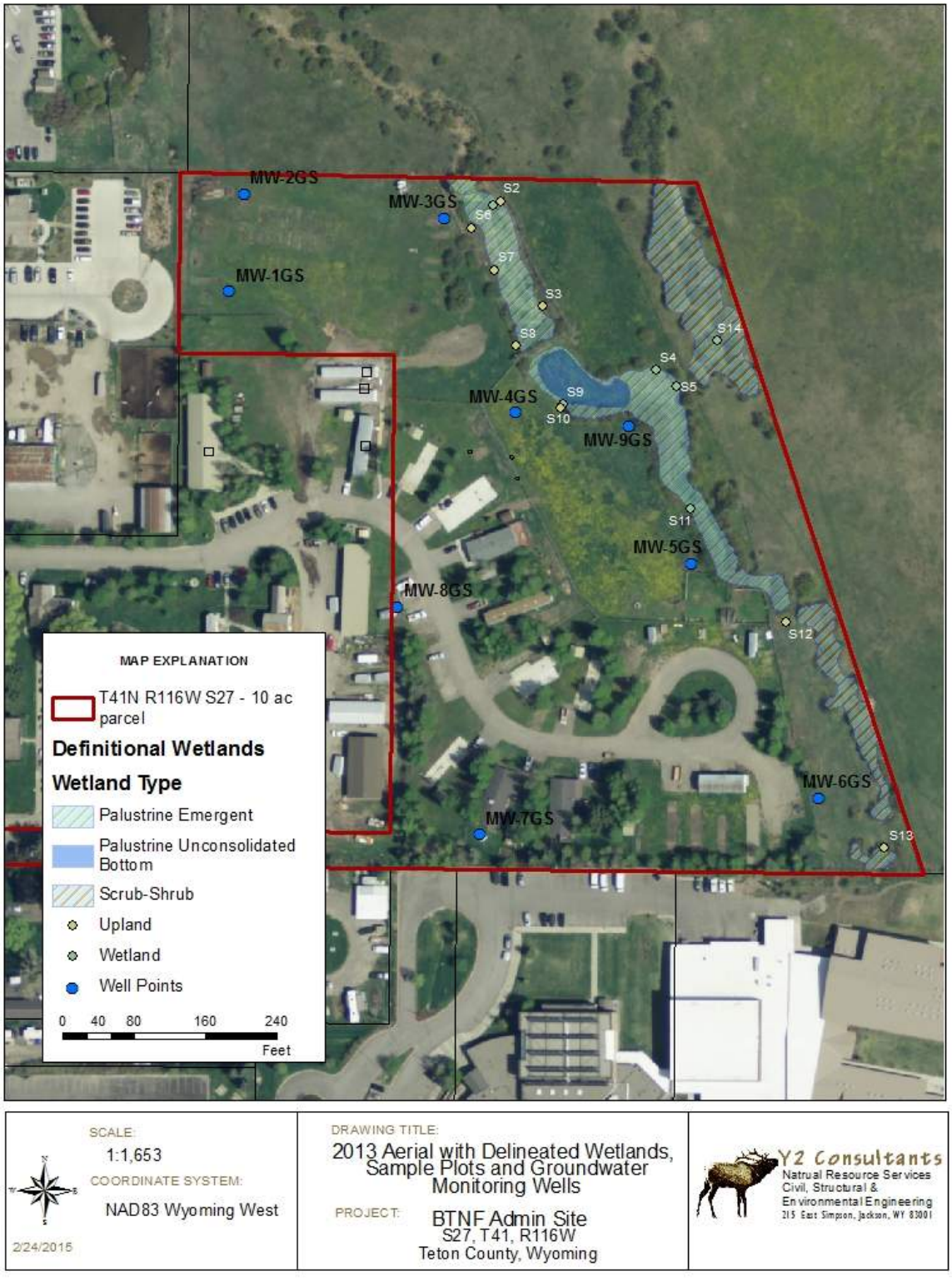
Map 3. Surface Hydrology



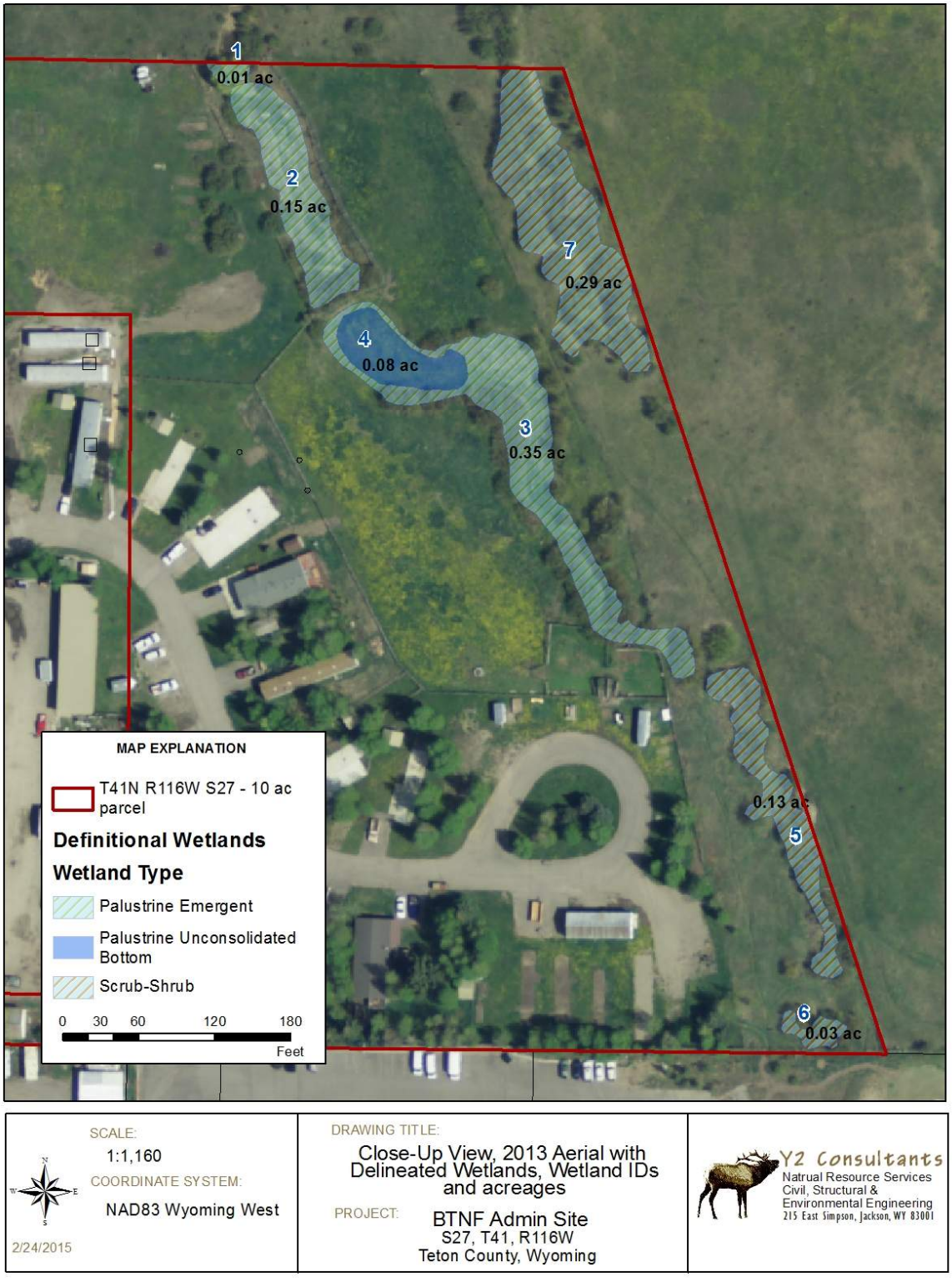
Map 4. Soil Types



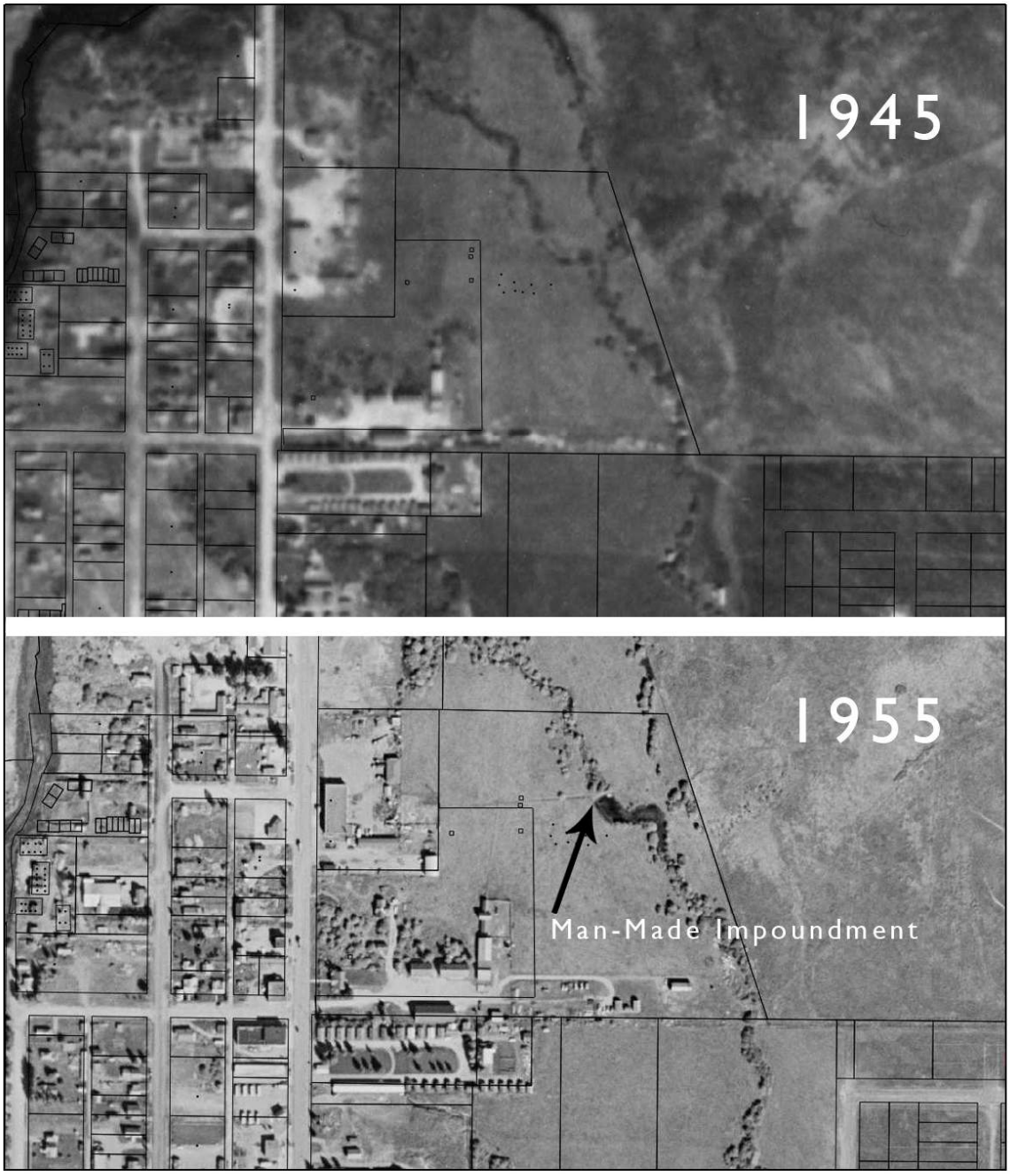
Map 5. National Wetlands Inventory, Wetlands



Map 6. Delineated Wetlands, Sample Plots and Monitoring Wells



Map 7. Delineated Wetlands Groupings and Acreage



Map 8. 1944-1955 Aerials Depicting Ponding Activity

Map 9. Depiction of delineated wetlands and sample points submitted to the USACE in 2011 by the Bridger-Teton National Forest.

APPENDIX B – STUDY AREA PHOTOS

Figure 1. Photo looking southeast depicting man-made freshwater ponded area.

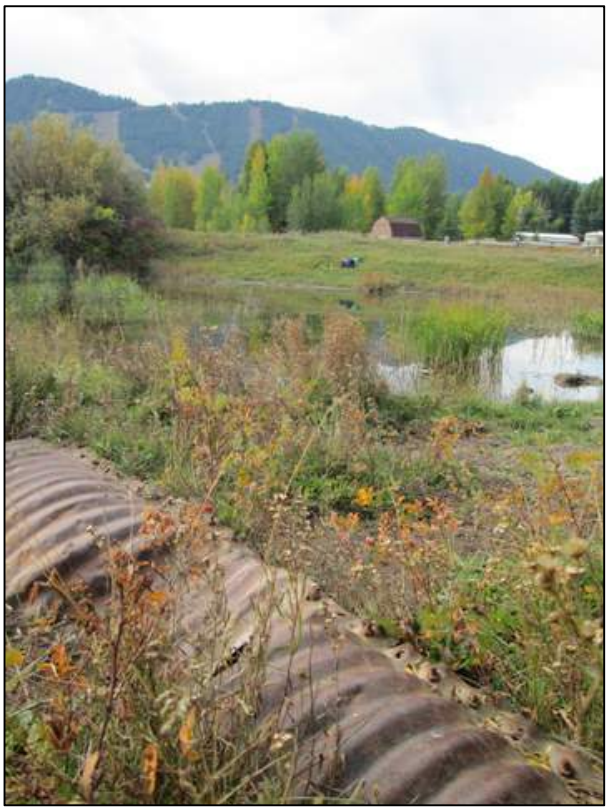


Figure 2. Photo looking south-southwest showing ponded area and remnant culvert.

Figure 3. Disturbed area adjacent to freshwater pond with remnant culvert.

Figure 4. Photo showing bermed area between wetland 3 and 7 and a well utilized trail.

Figure 5. Photo showing dumped concrete slabs and metal debris within wetland 5.

Figure 6. Photo showing dumped metal scraps directly within and adjacent to wetland 5.

Figure 7. Agricultural land-use structures directly adjacent to wetlands.

APPENDIX C – SAMPLE PLOT PHOTOS

a. b. c.

Figure 8. Sample plot 1, a wetland site (a) looking west, (b) looking south. Soil core at sample point 1 (S1) depicting hydric soil indicators.

a. b. c.

Figure 9. Sample plot 2, a non-wetland site (a) looking east, (b) looking south. Soil core at sample point 2 (S2) depicting a non-hydric soil.

a. b. c.

Figure 10. Sample plot 3, a non-wetland (a) looking west, (b) looking east. Soil core at sample point 3 (S3) depicting a non-hydric soil.

a. b. c.

Figure 11. Sample plot 4, a wetland site (a) looking east, (b) looking south. Soil core at sample point 4 (S4) depicting hydric soil indicators.

a. b. c.

Figure 12. Sample plot 5, a wetland site (a) looking southwest, (b) looking east. Soil core at sample point 5 (S5) depicting hydric redox soil indicators.

a. b. c.

Figure 13. Sample plot 6, a non-wetland site (a) looking southeast, (b) looking northeast. Soil core at sample point 6 (S6) depicting a non-hydric soil.

a. b. c.

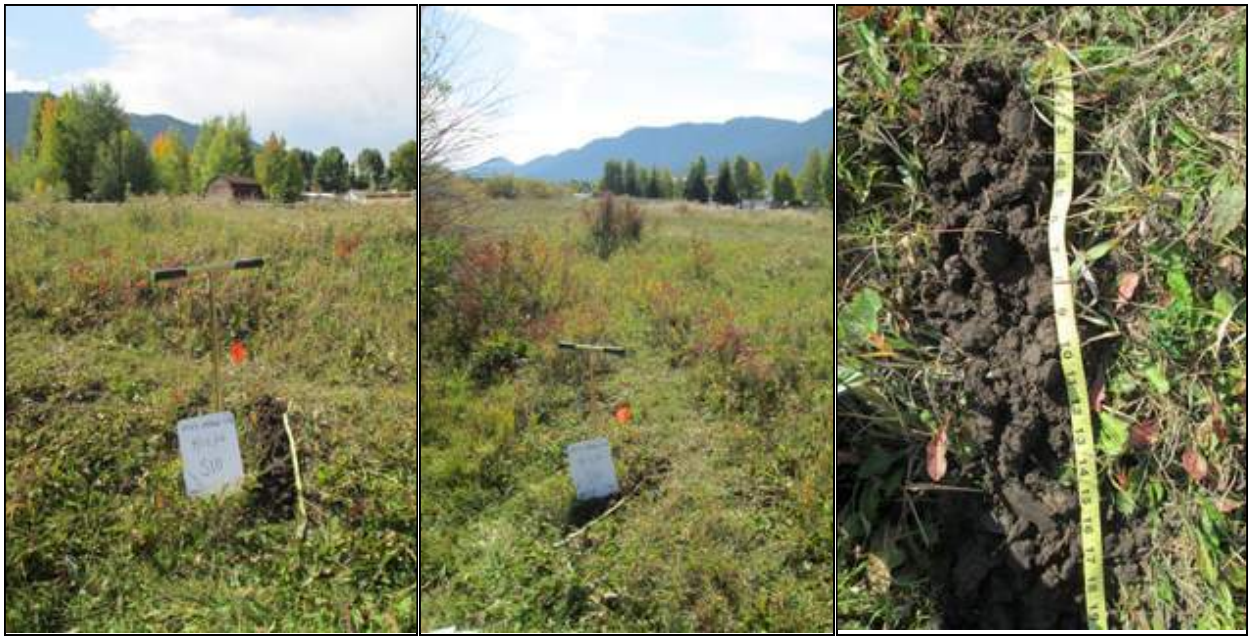
Figure 14. Sample plot 7, a non-wetland site (a) looking southeast, (b) looking north. Soil core at sample point 7 (S7) depicting a non-hydric soil.

a. b. c.

Figure 15. Sample plot 8, a non-wetland site (a) looking south, (b) looking north. Soil core at sample point 8 (S8) depicting a non-hydric soil.

a. b. c.

Figure 16. Sample plot 9, a wetland site (a) looking southeast, (b) looking north. Soil core at sample point 9 (S9) depicting hydric soil indicators.



a. b. c.

Figure 17. Sample plot 10, a non-wetland site (a) looking southwest, (b) looking southeast. Soil core at sample point 10 (S10) depicting a non-hydric soil.

a. b. c.

Figure 18. Sample plot 11, a wetland site (a) looking southeast, (b) looking north. Soil core at sample point 11 (S11) depicting hydric soil indicators.

a. b. c.

Figure 19. Sample plot 12, a non-wetland site (a) looking southeast, (b) looking east. Soil core at sample point 12 (S12) depicting a non-hydric soil.

Figure 20. Sample plot 13, a non-wetland site looking south.

a. b.

Figure 21. Sample plot 14, a wetland site looking north. Soil core at sample point 14 (14) depicting hydric soil indicators.

APPENDIX D – DATA FORMS

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: BTNF - Admin Site City/County: Jackson/Teton Sampling Date: 09/15/14
Applicant/Owner: _____ State: WY Sampling Point: S1
Investigator(s): Y2 Consultants Section, Township, Range: S27, T41, R116W
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): none Slope (%): 9%
Subregion (LRR): E Lat: 43.48538 Long: -110.75973 Datum: NAD 83
Soil Map Unit Name: 12 Cryaguolls - cryofibrists NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☒	No	☐	
Hydric Soil Present?	Yes	☒	No	☐	**Is the Sampled Area within a Wetland?** **Yes** ☒ **No** ☐
Wetland Hydrology Present?	Yes	☒	No	☐	

Remarks:

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
50% = _____, 20% = _____		= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Salix geyeriana*	15%	no	FACW
2. _____			
3. _____			
4. _____			
5. _____			
50% = _____, 20% = _____	15%	= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Alopecurus arundinaceus*	45%	yes	OBL
2. *Carex nebrascensis*	25%	yes	OBL
3. *Cirsium arvense*	10%	no	FAC
4. *Glyceria grandis*	5%	no	OBL
5. *Solidago canadensis*	1%	no	FACU
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = 43, 20% = 17.2	86%	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____			
2. _____			
50% = _____, 20% = _____		= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	75%	x1 =	75
FACW species	15	x2 =	30
FAC species	10	x3 =	30
FACU species	1	x4 =	4
UPL species	_____	x5 =	_____
Column Totals:	101 (A)		139 (B)

Prevalence Index = B/A = 1.38

Hydrophytic Vegetation Indicators:

☐ 1 – Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☒ 3 - Prevalence Index is ≤3.0[1]
☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
☐ 5 - Wetland Non-Vascular Plants[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks:

Project Site: BTNF - Admin Site

SOIL

Sampling Point: S1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/2	98%	7.5YR 4/6	2%	C	M	Si/C/L	
6-12	10YR 6/1	80%	7.5YR 5/6	20%	C	M/PL	Si/C/L	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☐ **No** ☐

Remarks: Water table @ ~6"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☒ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☒ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☒	No	☐	Depth (inches):	6"
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	0"

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Surface water present apprximately 2' to the west

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: BTNF - Admin Site City/County: Jackson/Teton Sampling Date: 09/15/14
Applicant/Owner: _____ State: WY Sampling Point: S2
Investigator(s): Y2 Consultants Section, Township, Range: S27, T41, R116
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): none Slope (%): 46%
Subregion (LRR): E Lat: 43.4854 Long: -110.7597 Datum: NAD 83
Soil Map Unit Name: 12 NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks:

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
50% = _____, 20% = _____		= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
50% = _____, 20% = _____	15%	= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Carex nebrascensis*	25%	yes	OBL
2. *Solidago canadensis*	20%	yes	FACU
3. *Cirsium arvense*	20%	yes	FAC
4. *Juncus articus littoralis*	15%	no	FACW
5. *Geum macrophyllum*	3%	no	FAC
6. *Poa pratensis*	3%	no	FAC
7. *Symphyotrichum lanceolatum*	3%	no	OBL
8. _____			
9. _____			
10. _____			
11. _____			
50% = _____, 20% = _____	89%	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____			
2. _____			
50% = _____, 20% = _____		= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x1 =	25
FACW species	15	x2 =	30
FAC species	_____	x3 =	87
FACU species	20	x4 =	80
UPL species	_____	x5 =	_____
Column Totals:	89 (A)		_____ (B)

Prevalence Index = B/A = 1.38

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: BTNF - Admin Site

SOIL

Sampling Point: S2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 2/1	100%					C/L	
16+	10YR 4/2	80%	7.5YR 4/6	10%	C	M	Si/C/L	"prominent"
	10YR 3/1	10%						

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: BTNF - Admin Site City/County: Jackson/Teton Sampling Date: 09/15/14
Applicant/Owner: _____ State: WY Sampling Point: S3
Investigator(s): Y2 Consultants Section, Township, Range: PT S027, T41N, R116W
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): none Slope (%): 18%
Subregion (LRR): E Lat: 43.48507 Long: -110.75952 Datum: NAD 83
Soil Map Unit Name: 12 NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks:

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
50% = _____, 20% = _____		= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Rosa woodsii*	30%	yes	FACU
2. *Lonicera involucrata*	25%	yes	FAC
3. _____			
4. _____			
5. _____			
50% = _____, 20% = _____	55%	= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Bromus inermis*	60%	yes	FAC
2. *Cirsium arvense*	20%	yes	FAC
3. *Juncus balticus*	10%	no	FACW
4. *Galium boreal*	5%	no	FACU
5. *Equisetum hymale*	2%	no	FACW
6. *Carex nebrascensis*	2%	no	OBL
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = _____, 20% = _____	89%	= Total Cover	
Woody Vine Stratum (Plot size: 5 ft)			
1. _____			
2. _____			
50% = _____, 20% = _____		= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	x1 =	2
FACW species	12	x2 =	24
FAC species	105	x3 =	315
FACU species	35	x4 =	140
UPL species	_____	x5 =	_____
Column Totals:	154 (A)		481 (B)

Prevalence Index = B/A = 3.12

Hydrophytic Vegetation Indicators:

☐ 1 – Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index is ≤3.0[1]
☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
☐ 5 - Wetland Non-Vascular Plants[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: BTNF - Admin Site

SOIL

Sampling Point: S3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 2/2	100%					Si/C/L	
12-16	10YR 4/2	99%	7.5YR 4/4	1%	C	M	S/L	"distinct" concentrations

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: BTNF - Admin Site City/County: Jackson/Teton Sampling Date: 09/15/14
Applicant/Owner: _____ State: WY Sampling Point: S4
Investigator(s): Y2 Consultants Section, Township, Range: S27, T41N, R116W
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): none Slope (%): 27%
Subregion (LRR): E Lat: 43.48488 Long: -110.75903 Datum: NAD 83
Soil Map Unit Name: 12 NWI classification: Freshwater pond
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☒	No	☐	
Hydric Soil Present?	Yes	☒	No	☐	**Is the Sampled Area within a Wetland?** **Yes** ☒ **No** ☐
Wetland Hydrology Present?	Yes	☒	No	☐	

Remarks:

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
50% = _____, 20% = _____		= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Salix lemmonii*	25%	yes	FACW
2. _____			
3. _____			
4. _____			
5. _____			
50% = _____, 20% = _____	55%	= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Poa pratensis*	30%	yes	FAC
2. *Agrostis stolinefera*	15%	yes	FAC
3. *Glyceria grandis*	9%	no	OBL
4. *Taraxacum officianale*	9%	no	FACU
5. *Symphyotrichom lanceolatum*	3%	no	OBL
6. *Trifolium pratense*	3%	no	FACU
7. *Carex nebrascensis*	12%	no	OBL
8. *Phalaris arundinacea*	2%	no	FACW
9. *Alopecurus arundinaceus*	2%	no	OBL
10. *Equisetum hyemale*	1%	no	OBL
11. _____			
50% = 43, 20% = 17.2	111%	= Total Cover	
Woody Vine Stratum (Plot size: 5 ft)			
1. _____			
2. _____			
50% = _____, 20% = _____		= Total Cover	
% Bare Ground in Herb Stratum 25%			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	27	x1 =	27
FACW species	27	x2 =	54
FAC species	45	x3 =	135
FACU species	12	x4 =	48
UPL species	_____	x5 =	_____
Column Totals:	111 (A)		264 (B)

Prevalence Index = B/A = 2.4

Hydrophytic Vegetation Indicators:

☐ 1 – Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☒ 3 - Prevalence Index is ≤3.0[1]
☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
☐ 5 - Wetland Non-Vascular Plants[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks: Glyceria grandis on fringe between standing water and saturated soils

Project Site: BTNF - Admin Site

SOIL

Sampling Point: S4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	90%	7.5YR 4/6	10%	C	M	C/L	
6-18	10YR 4/1	55%	7.5YR 4/6	45%	C	M	Si/C	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☒ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☐	Depth (inches):	> 18"
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	0"

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Visual observation of saturated soils from surface to > 18 ".

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: BTNF - Admin Site City/County: Jackson/Teton Sampling Date: 09/15/14
Applicant/Owner: _____ State: WY Sampling Point: S5
Investigator(s): Y2 Consultants Section, Township, Range: S27, T41N, R116W
Landform (hillslope, terrace, etc.): Floodplain terrace Local relief (concave, convex, none): none Slope (%): 27%
Subregion (LRR): E Lat: 43.48483 Long: -110.75895 Datum: NAD 83
Soil Map Unit Name: 12 NWI classification: Freshwater pond
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☒, Soil ☒, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☒
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☒	No	☐	
Hydric Soil Present?	Yes	☒	No	☐	**Is the Sampled Area within a Wetland?** **Yes** ☒ **No** ☐
Wetland Hydrology Present?	Yes	☒	No	☐	

Remarks: Vegetation and soil are significantly disturbed due to a well developed trail/foot path that runs adjacent to point of sampling (~ 4 ft east)

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
50% = _____, 20% = _____		= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Salix geyeriana*	15%	yes	FACW
2. *Salix lemmonii*	30%	yes	FACW
3. _____			
4. _____			
5. _____			
50% = _____, 20% = _____	45%	= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Agrostis stolonifera*	20%	yes	FAC
2. *Poa pratensis*	35%	yes	FAC
3. *Taraxacum officianale*	10%	no	FACU
4. *Carex nebrascensis*	5%	no	OBL
5. *Alopecurus arundinaceus*	5%	no	OBL
6. *Trifolium pratense*	5%	no	FACU
7. *Cirsium arvense*	2%	no	FAC
8. *Symphyotrichum lanceolatum*	2%	no	OBL
9. _____			
10. _____			
11. _____			
50% = 41, 20% = 16.4	104%	= Total Cover	
Woody Vine Stratum (Plot size: 5 ft)			
1. _____			
2. _____			
50% = _____, 20% = _____		= Total Cover	
% Bare Ground in Herb Stratum 20%			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	12	x1 =	12
FACW species	45	x2 =	90
FAC species	57	x3 =	171
FACU species	15	x4 =	60
UPL species	_____	x5 =	_____
Column Totals:	129 (A)		_____ (B)

Prevalence Index = B/A = 2.58

Hydrophytic Vegetation Indicators:

☐ 1 – Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☒ 3 - Prevalence Index is ≤3.0[1]
☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
☐ 5 - Wetland Non-Vascular Plants[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks:

Project Site: BTNF - Admin Site

SOIL Sampling Point: S5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	90%	7.5YR 4/6	10%	C	M	C/L	
6-18	10YR 4/1	55%	7.5YR 4/6	45%	C	M	S/C	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☒ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	0"

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Visual observation of saturated soils from 0-18"

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: BTNF - Admin Site City/County: Jackson/Teton Sampling Date: 09/15/14
Applicant/Owner: _____ State: WY Sampling Point: S6
Investigator(s): Y2 Consultants Section, Township, Range: S27, T41N, R116W
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): none Slope (%): 0%
Subregion (LRR): E Lat: 43.48531 Long: -110.75982 Datum: NAD 83
Soil Map Unit Name: 12 NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☒	No	☐	
Hydric Soil Present?	Yes	☒	No	☐	**Is the Sampled Area within a Wetland?** **Yes** ☐ **No** ☒
Wetland Hydrology Present?	Yes	☐	No	☒	

Remarks:

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
50% = _____, 20% = _____	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Loniera tatarica*	20%	yes	FACW
2. *Salix geyeriana*	25%	yes	FACW
3. *Salix lemmonii*	5%	no	FACW
4. *Rosa woodsii*	10%	no	FACU
5. *Potentilla fruticosa and Ribes aureum*	6%	no	FAC
50% = _____, 20% = _____	66%	= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Bromos inermis*	80%	yes	FAC
2. *Cirsium arvense*	30%	yes	FAC
3. *Equisetum hyemale*	2%	no	FACW
4. *Juncus balticus*	2%	no	FACW
5. *Maianthemum stellatum*	2%	no	FAC
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
50% = 58, 20% = 23.2	116%	= Total Cover	
Woody Vine Stratum (Plot size: 5 ft)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
50% = _____, 20% = _____	_____	= Total Cover	
% Bare Ground in Herb Stratum 0%			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x1 =	_____
FACW species	34	x2 =	68
FAC species	115	x3 =	345
FACU species	10	x4 =	40
UPL species	_____	x5 =	_____
Column Totals:	159 (A)		453 (B)

Prevalence Index = B/A = 2.84

Hydrophytic Vegetation Indicators:

☐ 1 – Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☒ 3 - Prevalence Index is ≤3.0[1]
☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
☐ 5 - Wetland Non-Vascular Plants[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks:

Project Site: BTNF - Admin Site

SOIL

Sampling Point: S6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 2/2	100%					S/L	
18+	10YR 4/2	95%	7.5YR 4/6	5%	C	M	S/C/L	"prominent" concentrations

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☒ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: BTNF - Admin Site City/County: Jackson/Teton Sampling Date: 09/15/14
Applicant/Owner: _____ State: WY Sampling Point: S7
Investigator(s): Y2 Consultants Section, Township, Range: S27, T41N, R116W
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): none Slope (%): 80%
Subregion (LRR): E Lat: 43.48518 Long: -110.75973 Datum: NAD 83
Soil Map Unit Name: 12 NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☒	No	☐	
Hydric Soil Present?	Yes	☐	No	☒	**Is the Sampled Area within a Wetland?** **Yes** ☐ **No** ☒
Wetland Hydrology Present?	Yes	☐	No	☒	

Remarks:

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	____	____
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
50% = _____, 20% = _____	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Salix geyeriana*	25%	yes	FACW
2. *Salix lemmonii*	10%	yes	FACW
3. *Ribes aureum*	5%	no	FAC
4. *Potentilla fruticosai*	2%	no	FACU
5. *Salix boothii*	2%	no	FACW
50% = _____, 20% = _____	44%	= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Juncus balticus*	50%	yes	OBL
2. *Elymus repens*	30%	yes	FAC
3. *Poa pratensis*	15%	no	FAC
4. *Galium boreale*	15%	no	FACU
5. *Bromus inermis*	8%	no	FAC
6. *Phleum pratense*	2%	no	FAC
7. *Geum macrophylum*	5%	no	FAC
8. *Equisetum hymale*	4%	no	FACW
9. *Glyceria grandis*	2%	no	OBL
10. *Carex utriculata*	6%	no	OBL
11. _____	_____	____	____
50% = 68, 20% = 27	135%	= Total Cover	
Woody Vine Stratum (Plot size: 5 ft)			
1. _____	_____	____	____
2. _____	_____	____	____
50% = _____, 20% = _____	_____	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	58	x1 =	58
FACW species	41	x2 =	82
FAC species	65	x3 =	195
FACU species	17	x4 =	68
UPL species	_____	x5 =	_____
Column Totals:	181 (A)		403 (B)

Prevalence Index = B/A = 2.2

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks:

Project Site: BTNF - Admin Site

SOIL Sampling Point: S7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/2	100%					L	
16-24	10YR 3/1	80%	7.5YR 4/6	20%			C-L	"prominent" Concentrations

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: BTNF - Admin Site City/County: Jackson/Teton Sampling Date: 09/15/14
Applicant/Owner: _____ State: WY Sampling Point: S8
Investigator(s): Y2 Consultants Section, Township, Range: S27, T41N, R116W
Landform (hillslope, terrace, etc.): Floodplain terrace Local relief (concave, convex, none): none Slope (%): 9%
Subregion (LRR): E Lat: 43.48495 Long: -110.75963 Datum: NAD 83
Soil Map Unit Name: 12 NWI classification: Freshwater pond
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks:

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
50% = _____, 20% = _____	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Salix geyeriana*	40%	yes	FACW
2. *Lonicera involuctra*	15%	yes	FAC
3. *Ribes aureum*	15%	no	FAC
4. *Amelanchier alnifolia*	8%	no	FACU
5. *Salix boothi and Salix lemmoni*	16%	no	FACW
50% = _____, 20% = _____	94%	= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Bromus inermis*	80%	yes	FAC
2. *Symphyotrichum lanceolatum*	15%	no	OBL
3. *Elymus repens*	10%	no	FAC
4. *Poa pratensis*	10%	no	FAC
5. *Chamerion angustifolium*	4%	no	FACU
6. *Taraxacum officianale*	4%	no	FACU
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = 62, 20% = 24.6	123%	= Total Cover	
Woody Vine Stratum (Plot size: 5 ft)			
1. _____			
2. _____			
50% = _____, 20% = _____		= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x1 =	15
FACW species	48	x2 =	96
FAC species	130	x3 =	390
FACU species	16	x4 =	64
UPL species	_____	x5 =	_____
Column Totals:	209 (A)		565 (B)

Prevalence Index = B/A = 2.7

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: BTNF - Admin Site

SOIL

Sampling Point: S8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	100%					L/S	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: BTNF - Admin Site City/County: Jackson/Teton Sampling Date: 09/17/14
Applicant/Owner: _____ State: WY Sampling Point: S9
Investigator(s): Y2 Consultants Section, Township, Range: S27, T41N, R116W
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): none Slope (%): 9%
Subregion (LRR): E Lat: 43.48477 Long: -110.75943 Datum: NAD 83
Soil Map Unit Name: 12 NWI classification: Freshwater Pond
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☒, Soil ☒, or Hydrology ☒, significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☒
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☒	No	☐	
Hydric Soil Present?	Yes	☒	No	☐	**Is the Sampled Area within a Wetland?** **Yes** ☒ **No** ☐
Wetland Hydrology Present?	Yes	☒	No	☐	

Remarks: **Area has been significantly disturbed over 60 years from damming, dredging and livestock use.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	____	____
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
50% = _____, 20% = _____	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Salix geyeriana*	30%	yes	FACW
2. *Cornus glabrata*	25%	yes	FACW
3. *Lonicera tatarica*	15%	no	FACU
4. *Rosa woodsii*	4%	no	FACU
5. *Ribes aureum*	4%	no	FAC
50% = _____, 20% = _____	78%	= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Poa pratensis*	30%	yes	FAC
2. *Agrostis stolonifera*	20%	yes	FAC
3. *Plantago major*	20%	yes	FAC
4. *Phleum pratense*	15%	no	FAC
5. *Elymus repens*	10%	no	FAC
6. *Taraxacum officinale*	3%	no	FACU
7. *Symphyotricum lanceolatum*	2%	no	OBL
8. *Trifolium pratense*	2%	no	FACU
9. *Carex nebrascensis*	2%	no	OBL
10. *Potentilla gracilis*	2%	no	FAC
11. *Achilliea millefolium*	1%	no	FACU
50% = 53.5, 20% = 21.4	107%	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft)			
1. _____	_____	____	____
2. _____	_____	____	____
50% = _____, 20% = _____	0	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	5	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	x1 =	2
FACW species	55	x2 =	110
FAC species	97	x3 =	291
FACU species	25	x4 =	100
UPL species	_____	x5 =	_____
Column Totals:	179 (A)		503 (B)

Prevalence Index = B/A = 2.8

Hydrophytic Vegetation Indicators:

☐ 1 – Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☒ 3 - Prevalence Index is ≤3.0[1]
☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
☐ 5 - Wetland Non-Vascular Plants[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks:

Project Site: BTNF - Admin Site

SOIL Sampling Point: S9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/2	80%	7.5YR 4/6	20%	C	M	Si/L	
6-14	10YR 5/2	20%	7.5YR 4/6	80%	C	M	C/L	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	0"

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: BTNF - Admin Site City/County: Jackson/Teton Sampling Date: 09/17/14
Applicant/Owner: _____ State: WY Sampling Point: S10
Investigator(s): Y2 Consultants Section, Township, Range: S27, T41N, R116W
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): 75%
Subregion (LRR): E Lat: 43.48476 Long: -110.75944 Datum: NAD 83
Soil Map Unit Name: 12 NWI classification: Freshwater Pond
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☒, Soil ☒, or Hydrology ☒, significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☒
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: **Area has been significantly disturbed over 60 years from damming, dredging and livestock use. At the time of analysis, significant utilization by horses is apparent.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
50% = _____, 20% = _____	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Salix geyeriana*	30%	yes	FACW
2. *Cornus glabrata*	25%	yes	FACW
3. *Lonicera tatarica*	15%	no	FACU
4. *Rosa woodsii*	8%	no	FACU
5. *Ribes aureum*	4%	no	FAC
50% = _____, 20% = _____	82%	= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Poa pratensis*	40%	yes	FAC
2. *Taraxacum officinale*	40%	yes	FACU
3. *Phleum pratense*	5%	no	FAC
4. *Elymus trachycaulus*	4%	no	FAC
5. *Potentilla gracilis*	4%	no	FAC
6. *Symphyotricum lanceolatum*	3%	no	OBL
7. *Achilliea millefolium*	2%	no	FACU
8. *Carex nebrascensis*	2%	no	OBL
9. *Plantago major*	2%	no	FAC
10. *Trifolium pratense*	2%	no	FACU
11. _____	_____	_____	_____
50% = _____, 20% = _____	104%	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
50% = _____, 20% = _____	0	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	75%	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	3	x1 =	3
FACW species	55	x2 =	110
FAC species	59	x3 =	177
FACU species	67	x4 =	268
UPL species	_____	x5 =	_____
Column Totals:	184 (A)		558 (B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: BTNF - Admin Site

SOIL

Sampling Point: S10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/2	100%					S/L	
14-23	10YR 2/2	70%	7.5YR 4/6	20%	C	M	C/L	~10% Pieces of burnt organic matter

