Environmental Review

City of Notus

Wastewater Utility

August 2016

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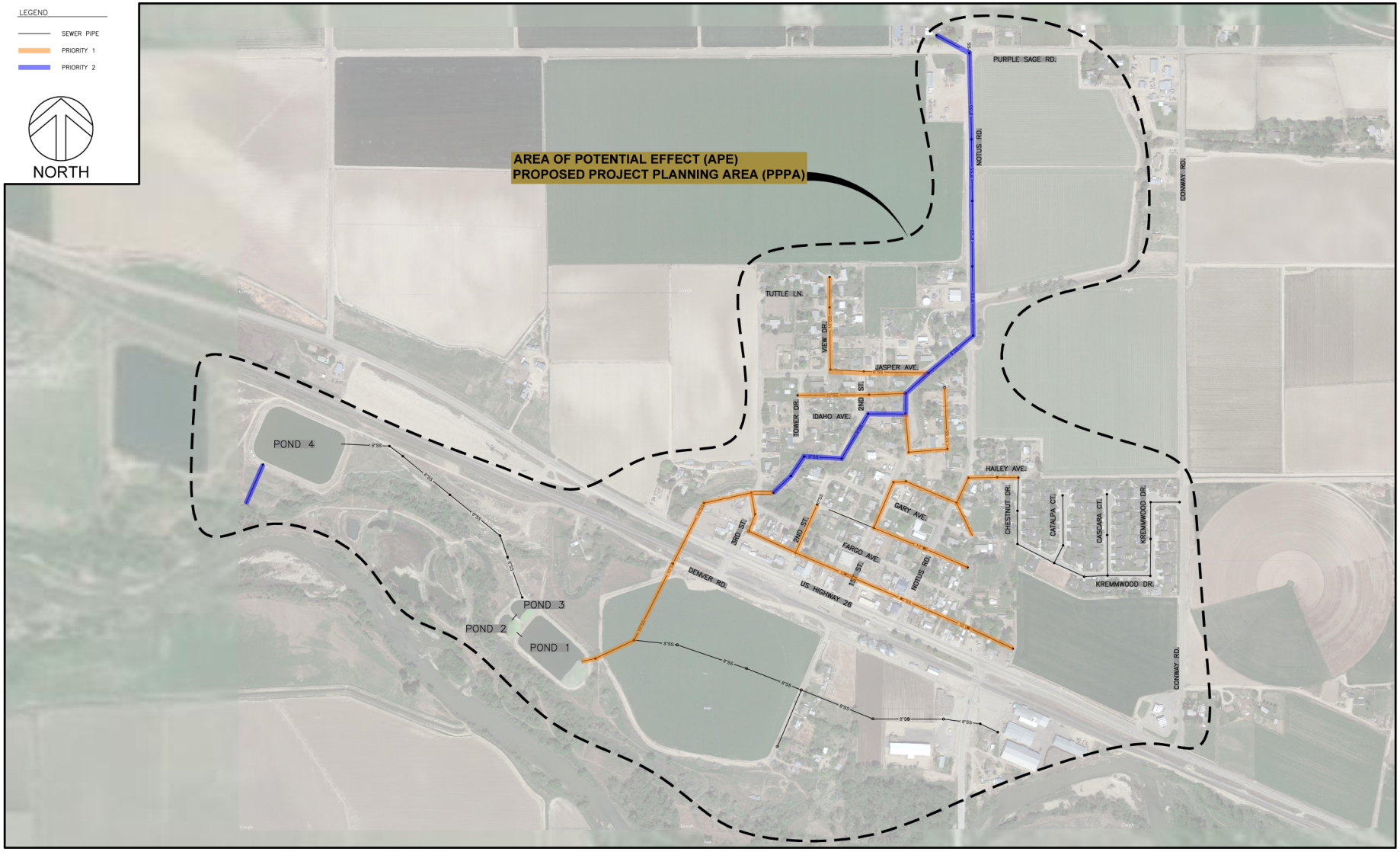
1.0 PURPOSE AND NEED

Mountain Waterworks was contracted in 2015 to finalize a *Wastewater Facility Planning Study* for the City of Notus, originally written in 2011 by Pharmer Engineering, LLC. At that time the recommended alternative for long-term wastewater service was to install a pump station and pipeline to convey sewage from Notus to the Greenleaf wastewater treatment facility for treatment and disposal. The cost of regionalization proved to be unaffordable, and in 2013 Pharmer Engineering prepared an *Addendum No. 1* to consider wastewater privatization. Privatization was demonstrated to be a non-viable approach as well. In response, Mountain Waterworks prepared *Addendum No. 2* in May 2016 to revisit the original alternatives developed in the 2011 planning study and to also review the City's collection system. This document corresponds to the *2016 Wastewater Facility Plan Addendum No. 2*.

The majority of the collections system was installed sometime prior to and in 1968. The City has experienced pipe collapses, root blockages and other maintenance issues with the 1968 and older system. The majority of the collections system is beyond its useful life and is in need of repair or replacement.

The City received a new National Pollutant Discharge Elimination System (NPDES) permit in 2013. The City's existing lagoon treatment system can achieve most of the permit limits without significant improvements. Minor improvements to the treatment system are necessary to extend the life of the lagoons and improve treatment efficiency. Proposed lagoon upgrades involve adding aeration, influent screening, influent/effluent flow measurement, and disinfection.

The recommended improvements are sized to treat projected community flow demands on the treatment system for the next 20 years and collection system repairs are sized for 40 years. This document will demonstrate that the proposed action will not cause adverse effects to the environment. All proposed wastewater treatment improvements will be contained within the existing boundaries of the treatment facility. Collection system work will be within existing right-of-ways, no excavation is planned to occur outside of previously disturbed and developed areas. Figure 1 indicates the planning area and all improvement locations.



PROJECT	155.0000.00
DATE	
FIGURE NO.	

MOUNTAIN WATERWORKS

ENGINEERING AND ENVIRONMENTAL SOLUTIONS
2210 W. MAIN ST.
BOISE, IDAHO 83702
208.780.3990

IDAHO OFFICES
BOISE · McCALL · COEUR D'ALENE

PLANNING AREA AND ALL IMPROVEMENT LOCATIONS

WASTEWATER IMPROVEMENT PROJECT
NOTUS, IDAHO

FIGURE 1

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2.0 PROJECT DESCRIPTION/ PROPOSED ACTION

The City of Notus selected to move forward with Alternative No. 1 from the *2016 Wastewater Facility Plan Addendum No. 2* which includes phase 1 treatment (from 2011 Facility Plan) and priority 1 and 2 collection repairs (from *2016 Addendum No. 2)*. The proposed project includes: priority 1 and 2 collection repairs (Figure 1), lagoon dredging, seepage testing after dredging, influent screen installation, construction of disinfection system, aeration upgrades, and influent/effluent flow measurement.

Wastewater upgrades have been presented in a phased approach to provide immediate compliance with the current NPDES permit while planning for future land application. This approach will reduce the initial rate increase to the citizens of Notus while immediately meeting the City's NPDES permit. The need for keeping user rates down while maintaining compliance with the City's NPDES permit and responding to growth was the strategy used for recommending the selected alternative in phases. A phased approach will provide information that could potentially reduce costs and better define design criteria related to flow and pollutant loading conditions.

Alternative No. 1 from the *2016 Wastewater Facility Plan Addendum No. 2* is evaluated in this document. Additional phases, as outlined in past facility plans, are not being evaluated at this time.

Phase 1 Treatment Improvements

To address historic permit compliance issues, along with furnishing flow data per permit requirements, Phase 1 consists of the following treatment upgrades:

- Land Application - *Phase 1*
  a) Dredge lagoons 1, 2, and 3.
  b) Seepage test lagoons after dredging
  c) Install influent screen
  d) Construct disinfection system
  e) Install lagoon aeration in existing lagoons 1 and possibly 2 and 3
  f) Install influent, effluent, and Conway Gulch flow measurement
- Collection System Upgrades
  a) Repair and replace priority 1 and 2 collection system piping and manholes as identified on Figure 1.

Alternative 1 was chosen for its ability to increase system capacity and provide disinfection for immediate needs while the City establishes its user rate structure to financially plan for future phasing. All priority one and two collection system repairs and/or replacement will be done on existing infrastructure within existing City right-of-ways. All treatment upgrades will be within the existing wastewater treatment property.

2.1 Estimated Project Costs and Funding Sources

A summary of the estimated capital costs for the proposed improvement is provided in Table 1.

Table 1: Phase 1 Proposed Improvement Capital Costs

Project Costs	
Phase 1 Lagoon Improvement	$ 805,000
Priority 1 Collection System Improvements	$ 925,000
Priority 2 Collection System Improvements	$ 372,000
Collection System Investigation and CCTV	$ 70,000
Total Cost	**$ 2,172,000**

The City of Notus passed a revenue bond in 2015 for $2,200,000 to fund the necessary wastewater improvements. Funding for the completion of the Facility Plan and Environmental Review was provided through the Idaho Department of Environmental Quality (DEQ) and USDA Rural Development planning grants. To pay for design and construction, the City was awarded a $500,000 Community Development Block Grant from the Idaho Department of Commerce. In addition to the Block Grant, the City qualifies for additional grant and low-interest loan funding with USDA Rural Development. The estimated end user rate is anticipated be approximately $50-$54 per month depending on the funding package. Detailed cost estimates are included in the *2016 Wastewater Facility Plan Addendum No. 2*.

3.0 ALTERNATIVES TO THE PROPOSED ACTION

Without improvements to the treatment system, the City is not expected to uphold compliance with the effluent limitations contained in the current and future NPDES permits. Detailed treatment alternative analysis and description of the City's selection of Phase 1 Treatment is provided in the *2016 Wastewater Facility Plan Addendum No. 2*. It is important to note that a new NPDES permit was issued to the City since the 2011 Facility Plan was completed. The new permit is not as strict as anticipated, making it possible for the City to continue with surface water discharge utilizing the lagoons with relatively minor upgrades.

The *2016 Wastewater Facility Plan Addendum No. 2* alternatives include:

1. Alternative 1 – Phase 1 Treatment Including Priority 1 & 2 Collection
2. Alternative 2 – Phase 1 Treatment Including Priority 1 Collection
3. Alternative 3 – No Action

Of the viable options, Alternative 2 is the lowest capital cost with Alternative 1 being the highest capital cost due to more collection repairs being completed. Both alternatives have an estimated annual operation and maintenance cost of $89,716.

Table 2: Summary of Alternative Costs (From the *2016 Addendum No. 2*)

Alt.	Description	Capital Cost
1	Phase 1 Treatment Including Priority 1 & 2 Collection	$2,172,000
2	Phase 1 Treatment Including Priority 1 Collection	$1,800,000
3	No Action	$ 0

Due to the City not being able to consistently meet their current NPDES permit, the No Action alternative is not a practical option.

3.1 Public Participation

The findings of the Wastewater Facility Plan were presented at an advertised public meeting on 6/30/2016. Public comments were accepted through 7/14/2016 although none were received. *Alternative No. 1* was officially selected at the regularly scheduled meeting on 7/18/2016. The Meeting minutes, the publication affidavit, and presentation given to the Council are included as Appendix G.

4.0 AFFECTED ENVIRONMENT/ ENVIRONMENTAL CONSEQUENCES

The *proposed project area* and the *area of potential effect* are the same for the proposed improvements and are referred to as the *planning area* herein. All proposed improvements will occur on property owned by the City or within which the City has right-of-way access. All treatment upgrades will be within the existing property line of the existing lagoon site. Figure 1 indicates all proposed collection and treatment improvement locations.

4.1 Land Use

4.1.1 Affected Environment

The wastewater collection and treatment system serves the entire community, approximately 0.4 square miles in size, including residential and commercial entities. The proposed improvements are located within the Notus City limits and will not expand the existing city limit boundary.

4.1.2 Environmental Consequences

Construction will be on existing infrastructure and within existing right-of-ways. Temporary construction disturbances will be minimal.

4.1.3 Mitigation

No mitigation required.

4.2 General Land Use

4.2.1 Important Farmland

4.2.1.1 Affected Environment

The proposed improvements will not convert any land resources. Although some soils within the planning area have characteristics of prime farmland, all collection system repairs will be replacement of existing infrastructure primarily located within roads and treatment improvements will occur within the existing site footprint. A full soil report for the planning area is included in Appendix A.

4.2.1.2 Environmental Consequences

The Canyon County Planning Department was consulted regarding any potential environmental effects although no response was provided. The USDA Natural Resource Conservation Service responded to consultation concurring that no farmland is converted as part of this project. Correspondence is included in Appendix F-1.

4.2.1.3 Mitigation

No mitigation required.

4.2.2 Formally Classified Land

4.2.2.1 Affected Environment

No *formally classified lands* exist within the planning area. That description includes wild and scenic rivers, lands administered by the State or Federal government, and tribal lands. The planning area borders Boise River. The proposed improvements will not impact any beneficial uses of the river but rather improve the effluent quality that reaches the river.

4.2.2.2 Environmental Consequences

No *formally classified lands* will be affected as a result of the proposed improvements.

4.2.2.3 Mitigation

No mitigation required.

4.3 Floodplains

4.3.1 Affected Environment

The designated floodplain is concentrated immediately around the Boise River and through the planning area in an unnamed stream of the Conway Gulch. The FEMA floodplain map and a preliminary site plan is included as Appendix B.

As discussed in the field with USDA Rural Development and shown on the site plan, the new disinfection system will consist of a small building and underground piping. The building is planned to be located on the lagoon dike area already above the floodplain. The chlorine contact piping is below grade and will not impact or alter existing floodplain elevations.

4.3.2 Environmental Consequences

Although collection repairs will occur intermittently within the floodplain, repair and replacement of the lines will not alter the floodplain. The existing lagoon dikes are above the floodplain elevations as shown on the map in Appendix B. Treatment improvements at the existing lagoons will not alter the floodplain elevations and therefore proposed improvements will not impact or be impacted by the floodplain. Consultation with the Idaho Department of Water Resources (IDWR) confirms that the proposed treatment improvements are located within a Special Flood Hazard Area.

4.3.3 Mitigation

Construction of the proposed improvements is not considered a *Substantial Improvement*, therefore no mitigation is required. Correspondence with IDWR is included in Appendix F-2.

4.4 Wetlands

4.4.1 Affected Environment

A map of the wetlands within the planning area are included as Appendix F-1. No construction is planned take place within wetland areas.

4.4.2 Environmental Consequences

The proposed improvements will not impact or be impacted by wetlands.

4.4.3 Mitigation

If construction results in a discharge of fill below the ordinary high water mark or within wetlands adjacent to the unnamed stream or Boise River, a permit from the US Army Corps of Engineers may be required. Correspondence is included in F-3.

4.5 Historic Properties

4.5.1 Affected Environment

No historic properties will be impacted due to proposed project.

4.5.2 Environmental Consequences

The Idaho State Historical Preservation Office (SHPO) was consulted and have recommended a *No Effect* determination for the project. Correspondence with the Idaho SHPO is included in Appendix F-4 with additional consultation from the Sho-Pai Tribes in F-5.

4.5.3 Mitigation

An Inadvertent Discovery Plan has been developed for this project and should be familiar to the Project Manager, Construction Manager, and appropriate City staff. The plan is included as Appendix C. The City Council will officially adopt the plan during a council meeting.

4.6 Biological Resources

4.6.1 Affected Environment

The United States Fish and Wildlife Service (USFWS) Information Planning and Conservation (IPaC) Tool was used for determining endangered and threatened species within the planning area and Canyon County. Slickspot peppergrass (a flowering plant) is listed as *proposed endangered* and as having *proposed* critical habitat within the identified planning area. The plant typically grows in small wet areas within larger sagebrush habitat, not found within the planning area. The USFWS IPaC report is included as Appendix D.

4.6.2 Environmental Consequences

The proposed improvements will not impact or be impacted by any biological resources, including slickspot peppergrass. No construction activities will take place within the Boise River. Improvements at the treatment plant will improve the effluent quality and eliminate NPDES violations which will be a net benefit to all downstream species of the Boise River.

4.6.3 Mitigation

USFWS was consulted regarding potential impacts to endangered or threatened species although no response was received. No mitigation is required.

4.7 Water Quality

4.7.1 Affected Environment

Sole Source Aquifer

The planning area is not located within any designated sole source aquifers or special ground water use areas.

Ground Water

The City of Notus is within the boundaries of the western Snake River Plain Aquifer with an overall flow in the west-northwest direction. The Treasure Valley contains a complex system of shallow, intermediate, and deep aquifers. Notus' public drinking water supply is provided by two active ground water wells, *Well No. 2 Backup Well* and *Well No. 4.* Both wells are north of the wastewater treatment site and aquifer flows are generally from the wells toward the lagoons. A map of the well location and well logs are included as Appendix E.

Surface Water

Notus' treated wastewater effluent flows into the Conway Gulch and finally into the Boise River. The Boise River is protected for cold water biota, primary and secondary contact recreation, agricultural water supply, industrial water supply, wildlife habitat and aesthetics. In addition to these protections, Section 303(d) of the Clean Water Act requires DEQ to develop total maximum daily load (TMDL) management plans for water bodies which are determined to be water quality limited. The receiving section of the Boise River effected by Notus' wastewater effluent is has limitations for nutrients, sediment, temperature, and bacteria.

4.7.2 Environmental Consequences

Modifications to the wastewater treatment system will not adversely affect surface water quality. Rather, modifications to the wastewater system will provide a higher quality effluent to be discharged in to the Boise River, which will be an improvement to the existing river condition.

Upgrades to the wastewater treatment plant will not have any negative effect on ground or surface water. Proposed collection system upgrades will not impact ground water.

4.7.3 Mitigation

Proper BMPs should be used during any excavation activities near the Conway Gulch or Boise River to limit potential runoff. BMP's may include: silt fencing, straw waddles, biofilter bags, temporary berms or other approved BMPs. Additional information is referenced in DEQ's *Catalogue of Stormwater Best Management Practices for Idaho Cities and Counties*.

4.8 Socio-Economic/ Environmental Justice

4.8.1 Affected Environment

The American Community Survey reports a median household income of $ 38,929 for the City of Notus. The proposed monthly rate per user for the proposed improvements is estimated at approximately $50-$54 per month, as discussed in Section 2.1 of this report. The City has raised rates and are planning to increase rates as necessary to fund the improvements. Passing of the $2,200,000 revenue bond shows the community is aware and in support of the project.

The US Census Bureau reports that approximately 13% of residents within the City live below the poverty level. Although residents living below the poverty level will be effected most by the rate increase to support this project, increases are implemented evenly to every resident. The 2010 Census reported 73% of the population as *White* and approximately 26% as *Hispanic or Latino*.

4.8.2 Environmental Consequences

The proposed improvements are not anticipated to adversely impact economics in the area or affect the social profile in a significantly negative manner. Although the anticipated monthly fee will be an additional expense for community residents, upgrades will minimize costly emergency repairs and NPDES violations that could lead to fines by the EPA or litigation from a third party.

4.8.3 Mitigation

No mitigation required.

4.9 Air Quality & Noise

4.9.1 Affected Environment

The primary impact related to air quality and noise associated with the proposed improvements will occur during construction. Odor resulting from the proposed improvements will not increase above the current levels.