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: BTNF - Admin Site City/County: Jackson/Teton Sampling Date: 09/17/14
Applicant/Owner: _____ State: WY Sampling Point: S11
Investigator(s): Y2 Consultants Section, Township, Range: S27, T41N, R116W
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): ____ Slope (%): 26%
Subregion (LRR): E Lat: 43.48445 Long: -110.75889 Datum: NAD 83
Soil Map Unit Name: 12 NWI classification: Freshwaster Pond
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☒, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☒
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☒	No	☐	
Hydric Soil Present?	Yes	☒	No	☐	**Is the Sampled Area within a Wetland?** **Yes** ☒ **No** ☐
Wetland Hydrology Present?	Yes	☒	No	☐	

Remarks: **Vegetation has been heavily grazed by horses in the vicinity.**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	____	____
2. _____	_____	____	____
3. _____	_____	____	____
4. _____	_____	____	____
50% = _____, 20% = _____	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Salix lemmonii*	40%	yes	FACW
2. *Lonicera involucrata*	10%	no	FAC
3. *Lonicera tatarica*	5%	no	FACU
4. *Ribes aureum*	2%	no	FAC
5. *Rosa woodsii*	1%	no	FACU
50% = _____, 20% = _____	58%	= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Poa pratensis*	30%	yes	FAC
2. *Elymus repens*	25%	yes	FAC
3. *Taraxacum officinale*	15%	no	FACU
4. *Cirsium arvense*	5%	no	FAC
5. *Symphyotrichum lanceolatum*	3%	no	OBL
6. _____	_____	____	____
7. _____	_____	____	____
8. _____	_____	____	____
9. _____	_____	____	____
10. _____	_____	____	____
11. _____	_____	____	____
50% = 39, 20% = 16	78%	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft)			
1. _____	_____	____	____
2. _____	_____	____	____
50% = _____, 20% = _____	0	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	3	x1 =	3
FACW species	40	x2 =	80
FAC species	72	x3 =	216
FACU species	21	x4 =	84
UPL species	_____	x5 =	_____
Column Totals:	136 (A)		383 (B)

Prevalence Index = B/A = 2.8

Hydrophytic Vegetation Indicators:

☐ 1 – Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☒ 3 - Prevalence Index is ≤3.0[1]
☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
☐ 5 - Wetland Non-Vascular Plants[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks:

Project Site: BTNF - Admin Site

SOIL

Sampling Point: S11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/2	90%	7.5YR 4/6	10%	C	PL	S/C/L - C/L	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	0"

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: BTNF - Admin Site City/County: Jackson/Teton Sampling Date: 09/17/14
Applicant/Owner: _____ State: WY Sampling Point: S12
Investigator(s): Y2 Consultants Section, Township, Range: S27, T41N, R116W
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): 0%
Subregion (LRR): E Lat: 43.481 Long: -110.75848 Datum: NAD 83
Soil Map Unit Name: 12 NWI classification: _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☒, Soil ☒, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☒
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☒	No	☐	
Hydric Soil Present?	Yes	☐	No	☒	**Is the Sampled Area within a Wetland?** **Yes** ☐ **No** ☒
Wetland Hydrology Present?	Yes	☐	No	☒	

Remarks: **Area has been significantly disturbed by historic ranching and dumping. Development in the form of roads and landscaping exist directly adjacent to site (approx. 40-50 ft away from point)**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
50% = _____, 20% = _____	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
50% = _____, 20% = _____		= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Bromus inermis*	80%	yes	FAC
2. *Elymus repens*	20%	yes	FAC
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = _____, 20% = _____	100%	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft)			
1. _____			
2. _____			
50% = _____, 20% = _____	0	= Total Cover	
% Bare Ground in Herb Stratum _____			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x1 =	_____
FACW species	_____	x2 =	_____
FAC species	100	x3 =	300
FACU species	_____	x4 =	_____
UPL species	_____	x5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = 3

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks:

Project Site: BTNF - Admin Site

SOIL

Sampling Point: S12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 2/2	98%					L/S	~2% charcoal remnants

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: BTNF - Admin Site City/County: Jackson/Teton Sampling Date: 09/17/14
Applicant/Owner: _____ State: WY Sampling Point: S13
Investigator(s): Y2 Consultants Section, Township, Range: S27, T41N, R116W
Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): concave Slope (%): 0%
Subregion (LRR): E Lat: 43.48341 Long: -110.75806 Datum: NAD 83
Soil Map Unit Name: 14 Greyback Gravelly loam, 0-3% slope NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☒	No	☐	
Hydric Soil Present?	Yes	☐	No	☒	**Is the Sampled Area within a Wetland?** **Yes** ☐ **No** ☒
Wetland Hydrology Present?	Yes	☒	No	☐	

Remarks:

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____			
2. _____			
3. _____			
4. _____			
50% = _____, 20% = _____	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Salix geyeriana*	65%	yes	FACW
2. *Lonicera utahensis*	30%	yes	FAC
3. *Lonicera involucrata*	15%	no	FAC
4. _____			
5. _____			
50% = _____, 20% = _____		= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Bromus inermis*	30%	yes	FAC
2. *Maianthemum stellatum*	5%	yes	FAC
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
50% = _____, 20% = _____	100%	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft)			
1. _____			
2. _____			
50% = _____, 20% = _____	0	= Total Cover	

% Bare Ground in Herb Stratum 65%

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	4	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x1 =	_____
FACW species	65	x2 =	130
FAC species	80	x3 =	240
FACU species	_____	x4 =	_____
UPL species	_____	x5 =	_____
Column Totals:	145 (A)		370 (B)

Prevalence Index = B/A = 2.55

Hydrophytic Vegetation Indicators:

☐ 1 – Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☒ 3 - Prevalence Index is ≤3.0[1]
☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
☐ 5 - Wetland Non-Vascular Plants[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks:

Project Site: BTNF - Admin Site

SOIL

Sampling Point: S13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/1	100%					L/S	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: Could not dig past 8" due to rocks

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☒ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: BTNF - Admin Site City/County: Jackson/Teton Sampling Date: 09/17/14
Applicant/Owner: _____ State: WY Sampling Point: S14
Investigator(s): Y2 Consultants Section, Township, Range: S27, T41N, R116W
Landform (hillslope, terrace, etc.): Swale/drainage? Local relief (concave, convex, none): concave Slope (%): 9%
Subregion (LRR): E Lat: 43.48497 Long: -110.75876 Datum: NAD 83
Soil Map Unit Name: 12 NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☒	No	☐	
Hydric Soil Present?	Yes	☒	No	☐	**Is the Sampled Area within a Wetland?** **Yes** ☒ **No** ☐
Wetland Hydrology Present?	Yes	☒	No	☐	

Remarks:

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
50% = _____, 20% = _____	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Salix geyeriana*	45%	yes	FACW
2. *Salix lemmonii*	45%	yes	FACW
3. *Rosa woodsii*	5%	no	FACU
4. *Lonicera utahensis*	2%	no	FAC
5. _____	_____	_____	_____
50% = _____, 20% = _____	97%	= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Poa pratensis*	5%	yes	FAC
2. *Taraxacum officinale*	5%	yes	FACU
3. *Carex spp.*	5%	yes	FACW
4. *Equisetum hymale*	5%	yes	FACW
5. *Geum macrophyllum*	5%	yes	FAC
6. *Maianthemum stellatum*	2%	no	FAC
7. *Chamerion angustifollium*	2%	no	FACU
8. *Bromus inermis*	1%	no	FAC
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
50% = 15, 20% = 6	80%	= Total Cover	
Woody Vine Stratum (Plot size: 10 ft)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
50% = _____, 20% = _____	0	= Total Cover	

% Bare Ground in Herb Stratum 50%

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	7	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	70%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x1 =	_____
FACW species	100	x2 =	200
FAC species	15	x3 =	45
FACU species	12	x4 =	48
UPL species	_____	x5 =	_____
Column Totals:	127 (A)		293 (B)

Prevalence Index = B/A = 2.3

Hydrophytic Vegetation Indicators:

☐ 1 – Rapid Test for Hydrophytic Vegetation
☒ 2 - Dominance Test is >50%
☒ 3 - Prevalence Index is ≤3.0[1]
☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
☐ 5 - Wetland Non-Vascular Plants[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks:

Project Site: BTNF - Admin Site

SOIL

Sampling Point: S14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	100%					S/C/L	
6-18	10YR 4/2	90%	7.5YR 4/6	10%	C	M	C/L	"prominent" concentrations

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☒ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: D2 - swale area

APPENDIX E - PLANT LIST

List of Sampled Plant Species during Delineation

Scientific Name	Common Name	Wetland Indicator Status
Bromus inermis	Smooth brome	FAC
Achillea millefolium	Common yarrow	FACU
Agrostis stolonifera	Creeping bentgrass/redtop	FAC
Alopecurus arundinaceus	Creeping meadow foxtail	OBL
Artemisia cana	Silver sage	FACU
Carex nebrascensis	Nebraska sedge	OBL
Carex utriculata	Notrhwest Territory sedge	OBL
Chamerion angustifolium	Fireweed	FACU
Cirsium arvense	Canada thistle	FAC
Cornus glabrata	Dogwood	FACW
Elymus repens	Quackgrass	FAC
Elymus trachycaulus	Slender wheatgrass	FAC
Amelanchier alnifolia	Saskatoon service-berry	FACU
Equisetum hyemale	Scouringrush horsetail	FACW
Galium boreale	Northern bedstraw	FACU
Geum macrophyllum	Largeleaf arvens	FAC
Glyceria grandis	American manna grass	OBL
Juncus balticus	Mountain rush	FACW
Lonicera tatarica	Tatarian honeysuckle	FACU
Lonicera involucrata	Black twinberry	FAC
Maianthemum stellatum	Starry false lily of the valley	FAC
Phalaris arundinacea	Reed canarygrass	FACW
Phleum alpinum	Mountain Timothy	FAC
Phleum pratense	Timothy	FAC
Plantago major	Common plantain	FAC
Poa pratensis	Kentucky bluegrass	FAC
Potentilla fruticosa/dasiphora	Shrubby cinquefoil	FAC
Potentilla gracilis	Slender cinquefoil	FAC
Prunus virginiana	Chokecherry	FACU
Ribes aureum	Golden currant	FAC
Rosa woodsii	Rose's wood	FACU
Salix boothii	Booth's Willow	FACW
Salix geyeriana	Geyer willow	FACW
Salix lemmonii	Lemmon's willow	FACW
Senecio hydrophilus	Marsh butterweed	OBL

Solidago canadensis	Mountain goldenrod	FACU
Symphyotrichum lanceolatum	White panicled American aster	OBL
Taraxacum officinale	Common dandelion	FACU
Trifolium repens	White clover	FAC

APPENDIX F - MTWAM ASSESSMENT FORM

MDT Montana Wetland Assessment Form (revised March 2008)

1. **Project Name:** BTNF Administration Site

3. **Evaluation Date:** Sept. 2014 **4**. **Evaluator(s):** Y2 Consultants, LLC. **5**. **Wetlands/Site #(s):** 1-7

6. **Wetland Location(s): i**. **Legal:** T41N, R116W, S27;
ii. Approx. Stationing or Mileposts: 519471, 4814682
iii. Watershed: 17040101 **Watershed Name, County:** Snake Headwaters, Teton

7. **a**. **Evaluating Agency:** USACE, Teton County, & Town of Jackson
b. **Purpose of Evaluation:**
1. __ Wetlands potentially affected by MDT project
2. __ Mitigation wetlands; pre-construction
3. __ Mitigation wetlands; post-construction
4. X Other: Determination of Ecosystem Function and Degradation

8. **Wetland size:** 1.05 acres (measured)

9. **Assessment area (AA):** 1.05 acres (measured)
(AA is considered the entire wetland size of those being assessed)

10. **Classification of Wetland and Aquatic Habitats in AA**

HGM Class (Brinson)	Class (Cowardin)	Modifier (Cowardin)	Water Regime	% of AA
D	EM	F, A, D	SI	97
D	UB	I	SI	3

Abbreviations:

HGM Classes: Riverine (**R**), Depressional (**D**), Slope (**S**), Mineral Soil Flats (**MSF**), Organic Soil Flats (**OSF**), Lacustrine Fringe (**LF**);

Cowardin Classes: Rock Bottom (**RB**), Unconsolidated bottom (**UB**), Aquatic Bed (**AB**), Unconsolidated Shore (**US**), Moss-lichen Wetland (**ML**), Emergent Wetland (**EM**), Scrub-Shrub Wetland (**SS**), Forested Wetland (**FO**)

Modifiers: Excavated (**E**), Impounded (**I**), Diked (**D**), Partly Drained (**PD**), Farmed (**F**), Artificial (**A**)

Water Regimes: Permanent / Perennial (**PP**), Seasonal / Intermittent (**SI**), Temporary / Ephemeral (**TE**)

11. Estimated relative abundance: (of similarly classified sites within the same Major Watershed Basin)
ABUNDANT

12. **General condition of AA:**

i. Disturbance:

Conditions within AA	*Predominant conditions adjacent to (within 500 feet of) AA*		
	Managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or buildings; and noxious weed or ANVS cover is ≤15%.	Land not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to minor clearing; contains few roads or buildings; noxious weed or ANVS cover is ≤30%.	Land cultivated or heavily grazed or logged; subject to substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.
AA occurs and is managed in predominantly natural state; is not grazed, hayed, logged, or otherwise converted; does not contain roads or occupied buildings; and noxious weed or ANVS cover is ≤15%.	low disturbance	low disturbance	moderate disturbance
AA not cultivated, but may be moderately grazed or hayed or selectively logged; or has been subject to relatively minor clearing, fill placement, or hydrological alteration; contains few roads or buildings; noxious weed or ANVS cover is ≤30%.	moderate disturbance	moderate disturbance	high disturbance
AA cultivated or heavily grazed or logged; subject to relatively substantial fill placement, grading, clearing, or hydrological alteration; high road or building density; or noxious weed or ANVS cover is >30%.	high disturbance	high disturbance	**high disturbance**

Comments: (types of disturbance, intensity, season, etc.):
i. The 10 acre study portion of the 15.3 acre BTNF Admin. parcel has been heavily disturbed by human activity. Historic uses include livestock grazing, ranching and development of permanent and semi-permanent structures and corrals. Approximately 4.5 acres have been developed with roads, utility installations and concrete pads for semi-permanent housing structures. A portion of the site continues to be grazed by horses throughout various portions of the summer and mowing occurs within the directly adjacent field on the site. Damming, berming and other manipulation activities have occurred within the riparian zones for over fifty years. Historic dumping is evident in portions of the parcel with debris including large metal scraps and cement blocks extending into wetland boundaries. Various horse and man-utilized trails run throughout the property.

Agricultural activities appears to have widened the remnant channel form in various ways. Evidence of widening is supported by comparison of the channel width within the study area with that directly downstream of the site on the National Elk Refuge (NER), which has not experienced as heavy utilization or alteration.
Unconsolidated bottom wetlands in the study area (.08 ac) were created through conversion of a small channel to a more expansive pond via damming sometime between 1945 and 1955. Beyond the damming that occurred in the 40's or 50's, berms and impoundments have also heavily altered the system throughout the study area.

Extent of both the Unconsolidated Bottom wetland and the other depressional wetlands on the site is further influenced and dimensionally increased by the long-time irrigation activities from adjacent upland pastures on the National Elk Refuge.

ii. Prominent noxious, aquatic nuisance, & other exotic vegetation species: *Much of the vegetation in the area and within the wetland fringes are non-native agricultural species as well as a few cultivated shrubs. Pasture oriented species include Bromus inermis, Agrostis stolonifera, Alopecurus*

arundinaceus, Phleum pretense, Poa pratensis and Trifolium repens. Invasive introduced species present within the study area included Cirsium arvense (considered 'noxious') and Elymus repens.

iii. Provide brief descriptive summary of AA and surrounding land use/habitat: See above

13. **Structural Diversity:** *(based on number of "Cowardin" **vegetated** classes present, see #10 above)*

Existing # of "Cowardin" Vegetated Classes in AA	Initial Rating	Is current management preventing (passive) existence of additional vegetated classes?		Modified Rating
≥3 (or 2 if 1 is forested) classes	H	NA	NA	NA
2 (or 1 if forested) classes	M	NA	NA	NA
1 class, but not a monoculture	M	←NO	YES→	**L**
1 class, monoculture (1 species comprises ≥90% of total cover)	L	NA	NA	NA

Comments: Management of the study area in the form of mowing of the agricultural fields adjacent to wetlands as well as active grazing of the area by horses have altered riparian species composition and prevented additional vegetated classes.

SECTION PERTAINING to FUNCTIONS & VALUES ASSESSMENT

14A. **Habitat for Federally Listed or Proposed Threatened or Endangered Plants or Animals:**

i. AA is Documented (D) or Suspected (S) to contain:
Primary or critical habitat (**list species**) -
Secondary habitat (**list species**) -
Incidental habitat (**list species**) -
No usable habitat X

ii. Rating

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
Functional Points and Rating	1H	.9H	.8M	.7M	.3L	.1L	**0L**

Sources for documented use (e.g. observations, records, etc): *Species receiving protection under the provisions of the Endangered Species Act in the region include Lynx Canadensis (Canada lynx), Ursus arctos horribilis (grizzly bear), Centrocercus urophasianus (greater sage-grouse), Gulo gulo luscus (wolverine), Pinus albicaulis (whitebark Pine) and Coccyzus americanus (yellow-billed cuckoo) (USFWS, 2014).*

None of these threatened or endangered species are expected to reside within the property boundaries or within its immediate vicinity.

Works Cited:
USFWS, 2014. Endangered, Threatened, Proposed and Candidate Species. Ecological Services, Cheyenne, WY.

14B. **Habitat for plant or animals rated S1, S2, or S3 by the Wyoming Natural Diversity Database:** *(not including species listed in14A above)*

i. AA is Documented (D) or Suspected (S) to contain:
Primary or critical habitat (**list species**) -
Secondary habitat (**list species**) -
Incidental habitat (**list species**) -
No usable habitat X

ii. Rating (use the conclusions from i above and the matrix below to arrive at [circle] the functional points and rating)

Highest Habitat Level	doc/primary	sus/primary	doc/secondary	sus/secondary	doc/incidental	sus/incidental	None
S1 Species: *Functional Points and Rating*	1H	.8H	.7M	.6M	.2L	.1L	0L
S2 and S3 Species: *Functional Points and Rating*	.9H	.7M	.6M	.5M	.2L	.1L	**0L**

Sources for documented use (e.g. observations, records, etc.): No known vascular or nonvascular plant species from the Wyoming Plant Species of Concern List (2012) from the Wyoming natural Diversity Database is present within the study site. Beyond already described endangered and threatened species, no recorded observations are available for any other mammals on site that are listed as a Mammal Species of Concern in the Wyoming Natural Diversity Database.

Wildlife species of special concern as designated by Teton County are not likely to use the property's agricultural habitat extensively.

Trumpeter swans are classified as a Priority SSC by Wyoming Game and Fish Department and are also a species of interest to the USFWS. Given the degraded wetland habitat and minimal open water on the study site, Trumpeter Swans are not expected to utilize the project area, preferring the high quality habitat and open water north of the parcel on the National Elk Refuge (NER). No known bald eagle nests are located near the project site and there is no protected crucial winter foraging habitat for eagles on the project area (WGFD, 2011). Other species (elk and mule deer) may minimally utilize the property as a movement corridor from the high density developed town area to the National Elk Refuge; however, extensive wildlife fencing

put in place by the NER heavily dissuades this movement from east to west into the study parcel.

Wetland features on site are not considered critical habitat or spawning areas for Snake River cutthroat trout.

Works Cited:
Teton County, 2014. Land Development Regulations, Adopted October 20-2014. Teton County, WY.
WGFD, 2011. Bald Eagle Nests Data. Wyoming Game and Fish Department, Jackson, WY.
WYNDD, 2012. Wyoming Plant Species of Concern List, 2012. University of Wyoming. Laramie, WY.

14C. General **Wildlife Habitat Rating:**

i. Evidence of overall wildlife use in the AA:

Substantial:
____observations of abundant wildlife #s or high species diversity (during any period)
____ abundant wildlife sign such as scat, tracks, nest structures, game trails, etc.
____ presence of extremely limiting habitat features not available in the surrounding area
____ interviews with local biologists with knowledge of the AA

Minimal (based on any of the following [check]):
____ few or no wildlife observations during peak use periods
____ little to no wildlife sign
____ sparse adjacent upland food sources
____ interviews with local biologists

Moderate (based on any of the following [check]):
__X__ observations of scattered wildlife groups or individuals or relatively few species during peak periods
__X__ common occurrence of wildlife sign such as scat, tracks, nest structures, game trails, etc.
__X__ adequate adjacent upland food sources
____ interviews with local biologists with knowledge of the AA

ii. Wildlife habitat features
*Structural diversity is from #13. For class cover to be considered evenly distributed, the most and least prevalent **vegetated** classes must be within 20% of each other in terms of their percent composition of the AA (see #10).*

(Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; T/E = temporary/ephemeral; and A = absent)

Structural diversity (see #13)	High								Moderate								Low			
Class cover distribution (all vegetated classes)	Even				Uneven				Even				Uneven				Even			
Duration of surface water in ≥ 10% of AA	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A
Low disturbance at AA (see #12i)	E	E	E	H	E	E	H	H	E	H	H	M	E	H	M	M	E	H	M	M
Moderate disturbance at AA (see #12i)	H	H	H	H	H	H	H	M	H	H	M	M	H	M	M	L	H	M	L	L
High disturbance at AA (see #12i)	M	M	M	L	M	M	L	L	M	M	L	L	M	L	L	L	**L**	L	L	L

iii. Rating

Evidence of wildlife use (i)	*Wildlife habitat features rating (ii)*			
	Exceptional	High	Moderate	Low
Substantial	1E	.9H	.8H	.7M
Moderate	.9H	.7M	.5M	**.3L**
Minimal	.6M	.4M	.2L	.1L

Comments:

14**D**. **General Fish Habitat Rating:**

i. Final Score and Rating: NA

Comments: The AA is not used by fish, fish use is not restorable due to habitat constraints, or is not desired from a management perspective (such as fish entrapped in a canal).

14E. **Flood Attenuation:**

i. Final Score and Rating: NA

Comments: Applies only to wetlands subject to flooding via in-channel or overbank flow. AA wetlands are not flooded from in-channel or overbank flow

14F. Short and Long Term Surface Water Storage: *(Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow.)*

i. Rating *(Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see instructions for further definitions of these terms].)*

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding	>5 acre feet	1.1 to 5 acre feet	≤1 acre foot

Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond **≥ 5 out of 10 years**	1H	.9H	.8H	.8H	.6M	.5M	.4M	**.3L**	.2L
Wetlands in AA flood or pond **< 5 out of 10 years**	.9H	.8H	.7M	.7M	.5M	.4M	.3L	.2L	.1L

Comments:

14G. **Sediment/Nutrient/Toxicant Retention and Removal:** (Applies to wetlands with potential to receive sediments, nutrients, or toxicants through influx of surface or ground water or direct input.)

i. Rating *[H = high, M = moderate, or L = low]*

Sediment, nutrient, and toxicant input levels within AA	AA receives or surrounding land use with potential to deliver levels of sediments, nutrients, or compounds at levels such that other functions are not substantially impaired. Minor sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.				Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants **or** AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.			
% cover of wetland vegetation in AA	≥ 70%		< 70%		≥ 70%		< 70%	
Evidence of flooding / ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains **no or restricted outlet**	1H	.8H	.7M	.5M	.5M	.4M	.3L	.2L
AA contains **unrestricted outlet**	**.9H**	.7M	.6M	.4M	.4M	.3L	.2L	.1L

Comments:

14H Sediment/Shoreline Stabilization:

i. Final Score and Rating: NA

Comments: AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action

14I. Production Export/Food Chain Support:

i. Level of Biological Activity (synthesis of wildlife and fish habitat ratings)

General Fish Habitat Rating (14D.iii.)	**General Wildlife Habitat Rating (14C.iii.)**		
	E/H	M	L
E/H	H	H	M
M	H	M	M
L	M	M	L
N/A	H	M	**L**

ii. Rating

Factor A = acreage of vegetated wetland component in the AA; Factor B = level of biological activity rating from above (14I.i.); Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P, S/I, and T/E are as previously defined, and A = "absent".)

A	Vegetated component >5 acres						Vegetated component 1-5 acres						Vegetated component <1 acre					
B	High		Moderate		Low		High		Moderate		Low		High		Moderate		Low	
C	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P/P	1H	.7M	.8H	.5M	.6M	.4M	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.6M	.6M	.4M	.3L	.2L
S/I	.9H	.6M	.7M	.4M	.5M	.3L	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.5M	.5M	.3L	**.3L**	.2L
T/E/A	.8H	.5M	.6M	.3L	.4M	.2L	.7M	.4M	.5M	.2L	.3L	.1L	.6M	.4M	.4M	.2L	.2L	.1L

iii. Modified Rating

Vegetated Upland Buffer (VUB): Area with ≥ 30% plant cover, ≤ 15% noxious weed or ANVS cover, and that is not subjected to periodic mechanical mowing or clearing (unless for weed control).

a) Is there an average ≥ 50 foot-wide vegetated upland buffer around ≥ 75% of the AA circumference? **NA** *If yes, add 0.1 to the score in **ii** above.*

iv. Final Score and Rating: 0.3L Comments:

14J. Groundwater **Discharge/Recharge:**

i. Discharge Indicators

_____ The AA is a slope wetland
X Springs or seeps are known or observed
_____ Vegetation growing during dormant season/drought

ii. Recharge Indicators

_____ Permeable substrate present without underlying impeding layer
_____ Wetland contains inlet but no outlet
_____ Stream is a known 'losing' stream; discharge volume decreases

_____ Wetland occurs at the toe of a natural slope
_____ Seeps are present at the wetland edge
_____ AA permanently flooded during drought periods
X Wetland contains an outlet, but no inlet
_____ Shallow water table and the site is saturated to the surface
_____ Other:

_____ Other:

iii. Rating

Criteria	**Duration of saturation at AA Wetlands *FROM GROUNDWATER DISCHARGE OR WITH WATER THAT IS RECHARGING THE GROUNDWATER SYSTEM***			
	P/P	S/I	T	None
Groundwater Discharge or Recharge	1H	**.7M**	.4M	.1L
Insufficient Data/Information	N/A			

Comments:

14K. Uniqueness:
i. Rating

Replacement potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland **or** plant association listed as "S1" by the MTNHP			AA does not contain previously cited rare types **and** structural diversity (#13) is high **or** contains plant association listed as "S2" by the MTNHP			AA does not contain previously cited rare types or associations **and** structural diversity (#13) is low-moderate		
Estimated relative abundance (#11)	rare	common	abundant	rare	common	abundant	rare	common	abundant
Low disturbance at AA (#12i)	1H	.9H	.8H	.8H	.6M	.5M	.5M	.4M	.3L
Moderate disturbance at AA (#12i)	.9H	.8H	.7M	.7M	.5M	.4M	.4M	.3L	.2L
High disturbance at AA (#12i)	.8H	.7M	.6M	.6M	.4M	.3L	.3L	.2L	**.1L**

Comments:

14L. Recreation/Education Potential: (affords "bonus" points if AA provides recreation or education opportunity)

i. Is the AA a known or potential rec./ed. site: NO

ii. Check categories that apply to the AA: ___ Educational/scientific study; ___ Consumptive rec.; ___Non-consumptive rec.; **NONE** Other

iii. Rating: NA Comments:

General Site Notes

FUNCTION & VALUE SUMMARY & OVERALL RATING FOR WETLAND/SITE #(S): 1-7

Function & Value Variables	Rating	Actual Functional Points	Possible Functional Points	Functional Units: (Actual Points x Estimated AA Acreage)	Indicate the four most prominent functions with an asterisk (*)
A. Listed/Proposed T&E Species Habitat	L	0.0	1	0.00	
B. MT Natural Heritage Program Species Habitat	L	0.0	1	0.00	
C. General Wildlife Habitat	L	0.3	1	0.32	*
D. General Fish Habitat	NA				
E. Flood Attenuation	NA				*
F. Short and Long Term Surface Water Storage	L	0.3	1.0	0.32	*
G. Sediment/Nutrient/Toxicant Removal	H	0.9	1.0	0.94	*
H. Sediment/Shoreline Stabilization	NA				
I. Production Export/Food Chain Support	L	0.3	1	0.32	
J. Groundwater Discharge/Recharge	M	0.7	1.0	0.74	
K. Uniqueness	L	0.1	1	0.10	
L. Recreation/Education Potential (bonus points)	NA		NA		
Totals:		2.60	8.0	2.73	
Percent of Possible Score			33%		

Category I Wetland: (must satisfy **one** of the following criteria; otherwise go to Category II)
_____ Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; **or**
_____ Score of 1 functional point for Uniqueness; **or**
_____ Score of 1 functional point for Flood Attenuation **and** answer to Question 14E.ii is "yes"; **or**
_____ Percent of possible score > 80% (round to nearest whole #).

Category II Wetland: (Criteria for Category I not satisfied **and** meets any **one** of the following criteria; otherwise go to Category IV)
_____ Score of 1 functional point for MT Natural Heritage Program Species Habitat; **or**
_____ Score of .9 or 1 functional point for General Wildlife Habitat; **or**
_____ Score of .9 or 1 functional point for General Fish Habitat; **or**
_____ "High" to "Exceptional" ratings for **both** General Wildlife Habitat **and** General Fish/Aquatic Habitat; **or**
_____ Score of .9 functional point for Uniqueness; **or**
_____ Percent of possible score > 65% (round to nearest whole #).

Category III Wetland: (Criteria for Categories I, II, or IV not satisfied)
__X__ percent of possible score > 35% and < 65% (round to nearest whole #)

Category IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; otherwise go to Category III)
__X__ "Low" rating for Uniqueness; **and**
__X__ Vegetated wetland component < 1 acre (do not include upland vegetated buffer); **and**
__X__ Percent of possible score < 35% (round to nearest whole #).

OVERALL ANALYSIS AREA RATING: IV

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
WYOMING REGULATORY OFFICE
2232 DELL RANGE BOULEVARD, SUITE 210
CHEYENNE WY 82009-4942

April 9, 2015

Tricia O'Connor
Forest Supervisor
U.S. Forest Service
Bridger-Teton National Forest
P.O. Box 1888
Jackson, Wyoming 83001-1888

Dear Ms. O'Connor:

This letter is in response to a request we received from Y2 Consultants, LLC (Y2) on April 2, 2015, to review the *Aquatic Resources Inventory, 10 acre Study Area, Bridger Teton Forest Service Administration Site, Teton County, Wyoming* dated March 17, 2015. The property is located in the NW ¼ SW ¼ of Section 27, Township 41 North, Range 116 West, Teton County, Wyoming.

The U.S. Army Corps of Engineers regulates the placement of dredged and fill material into waters of the United States under Section 404 of the Clean Water Act (33 U.S.C. 1344). The Corps' regulations are published in the *Code of Federal Regulations* as 33 CFR Parts 320 through 332. Information on Section 404 requirements in Wyoming can be obtained from our web site at: http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/Wyoming.aspx

Based on documentation in the report and previous site visits, I determined that methods used to identify wetlands on the property are consistent with requirements of the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region (Version 2.0)*. Therefore, Map 7 in the report provides an accurate depiction of boundaries for all wetlands and other surface waters in the study area. This verification of delineation results is valid for a period of 5 years, until **April 9, 2020**, unless new information warrants a modification.

The results identify 0.51 acre of palustrine emergent wetland, 0.16 acre of palustrine scrub-shrub (PSS) wetland, and a 0.08-acre shallow pond (Sites 1-6) that are all adjacent to the relic channel of Cache Creek, which functions as a tributary of Flat Creek. Another 0.29-acre PSS wetland (Site 7) may extend beyond the property boundary as part of a larger wetland complex adjacent to Flat Creek, a tributary of the Snake River, which is a traditional navigable water. Therefore, 0.96 acre of wetland and a pond in the study area are likely to be waters of the United States as defined at 33 CFR Part 328.3(a)(7).

Please understand that the purpose of this letter is to verify the accuracy of an aquatic resources inventory only, which does not constitute an approved jurisdictional determination (AJD) with the opportunity for an administrative appeal. On March 23, 2011, we sent an AJD

letter to the previous Forest Supervisor with a determination that all wetlands in this same study area (1.36 acres) were waters of the U.S. based on available information. However, more hydrology data has been collected from ground water monitoring wells that is currently inconclusive but may provide a basis for reconsideration of jurisdiction at some future date. I also understand that the property could be acquired by a private entity sometime soon. For those reasons, we are deferring any decision at this time that could affect the previous determination.

The AJD procedure described above is not necessary prior to undertaking activities authorized by nationwide permits such as habitat enhancement and residential development. Nationwide permits were published in the *Federal Register* on February 21, 2012 (Vol. 77, No. 34). Those permits are available for a period of 5 years and will expire on March 18, 2017. Information on nationwide permits is available from our web site.

We appreciate everyone's interest in complying with the U.S. Army Corps of Engineers' regulatory program. Persons can contact me by e-mail at Thomas.B.Johnson@usace.army.mil or by telephone at (307) 772-2300 and reference our file NWO-2011-00518 if they have any questions about permit requirements.

Sincerely,

Thomas B. Johnson, P.E.
Project Manager
Wyoming Regulatory Office

Copies Furnished:

Brenda Younkin
Y2 Consultants, LLC
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The Omaha District, Regulatory Branch, Wyoming Regulatory Office is committed to providing quality and timely service to our customers. Please take a moment to complete a Customer Service Survey found on our web site at http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/Wyoming.aspx Paper copies of the survey are also available upon request for those without Internet access.

PLANNING & BUILDING DEPARTMENT

May 13, 2015

Pierson Land Works
Attn: Christen Holt
PO 1143
Jackson, WY 83001

RE: P15-026
Zoning Compliance Verification – 45 Rosencrans

Dear Ms. Holt:

Thank you for submitting a request for a Zoning Compliance Verification (ZCV) letter for Environmental Review. The property is physically addressed as 45 Rosencrans and legally known as PT. N1/2SW1/4 SEC. 27, TWP. 41, RNG. 116 (BRIDGER TETON FOREST SERVICE ADMIN. SITE). Division 8.6.2 of the Town Land Development Regulations (LDRs) states that in order to issue a ZCV the Planning Director shall find that the property, portion of the property, or attribute of the property in question:

1. **Complies with Land Development Regulations (LDRs).**
   See below.

2. **Conformance with previous approvals/permits.**
   Not applicable to this review.

Planning Staff has reviewed the ZCV prepared by Y2 Consultants for 45 Rosencrans for compliance with the requested sections of the Town of Jackson LDR's. This ZCV is requesting a determination of protection for 0.97 acres of wetlands on a 10-acre portion of the USFS property. Specifically, the ZCV is narrowly defined to request a determination as to whether or not wetlands on the site are determined to be irrigation-induced and/or degraded.

An Aquatic Resources Inventory (ARI) was completed by Y2 in September 2014 and submitted to the Army Corp of Engineers (ACOE) on April 2, 2015. A letter from the ACOE, dated April 9, 2015, verified that the wetland delineation utilized methods consistent with the ACOE requirements. The ARI identified 0.51 acre of palustrine emergent wetland, 0.16 acre of palustrine scrub-shrub wetland, and a 0.08 acre shallow pond, all adjacent to the relic channel of Cache Creek. Another 0.29-acre palustrine emergent wetland may extend beyond the property

boundary into the NER as part of a larger wetland complex adjacent to Flat Creek. It is important to note that sometime likely in the 1950s, Cache Creek was rerouted south of this site to empty into Flat Creek west of the USFS site, so the surface hydrology supporting the site has been significantly altered.

Town of Jackson LDR Section 5.1.1.D.3.b discusses wetland development as follows: "Wetlands may be physically developed or used under the following circumstances:

i. **High-Intensity Use Degrades Wetland/Wetland Agriculture-Induced.** Where the intensity of adjoining use(s) cause the retained wetlands to become degraded habitats and the wetland area is suitable for physical development or use due to planning, location, and other factors, or where the wetland is induced by irrigation."

Based upon the language above, Staff is specifically looking at whether or not the **habitat** is degraded (rather than examining other wetland functions for degradation such as flood attenuation, surface water storage, groundwater discharge/recharge, etc.), if the wetland has been anthropogenically altered on the site, and if there is a correlation between irrigation practices on the NER that influence groundwater on the subject property and contribute to the persistence of wetlands on the USFS property.

Y2 asserts that the wetlands on the site are primarily irrigation-induced via irrigation from the NER. At the request of Staff, Y2 completed a functional assessment of the wetlands as a whole, as well as separate segments of the wetlands as identified by Staff and indicated on the attached map. Staff requested the consultant utilize the Montana Wetland Assessment Method (MWAM).

As a whole, the functional assessment identifies highly disturbed and degraded wetlands with a "low" rating for uniqueness and limited diversity of wetland vegetation. Human influences on the site include expanding the historic Cache Creek channel to create a stock pond for livestock, extensive livestock grazing, conversion of native wetland species to non-native and cultivated grasses and introduction of noxious weeds. Debris dumping including metal scraps and concrete slabs has also occurred on the site within the wetlands. Off site, as previously mentioned, Cache Creek was diverted and piped to the west, upstream of the property. The four habitat components in the assessment (Listed/Proposed Threatened and Endangered Species Habitat, Specific Species Habitat - Teton County Species of Special Concern Habitat, General Wildlife Habitat, and General Fish Habitat) all ranked low (0.0 to 0.3 out of a possible 1.0).

Per segment, the assessment yielded the following results:

- Segments 1-2: Habitat components ranked 0.0 to 0.3 out of a possible 1.0, with an overall ranking of 33% out of 100%.
- Segments 3-4: Habitat components ranked 0.0 to 0.5 out of a possible 1.0, with an overall ranking of 39% out of 100%.
- Segments 5-7: Habitat components ranked 0.0 to 0.5 out of a possible 1.0, with an overall ranking of 32% out of 100%.

Per the MWAM, a "low" rating is 35% or less. Segment 3-4 received a "medium" rating for overall wildlife habitat due to structural diversity of plant life (e.g.: more willows).

Staff visited the site twice: once on October 24, 2014 with a representative from Y2 and again on April 22, 2015. During the second staff was accompanied by Bill Long, Program Director with the Wyoming Wetlands Society, who is assisting Staff in this review, as well as representatives from Y2. Staff noted the condition of the wetlands on both visits, citing extensive noxious weeds, a lack of diversity of wetland plants, evidence of livestock grazing, and concrete and metal dumped into the wetlands.

A letter (undated, but received on 5/6/2015 via email) from Bill Long is attached, and while it referenced Teton County and Teton County LDRs, the sections of the LDRs to which he is referring are identical to the Town of Jackson LDRs. Mr. Long's letter provides support for the assessment completed by Y2 that all of the wetlands on the site are degraded, but he does not support the idea that the wetlands on the property are irrigation-induced via irrigation practices on the NER because of the shift in irrigation practices to sprinkler irrigation. While flood irrigation on the NER likely historically supported the willow community, Mr. Long asserts that the established willows on the property are now being maintained by wet conditions in the root zone of the shrubs due to subsurface influences. Mr. Long also describes how a series of events have compromised the wetlands on the property including the piping and diversion of Cache Creek (off the property) and partial filling of the relic Cache Creek Channel in multiple locations on the property. Staff agrees with Mr. Long's assessment.

Staff maintains that most of the wetlands on the property are naturally occurring, with the exception of the wetlands located within segment 4 that are associated with the stock pond, which is clearly anthropogenic in origin, and therefore is not protected under the LDRs. Staff concurs with the recommendations made by Y2 and the Wyoming Wetlands Society that all wetlands on the property are degraded and therefore may be developed. The LDRs require an applicant to demonstrate that reasonable project modification measures have been taken to reduce wetland loss and degradation. Encroachment into the 30-foot wetland buffer is permitted for degraded wetlands, with no mitigation requirement. Mitigation is required on a 2:1 basis when developing degraded wetlands, and 30- foot buffers shall be provided around all wetlands created for mitigation. No mitigation is required for the wetland expansion area associated with the damning of the relic Cache Creek Channel, but mitigation is required for the estimated 17-foot width of the relic Cache Creek Channel over which it was damned and expanded. The irrigation-induced wetlands and an estimated area of the original Cache Creek channel should be shown illustratively, as well as described in the narrative, in the future Environmental Analysis submittal.