Noise levels during construction will not be significantly higher than the current street traffic within the planning area. Long-term noise levels are not a concern with any of the proposed improvements.

4.9.2 Environmental Consequences

The proposed improvements will not impact or be impacted by air quality and noise characteristics. Multiple consultation attempts with DEQ Boise Regional Office was unsuccessful although air quality guidance was referenced from their website.

4.9.3 Mitigation

Dust control measures will be implemented during construction and construction equipment will be required to meet applicable emission standards. Best management practices should be employed to minimize construction related disturbances. The contractor must comply with State

standards to minimize odors during any collection system repair and replacement as well as treatment plant work.

4.10 Transportation

4.10.1 Affected Environment

Short-term traffic to the wastewater treatment site will increase as construction workers and equipment access the site for the proposed improvements. In the long-term, none of the proposed improvements will add increased traffic. Site access will be provided from existing access locations within the planning area, which all have sufficient capacity to handle the additional construction traffic load.

4.10.2 Environmental Consequences

Temporary construction traffic will not have any environmental consequences.

4.10.3 Mitigation

Temporary construction may limit access or close various streets within the planning area during construction. Clearly marked detours will be provided as needed by the contractor.

4.11 Environmental Consequences Summary

The environmental consequences are summarized in separate tables for treatment, disposal, and collection repairs. The effects are categorized by direct or indirect and are defined in RUS Bulletin 1794A-602 as follows:

> ***Direct effects*** *are caused by the action and occur at the same time and place (e.g. construction activities).*
>
> ***Indirect effects*** *are those caused by the action and are later in time or further removed in distance, but are still reasonably foreseeable (e.g. impacts caused by growth induced by a proposal).*
>
> ***Cumulative effects*** *result from the incremental impact of a proposal when added to other past, present, and future actions regardless of who undertakes such other actions (e.g. effects of the interaction of a proposal with other past, present, and future activities in the area. A good example would be the effect of a proposal's well field for ground water appropriations where it is only one of many well fields that utilize an aquifer of limited size or recharge).*

Each alternative is evaluated based on beneficial and adverse consequences to the existing environment with respect to *short* or *long-term* effects. The *short-term* effects are during the construction of the project. *Long-term* effects are those that will remain after project completion, again, beneficial and adverse.

Table 3: Cursory Environmental Screening

	Priority 1 Collection	Priority 2 Collection	Phase 1 Treatment Upgrades	No Action
Land Use	None	None	None	None
General Land Use	None	None	None	None
Important Farmland	None	None	None	None
Formally Classified Lands	None	None	None	Indirect, Adverse Long-term*
Flood Plains	None	None	None	None
Wetlands	None	None	None	None
Historic Properties	None	None	None	None
Biological Resources	None	None	None	Indirect, Adverse Long-term*
Water Quality	None	None	None	Indirect, Adverse Long-term*
Socio-Economic/ Enviro Justice	None	None	None	Indirect, Adverse Long-term
Air Quality and Noise	None	None	None	None
Transportation	Direct, Adverse Short-term	Direct, Adverse Short-term	Direct, Adverse Short-term	None

*The No Action alternative poses a potential threat of wastewater contamination of the Boise River and could threaten the biological resources dependent on that river.

5.0 SUMMARY OF MITIGATION

Mitigation measures will be undertaken with the proposed improvements to minimize the potential for impacting the surrounding environment. A number of regulatory and environmental agencies were contacted, their concerns were addressed or considered to be *no effect*.

Table 4: Mitigation Measures Summary

Environmental Resource	Section	Mitigation Measure
Land Use	4.1	No mitigation required.
General Land Use	4.2	No mitigation required.
Important Farmland	4.2.1	No mitigation required.
Formerly Classified Lands	4.2.2	No mitigation required.
Flood Plains	4.3	No mitigation required.
Wetlands	4.4	No mitigation required.
Historic Properties	4.5	No mitigation required.
Biological Resources	4.6	Erosion control and site containment BMPs such as silt fencing should be used when working near the Boise River.
Water Quality	4.7	Erosion control and site containment BMPs such as silt fencing should be used when working near the Boise River.
Socio-Economic/ Enviro Justice	4.8	No mitigation required.
Air Quality and Noise	4.9	Dust and odor control BMPs.
Transportation	4.10	Marked detours to be provided when necessary.

The above actions, along with any other appropriate BMPs wherever possible, will be implemented during permitting, construction, and included in the design documents, which will be reviewed and approved by DEQ and USDA Rural Development. The construction inspector will be responsible for monitoring and implementation of the mitigation measures.

6.0 CORRESPONDENCE AND COORDINATION

The mailing list of agencies consulted is provided in Table 5. All agency correspondence is included in Appendix F, including a copy of the letters sent to all agencies listed.

Table 5: Agency Consultation Mailing List

Agency	Contact	Address
State Fire Marshall	Knute Sandahl	PO Box 83720, Boise, ID 83720-0043
Department of Commerce	Dennis Porter	PO Box 83720, Boise, ID 83720-0093
Idaho DEQ –Boise Regional	Danielle Robbins	1445 North Orchard Street, Boise, ID 83706
Idaho DEQ – State Office	Mike Stambulis	1410 N. Hilton St., Boise, ID 83706
Idaho Dept. of Water Resources	Maureen O'Shea	P.O. Box 83720, Boise, ID 83720-0098
Dept. of Fish and Game	Rick Ward	3101 S. Powerline Rd, Nampa, ID 83686
USDA-NRCS	Hal Swenson	9173 W Barnes Dr., Boise, ID 83709
US Army Corps of Engineers	Project Reviewer	10095 Emerald St., Boise, ID 83704
US Fish and Wildlife Service	Project Reviewer	1387 S. Vinnell Way, Boise, ID 83709
Bureau of Land Management	John Sullivan	3948 Development Ave, Boise, ID 83705
State Historical Preservation Office	Ethan Morton	210 Main St., Boise, ID 83702
Cultural Resource Program	Ted Howard	PO Box 219, Owyhee, NV 89832
Cultural Resource Program	Carolyn Boyer Smith	PO Box 306, Fort Hall, ID 83203
Cultural Resource Program	Kenton Dick	HC-71 100 Pasigo St., Burns, OR 97720
Clearwater Economic Development Assoc.	Project Reviewer	1626 6th Ave. N., Lewiston, ID 83501
Canyon Counting Planning	Diana Dyas	111 N. 11th Ave, #140, Caldwell, ID 83605
Federal Aviation Administration	Project Reviewer	1601 Lind Ave. SW, Renton, WA 98057

7.0 REFERENCES

The *Wastewater Facility Plan Addendum No. 2 was* prepared and submitted to DEQ by Mountain Waterworks in May of 2016 and provided information for this Environmental Review. This document is supplement to the referenced *Addendum No. 2.*

Other sources include:

Federal Emergency Management Agency. Flood Insurance Rate Map City of Priest River, ID, Web, 23 May 2016. <https://msc.fema.gov/portal>

Idaho Department of Environmental Quality. *Source Water Assessment Online Tool.* Web, 23 May 2016. <http://www.deq.idaho.gov/water/swaOnline/>

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United States. *State and County Quick Facts*. U.S. Census Bureau. Web, 23 May 2016. <http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml>

United States Department of Agriculture. *Web Soil Survey.* Natural Resource Conservation Service. Web, 23 May 2016. <http://websoilsurvey.nrcs.usda.gov/app/websoilsurvey.aspx>

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United States Fish & Wildlife Service. *FWS Critical Habitat for Threatened & Endangered Species*. Web, 23 May 2016. < https://ecos.fws.gov/ipac/>

United States Fish & Wildlife Service. *National Wild and Scenic Rivers.* Web, 23 May 2016. <http://www.rivers.gov/>

United States Fish & Wildlife Service, Wetlands Online Mapper. Web, 23 May 2016. <http://www.fws.gov/wetlands>

Appendix A

NRCS Soil Report and Map

United States Department of Agriculture

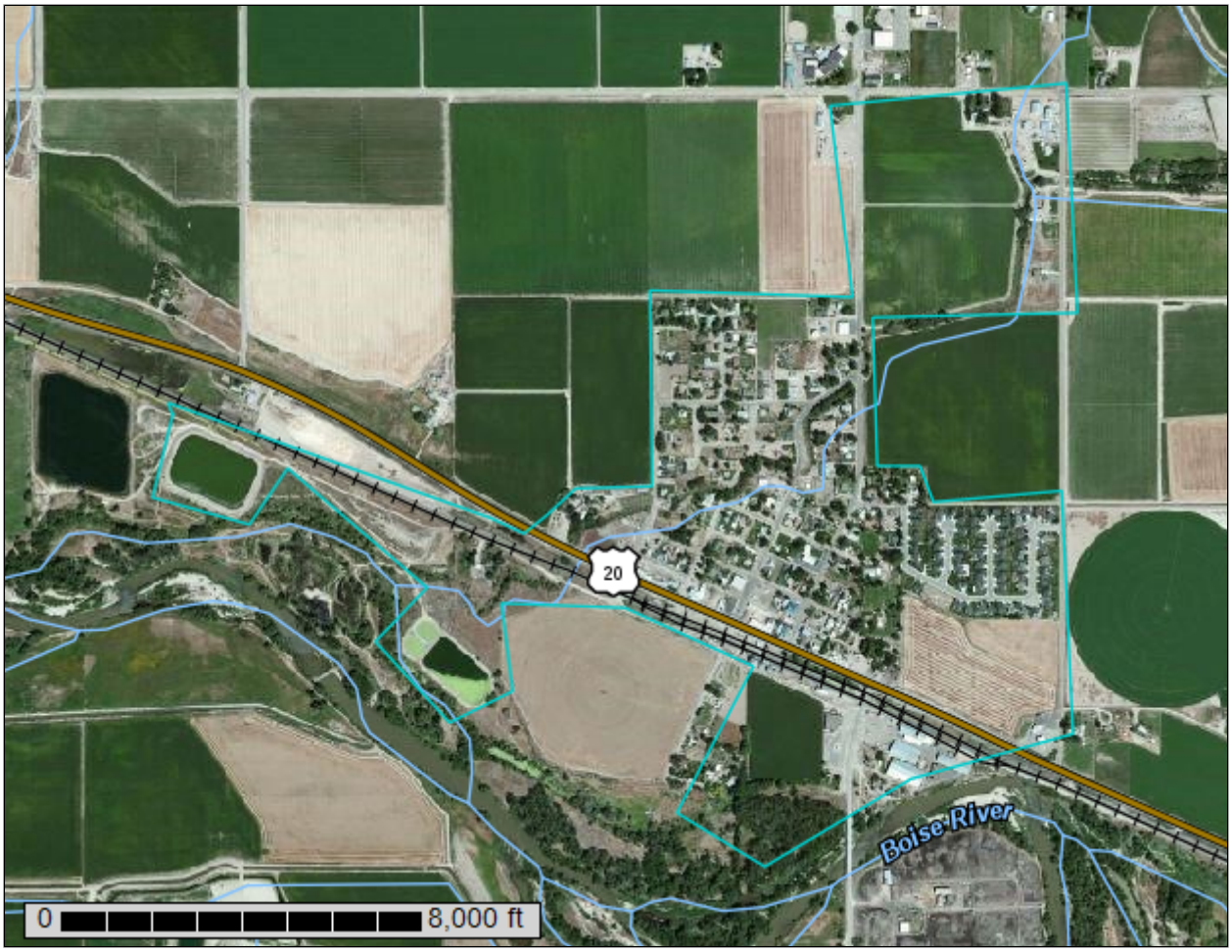
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Canyon Area, Idaho



February 25, 2016

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

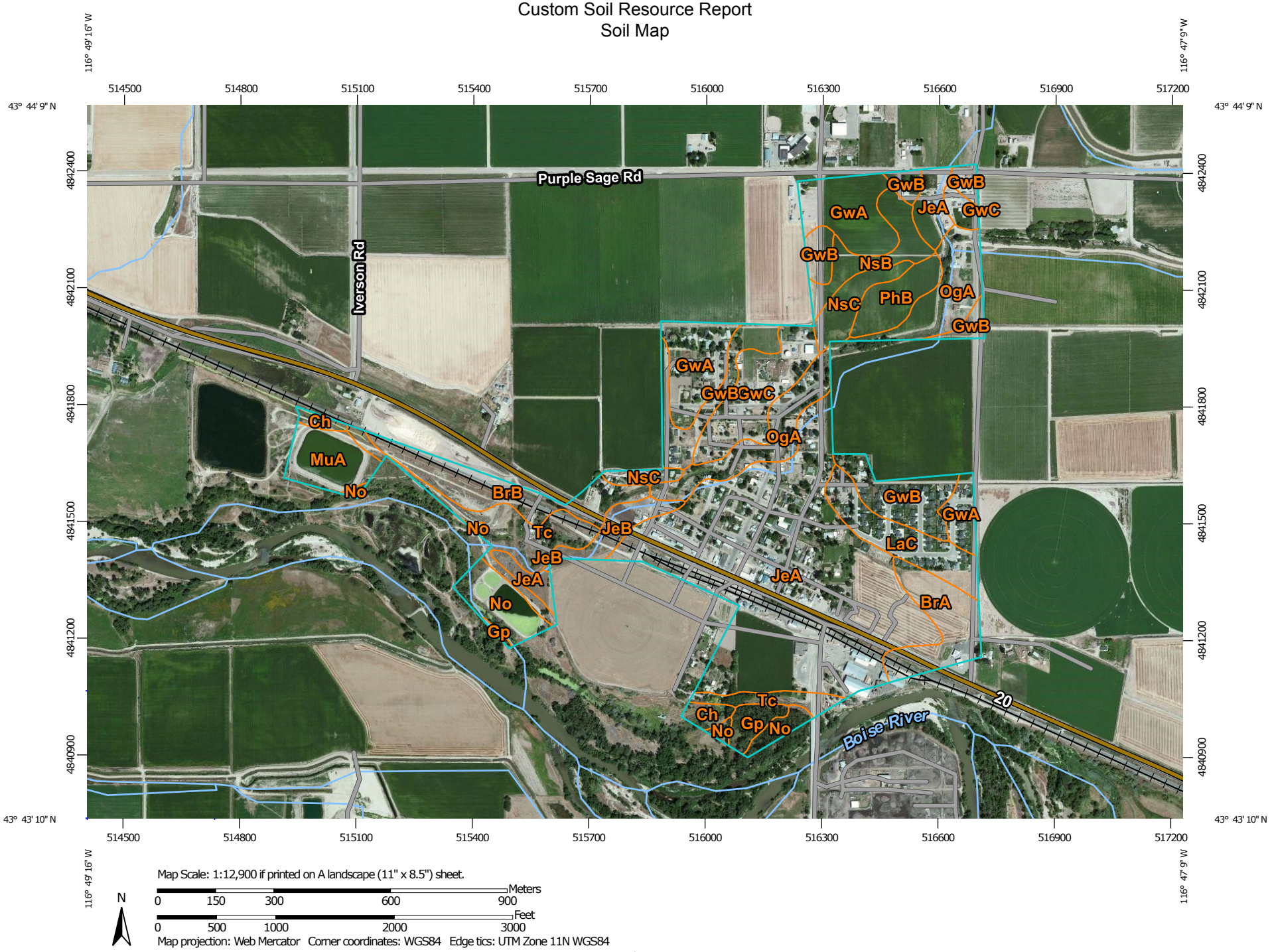
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:12,900 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Canyon Area, Idaho
Survey Area Data: Version 13, Sep 25, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 10, 2011—Aug 23, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Canyon Area, Idaho (ID665)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BrA	Bram silt loam, 0 to 1 percent slopes	10.2	4.1%
BrB	Bram silt loam, 1 to 3 percent slopes	12.2	4.9%
Ch	Chance fine sandy loam	2.6	1.1%
Gp	Gravel pit	3.0	1.2%
GwA	Greenleaf-Owyhee silt loams, 0 to 1 percent slopes	21.6	8.7%
GwB	Greenleaf-Owyhee silt loams, 1 to 3 percent slopes	21.7	8.7%
GwC	Greenleaf-Owyhee silt loams, 3 to 7 percent slopes	13.8	5.5%
JeA	Jenness loam, 0 to 1 percent slopes	81.1	32.5%
JeB	Jenness loam, 1 to 3 percent slopes	4.6	1.8%
LaC	Lankbush sandy loam, 3 to 7 percent slopes	9.7	3.9%
MuA	Moulton fine sandy loam, saline, 0 to 1 percent slopes	7.4	3.0%
No	Notus soils	9.5	3.8%
NsB	Nyssaton silt loam, 1 to 3 percent slopes	6.8	2.7%
NsC	Nyssaton silt loam, 3 to 7 percent slopes	6.5	2.6%
OgA	Oliaga loam, 0 to 1 percent slopes	18.9	7.6%
PhB	Power silt loam, 1 to 3 percent slopes	5.9	2.4%
Tc	Terrace escarpments	14.2	5.7%
Totals for Area of Interest		**249.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape,

however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and

relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Canyon Area, Idaho

BrA—Bram silt loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2q04
Elevation: 2,000 to 4,800 feet
Mean annual precipitation: 8 to 11 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 160 days
Farmland classification: Prime farmland if irrigated and reclaimed of excess salts and sodium

Map Unit Composition

Bram and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bram

Setting

Landform: Flood plains, fan remnants, lakebeds, river valleys
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or lacustrine deposits

Typical profile

A - 0 to 17 inches: silt loam
Bk - 17 to 52 inches: silt loam
C - 52 to 65 inches: fine sandy loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 25 percent
Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 8.0
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

BrB—Bram silt loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2q05
Elevation: 2,000 to 4,800 feet
Mean annual precipitation: 8 to 11 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 160 days
Farmland classification: Prime farmland if irrigated and reclaimed of excess salts and sodium

Map Unit Composition

Bram and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bram

Setting

Landform: Terraces, drainageways
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or lacustrine deposits

Typical profile

A - 0 to 17 inches: silt loam
Bk - 17 to 52 inches: silt loam
C - 52 to 65 inches: fine sandy loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 25 percent
Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 8.0
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

Ch—Chance fine sandy loam

Map Unit Setting

National map unit symbol: 2q0f
Elevation: 2,000 to 4,000 feet
Mean annual precipitation: 8 to 13 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 110 to 160 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Chance and similar soils: 85 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chance

Setting

Landform: Depressions, flood plains, swales
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Oe - 1 to 2 inches: moderately decomposed plant material
Ag - 2 to 14 inches: fine sandy loam
Bg - 14 to 25 inches: sandy loam
2Cg - 25 to 62 inches: sand, gravel

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): 5w
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D

Minor Components

Riverwash

Percent of map unit: 5 percent
Landform: Flood plains

Gp—Gravel pit

Map Unit Composition

Pits, gravel: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pits, Gravel

Typical profile

C - 0 to 60 inches: gravel, cobbles

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8

GwA—Greenleaf-Owyhee silt loams, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2q1h
Elevation: 2,000 to 4,500 feet
Mean annual precipitation: 7 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 110 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Greenleaf and similar soils: 65 percent
Owyhee and similar soils: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Greenleaf

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or lacustrine deposits and/or loess

Typical profile

Ap - 0 to 8 inches: silt loam
Btk - 8 to 17 inches: silty clay loam
Bk - 17 to 60 inches: silt