The following conditions are recommended:

1. A conceptual mitigation plan shall be submitted as part of the Environmental Analysis demonstrating how the 2:1 wetland mitigation ratio will be met.
2. Prior to any land-disturbing activity a final mitigation plan, pursuant to LDR Section 5.2.1.E.2.b shall be submitted for approval by the Planning Director.

This zoning compliance shall only verify zoning compliance at the time it is issued pursuant to Division 8.6.2 Zoning Compliance Verification of the Town of Jackson Land Development

Regulations. If you should have any further questions, please contact Tyler Sinclair at 733-0440, ext. 1301 or tsinclair@ci.jackson.wy.us.

Sincerely,

Tyler Sinclair
Planning Director

Enclosure

Wyoming Wetlands Society
Post Office Box 3216
125 East Pearl Street, Suite 8
Jackson, Wyoming 83001

Susan Johnson, Planning Manager
Teton County Planning and Development
P.O. Box 1727
Jackson, Wyoming 83001

Dear Susan,

The Wyoming Wetland Society (WWS) was asked by Teton County, as an impartial third party, to evaluate a proposed site development by the Bear Development Group on North Cache Street, Jackson, Wyoming for the proposed development sites value for *wetland habitat*. The site is US Forest Service property east of North Cache Street, in the town of Jackson, and laying immediate to the west of the National Elk Refuge boundary fence on the southwest corner of the Refuge. The parcel lays immediate to the town of Jackson.

In the process of the investigation WWS requested clarification of the requested scope of the evaluation. In a memo (S Johnson,4/23/2015) provided clarification from the Teton County Planning Department reference the Land Development Regulations (LDR) regarding "degraded habitats", in that WWS was to address the status concerning whether the wetland habitat on the parcel is degraded. According to the Teton County LDR 5.1.1, section3, subsection b(i), "High-Intensity Use Degrades Wetland/Wetland Agriculture-Induced Where the intensity of adjoining use(s) causes the retained wetlands to become degraded habitats and the wetland area is suitable for physical development or use due to planning, location and other factors, or where the wetland is induced by irrigation". On a site visit on April 22, 2015, the parties had an opportunity to visit the proposed development site and that visit provided valuable insight into the current status of the property and the wetland habitat.

In this evaluation WWS looked at the LDR to address several questions reference *degraded wetland habitat*; 1) Does adjoin use(s) cause the existing wetland habitat to be degraded, 2) Does historical use(s) cause the existing wetland habitat to be degraded, 3) Is the wetland habitat induced by irrigation uses, past or present. The following is a discussion of those questions.

1) Does adjoin use(s) cause the existing wetland habitat to be degraded?

Several small remnant scrub-shrub wetlands lay on the east side of the proposed Bear development site. This primary wetland, leading from the south and running northerly, is suspect to be the old Cache Creek channel. That channel is a relict on the landscape as Cache Creek was put underground and piped across town entering Flat Creek at a point west of the area. This action separated Cache Creek and degraded that system while leaving residual shrub communities along what use to be the stream bed. Historically the town of Jackson encroached from the south and west, the National Elk Refuge lays to the east. This old Cache creek channel exited into the adjacent cattail marsh found on the National Elk Refuge property that lays immediately north of the US Forest Service parcel-proposed Bear Development parcel.

2) Does historical use(s) cause the wetland habitat to be degraded?

The scrub-shrub habitat fringe what is the apparent remnant Cache Creek channel. That channel is a relict on the landscape as the stream was put underground and piped across town entering Flat Creek at a point west of the area. This action separated Cache Creek and degraded that system while leaving residual shrub communities along what use to be the stream bed. The historic channel was filled over time and currently only a shallow depression suggests a remnant stream channel. The channel has been filled with pieces of cement from off-site demolition, rock, and metal. The watershed was dammed in several locations creating shallow ephemeral wetlands that were evident as late as 1994, those sites were breached historically and no longer hold water,

3) Is the wetland habitat induced by irrigation uses, past or present?

The scrub-shrub willow community exists as a result of local hydrology. Water exists in the root zone of this mature willow community currently adequate to perpetuate that willow habitat. That community was most likely established and maintained by the historic flood irrigation, Cache Creek pre-piping and the existing hydrology influences of Flat Creek floodplain. This Scrub-Shrub can be found along and among the fill materials in the upper reach of the Bear Development parcel and downstream to its intersect with the NER boundary. A well-established willow community exists on the property with root systems in the water zone subsurface. The existing remnant willow community, scrub-shrub wetland habitat is in good condition however the system overall is degraded because of historic human influences.

In summary the wetland habitat on the proposed development of the Bear Development site is generally intact; however it has been compromised over the years by a series of events including the development of the town of Jackson and the piping of Cache Creek It is most likely that flood irrigation from the National Elk Refuge historically supported the willow community, as did the hydrology of the Flat Creek floodplain. Currently the hydrology of Flat creek is likely supporting this willow community, not flood irrigation because of the shift of irrigation practices to sprinklers. Once establish, this willow habitat is being maintained by wet conditions in the root zone of those shrubs, in this case subsurface influences. The wetland scrub-shrub habitat on this site has

been degraded, on the upper reaches of the proposed development site primarily, yet man caused influences/activities have occurred over all reaches of the parcel. As a result of historic human activities the wetland habitat has been compromised.

Sincerely,

William M. Long, Program Director
Wyoming Wetland Society
P.O. Box 3216
Jackson, Wyoming 83001
307-203-2209
bill@wyomingwetlandssociety.org

August 30, 2016

Tyler Sinclair
Town of Jackson
PO Box 2687
Jackson, WY 83001

Re: Status of wetlands at 60 Rosencrans

Dear Tyler,

Y2 Consultants LLC. was contracted by Hansen & Hansen, LLC. to install additional groundwater monitoring wells for the 10.0-acre parcel, physically addressed as 60 Rosencrans. Y2 directed the installation of 4 groundwater monitoring wells along the eastern border of the 10-acre parcel (Figure 1). The purpose of these wells was to provide groundwater elevation data and to help in the identification of natural and irrigation-induced wetlands at the project site. Wells were installed to depths ranging from 6.5 to 8.0 feet in depth and consisted of 4-inch diameter perforated PVC pipe encased in a filter sock.

Figure 1. Monitoring well locations.

Monitoring groundwater depth began in 2016 monthly in January then with increasing frequency through the spring of 2016 as snowmelt and spring runoff occurred. Water depth at wells 3 and 4 have consistently been notably deeper than wells 1 and 2. Water levels began to rise in all wells at the end of May, which coincided with snowmelt and runoff. As of August 19, 2016, water levels in wells 3 and 4 have maintained depths of greater than 40 inches from the ground surface. Wells 1 and 2 have stayed at

a depth of approximately 18 inches below the surface since mid-June, although spikes are observed in the data due to a periods of irrigation on the elk refuge adjacent to the parcel the first week of July. Groundwater levels are provided from June 1 through August 19, 2016 in Figure 2. Groundwater data are available from January, 2016 and data continues to be collected weekly. The NER has irrigated immediately adjacent to the parcel beginning in mid-June and continues to irrigate.

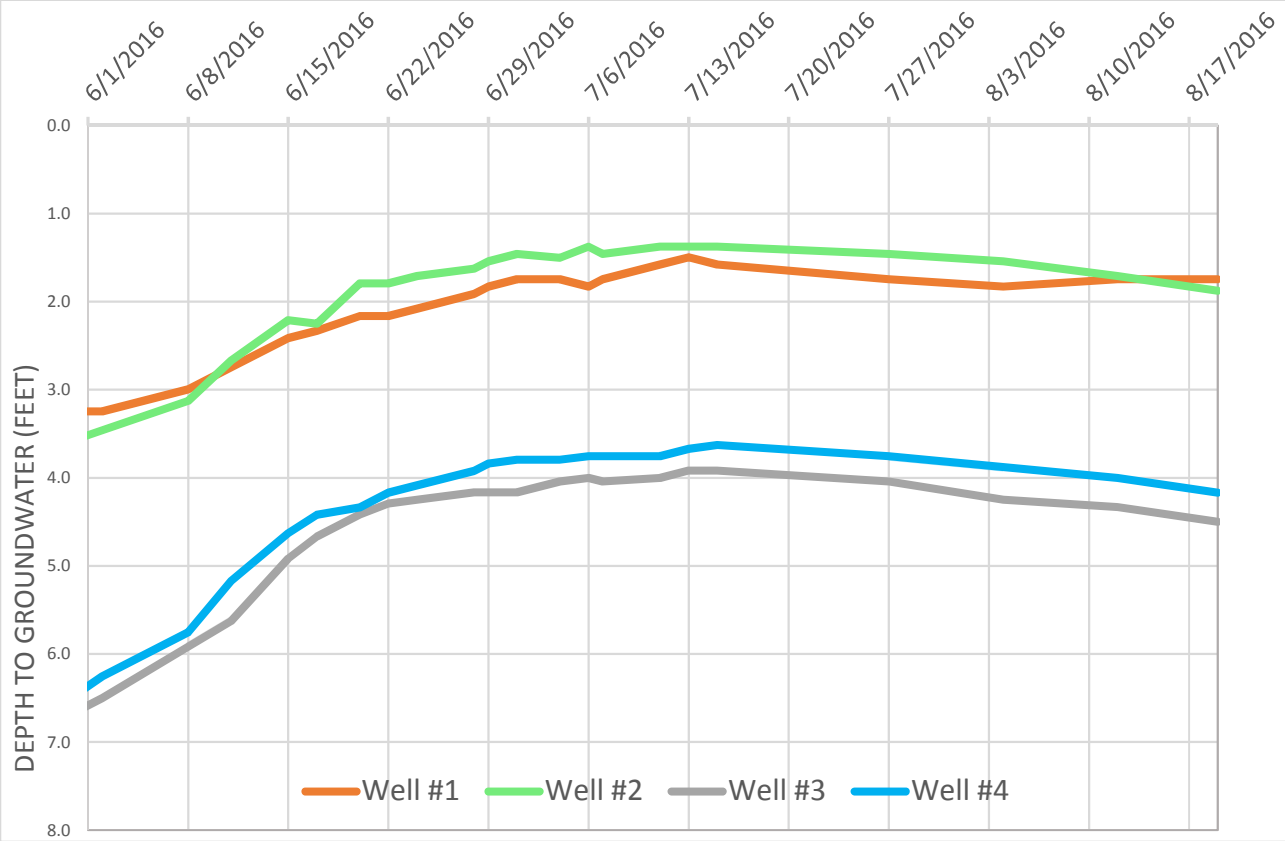


Figure 2. Well data from 6/1/16 to 8/17/16.

Figure 3. Current wetland map, 60 Rosencrans.

These data were provided to the Corps of Engineers with a request to remove polygons 5, 6 and 7 as definitional wetlands. Their review is underway but the well data supports removal of these features as wetlands.

If you have any questions or need any more information please contact me at 307-733-2999.

Sincerely,

Brenda K Younkin

Brenda Younkin

SECTION 8- ARCHITECTURAL DESIGNS & PRESERVATION MEMOS

- **BUILDING DESIGNS**
- **BUILDING REUSE AND RECYCLE MEMO**
- **TREE PRESERVATION & TEMPORARY NURSERY MEMO**

HIDDEN HOLLOW

Single Family

Front

HIDDEN HOLLOW

Single Family

Back

HIDDEN HOLLOW

Single Family

Right Side

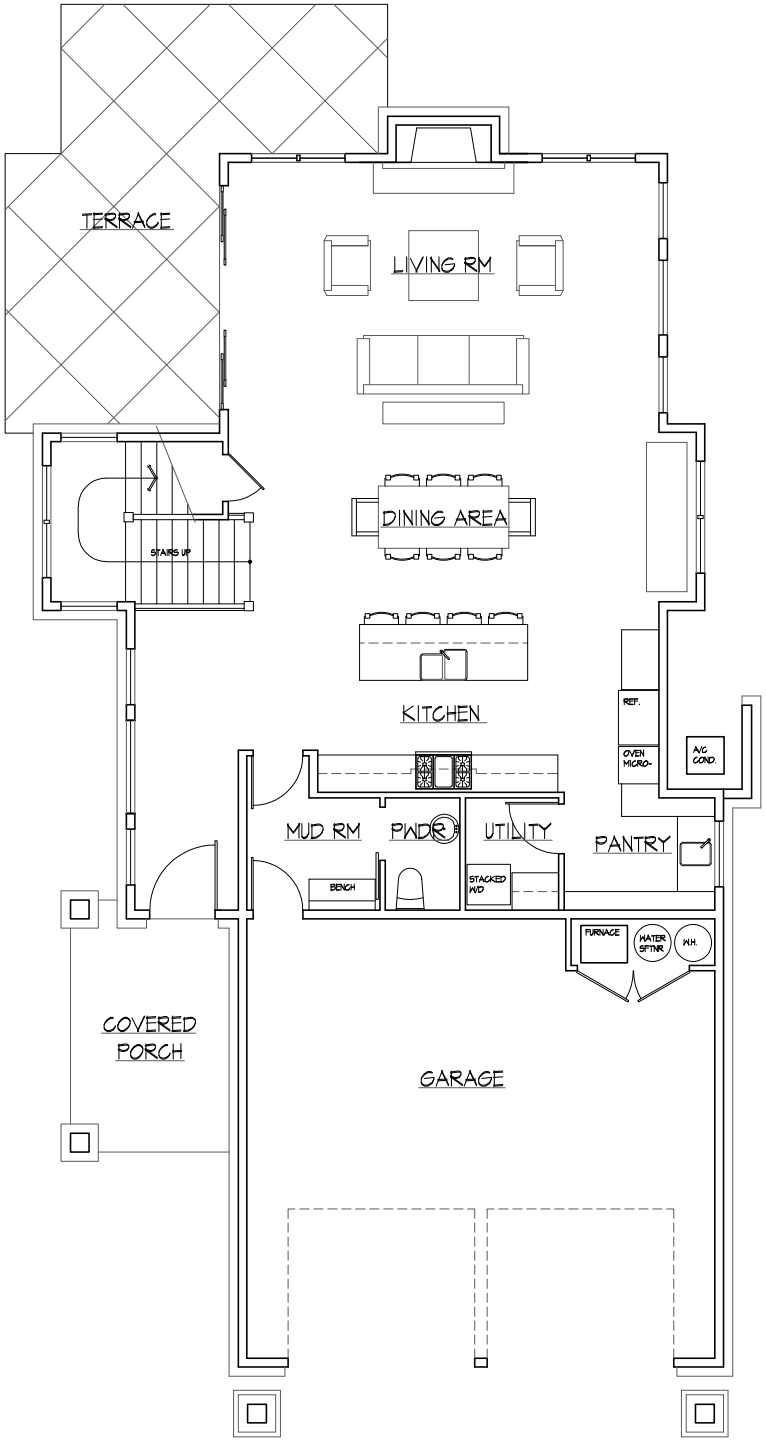
HIDDEN HOLLOW

Single Family

Left Side

HIDDEN HOLLOW

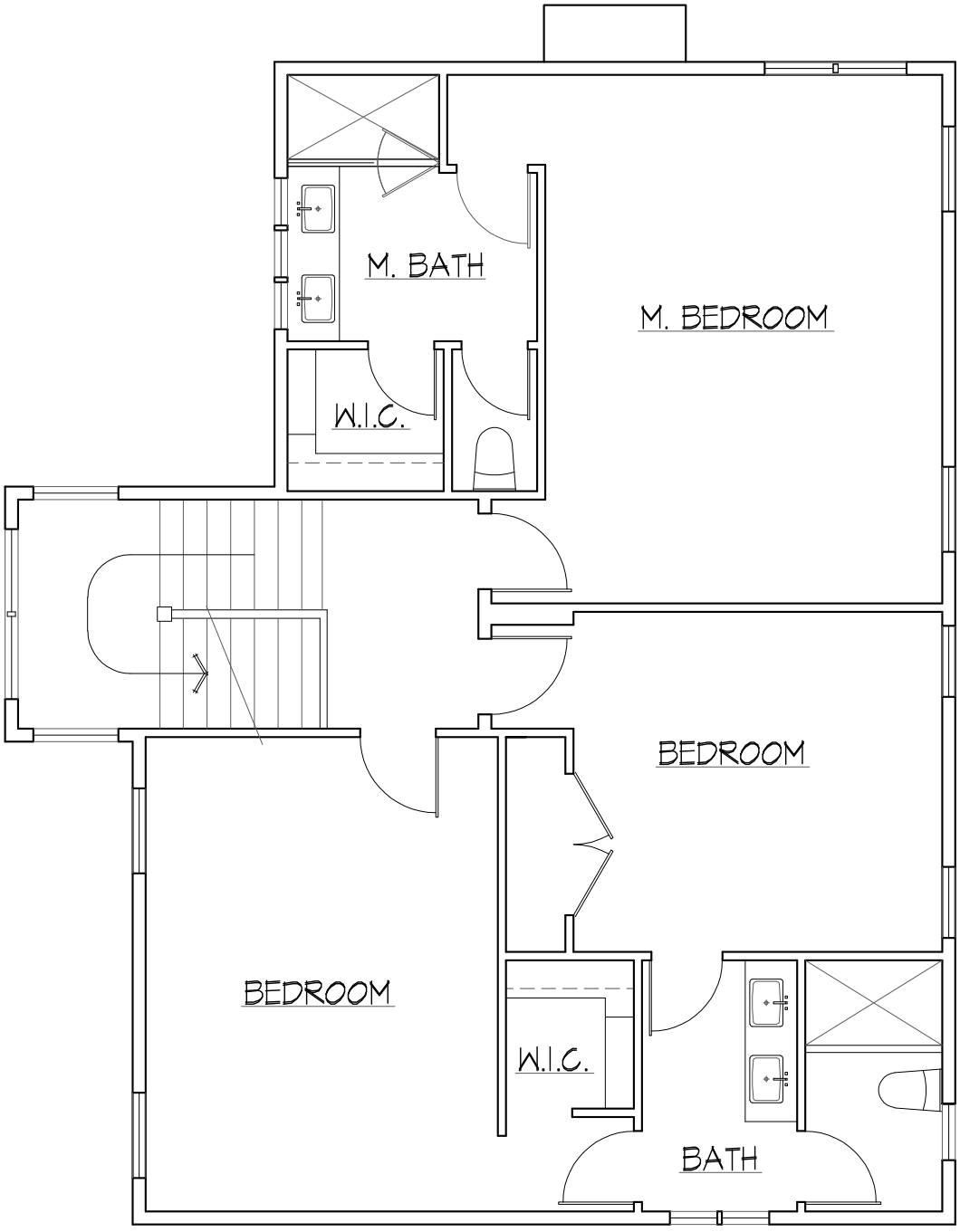
Single Family Floor Plans



Main Floor

HIDDEN HOLLOW

Single Family Floor Plans

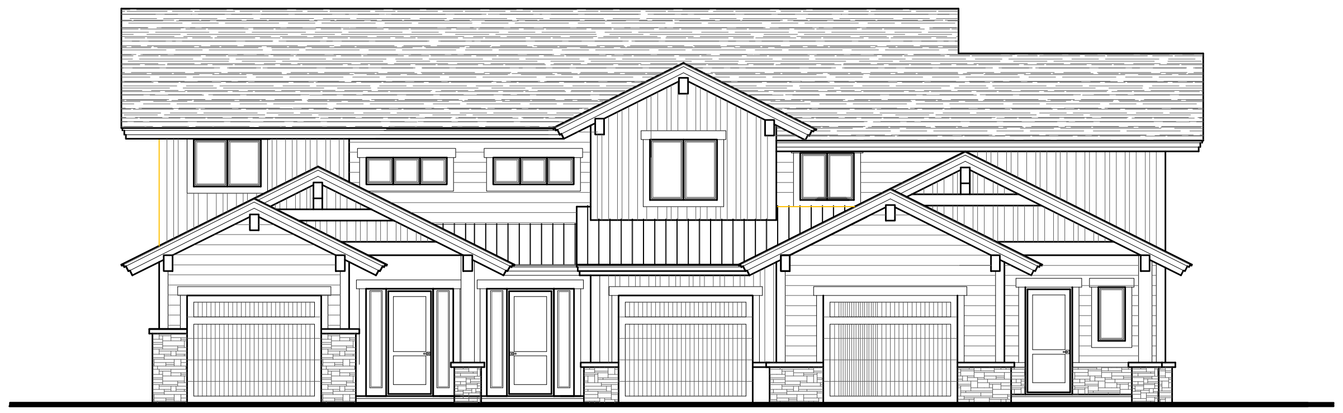


Upper Floor

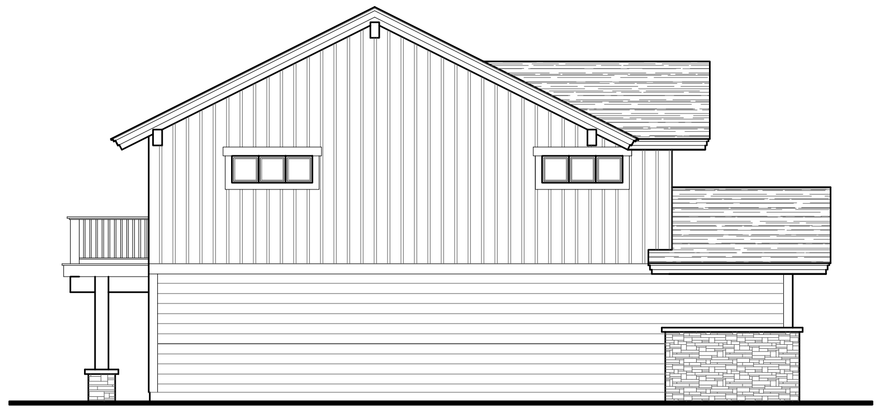
HIDDEN HOLLOW UNIT DATA (TOWNHOUSES)_

UNIT	SQUARE FOOTAGE								NUMBER OF BEDROOMS	NUMBER OF UNITS THIS PROJECT
	MAIN FLOOR	2ND FLOOR	3RD FLOOR	TOTAL LIVING	GARAGE	MAIN FLOOR DECK	2ND FLOOR DECK	3RD FLOOR DECK		
A	821 SQ FT	903 SQ FT		1,724 SQ FT	376 SQ FT	78 SQ FT	110 SQ FT		2	5
B	522 SQ FT	874 SQ FT	847 SQ FT	2,243 SQ FT	432 SQ FT		125 SQ FT	125 SQ FT	3	5
C	529 SQ FT	903 SQFT	903 SQ FT	2,335 SQ FT	502 SQ FT		120 SQ FT	120 SQ FT	3	3
D	668 Q FT	847 SQ FT		1,515 SQ FT	316 SQ FT	60 SQ FT	84 SQ FT		2	2
TOTALS										15

3 unit building



FRONT EXTERIOR ELEVATION
SCALE: 1/8" = 1'-0"

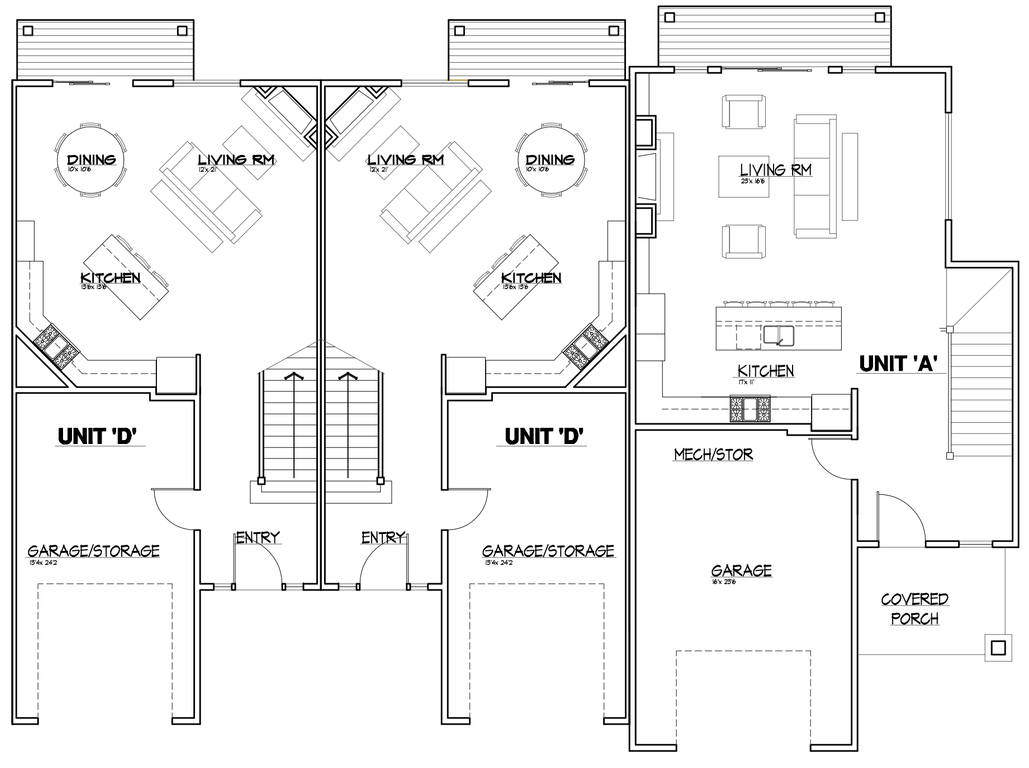


LEFT EXTERIOR ELEVATION
SCALE: 1/8" = 1'-0"

RIGHT EXTERIOR ELEVATION
SCALE: 1/8" = 1'-0"

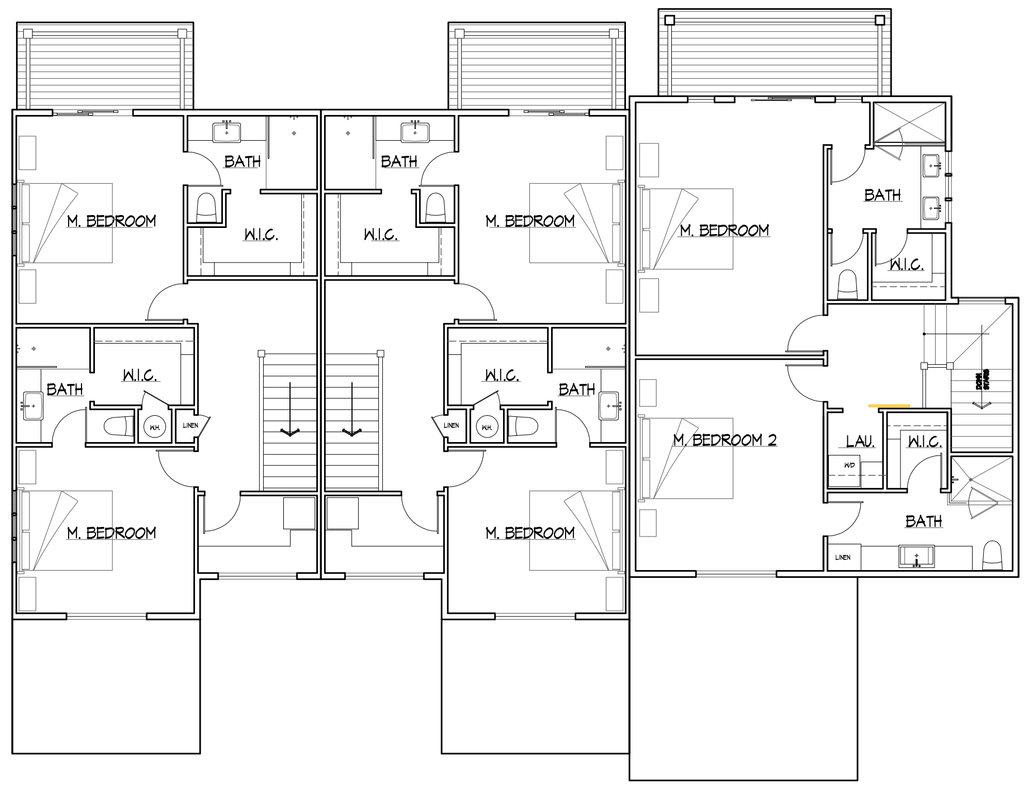
REAR EXTERIOR ELEVATION
SCALE: 1/8" = 1'-0"

3 unit building



MAIN FLOOR PLAN

SCALE: 1/8" = 1'-0"



2ND FLOOR PLAN

5 UNIT BUILDING

FRONT EXTERIOR ELEVATION
SCALE: 1/8" = 1'-0"

LEFT EXTERIOR ELEVATION
SCALE: 1/8" = 1'-0"

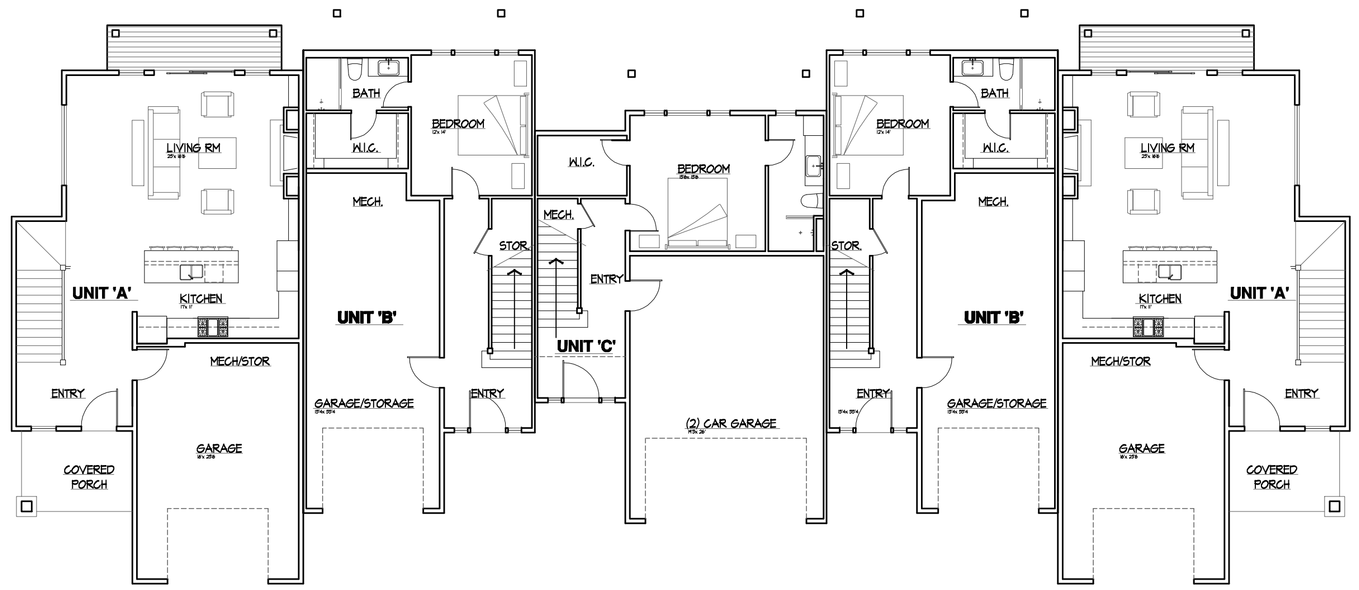
RIGHT EXTERIOR ELEVATION
SCALE: 1/8" = 1'-0"

REAR EXTERIOR ELEVATION
SCALE: 1/8" = 1'-0"

5 UNIT BUILDING

UNIT DATA:

UNIT 'A'	
MAIN FLOOR:	821 SQ FT
UPPER FLOOR:	905 SQ FT
MAIN FLOOR DECK:	78 SQ FT
UPPER FLOOR DECK:	101 SQ FT
GARAGE:	376 SQ FT
(2) BEDROOMS	
UNIT 'B'	
MAIN FLOOR:	522 SQ FT
2ND FLOOR:	874 SQ FT
3RD FLOOR:	847 SQ FT
2ND FLOOR DECK:	125 SQ FT
3RD FLOOR DECK:	125 SQ FT
GARAGE:	432 SQ FT
(3) BEDROOMS	
UNIT 'C'	
MAIN FLOOR:	524 SQ FT
2ND FLOOR:	903 SQFT
3RD FLOOR	403 SQ FT
2ND FLOOR DECK:	120 SQ FT
3RD FLOOR DECK:	120 SQ FT
GARAGE:	502 SQ FT
(3) BEDROOMS	
UNIT 'D'	
MAIN FLOOR:	668.0 FT
UPPER FLOOR:	847 SQ FT
MAIN FLOOR DECK:	60 SQ FT
UPPER FLOOR DECK:	84 SQ FT
GARAGE:	316 SQ FT
(2) BEDROOMS	

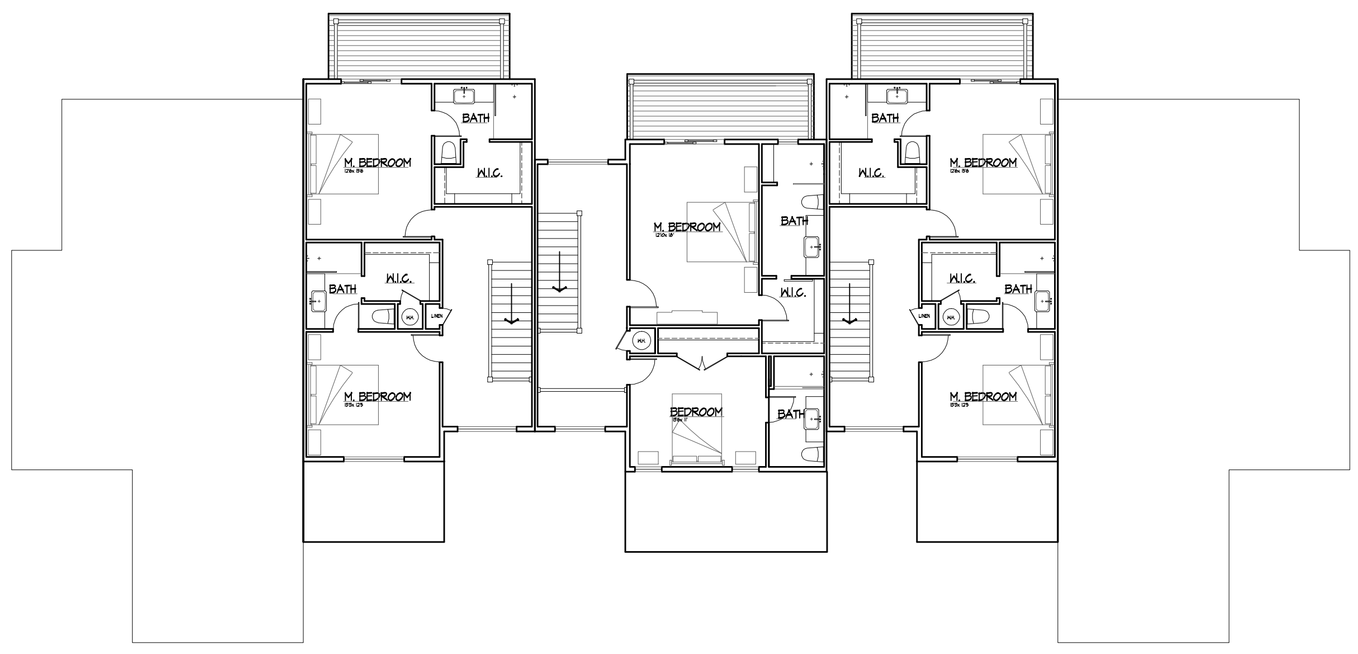


MAIN FLOOR PLAN

SCALE: 1/8" = 1'-0"

2ND FLOOR PLAN

SCALE: 1/8" = 1'-0"



3RD FLOOR PLAN

SCALE: 1/8" = 1'-0"

7 unit building

FRONT EXTERIOR ELEVATION

SCALE: 1/8" = 1'-0"

LEFT EXTERIOR ELEVATION

SCALE: 1/8" = 1'-0"

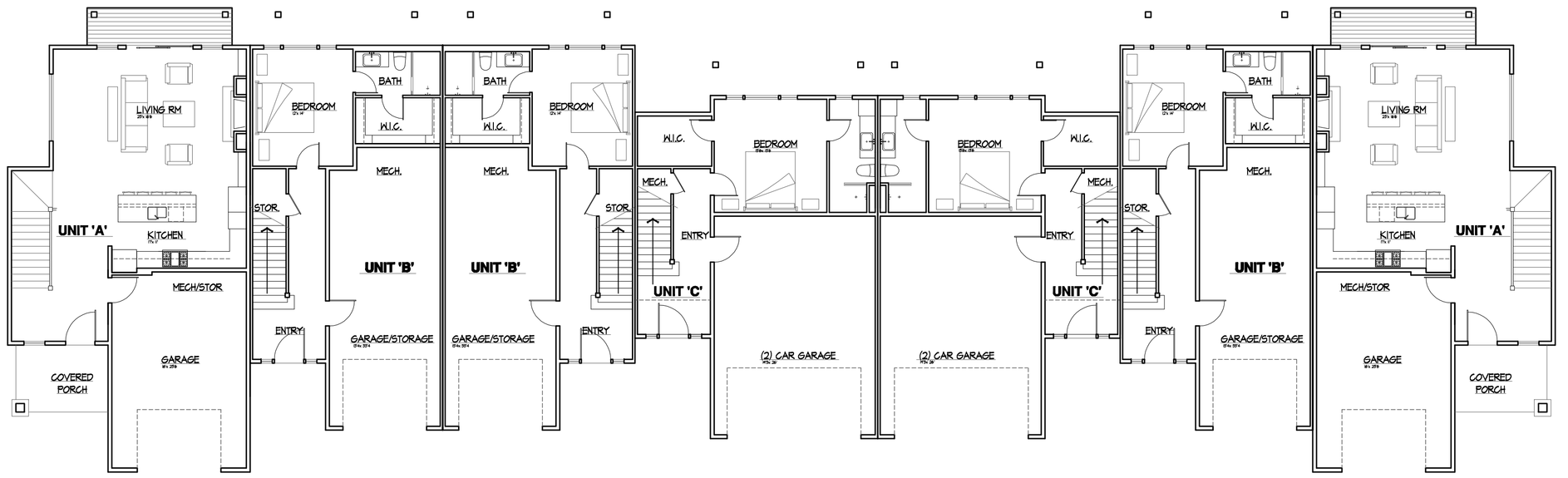
RIGHT EXTERIOR ELEVATION

SCALE: 1/8" = 1'-0"

REAR EXTERIOR ELEVATION

SCALE: 1/8" = 1'-0"

7 unit building



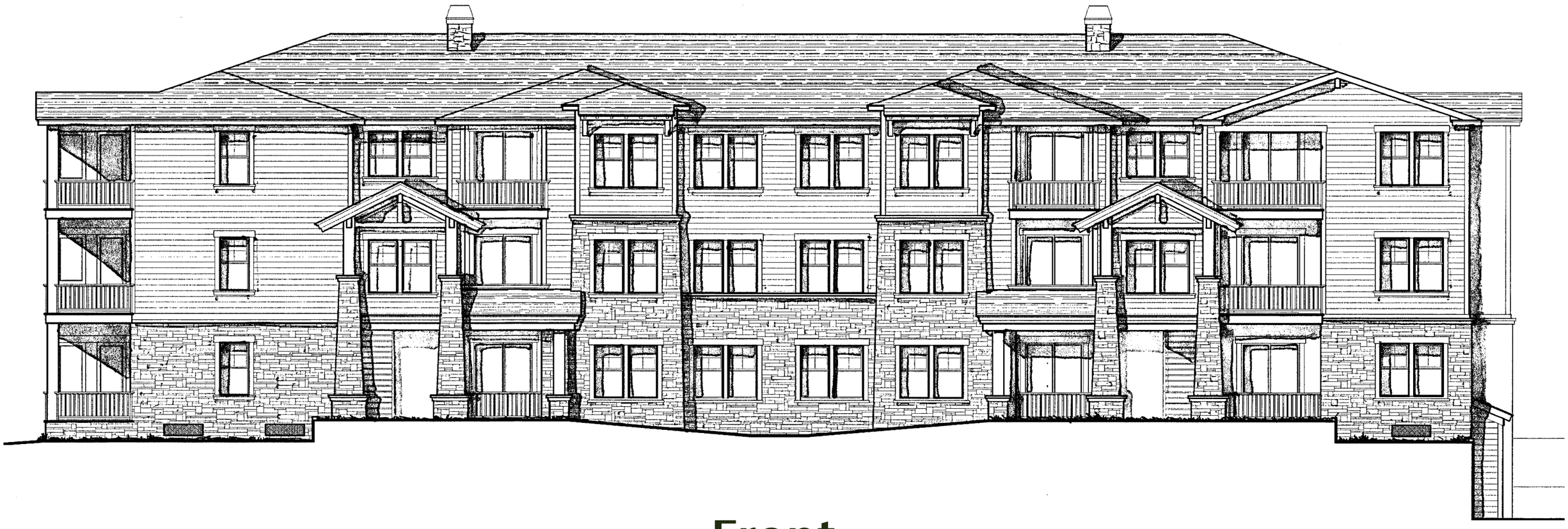
MAIN FLOOR PLAN
SCALE: 1/8" = 1'-0"