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.8 inches)

Interpretive groups
Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

Description of Owyhee

Setting
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits and/or loess and/or silty alluvium

Typical profile
A - 0 to 10 inches: silt loam
Bw - 10 to 22 inches: silt loam
Bk - 22 to 60 inches: silt loam

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 25 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.5 inches)

Interpretive groups
Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

GwB—Greenleaf-Owyhee silt loams, 1 to 3 percent slopes

Map Unit Setting
National map unit symbol: 2q1j
Elevation: 2,000 to 4,500 feet
Mean annual precipitation: 7 to 12 inches

Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 110 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Greenleaf and similar soils: 65 percent
Owyhee and similar soils: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Greenleaf

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or lacustrine deposits and/or loess

Typical profile

Ap - 0 to 8 inches: silt loam
Btk - 8 to 17 inches: silty clay loam
Bk - 17 to 60 inches: silt

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.8 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

Description of Owyhee

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits and/or loess and/or silty alluvium

Typical profile

A - 0 to 10 inches: silt loam
Bw - 10 to 22 inches: silt loam
Bk - 22 to 60 inches: silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 25 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.5 inches)

Interpretive groups
Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

GwC—Greenleaf-Owyhee silt loams, 3 to 7 percent slopes

Map Unit Setting
National map unit symbol: 2q1k
Elevation: 2,000 to 4,500 feet
Mean annual precipitation: 7 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 110 to 170 days
Farmland classification: Farmland of statewide importance, if irrigated

Map Unit Composition
Owyhee and similar soils: 45 percent
Greenleaf and similar soils: 45 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Greenleaf

Setting
Landform: Terraces, drainageways
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or lacustrine deposits and/or loess

Typical profile
Ap - 0 to 8 inches: silt loam
Btk - 8 to 17 inches: silty clay loam
Bk - 17 to 60 inches: silt

Properties and qualities
Slope: 3 to 7 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Calcium carbonate, maximum in profile: 40 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.8 inches)

Interpretive groups
Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

Description of Owyhee

Setting
Landform: Terraces, drainageways
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits and/or loess and/or silty alluvium

Typical profile
A - 0 to 10 inches: silt loam
Bw - 10 to 22 inches: silt loam
Bk - 22 to 60 inches: silt loam

Properties and qualities
Slope: 3 to 7 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 25 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.5 inches)

Interpretive groups
Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

JeA—Jenness loam, 0 to 1 percent slopes

Map Unit Setting
National map unit symbol: 2q1r
Elevation: 2,000 to 5,000 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 100 to 160 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Jenness and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Jenness

Setting

Landform: Terraces, drainageways
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous rock

Typical profile

A - 0 to 9 inches: loam
C1 - 9 to 43 inches: silt loam
2C2 - 43 to 60 inches: stratified coarse sand to loamy sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: B

JeB—Jenness loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2q1s
Elevation: 2,000 to 5,000 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 100 to 160 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Jenness and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Jenness

Setting

Landform: Flood plains, terraces, drainageways
Down-slope shape: Linear

Across-slope shape: Linear
Parent material: Alluvium derived from igneous rock

Typical profile
A - 0 to 9 inches: loam
C1 - 9 to 43 inches: silt loam
2C2 - 43 to 60 inches: stratified coarse sand to loamy sand

Properties and qualities
Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 10.5 inches)

Interpretive groups
Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: B

LaC—Lankbush sandy loam, 3 to 7 percent slopes

Map Unit Setting
National map unit symbol: 2q1v
Elevation: 2,000 to 5,500 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 100 to 160 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Lankbush and similar soils: 95 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lankbush

Setting
Landform: Terraces, fan remnants
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or lacustrine deposits and/or loess

Typical profile
A - 0 to 14 inches: sandy loam
Bt - 14 to 50 inches: sandy clay loam
2C - 50 to 60 inches: sand

Properties and qualities
Slope: 3 to 7 percent

Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups
Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

MuA—Moulton fine sandy loam, saline, 0 to 1 percent slopes

Map Unit Setting
National map unit symbol: 2q2s
Elevation: 2,100 to 4,500 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 140 to 160 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition
Moulton, saline, and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Moulton, Saline

Setting
Landform: Flood plains, fan remnants, stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous rock

Typical profile
A - 0 to 3 inches: fine sandy loam
Bg - 3 to 21 inches: fine sandy loam
2C - 21 to 60 inches: very gravelly sand

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)

Available water storage in profile: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: B

No—Notus soils

Map Unit Setting

National map unit symbol: 2q2y
Elevation: 2,000 to 4,500 feet
Mean annual precipitation: 7 to 13 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 110 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Notus and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Notus

Setting

Landform: Terraces, fan remnants
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

A - 0 to 1 inches: sandy loam
C1 - 1 to 14 inches: fine sandy loam
2C2 - 14 to 60 inches: stratified sand to gravel

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Available water storage in profile: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A

NsB—Nyssaton silt loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2q30
Elevation: 2,200 to 2,700 feet
Mean annual precipitation: 7 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 145 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Nyssaton and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nyssaton

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits and/or loess and/or silty alluvium

Typical profile

Ap - 0 to 11 inches: silt loam
Bk - 11 to 60 inches: silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 20 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

NsC—Nyssaton silt loam, 3 to 7 percent slopes

Map Unit Setting

National map unit symbol: 2q31
Elevation: 2,200 to 2,700 feet
Mean annual precipitation: 7 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 145 to 170 days
Farmland classification: Farmland of statewide importance, if irrigated

Map Unit Composition

Nyssaton and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nyssaton

Setting

Landform: Terraces, drainageways
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits and/or loess and/or silty alluvium

Typical profile

Ap - 0 to 11 inches: silt loam
Bk - 11 to 60 inches: silt loam

Properties and qualities

Slope: 3 to 7 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 20 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

OgA—Oliaga loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2q34
Elevation: 2,000 to 4,500 feet
Mean annual precipitation: 7 to 11 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Oliaga and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oliaga

Setting

Landform: Flood plains, terraces, fan remnants
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite and/or igneous rock

Typical profile

Apk - 0 to 8 inches: loam
Bk - 8 to 35 inches: loam
2C - 35 to 60 inches: sand, gravel

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: About 24 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 14 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: B

PhB—Power silt loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2q3h
Elevation: 2,000 to 4,600 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Power and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Power

Setting

Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or loess

Typical profile

Ap - 0 to 9 inches: silt loam
Btk - 9 to 17 inches: silt loam
Bk - 17 to 60 inches: silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 30 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

Tc—Terrace escarpments

Map Unit Setting

National map unit symbol: 2q4h
Elevation: 2,250 to 4,400 feet
Mean annual precipitation: 8 to 11 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 100 to 150 days

Map Unit Composition

Terrace escarpments: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Terrace Escarpments

Typical profile

A - 0 to 5 inches: fine sandy loam
C - 5 to 60 inches: fine sandy loam

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8

Soil Information for All Uses

Suitabilities and Limitations for Use

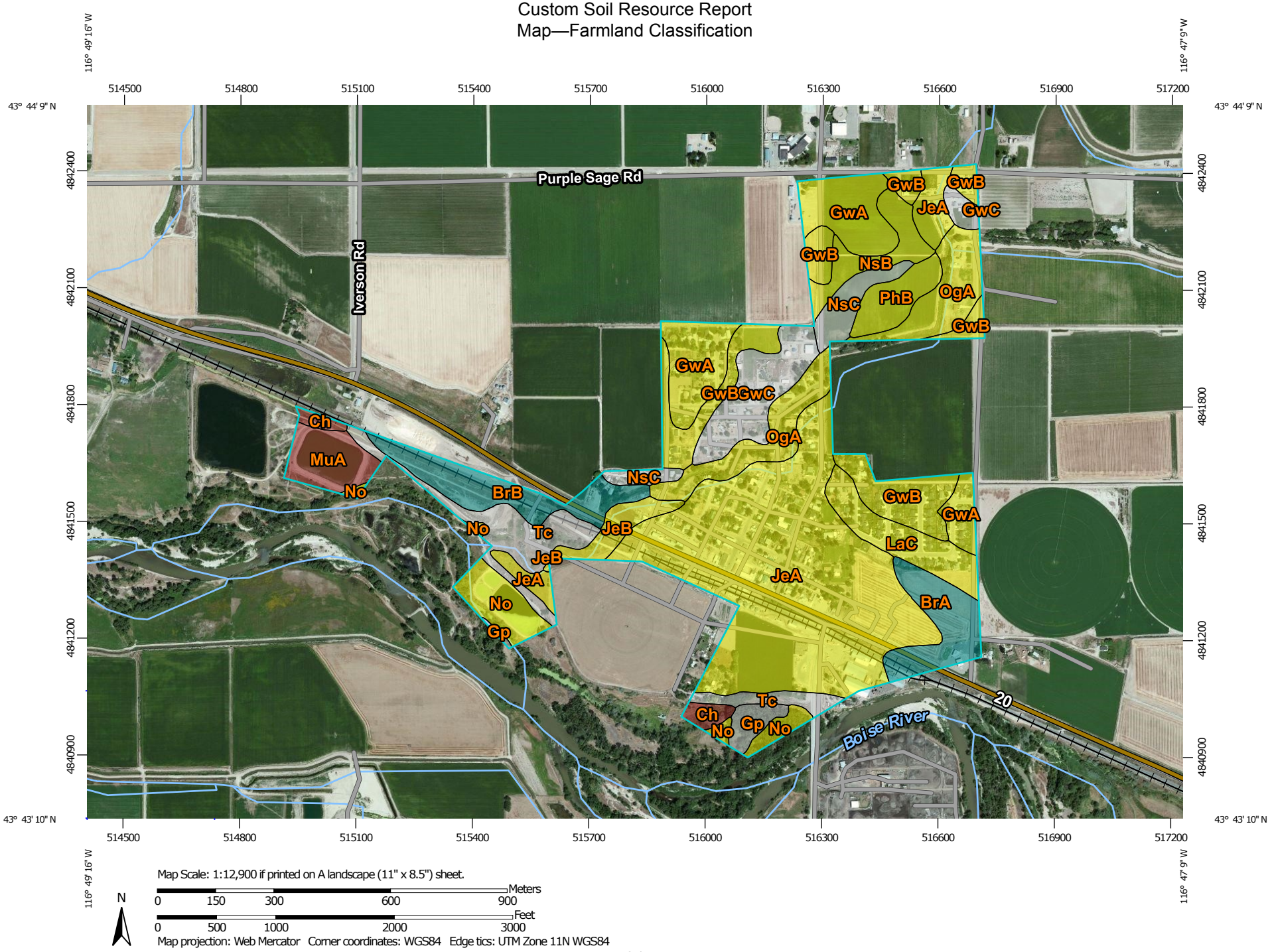
The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Farmland Classification

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.



Map Scale: 1:12,900 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Soil Rating Points

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Water Features

MAP INFORMATION

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Canyon Area, Idaho
Survey Area Data: Version 13, Sep 25, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 10, 2011—Aug 23, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Farmland Classification

Farmland Classification— Summary by Map Unit — Canyon Area, Idaho (ID665)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
BrA	Bram silt loam, 0 to 1 percent slopes	Prime farmland if irrigated and reclaimed of excess salts and sodium	10.2	4.1%
BrB	Bram silt loam, 1 to 3 percent slopes	Prime farmland if irrigated and reclaimed of excess salts and sodium	12.2	4.9%
Ch	Chance fine sandy loam	Prime farmland if irrigated and drained	2.6	1.1%
Gp	Gravel pit		3.0	1.2%
GwA	Greenleaf-Owyhee silt loams, 0 to 1 percent slopes	Prime farmland if irrigated	21.6	8.7%
GwB	Greenleaf-Owyhee silt loams, 1 to 3 percent slopes	Prime farmland if irrigated	21.7	8.7%
GwC	Greenleaf-Owyhee silt loams, 3 to 7 percent slopes	Farmland of statewide importance, if irrigated	13.8	5.5%
JeA	Jenness loam, 0 to 1 percent slopes	Prime farmland if irrigated	81.1	32.5%
JeB	Jenness loam, 1 to 3 percent slopes	Prime farmland if irrigated	4.6	1.8%
LaC	Lankbush sandy loam, 3 to 7 percent slopes	Prime farmland if irrigated	9.7	3.9%
MuA	Moulton fine sandy loam, saline, 0 to 1 percent slopes	Prime farmland if irrigated and drained	7.4	3.0%
No	Notus soils	Prime farmland if irrigated	9.5	3.8%
NsB	Nyssaton silt loam, 1 to 3 percent slopes	Prime farmland if irrigated	6.8	2.7%
NsC	Nyssaton silt loam, 3 to 7 percent slopes	Farmland of statewide importance, if irrigated	6.5	2.6%
OgA	Oliaga loam, 0 to 1 percent slopes	Prime farmland if irrigated	18.9	7.6%
PhB	Power silt loam, 1 to 3 percent slopes	Prime farmland if irrigated	5.9	2.4%
Tc	Terrace escarpments		14.2	5.7%
Totals for Area of Interest			**249.7**	**100.0%**

Rating Options—Farmland Classification

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

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Appendix B

FEMA FIRM Map

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242,** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this panel was provided by the U.S. Department of Agriculture Farm Service Agency Aerial Photography Field Office. Orthophotos were produced at a scale of 1:12,000 from photography dated June 21, 2004.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

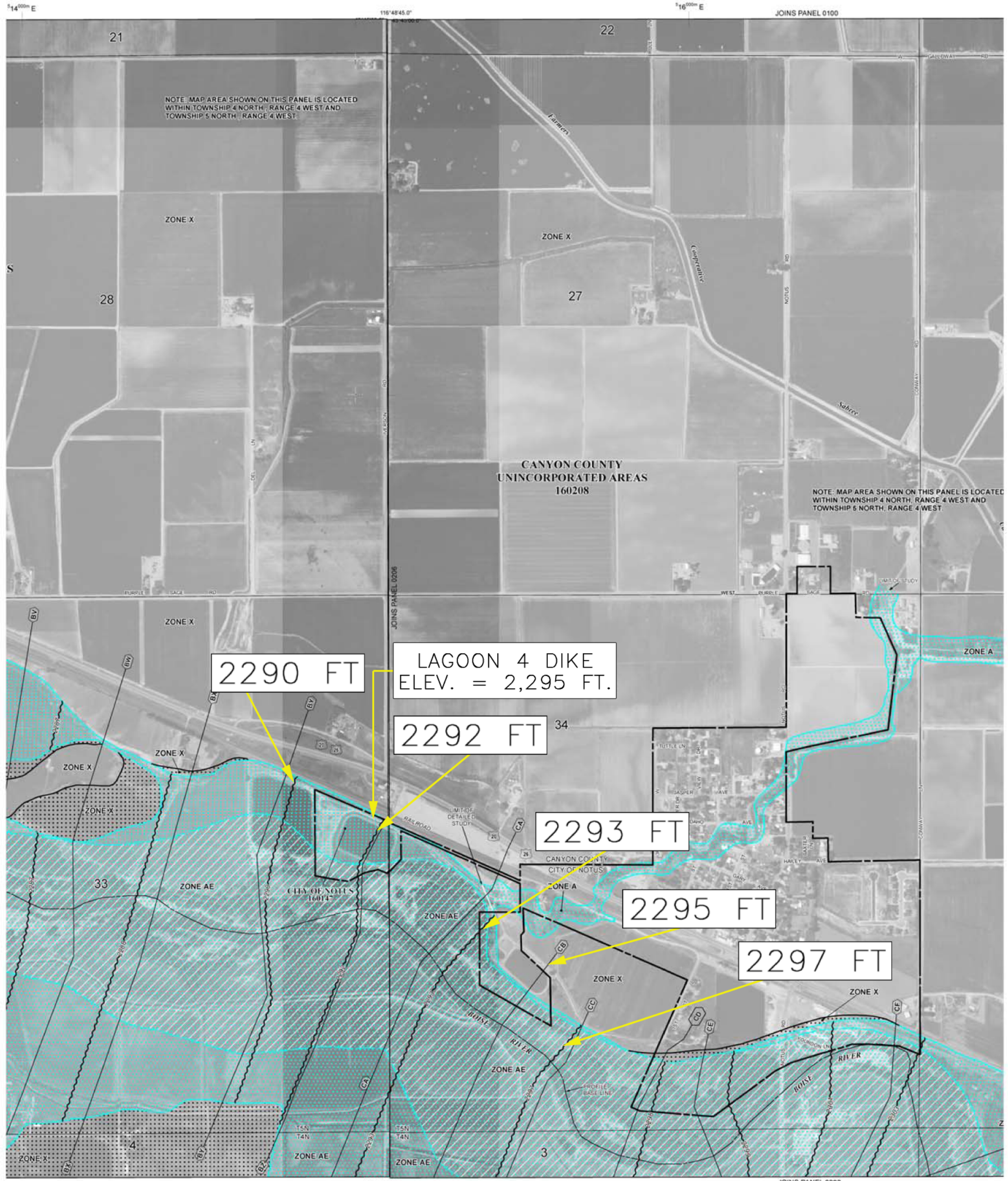
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood Insurance Study report,* and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the profile baseline, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513 Base Flood Elevation line and value; elevation in feet*

(EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

A—A Cross section line

23 - - - 23 Transect line

97°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

4275000mN 1000-meter Universal Transverse Mercator grid ticks, zone 11

6000000 M 5000-foot grid ticks: Idaho State Plane coordinate system, west zone (FIPSZONE 1103), Transverse Mercator

DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)

• M1.5 River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
May 24, 2011
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0202F

FIRM
FLOOD INSURANCE RATE MAP
CANYON COUNTY, IDAHO AND INCORPORATED AREAS

PANEL 202 OF 575

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CANYON COUNTY	160208	0202	F
NOTUS, CITY OF	160147	0202	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 16027C0202F

EFFECTIVE DATE MAY 24, 2011

Federal Emergency Management Agency

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0206F

FIRM
FLOOD INSURANCE RATE MAP
CANYON COUNTY, IDAHO AND INCORPORATED AREAS

PANEL 206 OF 575

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CANYON COUNTY	160208	0206	F
NOTUS, CITY OF	160147	0206	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 16027C0206F

EFFECTIVE DATE MAY 24, 2011

Federal Emergency Management Agency

Appendix C

Inadvertent Discovery Plan

INADVERTENT DISCOVERY PLAN

CITY OF NOTUS

WASTEWATER SYSTEM IMPROVEMENT PROJECT

This Inadvertent Discovery Plan establishes protocols to be followed if potentially important archaeological materials or human remains are unearthed during the City of Notus Wastewater Improvement Project activities. These procedures are intended to provide compliance with applicable federal and state laws, preserve significant archaeological resources, and ensure that any human remains are appropriately treated.

Policies

As a general policy, potentially important archaeological materials and human remains will be avoided during project construction activities and protected in place. If such materials or remains are inadvertently unearthed during project construction, procedures described below under "Archaeological Resources Discovery" or "Human Remains Discovery" will be immediately initiated to prevent further disturbance to the resource.

Collection of archaeological materials or human remains by construction personnel or others with access to the construction area is illegal and prohibited.

Archaeological materials or human remains can become targets for vandalism or illegal excavation activities. To preserve these resources, all information regarding known or suspected archaeological materials or human remains, particularly locations of such resources, must be held confidential and exempted from public disclosure per Idaho Statute 9-340E. Confidentiality of information includes, but is not limited to, restricting access to information to authorized persons with a need to know and preventing persons with such information from contacting the media or sharing the information with a third party or any member of the public. All information generated by this project regarding discoveries of archaeological materials or human remains will be turned over to the Idaho State Historical Preservation Office (SHPO).

Human Remains Discovery

If a find is obviously human remains, the Project Manager should immediately notify the Canyon County Sheriff's Office and the Canyon County Coroner/Medical Examiner and request that the Coroner/Medical Examiner determine if the remains are forensic or non-forensic. Following this contact, the Project Manager should immediately notify SHPO of the discovery of human remains.

The area of the find should be immediately secured, to a distance of 30 feet at a minimum, and the human remains should be covered. No further disturbance of the remains should occur and vehicles, equipment, and unauthorized personnel will not be permitted to enter the discovery area. Although construction work in the immediate area of the find will not

resume until assessment and treatment has been completed, construction work may continue in other parts of the project. Due to the sensitive nature of such a find, human remains should never be left unattended.

If the Canyon County Coroner/Medical Examiner determines the human remains to be non-forensic, SHPO will take jurisdiction over the remains. No work will resume in the area of discovery until a treatment plan has been developed and written authorization has been received from the SHPO.

Adopted by the Notus City Council this 20th day of June 2016.

City of Notus

Mayor, David Porterfield

ATTEST:

City Clerk, Loretta Vollmer

Appendix D

IPac Trust Species Report

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Idaho Fish and Wildlife Office
1387 SOUTH VINNELL WAY, SUITE 368
BOISE, ID 83709
PHONE: (208)378-5243 FAX: (208)378-5262

Consultation Code: 01EIFW00-2016-SLI-0698 May 23, 2016
Event Code: 01EIFW00-2016-E-00717
Project Name: Notus Wastewater Improvement Project

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having

similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

Please note: The IPaC module for producing a list of proposed and designated critical habitat is currently incomplete. At this time, we ask that you use the information given below to determine whether your action area falls within a county containing proposed/designated critical habitat for a specific species. If you find that your action falls within a listed county, use the associated links for that species to determine if your action area actually overlaps with the proposed or designated critical habitat.

Canada Lynx (*Lynx canadensis*) - *Designated February 24, 2009.*
Counties: Boundary County.

Federal Register Notice:
http://www.gpo.gov/fdsys/pkg/FR-2009-02-25/pdf/E9-3512.pdf#page=1
Printable Maps:
http://www.fws.gov/mountain-prairie/species/mammals/lynx/criticalhabitat_files/20081222_fedre

GIS Data: http://criticalhabitat.fws.gov/docs/crithab/zip/lunx_ch.zip
KML for Google Earth: (None Currently Available)

Selkirk Mountains Woodland Caribou (*Rangifer tarandus Caribou*) - *Proposed November 30, 2011.*
Counties: Bonner and Boundary Counties.

Federal Register Notice: http://www.fws.gov/idaho/home/2011-30451FINALR.pdf
Printable Maps: http://www.fws.gov/idaho/home/Map1_sub1_150.pdf
GIS Data: (None Currently Available)
KML for Google Earth: (None Currently Available)

Bull Trout (*Salvelinus confluentus*) - *Designated September 30, 2010.*
Counties: Adams, Benewah, Blaine, Boise, Bonner, Boundary, Butte, Camas, Clearwater, Custer, Elmore, Gem, Idaho, Kootenai, Lemhi, Lewis, Nez Perce, Owyhee, Shoshone, Valley, and Washington Counties.

Federal Register Notice:
http://www.gpo.gov/fdsys/pkg/FR-2010-10-18/pdf/2010-25028.pdf#page=2
Printable Maps: http://www.fws.gov/pacific/bulltrout/CH2010_Maps.cfm#CHMaps
GIS Data: http://criticalhabitat.fws.gov/docs/crithab/zip/bulltrout.zip
KML for Google Earth:
http://www.fws.gov/pacific/bulltrout/finalcrithab/BT_FCH_2010_KML.zip

Kootenai River White Sturgeon (*Acipenser transmontanus*) - *Designated July 9, 2008.*
Counties: Boundary County.

Federal Register Notice:
http://www.gpo.gov/fdsys/pkg/FR-2008-07-09/pdf/E8-15134.pdf#page=1
Printable Maps: (None Currently Available)
GIS Data: http://criticalhabitat.fws.gov/docs/crithab/zip/fch_73fr39506_acit_2009.zip
KML for Google Earth: (None Currently Available)

Slickspot Peppergrass (*Lepidium papilliferum*) - Proposed May 10, 2011. Counties: Ada, Canyon, Elmore, Gem, Owyhee, and Payette Counties.

Federal Register Notice: http://www.gpo.gov/fdsys/pkg/FR-2011-10-26/pdf/2011-27727.pdf
Printable Maps: http://www.fws.gov/idaho/Lepidium.html
GIS Data: (None Currently Available)
KML for Google Earth: (None Currently Available)

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Notus Wastewater Improvement Project

Official Species List

Provided by:

Idaho Fish and Wildlife Office
1387 SOUTH VINNELL WAY, SUITE 368
BOISE, ID 83709
(208) 378-5243

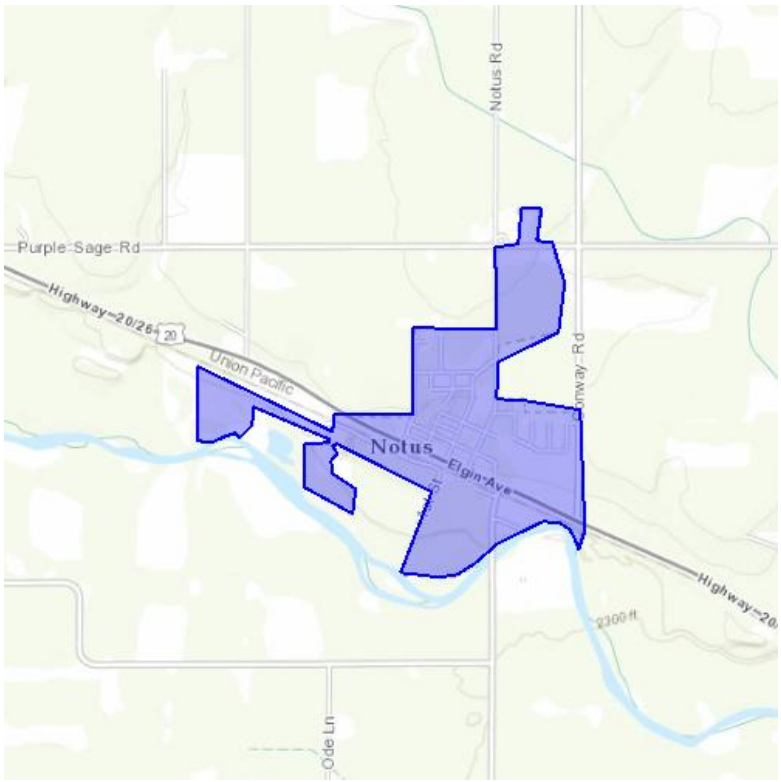
Consultation Code: 01EIFW00-2016-SLI-0698
Event Code: 01EIFW00-2016-E-00717

Project Type: WASTEWATER PIPELINE

Project Name: Notus Wastewater Improvement Project
Project Description: Wastewater collection and lagoon treatment upgrades.

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:



Project Coordinates: The coordinates are too numerous to display here.

Project Counties: Canyon, ID

Endangered Species Act Species List

There are a total of 1 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

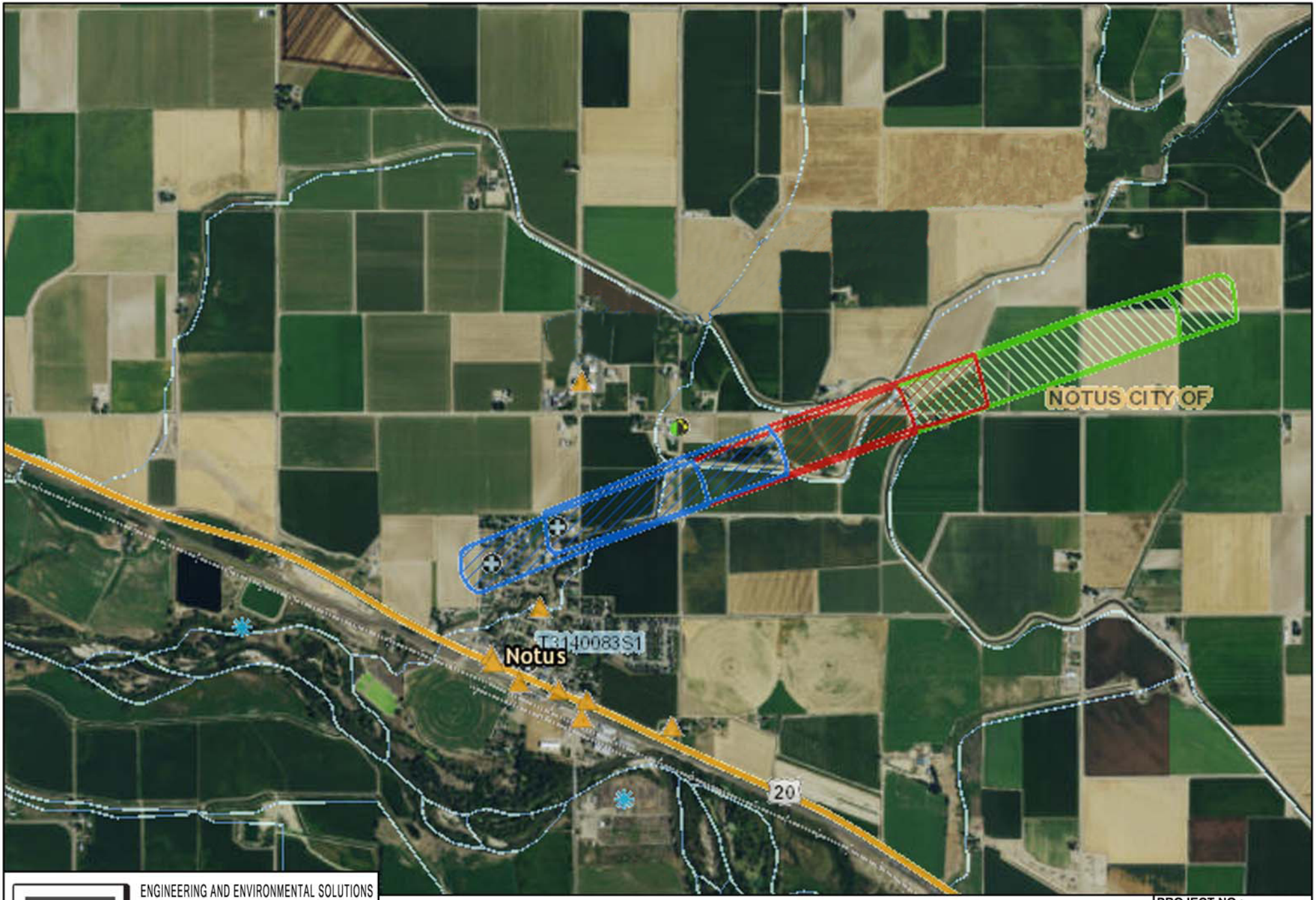
Flowering Plants	Status	Has Critical Habitat	Condition(s)
Slickspot peppergrass *(Lepidium papilliferum)*	Proposed Endangered	Proposed	

Critical habitats that lie within your project area

There are no critical habitats within your project area.

Appendix E

Well Locations and Well Logs



MOUNTAIN WATERWORKS

ENGINEERING AND ENVIRONMENTAL SOLUTIONS
2210 W MAIN ST.
BOISE, IDAHO 83702
208.850.9978

IDAHO OFFICES
BOISE - McCALL - COEUR D'ALENE

CITY OF NOTUS

GROUND WATER WELLS

PROJECT NO.:

SHEET NO.

Form 238-7
7/94

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT 49087

Use Typewriter or Ball Point Pen

JUL 7 1995
Department of Water Resources

1. DRILLING PERMIT NO. 63 - 95 - W - 0233 - 000
Other IDWR No. 63-12189

2. OWNER:
Name CITY OF NOTUS
Address P.O. Box 257
City Notus State ID Zip 83656

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 5N North ☒ or South ☐
Rge. 4W East ☐ or West ☒
Sec. 27, ____ 1/4 SW 1/4 SE 1/4
(10 acres, 40 acres, 160 acres)
Gov't Lot ____ County Canyon
Address of Well Site Notus Road
City Notus
(Give at least name of road + Distance to Road or Landmark)

Lt. ____ Blk. ____ Sub. Name ____

4. PROPOSED USE:
☐ Domestic ☒ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other ____

5. TYPE OF WORK
☒ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD
☐ Mud Rotary ☐ Air Rotary ☐ Cable ☒ Other Reverse Rotary

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	50	10,000	Pour from top
Color. Silica	50	149	8 yard	Pour from top

Was drive shoe used? ☐ Y ☒ N Shoe Depth(s) ____
Was drive shoe seal tested? Y☐ N☐ How? ____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
12"	+1	73	.375	Steel	☒	☐	XX	
12	83	107	.375	Steel	☒	☐	XX	
12	117	137	.375	Steel	☒	☐	XX	☐

Length of Headpipe ____ Length of Tailpipe ____

9. PERFORATIONS/SCREENS
☐ Perforations Method ____
☒ Screens Screen Type Halliburton wire wrap

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
73	83	.035		12"	Steel	☒	☐
107	117	.035		12"	Steel	☒	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
7' ft. below ground Artesian pressure ____ lb.
Depth flow encountered ____ ft. Describe access port or control devices: well cap

11. WELL TESTS:
☒ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
400		48'	1 hr.
600		56'	1 hr.
900		67'	2 hr.

Water Temp. 59 Bottom hole temp. ____
Water Quality test or comments: ____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
23	0	9	Top soil		X
23	9	11	Hard pan		X
23	11	20	Hard burnt clay		X
23	20	29	Brown clay		X
23	29	47	Sand,Gravel,& river rock	X	
23	47	49	Light brown clay		X
23	49	56	Fine to medium sand	X	
23	56	61	Brown clay		X
23	61	65	Blue clay		X
23	65	79	Fine to medium sand	X	
23	79	91	Fine to medium sand	X	
23	91	92	Brown & greenish clay		X
23	92	98	Blue clay w/fine sand		X
23	98	109	Fine sand	X	
23	109	117	Fine to medium sand	X	
23	117	119	Blue clay		X
23	119	121	Fine sand	X	
23	121	124	Blue clay		X
23	124	126	Fine sand	X	
23	126	139	Blue clay		X
23	139	149	Blue clay		X

RECEIVED
JUL 13 1995
Department of Water Resources

RECEIVED
JUL 10 1995
WATER RESOURCES
WESTERN REGION

RECEIVED
OCT 02 1995

Completed Depth 137 (Measurable)
Date: Started 5-19-95 Completed 5-29-95

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm Name Riverside, Inc. Firm No. 333
Firm Official ____ Date 6-30-95
and
Supervisor or Operator ____ Date 6-30-95
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Form 238-7
11/97

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

053856

Office Use Only
Inspected by _____
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. WELL TAG NO. D 0009380
DRILLING PERMIT NO. 63-98-W-0641-000
Other IDWR No. 63-12467

2. OWNER:
Name City of Notus, Idaho
Address P.O. Box 257
City Notus State Id. Zip 83656

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S — X

Twp. 5 North ☒ or South ☐
Rge. 4 East ☐ or West ☒
Sec. 34, ____ 1/4 (10 acres) SW 1/4 (40 acres) NE 1/4 (160 acres)
Gov't Lot ____ County Canyon
Lat: ____ Long: ____
Address of Well Site 207 Notus Rd.
City ____
(Give at least name of road + Distance to Road or Landmark)

Lt. ____ Blk. ____ Sub. Name ____

4. USE:
☐ Domestic ☒ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other ____

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other ____

6. DRILL METHOD
☐ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other Reverse

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite Eg 5"	0	180	42500#	Overbore
Dry #16 → Fest Sand	170	250'	13500#	overbore
Bentonite Eg	250	595'	27500#	Overbore

Was drive shoe used? ☐Y ☒ N Shoe Depth(s) ____
Was drive shoe seal tested? ☐ Y ☐ N How? ____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
18"	+3	180'	.375	Steel	☒	☐	☒	☐
10"	170	205	.365	Steel	☒	☐	☒	☐
10"	235'	245'	.365	Steel	☒	☐	☒	☐

Length of Headpipe 35' Length of Tailpipe 10'

9. PERFORATIONS/SCREENS
Perforations Method S.S.
(Screens) Screen Type Johnson wire wrap

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
205	215	.025		10"	SS.	☒	☐
215	225	.035		10"	SS.	☒	☐
225	235	.025		10"	SS.	☒	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
16 ft. below ground Artesian pressure ____ lb.
Depth flow encountered ____ ft. Describe access port or control devices: 2" access

11. WELL TESTS:
☒ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
500	126'	142'	3 days

Water Temp. 59° Bottom hole temp. ____
Water Quality test or comments: ____
Depth first Water Encounter ____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
28"	0	15	Topsoil		
	15	33	Sand & Gravels		
	33	50	Brn. Clay		
	50	71	Fine to Med. Sand		
	71	203	Blue Clay stks Sand		
18"	203	220	Fine & Coarse Sand		
	220	223	Blue Clay		
	223	227	Fine Sand		
	227	595	Blue Clay stks Sand		
			12" Hole From 245' to Bottom Filled with Eg" Bentonite		

RECEIVED
JUL 16 1999
MICROFILMED
Department of Water Resources
JUL 13 1999

Completed Depth 245 (Measurable)
Date: Started 4-16-99 Completed 7-2-99

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name Riverside Inc. Firm No. 333
Firm Official and Driller or Operator ____ Date ____
Date 7-12-99
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Appendix F

Agency Environmental Consultation Letter Example

February 10, 2016

BLM
Attn: John Sullivan
3948 Development Ave
Boise, ID 83705

SUBJECT: **(1)** Notification of Intent to Apply For Federal Assistance; Request for Intergovernmental Review/Comments in Accordance With Executive Order 12372
(2) Environmental Information Screening

Dear Reviewer:

(1) The City of Notus, Idaho has applied to USDA, Rural Development for financial assistance to develop the project described on the enclosed copy of the Application for Federal Assistance. Federal Executive Order 12372 requires that State and local governments be given an opportunity to review and comment on projects applying for federal assistance.

In order to comply with the requirements of Federal Executive Order 12372, the following information is provided for your review and comment:

1. Copy of Standard Form 424, "Application for Federal Assistance."
2. Project map showing the geographic location of the project, the proposed improvements and the service area (Figure 2).
3. Brief description of proposed project with a cost estimate.
4. Federal agency name and address to send comments to is Carol Garrison at USDA-Rural Development, 9173 W Barnes Dr., Boise, ID 83709.

Please provide your comments, on the enclosed comment sheet, for this proposed project within 30-days of the date of this letter to USDA, Rural Development address listed above.