2ND FLOOR PLAN

3RD FLOOR PLAN
SCALE: 1/8" = 1'-0"

HIDDEN HOLLOW

Multi-Family

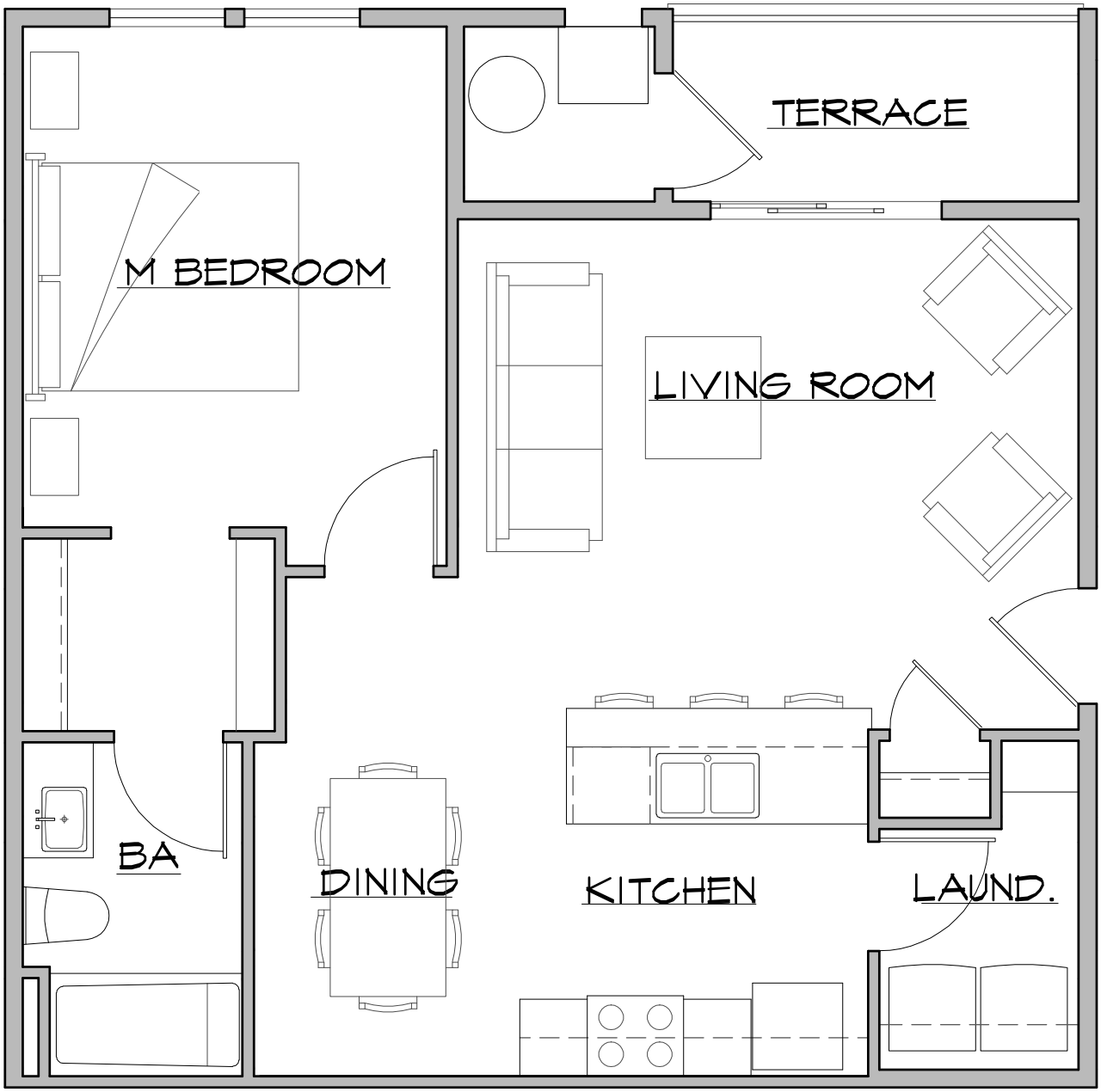


Front

HIDDEN HOLLOW

Multi-Family Floor Plans

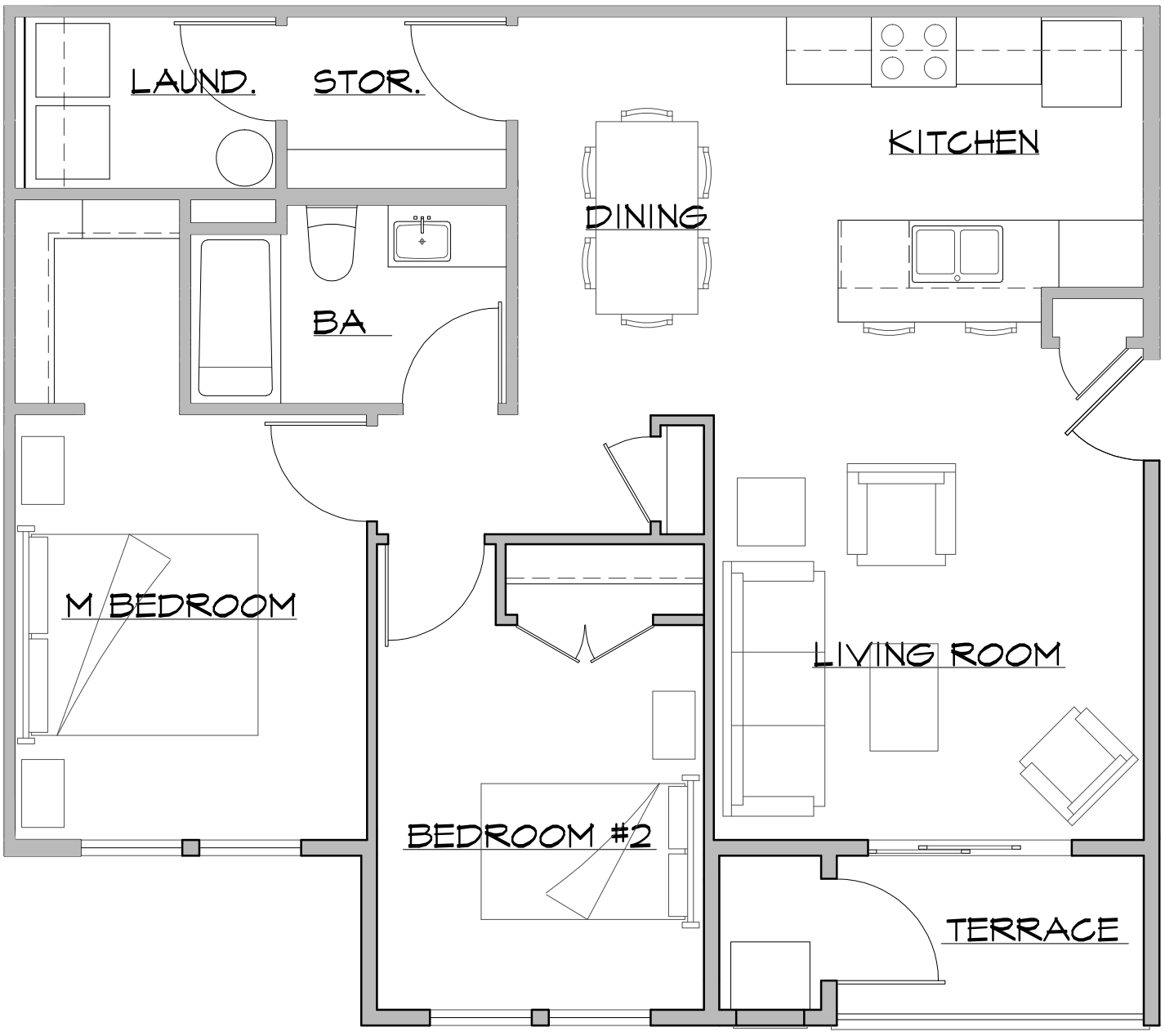
1 Bedroom, 1 Bath



HIDDEN HOLLOW

Multi-Family Floor Plans

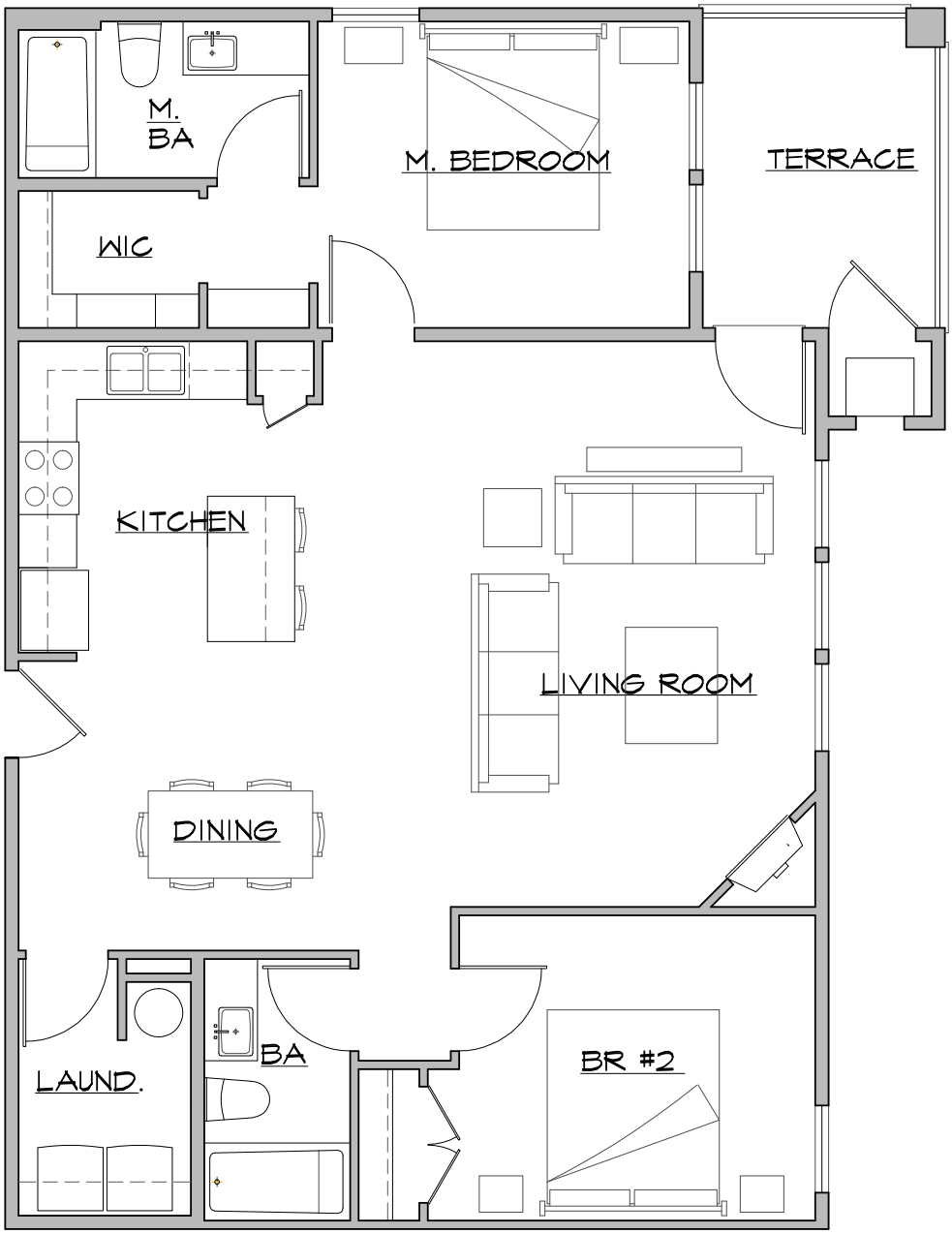
2 Bedroom, 1 Bath



HIDDEN HOLLOW

Multi-Family Floor Plans

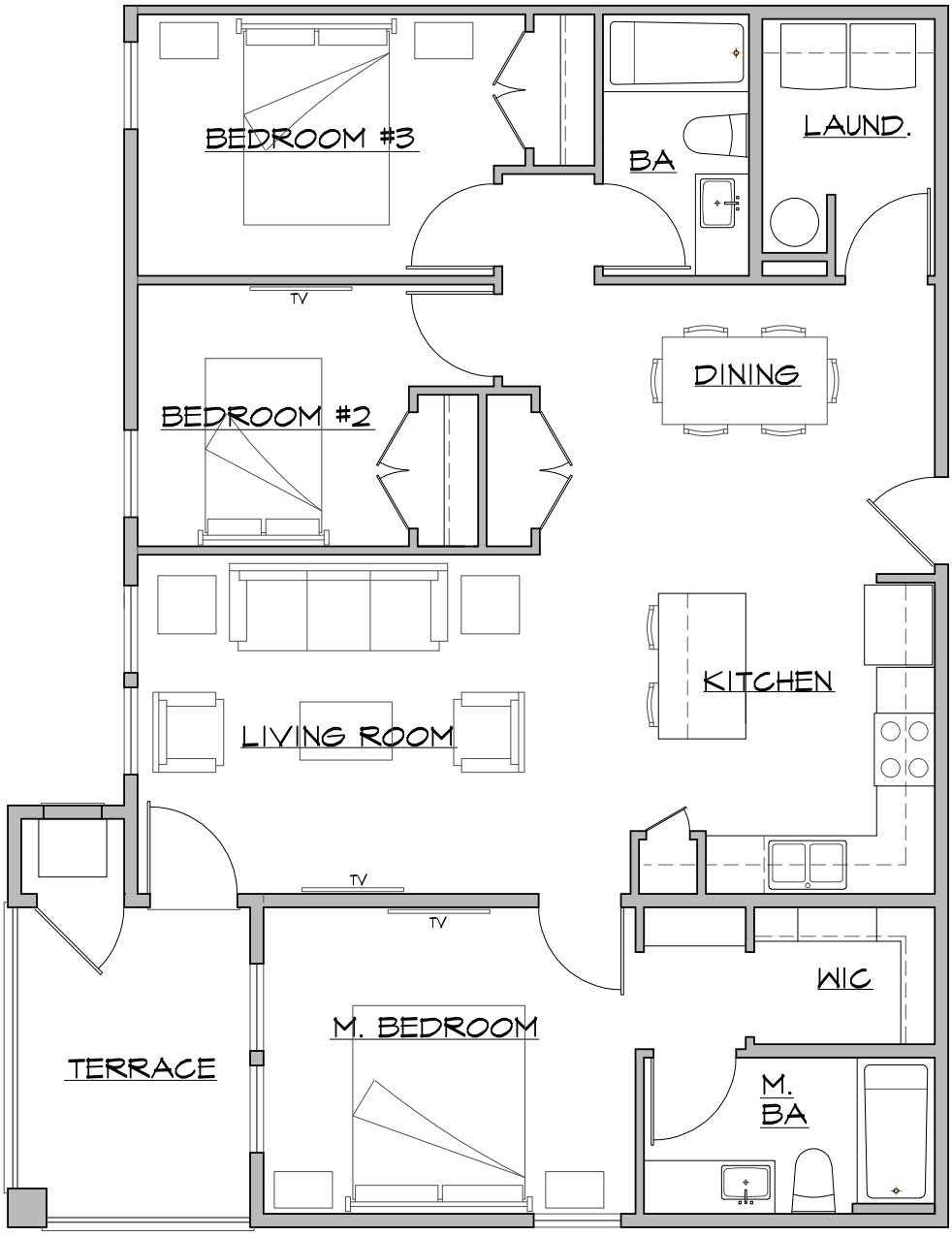
2 Bedroom, 2 Bath



HIDDEN HOLLOW

Multi-Family Floor Plans

3 Bedroom, 2 Bath



Tree Preservation & Temporary Nursery Memo **7/11/16**

Because the project parcel was previously developed and used by the USFS, there were many mature and established tree plantings and groupings that existed on the project site. Knowing that most of these established trees would become casualties of the grading and site improvement work, the Owners and development team felt responsible to preserve a portion of the existing trees to use back in the final landscaping. Twenty-four (24) of the healthiest tree specimens were transplanted to a temporary nursery located on the project site that is out the way of major road building and infrastructure work. Drip irrigation and sprinkler control was installed to maintain these trees during the construction period. Fifteen spruce and nine aspen trees will be designed into the final landscape plans and planted back into the project. All other tree and brush groupings that currently exist in what will be future open space and common areas will be fenced off and preserved as best as possible during the development activities. See attachment showing photos of trees in this temporary nursery.

Building Reuse and Recycle Memo **7/11/16**

Included in the parcel purchase from the USFS were several old buildings and abandoned storage sheds that the Forest Service no longer had use for. The USFS provided a commissioned and provided an asbestos inspection report on these included buildings. The Owners quickly moved forward with a ToJ issued demolition permit to remove these buildings from the project site. These buildings went through the proper historical reviews and were determined to not have historical significance because they had been changed and altered many times over by the USFS.

The seven small storage sheds were removed from their existing foundations, sold at a discount, and were relocated to several contractors and also the Rodeo Grounds in Teton County. The Fire Crew building was demolished and all rubbish removed. The Gas House had asbestos abatement performed and removed by a licensed contractor, then was demolished and had all rubbish removed. The Fire Shed was dismantled, and the materials were transported to an offsite location to be used in a future shop building.

The building left behind by the Forest Service that generated the most interest was known as the Car Barn. It was a timber framed barn type building, 38 feet by 94 feet in size. The exterior had been painted typical Forest Service colors, but the interior was the original wood surface that had aged beautifully since the time it was built in the 1930's. The roof structure was built on top of heavy beam trusses tied together with metal strapping and tie rods. Although it was determined that this building did not qualify for historical registration, the look and feel of the timber framing made it feel like it has been a part of Jackson Holes history for 85 years.

The Owners contacted several reclaimed timber companies to assess the Car Barn and the wood materials inside. Upon inspection of the actual building, none were interested in salvaging the building. Although beautifully aged, the wood used to build the Car Barn was milled lumber and not rough sawn or hand hewn. The aged wood did not have the resale and re-use value these reclaimed timber companies expected. The Owners felt it a shame to have to demo this building and haul off to the landfill. The decision was made to hold off on the demo of this building until a potential solution could be found.

A local building contractor approached the Owners and inquired about the salvage of the Car Barn. A deal was negotiated in which the local contractor was granted a month long time period to dismantle and remove all the materials except the concrete foundation from the project site. This was done at no cost to the contractor, but he removed the building materials and trash generated at his expense. The Car Barn was dismantled and all salvageable lumber materials were removed during the month of April 2016. The lumber from this building will remain in Jackson Hole, and will be used in the construction of new buildings. See attached pictures of the dismantling and lumber salvage of the Car Barn.
The clean-up and demo activities of the items left behind by the Forest Service has been completed, final inspections performed, and the Demo Permit issued by the ToJ has been closed.

SECTION 9- APPLICATION MATERIALS & TITLE REPORT

JORGENSEN
It's About People, Trust and Know How

PO Box 9550 · 1315 HWY 89 S., Suite 201
Jackson, WY 83002
PH: 307.733.5150
|www.jorgeng.com

July 8, 2016

Mr. Tyler Sinclair
Town of Jackson Planning Dept.
P.O. Box 1687
150 E. Pearl Avenue.
Jackson, WY 83001

-Hand Delivered-

RE: Sketch Plan for Planned Unit Development (PUD)-Hidden Hollow

Dear Tyler,

Enclosed you will find the necessary materials for a Sketch Plan for Planned Unit Development (PUD) we are submitting on behalf of Hansen & Hansen, LLP. The property is located at 60 Rosencrans, Jackson, WY, and described as the 10 acre parcel formerly owned by the United States Forest Service, now owned by the applicant Hansen & Hansen LLP.

Our clients will be moving forward with a Sketch Plan for Planned Unit Development of 168 residential units that including single, townhouse, and multifamily unit types. Included with this transmittal you will find the following:

- Planning Permit Application Sketch Plan for a Planned Unit Development (PUD).
- Two checks: one for $2,500 (Sketch Plan), and one for $1,500 (PUD)
- A binder containing all pertinent information and Site Plans.

Sincerely,

JORGENSEN ASSOCIATES, P.C.

Brendan Schulte
Senior Planner

PLANNING PERMIT APPLICATION

Planning & Building Department
Planning Division

150 E Pearl Ave.
P.O. Box 1687
Jackson, WY 83001

ph: (307) 733-0440
fax: (307) 734-3563
www.townofjackson.com

For Office Use Only

Fees Paid_____

Check # _____ Credit Card_____ Cash_____

Application #s _____ _____ _____

PROJECT.

Name/Description: Hidden Hollow

Physical Address: 60 Rosencrans, Jackson, WY

Lot, Subdivision: _____ PIDN: 22-41-16-27-3-00-032

OWNER.

Name: Hansen & Hansen, LLP Phone: _____

Mailing Address: P.O. Box 50106, Idaho Falls, ID ZIP: 83405

E-mail: _____

APPLICANT/AGENT.

Name: Jorgensen Associates, P.C. C/O Brendan Schulte Phone: 307-733-5150

Mailing Address: PO BOX 9550, Jackson, WY ZIP: 83002

E-mail: bschulte@jorgensenassociates.com

DESIGNATED PRIMARY CONTACT.

_____Owner X Applicant/Agent

TYPE OF APPLICATION. *Please check all that apply; see Fee Schedule for applicable fees.*

Use Permit

_____Basic Use

_____Conditional Use

_____Special Use

Physical Development

X Sketch Plan

_____Development Plan

Interpretations

_____Formal Interpretation

_____Zoning Compliance Verification

Relief from the LDRs

_____Administrative Adjustment

_____Variance

_____Beneficial Use Determination

_____Appeal of an Admin. Decision

Development Option/Subdivision

_____Development Option Plan

_____Subdivision Plat

_____Boundary Adjustment (replat)

_____Boundary Adjustment (no plat)

Amendments to the LDRs

_____LDR Text Amendment

_____Zoning Map Amendment

X Planned Unit Development

PRE-SUBMITTAL STEPS. *Pre-submittal steps, such as a pre-application conference, environmental analysis, or neighborhood meeting, are required before application submittal for some application types. See Section 8.1.5, Summary of Procedures, for requirements applicable to your application package. If a pre-submittal step is required, please provide the information below. If you need assistance locating the project number or other information related to a pre-submittal step, contact the Planning Department.* ***If this application is amending a previous approval, indicate the original permit number.***

Pre-application Conference #:	P16-031	Environmental Analysis #:	P16-072
Original Permit #:		Date of Neighborhood Meeting:	05-26-2016

SUBMITTAL REQUIREMENTS. *Twelve (12) hard copies and one (1) digital copy of the application package (this form, plus all applicable attachments) should be submitted to the Planning Department.. Please ensure all submittal requirements are included. The Planning Department will not hold or process incomplete applications. Partial or incomplete applications will be returned to the applicant.*

Have you attached the following?

X **Application Fee.** Fees are cumulative. Applications for multiple types of permits, or for multiple permits of the same type, require multiple fees. See the currently adopted Fee Schedule in the Administrative Manual for more information.

X **Notarized Letter of Authorization.** A notarized letter of consent from the landowner is required if the applicant is not the owner, or if an agent is applying on behalf of the landowner. If the owner is a partnership or corporation, proof that the owner can sign on behalf of the partnership or corporation is also required. Please see the Letter of Authorization template in the Administrative Manual for a sample.

X **Response to Submittal Checklist.** All applications require response to applicable review standards. These standards are outlined on the Submittal Checklists for each application type. If a pre-application conference is held, the Submittal Checklists will be provided at the conference. If no pre-application conference is required, please see the Administrative Manual for the applicable Checklists. The checklist is intended as a reference to assist you in submitting a sufficient application; submitting a copy of the checklist itself is not required.

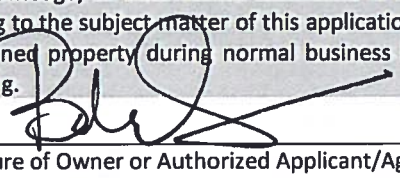
FORMAT.

The main component of any application is demonstration of compliance with all applicable Land Development Regulations (LDRs) and Resolutions. The submittal checklists are intended to identify applicable LDR standards and to outline the information that must be submitted to sufficiently address compliance with those standards.

For some submittal components, minimum standards and formatting requirements have been established. Those are referenced on the checklists where applicable. For all other submittal components, the applicant may choose to make use of narrative statements, maps, drawings, plans and specifications, tables and/or calculations to best demonstrate compliance with a particular standard.

Note: Information provided by the applicant or other review agencies during the planning process may identify other requirements that were not evident at the time of application submittal or a Pre-Application Conference, if held. Staff may request additional materials during review as needed to determine compliance with the LDRs.

Under penalty of perjury, I hereby certify that I have read this application and associated checklists and state that, to the best of my knowledge, all information submitted in this request is true and correct. I agree to comply with all county and state laws relating to the subject matter of this application, and hereby authorize representatives of Teton County to enter upon the above-mentioned property during normal business hours, after making a reasonable effort to contact the owner/applicant prior to entering.



Signature of Owner or Authorized Applicant/Agent

7-7-2016
Date

Brendan Schulte
Name Printed

Senior Planner
Title

PRE-APPLICATION CONFERENCE SUMMARY
Planning & Development Department
Planning Division

150 E Pearl Ave. | ph: (307) 733-0440
P.O. Box 687 | fax: (307) 734-3563
Jackson, WY 83001 | www.townofjackson.com

This Summary will be prepared by Planning Staff. The applicant, or the applicant's agent, shall receive a copy of this summary for their reference in submitting a sufficient application.

Staff may request additional materials during review as needed to determine compliance with the LDRs.

PRE-APPLICATION MEETING BASICS.

PAP#: P16-031

Date of Conference: 5/4/16

Planning Staff: Tyler Sinclair & Tyler Valentine

PROJECT.

Name/Description: 60 Rosencrans PUD

Physical Address: 60 Rosencrans

Lot, Subdivision: PT. NW1/4 W1/4 SEC. 27, TWP. 41, RNG. 116 (MOS T-20F) PIDN: 22-41-16-27-3-00-032

Zoning District(s): UR (Urban Residential)

Overlay(s): None

STAKEHOLDERS.

Applicant: Jorgensen Associates – Brendan Schulte

Owner: Hansen & Hansen, LLP

Agent: Brendan Schulte

REQUIRED APPLICATIONS. (See B.12, C.1, D.4 of applicable zone in Article 2, 3 or 4) *This project will require the following applications:*

Application	Reason	Fee
1ST ROUND - Neighborhood Meeting (8.2.3)	Required for Sketch Plan	$0.00
1ST ROUND - Sketch Plan (8.3.1)	Beyond square footage & unit thresholds	$2,500
1ST ROUND - Planned Unit Development (8.7.3)	Required for proposed density, square footage etc.	$1,500
1ST ROUND - Amendment to Zoning Map (8.7.2)	Required as part of the PUD	$0.00
1ST ROUND - LDR Text Amendment (8.7.1)	Required as part of the PUD	$0.00
2ND ROUND - Development Plan (8.3.2)	Final plan to be consistent with Sketch Plan	$2,500
2ND ROUND - Basic Use Permit (8.4)	Required for uses	$500
POST CONSTRUCTION – Final Plat	Required for subdivision	$1,000/plus review

MEETING ATTENDEES:

Name	Company	Phone/Email
Tyler Sinclair	Town Planning Department	307-733-0440, x1301
Tyler Valentine	Town Planning Department	307-739-0665, x1305
Stacy Stoker	Teton County Housing Authority	307-732-0867
Valerie Adams	Teton County Housing Authority	307-732-0867, x8530
Larry Pardee	Town Public Works	307-733-3079, x1401
Jeremy Parker	Town Public Works	307-733-3079, x1412
Josh Frappart	Town Public Works	307-733-3079, 1413
Steve Ashworth	Parks and Recreation	307-739-9025, x5056
Brian Schilling	Pathways	307-732-8573, x8573
Brendan Schulte	Jorgensen Associates	307-733-5150
Jeff Bates	Jorgensen Associates	307-733-5150
Brenda Younkin	Y2 Consultants	307-733-2999
Kirk Hansen	Owner	
Guy Roberts	Owner Representative	
Zane Powell	Owner Representative	208-419-5886

TIMELINES. *This table is intended to provide general information regarding the review process and timing of decisions. See Article 8 for a complete explanation of the review process.*

For administrative decisions made by the Planning Director, the following timelines are generally applicable:

Application Types:	Sufficiency	Planning Director
	Within 14 days of Submittal	Decision within days of Sufficiency

For decisions requiring a public hearing process, the following timelines are generally applicable:

Application Types:	Sufficiency	Planning Commission (PC)	Town Council
Subdivision Plat	Within 14 days of Submittal	N/A	Hearing within 90 days of Sufficiency
Required – Round 1 Sketch Plan Planned Unit Development LDR Text Amendment Zoning Map Amendment **Required – Round 2** Development Plan Basic Use Permit	Within 14 days of Submittal	Hearing within 90 days of Sufficiency	Hearing within 60 days of PC Recommendation

GENERAL INFORMATION.

✓ *Required, If Checked.*

If not checked, review requirement with a Staff member to determine if necessary for your application.

Requirement		Notes
✓	**Planning Permit Application.** The application should list all pertinent permits (use, physical development, interpretation, relief from the LDRs, Development Option/Subdivisions, Amendments to the LDRs) for which you are applying.	

Requirement		Notes
✓	**Notarized Letter of Authorization.** See **Section 8.2.4.A** for requirements. A template is established in the Administrative Manual.	
✓	**Application Fees.** Fees are cumulative. Applications for multiple types of permits, or for multiple permits of the same type, require multiple fees. See the currently adopted Fee Schedule in the Administrative Manual for more information.	
✓	**Review fees.** The applicant is responsible for paying any review fees and expenses from consulting services necessitated by the review of the application by the Town Surveyor, Town Engineer, Town Associate Engineer, Title Company and any other required consultant. Such fees shall be paid prior to approval of the permit.	
✓	**Mailed Notice fee.** See **Section 8.2.14.C.2** for notice requirements. If mailed notices are required, the applicant is responsible for paying for any mailing in excess of 25 notices.	
✓	**Other information needed.** All applications submitted to the Town of Jackson Planning Department must be submitted in digital format once the application is determined to be sufficient.	
✓	**Response to Submittal Checklist.** All applications require response to applicable review standards. For applications where a pre-application conference is required, applicable standards are identified below. If a pre-application conference is optional, see the submittal checklist for the relevant application type, established in the Administrative Manual.	
✓	**Title Report.** A title report, title certificate or record document guarantee prepared within the last six months that includes evidence of ownership and all encumbrances on the subject property. Copies of the documents referenced in the report should not be submitted unless requested by the planner during review.	
✓	**Narrative description of the proposed development.** Briefly describe the existing condition of the property and the proposed use, physical development, subdivision or development option for which you are seeking approval.	
✓	**Proposed Development Program.** Please use the attached template established in the Administrative Manual.	
✓	**Site Plan.** Please see the attached list of minimum standards for a site plan, established in the Administrative Manual.	
✓	**Floor Plans.** Include floor plans for any existing buildings that will be occupied by a proposed use. If changes to existing buildings are proposed, indicate those on the floor plans.	

✓ **Neighborhood Meeting Summary.** See **Section 8.2.3** for Neighborhood Meeting requirements.

✓ **Posted Notice.** See **Section 8.2.14.C.4** for Posted Notice requirements for all public hearings.

Requirements listed under each Article will be checked if required for the application.

✓ *Required, If Checked.*

_____ *If not checked, this requirement is not applicable to your application.*

ARTICLE 1, GENERAL PROVISIONS.

Requirement	**Notes**
_____ **Division 1.9, Nonconformities**	
1.9.2 Nonconforming Physical Development	
1.9.3 Nonconforming Uses	
1.9.4 Nonconforming Development Options and Subdivisions	
1.9.5 Nonconforming Signs	

ARTICLE 2, COMPLETE NEIGHBORHOODS, ARTICLE 3, RURAL AREA ZONES, and ARTICLE 4, SPECIAL PURPOSE ZONES – (Public/Semi-Public & Park and Open Space zones only).

Applicable Zone: Applicable LDR Section:

SUBSECTION B, PHYSICAL DEVELOPMENT. *Please provide the following information for the applicable zone.*

Requirement	**Notes:**
✓ Structure Location and Mass (Setbacks, Height, total site FAR)	
✓ Maximum Scale of Development (Individual building size)	
✓ Building Design (Design Review Process)	Applicant choose to present in front of the Design Review Committee but it is not required; minimum applicant submission requirements will be required if a review is requested
✓ Site Development (Driveway and Access limits	
_____ Fencing (Height, Setback, Orientation)	

Additional Comments:

SUBSECTION C, ALLOWABLE USES. *Please provide the following information for the applicable zone.*

Requirement		Notes:
_____	Maximum Scale of Use	

Additional Comments:

SUBSECTION D, DEVELOPMENT OPTIONS. *Please provide the following information for the applicable zone.*

Requirement		Notes:
✓	Subdivision and Development Option Permits	

Additional Comments:

SUBSECTION E, ADDITIONAL ZONE-SPECIFIC STANDARDS. *Please provide the following information for the applicable zone.*

Requirement	Notes:
_____	
_____	
_____	
_____	
_____	

Additional Comments:

See standards in Sec. 2.3.6.E Additional Zone-specific Standards

ARTICLE 4, SPECIAL PURPOSE ZONES (Planned Resort Zones and Planned Unit Development Zones only)

Requirement		Notes
_____	**Division 4.3, Planned Resort Zones**	
	4.3.1 All Planned Resort Zones	
	4.3.2 Snow King	
✓	**Division 4.4, Planned Unit Development**	Applicant shall meet with staff to review requirements for rezone standards to be established through rezone process, see template attached
	4.4.1 All Planned Unit Development (PUD) Zones	
	4.4.2 Planned Unit Development – Town	

ARTICLE 5, PHYSICAL DEVELOPMENT STANDARDS APPLICABLE IN ALL ZONES.

Requirement		Notes
✓	**Division 5.1, General Environmental Standards**	
	5.1.1 Waterbody and Wetland Buffers	
	5.1.2 Wildlife Friendly Fencing	
	5.1.5 Water Quality (reserved for future standards)	
	Division 5.2, Environmental Standards Applicable in Specific Areas	
	5.2.1 Natural Resources Overlay (NRO) Standards	
✓	**Division 5.3, Scenic Standards.**	
	5.3.1 Exterior Lighting Standards	
	5.3.2 Scenic Resources Overlay (SRO) Standards	
	Division 5.4, Natural Hazard Protection Standards	
	5.4.1 Steep Slopes	
	5.4.2 Unstable Soils	
	5.4.3 Faults	
	5.4.4 Floodplains	
	5.4.5 Wildland Urban Interface	
✓	**Division 5.5, Landscaping Standards**	
	5.5.2 Landscape Plan	
	5.5.3 Required Plant Units	
	5.5.4 General Landscaping Standards	
	5.5.5 Installation and Maintenance	
✓	**Division 5.6, Sign Standards**	Applicant may choose to include sign standards in the PUD application
✓	**Division 5.7, Grading, Erosion Control and Stormwater Management**	
	5.7.2 Grading Standards	
	5.7.3 Erosion control standards	
	5.7.4 Stormwater Management Standards	
	Division 5.8, Design Guidelines	
	5.8.2. Design Guidelines	
	5.8.3. Design Review Committee	

ARTICLE 6, USE STANDARDS APPLICABLE IN ALL ZONES.

Requirement		Notes
✓	**Division 6.1, Allowed Uses**	Proposed uses will need to be identified during the PUD rezone application

✓ **Division 6.2, Parking and Loading Standards**

- **6.2.2** Required Parking and Loading
- **6.2.3** Location of Required Parking
- **6.2.4** Maintenance of Off-Street Parking and Loading
- **6.2.5** Off-Street Parking and Loading Design Standards
- **6.2.6** Parking and Loading Standards in the Downtown Parking District

_____ **Division 6.3, Employee Housing Requirements**

✓ **Division 6.4, Operational Standards**

- **6.4.1** Outside Storage
- **6.4.2** Refuse and Recycling
- **6.4.3** Noise
- **6.4.4** Vibration
- **6.4.5** Electrical Disturbances
- **6.4.6** Fire and Explosive Hazards

ARTICLE 7, DEVELOPMENT OPTION AND SUBDIVISION STANDARDS APPLICABLE IN ALL ZONES.

Requirement **Notes**

_____ **Division 7.1, Development Option Standards**

- **7.1.3** Urban Cluster Development
- **7.1.4** Mobile Home Park

✓ **Division 7.2, Subdivision Standards**

- **7.2.2** Standards Applicable to all Subdivision
- **7.2.3** Land Division Standards
- **7.2.4** Condominium and Townhouse Subdivisions

_____ **Division 7.3, Open Space Standards**

- **7.3.3** Configuration and Location of Required Open Space
- **7.3.4** Use of Open Space
- **7.3.5** Physical Development Permitted in Open Space
- **7.3.6** Record of Restriction
- **7.3.7** Ownership of Open Space

✓ **Division 7.4, Affordable Housing Standards**

✓ **Division 7.5, Development Exaction Standards**

- **7.5.2.** Park Exactions
- **7.5.3.** School Exactions

✓ **Division 7.6, Transportation Facility Standards**

- **7.6.2** Access to Roads, Streets and Highways
- **7.6.3** Streets, Alleys, and Easements

✓ **Division 7.7, Required Utilities**

- **7.7.2** Potable Water Supply
- **7.7.3** Sanitary Sewer Systems
- **7.7.4** Irrigation Ditch Systems and Design
- **7.7.5** Other Utilities
- **7.7.6** Fuel Storage Tank

PLAN REVIEW COMMITTEE. *The Plan Review Committee consists of the following listed agencies. Planning Staff will transmit pertinent portions of the application to each agency.* ***Other agencies and individuals not checked off on this list may be added to the PRC if necessary.***

✓	Public Works/Town Engineer	✓	Police Department
✓	Building Official	✓	START Bus
✓	Town Attorney		Jackson Hole Fire EMS
	Town Clerk	✓	Parks and Recreation Department
✓	Pathways Coordinator		Teton County School District #1
	Surveyor		Teton County Sheriff
	Title Company		Wyoming Department of Game & Fish
✓	Teton County Housing Authority	✓	Wyoming Department of Transportation
	Teton County Weed & Pest		Wyoming Department of Environmental Quality
	Teton County Planning		Army Corp of Engineers
	Teton County Engineer		Lower Valley Energy
	Teton County Assessor		U.S. National Park Service
	Integrated Solid Waste and Recycling		U.S. Forest Service
	Teton County Clerk		U.S. Fish and Wildlife
	Teton County Public Health		Other
	Teton County Scenic Preserve Trust		

Additional Comments:

- Phasing will be an important matter to address, especially early on in the process. This should be addressed with the PUD Sketch Plan during the first round of review. The applicant may choose to set development review thresholds specific to this PUD during the PUD rezone application.

- There was discussion regarding the amount of review and ways to reduce the timeline. The applicant may provide 'Final Development' details at the time of Sketch Plan and propose that all subsequent permits are administratively processed i.e. Building Permits. This would remove the Development Plan process. This would ultimately be up to the Town Council to decide.

- WYDOT will review any traffic study for the site as the property has access from the HWY. Because there are plans to expand the Rec Center, a joint traffic analysis may be possible, especially if the applicant intends to include a secondary means of egress through N King Street.

- Applicant shall consider where snow storage will be addressed.

- Applicant shall consider redesign of the back out parking spaces adjacent to the apartment buildings.

- In regards to school safety, the elementary school is located to the southeast of the subject property. Discussion took place regarding fencing and access in-between the properties. This includes the existing trail improvements etc.

MEMORANDUM

TO: **Hansen & Hansen, LLP**

FROM: **Tyler Sinclair, Town of Jackson**

DATE: **May 4, 2016**

SUBJECT: **Item # P016-031, 60 Rosencrans, Planned Unit Development Pre-application Conference Comments**

The following information and comments have been put together by the Planning Staff in relation to Item P16-031 a Urban Residential Planned Unit Development located at 60 Rosencrans in the Town of Jackson. This memorandum summarizes the main issues raised by the reviews of the Planning Staff and other relevant Town review departments. It also highlights code requirements that will likely be of primary importance in the review of this project. This information is provided to help assist you in the finalization of the project application prior to formal submission for review by all Town Departments, the Planning and Zoning Commission/Board of Adjustment, and Town Council.

The following is a summarized list of the identified planning requests that will be necessary to complete your proposed project:

Initial Applications (Timeline: 90-120 days)

1. **Neighborhood Meeting (8.2.3)** required pursuant to Section 8.7.3 Planned Unit Development & Section 8.7.2 Zoning Map Amendment.

2. Approval of a **Sketch Plan** pursuant to Section 8.3.1 Sketch Plan;
   - **8.3.1.C** Sketch Plan (if more than 10 units are proposed) – 5 findings
   - Fee: $2,500

3. Approval of a **Planned Unit Development (PUD)** pursuant to Section 8.7.3 (Planned Unit Development).
   - **8.7.3.D** Planned Unit Development (PUD) – 5 findings
   - **4.4.2.E.2** Planned Unit Development – 6 findings

4. Approval of an **Amendment to the Official Zoning Map** pursuant to Section 8.7.2 (Zoning Map Amendment).
   - **8.7.2.C** Zoning Map Amendment – 4 findings
   - Fee: $1,500

5. Approval of an **Land Development Regulation Text Amendment** pursuant to Section 8.7.1
   - **8.7.1.C** LDR Text Amendment – 6 findings

Subsequent Applications (Timeline: 90-120 days)

1. Approval of a **Development Plan** pursuant to Section 8.3.2 (Development Plan).
   - **8.3.2.C** Development Plan – 6 findings
   - Fees: $2,500

2. Approval of a **Basic Use Permits** pursuant to Section 8.4
   - Fee: $500

In addition, staff have identified the following items that will need to be addressed as part of the required formal applications for this project described above to be discussed at the pre-application meeting:

1. Determination on whether property in in Natural Resources Overlay
- Section 8.2.2.B.1.g.i Exemptions
- Zoning Compliance Verification

2. **Zoning Compliance Verification letter dated May 13, 2015**

3. **Base Development Standards**
   - Min. Site Area: 15,000 sf
   - Landscape Surface Ratio: 0.30
   - Floor Area Ratio: 0.65
   - Lot Coverage: 0.5

4. **Flexible Development Standards**
   a. Front Setbacks (Street Yards).
   b. Side and Rear Setbacks.
   c. Density.
   d. Height of Structures. May exceed 35 feet to provide workforce, affordable or employee housing in the UR zone as provided in 2.3.4.E..

      PUD-ToJ Height. For a PUD-ToJ proposed in the UR zoning district, structure height may be 48 feet provided the following criteria are met.

      - The following standards apply to the amount of additional floor area achieved through the increase in structure height; however, the actual floor area to which the following standards apply may be distributed throughout the structure.

        i. It shall be deed restricted workforce, affordable, or employee housing with an occupancy restriction;

        ii. It may have an employment and/or price restriction.

        iii. It shall be exempt from the calculation of affordable housing required by Division 7.4, but shall not be used to meet the affordable housing requirement for the project.

      - The project shall provide the affordable housing required by Division 7.4 on site.

      - The site shall be at least 2 acres to provide opportunity for sufficient setback from, and building height step down to small scale development.

      - The site shall be served by transit within 1/4 mile.

      - The site shall be within 1/4 mile walking distance from numerous commercial services routinely needed by residents.

      - The additional building height shall not increase the floor area allowance or decrease the required open space.

   e. Parking Requirements.
   f. Cross Aisles.
   g. Tandem Parking.
   h. Backing onto Roads and Public Streets.
   i. Public and Private Streets.

5. **Criteria for Review.**
   a. Conformance with Comprehensive Plan.
   b. Conformance with Other Applicable Regulations.
   c. Density.
   d. Variety of Unit Types.

e. Open Space.
f. Historical and Cultural Resources.
g. Arrangement and Design.
h. Access.
   - Coordination with King Street
   - Access to Recreation Center
i. Circulation.
j. Emergency Access.
k. Streetscapes.
l. Pedestrian System

6. Phasing

Phasing of development and associated public and private improvements is permitted subject to an approved phasing schedule. All requirements of these LDRs, as well as all standards established by PUD-ToJ approval, shall be met at each development phase.

7. Effective Date of District 2 Land Development Regulations

8. Park and School Exactions

- Schools exaction: 0.020 acres per 1- or 2-family unit
  0.015 acres per multi-family unit
- Parks exaction: 9 acres per 1,000 resident

9. Comments from the Town Public Works Department

10. Comments from the Jackson/Teton County Housing Department

11. Comments from the Jackson/Teton County Pathways Department

12.

13. Comments from the Jackson/Teton Fire Department

14. Comments from the Town Building Department

Comments from all the other reviewing departments are attached to this letter. The applicant shall submit documents that comply or are consistent with these comments as discussed during the pre-application conference.

I look forward to working with you on this project, please contact the Jackson Planning Department at 307-733-0440, should you have questions or need further clarification on this project.

Attachments: ZCV, May 13, 2015
Park and School Exaction Worksheets
Departmental Reviews

Town of Jackson
Project Reviews

Project Number P16-031
Project Name 60 Rosencrans
Type PREAPPLICATION
Subtype PUD
Status STAFF REVIEW
Applicant Jorgensen Associates, P.C.

Applied 3/14/2016 JC
Approved
Closed
Expired
Status
Owner HANSEN & HANSEN, LLP

Site Address 60 Rosencrans
City
State
Zip

Subdivision
Parcel No 22411627300032

Type of Review / Notes	Status	Dates: Sent	Due	Received	Remarks
Building	APPROVED W/COND	3/14/2016	4/4/2016	4/1/2016	

Project has not been reviewed for compliance with the Building and/or Fire Codes adopted by the Town of Jackson. Approval of documents for planning department application does not indicate compliance with the applicable local codes and ordinances or State Law.
Contact the Building Official for additional information as needed.
Steve Haines
Building Official
Jackson, Wyoming

Fire	APPROVED W/COND	3/14/2016	4/4/2016	3/18/2016	

Type of Review / Notes	Status	Dates: Sent	Due	Received	Remarks

MEMO

TO: Tyler Sinclair, Planning Director
Steve Haines, Building Official

FROM: Kathy Clay, Fire Marshal

DATE: March 17, 2016

SUBJECT: Pre-Application for PUD
60 Rosencrans Street
P16-031

This office has received the request for pre-application for a planned unit development at the above address. The currently adopted edition of the International Fire Code and of the NEC adopted at time of permit shall be followed. Comments include:

1. Fire apparatus access shall be provided. (IFC 503.1.1) Fire Marshal indicated in a preliminary meeting that fire department access could significantly be reduced with fire sprinkling added to all structures within the complex.
2. Fire flow requirements shall meet Appendix B of the International Fire Code. See note #1.
3. As determined by the Town of Jackson Building Official, some building will have an automatic fire sprinkler system in accordance with the appropriate standard. (IFC 903.2.7)
4. Outside residential decks shall be provided with fire sprinkler protection having Type V construction if present. (IFC 903.3.1.2.1)
5. A horn/strobe shall be installed above the fire department connection. (IFC 912.2.2.1)
6. Water main line shall be installed in accordance to NFPA 13 and NFPA 24 to provide for proper clearances, seismic requirements, flushing and hydrotesting. (IFC 901.4.1)
7. A Knox Box shall be installed in an approved location at each structure having a fire sprinkler system. (IFC 506.1)
8. Buildings which are required shall have a complete alarm system per NFPA 72.
9. Interior finishes shall meet fire code requirements. (IFC Chapter 8)
10. Means of egress shall meet fire code requirements. (IFC Chapter 10)
11. The means of egress, including exit discharge, shall be illuminated at all times building space served by means of egress is occupied, when required. (IFC 1006.1)
12. Any hazardous material storage shall meet fire code requirement, if present. (IFC Chapter 27)
13. Should any fuel-fired appliances be installed, requirements for carbon monoxide detection shall be followed. (IFC 908.7)

Please feel free to contact me if you have any further questions at kclay@tetonwyo.org or 307-733-4732.

Legal	APPROVED	3/14/2016	4/4/2016	3/25/2016
Pathways	APPROVED W/COND	3/14/2016	4/4/2016	4/6/2016

Type of Review / Notes	Status	Dates: Sent	Due	Received	Remarks

P16-031, 60 Rosencrans (USFS) Pre-app
Comments from Teton County/TOJ Pathways Department
Status: approved w/conditions

- Site layout and non-motorized connectivity
  - o Per the Comprehensive Plan District 2 (Subarea 2.4) and district map, the site should provide for increased connectivity (especially walking and biking connections) to the adjacent public use properties.
  - o The site layout should also plan for the extension of King Street north to Mercill for motorized vehicles.
  - o External non-motorized connectivity
    - ? Connections for bicyclists, pedestrians, and other non-motorized users should be provided for the following:
      - Public access through the parcel from the proposed King St. extension on the south side of the property connecting to the US Fish and Wildlife Service property at the northwest corner of the parcel.
      - Access for residents to the Jackson Elementary School parcel
      - Access for residents to the Jackson/Teton County Recreation Center
  - o Internal non-motorized connectivity
    - ? Given the density and location of the proposed development, the site layout should provide excellent internal connectivity for non-motorized users to access residences and other internal amenities, as well as connections to the external pedestrian/bike network.
  - o Pedestrian and bicycle infrastructure details shall be shown on site plans.
- Bicycle Parking
  - o Given the location, type of use, and parking plan of the proposed development, staff expects that there will be a high demand for bicycle parking.
  - o The bike parking should ideally be a mix of short-term (for visitors) and long-term (for residents).
  - o Short-term parking (for visitors or guests parking for a few hours or less): the recommended style for short-term bike parking is one or more “single inverted-U” racks. “Wave,” “ribbon,” and “toaster” style racks shall not be used. The best location for a rack area is immediately adjacent to the entrance it serves. The rack area should be as close as or closer to thefront entrance than the nearest car parking space, visible from the front entrance, hardscaped, and should not obstruct pedestrian flow.
  - o Long-term parking (for employees/residents parking for more than a few hours—i.e. all-day or overnight): the recommendations for long-term parking include providing a secure, well-lit, covered area with racks or lockers that will protect bikes from rain, snow and other elements and deter bike theft. The area does not have to be immediately adjacent to the access door for the business or residence, but should be located in a secure or monitored location or in a locked enclosure. Clustered bike racks, wall racks, or bike lockers are appropriate.
  - o At least two bike parking spots per unit should be provided.
  - o The bike parking should be constructed on a concrete pad. A grass surface as proposed in the site plan will quickly deteriorate into mud from foot traffic during wet seasons and will be difficult to keep clear of snow. Also a concrete surface will provide a more secure mounting surface for the racks and will discourage theft.
  - o Staff supports including the bike parking towards the landscape surfacing requirement so that providing hardscape for the bike parking does not impact the applicant’s landscape requirements.
  - o Rack and storage locations should be shown on site plans.
  - o Jackson Hole Community Pathways will be happy to provide additional background information and guidance on site selection, layout, rack selection, and rack installation.

Police	APPROVED W/COND	3/14/2016	4/4/2016	3/15/2016	

Question to be answered would be impact on Cache & Mercill intersection with increased density. No concerns.

Todd Smith

Public Works	APPROVED W/COND	3/14/2016	4/4/2016	3/24/2016	

Type of Review / Notes	Status	Dates: Sent	Due	Received	Remarks

(3/24/2016 1:16 PM SO)
*Please be advised that the following comments are being provided for use in preparation of future Development Plan submittals

The applicant shall provide information of the proposed ownership of all utility systems. This shall include roadways, sidewalks, water utilities, sewer utilities, storm drainage systems, lighting and all ancillary items.

The applicant shall clearly show what the proposed mitigation for wetland(s) modifications.

The applicant shall be required to obtain approval of the final design from the fire department.

A preliminary potable water system plan shall be provided on the plans consistent with the LDR's. This plan shall include backflow device and meter locations.

A water system analysis indicating the required fire flow demands and the impacts to the Town's existing system shall be required.

A preliminary sanitary sewer system plan shall be provided on the plans consistent with the LDR's.

Information concerning the additional wastewater flows to be delivered to the Town's system shall be required. In addition this information shall include a review of downstream impacts created from the additional flows being delivered.

A preliminary irrigation system design (if applicable) with backflow system plan shall be provided on the plans consistent with the LDR's.

A complete and detailed landscaping plan shall be required.

A preliminary stormwater management plan for the site shall be provided on the plans consistent with the LDR's.

A complete grading and erosion control plan shall be provided on the plans consistent with the LDR's.

Site contours (existing and proposed) shall be provided on the plans beyond all property boundaries per the LDR's to ensure the development's integration into the surrounding public and private property.

A parking and access plan per the LDR's shall be required. The dimensions of the parking spaces and drive lanes, including turning movements (both ingress andegress), shall be clearly shown on the plans for review.

A traffic analysis for the development's impact on adjacent roadways per the LDR's shall be required. This shall need to be approved by both the Town and WYDOT.

An access roadway plan(s) and pedestrian corridor plan(s) shall be provided for review. This shall include all proposed roadway systems layouts, dimensions and elevations in relation to existing curb and future development together with ADA compliance.

All onsite power shall be shown as underground and location(s) of transformers indicated.

Snow storage areas for the site shall be indicated on the plans.

TC Housing Authority	APPROVED W/COND	3/14/2016	4/4/2016	4/12/2016	

Type of Review / Notes	Status	Dates: Sent	Due	Received	Remarks

MEMORANDUM

To: Tyler Sinclair
Planning Director, Town of Jackson Planning and Building

From: Valerie Adams
Housing Specialist, Teton County Housing Authority

Re: Pre-App (P16-031)
60 Rosencrans Street

Date: April 12, 2016

The applicant is requesting a Pre-Application Meeting for a Planned Unit Development for a Physical Development located at 60 Rosencrans Street, legally known as PT.NW1/4SW1/4SEC.27,TWP.41,RNG.116 (MOS T-20F). Teton County Housing Authority (TCHA) staff's review is based on Division 7.4 of the Town of Jackson Land Development Regulations (LDRs).

TOWN OF JACKSON LAND DEVELOPMENT REGULATIONS REVIEW

AFFORDABLE HOUSING MITIGATION PLAN (DIVISION 7.4): The Applicant is proposing to construct a planned unit development consisting of 13 single family detached dwellings, 20 multi-family attached dwellings, and 120 apartment/condo units.

Housing Exemption: Section 7.4.2.D.1 of the LDRs states, redevelopment of a use existing prior to December 18, 1995 are exempt from housing requirements. There will be a housing credit for all dwellings that existed prior to December 18, 1995. In order to calculate, TCHA would need to know the number of existing bedrooms.

Housing Requirement: According to Section 7.4.2.E of the LDRs, residential development and condominium or townhouse subdivisions shall consist of at least a 1:4 ratio of affordable housing to free market housing. The formula takes the total number of proposed units multiplied by the applicable occupancy. The applicant is proposing 13 (3-bedroom single family detached), 20 (3-bedroom attached), and 120 (1.875-bedroom apartment/condos). The Land Development Regulations do not recognize bedroom sizes in fractions (1.875). The equation will use 2-bedrooms.
13 (proposed single family detached units) X 3 (persons housed for 3-bedrooms) X .20 (multiplier) = 7.8 persons to be housed requirement
20 (proposed attached) X 3 (persons housed per 3-bedroom) X .20 (multiplier) = 12 persons to be housed requirement
120 (proposed apartment/condos) X 2.25 (persons housed per 2-bedroom) X .20 (multiplier) = 54 persons to be housed requirement.
Total = 73.8 persons to be housed requirement
Section 7.4.2.F of the LDRs indicates the production of new units on site as the preferred method for providing affordable housing. The required affordable portion shall provide housing for an equal number of persons in category 1, 2, and 3 income categories, starting with category 1.

If the apartments will be rentals, it is reasonable that the requirement generated by those units could be restricted Employee Housing rental units. The requirement generated by ownership units should be satisfied by affordable restricted ownership units.

The number of persons housed per restricted unit will be based on the number of bedrooms in the units using the chart in Section 6.3.1.D of the LDRs.

TCHA will work with the applicant to place the appropriate restriction on the units.

Thank you for the opportunity to review this application. Please contact me with any questions.

PLANNING & BUILDING DEPARTMENT

May 13, 2015

Pierson Land Works
Attn: Christen Holt
PO 1143
Jackson, WY 83001

RE: P15-026
Zoning Compliance Verification – 45 Rosencrans

Dear Ms. Holt:

Thank you for submitting a request for a Zoning Compliance Verification (ZCV) letter for Environmental Review. The property is physically addressed as 45 Rosencrans and legally known as PT. N1/2SW1/4 SEC. 27, TWP. 41, RNG. 116 (BRIDGER TETON FOREST SERVICE ADMIN. SITE). Division 8.6.2 of the Town Land Development Regulations (LDRs) states that in order to issue a ZCV the Planning Director shall find that the property, portion of the property, or attribute of the property in question:

1. **Complies with Land Development Regulations (LDRs).**
   See below.

2. **Conformance with previous approvals/permits.**
   Not applicable to this review.

Planning Staff has reviewed the ZCV prepared by Y2 Consultants for 45 Rosencrans for compliance with the requested sections of the Town of Jackson LDR's. This ZCV is requesting a determination of protection for 0.97 acres of wetlands on a 10-acre portion of the USFS property. Specifically, the ZCV is narrowly defined to request a determination as to whether or not wetlands on the site are determined to be irrigation-induced and/or degraded.

An Aquatic Resources Inventory (ARI) was completed by Y2 in September 2014 and submitted to the Army Corp of Engineers (ACOE) on April 2, 2015. A letter from the ACOE, dated April 9, 2015, verified that the wetland delineation utilized methods consistent with the ACOE requirements. The ARI identified 0.51 acre of palustrine emergent wetland, 0.16 acre of palustrine scrub-shrub wetland, and a 0.08 acre shallow pond, all adjacent to the relic channel of Cache Creek. Another 0.29-acre palustrine emergent wetland may extend beyond the property

boundary into the NER as part of a larger wetland complex adjacent to Flat Creek. It is important to note that sometime likely in the 1950s, Cache Creek was rerouted south of this site to empty into Flat Creek west of the USFS site, so the surface hydrology supporting the site has been significantly altered.

Town of Jackson LDR Section 5.1.1.D.3.b discusses wetland development as follows: "Wetlands may be physically developed or used under the following circumstances:

i. **High-Intensity Use Degrades Wetland/Wetland Agriculture-Induced.** Where the intensity of adjoining use(s) cause the retained wetlands to become degraded habitats and the wetland area is suitable for physical development or use due to planning, location, and other factors, or where the wetland is induced by irrigation."

Based upon the language above, Staff is specifically looking at whether or not the **habitat** is degraded (rather than examining other wetland functions for degradation such as flood attenuation, surface water storage, groundwater discharge/recharge, etc.), if the wetland has been anthropogenically altered on the site, and if there is a correlation between irrigation practices on the NER that influence groundwater on the subject property and contribute to the persistence of wetlands on the USFS property.

Y2 asserts that the wetlands on the site are primarily irrigation-induced via irrigation from the NER. At the request of Staff, Y2 completed a functional assessment of the wetlands as a whole, as well as separate segments of the wetlands as identified by Staff and indicated on the attached map. Staff requested the consultant utilize the Montana Wetland Assessment Method (MWAM).

As a whole, the functional assessment identifies highly disturbed and degraded wetlands with a "low" rating for uniqueness and limited diversity of wetland vegetation. Human influences on the site include expanding the historic Cache Creek channel to create a stock pond for livestock, extensive livestock grazing, conversion of native wetland species to non-native and cultivated grasses and introduction of noxious weeds. Debris dumping including metal scraps and concrete slabs has also occurred on the site within the wetlands. Off site, as previously mentioned, Cache Creek was diverted and piped to the west, upstream of the property. The four habitat components in the assessment (Listed/Proposed Threatened and Endangered Species Habitat, Specific Species Habitat - Teton County Species of Special Concern Habitat, General Wildlife Habitat, and General Fish Habitat) all ranked low (0.0 to 0.3 out of a possible 1.0).

Per segment, the assessment yielded the following results:

- Segments 1-2: Habitat components ranked 0.0 to 0.3 out of a possible 1.0, with an overall ranking of 33% out of 100%.
- Segments 3-4: Habitat components ranked 0.0 to 0.5 out of a possible 1.0, with an overall ranking of 39% out of 100%.
- Segments 5-7: Habitat components ranked 0.0 to 0.5 out of a possible 1.0, with an overall ranking of 32% out of 100%.

Per the MWAM, a "low" rating is 35% or less. Segment 3-4 received a "medium" rating for overall wildlife habitat due to structural diversity of plant life (e.g.: more willows).

Staff visited the site twice: once on October 24, 2014 with a representative from Y2 and again on April 22, 2015. During the second staff was accompanied by Bill Long, Program Director with the Wyoming Wetlands Society, who is assisting Staff in this review, as well as representatives from Y2. Staff noted the condition of the wetlands on both visits, citing extensive noxious weeds, a lack of diversity of wetland plants, evidence of livestock grazing, and concrete and metal dumped into the wetlands.

A letter (undated, but received on 5/6/2015 via email) from Bill Long is attached, and while it referenced Teton County and Teton County LDRs, the sections of the LDRs to which he is referring are identical to the Town of Jackson LDRs. Mr. Long's letter provides support for the assessment completed by Y2 that all of the wetlands on the site are degraded, but he does not support the idea that the wetlands on the property are irrigation-induced via irrigation practices on the NER because of the shift in irrigation practices to sprinkler irrigation. While flood irrigation on the NER likely historically supported the willow community, Mr. Long asserts that the established willows on the property are now being maintained by wet conditions in the root zone of the shrubs due to subsurface influences. Mr. Long also describes how a series of events have compromised the wetlands on the property including the piping and diversion of Cache Creek (off the property) and partial filling of the relic Cache Creek Channel in multiple locations on the property. Staff agrees with Mr. Long's assessment.

Staff maintains that most of the wetlands on the property are naturally occurring, with the exception of the wetlands located within segment 4 that are associated with the stock pond, which is clearly anthropogenic in origin, and therefore is not protected under the LDRs. Staff concurs with the recommendations made by Y2 and the Wyoming Wetlands Society that all wetlands on the property are degraded and therefore may be developed. The LDRs require an applicant to demonstrate that reasonable project modification measures have been taken to reduce wetland loss and degradation. Encroachment into the 30-foot wetland buffer is permitted for degraded wetlands, with no mitigation requirement. Mitigation is required on a 2:1 basis when developing degraded wetlands, and 30- foot buffers shall be provided around all wetlands created for mitigation. No mitigation is required for the wetland expansion area associated with the damning of the relic Cache Creek Channel, but mitigation is required for the estimated 17-foot width of the relic Cache Creek Channel over which it was damned and expanded. The irrigation-induced wetlands and an estimated area of the original Cache Creek channel should be shown illustratively, as well as described in the narrative, in the future Environmental Analysis submittal.

The following conditions are recommended:

1. A conceptual mitigation plan shall be submitted as part of the Environmental Analysis demonstrating how the 2:1 wetland mitigation ratio will be met.
2. Prior to any land-disturbing activity a final mitigation plan, pursuant to LDR Section 5.2.1.E.2.b shall be submitted for approval by the Planning Director.

This zoning compliance shall only verify zoning compliance at the time it is issued pursuant to Division 8.6.2 Zoning Compliance Verification of the Town of Jackson Land Development

Regulations. If you should have any further questions, please contact Tyler Sinclair at 733-0440, ext. 1301 or tsinclair@ci.jackson.wy.us.

Sincerely,

Tyler Sinclair
Planning Director

Enclosure

Wyoming Wetlands Society
Post Office Box 3216
125 East Pearl Street, Suite 8
Jackson, Wyoming 83001

Susan Johnson, Planning Manager
Teton County Planning and Development
P.O. Box 1727
Jackson, Wyoming 83001

Dear Susan,

The Wyoming Wetland Society (WWS) was asked by Teton County, as an impartial third party, to evaluate a proposed site development by the Bear Development Group on North Cache Street, Jackson, Wyoming for the proposed development sites value for *wetland habitat*. The site is US Forest Service property east of North Cache Street, in the town of Jackson, and laying immediate to the west of the National Elk Refuge boundary fence on the southwest corner of the Refuge. The parcel lays immediate to the town of Jackson.

In the process of the investigation WWS requested clarification of the requested scope of the evaluation. In a memo (S Johnson,4/23/2015) provided clarification from the Teton County Planning Department reference the Land Development Regulations (LDR) regarding "degraded habitats", in that WWS was to address the status concerning whether the wetland habitat on the parcel is degraded. According to the Teton County LDR 5.1.1, section3, subsection b(i), "High-Intensity Use Degrades Wetland/Wetland Agriculture-Induced. Where the intensity of adjoining use(s) causes the retained wetlands to become degraded habitats and the wetland area is suitable for physical development or use due to planning, location and other factors, or where the wetland is induced by irrigation". On a site visit on April 22, 2015, the parties had an opportunity to visit the proposed development site and that visit provided valuable insight into the current status of the property and the wetland habitat.

In this evaluation WWS looked at the LDR to address several questions reference *degraded wetland habitat*; 1) Does adjoin use(s) cause the existing wetland habitat to be degraded, 2) Does historical use(s) cause the existing wetland habitat to be degraded, 3) Is the wetland habitat induced by irrigation uses, past or present. The following is a discussion of those questions.

1) Does adjoin use(s) cause the existing wetland habitat to be degraded?

Several small remnant scrub-shrub wetlands lay on the east side of the proposed Bear development site. This primary wetland, leading from the south and running northerly, is suspect to be the old Cache Creek channel. That channel is a relict on the landscape as Cache Creek was put underground and piped across town entering Flat Creek at a point west of the area. This action separated Cache Creek and degraded that system while leaving residual shrub communities along what use to be the stream bed. Historically the town of Jackson encroached from the south and west, the National Elk Refuge lays to the east. This old Cache creek channel exited into the adjacent cattail marsh found on the National Elk Refuge property that lays immediately north of the US Forest Service parcel-proposed Bear Development parcel.

2) Does historical use(s) cause the wetland habitat to be degraded?

The scrub-shrub habitat fringe what is the apparent remnant Cache Creek channel. That channel is a relict on the landscape as the stream was put underground and piped across town entering Flat Creek at a point west of the area. This action separated Cache Creek and degraded that system while leaving residual shrub communities along what use to be the stream bed. The historic channel was filled over time and currently only a shallow depression suggests a remnant stream channel. The channel has been filled with pieces of cement from off-site demolition, rock, and metal. The watershed was dammed in several locations creating shallow ephemeral wetlands that were evident as late as 1994, those sites were breached historically and no longer hold water,

3) Is the wetland habitat induced by irrigation uses, past or present?

The scrub-shrub willow community exists as a result of local hydrology. Water exists in the root zone of this mature willow community currently adequate to perpetuate that willow habitat. That community was most likely established and maintained by the historic flood irrigation, Cache Creek pre-piping and the existing hydrology influences of Flat Creek floodplain. This Scrub-Shrub can be found along and among the fill materials in the upper reach of the Bear Development parcel and downstream to its intersect with the NER boundary. A well-established willow community exists on the property with root systems in the water zone subsurface. The existing remnant willow community, scrub-shrub wetland habitat is in good condition however the system overall is degraded because of historic human influences.

In summary the wetland habitat on the proposed development of the Bear Development site is generally intact; however it has been compromised over the years by a series of events including the development of the town of Jackson and the piping of Cache Creek. It is most likely that flood irrigation from the National Elk Refuge historically supported the willow community, as did the hydrology of the Flat Creek floodplain. Currently the hydrology of Flat creek is likely supporting this willow community, not flood irrigation because of the shift of irrigation practices to sprinklers. Once establish, this willow habitat is being maintained by wet conditions in the root zone of those shrubs, in this case subsurface influences. The wetland scrub-shrub habitat on this site has

been degraded, on the upper reaches of the proposed development site primarily, yet man caused influences/activities have occurred over all reaches of the parcel. As a result of historic human activities the wetland habitat has been compromised.

Sincerely,

William M. Long, Program Director
Wyoming Wetland Society
P.O. Box 3216
Jackson, Wyoming 83001
307-203-2209
bill@wyomingwetlandssociety.org

TOWN OF JACKSON
LAND DEVELOPMENT REGULATIONS
DIVISION 7.5.3 - SCHOOL EXACTIONS
DATE: 5/4/16

CASH-IN-LIEU OF LAND DEDICATION: SECTION 49770

1. PROJECT NAME: 60 Rosencrans
2. LOCATION: 60 Rosencrans
3. PROJECT NUMBER: P16-031

4. CALCULATE REQUIRED DEDICATION OF LAND:

LAND DEDICATION REQUIREMENT	X	# OF UNITS	=	LAND DEDICATION
.020 ACRES PER UNIT SINGLE & TWO-FAMILY		99		1.98
.015 ACRES PER UNIT MULTI-FAMILY		120		1.8

5. CALCULATE CASH IN-LIEU:

3.78 LAND DEDICATION STANDARD X $100,000 (VALUE OF LAND) = $ 378,000 CASH-IN-LIEU

6. FOR INFORMATION ON PROVIDING AN INDEPENDENT CALCULATION, SEE LDR SECTION 7.5.3 OPTION FOR INDEPENDENT CALCULATION OF DEDICATION STANDARDS

TOWN OF JACKSON
LAND DEVELOPMENT REGULATIONS
DIVISION 7.5.2 - PARK EXACTIONS
DATE: 5/4/16

CASH-IN-LIEU OF LAND DEDICATION: SECTION 49660

1. PROJECT NAME: 60 Rosencrans
2. LOCATION: 60 Rosencrans
3. PROJECT NUMBER: P16-031

4. CALCULATE PROPOSED PROJECT POPULATION:

UNIT TYPE	# OF UNITS	X	PERSONS HOUSED PER UNIT	PROJECTED POPULATION
STUDIO			1.25	
1 BEDROOM			1.75	
2 BEDROOM	120		2.25	270
3 BEDROOM	99		3.00	297
4 BEDROOM			3.75	
5 BEDROOM			4.50	
EACH ADDITIONAL BEDROOM			0.50	
DORMITORY			1 per 150 sf of net habitable area	
TOTAL				567

5. CALCULATE REQUIRED PARK ACREAGE:

567 TOTAL PROJECTED POPULATION X 9 ACRES / 1000 RESIDENTS = 5.103 REQUIRED ACRES

6. CALCULATE CASH-IN-LIEU:

5.103 REQUIRED ACRES X $100,000 (VALUE OF LAND) = $510,300 CASH-IN-LIEU

7. FOR INFORMATION ON PROVIDING AN INDEPENDENT CALCULATION, SEE LDR SECTION 7.5.2 OPTION FOR INDEPENDENT CALCULATION OF DEDICATION STANDARDS

Master Plan (Sketch Plan)	
Development Standard	**Allowed/Proposed**
FAR	Allowed - 65% / Proposed 0.0
LSR	Allowed - 30% / Proposed - 0.0
Plant Units	1 per DU & 1 per 12 parking spaces = 23 units.
Maximum Lot Coverage	Allowed - 50% / Proposed - 0.0
Height	
Stories	
Density	
Parking	
Front Yard Setback	
Rear Yard Setback	
Lower Level Yard Setback (both sides)	
Upper Level Side Setback (north)	
Upper Level Side Setback (south)	
Any development standards not included above will be applied as allowed or required in Sec. 2.3.4 Urban Residential (UR)	
Allowed Uses	**Allowed/Proposed**
Residential	
Attached Single-family Unit (condominiums / townhouses)	B
Apartment	B
Transportation/Infrastructure	
Utility Facility	C
Accessory Uses	
Home Occupation	B

JACKSON HOLE
TITLE & ESCROW
307.733.3153

Released	
Indexed	✓
Abstracted	✓
Scanned	

+2

WHEN RECORDED MAIL TO:
AND MAIL TAX STATEMENTS TO:

Hansen & Hansen, LLP
P.O. Box 50106
Idaho Falls, ID 83405

FSREA Sale, Jackson Admin. Site, B-T NF

APN: 22-41-16-27-3-00-020

GRANTOR: UNITED STATES OF AMERICA
GRANTEE: HANSEN & HANSEN LLP
Doc 0895616 bk 910 pg 186-191 Filed At 14:59 ON 12/04/15
Sherry L. Daigle Teton County Clerk fees: 27.00
By Mary Smith Deputy

QUITCLAIM DEED

THIS QUITCLAIM DEED is made this 27th day of November, 2015, by and between the **UNITED STATES OF AMERICA**, acting by and through the Forest Service, Department of Agriculture, hereinafter called **GRANTOR;** and **HANSEN & HANSEN, LLP, an Idaho limited liability partnership,** P.O. Box 50106, Idaho Falls, ID 83405, hereinafter called **GRANTEE.**

WITNESSETH: The Grantor, as authorized by the Forest Service Realignment and Enhancement Act of 2005 (16 U.S.C. 580d note; P.L. 109-54, Title V; 119 Stat. 559-563, as amended) (FSREA), the provisions of which have been met, has determined that this conveyance is in the public interest.

NOW THEREFORE, the Grantor, for and in consideration of the amount set forth in the *Contract to Buy and Sell Commercial Real Estate*, a binding document signed and sealed by both the Grantee and Grantor, the receipt of which is hereby duly acknowledged, does hereby remise, release, and quitclaim unto the **GRANTEE**, its successors and assigns, all its right, title, interest, and claim in and to the real property situated in the County of Teton, State of Wyoming, more particularly described as follows:

Sixth Principal Meridian

JB 11-30-2015
Checked as to price, acreage, description, and condition of sale, and found to be correct.

T. 41 N., R. 116 W.,
Sec. 27, a portion of the NW¼SW¼, more particularly described as follows:

Commencing at the southwest corner of said NW¼SW¼; thence S. 89°54' E., 40.0 feet to a point on the east right-of-way line of State Highway 26-89-191 which is the **True Point of Beginning**; thence N. 00°08' W., 40.0 feet along said right-of-way line; thence S. 89°54' E., 550.4 feet; thence N. 00°08' W., 537.5 feet; thence S. 89°52' W., 241.3 feet; thence N. 00°08' W., 203.2 feet; thence S. 89°24' E., 582.0 feet; thence S. 18°37' E., 818.3 feet; thence N. 89°52' W., 600.1 feet; thence N. 89°54' W., 550.4 feet to said right of way line, the **Point of Beginning**.

Containing 10.00 acres, more or less.

TOGETHER WITH:

1. All improvements thereon, other appurtenances, and all fixtures of a permanent nature currently on the premises, in their present condition, ordinary wear and tear excepted, and including all personal property described herein, and specifically including a horse corral and the following eleven (11) buildings:

UNIT	BUILDING INFRA ID#	BUILDING NAME	CATEGORIES	GROSS SQ FEET	YEAR BUILT
SO	TN806014	Jackson Car Barn	Utility	3,840	1933
SO	TN809013	Fire Storage Shed	Storage/Shed	572	1933
SO	TN810010	Jackson Gas House	Storage/Gas/Oil	630	1933
D4	TN805016	Fire Crew Building	Office	1,000	1954
SO	TN809023	45 Rosencrans	Shed	96	1985
SO	TN809024	55 Rosencrans	Shed	96	1985
SO	TN809025	65 Rosencrans	Shed	96	1985
SO	TN809026	70 Rosencrans	Shed	96	1985
SO	TN809028	75 Rosencrans	Shed	96	1985
SO	TN809029	80 Rosencrans	Shed	96	1985
SO	TN809030	90 Rosencrans	Shed	96	1985

2. An easement to maintain that portion of the Jackson Car Barn (TN806014) that encroaches approximately two (2) feet by ninety-six (96) feet onto property retained by the Grantor for a period not to exceed five (5) years from the date of closing. On or before expiration of said easement at the end of the five-year term, Grantee, or its successors in interest, shall remove that portion of the structure that encroaches upon the property retained by Grantor.

EXCEPTING AND RESERVING TO THE UNITED STATES: A 40-foot easement for access and utilities, more particularly described as follows:

Sixth Principal Meridian

T. 41 N., R. 116 W.,
Sec. 27, NW1/4SW1/4, that portion described as follows:

Beginning at the southwest corner of the parcel, which is on the east right-of-way line of State Highway 26-89-191 and North Cache Street and bears S. 89°54' E., 40.0 feet from the south one-sixteenth corner between said Sec. 27 and Sec. 28; thence S. 89°54' E., 590.4 feet along the south one-sixteenth line; thence N. 00°08' W., 40.0 feet; thence N. 89°54' W., 590.4 feet to and then along the south property boundary of the Bridger-Teton National Forest Supervisor's Office Parcel to the east right-of-way line for State Highway 26-89-191 and North Cache Street; thence S. 00°08' E., 40.0 feet to the Point of Beginning.

Said reservation contains 0.54 acre, more or less, is 590.5 feet long and 40.0 feet wide, and includes the right, but not the obligation, to remove Building Nos. TN806014, TN809013, and TN810010 (the Jackson Car Barn, Fire Storage Shed, and Jackson Gas House, respectively), located within the above-reserved easement, if they are not removed by Grantee.

If the Regional Forester determines that all or any portion of the easement herein reserved is no longer needed, the easement or such portion(s) thereof shall terminate. The termination shall be evidenced by a statement in recordable form furnished by the Regional Forester to Grantee or its successors or assigns in interest.

NOTICE REGARDING HAZARDOUS SUBSTANCE ACTIVITY

Pursuant to Section 120(h)(3)(A)(i) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9620(h)(3)(A)(i), and based upon a complete search of agency files, the **UNITED STATES** gives notice of no hazardous substance activity at the subject property by providing the **GRANTEE** with the following documents:

GRANTEE acknowledges receipt of the following document provided by **GRANTOR:** *Forest Service Land Transaction Screening Process Worksheets*, Forms 1-5 inclusive.

CERCLA COVENANT

Pursuant to Section 120(h)(3)(A)(ii) of the CERCLA, 42 U.S.C. § 9620(h)(3)(A)(ii), the **UNITED STATES** hereby warrants and covenants that:

(1) All response action necessary to protect human health and the environment with respect to any hazardous substance remaining on the property prior to this conveyance has been taken before the date of this conveyance; and

(2) It shall take any additional response action found to be necessary after this conveyance with respect to hazardous substances that were located on the property prior to this conveyance. This covenant shall not apply:

(a) In any case in which the **GRANTEE**, its successors, or assigns, is a Potentially Responsible Party (PRP) with respect to the subject property prior to this conveyance; OR

(b) To the extent, but only to the extent, that such additional response action or part thereof found to be necessary is the result of a failure to act of the **GRANTEE**, its successors or assigns, or any party in possession after the date of this conveyance that either:

(i) Results in a release or threatened release of a hazardous substance that was not located on the property on the date of this conveyance; OR

(ii) Causes or exacerbates the release or threatened release of a hazardous substance, the existence and location of which was known and identified to the applicable regulatory authority as of the date of this conveyance.