(2) The City has completed a facility plan, funded in part by the Idaho Department of Environmental Quality, requiring compliance with the *Rules for Wastewater Treatment Facility Grants, IDAPA 58.01.04*. The purpose of this letter is to request your review and response regarding any environmental impacts or concerns that your agency may identify for this proposed project. The review process is in line with the Idaho DEQ State Environmental Review Process, which mirrors the National Environmental Policy Act.

We respectfully request that comments are provided within 30-days in order to proceed with the completion of the environmental review and determination.

Sincerely,

Dave Porterfield, Mayor

Proposed Improvements Summary

City of Notus, Idaho Wastewater System Improvement Project

The City of Notus, Idaho is located in Canyon County along the Boise River, a vicinity map is included as Figure 1. The City has struggled to maintain compliance under their current NPDES permit and has sections of failing collection system.

The City of Notus has selected to move forward with the following projects to improve their wastewater system:

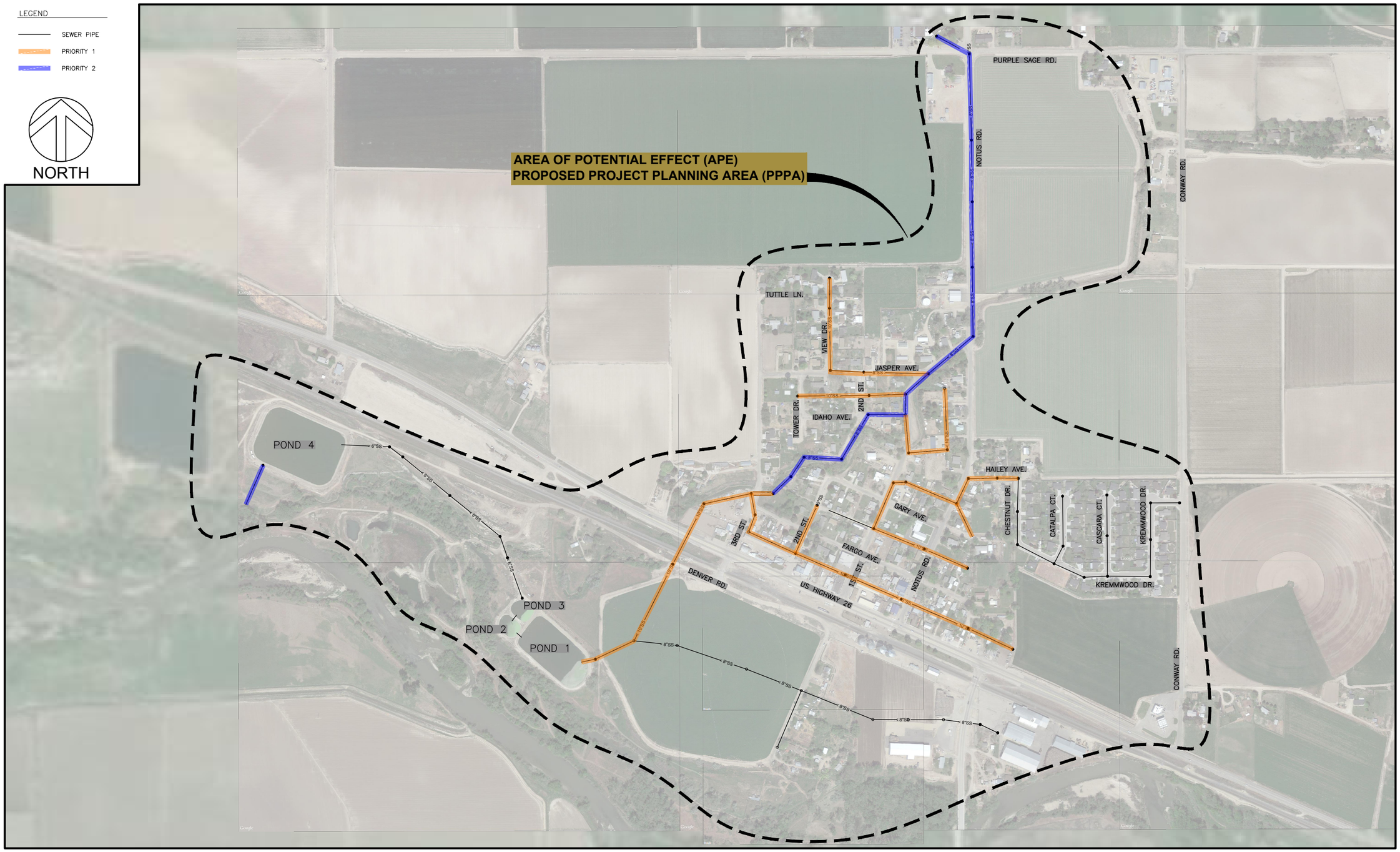
- Lagoon Dredging in Ponds 1, 2, and 3
- Install Influent Screen
- Construct Disinfection System
- Install Influent, Effluent, and Conway Gulch Flow Measurement
- Lagoon Aeration Upgrades
- Priority 1 and 2 Collection System Improvements

The improvement locations are described on Figure 2. All collection system improvements will be completed within existing City right-of-ways in previously disturbed areas. The treatment system upgrades will be within the existing boundaries of the wastewater lagoons and will not alter the floodplain. The existing lagoon dikes are above the floodplain elevations.

Project Cost

The total project cost is estimated at $2,172,000. The City passed a $2,200,00 revenue bond in November of 2015 and is pursuing a $350,000 Idaho Department of Commerce Community Development Block Grant as well as low-interest loan and grant funding from USDA Rural Development to offset rate impacts to users.

For more information regarding the City of Notus wastewater system upgrades, please contact Mountain Waterworks at 208.780.3990.



PROJECT	155.0000.00
DATE	11/11/2015
FIGURE NO.	FIGURE 2

MOUNTAIN WATERWORKS

ENGINEERING AND ENVIRONMENTAL SOLUTIONS
2210 W. MAIN ST.
BOISE, IDAHO 83702
208.780.3990

IDAHO OFFICES
BOISE · McCALL · COEUR D'ALENE

WASTEWATER IMPROVEMENT PROJECT
NOTUS, IDAHO

FIGURE 2

Path: X:\Projects\M-R\Notus, 155\0000\CSD\Enviro Figure Collection System Repairs.dwg File Name: Enviro Figure Collection System Repairs.dwg Plot Date: 11/11/2015 2:42 PM Duce

INTERGOVERNMENTAL REVIEW COMMENT SHEET
FOR

City of Notus, Idaho
(APPLICANT NAME)

Wastewater System Upgrades
(PROJECT TYPE)

****

TO AGENCY ADDRESSED:

If you intend to comment but cannot respond to USDA, Rural Development within 30 calendar days, please notify USDA, Rural Development immediately. If no response is received by the due date, it will be assumed that you have no comment and the file will be closed.

****

PROGRAM REVIEW AND COMMENT

TO USDA, RURAL DEVELOPMENT:

We have reviewed the subject preapplication for Federal assistance and have reached the following conclusions on its relationship to our plans and programs:

[ ] It has no adverse effect.

[ ] We have no comment.

[ ] Effects, although measurable, would be acceptable.

[ ] It has adverse effects. (Explain in the Remarks Section.)

[ ] We are interested but require more information to evaluate the proposal. (Explain in the Remarks Section)

[ ] Additional comments for project improvement. (Attach if necessary)

REMARKS:

AGENCY: _____

BY: _____

PHONE NUMBER: _____

OMB Number: 4040-0004
Expiration Date: 03/31/2012

Application for Federal Assistance SF-424

*** 1. Type of Submission:**
- [ ] Preapplication
- [x] Application
- [ ] Changed/Corrected Application

*** 2. Type of Application:**
- [x] New
- [ ] Continuation
- [ ] Revision

* If Revision, select appropriate letter(s):

* Other (Specify):

*** 3. Date Received:** 10/28/15 [illegible]
Completed by Grants.gov upon submission.

4. Applicant Identifier:

5a. Federal Entity Identifier:

*** 5b. Federal Award Identifier:**

State Use Only:

6. Date Received by State: NA

7. State Application Identifier: NA

8. APPLICANT INFORMATION:

*** a. Legal Name:** City of Notus

*** b. Employer/Taxpayer Identification Number (EIN/TIN):** *****1329

*** c. Organizational DUNS:** 039043471

d. Address:

*** Street 1:** P.O. Box 257
Street 2:
*** City:** Notus
County/Parish: Canyon
*** State:** Idaho
Province:
*** Country:** USA: UNITED STATES
*** Zip / Postal Code:** 83656

e. Organizational Unit:

Department Name:

Division Name:

f. Name and contact information of person to be contacted on matters involving this application:

Prefix:
*** First Name:** Loretta
Middle Name:
*** Last Name:** Vollmer
Suffix:

Title: City Clerk

Organizational Affiliation: City of Notus

*** Telephone Number:** 208-459-6212
Fax Number:

*** Email:** notuscityclerk@gmail.com

1-3

Application for Federal Assistance SF-424

9. Type of Applicant I - Select Applicant Type:

Municipal

Type of Applicant 2- Select Applicant Type:

Type of Applicant 3- Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

USDA Rural Development

11. Catalog of Federal Domestic Assistance Number:

10.760

CFDA Title:

*** 12. Funding Opportunity Number:**

* Title:

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

City of Notus

Add Attachments | Delete Attachments | View Attachments

*** 15. Descriptive Title of Applicant's Project:**

Sewer System Upgrade

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

1-3

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant: ID-01;
* b. Program/Project: ID-01;

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachments | Delete Attachments | View Attachments

17. Proposed Project:

* a. Start Date: 01-14-2016
* b. End Date: ~~04-13-2016~~ 12/15/17

18. Estimated Funding ($):

* a. Federal	$1,672,000.00
* b. Applicant	
* c. State	$500,000.00
* d. Local	
* e. Other	
* f. Program Income	
* g. TOTAL	~~$1,672,000,500,000.00~~ 2,172,000

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

- [ ] a. This application was made available to the State under the Executive Order 12372 Process for review on _____.
- [ ] b. Program is subject to E.O. 12372 but has not been selected by the State for review.
- [ ] c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes", provide explanation.)**

- [ ] Yes
- [x] No

If "Yes, provide explanation and attach.

Add Attachments | Delete Attachments | View Attachments

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

- [x] ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix:	
* First Name:	David
Middle Name:	
* Last Name:	Porterfield
Suffix:	
* Title:	Mayor
*Telephone Number:	208-459-6212
Fax Number:	
* Email:	notus city mayor@gmail.com
* Signature of Authorized Representative:	Completed by Grants.gov upon submission.
* Date Signed:	Completed by Grants.gov upon submission.

David Porterfield

Oct. 28/2015

1-3

BUDGET INFORMATION - Construction Programs

OMB *Approval No. 4040-0008*
Expiration Date 07/30/2010

NOTE: Certain Federal assistance programs require additional computations to arrive at the Federal share of project costs eligible for participation. If such is the case, you will be notified.

COST CLASSIFICATION	a. Total Cost	b. Costs Not Allowable for Participation	c. Total Allowable Costs (Columns a-b)
1. Administrative and legal expenses	$ 60,000.00	$	$ 60,000.00
2. Land, structures, rights-of-way, appraisals, etc.	$	$	$ 0.00
3. Relocation expenses and payments	$	$	$ 0.00
4. Architectural and engineering fees	$ 330,000.00	$	$ 330,000.00
5. Other architectural and engineering fees	$	$	$ 0.00
6. Project inspection fees	$	$	$ 0.00
7. Site work	$	$	$ 0.00
8. Demolition and removal	$	$	$ 0.00
9. Construction	$ 1,549,000.00	$	$ 1,549,000.00
10. Equipment	$	$	$ 0.00
11. Miscellaneous	$	$	$ 0.00
12. SUBTOTAL *(sum of lines 1- 11)*	$ 1,939,000.00	$ 0.00	$ 1,939,000.00
13. Contingencies	$ 233,000.00	$	$ 233,000.00
14. SUBTOTAL	$ 2,172,000.00	$ 0.00	$ 2,172,000.00
15. Project (program) income	$	$	$ 0.00
16. TOTAL PROJECT COSTS (subtract #15 from #14)	$ 2,172,000.00	$ 0.00	$ 2,172,000.00

FEDERAL FUNDING

17. Federal assistance requested, calculate as follows: (Consult Federal agency for Federal percentage share.) Enter the resulting Federal share.	Enter eligible costs from line 16c Multiply X %	$

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Standard Form 424C (Rev. 7-97)
Prescribed by OMB Circular A-102

1-3

ASSURANCES - CONSTRUCTION PROGRAMS

OMB Approval No. 4040-0009
Expiration Date 07/30/2010

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0042), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the Awarding Agency. Further, certain Federal assistance awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance, and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project costs) to ensure proper planning, management and completion of the project described in this application.

2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, the right to examine all records, books, papers, or documents related to the assistance; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.

3. Will not dispose of, modify the use of, or change the terms of the real property title, or other interest in the site and facilities without permission and instructions from the awarding agency. Will record the Federal awarding agency directives and will include a covenant in the title of real property acquired in whole or in part with Federal assistance funds to assure non-discrimination during the useful life of the project.

4. Will comply with the requirements of the assistance awarding agency with regard to the drafting, review and approval of construction plans and specifications.

5. Will provide and maintain competent and adequate engineering supervision at the construction site to ensure that the complete work conforms with the approved plans and specifications and will furnish progress reports and such other information as may be required by the assistance awarding agency or State.

6. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.

7. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.

8. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).

9. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.

10. Will comply with all Federal statutes relating to non-discrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681 1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) underwhich application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.

11. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal and federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.

12. Will comply with the provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

13. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333) regarding labor standards for federally-assisted construction subagreements.

14. Will comply with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is $10,000 or more.

15. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).

16. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.

17. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq).

18. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-1 33, "Audits of States, Local Governments, and Non-Profit Organizations."

19. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

*SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL	*TITLE
David Parkinfield	Mayor
*APPLICANT ORGANIZATION	*DATE SUBMITTED
City of Notus	Oct. 28, 2015

SF-424D (Rev. 7-97) Back

Appendix F-1

Natural Resource Conservation Service

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
1848 So. Mountain View Rd., Ste. 3
Moscow, Idaho 83843
Phone: (208) 882-4960

February 12, 2016

Keri Hill
Mountain Waterworks
2210 W. Main St.
Boise, ID. 83702

RE: City of Notus - Proposed Wastewater System Improvement Project

Dear Ms. Hill:

This letter and the enclosed Soil Resource Report has been prepared in response to your request for NRCS assistance in identifying impacts related to the above referenced project during the environmental phase. The Canyon Area, Idaho Soil Survey was used for soils information.

If federal funding will be used to complete the project, the Farmland Protection Policy Act (FPPA), Public Law 97-98, 7 U.S.C. 4201 will apply. Installation of new or replacement sewer line alone does not constitute conversion of farmlands, as the disturbance is temporary and is exempted from the FPPA provisions. Based on the "Proposed Improvements Summary" and project map, it appears the proposed projects will not convert farmland in the Area of Potential Effect (APE).

However, if undeveloped farmland will be permanently converted during the course of this project, a Farmland Conversion Impact Rating (form AD-1006) needs to be completed. The Soil Resource Report includes a list of soil map units that are considered prime farmland and subject to the FPPA provisions.

The Water Features report indicates that some soils in the project area have a seasonal high water table; and the "Chance" soils meet hydric soils criteria (Hydric Soil List report). The water table may be a consideration for project design and construction. Hydric soils are a wetland indicator and, therefore, wetlands may be present in the APE.

The National Wetlands Inventory map indicates there a wetlands in and around the APE. NRCS recommends avoiding impacts to wetlands and, if you have not already done so, contacting the local U.S. Army Corps of Engineers office to determine the extent of wetlands in the project area under the jurisdiction of the Clean Water Act.

The Soil Features report indicates that some soils in the project area are rated as moderate or high for the risk of corrosion. These limitations may affect project design, construction, and/or materials used. NRCS recommends that provisions for erosion, sediment, dust control, and runoff be included during project construction to protect soil, water, and air resources.

Thank you for the opportunity to review and comment on this project. If you have any questions, please contact me at 208-882-4960 x114.

Sincerely,

Allyson Young

Resource Soil Scientist

cc: Shawn Nield, State Soil Scientist, NRCS, Boise
Amie Miller, District Conservationist, NRCS, Caldwell

United States Department of Agriculture

NRCS

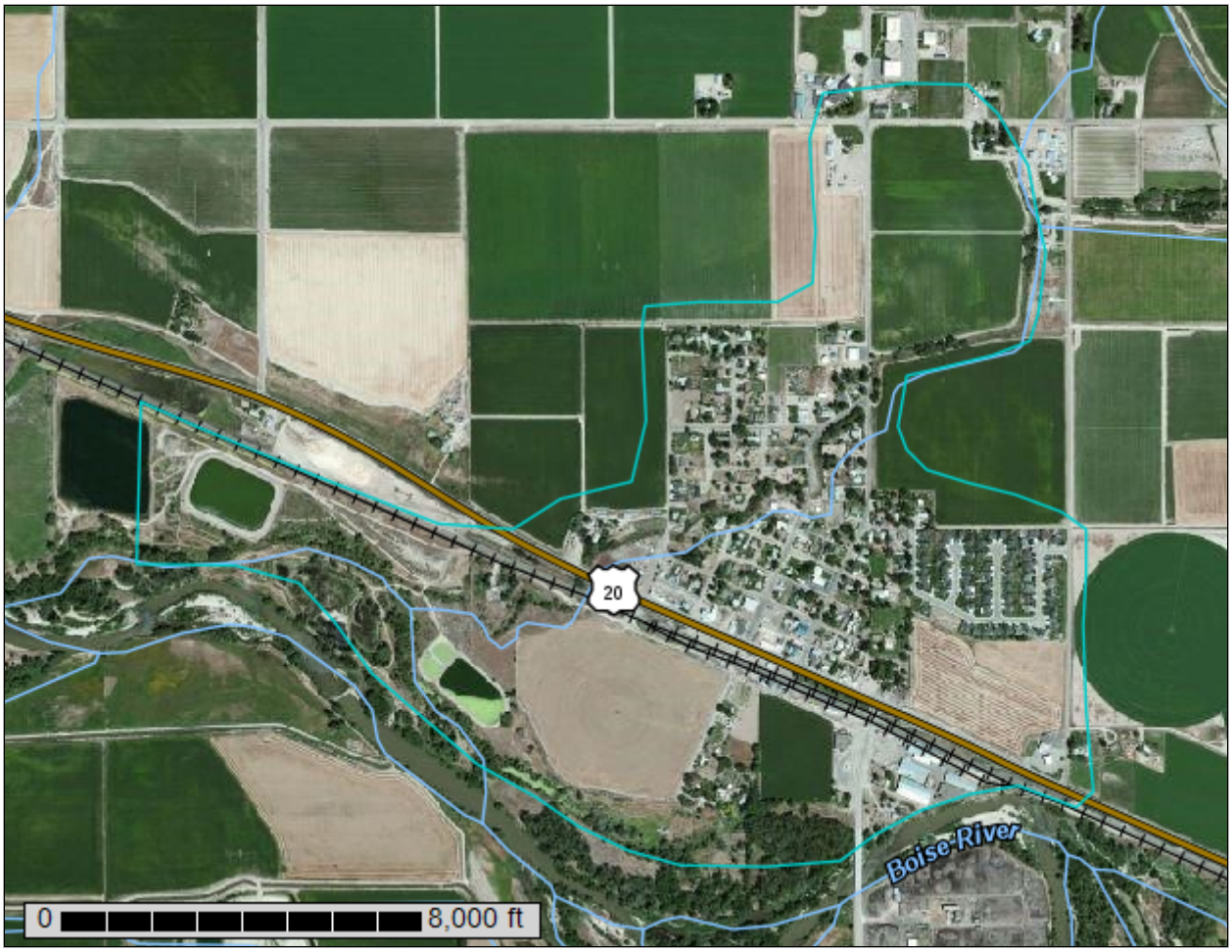
Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Canyon Area, Idaho