These warranties and covenants do not apply with respect to lead-based paint (LBP) or asbestos-containing building materials (ACBM) associated with structures related to the subject property, as those matters are addressed elsewhere in this Deed, in accordance with the FSREA.

CERCLA ACCESS

Pursuant to Section 120(h)(3)(A)(iii) of CERCLA, 42 U.S.C. § 9620(h)(3)(A)(iii), the **UNITED STATES** reserves a right of access to all portions of the property for environmental investigation, remediation, or response, as needed to take action in accordance with the covenant, set forth above and made under Section 120(h)(3(A)(ii) of CERCLA. If, after the date of transfer, the **UNITED STATES** finds that such additional response action is necessary with respect to hazardous substances released on the property prior to the date of transfer, the **UNITED STATES**, and its respective officers, agents, employees, contractors and subcontractors shall have the right (upon reasonable advance written notice to the record title owner) to enter upon the property and conduct investigations and surveys, and to conduct any additional response action or corrective action that is necessary. For the purposes of this paragraph, "access" includes, but is not limited to, the authority to enter the property; the authority to remove, to relocate, or to dispose of hazardous substances which are located on the property; the authority to remove, to relocate, or to dispose of solid and liquid materials including chemicals, wastes, soil, water and contaminated portions of equipment, facilities, and structures on the property for the purposes of performing necessary response measures; and the authority to take all other actions which are reasonably incidental or necessary to conduct any of the foregoing activities. Any such entry shall be coordinated with the record title owner and shall be performed in a manner that minimizes interruption with activities of authorized occupants.

FSREA DISCLOSURES AND WRITTEN ASSURANCES

Pursuant to Section 504(d)(3)(A) of the FSREA, the **UNITED STATES** hereby provides notice that no LBP or risk assessments, or ACBM inspections have been conducted on the property to be conveyed. FSREA exempts the agency from abatement of LBP and ACBM.

Due to their age, four of the buildings that will remain on the parcel may contain ACBM. Section 504(d)(3) of the FSREA exempts the agency from abatement of LBP and ACBM. No disclosure prior to sale, other than provisions of the afore-mentioned *Forest Service Land Transaction Screening Process Worksheets*, Forms 1-5 inclusive, with attachments, is required.

The **GRANTEE** hereby agrees to comply with any and all applicable Federal, State, and local laws relating to the management of LBP and ACBM associated with the property, including but not limited to, any such laws relating to the mitigation, abatement, remediation, cleanup, or disposal of LBP or ACBM associated with structures on the property, or the renovation or demolition of existing structures with LBP or ACBM.

Notwithstanding the covenants provided by the **UNITED STATES** in the previous paragraphs, the **GRANTEE** hereby agrees to hold harmless, defend, and indemnify the **UNITED STATES** from and against any liability, judgment, claim, penalty, fine, or other adverse action (whether legal or equitable in nature, and including without limitation, court costs and attorneys' fees) brought against the **UNITED STATES** after the date of this instrument by any person or entity under any Federal, State, or local law, including but not limited to environmental and tort laws, with respect to any LBP and/or ACBM associated with the property. This covenant to comply with applicable laws and to indemnify, release, defend, and hold harmless the **UNITED STATES** shall survive the subsequent conveyance of all or any portion of the property to any person and shall be construed as running with the real property, and may be enforced by the **UNITED STATES** in a court of competent jurisdiction.

These covenants by the **UNITED STATES OF AMERICA** and the **GRANTEE** shall be construed as running with the land, and may be enforced by the **UNITED STATES OF AMERICA** or the **GRANTEE** in a court of competent jurisdiction.

TO HAVE AND TO HOLD the property described herein unto the **GRANTEE** and its assigns, together with all hereditaments and appurtenances thereunto belonging.

IN WITNESS WHEREOF, the Grantor, by its duly authorized representative, has executed this Quitclaim Deed on the day and year first above written pursuant to the delegation of authority promulgated in Title 7 CFR 2.60 and 49 F.R. 34283, August 29, 1984.

UNITED STATES OF AMERICA

KATHRYN J. CONANT
Director of Lands & Minerals
Intermountain Region
USDA Forest Service

ACKNOWLEDGMENT

STATE OF UTAH }
COUNTY OF WEBER } **ss**

On this 27th day of November, 2015, before me, Lori Blickfeldt, a Notary Public in and for Weber County, personally appeared **KATHRYN J. CONANT, Director of Lands & Minerals, Intermountain Region, Forest Service, U.S. Department of Agriculture**, the signer of the within instrument, who acknowledged to me that she executed the foregoing instrument, by duly delegated authority.

Notary Public for the State of Utah
Residing in Perry, UT
My Commission Expires 11/30/2015

LORI BLICKFELDT
NOTARY PUBLIC • STATE of UTAH
COMMISSION NO. 649745
COMM. EXP. 11/30/2015

LETTER OF AUTHORIZATION

Hansen and Hansen, LLP ,"Owner" whose address is: _____

P.O. Box 50106, Idaho Falls

(NAME OF ALL INDIVIDUALS OR ENTITY OWNING THE PROPERTY)

Hansen and Hansen, LLP , **as the owner of property**

more specifically legally described as:

PT. NW1/4SW1/4, SEC. 27, TWP. 41, RNG. 116 PARCEL 1 (MOS T-20F)

(If too lengthy, attach description)

HEREBY AUTHORIZES Zane Powell **as agent to represent and act for Owner in making application for and receiving and accepting on Owners behalf, any permits or other action by the Town of Jackson, or the Town of Jackson Planning, Building, Engineering and/or Environmental Health Departments relating to the modification, development, planning or replatting, improvement, use or occupancy of land in the Town of Jackson. Owner agrees that Owner is or shall be deemed conclusively to be fully aware of and to have authorized and/or made any and all representations or promises contained in said application or any Owner information in support thereof, and shall be deemed to be aware of and to have authorized any subsequent revisions, corrections or modifications to such materials. Owner acknowledges and agrees that Owner shall be bound and shall abide by the written terms or conditions of issuance of any such named representative, whether actually delivered to Owner or not. Owner agrees that no modification, development, platting or replatting, improvement, occupancy or use of any structure or land involved in the application shall take place until approved by the appropriate official of the Town of Jackson, in accordance with applicable codes and regulations. Owner agrees to pay any fines and be liable for any other penalties arising out of the failure to comply with the terms of any permit or arising out of any violation of the applicable laws, codes or regulations applicable to the action sought to be permitted by the application authorized herein.**

Under penalty of perjury, the undersigned swears that the foregoing is true and, if signing on behalf of a corporation, partnership, limited liability company or other entity, the undersigned swears that this authorization is given with the appropriate approval of such entity, if required.

OWNER: C James Hansen

(SIGNATURE) (SIGNATURE OF CO-OWNER)

***Title*:** Partner

(if signed by officer, partner or member of corporation, LLC (secretary or corporate owner) partnership or other non-individual Owner)

STATE OF Idaho)

)SS.

COUNTY OF Bonneville)

The foregoing instrument was acknowledged before me by C James Hansen this 15 day of June, 2016.

WITNESS my hand and official seal.

(Seal)

JAKE HANSEN NOTARY PUBLIC STATE OF IDAHO

(Notary Public)

My commission expires: April 30, 2018

LETTER OF AUTHORIZATION

Hansen and Hansen, LLP ,"Owner" whose address is: _____

P.O. Box 50106, Idaho Falls

(NAME OF ALL INDIVIDUALS OR ENTITY OWNING THE PROPERTY)

Hansen and Hansen, LLP , as the owner of property

more specifically legally described as: _____

PT. NW1/4SW1/4, SEC. 27, TWP. 41, RNG. 116 PARCEL 1 (MOS T-20F)

(If too lengthy, attach description)

HEREBY AUTHORIZES Jorgensen Associates, P.C. as agent to represent and act for Owner in making application for and receiving and accepting on Owners behalf, any permits or other action by the Town of Jackson, or the Town of Jackson Planning, Building, Engineering and/or Environmental Health Departments relating to the modification, development, planning or replatting, improvement, use or occupancy of land in the Town of Jackson. Owner agrees that Owner is or shall be deemed conclusively to be fully aware of and to have authorized and/or made any and all representations or promises contained in said application or any Owner information in support thereof, and shall be deemed to be aware of and to have authorized any subsequent revisions, corrections or modifications to such materials. Owner acknowledges and agrees that Owner shall be bound and shall abide by the written terms or conditions of issuance of any such named representative, whether actually delivered to Owner or not. Owner agrees that no modification, development, platting or replatting, improvement, occupancy or use of any structure or land involved in the application shall take place until approved by the appropriate official of the Town of Jackson, in accordance with applicable codes and regulations. Owner agrees to pay any fines and be liable for any other penalties arising out of the failure to comply with the terms of any permit or arising out of any violation of the applicable laws, codes or regulations applicable to the action sought to be permitted by the application authorized herein.

Under penalty of perjury, the undersigned swears that the foregoing is true and, if signing on behalf of a corporation, partnership, limited liability company or other entity, the undersigned swears that this authorization is given with the appropriate approval of such entity, if required.

OWNER: C James Hansen

(SIGNATURE) (SIGNATURE OF CO-OWNER)

Title: Partner

(if signed by officer, partner or member of corporation, LLC (secretary or corporate owner) partnership or other non-individual Owner)

STATE OF Idaho)
)SS.
COUNTY OF Bonneville)

The foregoing instrument was acknowledged before me by C James Hansen this 15 day of June, 2016.

WITNESS my hand and official seal.

(Seal)

(Notary Public)

My commission expires: April 30, 2018

JAKE HANSEN NOTARY PUBLIC STATE OF IDAHO

OWNER'S POLICY OF TITLE INSURANCE

Policy Number **OX 09714510**

Issued by Old Republic National Title Insurance Company

Any notice of claim and any other notice or statement in writing required to be given to the Company under this Policy must be given to the Company at the address shown in Section 18 of the Conditions.

COVERED RISKS

SUBJECT TO THE EXCLUSIONS FROM COVERAGE, THE EXCEPTIONS FROM COVERAGE CONTAINED IN SCHEDULE B, AND THE CONDITIONS, OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY, a Minnesota corporation (the "Company") insures, as of Date of Policy and, to the extent stated in Covered Risks 9 and 10, after Date of Policy, against loss or damage, not exceeding the Amount of Insurance, sustained or incurred by the Insured by reason of:

1. Title being vested other than as stated in Schedule A.
2. Any defect in or lien or encumbrance on the Title. This Covered Risk includes but is not limited to insurance against loss from:
   (a) A defect in the Title caused by
      (i) forgery, fraud, undue influence, duress, incompetency, incapacity, or impersonation;
      (ii) failure of any person or Entity to have authorized a transfer or conveyance;
      (iii) a document affecting Title not properly created, executed, witnessed, sealed, acknowledged, notarized, or delivered;
      (iv) failure to perform those acts necessary to create a document by electronic means authorized by law;
      (v) a document executed under a falsified, expired, or otherwise invalid power of attorney;
      (vi) a document not properly filed, recorded, or indexed in the Public Records including failure to perform those acts by electronic means authorized by law; or
      (vii) a defective judicial or administrative proceeding.
   (b) The lien of real estate taxes or assessments imposed on the Title by a governmental authority due or payable, but unpaid.
   (c) Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land. The term "encroachment" includes encroachments of existing improvements located on the Land onto adjoining land, and encroachments onto the Land of existing improvements located on adjoining land.
3. Unmarketable Title.
4. No right of access to and from the Land.
5. The violation or enforcement of any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (a) the occupancy, use, or enjoyment of the Land;
   (b) the character, dimensions, or location of any improvement erected on the Land;
   (c) the subdivision of land; or
   (d) environmental protection
   if a notice, describing any part of the Land, is recorded in the Public Records setting forth the violation or intention to enforce, but only to the extent of the violation or enforcement referred to in that notice.
6. An enforcement action based on the exercise of a governmental police power not covered by Covered Risk 5 if a notice of the enforcement action, describing any part of the Land, is recorded in the Public Records, but only to the extent of the enforcement referred to in that notice.
7. The exercise of the rights of eminent domain if a notice of the exercise, describing any part of the Land, is recorded in the Public Records.
8. Any taking by a governmental body that has occurred and is binding on the rights of a purchaser for value without Knowledge.
9. Title being vested other than as stated in Schedule A or being defective

   (a) as a result of the avoidance in whole or in part, or from a court order providing an alternative remedy, of a transfer of all or any part of the title to or any interest in the Land occurring prior to the transaction vesting Title as shown in Schedule A because that prior transfer constituted a fraudulent or preferential transfer under federal bankruptcy, state insolvency, or similar creditors' rights laws; or
   (b) because the instrument of transfer vesting Title as shown in Schedule A constitutes a preferential transfer under federal

bankruptcy, state insolvency, or similar creditors' rights laws by reason of the failure of its recording in the Public Records
(i) to be timely, or
(ii) to impart notice of its existence to a purchaser for value or to a judgment or lien creditor.

10. Any defect in or lien or encumbrance on the Title or other matter included in Covered Risks 1 through 9 that has been created or attached or has been filed or recorded in the Public Records subsequent to Date of Policy and prior to the recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

The Company will also pay the costs, attorneys' fees, and expenses incurred in defense of any matter insured against by this Policy, but only to the extent provided in the Conditions.

Issued through the Office of:

Jackson Hole Title & Escrow

Authorized Signature

OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY
A Stock Company
400 Second Avenue South, Minneapolis, Minnesota 55401
(612) 371-1111

By _____ President

Attest _____ Secretary

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions, or location of any improvement erected on the Land;
   (iii) the subdivision of land; or
   (iv) environmental protection;
   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
   (a) created, suffered, assumed, or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 9 and 10); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.
4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction vesting the Title as shown in Schedule A, is
   (a) a fraudulent conveyance or fraudulent transfer; or
   (b) a preferential transfer for any reason not stated in Covered Risk 9 of this policy.
5. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

CONDITIONS AND STIPULATIONS

1. DEFINITION OF TERMS

The following terms when used in this policy mean:

(a) "Amount of Insurance": The amount stated in Schedule A, as may be increased or decreased by endorsement to this policy, increased by Section 8(b), or decreased by Sections 10 and 11 of these Conditions.

(b) "Date of Policy": The date designated as "Date of Policy" in Schedule A.

(c) "Entity": A corporation, partnership, trust, limited liability company, or other similar legal entity.

(d) "Insured": The Insured named in Schedule A.

(i) The term "Insured" also includes

(A) successors to the Title of the Insured by operation of law as distinguished from purchase, including heirs, devisees, survivors, personal representatives, or next of kin;

(B) successors to an Insured by dissolution, merger, consolidation, distribution, or reorganization;

(C) successors to an Insured by its conversion to another kind of Entity;

(D) a grantee of an Insured under a deed delivered without payment of actual valuable consideration conveying the Title

(1) if the stock, shares, memberships, or other equity interests of the grantee are wholly-owned by the named Insured,

(2) if the grantee wholly owns the named Insured,

(3) if the grantee is wholly-owned by an affiliated Entity of the named Insured, provided the affiliated Entity and the named Insured are both wholly-owned by the same person or Entity, or

(4) if the grantee is a trustee or beneficiary of a trust created by a written instrument established by the Insured named in Schedule A for estate planning purposes.

(ii) With regard to (A), (B), (C), and (D) reserving, however, all rights and defenses as to any successor that the Company would have had against any predecessor Insured.

(e) "Insured Claimant": An Insured claiming loss or damage.

(f) "Knowledge" or "Known": Actual knowledge, not constructive knowledge or notice that may be imputed to an Insured by reason of the Public Records or any other records that impart constructive notice of matters affecting the Title.

(g) "Land": The land described in Schedule A, and affixed improvements that by law constitute real property. The term "Land" does not include any property beyond the lines of the area described in Schedule A, nor any right, title, interest, estate, or easement in abutting streets, roads, avenues, alleys, lanes, ways, or waterways, but this does not modify or limit the extent that a right of access to and from the Land is insured by this policy.

(h) "Mortgage": Mortgage, deed of trust, trust deed, or other security instrument, including one evidenced by electronic means authorized by law.

(i) "Public Records": Records established under state statutes at Date of Policy for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without Knowledge. With respect to Covered Risk 5(d), "Public Records" shall also include environmental protection liens filed in the records of the clerk of the United States District Court for the district where the Land is located.

(j) "Title": The estate or interest described in Schedule A.

(k) "Unmarketable Title": Title affected by an alleged or apparent matter that would permit a prospective purchaser or lessee of the Title or lender on the Title to be released from the obligation to purchase, lease, or lend if there is a contractual condition requiring the delivery of marketable title.

2. CONTINUATION OF INSURANCE

The coverage of this policy shall continue in force as of Date of Policy in favor of an Insured, but only so long as the Insured retains an estate or interest in the Land, or holds an obligation secured by a purchase money Mortgage given by a purchaser from the Insured, or only so long as the Insured shall have liability by reason of warranties in any transfer or conveyance of the Title. This policy shall not continue in force in favor of any purchaser from the Insured of either (i) an estate or interest in the Land, or (ii) an obligation secured by a purchase money Mortgage given to the Insured.

3. NOTICE OF CLAIM TO BE GIVEN BY INSURED CLAIMANT

The Insured shall notify the Company promptly in writing (i) in case of any litigation as set forth in Section 5(a) of these Conditions, (ii) in case Knowledge shall come to an Insured hereunder of any claim of title or interest that is adverse to the Title, as insured, and that might cause loss or damage for which the Company may be liable by virtue of this policy, or (iii) if the Title, as insured, is rejected as Unmarketable Title. If the Company is prejudiced by the failure of the Insured Claimant to provide prompt notice, the Company's liability to the Insured Claimant under the policy shall be reduced to the extent of the prejudice.

4. PROOF OF LOSS

In the event the Company is unable to determine the amount of loss or damage, the Company may, at its option, require as a

condition of payment that the Insured Claimant furnish a signed proof of loss. The proof of loss must describe the defect, lien, encumbrance, or other matter insured against by this policy that constitutes the basis of loss or damage and shall state, to the extent possible, the basis of calculating the amount of the loss or damage.

5. DEFENSE AND PROSECUTION OF ACTIONS

(a) Upon written request by the Insured, and subject to the options contained in Section 7 of these Conditions, the Company, at its own cost and without unreasonable delay, shall provide for the defense of an Insured in litigation in which any third party asserts a claim covered by this policy adverse to the Insured. This obligation is limited to only those stated causes of action alleging matters insured against by this policy. The Company shall have the right to select counsel of its choice (subject to the right of the Insured to object for reasonable cause) to represent the Insured as to those stated causes of action. It shall not be liable for and will not pay the fees of any other counsel. The Company will not pay any fees, costs, or expenses incurred by the Insured in the defense of those causes of action that allege matters not insured against by this policy.

(b) The Company shall have the right, in addition to the options contained in Section 7 of these Conditions, at its own cost, to institute and prosecute any action or proceeding or to do any other act that in its opinion may be necessary or desirable to establish the Title, as insured, or to prevent or reduce loss or damage to the Insured. The Company may take any appropriate action under the terms of this policy, whether or not it shall be liable to the Insured. The exercise of these rights shall not be an admission of liability or waiver of any provision of this policy. If the Company exercises its rights under this subsection, it must do so diligently.

(c) Whenever the Company brings an action or asserts a defense as required or permitted by this policy, the Company may pursue the litigation to a final determination by a court of competent jurisdiction, and it expressly reserves the right, in its sole discretion, to appeal any adverse judgment or order.

6. DUTY OF INSURED CLAIMANT TO COOPERATE

(a) In all cases where this policy permits or requires the Company to prosecute or provide for the defense of any action or proceeding and any appeals, the Insured shall secure to the Company the right to so prosecute or provide defense in the action or proceeding, including the right to use, at its option, the name of the Insured for this purpose. Whenever requested by the Company, the Insured, at the Company's expense, shall give the Company all reasonable aid (i) in securing evidence, obtaining witnesses, prosecuting or defending the action or proceeding, or effecting settlement, and (ii) in any other lawful act that in the opinion of the Company may be necessary or desirable to establish the Title or any other matter as insured. If the Company is prejudiced by the failure of the Insured to furnish the required cooperation, the Company's obligations to the Insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such cooperation.

(b) The Company may reasonably require the Insured Claimant to submit to examination under oath by any authorized representative of the Company and to produce for examination, inspection, and copying, at such reasonable times and places as may be designated by the authorized representative of the Company, all records, in whatever medium maintained, including books, ledgers, checks, memoranda, correspondence, reports, e-mails, disks, tapes, and videos whether bearing a date before or after Date of Policy, that reasonably pertain to the loss or damage. Further, if requested by any authorized representative of the Company, the Insured Claimant shall grant its permission, in writing, for any authorized representative of the Company to examine, inspect, and copy all of these records in the custody or control of a third party that reasonably pertain to the loss or damage. All information designated as confidential by the Insured Claimant provided to the Company pursuant to this Section shall not be disclosed to others unless, in the reasonable judgment of the Company, it is necessary in the administration of the claim. Failure of the Insured Claimant to submit for examination under oath, produce any reasonably requested information, or grant permission to secure reasonably necessary information from third parties as required in this subsection, unless prohibited by law or governmental regulation, shall terminate any liability of the Company under this policy as to that claim.

7. OPTIONS TO PAY OR OTHERWISE SETTLE CLAIMS; TERMINATION OF LIABILITY

In case of a claim under this policy, the Company shall have the following additional options:

(a) To Pay or Tender Payment of the Amount of Insurance.

To pay or tender payment of the Amount of Insurance under this policy together with any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment or tender of payment and that the Company is obligated to pay.

Upon the exercise by the Company of this option, all liability and obligations of the Company to the Insured under this policy, other than to make the payment required in this subsection, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation.

(b) To Pay or Otherwise Settle With Parties Other Than the Insured or With the Insured Claimant.

(i)To pay or otherwise settle with other parties for or in the name of an Insured Claimant any claim insured against under

this policy. In addition, the Company will pay any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment and that the Company is obligated to pay; or

(ii) To pay or otherwise settle with the Insured Claimant the loss or damage provided for under this policy, together with any costs, attorneys' fees, and expenses incurred by the Insured Claimant that were authorized by the Company up to the time of payment and that the Company is obligated to pay.

Upon the exercise by the Company of either of the options provided for in subsections (b)(i) or (ii), the Company's obligations to the Insured under this policy for the claimed loss or damage, other than the payments required to be made, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation.

8. DETERMINATION AND EXTENT OF LIABILITY

This policy is a contract of indemnity against actual monetary loss or damage sustained or incurred by the Insured Claimant who has suffered loss or damage by reason of matters insured against by this policy.

(a) The extent of liability of the Company for loss or damage under this policy shall not exceed the lesser of

(i) the Amount of Insurance; or

(ii) the difference between the value of the Title as insured and the value of the Title subject to the risk insured against by this policy.

(b) If the Company pursues its rights under Section 5 of these Conditions and is unsuccessful in establishing the Title, as insured,

(i) the Amount of Insurance shall be increased by 10%, and

(ii) the Insured Claimant shall have the right to have the loss or damage determined either as of the date the claim was made by the Insured Claimant or as of the date it is settled and paid.

(c) In addition to the extent of liability under (a) and (b), the Company will also pay those costs, attorneys' fees, and expenses incurred in accordance with Sections 5 and 7 of these Conditions.

9. LIMITATION OF LIABILITY

(a) If the Company establishes the Title, or removes the alleged defect, lien, or encumbrance, or cures the lack of a right of access to or from the Land, or cures the claim of Unmarketable Title, all as insured, in a reasonably diligent manner by any method, including litigation and the completion of any appeals, it shall have fully performed its obligations with respect to that matter and shall not be liable for any loss or damage caused to the Insured.

(b) In the event of any litigation, including litigation by the Company or with the Company's consent, the Company shall have no liability for loss or damage until there has been a final determination by a court of competent jurisdiction, and disposition of all appeals, adverse to the Title, as insured.

(c) The Company shall not be liable for loss or damage to the Insured for liability voluntarily assumed by the Insured in settling any claim or suit without the prior written consent of the Company.

10. REDUCTION OF INSURANCE; REDUCTION OR TERMINATION OF LIABILITY

All payments under this policy, except payments made for costs, attorneys' fees, and expenses, shall reduce the Amount of Insurance by the amount of the payment.

11. LIABILITY NONCUMULATIVE

The Amount of Insurance shall be reduced by any amount the Company pays under any policy insuring a Mortgage to which exception is taken in Schedule B or to which the Insured has agreed, assumed, or taken subject, or which is executed by an Insured after Date of Policy and which is a charge or lien on the Title, and the amount so paid shall be deemed a payment to the Insured under this policy.

12. PAYMENT OF LOSS

When liability and the extent of loss or damage have been definitely fixed in accordance with these Conditions, the payment shall be made within 30 days.

13. RIGHTS OF RECOVERY UPON PAYMENT OR SETTLEMENT

(a) Whenever the Company shall have settled and paid a claim under this policy, it shall be subrogated and entitled to the rights of the Insured Claimant in the Title and all other rights and remedies in respect to the claim that the Insured Claimant has against any person or property, to the extent of the amount of any loss, costs, attorneys' fees, and expenses paid by the Company. If requested by the Company, the Insured Claimant shall execute documents to evidence the transfer to the Company of these rights and remedies. The Insured Claimant shall permit the Company to sue, compromise, or settle in the name of the Insured Claimant and to use the name of the Insured Claimant in any transaction or litigation involving these rights and remedies.

If a payment on account of a claim does not fully cover the loss of the Insured Claimant, the Company shall defer the

exercise of its right to recover until after the Insured Claimant shall have recovered its loss.

(b) The Company's right of subrogation includes the rights of the Insured to indemnities, guaranties, other policies of insurance, or bonds, notwithstanding any terms or conditions contained in those instruments that address subrogation rights.

14. ARBITRATION

Either the Company or the Insured may demand that the claim or controversy shall be submitted to arbitration pursuant to the Title Insurance Arbitration Rules of the American Land Title Association ("Rules"). Except as provided in the Rules, there shall be no joinder or consolidation with claims or controversies of other persons. Arbitrable matters may include, but are not limited to, any controversy or claim between the Company and the Insured arising out of or relating to this policy, any service in connection with its issuance or the breach of a policy provision, or to any other controversy or claim arising out of the transaction giving rise to this policy. All arbitrable matters when the Amount of Insurance is $2,000,000 or less shall be arbitrated at the option of either the Company or the Insured. All arbitrable matters when the Amount of Insurance is in excess of $2,000,000 shall be arbitrated only when agreed to by both the Company and the Insured. Arbitration pursuant to this policy and under the Rules shall be binding upon the parties. Judgment upon the award rendered by the Arbitrator(s) may be entered in any court of competent jurisdiction.

15. LIABILITY LIMITED TO THIS POLICY; POLICY ENTIRE CONTRACT

(a) This policy together with all endorsements, if any, attached to it by the Company is the entire policy and contract between the Insured and the Company. In interpreting any provision of this policy, this policy shall be construed as a whole.

(b) Any claim of loss or damage that arises out of the status of the Title or by any action asserting such claim shall be restricted to this policy.

(c) Any amendment of or endorsement to this policy must be in writing and authenticated by an authorized person, or expressly incorporated by Schedule A of this policy.

(d) Each endorsement to this policy issued at any time is made a part of this policy and is subject to all of its terms and provisions. Except as the endorsement expressly states, it does not (i) modify any of the terms and provisions of the policy, (ii) modify any prior endorsement, (iii) extend the Date of Policy, or (iv) increase the Amount of Insurance.

16. SEVERABILITY

In the event any provision of this policy, in whole or in part, is held invalid or unenforceable under applicable law, the policy shall be deemed not to include that provision or such part held to be invalid, but all other provisions shall remain in full force and effect.

17. CHOICE OF LAW; FORUM

(a) Choice of Law: The Insured acknowledges the Company has underwritten the risks covered by this policy and determined the premium charged therefor in reliance upon the law affecting interests in real property and applicable to the interpretation, rights, remedies, or enforcement of policies of title insurance of the jurisdiction where the Land is located.
Therefore, the court or an arbitrator shall apply the law of the jurisdiction where the Land is located to determine the validity of claims against the Title that are adverse to the Insured and to interpret and enforce the terms of this policy. In neither case shall the court or arbitrator apply its conflicts of law principles to determine the applicable law.

(b) Choice of Forum: Any litigation or other proceeding brought by the Insured against the Company must be filed only in a state or federal court within the United States of America or its territories having appropriate jurisdiction.

18. NOTICES, WHERE SENT

Any notice of claim and any other notice or statement in writing required to be given to the Company under this policy must be given to the Company at 400 Second Avenue South, Minneapolis, Minnesota 55401-2499.

SCHEDULE A

Jackson Hole Title & Escrow
255 Buffalo Way/PO Box 921
Jackson, WY 83001

File No.: **568426JAC** Policy No.: **OX 09714510**

Address Reference: **Jackson Administrative Site, Located in NW/SW/27/41/116 Jackson, WY 83001**

Amount of Insurance: **$9,100,000.00** Premium: **$8,820.00**

Date of Policy: **December 4, 2015** at **3:08 P.M.**

1. Name of Insured:

   Hansen & Hansen, LLP, an Idaho Limited Liability Partnership

2. The estate or interest in the Land that is insured by this policy is:

   Fee Simple

3. Title is vested in:

   Hansen & Hansen, LLP, an Idaho Limited Liability Partnership

4. The Land referred to in this policy is described as follows:

   The land referred to herein is described in the Legal Description attached hereto as Exhibit A.

Exhibit "A"

Real property in the County of Teton, State of Wyoming, described as follows:

A portion of land lying within NW¼ SW¼ Section 27, Township 41 North, Range 116 West, 6th P.M., Teton County, Wyoming, being more particularly described as follows:

Commencing at the southwest corner of said aliquot part;

Thence S 89° 54′ E, 40.0 feet to the True Point of Beginning;

Thence N 00° 08′ W, 40.0 feet;

Thence S 89° 54′ E, 550.4 feet;

Thence N 00° 08′ W, 537.5 feet;

Thence S 89° 52′ W, 241.3 feet;

Thence N 00° 08′ W, 203.2 feet;

Thence S 89° 24′ E, 582.0 feet;

Thence S 18° 37′ E, 818.3 feet;

Thence N 89° 52′ W, 600.1 feet;

Thence N 89° 54′ W, 550.4 feet to the Point of Beginning.

SCHEDULE B

Policy No.: OX 09714510

File No. 568426JAC

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage, and the Company will not pay costs, attorneys' fees, or expenses that arise by reason of:

1. Any facts, rights, interest or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession, or claiming to be in possession, thereof.

2. Easements, liens, encumbrances, or claims thereof, which are not shown by the public records.

3. Any encroachment, encumbrance, violation, variation or adverse circumstance affecting the title that would be disclosed by an accurate and complete land survey of the Land and that is not shown by the public records.

4. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; or (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.

5. Any right, title or interest in any minerals, mineral rights, or related matters, including but not limited to oil, gas, coal, and other hydrocarbons, whether or not shown by the public record.

6. Taxes for the year 2016 and subsequent years, which are not yet due and payable.

7. Covenants, conditions, restrictions, reservations, easements, encroachments, ditches, roadways, rights-of-way, common areas and building set back requirements as delineated on the recorded Map Number(s) T-20F and Map T-20I, records of Teton County, Wyoming.

8. Terms, conditions, easements and reservations as contained in that deed from the United States of America to Hansen & Hansen, LLP, an Idaho Limited Liability Partnership appearing of record in Book 910 of Photo, Pages 186-191, records of Teton County, Wyoming.

9. Electric Distribution Easement to Lower Valley Energy appearing of record in Book 910 of Photo, Pages 192-196, records of Teton County, Wyoming.

10. Distribution Gas Easement to Lower Valley Energy appearing of record in Book 910 of Photo, Pages 197-200, records of Teton County, Wyoming.

11. Easement to Qwest Corporation d/b/a Century Link QC appearing of record in Book 910 of Photo, Pages 201-205, records of Teton County, Wyoming.

12. Easement to Silver Star Telephone Company, Inc. appearing of record in Book 910 of Photo, Pages 206-208, records of Teton County, Wyoming.

ENDORSEMENT

To be attached to and become a part of Policy No. 09714510 of Old Republic National Title Insurance Company.

The Company insures against loss or damage sustained by the Insured by reason of the failure of the Land to constitute a lawfully created parcel according to the subdivision statutes and local subdivision ordinances applicable to the Land.

The total liability of the Company under said Policy and any endorsement thereto shall not exceed, in the aggregate, the face amount of said policy and costs which the Company is obligated under the Conditions and Stipulations thereof to pay.
This endorsement, when countersigned by an authorized officer or agent, is made a part of said policy as of the policy date thereof and is subject to the Schedules, Conditions and Stipulations and Exclusions from Coverage therein contained, except as modified by the provisions hereof.

ORT Form 3854
Subdivision Endorsement

Authorized Officer or Agent

OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY
A Stock Company
400 Second Avenue South, Minneapolis, Minnesota 55401
(612) 371-1111

By _____ President

Attest _____ Secretary

OLD REPUBLIC NATIONAL TITLE INSURANCE AGENCY
PRIVACY POLICY NOTICE

PURPOSE OF THIS NOTICE

Title V of the Gramm-Leach-Bliley Act (GLBA) generally prohibits any financial institution, directly or through its affiliates, from sharing nonpublic personal information about you with a nonaffiliated third party unless the institution provides you with a notice of its privacy policies and practices, such as the type of information that it collects about you and the categories of persons or entities to whom it may be disclosed. In compliance with the GLBA, we are providing you with this document, which notifies you of the privacy policies and practices of Old Republic National Title Insurance Company.

We may collect nonpublic information about you from the following sources:

Information we received from you such as on applications or other forms.
Information about your transactions we secure from our files, or from others.
Information we receive from a consumer reporting agency.
Information that we receive from others involved in your transaction, such as the real estate agent or lender.

Unless it is specifically stated otherwise in an amended Privacy Policy Notice, no additional nonpublic personal information will be collected about you.

We also may disclose this information about our customers or former customers to the following types of nonaffiliated companies that perform services on our behalf or with whom we have joint market agreements:

Financial services providers such as companies engaged in banking, consumer finance, securities and insurance.
Non-financial companies such as envelope stuffers and other fulfillment service providers.

We do not disclose any nonpublic personal information about you with anyone for any purpose that is not specifically permitted by law.

We restrict access to nonpublic information about you to those employees who need to know that information in order to provide products or services to you. We maintain physical, electronic and procedural safeguards that comply with federal regulations to guard your nonpublic personal information.

WHEN RECORDED MAIL TO:

Town of Jackson
150 East Pearl
P.O. Box 1687
Jackson, WY 83001
(307) 733-3932

APN: #22-41-16-27-3-00-020

DRAINAGE EASEMENT

KNOW ALL MEN BY THESE PRESENTS, that for **TEN DOLLARS ($10)** and other good and valuable consideration, receipt whereof being hereby acknowledged by **HANSEN & HANSEN LLP, an Idaho limited liability partnership**, address P.O. Box 50106, Idaho Falls, ID 83405 ("Grantor") hereby grants and conveys to the **TOWN OF JACKSON, a municipal corporation of the State of Wyoming**, its successors and assigns, of P.O. Box 1687, Jackson, WY 83001, hereinafter called the "Grantee", a non-exclusive easement in, on, over, under, across, and through that property in Teton County, State of Wyoming, described as follows:

Sixth Principal Meridian

T. 41 N., R. 116 W.,
Sec. 27, NW1/4SW1/4 that portion described as follows:

Beginning at the intersection of the centerline of the Cache Creek pipeline with the south one-sixteenth line of said Sec. 27, which bears S. 89°54' E., 229.6 feet, more or less, from the south one-sixteenth corner of said Sec. 27 and Sec. 28; thence N. 14°04' W., 41.3 feet, more or less, along the centerline of said pipeline to the north property line of Grantor's said tract, where the Cache Creek pipeline leaves said tract.

The above-described easement is 41.3 feet long, more or less, and contains 0.03 acre, more or less. Easement is centered on the pipeline and is 30 feet wide, 15 feet on each side of the centerline of the pipeline.

Said easement is further depicted on **Exhibit A**, attached hereto and by this reference made a part hereof for the right to install, operate, and maintain surface and subsurface drainage improvements to convey storm water drainage, runoff, and snowmelt, together with the right to remove trees, bushes, undergrowth, and other obstructions interfering with the installation, construction, and maintenance of said drainage improvements, and the further right of ingress and egress to and from the said described property, over and across reasonable routes approved by Grantor in order that the Grantee might exercise the rights granted by this easement.

The within grant is an easement running with the land and shall be perpetual so long as it is used for the above-described purposes.

IN WITNESS WHEREOF, we have hereunto set our hands this 2ND day of DECEMBER, 2015, hereby waiving and releasing all rights under and by virtue of the homestead exemption laws of the State of Wyoming.

HANSEN & HANSEN, LLP,
an Idaho limited liability partnership

By: _____
KIRKLAND R. HANSEN, Partner

ACKNOWLEDGMENT

STATE OF IDAHO }
COUNTY OF BONNEVILLE } **ss**

The foregoing instrument was acknowledged before me, by **KIRKLAND R. HANSEN**, affirming proper authority as the **Partner** of **HANSEN & HANSEN, LLP, an Idaho limited liability partnership**, this 2ND day of DECEMBER, 2015.

WITNESS MY HAND AND OFFICIAL SEAL

_____
Notary Public for the State of Idaho
Residing in IDAHO FALLS IDAHO
My Commission Expires 1/27/20

(Seal)
JEFFERY C. WALBOM
NOTARY
PUBLIC
STATE OF IDAHO

Approved as to form: _____

AUDREY COHEN-DAVIS
Town Attorney

Approved as to content: _____

SHAWN O'MALLEY
Town Engineer

The foregoing easement is hereby accepted by the **TOWN OF JACKSON** this _____day of _____, 2015.

BY: _____
SARAH FLITNER
Mayor

ATTEST:

BY: _____
Town Clerk

ACKNOWLEDGMENT

STATE OF WYOMING }
COUNTY OF TETON } **ss**

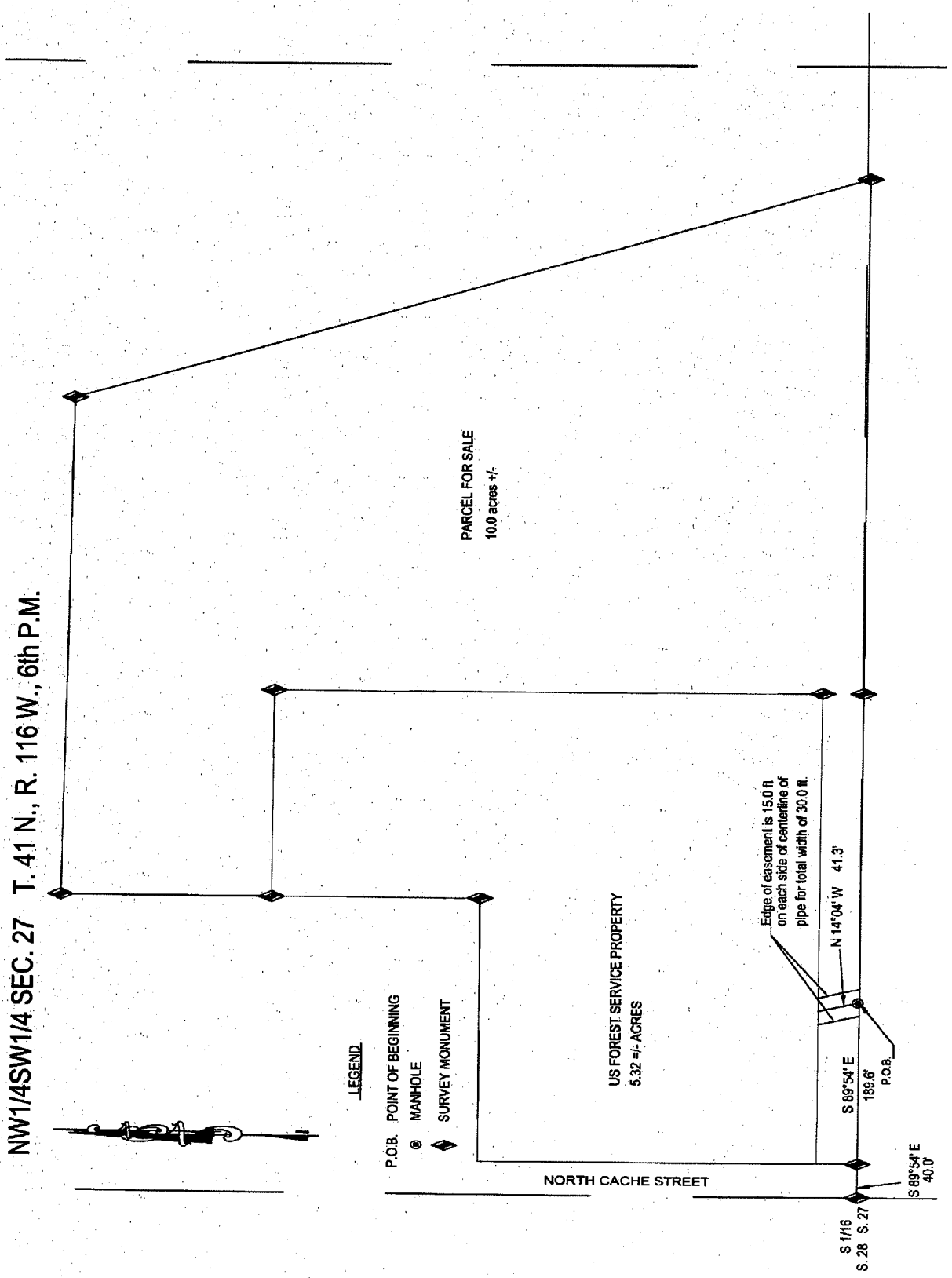
The foregoing instrument was acknowledged before me by **SARAH FLITNER**, affirming proper authority as the **Mayor of Jackson City, Wyoming**, this _____ day of _____, 2015.

WITNESS MY HAND AND OFFICIAL SEAL:

(Seal)

_____
Notary Public for the State of Wyoming
Residing in _____
My Commission Expires _____

EXHIBIT A


NW1/4SW1/4 SEC. 27 T. 41 N., R. 116 W., 6th P.M.
PARCEL FOR SALE
10.0 acres +/-
US FOREST SERVICE PROPERTY
5.32 +/- ACRES
Edge of easement is 15.0 ft on each side of centerline of pipe for total width of 30.0 ft.
N 14°04' W 41.3'
S 89°54' E 189.6'
P.O.B.
S 89°54' E 40.0'
NORTH CACHE STREET
S 1/16 S. 28 S. 27
LEGEND
P.O.B. POINT OF BEGINNING
MANHOLE
SURVEY MONUMENT

WHEN RECORDED MAIL TO:

Town of Jackson
150 East Pearl
P.O. Box 1687
Jackson, WY 83001
(307) 733-3932

APN: #22-41-16-27-3-00-020

SANITARY SEWER EASEMENT

KNOW ALL MEN BY THESE PRESENTS, that for **TEN DOLLARS ($10)** and other good and valuable consideration, receipt whereof being hereby acknowledged by **HANSEN & HANSEN LLP, an Idaho limited liability partnership,** P.O. Box 50106, Idaho Falls, ID 83405, hereinafter called "Grantor", hereby grants and conveys to the **TOWN OF JACKSON, a municipal corporation of the State of Wyoming,** its successors and assigns, of P.O. Box 1687, Jackson, WY 83001, hereinafter called "Grantee", a non-exclusive easement in, on, over, under, across, and through that property in Teton County, State of Wyoming, described as follows:

Sixth Principal Meridian

T. 41 N., R. 116 W.,
Sec. 27, NW1/4SW1/4 that portion described as follows:

Beginning at the intersection of the centerline of Town of Jackson sewer line with the south one-sixteenth line of said Sec. 27, which bears S. 89°54' E., 193.2 feet from the south one-sixteenth corner of said Sec. 27 and Sec. 28; thence along the centerline of said sewer line N. 00°39 W., 35.3 feet to a manhole; thence along the centerline of said sewer line N. 89°11' W., 152.8 feet to a point on the east right-of-way line of State Highway 26/89/191 (also known as North Cache Street), which is the west boundary of the Grantor's said tract, which bears N. 00°07' W., 37.1 feet from the southwest corner of said tract, where the Town of Jackson sewer line leaves said tract.

The above-described easement is 188.0 feet long, more or less, and contains 0.09 acre, more or less. Easement is centered on the sewer line, and is 30 feet wide, 15 feet on each side of the centerline of the sewer pipe, but not lying past the north property line of Grantor's said tract, whichever distance is less.

Said easement is further depicted on **Exhibit A**, attached hereto and by this reference made a part hereof for the right to lay out, install, operate, and maintain public sanitary sewer mains, manholes, cleanouts and appurtenances thereto, together with the right to remove trees, bushes, undergrowth,

and other obstructions interfering with the installation, construction, and maintenance of said public sanitary sewer mains, and the further right of ingress and egress to and from the said described property over and across reasonable routes approved by Grantor in order that the Grantee might exercise the rights granted by this easement.

Grantor reserves the right to use the property subject to the permanent easement for any purpose whatsoever which does not damage or destroy the underground pipelines, mains, services, and appurtenances, specifically including the right to place fences with gates, grass, bushes, and moveable objects upon the property, together with the right to utilize the property for parking, storage, driveway, or recreation purposes.

The Grantee shall repair or replace any items that it shall move from the conveyed property and shall repair any damage due to the Grantee's use of the property as contemplated by this easement.

The within grant is an easement running with the land and shall be perpetual so long as it is used for the above-described purposes.

IN WITNESS WHEREOF, we have hereunto set our hands this 2ND day of DECEMBER, 2015, hereby waiving and releasing all rights under and by virtue of the homestead exemption laws of the State of Wyoming.

HANSEN & HANSEN, LLP,
an Idaho limited liability partnership

By: Kirkland R. Hansen
KIRKLAND R. HANSEN, Partner

ACKNOWLEDGMENT

STATE OF IDAHO }
COUNTY OF BONNEVILLE } **ss**

The foregoing instrument was acknowledged before me, by **KIRKLAND R. HANSEN**, affirming proper authority as the **Partner** of **HANSEN & HANSEN, LLP, an Idaho limited liability partnership, this** 2ND day of DECEMBER, 2015.

JEFFERY C. WALBOM (Seal) NOTARY PUBLIC STATE OF IDAHO

WITNESS MY HAND AND OFFICIAL SEAL

Jeffery C. Walbom
Notary Public for the State of Idaho
Residing in IDAHO FALLS, IDAHO
My Commission Expires 1/27/20

Approved as to form: _____

AUDREY COHEN-DAVIS
Town Attorney

Approved as to content: _____

SHAWN O'MALLEY
Town Engineer

The foregoing easement is hereby accepted by the **TOWN OF JACKSON** this _____day of _____, 2015.

BY: _____
SARAH FLITNER
Mayor

ATTEST:

BY: _____
Town Clerk

ACKNOWLEDGMENT

STATE OF WYOMING }
COUNTY OF TETON } **ss**

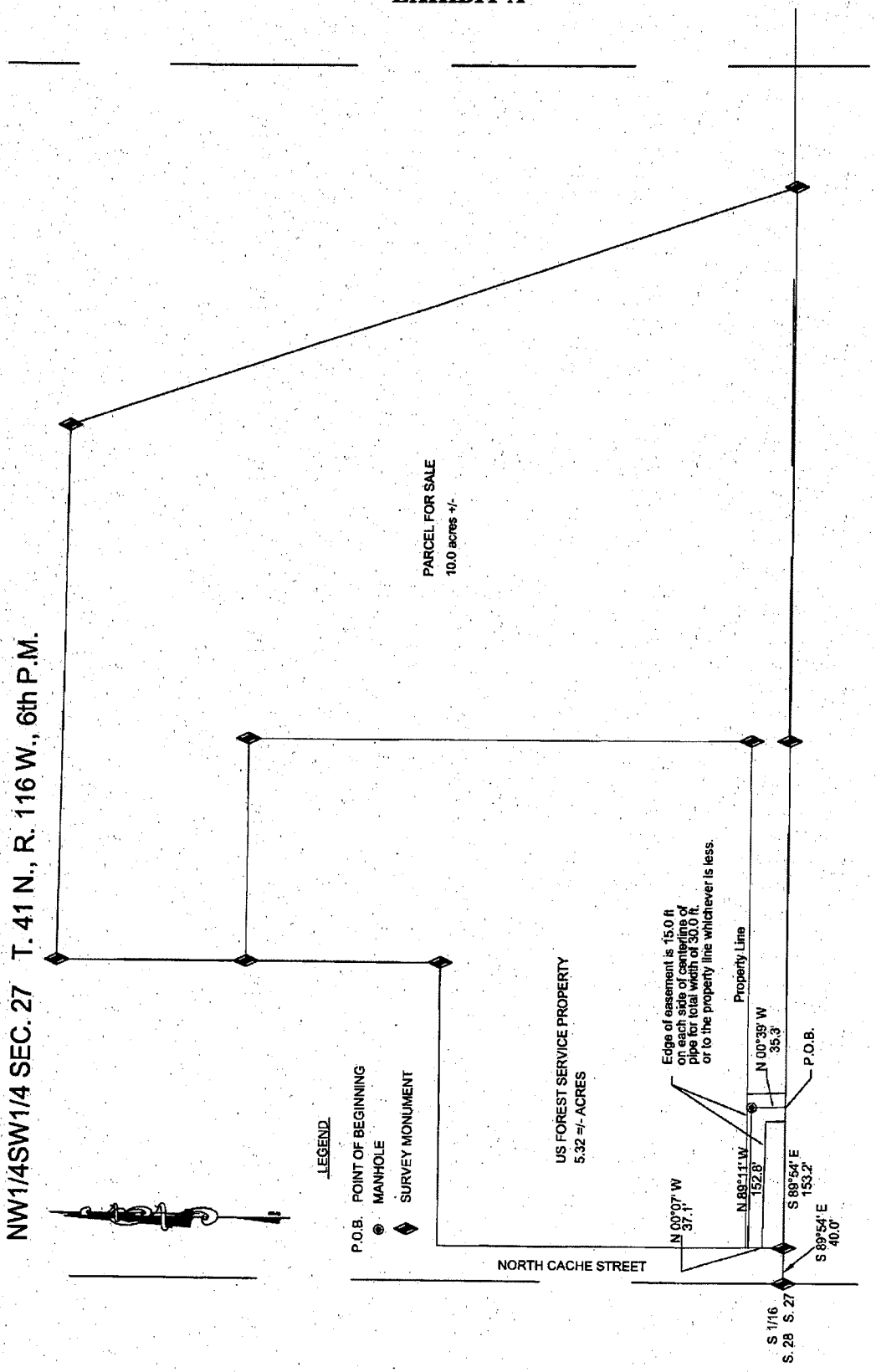
The foregoing instrument was acknowledged before me by **SARAH FLITNER**, affirming proper authority as the **Mayor of Jackson City, Wyoming**, this _____ day of _____, 2015.

WITNESS MY HAND AND OFFICIAL SEAL:

(Seal)

_____
Notary Public for the State of Wyoming
Residing in _____
My Commission Expires _____

EXHIBIT A


NW1/4SW1/4 SEC. 27 T. 41 N., R. 116 W., 6th P.M.
PARCEL FOR SALE
10.0 acres +/-
US FOREST SERVICE PROPERTY
5.32 +/- ACRES
Edge of easement is 15.0 ft on each side of centerline of pipe for total width of 30.0 ft. or to the property line whichever is less.
Property Line
N 00°39' W
35.3'
P.O.B.
N 88°11' W
152.8'
S 89°54' E
153.2'
S 89°54' E
40.0'
N 00°07' W
37.1'
LEGEND
P.O.B. POINT OF BEGINNING
MANHOLE
SURVEY MONUMENT
NORTH CACHE STREET
S 1/16
S. 28 S. 27

2

WHEN RECORDED MAIL TO:

Lower Valley Energy, Inc.
4000 South Highway 89
P.O. Box 572
Jackson, WY 83001
(307) 733-2446

APN: #22-41-16-27-3-00-020

ELECTRIC DISTRIBUTION EASEMENT

MEMBER #906609
PARCEL IDENTIFICATION # N/A
WORK ORDER # N/A
SEC. 27, T. 41 N., R. 116 W., Sixth P.M.

KNOW ALL MEN BY THESE PRESENCE: That the undersigned, **HANSEN & HANSEN, LLP, an Idaho limited liability partnership,** hereinafter called **GRANTOR,** for a good and valuable consideration, the receipt of which is hereby acknowledged, does hereby grant, convey, and warrant unto **LOWER VALLEY ENERGY, a Cooperative Utility Corporation of Afton and Jackson, Wyoming**, 4000 South Highway 89, P.O. Box 572, Jackson, WY 83001, and to its successors and assigns, hereinafter called **GRANTEE,** a perpetual easement and right of way for the construction and continued maintenance, repair, technological upgrades or alteration and replacement of the electric distribution circuits, lines and equipment of the Grantee to be constructed and maintained under, upon and across the premises of Grantor in Teton County, State of Wyoming, along a line described as follows, to wit:

Sixth Principal Meridian

T. 41 N., R. 116 W.,
Sec. 27, NW1/4SW1/4, that portion described as follows:

Easement for the power line paralleling the south property line - the south 14 feet of the property, as shown on **Exhibit A,** attached hereto and made a part hereof. This easement is 1,210 feet long, 14.0 feet wide, and contains 0.37 acre, more or less.

Power Line #1 from Lower Valley Energy Utility Pole EC-13 - Beginning at the point of intersection of the south one-sixteenth line of said Sec. 27 and the power line servicing the Bridger-Teton National Forest (B-T NF) Supervisor's Office (SO), which bears S. 89°54' E., 202.9 feet, more or less, from the southwest property corner; thence

N. 41°43' W., 53.7 feet, more or less, along the power line to the point where the power line exits Grantor's said tract, as shown on Exhibit A. Said easement is centered on the power line and is 15 feet wide, 7.5 feet on each side of the power line. Said easement is 53.7 feet long, more or less, and contains 0.018 acre, more or less.

Power Line #2 from Lower Valley Energy Utility Pole EC-13 - Beginning at the point of intersection of the south one-sixteenth line of said Sec. 27 and the power line servicing the B-T NF SO property, which bears S. 89°54' E., 206.6 feet, more or less, from the southwest property corner; thence N. 02°32' W., 40.0 feet, more or less, along the power line to the point where the power line exits Grantor's said tract, as shown on Exhibit A. Said easement is centered on the power line and is 15 feet wide, 7.5 feet on each side of the power line. Said easement is 40.0 feet long, more or less, and contains 0.01 acre, more or less.

Power Line #3 from Lower Valley Energy Utility Pole EC-11 - Beginning at the point of intersection of the south one-sixteenth line of said Sec. 27 and the power line servicing the B-T NF SO property, which bears S. 89°54' E., 556.4 feet, more or less, from the southwest property corner; thence N. 14°12' W., 41.3 feet, more or less, along the power line to the point where the power line exits Grantor's said tract, as shown on Exhibit A. Said easement is centered on the power line and is 15 feet wide, 7.5 feet on each side of the power line. Said easement is 41.3 feet long, more or less, and contains 0.02 acre, more or less.

Buried Power Line #4 from Lower Valley Energy Utility Point EC-10 - Beginning at the point of intersection of the south one-sixteenth line of said Sec. 27 and the power line, which bears S. 89°54' E., 755.0 feet, more or less, from the southwest property corner; thence northwesterly, approximately 130 feet along buried power line to Utility Point EC10B-1; thence northeasterly, approximately 270 feet along buried power line to Utility Point EC10B-2; thence northwesterly, approximately 141 feet along buried power line to Utility Point EC10B-2.6; thence northwesterly, approximately 159 feet along buried power line to Utility Point EC10B-3; thence northwesterly, approximately 38 feet along buried power line to the point where the power line exits Grantor's said tract, as shown on Exhibit A. Said easement is centered on the power line and is 15 feet wide, 7.5 feet on each side of the power line. Said easement is 738 feet long, more or less, and contains 0.25 acre, more or less.

Total length of easements as described above is 2,083 feet long, more or less, and contains 0.67 acre, more or less. Contact Lower Valley Energy for actual line locations.

TOGETHER WITH all necessary and reasonable rights of ingress and egress and to excavate and refill ditches and trenches for the location and repair of said facilities and to cut, trim, spray herbicides, or remove trees, shrubbery, undergrowth, or other obstructions interfering with the repair and maintenance of the facilities.

The Grantor acknowledges that Electric and Magnetic Fields (EMF) are naturally occurring in the transmission or distribution of electricity, and that the Grantee has hereby notified Grantor that EMF testing and information is available upon request from the Grantee. This Easement by Grantor is intended to include so much space as is necessary or appropriate to the presence of EMF and reasonable operation of the Grantee's distribution lines.

Grantor agrees that all poles, wires, and other facilities, installed on or under the described lands, shall remain the property of the Grantee removable in the sole discretion of the Grantee at the Grantee's expense. The rights, conditions and provisions of this easement shall inure to the benefit of and be binding upon the parties, their heirs, executors, administrators, successors and assigns. Grantor shall compensate Grantee for any damages to Grantee's facilities caused by Grantor, including payment of Grantee's attorney fees if action is undertaken by Grantee to enforce the commitments described in this easement. Grantor reserves the right to improve, occupy, and use this easement for all purposes not inconsistent with the easement grant. Each party shall have the remedy of specific performance regarding this easement. The rights and obligations described in this easement shall run with the land. This easement is not exclusive, and Grantor retains all rights not specifically granted by this easement. This is the entire agreement of the parties regarding this easement, except as may be set forth in writing after the date of this easement and signed by the parties.

Grantor hereby releases and waives all rights by virtue of the Homestead Exemption Laws of Wyoming.

WITNESS the hand of the Grantor, this 2nd day of December, 2015.

HANSEN & HANSEN, LLP,
an Idaho limited liability partnership

By: Kirkland R. Hansen
KIRKLAND R. HANSEN, Partner

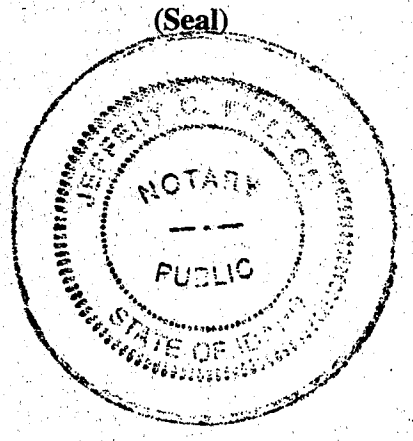
ACKNOWLEDGMENT

STATE OF IDAHO
COUNTY OF BONNEVILLE } ss

The foregoing instrument was acknowledged before me, by **KIRKLAND R. HANSEN**, affirming proper authority as the **Partner** of **HANSEN & HANSEN, LLP, an Idaho limited liability partnership, this** 2ND day of DECEMBER, 2015.

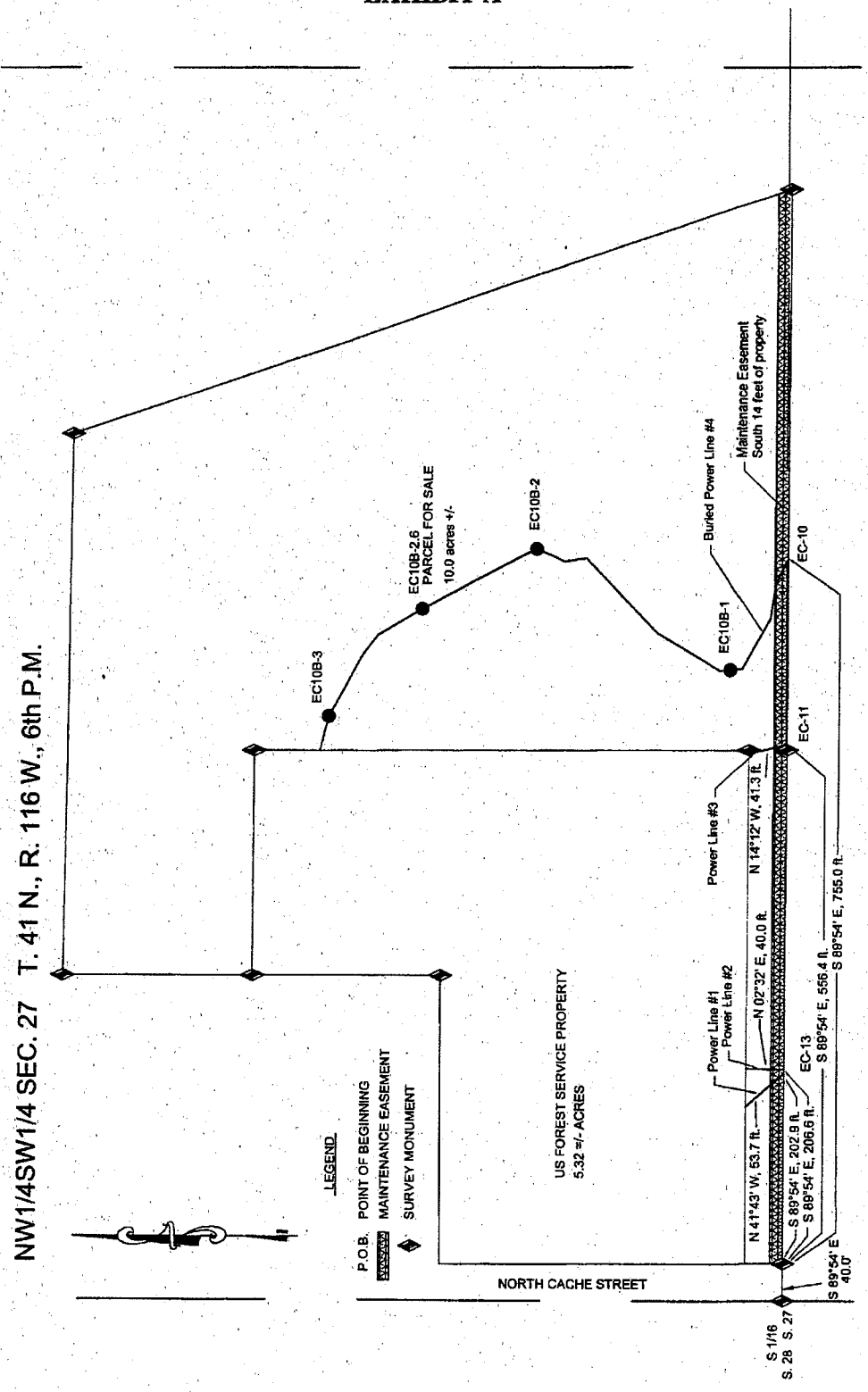
WITNESS MY HAND AND OFFICIAL SEAL

(Seal)



Notary Public for the State of Idaho
Residing in IDAHO FALLS, IDAHO
My Commission Expires 1/27/20

EXHIBIT A


NW1/4SW1/4 SEC. 27 T. 41 N., R. 116 W., 6th P.M.
EC10B-3
EC10B-2.6
PARCEL FOR SALE
10.0 acres +/-
EC10B-2
EC10B-1
Buried Power Line #4
Maintenance Easement
South 14 feet of property
EC-10
EC-11
Power Line #3
N 14°12' W, 41.3 ft.
Power Line #1
Power Line #2
N 02°32' E, 40.0 ft.
EC-13
S 89°54' E, 755.0 ft.
S 89°54' E, 556.4 ft.
S 89°54' E, 206.6 ft.
S 89°54' E, 202.9 ft.
N 41°43' W, 53.7 ft.
S 89°54' E
40.0'
US FOREST SERVICE PROPERTY
5.32 +/- ACRES
LEGEND
P.O.B. POINT OF BEGINNING
MAINTENANCE EASEMENT
SURVEY MONUMENT
NORTH CACHE STREET
S 1/16
S. 28 S. 27

3

WHEN RECORDED MAIL TO:

Lower Valley Energy, Inc.
4000 South Highway 89
P.O. Box 572
Jackson, WY 83001
(307) 733-2446

APN: #22-41-16-27-3-00-020

DISTRIBUTION GAS EASEMENT

MEMBER #906609
PARCEL IDENTIFICATION # MA
WORK ORDER # N/A
SEC. 27, T. 41 N., R. 116 W., Sixth P.M.

KNOW ALL MEN BY THESE PRESENCE: That the undersigned, **HANSEN & HANSEN, LLP, an Idaho limited liability partnership,** hereinafter called **GRANTOR,** for a good and valuable consideration, the receipt of which is hereby acknowledged, does hereby grant, convey, and warrant unto **LOWER VALLEY ENERGY, a Cooperative Utility Corporation of Afton and Jackson, Wyoming**, 4000 South Highway 89, P.O. Box 572, Jackson, WY 83001, and to its successors and assigns, hereinafter called **GRANTEE,** a perpetual easement and right of way for the construction and continued maintenance, repair, alteration and replacement of the natural gas lines, lines and equipment of the Grantee to be constructed and maintained under, upon, and across the premises of Grantor in Teton County, State of Wyoming, along a line described as follows, to wit:

Sixth Principal Meridian

T. 41 N., R. 116 W.,
Sec. 27, NW1/4SW1/4, that portion described as follows:

Beginning at the intersection of the centerline of Lower Valley Energy (LVE) natural gas pipeline with the south one-sixteenth line of said Sec. 27, which bears N. 89°50' W., 269.5 feet, more or less, from the southeast corner of Grantor's parcel, monumented with a brass cap; thence northerly, approximately 114 feet along the centerline of said pipeline. At this point the pipeline runs northerly and westerly along the south edge of Rosencrans Street, approximately 320 feet along the centerline of said pipeline to a point where the LVE natural gas pipeline leaves said parcel. Easement is intended to cover existing pipeline location, as depicted on **Exhibit A**, attached hereto and made a part hereof.

Easement is centered on the pipeline and is 15 feet wide, 7.5 feet on each side of the centerline of the pipeline.

The above-described easement is 434 feet long more or less, and contains 0.15 acre, more or less. Contact LVE for actual line location.

TOGETHER WITH all necessary and reasonable rights of ingress and egress and to excavate and refill ditches and trenches for the location and repair of said facilities and to cut, trim, spray herbicides, or remove trees, shrubbery, undergrowth, or other obstructions interfering with the repair and maintenance of the facilities.

Grantor agrees that all natural gas lines and other facilities, installed on or under the described lands shall remain the property of the Grantee, removable in the sole discretion of the Grantee at the Grantee's expense. The rights, conditions and provisions of this easement shall inure to the benefit of and be binding upon the parties, their heirs, executors, administrators, successors, and assigns. Grantor shall compensate Grantee for any damages to Grantee's facilities caused by Grantor, including payment of Grantee's attorney fees if action is undertaken by Grantee to enforce the commitments described in this easement. Grantor reserves the right to improve, occupy and use this easement for all purposes not inconsistent with the easement grant. Each party shall have the remedy of specific performance regarding this easement. The rights and obligations described in this easement shall run with the land. This easement is not exclusive, and Grantor retains all rights not specifically granted by this easement. This is the entire agreement of the parties regarding this easement, except as may be set forth in writing after the date of this easement and signed by the parties.

Grantor hereby releases and waives all rights by virtue of the Homestead Exemption Laws of Wyoming.

WITNESS the hand of the Grantor, this 2ND day of DECEMBER, 2015.

HANSEN & HANSEN, LLP,
an Idaho limited liability partnership

By: Kirkland R Han
KIRKLAND R. HANSEN, Partner

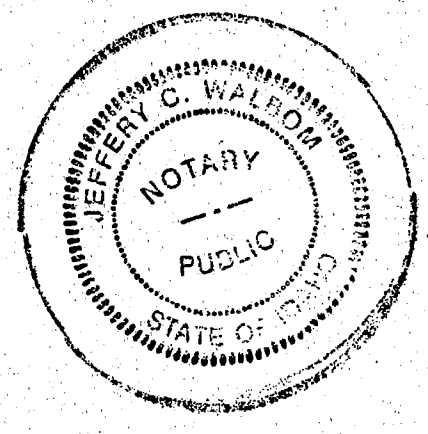
ACKNOWLEDGMENT

STATE OF IDAHO }
COUNTY OF BONNEVILLE } **ss**

The foregoing instrument was acknowledged before me, by **KIRKLAND R. HANSEN**, affirming proper authority as the **Partner** of **HANSEN & HANSEN, LLP, an Idaho limited liability partnership, this** 2ND day of DECEMBER, 2015.

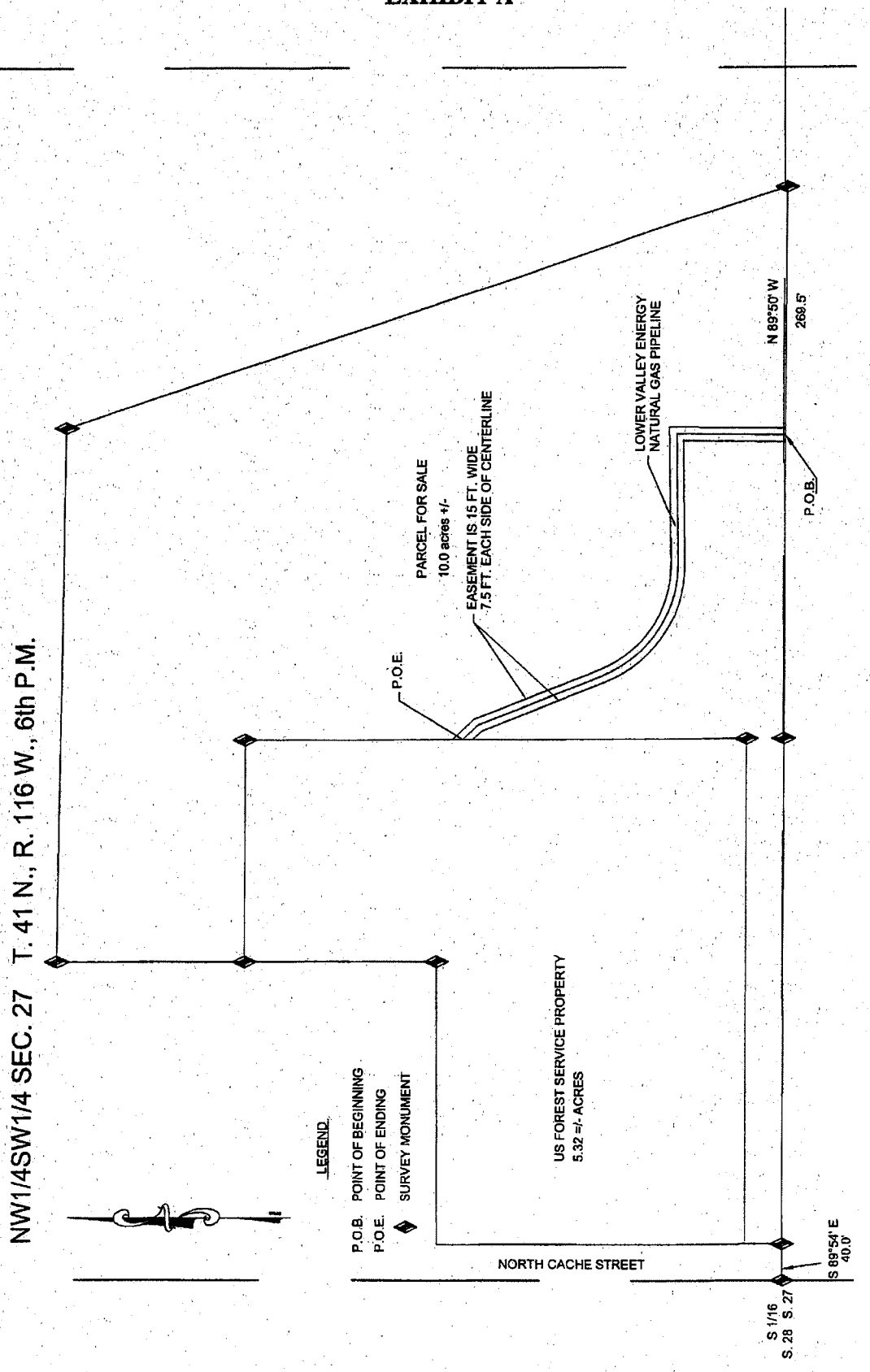
WITNESS MY HAND AND OFFICIAL SEAL

(Seal)



Notary Public for the State of Idaho
Residing in IDAHO FALLS, IDAHO
My Commission Expires 1/27/20

EXHIBIT A


NW1/4SW1/4 SEC. 27 T. 41 N., R. 116 W., 6th P.M.
PARCEL FOR SALE
10.0 acres +/-
EASEMENT IS 15 FT. WIDE
7.5 FT. EACH SIDE OF CENTERLINE
LOWER VALLEY ENERGY
NATURAL GAS PIPELINE
N 89°50' W
269.5'
P.O.B.
P.O.E.
US FOREST SERVICE PROPERTY
5.32 +/- ACRES
LEGEND
P.O.B. POINT OF BEGINNING
P.O.E. POINT OF ENDING
SURVEY MONUMENT
NORTH CACHE STREET
S 89°54' E
40.0'
S 1/16
S. 28 S. 27

WHEN RECORDED MAIL TO:

Qwest Corporation
d/b/a CenturyLink QC
1801 California St., Suite 900
Denver, CO 80202

APN: #22-41-16-27-3-00-020

(RECORDING INFORMATION ABOVE)

EASEMENT AGREEMENT

Private Easement
Individual(s) as Grantor

The undersigned, **HANSEN & HANSEN, LLP, an Idaho limited liability partnership,** hereinafter called **GRANTOR,** for and in consideration of $10.00 and other good and valuable consideration, the receipt of which is hereby acknowledged, does hereby grant and convey unto **QWEST CORPORATION, d/b/a CenturyLink QC, a Colorado corporation,** hereinafter called **GRANTEE**, whose address is 1801 California St., Suite 900, Denver, CO 80202, and its successors, assigns, affiliates, lessees, licensees, and agents, a perpetual non-exclusive easement to construct, modify, add to, maintain, and remove such telecommunications facilities, electrical and gas facilities, and other appurtenances, from time to time, as Grantee may require, upon, over, under, and across the following described property situated in the County of Teton, State of Wyoming, which Grantor owns or in which Grantor has an interest ("Easement Area"), to wit:

Sixth Principal Meridian

T. 41 N., R. 116 W.,
Sec. 27, NW1/4SW1/4, further described as follows:

Beginning at the point of the intersection of the south one-sixteenth line of said Sec. 27 and the telephone line, which point bears S. 89°54' E., 781.2 feet, more or less, from the south one-sixteenth corner between said Sec. 27 and Sec. 28; thence running along said telephone line N. 2°05' E., 132 feet, more or less; thence northwesterly approximately 50 feet to a point that is coincident with the Lower Valley Energy (LVE) buried power line trench. At this point, the telephone service splits with one line running southwesterly approximately 45 feet in the LVE trench and terminates. The other line continues northeasterly, approximately 120 feet along the LVE trench; thence northwesterly, approximately 337 feet along the LVE trench to the point where the power line exits the property. Easement is further depicted as **Exhibit A**, attached hereto and made a part hereof.

Said easement is ten (10) feet wide, five (5) feet each side of a buried telephone line, 684 feet long, more or less, and contains 0.16 acre, more or less.

R/W#_____ Job # _____ Exchange _____

Teton County, Section 27, T. 41 N., R. 116 W., 6th P.M.
Initials _____

(RECORDING INFORMATION ABOVE)

ALSO

Sixth Principal Meridian

T. 41 N., R. 116 W.,
Sec. 27, that portion of the NW1/4SW1/4, further described as follows:

Beginning at the intersection of the east right-of-way line of North Cache Street and the telephone line to the Bridger-Teton National Forest Supervisor's Office, said point being N. 87°47' E., 40.0 feet, more or less, from the south one-sixteenth corner common to said Sec. 27 and Sec. 28; thence N. 39°36' E., 49.9 feet, more or less, to the north line of Grantor's parcel. Easement is further depicted on **Exhibit B,** attached hereto and made a part hereof.

Said easement is ten (10) feet wide, being five (5) feet each side of a buried telephone line, 49.9 feet long, more or less, and contains 0.01 acre, more or less.

Grantor further conveys to Grantee the right of ingress and egress to and from the Easement Area during all periods of construction, maintenance, installation, reinforcement, repair and removal, over and across Grantors' lands with the right to clear and keep cleared all trees and other obstructions as may be necessary for Grantee's use and enjoyment of the Easement Area.

Grantee shall indemnify Grantor for all damages caused to Grantor as a result of Grantee's negligent exercise of the rights and privileges herein granted. Grantee shall have no responsibility for environmental contamination, which is either pre-existing or not caused by Grantee.

Grantor reserves the right to occupy, use, and cultivate the Easement Area for all purposes not inconsistent with the rights herein granted.

Grantor covenants that Grantor is the fee simple owner of the Easement Area or has an interest in the Easement Area. Grantor will warrant and defend title to the Easement Area against all claims.

Grantor hereby covenants that no excavation, structure, or obstruction will be constructed or permitted on the Easement Area, and no change will be made by grading or otherwise that would adversely affect Grantee's use and enjoyment of the Easement Area.

The rights, conditions, and provisions of this Easement Agreement shall run with the land and shall inure to the benefit of and be binding upon Grantor and Grantee and their respective successors and assigns.

(RECORDING INFORMATION ABOVE)

Any claim, controversy, or dispute arising out of this Easement Agreement shall be settled by arbitration in accordance with the applicable rules of the American Arbitration Association, and judgment upon the award rendered by the arbitrator may be entered in any court having jurisdiction thereof. The arbitration shall be conducted in the county where the Easement Area is situated.

Grantor hereby releases and waives all rights by virtue of the Homestead Exemption Laws of Wyoming.

WITNESS the hand of the Grantor, this 2ND day of DECEMBER, 2015.

HANSEN & HANSEN, LLP,
an Idaho limited liability partnership

By: Kirkland R. Hansen
KIRKLAND R. HANSEN, Partner

ACKNOWLEDGMENT

STATE OF IDAHO }
COUNTY OF BONNEVILLE } **ss**

The foregoing instrument was acknowledged before me, by **KIRKLAND R. HANSEN**, affirming proper authority as the **Partner** of **HANSEN & HANSEN, LLP, an Idaho limited liability partnership**, this 2ND day of DECEMBER, 2015.