Notus Wastewater Project



February 11, 2016

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

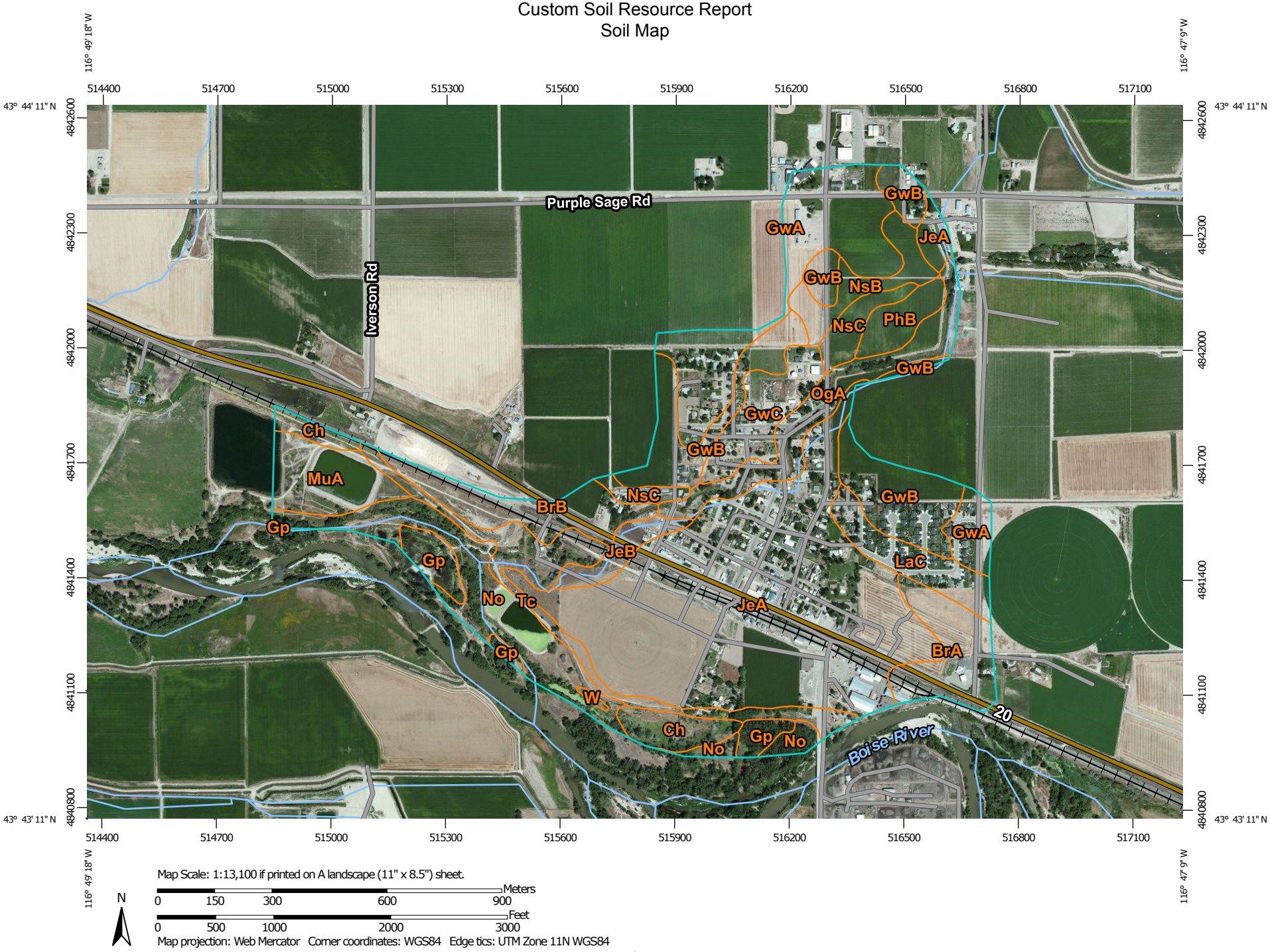
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:13,100 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Canyon Area, Idaho
Survey Area Data: Version 13, Sep 25, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 10, 2011—Aug 23, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Canyon Area, Idaho (ID665)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BrA	Bram silt loam, 0 to 1 percent slopes	14.2	4.1%
BrB	Bram silt loam, 1 to 3 percent slopes	14.5	4.1%
Ch	Chance fine sandy loam	8.9	2.5%
Gp	Gravel pit	7.8	2.2%
GwA	Greenleaf-Owyhee silt loams, 0 to 1 percent slopes	34.8	10.0%
GwB	Greenleaf-Owyhee silt loams, 1 to 3 percent slopes	34.4	9.9%
GwC	Greenleaf-Owyhee silt loams, 3 to 7 percent slopes	12.2	3.5%
JeA	Jenness loam, 0 to 1 percent slopes	109.3	31.3%
JeB	Jenness loam, 1 to 3 percent slopes	5.4	1.5%
LaC	Lankbush sandy loam, 3 to 7 percent slopes	10.3	3.0%
MuA	Moulton fine sandy loam, saline, 0 to 1 percent slopes	12.8	3.7%
No	Notus soils	27.6	7.9%
NsB	Nyssaton silt loam, 1 to 3 percent slopes	8.6	2.4%
NsC	Nyssaton silt loam, 3 to 7 percent slopes	7.2	2.1%
OgA	Oliaga loam, 0 to 1 percent slopes	17.1	4.9%
PhB	Power silt loam, 1 to 3 percent slopes	5.9	1.7%
Tc	Terrace escarpments	17.9	5.1%
W	Water	0.4	0.1%
Totals for Area of Interest		**349.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named

according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or

anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Canyon Area, Idaho

BrA—Bram silt loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2q04
Elevation: 2,000 to 4,800 feet
Mean annual precipitation: 8 to 11 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 160 days
Farmland classification: Prime farmland if irrigated and reclaimed of excess salts and sodium

Map Unit Composition

Bram and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bram

Setting

Landform: Flood plains, fan remnants, lakebeds, river valleys
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or lacustrine deposits

Typical profile

A - 0 to 17 inches: silt loam
Bk - 17 to 52 inches: silt loam
C - 52 to 65 inches: fine sandy loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 25 percent
Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 8.0
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

BrB—Bram silt loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2q05
Elevation: 2,000 to 4,800 feet
Mean annual precipitation: 8 to 11 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 160 days
Farmland classification: Prime farmland if irrigated and reclaimed of excess salts and sodium

Map Unit Composition

Bram and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bram

Setting

Landform: Terraces, drainageways
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or lacustrine deposits

Typical profile

A - 0 to 17 inches: silt loam
Bk - 17 to 52 inches: silt loam
C - 52 to 65 inches: fine sandy loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 25 percent
Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 8.0
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

Ch—Chance fine sandy loam

Map Unit Setting

National map unit symbol: 2q0f
Elevation: 2,000 to 4,000 feet
Mean annual precipitation: 8 to 13 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 110 to 160 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition

Chance and similar soils: 85 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chance

Setting

Landform: Depressions, flood plains, swales
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
Oe - 1 to 2 inches: moderately decomposed plant material
Ag - 2 to 14 inches: fine sandy loam
Bg - 14 to 25 inches: sandy loam
2Cg - 25 to 62 inches: sand, gravel

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): 5w
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D

Minor Components

Riverwash

Percent of map unit: 5 percent
Landform: Flood plains

Gp—Gravel pit

Map Unit Composition

Pits, gravel: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pits, Gravel

Typical profile

C - 0 to 60 inches: gravel, cobbles

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8

GwA—Greenleaf-Owyhee silt loams, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2q1h
Elevation: 2,000 to 4,500 feet
Mean annual precipitation: 7 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 110 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Greenleaf and similar soils: 65 percent
Owyhee and similar soils: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Greenleaf

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or lacustrine deposits and/or loess

Typical profile

Ap - 0 to 8 inches: silt loam
Btk - 8 to 17 inches: silty clay loam
Bk - 17 to 60 inches: silt

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.8 inches)

Interpretive groups
Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

Description of Owyhee

Setting
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits and/or loess and/or silty alluvium

Typical profile
A - 0 to 10 inches: silt loam
Bw - 10 to 22 inches: silt loam
Bk - 22 to 60 inches: silt loam

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 25 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.5 inches)

Interpretive groups
Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

GwB—Greenleaf-Owyhee silt loams, 1 to 3 percent slopes

Map Unit Setting
National map unit symbol: 2q1j
Elevation: 2,000 to 4,500 feet
Mean annual precipitation: 7 to 12 inches

Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 110 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Greenleaf and similar soils: 65 percent
Owyhee and similar soils: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Greenleaf

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or lacustrine deposits and/or loess

Typical profile

Ap - 0 to 8 inches: silt loam
Btk - 8 to 17 inches: silty clay loam
Bk - 17 to 60 inches: silt

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.8 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

Description of Owyhee

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits and/or loess and/or silty alluvium

Typical profile

A - 0 to 10 inches: silt loam
Bw - 10 to 22 inches: silt loam
Bk - 22 to 60 inches: silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 25 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.5 inches)

Interpretive groups
Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

GwC—Greenleaf-Owyhee silt loams, 3 to 7 percent slopes

Map Unit Setting
National map unit symbol: 2q1k
Elevation: 2,000 to 4,500 feet
Mean annual precipitation: 7 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 110 to 170 days
Farmland classification: Farmland of statewide importance, if irrigated

Map Unit Composition
Owyhee and similar soils: 45 percent
Greenleaf and similar soils: 45 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Greenleaf

Setting
Landform: Terraces, drainageways
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or lacustrine deposits and/or loess

Typical profile
Ap - 0 to 8 inches: silt loam
Btk - 8 to 17 inches: silty clay loam
Bk - 17 to 60 inches: silt

Properties and qualities
Slope: 3 to 7 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Calcium carbonate, maximum in profile: 40 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.8 inches)

Interpretive groups
Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

Description of Owyhee

Setting
Landform: Terraces, drainageways
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits and/or loess and/or silty alluvium

Typical profile
A - 0 to 10 inches: silt loam
Bw - 10 to 22 inches: silt loam
Bk - 22 to 60 inches: silt loam

Properties and qualities
Slope: 3 to 7 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 25 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.5 inches)

Interpretive groups
Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

JeA—Jenness loam, 0 to 1 percent slopes

Map Unit Setting
National map unit symbol: 2q1r
Elevation: 2,000 to 5,000 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 100 to 160 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Jenness and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Jenness

Setting

Landform: Terraces, drainageways
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous rock

Typical profile

A - 0 to 9 inches: loam
C1 - 9 to 43 inches: silt loam
2C2 - 43 to 60 inches: stratified coarse sand to loamy sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: B

JeB—Jenness loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2q1s
Elevation: 2,000 to 5,000 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 100 to 160 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Jenness and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Jenness

Setting

Landform: Flood plains, terraces, drainageways
Down-slope shape: Linear

Across-slope shape: Linear
Parent material: Alluvium derived from igneous rock

Typical profile
A - 0 to 9 inches: loam
C1 - 9 to 43 inches: silt loam
2C2 - 43 to 60 inches: stratified coarse sand to loamy sand

Properties and qualities
Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 10.5 inches)

Interpretive groups
Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: B

LaC—Lankbush sandy loam, 3 to 7 percent slopes

Map Unit Setting
National map unit symbol: 2q1v
Elevation: 2,000 to 5,500 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 100 to 160 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Lankbush and similar soils: 95 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lankbush

Setting
Landform: Terraces, fan remnants
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or lacustrine deposits and/or loess

Typical profile
A - 0 to 14 inches: sandy loam
Bt - 14 to 50 inches: sandy clay loam
2C - 50 to 60 inches: sand

Properties and qualities
Slope: 3 to 7 percent

Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups
Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

MuA—Moulton fine sandy loam, saline, 0 to 1 percent slopes

Map Unit Setting
National map unit symbol: 2q2s
Elevation: 2,100 to 4,500 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 140 to 160 days
Farmland classification: Prime farmland if irrigated and drained

Map Unit Composition
Moulton, saline, and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Moulton, Saline

Setting
Landform: Flood plains, fan remnants, stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous rock

Typical profile
A - 0 to 3 inches: fine sandy loam
Bg - 3 to 21 inches: fine sandy loam
2C - 21 to 60 inches: very gravelly sand

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)

Available water storage in profile: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: B

No—Notus soils

Map Unit Setting

National map unit symbol: 2q2y
Elevation: 2,000 to 4,500 feet
Mean annual precipitation: 7 to 13 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 110 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Notus and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Notus

Setting

Landform: Terraces, fan remnants
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

A - 0 to 1 inches: sandy loam
C1 - 1 to 14 inches: fine sandy loam
2C2 - 14 to 60 inches: stratified sand to gravel

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Available water storage in profile: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A

NsB—Nyssaton silt loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2q30
Elevation: 2,200 to 2,700 feet
Mean annual precipitation: 7 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 145 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Nyssaton and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nyssaton

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits and/or loess and/or silty alluvium

Typical profile

Ap - 0 to 11 inches: silt loam
Bk - 11 to 60 inches: silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 20 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

NsC—Nyssaton silt loam, 3 to 7 percent slopes

Map Unit Setting

National map unit symbol: 2q31
Elevation: 2,200 to 2,700 feet
Mean annual precipitation: 7 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 145 to 170 days
Farmland classification: Farmland of statewide importance, if irrigated

Map Unit Composition

Nyssaton and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nyssaton

Setting

Landform: Terraces, drainageways
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits and/or loess and/or silty alluvium

Typical profile

Ap - 0 to 11 inches: silt loam
Bk - 11 to 60 inches: silt loam

Properties and qualities

Slope: 3 to 7 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 20 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

OgA—Oliaga loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2q34
Elevation: 2,000 to 4,500 feet
Mean annual precipitation: 7 to 11 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Oliaga and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oliaga

Setting

Landform: Flood plains, terraces, fan remnants
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite and/or igneous rock

Typical profile

Apk - 0 to 8 inches: loam
Bk - 8 to 35 inches: loam
2C - 35 to 60 inches: sand, gravel

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: About 24 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 14 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 5.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: B

PhB—Power silt loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2q3h
Elevation: 2,000 to 4,600 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Power and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Power

Setting

Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or loess

Typical profile

Ap - 0 to 9 inches: silt loam
Btk - 9 to 17 inches: silt loam
Bk - 17 to 60 inches: silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 30 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C

Tc—Terrace escarpments

Map Unit Setting

National map unit symbol: 2q4h
Elevation: 2,250 to 4,400 feet
Mean annual precipitation: 8 to 11 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 100 to 150 days

Map Unit Composition

Terrace escarpments: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Terrace Escarpments

Typical profile

A - 0 to 5 inches: fine sandy loam
C - 5 to 60 inches: fine sandy loam

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Land Classifications

This folder contains a collection of tabular reports that present a variety of soil groupings. The reports (tables) include all selected map units and components for each map unit. Land classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Hydric Soils

This table lists the map unit components that are rated as hydric soils in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part

(Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;
3. Soils that are frequently ponded for long or very long duration during the growing season.
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;
4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;

Hydric Condition: Food Security Act information regarding the ability to grow a commodity crop without removing woody vegetation or manipulating hydrology.

References:
Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
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Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
National Research Council. 1995. Wetlands: Characteristics and boundaries.
Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.
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Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

Report—Hydric Soils

Hydric Soils–Canyon Area, Idaho				
Map symbol and map unit name	**Component**	**Percent of map unit**	**Landform**	**Hydric criteria**
Ch—Chance fine sandy loam				
	Chance	85	Depressions, flood plains, swales	2
	Riverwash	5	Flood plains	2, 4

Prime and other Important Farmlands

This table lists the map units in the survey area that are considered important farmlands. Important farmlands consist of prime farmland, unique farmland, and farmland of statewide or local importance. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation's food supply.

Prime farmland is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as

well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

For some of the soils identified in the table as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed. The water supply is dependable and of adequate quality. Nearness to markets is an additional consideration. Unique farmland is not based on national criteria. It commonly is in areas where there is a special microclimate, such as the wine country in California.

In some areas, land that does not meet the criteria for prime or unique farmland is considered to be *farmland of statewide importance* for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

In some areas that are not identified as having national or statewide importance, land is considered to be *farmland of local importance* for the production of food, feed, fiber, forage, and oilseed crops. This farmland is identified by the appropriate local agencies. Farmland of local importance may include tracts of land that have been designated for agriculture by local ordinance.

Report—Prime and other Important Farmlands

Prime and other Important Farmlands–Canyon Area, Idaho		
Map Symbol	**Map Unit Name**	**Farmland Classification**
BrA	Bram silt loam, 0 to 1 percent slopes	Prime farmland if irrigated and reclaimed of excess salts and sodium
BrB	Bram silt loam, 1 to 3 percent slopes	Prime farmland if irrigated and reclaimed of excess salts and sodium
Ch	Chance fine sandy loam	Prime farmland if irrigated and drained
Gp	Gravel pit	
GwA	Greenleaf-Owyhee silt loams, 0 to 1 percent slopes	Prime farmland if irrigated
GwB	Greenleaf-Owyhee silt loams, 1 to 3 percent slopes	Prime farmland if irrigated
GwC	Greenleaf-Owyhee silt loams, 3 to 7 percent slopes	Farmland of statewide importance, if irrigated
JeA	Jenness loam, 0 to 1 percent slopes	Prime farmland if irrigated
JeB	Jenness loam, 1 to 3 percent slopes	Prime farmland if irrigated
LaC	Lankbush sandy loam, 3 to 7 percent slopes	Prime farmland if irrigated
MuA	Moulton fine sandy loam, saline, 0 to 1 percent slopes	Prime farmland if irrigated and drained
No	Notus soils	Prime farmland if irrigated
NsB	Nyssaton silt loam, 1 to 3 percent slopes	Prime farmland if irrigated
NsC	Nyssaton silt loam, 3 to 7 percent slopes	Farmland of statewide importance, if irrigated
OgA	Oliaga loam, 0 to 1 percent slopes	Prime farmland if irrigated
PhB	Power silt loam, 1 to 3 percent slopes	Prime farmland if irrigated
Tc	Terrace escarpments	
W	Water	

Sanitary Facilities

This folder contains a collection of tabular reports that present soil interpretations related to sanitary facilities. The reports (tables) include all selected map units and components for each map unit, limiting features and interpretive ratings. Sanitary facilities interpretations are tools designed to guide the user in site selection for the safe disposal of sewage and solid waste. Example interpretations include septic tank absorption fields, sewage lagoons, and sanitary landfills.

Sewage Disposal

This table shows the degree and kind of soil limitations that affect septic tank absorption fields and sewage lagoons. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are

moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches or between a depth of 24 inches and a restrictive layer is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Saturated hydraulic conductivity (Ksat) is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a Ksat rate of more than 14 micrometers per second are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

Information in this table is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet.

Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this table. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Report—Sewage Disposal

[Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

Sewage Disposal–Canyon Area, Idaho					
Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
BrA—Bram silt loam, 0 to 1 percent slopes					
Bram	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Depth to saturated zone	0.84	Depth to saturated zone	0.17
BrB—Bram silt loam, 1 to 3 percent slopes					
Bram	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Depth to saturated zone	0.84	Depth to saturated zone	0.17
Ch—Chance fine sandy loam					
Chance	85	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Seepage, bottom layer	1.00	Depth to saturated zone	1.00
Gp—Gravel pit					
Pits, gravel	100	Not rated		Not rated	
GwA—Greenleaf-Owyhee silt loams, 0 to 1 percent slopes					
Greenleaf	65	Very limited		Not limited	
		Slow water movement	1.00		
Owyhee	25	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.50

Sewage Disposal–Canyon Area, Idaho					
Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
GwB—Greenleaf-Owyhee silt loams, 1 to 3 percent slopes					
Greenleaf	65	Very limited		Not limited	
		Slow water movement	1.00		
Owyhee	25	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.50
GwC—Greenleaf-Owyhee silt loams, 3 to 7 percent slopes					
Greenleaf	45	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.68
Owyhee	45	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.68
				Seepage	0.50
JeA—Jenness loam, 0 to 1 percent slopes					
Jenness	85	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Seepage	0.50
JeB—Jenness loam, 1 to 3 percent slopes					
Jenness	90	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Seepage	0.50
LaC—Lankbush sandy loam, 3 to 7 percent slopes					
Lankbush	95	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
				Slope	0.68
MuA—Moulton fine sandy loam, saline, 0 to 1 percent slopes					
Moulton, saline	90	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
		Seepage, bottom layer	1.00		
No—Notus soils					
Notus	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Filtering capacity	1.00	Seepage	1.00
		Seepage, bottom layer	1.00	Depth to saturated zone	0.72
		Depth to saturated zone	0.99		

Sewage Disposal–Canyon Area, Idaho					
Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
NsB—Nyssaton silt loam, 1 to 3 percent slopes					
Nyssaton	90	Very limited		Not limited	
		Slow water movement	1.00		
NsC—Nyssaton silt loam, 3 to 7 percent slopes					
Nyssaton	90	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.68
OgA—Oliaga loam, 0 to 1 percent slopes					
Oliaga	85	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Slow water movement	0.50	Depth to saturated zone	0.99
PhB—Power silt loam, 1 to 3 percent slopes					
Power	90	Somewhat limited		Somewhat limited	
		Slow water movement	0.50	Seepage	0.50
Tc—Terrace escarpments					
Terrace escarpments	100	Very limited		Very limited	
		Slope	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
W—Water					
Water	100	Not rated		Not rated	

Soil Qualities and Features

This folder contains tabular reports that present various soil qualities and features. The reports (tables) include all selected map units and components for each map unit. Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Soil Features

This table gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Subsidence is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage, or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, saturated hydraulic conductivity (Ksat), content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low*, *moderate*, or *high.* It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Soil Features–Canyon Area, Idaho									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		Low-RV-High	*Range*		*Low-High*	*Low-High*			
		In	*In*		*In*	*In*			
BrA—Bram silt loam, 0 to 1 percent slopes									
Bram		—	—		0	—	Moderate	High	Moderate
BrB—Bram silt loam, 1 to 3 percent slopes									
Bram		—	—		0	—	Moderate	High	Moderate
Ch—Chance fine sandy loam									
Chance		—	—		0	—	High	High	Low
Gp—Gravel pit									
Pits, gravel		—	—		0	—			
GwA—Greenleaf-Owyhee silt loams, 0 to 1 percent slopes									
Greenleaf		—	—		0	—	Low	Moderate	Low
Owyhee		—	—		0	—	Low	Moderate	Low
GwB—Greenleaf-Owyhee silt loams, 1 to 3 percent slopes									
Greenleaf		—	—		0	—	Low	Moderate	Low
Owyhee		—	—		0	—	Low	Moderate	Low

Soil Features–Canyon Area, Idaho									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		Low-RV-High	*Range*		*Low-High*	*Low-High*			
GwC—Greenleaf-Owyhee silt loams, 3 to 7 percent slopes									
Greenleaf		—	—		0	—	Low	Moderate	Low
Owyhee		—	—		0	—	Low	Moderate	Low
JeA—Jenness loam, 0 to 1 percent slopes									
Jenness		—	—		0	—	Moderate	High	Low
JeB—Jenness loam, 1 to 3 percent slopes									
Jenness		—	—		0	—	Moderate	High	Low
LaC—Lankbush sandy loam, 3 to 7 percent slopes									
Lankbush		—	—		0	—	Low	Low	Low
MuA—Moulton fine sandy loam, saline, 0 to 1 percent slopes									
Moulton, saline		—	—		0	—	High	High	Moderate
No—Notus soils									
Notus		—	—		0	—	Moderate	High	Low
NsB—Nyssaton silt loam, 1 to 3 percent slopes									
Nyssaton		—	—		0	—	Low	Moderate	Low

Soil Features–Canyon Area, Idaho									
Map symbol and soil name	Restrictive Layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		Low-RV-High	*Range*		*Low-High*	*Low-High*			
NsC—Nyssaton silt loam, 3 to 7 percent slopes									
Nyssaton		—	—		0	—	Low	Moderate	Low
OgA—Oliaga loam, 0 to 1 percent slopes									
Oliaga		—	—		0	—	Moderate	High	Low
PhB—Power silt loam, 1 to 3 percent slopes									
Power		—	—		0	—	Low	Moderate	Low
Tc—Terrace escarpments									
Terrace escarpments		—	—		0	—	Low		
W—Water									
Water		—	—		—	—			

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U.S. Fish and Wildlife Service

National Wetlands Inventory

Notus NWI

Feb 11, 2016

Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

Appendix F-2

Idaho Department of Water Resources

INTERGOVERNMENTAL REVIEW COMMENT SHEET
FOR

City of Notus, Idaho
(APPLICANT NAME)

Wastewater System Upgrades
(PROJECT TYPE)

****

TO AGENCY ADDRESSED:

If you intend to comment but cannot respond to USDA, Rural Development within 30 calendar days, please notify USDA, Rural Development immediately. If no response is received by the due date, it will be assumed that you have no comment and the file will be closed.

****

PROGRAM REVIEW AND COMMENT

TO USDA, RURAL DEVELOPMENT:

We have reviewed the subject preapplication for Federal assistance and have reached the following conclusions on its relationship to our plans and programs:

[ ] It has no adverse effect.

[ ] We have no comment.

[ ] Effects, although measurable, would be acceptable.

[ ] It has adverse effects. (Explain in the Remarks Section.)

[ ] We are interested but require more information to evaluate the proposal. (Explain in the Remarks Section)

[X] Additional comments for project improvement. (Attach if necessary)

REMARKS:

See attached

AGENCY: IDWR NFIP
BY: Maureen O'Shea
PHONE NUMBER: 208.287.4928

State of Idaho
DEPARTMENT OF WATER RESOURCES
322 East Front Street • P.O. Box 83720 • Boise, Idaho 83720-0098
Phone: (208) 287-4800 • Fax: (208) 287-6700 • Website: www.idwr.idaho.gov

C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

February 11, 2016

The Honorable Dave Porterfield
Mayor, City of Notus
P.O. Box 257
Notus, ID 83656-0557

Re: Development Review for City of Notus Wastewater System Improvement Project

Dear Mr. Porterfield,

This email is in response to the City of Notus Wastewater System Improvement Project that was received by IDWR on February 10, 2016. The project description states: ... *The treatment system upgrades will be within the existing boundaries of the wastewater lagoons and will not alter the floodplain. The existing lagoon dikes are above the floodplain elevations. ... The total project cost is estimated at $2,172,000. ...*

The site is located in the Special Flood Hazard Area (SFHA) along the Boise River in a Regulatory Floodway as shown on the City of Notus FIRM Panel Numbers 16027C0202F and 16027C0206F dated May 24, 2011.

The Flood Zone is AE and the Base Flood Elevation (BFE) for this site varies from approximately AE 2290.0 ft. to AE 2297.0 ft.

The project description is not clear as to whether or not this project is a Substantial Improvement. Title 44 of the Code of Federal Regulations Section 59.1 definition: *Substantial improvement means any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the "start of construction" of the improvement.*

Title 44 of the Code of Federal Regulations Section 60.3 requires in part:

> *(a)(5) Require within flood-prone areas new and replacement water supply systems to be designed to minimize or eliminate infiltration of flood waters into the systems; and*
>
> *(a)(6) Require within flood-prone areas*
>
> > *(i) new and replacement sanitary sewage systems to be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters and*
> >
> > *(ii) onsite waste disposal systems to be located to avoid impairment to them or contamination from them during flooding.*
>
> *(d)(3) Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge;*
>
> *(d)(4) Notwithstanding any other provisions of §60.3, a community may permit encroachments within the adopted regulatory floodway that would result in an increase in base flood elevations, provided that the community first applies for a conditional FIRM and floodway revision, fulfills the*

requirements for such revisions as established under the provisions of §65.12, and receives the approval of the Federal Insurance Administrator.

ASCE24 recommends that all critical facilities protect their facilities to an elevation 3.0 ft. above the BFE.

If this is a Substantial Improvement it means reinforcing and/or elevating the existing lagoon dikes to at least three (3) feet above the BFE for each lagoons location (if they are not already at this elevation). This improvement will require hydrologic and hydraulic analyses be performed. Substantial Improvement also means upgrading as necessary the sanitary sewage system to minimize or eliminate infiltration of flood waters into the system and discharges from the system into flood waters.

A Floodplain Development Permit will be required prior to the start of construction from the Floodplain Administrator for the City of Notus, Loretta Vollmer at 208-459-6212 or notuscityclerk@gmail.com.

Thank you for soliciting my comments on the proposed project. Should you have any questions regarding my comments on this project, please contact me through email at maureen.oshea@idwr.idaho.gov or at (208) 287-4928.

Sincerely,

Maureen O'Shea, AICP, CFM
State NFIP Coordinator

Cc: Loretta Vollmer, City Clerk/Floodplain Administrator (via email).

Appendix F-3

US Army Corps of Engineers

RECEIVED DEC 0 4 2015

DEPARTMENT OF THE ARMY
WALLA WALLA DISTRICT, CORPS OF ENGINEERS
BOISE REGULATORY OFFICE
720 E. PARK BLVD. SUITE 245
BOISE, IDAHO 83712

REPLY TO ATTENTION OF

Regulatory Division

November 30, 2015

SUBJECT: NWW-2015-00553, City of Notus; Waste Water System Improvements

Ms. Kelly Dahlquist
Clearwater Economic Development Association
1626 6th Avenue N.
Lewiston, Idaho 83501

Dear Ms. Dahlquist:

This is in response to your November 5, 2015 letter requesting comments on the proposed City of Notus Waste Water System Improvements. Thank you for providing the Corps of Engineers (Corps) the opportunity to provide early comment. According to information provided, the proposed project includes the upgrading of the lagoon infrastructure and improving and repairing collection lines throughout the service area in Notus.

The site is located, within Section 34 of Township 5 North, Range 4 West, near latitude 43.725° N and longitude –116.800° W, in Canyon County, in the City of Notus, Idaho. Your project has been assigned Department of Army (DA) File # NWW-2015-00533, which should be referred to in all future correspondence.

AUTHORITY

The DA exerts regulatory jurisdiction over waters of the United States (U.S.), including wetlands, pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344). Section 404 of the Clean Water Act requires a DA permit be obtained prior to discharging dredged or fill material into Waters of the U.S., which includes most perennial and intermittent rivers and streams, natural and man-made lakes and ponds, irrigation and drainage canals and ditches that are tributaries to other waters, and wetlands.

Based on our review of the information you furnished and available to our office, we have determined that at several locations, the sewer collection lines cross an unnamed stream of the Conway Gulch, or are located adjacent to a side channel of the Boise River. Should the proposed work result in a discharge of fill below the ordinary high water mark (OHWM) or within wetlands adjacent to these waters, a DA permit may be required.

Please contact me by telephone at (208) 433-4470, by mail at the address in the letterhead, or via email at christen.m.griffith@usace.army.mil if you have any questions or need additional information.

Sincerely,

Christen Marve Griffith
Project Manager, Regulatory Division

Printed on Recycled Paper

Appendix F-4

State Historical Preservation Office

www.history.idaho.gov

Idaho State Historical Society

C.L. "Butch" Otter
Governor of Idaho

Janet Gallimore
Executive Director

Administration
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 334-2682
Fax: (208) 334-2774

Membership and Fund Development
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 514-2310
Fax: (208) 334-2774

Historical Museum and Education Programs
610 North Julia Davis Drive
Boise, Idaho 83702-7695
Office: (208) 334-2120
Fax: (208) 334-4059

State Historic Preservation Office and Historic Sites
Archeological Survey of Idaho
210 Main Street
Boise, Idaho 83702-7264
Office: (208) 334-3861
Fax: (208) 334-2775

Statewide Sites:
• Franklin Historic Site
• Pierce Courthouse
• Rock Creek Station and
• Stricker Homesite

Old Penitentiary
2445 Old Penitentiary Road
Boise, Idaho 83712-8254
Office: (208) 334-2844
Fax: (208) 334-3225

Idaho State Archives
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 334-2620
Fax: (208) 334-2626

North Idaho Office
112 West 4th Street, Suite #7
Moscow, Idaho 83843
Office: (208) 882-1540
Fax: (208) 882-1763

May 26, 2016

Ms. Keri Hill
Environmental & Funding Specialist
Mountain Waterworks
2210 W. Main Street
Boise, ID 83702

RE: City of Notus Wastewater Upgrades (Idaho SHPO REV 2016-103)

Dear Ms. Hill,

Thank you for providing us with an inadvertent cultural resource discovery plan for the proposed undertaking. We have reviewed the plan and believe the undertaking will have no adverse effect on *historic properties* if the plan is implemented (36CFR800.3). If any significant cultural materials (prehistoric artifacts, or historic features or buildings) are discovered during the course of the undertaking, construction should cease in the immediate vicinity and our office should be consulted.

We appreciate your consulting with our office. If you have any questions feel free to contact me at 208-334-3847 x107 or ethan.morton@ishs.idaho.gov.

Sincerely,

Ethan Morton, Idaho State Historic Preservation Office

cc: Kelly Dahlquist, Clearwater Economic Development Association

Historical Society is an
Equal Opportunity Employer.

Appendix F-5

Sho-Pai Tribes

Keri Hill

From: Ted Howard <howard.ted@shopai.org>
Sent: Wednesday, February 10, 2016 11:03 AM
To: Keri Hill
Subject: Re: Notus Wastewater Review

Ken,

I realize most of these areas have been previously disturbed. I wasn't sure if they were going to be digging in virgin ground. We don't have a problem with your project, go aghead.I will ask that you contact my office if there is a discovery, we would like to be present before any further disturbance to the site. The SHPO is only interested in the aruchaeology, and our interested goes beyond the archaeology. These sites have a spiritual/traditional importance to us. Thank you for inquiring with my office.

Ted

On Wed, Feb 10, 2016 at 10:27 AM, Keri Hill <khill@mountainwtr.com> wrote:

Hi Ted,

Sorry for the paperwork, we are bound by federal funding red tape! All of the work is repair and replacement of existing pipe with some minor repairs to existing lagoon infrastructure. While I can't guarantee that trenches will be exact to when it was installed originally, I can tell you that it's all in previously disturbed ground. Recently on other projects like this we have been working with the Idaho SHPO in developing Inadvertent Discovery Plans for communities to adopt. I expect that to be done here too, would you like to be kept in the loop on that?

Cheers,

Keri Hill | Mountain Waterworks

From: Ted Howard [mailto:howard.ted@shopai.org]
Sent: Wednesday, February 10, 2016 10:24 AM
To: Keri Hill
Subject: Re: Notus Wastewater Review

Mr, Hill,

Too much paper work for me. Were there any cultural clearances done for the area? The information provided is focused on what you would like to do, there is no mention of any studies that were completed for the area.

This entire area is the homelands of the Shoshone-Paiute people, has been for thousands of years. There is no telling what may be discovered when you start excavating, especially in close proximity to the Boise River. Our people camped throughout that area fishing for salmon.

Sincerely,

Ted Howard

Shoshone-Paiute Tribes

Cultural Resources Director

P.O. Box 219

Owyhee, Nevada 89832

Wk (208) 759-3100 ext. 1243

Fx (208) 759-3202

Cell (208) 871-7064

Notice: This e-mail, including attachments, is covered by the Electronic Communications Privacy Act, 18 U.S.C. §§ 2510-2521, is confidential and may be legally privileged or otherwise protected from disclosure. If you are not the intended recipient, you are hereby notified that any retention, dissemination, distribution, or copying of this communication is strictly prohibited. Please reply to the sender that you have received the message in error, and delete it. Thank you.

On Wed, Feb 10, 2016 at 9:58 AM, Keri Hill <khill@mountainwtr.com> wrote:

Good Morning,

On behalf of the City of Notus, we are requesting your review of their upcoming wastewater improvement project. Attached is the information for your review, please let me know if you need anything additional.

Thank you,

Keri Hill | Mountain Waterworks

ENVIRONMENTAL & FUNDING SPECIALIST

Boise – McCall – Coeur d'Alene

P 208.780.3993

C 208.550.2056

E khill@mountainwtr.com

Appendix F-6

Idaho State Fire Marshall

INTERGOVERNMENTAL REVIEW COMMENT SHEET
FOR

City of Notus, Idaho
(APPLICANT NAME)

Wastewater System Upgrades
(PROJECT TYPE)

****

TO AGENCY ADDRESSED:

If you intend to comment but cannot respond to USDA, Rural Development within 30 calendar days, please notify USDA, Rural Development immediately. If no response is received by the due date, it will be assumed that you have no comment and the file will be closed.

****

PROGRAM REVIEW AND COMMENT

TO USDA, RURAL DEVELOPMENT:

We have reviewed the subject preapplication for Federal assistance and have reached the following conclusions on its relationship to our plans and programs:

[ ] It has no adverse effect.

[X] We have no comment.

[ ] Effects, although measurable, would be acceptable.

[ ] It has adverse effects. (Explain in the Remarks Section.)