JEFFERY C. WALDRON NOTARY PUBLIC (Seal) STATE OF IDAHO

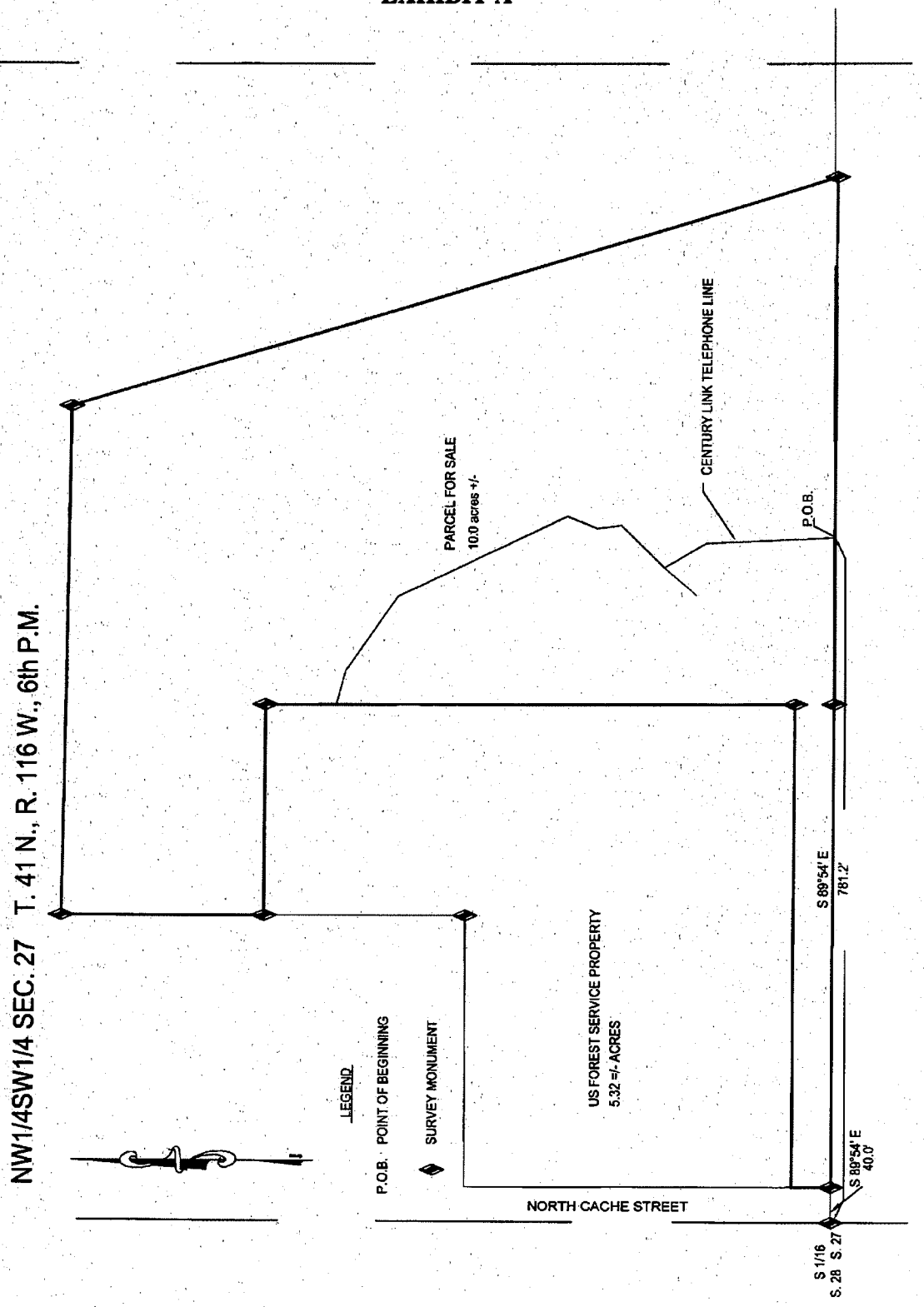
WITNESS MY HAND AND OFFICIAL SEAL

Jeffery C. Waldron
Notary Public for the State of Idaho
Residing in IDAHO FALLS, IDAHO
My Commission Expires 2/27/20

R/W#_____ **Job #** _____ **Exchange** _____

Teton County, Section 27, T. 41 N., R. 116 W., 6th P.M.
Initials _____

EXHIBIT A



R/W#_____ Job # _____ Exchange _____

Teton County, Section 27, T. 41 N., R. 116 W., 6th P.M.

Initials _____

5

WHEN RECORDED MAIL TO:

Silver Star Telephone Company, Inc.
U.S. 89
Freedom, WY 83120
(307) 883-6684

APN: #22-41-16-27-3-00-020

GRANT OF EASEMENT

HANSEN & HANSEN LLP, an Idaho limited liability partnership, of the County of Bonneville, State of Idaho ("Grantor"), hereby **ACKNOWLEDGES, CONVEYS, and WARRANTS** to **SILVER STAR TELEPHONE COMPANY, INC.** (Grantee), of Freedom, Wyoming, an easement for the benefit of the Grantee on the following described real estate, situate in the County of Teton, State of Wyoming, for the following purposes and under the following conditions:

1. Purpose of Easement. This easement shall be for the purpose of a right-of-way for telecommunication lines and to construct, operate, repair, maintain, relocate, and replace thereon underground telecommunication facilities. The Grantee may trim or remove trees or other objects that pose a threat of damage to the utilities.

2. Description of Easement. The easement shall occupy the following described property:

   Sixth Principal Meridian

   T. 41 N., R. 116 W.,
   Sec. 27, NW1/4SW1/4, that portion described as follows:

   Beginning at a point on the east right-of-way line of State Highway 26/89/191 (also North Cache Street), at a point N. 66°47'20" E., 43.49 feet, more or less, from the south one-sixteenth corner common to Sec. 27 and Sec. 28 said Township and Range; thence N. 45°15'20" E., 32.32 feet, more or less, at which point the fiber optic line leaves the Grantor's parcel. Easement is further depicted on **Exhibit A**, attached hereto and made a part hereof.

   Said easement is 15 feet wide, 7.5 feet on either side, is 32.32 feet long, more or less, and contains 0.01 acre, more or less.

3. Binding Effect. The terms and conditions of this easement shall be binding upon and inure to the benefit of the heirs, successors, and assigns of the parties named in this Grant of Easement.

Grantor hereby releases and waives all rights by virtue of the Homestead Exemption laws of the State of Wyoming.

WITNESS the hand of the Grantor, this 2nd day of DECEMBER, 2015.

HANSEN & HANSEN, LLP,
an Idaho limited liability partnership

By: Kirkland R. Hansen
KIRKLAND R. HANSEN, Partner

ACKNOWLEDGMENT

STATE OF IDAHO }
ss
COUNTY OF BONNEVILLE }

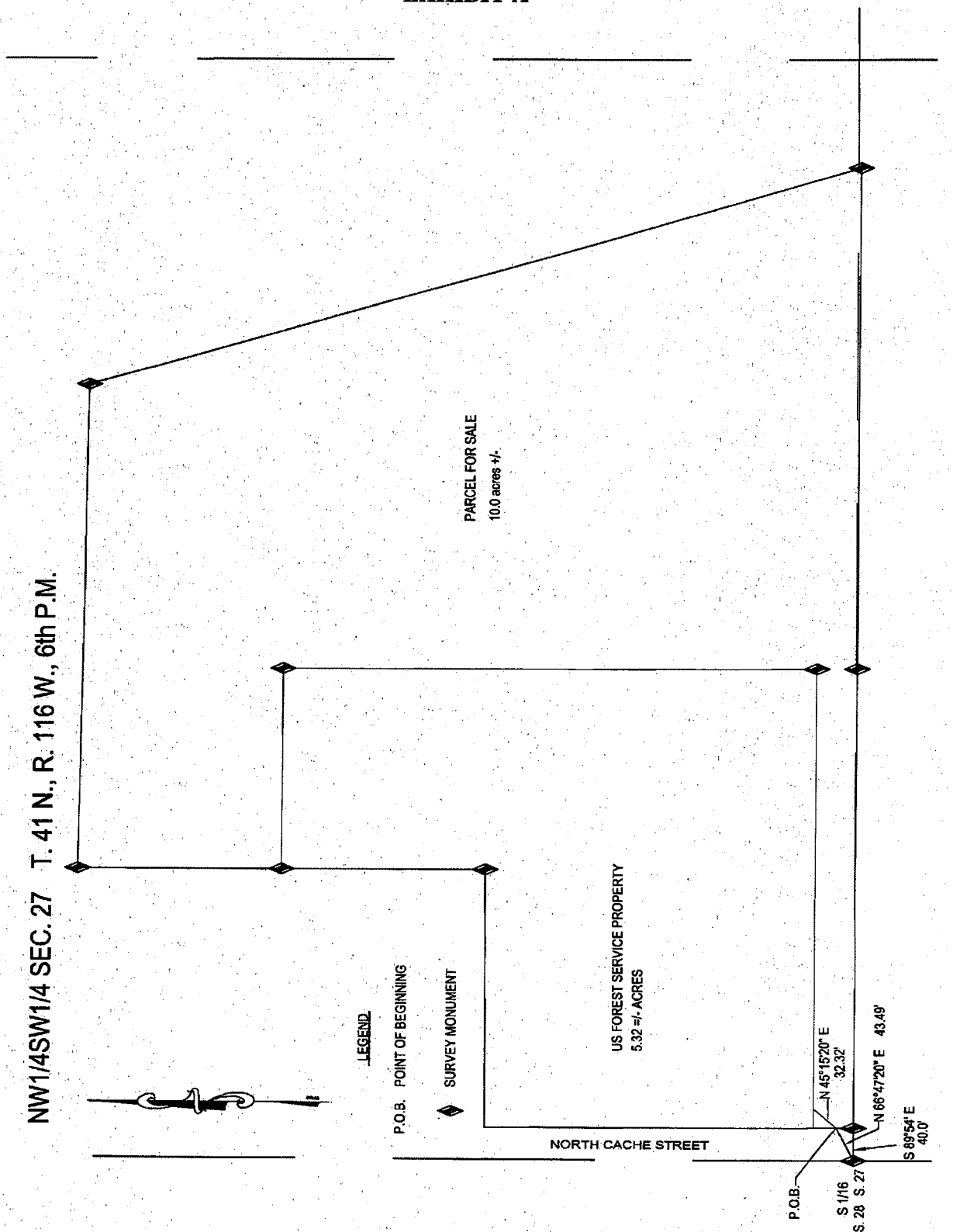
The foregoing instrument was acknowledged before me, by **KIRKLAND R. HANSEN**, affirming proper authority as the Partner of **HANSEN & HANSEN, LLP, an Idaho limited liability partnership**, this 2nd day of DECEMBER, 2015.

JEFFERY [illegible] HOLTOM
NOTARY PUBLIC
(Seal)
STATE OF IDAHO

WITNESS MY HAND AND OFFICIAL SEAL

Jeffery Holtom
Notary Public for the State of Idaho
Residing in IDAHO FALLS, IDAHO
My Commission Expires 7/27/20

EXHIBIT A


NW1/4SW1/4 SEC. 27 T. 41 N., R. 116 W., 6th P.M.
PARCEL FOR SALE
10.0 acres +/-
US FOREST SERVICE PROPERTY
5.32 +/- ACRES
LEGEND
P.O.B. POINT OF BEGINNING
SURVEY MONUMENT
NORTH CACHE STREET
N 45°15'20" E
32.32'
N 66°47'20" E 43.49'
S 89°54' E
40.0'
P.O.B.
S 1/16
S. 28 S. 27

SECTION 10 - SKETCH PLAN DRAWING SET 11" X 17' FORMAT

- VICINITY MAP LEGEND NOTES
- PROPOSED SITE PLAN
- EXISTING CONDITIONS
- ROAD AND GRADING OVERVIEW
- WATER AND SEWER OVERVIEW

HIDDEN HOLLOW
HANSEN AND HANSEN, LLP
SKETCH PLAN

TETON COUNTY, WYOMING

LOCATED WITHIN THE NW$\frac{1}{4}$ SW$\frac{1}{4}$
SECTION 27,
TWP 41, RNG 116, 6TH P.M.
TETON COUNTY, WYOMING

GENERAL PROJECT NOTES:

1. PROJECT SCOPE: PROVIDE ACCESS, UTILITY INFRASTRUCTURE, GRADING, AND NECESSARY SITE DEVELOPMENT AND MITIGATION FOR PROPOSED MIXED HOUSING DEVELOPMENT.
2. PROPERTY IS ZONED UR OR URBAN RESIDENTIAL IN THE TOWN OF JACKSON.
3. PROPERTY AREA: 10 ACRES
4. PROPERTY SLOPES ARE MOSTLY BETWEEN 0-10% AND THE SMALL PORTION OF THE SLOPES HIGHER THAT 10% ARE CONTAINED IN THE EXISTING WETLAND AREAS.
5. Y2 CONSULTANTS, LLC PREFORMED A GEOTECHNICAL INVESTIGATION OF THE PROPERTY ON 3/27/2016 CONSISTING OF 6 BOREHOLES AND 2 TEST PITS. THE PROPERTY CONSISTS OF 2.5 TO 16.5 FEET OF FINE-GRAINED FLOOD PLAIN AND SWAMP DEPOSITS, WITH THE THICKEST DEPOSITS OCCURRING AT THE NORTHWEST CORNER AND THINNING TO THE SOUTHEAST. THESE FINE-GRAINED SOILS CONSIST OF PRIMARILY SILT AND CLAY WITH SAND.THE SWAMP AND FLOOD PLAIN DEPOSITS OVERLIE MEDIUM DENSE TO DENSE SANDY COBBLE AND GRAVEL ALLUVIUM TO DEPTHS IN EXCESS OF 40 FEET.
6. JORGENSEN ASSOCIATES, P.C. PERFORMED THE TOPOGRAPHIC SURVEYS FOR THIS PROPERTY IN APRIL AND MAY OF 2016.
7. VEGETATION CONSISTS PRIMARILY OF IRRIGATED AGRICULTURAL FIELDS, MIXED BLUE SPRUCE-ASPEN-COTTONWOOD SEMI-NATURAL PLANTED, WILLOW SHRUBLAND, MIXED GRASSLAND, FLOODED MEADOW, AND LAWNS AND LANDSCAPING.
8. THE PROPERTY IS NOT WITHIN THE WILD LAND URBAN INTERFACE OR THE NATIONAL WILD AND SCENIC.
9. PART OF THE NORTHERN END OF THE PROPERTY LIES WITHIN THE FEMA FLOOD ZONE A/AE/AO/AH.
10. CONTRACTOR SHALL VERIFY LOCATION OF ALL BURIED AND OVERHEAD UTILITIES PRIOR TO ANY EXCAVATION IN THE VICINITY. UTILITY LOCATIONS SHOWN ON THESE DRAWINGS ARE APPROXIMATE AND BASED ON THE BEST INFORMATION AVAILABLE TO THE ENGINEER. ENGINEER DOES NOT WARRANT THE ACCURACY NOR COMPLETENESS OF THE INFORMATION SHOWN FOR EXISTING UTILITIES. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANIES PRIOR TO INSTALLING IMPROVEMENTS. PRIVATE UNDERGROUND UTILITIES EXIST IN THE PROJECT AREA. CONTACT ENGINEER TO LOCATE EXISTING WATER LINES, SEWER LINES.

REVEGETATION SPECIFICATIONS:
(FOLLOW MITIGATION PLAN. FOLLOW THESE SPECIFICATIONS WHERE NOTHING IS SPECIFIED ON MITIGATION PLANS OR BY LANDSCAPE ARCHITECT.)

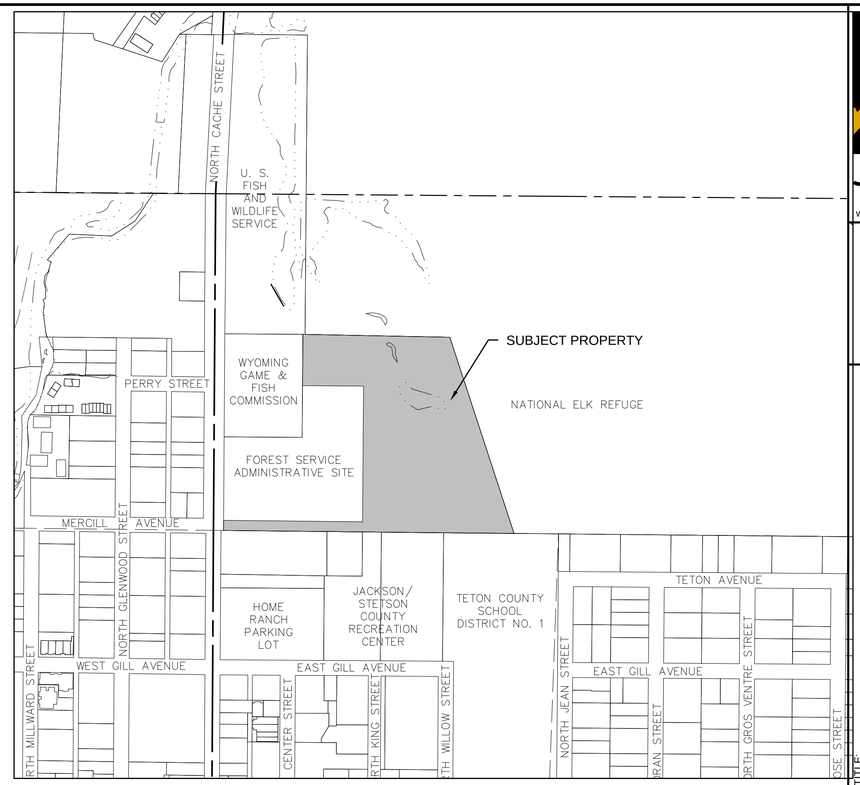
1. SEED MIXTURE:

COMMON NAME	LBS./ACRE
MOUNTAIN BROME	10 LBS./ACRE
THICKSPIKE WHEATGRASS	12 LBS./ACRE
IDAHO FESCUE	6 LBS./ACRE
WESTERN WHEATGRASS	12 LBS./ACRE
ALPINE TIMOTHY	12 LBS./ACRE
TOTAL PURE LIVE SEED APPLICATION RATE	52 LBS./ACRE

2. SEED MIXES CONTAINING NATIVE FLOWERING PLANTS SUCH AS LUPINE, YARROW AND PAINTBRUSH ARE ACCEPTABLE.
3. ALL SEED SHALL COMPLY WITH WYOMING SEED LAW. SEED SHALL BE PURCHASED FROM A DEALER LICENSED WITH THE WYOMING DEPARTMENT OF AGRICULTURE. CERTIFICATIONS FOR THE SEED MIX SHALL BE PROVIDED TO THE ENGINEER PRIOR TO SEEDING.
4. TOPSOIL SHALL BE UNIFORMLY SPREAD ON PREPARED SURFACES PRIOR TO SEEDING. REMOVE FOREIGN MATERIALS, WEEDS AND UNDESIRABLE PLANTS FROM THE PREPARED SOIL PRIOR TO SEEDING.
5. HARD PACKED OR CAKED TOPSOIL SURFACES SHALL BE SCARIFIED OR DISKED PRIOR TO SEEDING.
6. SEED SHALL BE UNIFORMLY DISTRIBUTED OVER THE SURFACE BY APPROVED MECHANICAL BROADCASTING DEVICES AND THE GROUND SHALL BE IMMEDIATELY RAKED OR DRAGGED TO COVER THE SEED.
7. SEEDING SHALL BE PERFORMED BETWEEN THE TIME THE FROST LEAVES THE GROUND IN THE SPRING AND BEFORE THE FROST ENTERS THE GROUND IN THE FALL.

GENERAL CONSTRUCTION NOTES & SPECIFICATIONS:

1. IF NECESSARY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN A WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY NPDES STORMWATER PERMIT PRIOR TO COMMENCING ANY LAND DISTURBING ACTIVITIES.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD AND SHALL PROMPTLY NOTIFY THE ENGINEER OF ANY VARIATIONS OR DISCREPANCIES.
3. ALL EXCAVATION ACTIVITIES SHALL COMPLY WITH PERMIT REQUIREMENTS ISSUED FOR THE PROJECT. CONTRACTOR SHALL REVIEW AND BE RESPONSIBLE FOR PERMIT COMPLIANCE.
4. CONTRACTOR TO CONFIRM STOCKPILE AND STAGING LOCATIONS WITH THE OWNER.
5. CONTRACTOR TO LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION.
6. FILL MATERIAL SHALL BE SUITABLE ON-SITE OR IMPORTED MATERIAL WITH ROCK NO LARGER THAN 6 INCHES IN DIAMETER. LARGER MATERIAL MAY BE PLACED ONLY WHEN AUTHORIZED BY THE ENGINEER.
7. SUBGRADE, PIT RUN SUBBASE, AND SITE FILL MATERIALS SHALL BE MECHANICALLY COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698 (AASHTO T-99 - STANDARD PROCTOR DENSITY) IN LIFTS NOT TO EXCEED 8 INCHES IN LOOSE THICKNESS.
8. CRUSHED GRAVEL BASE MATERIAL SHALL BE GRADING H OR GRADING W.
9. CRUSHED GRAVEL BASE COURSES SHALL BE MECHANICALLY COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D1557 (AASHTO T-180 - MODIFIED PROCTOR DENSITY).
10. ALL SITE WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2001 EDITION OF WYOMING PUBLIC WORKS STANDARD SPECIFICATIONS AND ARTICLE 5 OF TETON COUNTY LAND DEVELOPMENT REGULATIONS.
11. DESTRUCTION AND DAMAGE TO TREES AND OTHER NATURAL VEGETATION SHALL BE MINIMIZED AND ALL DISTURBED SURFACES SHALL BE RESEEDED AS SOON AS PRACTICABLE IN ACCORDANCE TO THE REVEGETATION SPECIFICATIONS.
12. STRIP AND SALVAGE TOPSOIL FROM ALL EXCAVATED AREAS.
13. WEEDS SHALL BE CONTROLLED BY SPRAYING, LIMITING DISTURBANCE AREA, OR OTHER MEANS PRIOR TO REVEGETATION AND AFTER REVEGETATION IS COMPLETE.
14. FUGITIVE DUST WILL BE CONTROLLED BY WATERING DURING DRY PERIODS OR AS REQUIRED BY ENGINEER.
15. ALL EXCAVATED MATERIALS SHALL BE STOCKPILED AND PROCESSED ON-SITE ONLY AT LOCATIONS AS DESIGNATED ON THE PLANS.
16. TOPS OF CUT AND FILL SLOPES SHALL BE ROUNDED TO AVOID RAVELING AND EROSION.
17. A FOUR INCH MINIMUM LAYER OF TOPSOIL SHALL BE PLACED ON ALL SLOPES AND AREAS STRIPPED FOR GRADING.
18. CUT AND FILL SLOPES SHALL NOT EXCEED 2:1 WITHOUT SPECIAL STABILIZATION AND APPROVAL FROM ENGINEER.
19. NO WETLANDS SHALL BE DISTURBED WITHOUT FIRST OBTAINING NECESSARY PERMITS FROM THE U. S. ARMY CORPS OF ENGINEERS.



VICINITY MAP

1" = 300' for 22x34 Prints
1" = 600' for 11x17 Prints

OWNER
Hansen and Hansen, LLP
60 Rosencrans
Jackson, WY 83002

ENGINEER, SURVEYOR, AND LAND USE PLANNER
Jorgensen Associates, P.C.
1315 S. Highway 89, #201
P.O. Box 9550
Jackson, WY 83002-9550
(307) 733-5150

LANDSCAPE ARCHITECT
Hershberger Design
560 South Glenwood Street
Jackson, WY 83001
(307) 739-1001

INDEX OF SHEETS

– PRELIMINARY –
SUBJECT TO CORRECTION AND APPROVAL

JORGENSEN
JACKSON, WYOMING
307.733.5150
www.jorgensenassociates.com

PROJECT TITLE:
HIDDEN HOLLOW
SKETCH PLAN
TETON COUNTY, WYOMING

SHEET TITLE:
VICINITY MAP, LEGEND, NOTES, AND INDEX

DRAFTED BY:	ZD
REVIEWED BY:	TK
PLAN VERSION	DATE
SKETCH PLAN	09/01/2016

PROJECT NUMBER
16016.00

SHEET
C1.0

LEGEND

1. Snow Storage
2. Preserved Wetlands
3. Proposed Wetland Mitigation
4. 5' Pedestrian Sidewalk
5. 5' Pedestrian Path
6. 15' Overhead Powerline Easement
7. 60' Access & Utility Easement
8. Proposed Connection to Future Elk Refuge Trail
9. Environmental Learning Platform - Connect to School Trails
10. Potential King Street Connection
11. Fire Access
12. 10' Multi-Use Path
13. Proposed Connection Point to Pathway System

SF Single Family Unit
TH Townhouse
APT Apartment building

DEVELOPMENT SUMMARY

Gross Site Area	9.46 AC
Minimum LSR	0.3 Min
Proposed Plant Units	176

PARKING SUMMARY

TOTAL PARKING (390)	
On-Street Parking (73)	

Apartment (225)	Townhouse (40)	Single Family Unit (52)
1 Space/1 Bedroom	2 Spaces/Unit	4 Spaces/Unit
2 Spaces/2-3 Bedrooms	1 space in garage	2 spaces in garage
0.25 Space/Unit Guest Parking	1 space in driveway	2 spaces in driveway

WETLAND MITIGATION SUMMARY

Existing	23,343 SF / 0.54 AC
Disturbed	16,129 SF / 0.37 AC
Preserved	7,214 SF / 0.17 AC
Mitigation Required (2:1)	32,258 SF / 0.74 AC
Mitigation Proposed	32,258 SF / 0.74 AC

USA
Fish & Wildlife Service
National Elk Refuge

Wyoming
Game & Fish
Commission

US Forest Service
Property

North Cache Street

Mercill Avenue Extension

USA
Fish & Wildlife Service
National Elk Refuge

Teton County Recreation Center

Davey Jackson
Elementary School

TH-1 TH-2 TH-3 TH-4 TH-5 TH-6 TH-7 TH-8 TH-9 TH-10 TH-11 TH-12 TH-13 TH-14 TH-15

SF-1 SF-2 SF-3 SF-4 SF-5 SF-6 SF-7 SF-8 SF-9 SF-10 SF-11 SF-12 SF-13

TH-16 TH-17 TH-18 TH-19 TH-20

Apt-1
27 Units w/
Underground Parking
(28)

Apt-2
27 Units w/
Underground Parking
(28)

Apt-3
27 Units w/
Underground Parking
(28)

Apt-4
27 Units w/
Underground Parking
(28)

Apt-5
27 Units w/
Underground Parking
(28)

MAX 8%
MAX 12%

HIDDEN HOLLOW

Proposed Site Plan
31 August 2016

HERSHBERGERDESIGN
LANDSCAPE ARCHITECTURE · PLANNING · URBAN DESIGN

N
SCALE 1" = 30' - 0"

SANITARY SEWER MANHOLE DETAILS

(1) Rim Elevation=6224.93'
Invert Elevation (N)=6220.84'
Invert Elevation (E)=6220.63'
Invert Elevation (W)=6220.65'

(2) Rim Elevation=6223.11'
Invert Elevation (E)=6218.29'
Invert Elevation (NE)=6217.59'
Invert Elevation (NW)=6216.91'
Invert Elevation (W)=6216.85'

(3) Rim Elevation=6223.31'
Invert Elevation (N)=6216.97'
Invert Elevation (E)=6217.46'
Invert Elevation (S)=6216.56'
Invert Elevation (W)=6216.41'

(4) & (5) Data unavailable

STORM DRAIN MANHOLE DETAILS

(1) Rim Elevation=6223.23'
Invert Elevation=6218.02'

LEGEND

- Certified Land Corner of Record, monument below surface in water valve box
- 3-1/4" diameter aluminum cap inscribed "US DEPT OF AGRICULTURE FOREST SERVICE 2012 PLS 7049" with other appropriate markings, found this survey
- 3-1/4" diameter aluminum cap inscribed "US DEPT OF AGRICULTURE FOREST SERVICE 1985 RLS 164" with other appropriate markings, found this survey
- 3" diameter brass cap inscribed "PE&LS 578" with other appropriate markings, found this survey; NOTE: "WC" indicates witness corner--see detail
- 3-1/4"" diameter brass cap inscribed "1967 RLS 164" with other appropriate markings, found this survey

- boundary, SUBJECT PROPERTY
- boundary, EASEMENT, as noted
- boundary, ADJOINING/ADJACENT PROPERTY
- S89°55'57"E 320.51' measured bearing & distance or curve geometry
- (S89°56'20"W) (149.88') record bearing & distance or curve geometry
- telephone pedestal
- natural gas valve
- gas service (abandoned)
- electric meter/service
- electric power transformer
- utility pole
- guy anchor
- sanitary sewer cleanout
- sanitary sewer manhole
- sanitary sewer line
- storm drain inlet
- storm drain manhole
- stm storm drain line
- storm culvert, 18" dia. CMP, abandoned
- hydrant, fire protection
- curbstop
- water service connection with curbstops and checkvalves
- spigot
- water valve
- MW 1 monitoring well
- TP 1 test pit
- edge of concrete
- edge of pavement
- top of bank
- fence, wood post & rail
- fence, metal post with welded wire fabric
- 6220.5 spot elevation
- index contour (5' interval)
- intermediate contour (1' interval)

USA
FISH & WILDLIFE SERVICE
NORTH PARK
BK814P274-276

USA
FISH & WILDLIFE SERVICE
NATIONAL ELK REFUGE
BK814P274-276

580.61'
1.00'
WC

S88°57'20"E 581.61'
(S89°24'E) (582.0')

N00°21'12"E 203.28'
(N00°06'W) (203.2')

N89°39'38"W 241.29'
(S89°52'W) (241.3')

BENCHMARK ELEV=
6221.73

18"ø CMP--
ABANDONED
INVERT ELEV.
UNAVAILABLE

S89°18'E (S89°47'E) (818.3')

WYOMING GAME & FISH COMMISSION
BK348P830

US FOREST SERVICE
BK30248

N00°20'24"E 537.39'
(N00°06'W) (537.5')

HANSEN & HANSEN, LLP
10.00± AC
910P186-191

ASPHALT DEBRIS PILE

CONCRETE DEBRIS PILE

ROSENCRANS

STRUCTURE

CONCRETE

40.0' WIDE
ACCESS & UTILITY EASEMENT
BENEFITING
UNITED STATES OF AMERICA
BK910P186-191

NORTH CACHE STREET / US HIGHWAYS 26 89 191

CALCULATED POSITION

(S89°54'E) (550.4')
S89°26'38"E 550.29'

S1/16 TO
PROPERTY
CORNER
S89°26'38"E
40.00'

S1/16
S27

N00°21'36"E
40.01'
(N00°06'W) (40.0')

MERCILL AVENUE

MONUMENT RECOVERED THIS SURVEY; 1.4'± SOUTHWESTERLY OF CALCULATED BOUNDARY CORNER AND 0.8'± SOUTHERLY OF SOUTH ONE-SIXTEENTH SECTION LINE

MONUMENT RECOVERED THIS SURVEY; 0.1'± NORTH OF SOUTH ONE-SIXTEENTH SECTION LINE

N89°26'38"W 550.35'
(N89°54'W) (550.4')

KUDAR ENTERPRISES, INC.
BK100P744

KUDAR ENTERPRISES, INC.
BK147P14

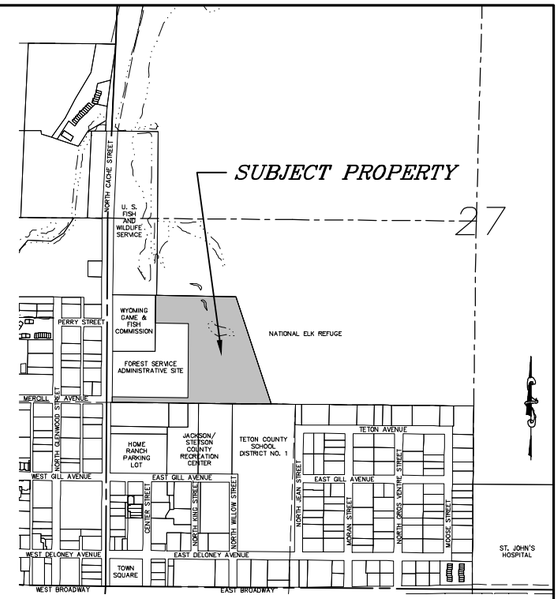
JACKSON/TETON COUNTY
RECREATION CENTER
BK246P568-569

JACKSON/TETON COUNTY
RECREATION CENTER
BK731P478-479

N89°23'53"W 600.27' (N89°52'W) (600.1')
BASIS OF BEARING

TETON COUNTY SCHOOL DISTRICT NO. 1

USA
FISH & WILDLIFE SERVICE
NATIONAL ELK REFUGE
BK814P274-276



VICINITY MAP
SCALE 1"=500'

NOTES

This survey was conducted in April and May 2016 and prepared under the direction of Kenneth G. Magrath, Wyoming PLS 8469 and does not include an engineering review.

The BASIS OF BEARING for this survey is N89°23'53"W on the south boundary of the subject property between found monuments as depicted hereon.

Locations of structures depicted hereon derived from aerial photography.

Locations of utilities depicted hereon are limited to visible structures; underground location must be verified prior to any construction activity.

Easements shown and/or noted hereon are based on readily available records in the Office of the Clerk of Teton County, Wyoming. Other easements may exist on the subject property. A thorough search of public records was not conducted. Refer to Map entitled "Record of Survey National Forest Boundary Parcel Division" of record in said Office as Map T-201 for location of additional utility easements. Said Map T-201 may not include all easements of record.

0 40 80 120
SCALE: 1 INCH = 40 FEET
THIS SCALE VALID ONLY FOR 24x36 PRINTS

TOPOGRAPHIC SURVEY
HANSEN & HANSEN, LLP PARCEL

WITHIN THE
NW1/4 SW1/4 Section 27
T41N, R116W, 6th P.M.
Teton County, Wyoming

C1.1

JORGENSEN ASSOCIATES, P.C. P.O. BOX 9550 JACKSON, WYOMING 83002 (307) 733-5150

Prepared By: RHL
Map Revised: June 23, 2016
Map Prepared: June 13, 2016
Project No.: 16016.00.62

H:\2016\16016\XREF\16016 - Topo Hansen-Hansen.dwg

CURVE TABLE					
CURVE	LENGTH	RADIUS	DELTA	CHORD DIRECTION	CHORD LENGTH
C5	55.55'	1000.00'	003.18	N11° 03' 22.95"W	55.55'
C6	94.26'	540.00'	010.00	N14° 27' 55.96"W	94.14'
C7	81.67'	545.00'	008.59	N23° 45' 33.17"W	81.59'
C8	166.95'	127.00'	075.32	N65° 42' 42.21"W	155.19'
C9	107.28'	90.00'	068.30	N69° 13' 25.02"W	101.04'
C10	43.14'	45.00'	054.92	N62° 32' 15.31"W	41.50'
C11	132.73'	42.25'	180.00	S0° 00' 03.04"W	84.50'
C12	45.36'	90.00'	028.88	S75° 33' 39.41"E	44.88'
C13	36.53'	100.00'	020.93	S79° 32' 03.86"W	36.33'

LINE TABLE		
LINE	LENGTH	BEARING
L1	490.96'	S89° 24' 50.29"E
L2	23.76'	S80° 18' 55.53"E
L3	110.29'	S89° 27' 31.14"E
L4	14.63'	N66° 06' 24.61"E
L5	43.22'	N12° 38' 52.27"W
L6	64.23'	N9° 27' 53.63"W
L7	1.09'	N19° 27' 58.29"W
L8	5.88'	N28° 03' 08.05"W
L9	5.92'	S76° 37' 43.63"W
L10	60.44'	N35° 04' 33.67"W
L11	30.17'	N89° 59' 56.96"W
L12	88.46'	S89° 59' 56.96"E
L13	416.77'	N0° 00' 00.00"E
L14	38.30'	S69° 04' 07.72"W
L15	202.23'	N90° 00' 00.00"W

JORGENSEN
JACKSON, WYOMING
307.733.5150
www.jorgensenassociates.com

PROJECT TITLE:
HIDDEN HOLLOW
SKETCH PLAN
TETON COUNTY, WY

SHEET TITLE:
ROAD AND GRADIND OVERVIEW

DRAFTED BY:	AB
REVIEWED BY:	TK
PLAN VERSION	DATE
SKETCH PLAN	09/01/2016

PROJECT NUMBER
16016.00

SHEET
C2.1

TOWNHOME GEOTHERMAL TO BE ROUTED IN A MAIN AND DISCHARGED

STA SAN C 5+40
SSMH C6
RIM = 6222.10
RIM TO INV. = 6.03

STA SAN C 6+37
SSMH C10
RIM = 6217.06
RIM TO INV. = 3.19

STA SAN C 6+37
SSMH C7
RIM = 6222.00
RIM TO INV. = 6.47

STA SAN C 2+89
SSMH C4
RIM = 6223.00
RIM TO INV. = 5.60

STA SAN C 4+12
SSMH C5
RIM = 6222.30
RIM TO INV. = 5.55

STA SAN C 2+88
SSMH C9
RIM = 6222.40
RIM TO INV. = 6.52

STA SAN C 2+14
SSMH C3
RIM = 6223.44
RIM TO INV. = 5.62

STA SAN C 1+31
SSMH C2
RIM = 6223.03
RIM TO INV. = 5.62

FIRE HYDRANT (TYP.)

STA SAN C 7+03
SSMH C8
RIM = 6222.10
RIM TO INV. = 6.86

STA: 5+69
END WATERMAIN A

LIFT STATION SERVING SAN C TO SSMH B3

GEOTHERMAL PUMP BUILDING. SUBDIVISION SUPPLIED BY (2) 10" WELLS.

FIRE HYDRANT (TYP.)

STA SAN B 4+29
SSMH B3
RIM = 6226.83
RIM TO INV. = 5.47

STA: 0+00
BEGIN WATER MAIN C
CONNECT TO EXISTING 8" DIP

STA: 0+00
BEGIN WATER MAIN B

STA: 0+70
WATERMAIN A
STA: 4+46
END WATERMAIN C

SINGLE FAMILY HOME GEOTHERMAL TO DISCHARGE TO WETLAND

8" GEOTHERMAL MAIN SUPPLY LINE. DISCHARGE LINES ARE NOT SHOWN FOR CLARITY

STA SAN C 0+00
SSMH C1
RIM = 6224.71
RIM TO INV. = 5.71

STA SAN B 3+24
SSMH B2
RIM = 6227.85
RIM TO INV. = 7.04

APARTMENT GEOTHERMAL TO BE ROUTED IN A MAIN AND DISCHARGED

STA SAN A 9+30
SSMH A6
RIM = 6225.27
RIM TO INV. = 3.92

STA SAN B 1+62
SSMH B1
RIM = 6229.95
RIM TO INV. = 10.05

STA SAN A 8+10
SSMH A5
RIM = 6225.99
RIM TO INV. = 5.30

WATER SERVICE (TYP.)

CONNECTION TO NORTH CACHE STREET WATER MAIN

STA SAN A 0+00
EX SSMH
RIM = 6223.71
RIM TO INV. = 7.15

STA SAN A 3+80
SSMH A1
RIM = 6225.81
RIM TO INV. = 7.46

FIRE HYDRANT (TYP.)

STA SAN A 7+12
SSMH A4
RIM = 6226.57
RIM TO INV. = 6.42

GEOTHERMAL SUPPLY SERVICE (TYP.)

STA: 4+07
END WATER MAIN B
STA: 0+00
BEGIN WATERMAIN A

SANITARY SEWER SERVICE (TYP.)

STA SAN A 6+30
SSMH A3
RIM = 6227.05
RIM TO INV. = 7.38

STA SAN A 5+48
STA SAN B 0+00
SSMH A2
RIM = 6227.38
RIM TO INV. = 8.17

FF = 23.0' TH-1 TH-2 TH-3 TH-4 TH-5 TH-6 TH-7 TH-8 TH-9 TH-10 TH-11 TH-12 TH-13 TH-14 TH-15

FF = 24.5' SF-1
FF = 25.0' SF-2
FF = 25.5' SF-3
FF = 25.4' SF-4
FF = 25.6' SF-5
FF = 25.9' SF-6
FF = 26.0' SF-7
FF = 26.3' SF-8
FF = 26.5' SF-9
FF = 26.7' SF-10
FF = 26.9' SF-11
FF = 27.3' SF-12
FF = 27.5' SF-13

FF = 28.0' APT-1
FF = 27.8' APT-2
FF = 29.8' APT-3
FF = 29.8' APT-4
FF = 27.8' APT-5

TH-16 FF = 27.7'
TH-17 FF = 27.9'
TH-18 FF = 27.9'
TH-19 FF = 28.2'
TH-20 FF = 28.2'

USA FISH & WILDLIFE SERVICE NATIONAL ELK REFUGE BK814P274-276

WYOMING GAME & FISH COMMISSION BK348P830

US FOREST SERVICE BK3D248

KUDAR ENTERPRISES, INC. BK100P744

KUDAR ENTERPRISES, INC. BK147P14

JACKSON/TETON COUNTY RECREATION CENTER BK246P568-569

JACKSON/TETON COUNTY RECREATION CENTER BK731P478-479

TETON COUNTY SCHOOL DISTRICT NO. 1

0 40 80 120
SCALE: 1 INCH = 40 FEET
THIS SCALE VALID ONLY FOR 22X34 PRINTS

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TETON COUNTY, WY

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SKETCH PLAN	09/01/2016

PROJECT NUMBER
16016.00

SHEET
C2.2