[ ] We are interested but require more information to evaluate the proposal. (Explain in the Remarks Section)

[ ] Additional comments for project improvement. (Attach if necessary)

REMARKS:

AGENCY: IDAHO STATE FIRE MARSHAL'S OFFICE
BY: [illegible], STATE FIRE MARSHAL
PHONE NUMBER: (208) 334-4370

Appendix G

Meeting Minutes, Publication Affidavit & Presentation

31024 1472539

1 NOTUS, CITY OF

P.O. BOX 257
NOTUS ID 83656

AFFIDAVIT OF PUBLICATION

STATE OF IDAHO)
)SS.
County of Canyon)

Sharon Jessen
of Nampa, Canyon County, Idaho, being
first duly sworn, deposes and says:

1. That I am a citizen of the United States, and at all times hereinafter mentioned was over the age of eighteen years, and not a party to the above entitled action.
2. That I am the Principle Clerk of the Idaho Press-Tribune, a daily newspaper published in the City of Nampa, in the County of Canyon, State of Idaho; that the said newspaper is in general circulation in the said County of Canyon, and in the vicinity of Nampa and Caldwell, and has been uninterruptedly published in said County during a period of seventy-eight consecutive weeks prior to the first publication of this notice, a copy of which is hereto attached.
3. That the notice, of which the annexed is a printed copy, was published in said newspaper 2 times(s) in the regular and entire issue of said paper, and was printed in the newspaper proper, and not in a supplement.

That said notice was published the following:
06/14/2016 06/21/2016

Sharon Jessen

STATE OF IDAHO)
County of Canyon)
On this 21st day of June in the year of
2016 before me a Notary Public, personally appeared.
Sharon Jessen, known or identified
to me to be the person whose name is subscribed
to the within instrument, and being by me first
duly sworn, declared that the statements therein
are true, and acknowledge to me that he/she
executed the same.

Brenda L. Stroud

Notary Public for Idaho
Residing at Canyon County
My Commission expires 05/04/2021

BRENDA L STROUD
NOTARY
PUBLIC
STATE OF IDAHO

LEGAL NOTICE

CITY OF NOTUS
NOTICE OF PUBLIC HEARING

The City of Notus will hold a public hearing on June 30th, 2016 at 7:00 PM at the City of Notus City Hall regarding the Notus Wastewater Facility Plan. The public is invited to review and comment on the draft facility plan upon the first publication of this notice. Copies are available for review at Notus City Hall, located at 375 Notus Rd., Notus, ID 83656. Verbal comments may be given at the public meeting on June 30th, 2016 and written comments can be received at Notus City Hall, or by US Mail to PO Box 257, Notus, ID 83656 or via email to notuscityclerk@gmail.com until July 14th, 2016.

Loretta Vollmer,
City Clerk

June 14, 21, 2016
1472539

CITY COUNCIL MEETING Minutes
Regular Session: **Monday, July 18th**, 2016
7:00 pm @ Notus City Hall

1. **Meeting Called to Order**
Meeting was called to order at 7:03 pm by Mayor, David Porterfield.

2. **Roll Call**
Roll call was taken with the following results: Councilwomen Mo Shamseldin and Michelle DeGiorgio, present; Councilmen Rick Wallace Jr., and Jerry Hollenberg present: Also present Mayor, David Porterfield and Attorney, Todd Lakey.

3. **Pledge of Allegiance**

4. **Public Concerns, Comments**

5. **Approval of Meeting Agenda, as posted**
Hollenberg motioned to approve agenda with the addition of 10.3 MYAC Liaison Appointment. Reason is time crunch. Wallace Jr seconded. All in Favor. Motion passed.

6. **Consent Agenda**

6.1 **Disbursement List**
Shamseldin motioned to approve disbursements as presented. DeGiorgio seconded. Roll call was taken with the following results: Shamseldin; yes, DeGiorgio; yes, Wallace Jr; yes, Hollenberg; yes. Motion passed.

6.2 **Council Meeting Minutes**
DeGiorgio motioned to approve meeting minutes from June 20th, 2016 with the changes to 10.2 and 10.3 adding words "because we have to" to each motion. Hollenberg seconded. Roll call was taken with the following results: DeGiorgio; yes, Hollenberg; yes. Shamseldin; yes, Wallace Jr; yes. Motion passed.
Hollenberg motioned to approve City Council Special Session meeting minutes of June 28th, 2016. Motion dies for lack of second.
DeGiorgio motioned to approve Public Hearing from June 30th, 2016 for Wastewater Facility Plan, minutes as written. Hollenberg seconded. Roll call was taken with the following results: DeGiorgio; yes, Hollenberg; yes, Shamseldin; yes, Wallace Jr.; yes.
Hollenberg motioned to approve City Council Special Session meeting minutes of June 28th, 2016. Shamseldin seconded. Roll call was taken with the following results: Hollenberg; yes, Shamseldin; yes, DeGiorgio; yes, Wallace Jr; abstain. Motion passed.

6.3 **Committee Meeting Minutes: Community Events, Irrigation Committee**
Wallace Jr motioned to accept Events Committee meeting minutes as written for June 13, 20, 27 and July 11, 2016. Hollenberg seconded. All in Favor. Motion passed.
Wallace Jr motioned to accept MYAC meeting minutes from June 16, 2016 as written. Shamseldin seconded. Roll call was taken with the following results: Wallace Jr.; yes, Shamseldin; yes, DeGiorgio; yes, Hollenberg; yes. Motion passed.
Wallace Jr motioned to accept Library meeting minutes for June 8, and 16th, 2016 as written. DeGiorgio seconded. All in Favor. Motion passed.

7. **Community Relations**

7.1 **Notus School District**

NONE

8. **Staff Reports**

8.1 **Public Works**
No report given. DeGiorgio would like weeds along 20/26 taken care of. It makes city look bad. The storm drains need better maintenance especially when it rains. DeGiorgio also reminds the Attorney to send farmers (fields east of town, Brad) a letter to ask them to notify Stacy when they are changing the irrigation flow so he can avoid flooding the streets with irrigation water.

8.2 **Library Liaison**
NONE

8.3 **Treasurer**
Budget workshops for July 20, 21 and maybe 25, 2016.

9. **Professional's Reports**

9.1 **Wastewater**
NONE

9.2 **Engineer**
Mayor read Stuarts report: The block grant contract is in place and are they kicking off the collection system clean/camera work and survey. We will prepare a map and get quotes from Roto Rooter and Pipeline Inspection for the cleaning/camera work. After that is completed we will have the surveyor do the site survey.
Once the survey work is completed we will then start on design of the facilities. The first document to be prepared will be the preliminary engineering report, which has to be reviewed and approved by DEQ. The next submittal is the construction plans and specifications, which also need to be reviewed and approved by DEQ and USDA.
We have completed the analysis for the bio solids land application (lagoon dredging) and have sent Mayor a few talking points for discussion with local farmers. The goal is to get someone interested and meet with them to discuss using their land for the bio solids application site. We have prepared the DEQ land application permit package, we just need to find a site, approximately 35 acres.
DeGiorgio would like to advertise the (bio solids analysis) for land app.

10. **Business:**

10.1 **Wastewater Facility Plan Alternative Selection**
Hollenberg motioned to approve Alternative 3 land app with aerated lagoons along with priority 1 and priority 2 collection improvements as described in the waste water facility plan addendum #2.Wallace Jr seconded. Roll call was taken with the following results; Hollenberg; yes, Wallace Jr; yes, Shamseldin; yes, DeGiorgio; yes. Motion passed.

10.2 **MYAC Report, Autumn Hutchison**
NONE

10.3 **MYAC Liaison Appointment**
Shamseldin volunteers. DeGiorgio motioned to appoint and approve Shamseldin as the MYAC liaison. Wallace Jr seconded. Roll call was taken with the following results: DeGiorgio; yes, Wallace Jr; yes, Shamseldin; abstain, Hollenberg; yes. Motion passed.

10.4 **Translator Decision**
Hollenberg motioned to get applicant, Elizabeth Arredondo, as a backup translator, with a minimum of $10.00 per job fee and if more than one hour, will be paid at minimum wage. Hours will be on an as needed basis. Wallace Jr. seconded. Roll call was taken with the following results: Hollenberg; yes, Wallace Jr; yes, Shamseldin; yes, DeGiorgio; no. Motion passed. Clerk will bring back work agreement to Council for approval.

10.5 **Auditor Agreement**
Wallace Jr. motioned to approve agreement with Milton and Zwygart (Auditor). DeGiorgio seconded. Roll call was taken with the following results; Wallace Jr; yes, DeGiorgio; yes, Shamseldin; yes, Hollenberg; yes. Motion passed.

10.6 **Letter of Engagement, McHugh Bromley (water attorney)**
Wallace Jr motioned to approve the agreement with McHugh Bromley. Hollenberg seconded. Roll call was taken with the following results; Wallace Jr.; yes, Hollenberg; yes, Shamseldin; yes, DeGiorgio; yes. Motion passed.

10.7 **I T Software Discussion of Ransomware**
Discussion was held on the danger of ransomware. Staff will do more research on safety measures that other cities use, using "the cloud" and costs.

RICK WALLACE JR. LEAVES MEETING AT 8:35 PM.

10.8 **Declaration of Old Lawn Mower as Surplus**
Hollenberg motioned to declare the old Toro mower as surplus. Shamseldin seconded. Roll call was taken with the following results: Hollenberg; yes, Shamseldin; yes, DeGiorgio; no. Motion passed. Hollenberg motioned to dispose or donate the old Toro mower to CWI. Motion dies for lack of second.

10.9 **Consideration of Equipment Barter**
A resident has an old stand on mower they would like to barter with the city for the old Ferguson tractor and sickle mower. No decision.

10.10 **Permission for City Clerk to attend ICCTFOA Conference**
Shamseldin motioned to allow the City Clerk to attend the ICCTFOA Conference and apply for a scholarship. Hollenberg seconded. Roll call was taken with the following results: Shamseldin; yes, Hollenberg; yes. DeGiorgio; no. Motion passed.

11. **Mayor & Council Comment**
Budget workshops on Wednesday and Thursday Shamseldin would like items on the agenda that need "follow up".

12. **Executive Session: (Idaho Code 74-206(1)(a)(b)) Personnel**
NONE

13. **Adjournment**
DeGiorgio motioned to adjourn at 9:06 pm. Hollenberg seconded. All in favor

Respectively submitted by Loretta Vollmer, City Clerk.

City of Notus
Wastewater Facility Plan
Public Meeting

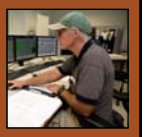
Stuart Hurley, P.E.

June 30, 2016

MOUNTAIN WATERWORKS

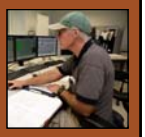
Presentation Overview

- Introduction, background, and purpose.
- Summary of existing wastewater system.
- Identified system deficiencies.
- Permitting conditions.
- System upgrade alternatives.
- Plan moving forward.



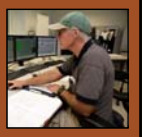
Background

- Mountain Waterworks was hired by Notus to complete a wastewater facility planning study that began in 2011.
- The Facility Plan has received technical approval by DEQ and is fully approved by USDA.
- The next step is for the City to present the information to the community and select one of the alternatives presented in the Facility Plan.
- The City passed a revenue bond in November of 2015 to fund the planned wastewater improvements.



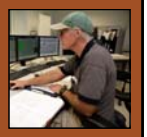
Purpose

- Wastewater Facility Plan
  - Evaluate the existing wastewater collection and treatment system
  - Define service and treatment standards
  - Develop feasible alternatives to get the system from where it is now to where it needs to be to meet the service and treatment standards for the next 20 years



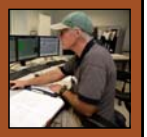
Roles and Responsibilities

- EPA and DEQ: Set wastewater facility standards and enforce permit compliance
- Engineer: Assist the City with meeting compliance. Prepare FP as directed by the City. Design and oversee construction for wastewater improvements.
- City Council: Make decisions about project direction and direct the engineer accordingly.
- City Users: Provide input for project direction to the Council.
- Funding Agencies (USDA / IDOC / DEQ): Work with the City and the Engineer to procure project funding as directed by the City Council.



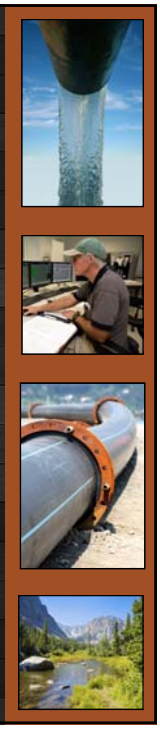
Existing Wastewater System

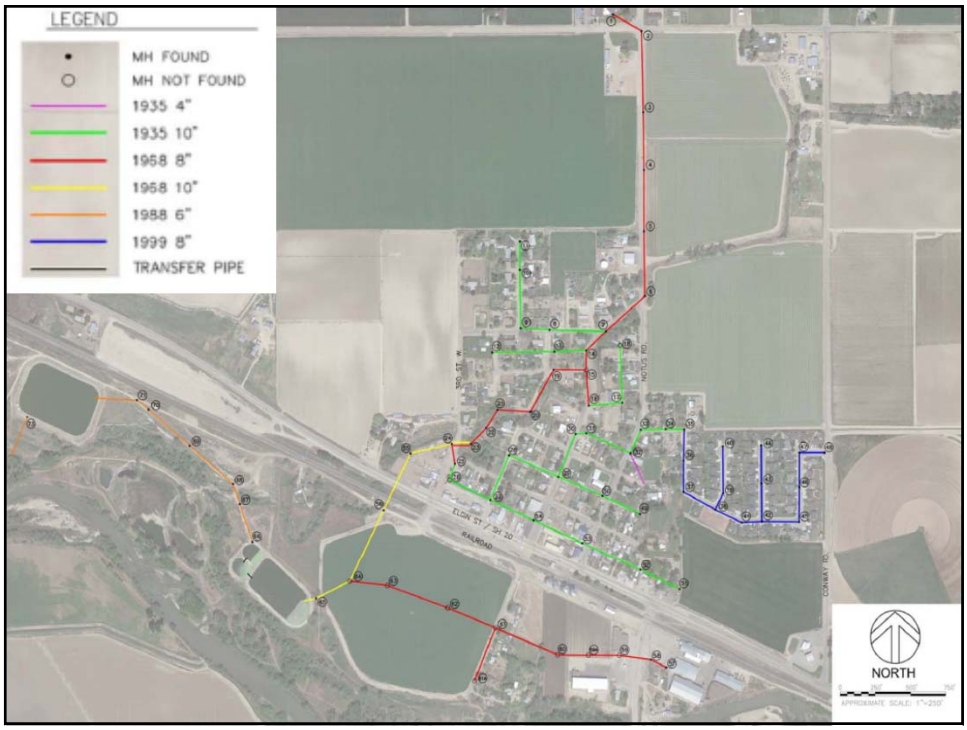
- Wastewater system consists of:
  - Gravity collection system pipes and manholes
  - Lagoon treatment system
  - Discharge to the Conway Gulch (Boise River)
- City wastewater system originally constructed in the 1930s and 1960s.
- Treatment plant upgrades made in the late 1980s and collection expanded in 1999.



Wastewater System

- Reported Deficiencies:
  - Collection system breaks, tree roots, grease blockages
  - Treatment plant discharge permit violations
  - Significant sludge buildup in lagoons
- City's wastewater system must be evaluated per Idaho Department of Environmental Quality (IDEQ) guidelines – Facility Plan
- If violations continue, regulatory agencies can levy fines and consent order(s)
  - Significant daily fines (up to $37,500 per day)
  - Loss of property value and economic development
- Potential for third party lawsuits from environmental organizations

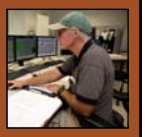




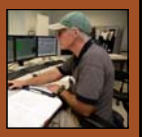
Piping Photos

Treatment Lagoons

- Permit Violations – over 300 from 2011 through 2014 for:
  - Organic removal
  - E.coli and Fecal Coliform (no disinfection)
- Flow Monitoring Equipment Inoperable (EPA permit requirement)

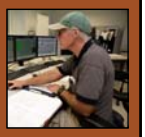


Treatment Lagoons



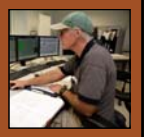
Surface Water Permitting Conditions

- New Discharge Permit Very Stringent in the summer for Phosphorus
  - Currently store during the summer and discharge during the winter
  - Disinfection is a major concern
  - Lack of organic removal continues to be an issue



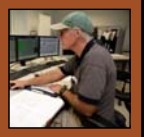
Facility Plan Components

- Community Population and Growth
- Respond to Current and Anticipated Future Permit Conditions
- Develop Improvement Alternatives
- Evaluate Alternatives with Public Input
- Select Alternative
- Environmental Document



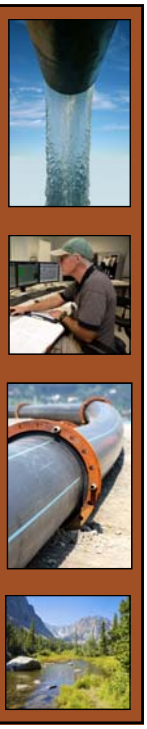
Community Growth

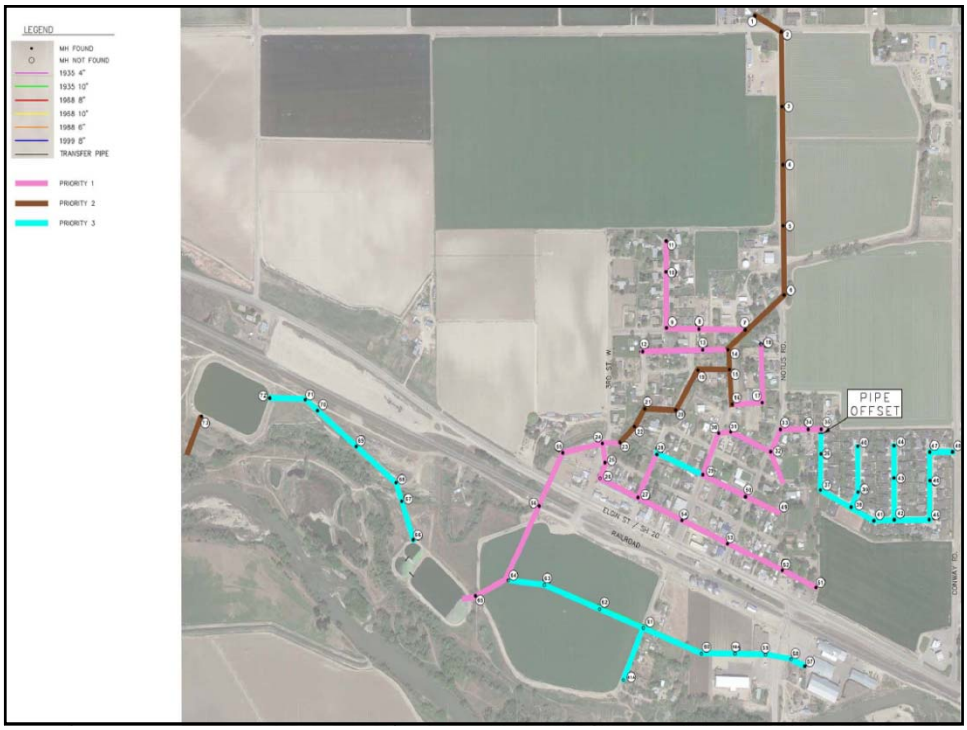
- Currently approximately 557 residents
- 20-year growth projection is for 897 residents (2.41% annual growth)
- Treatment alternatives developed to support the 20-year growth projection
- 40-year growth projection is for 1,444 residents
- Collection system alternatives developed to support the 40-year growth projection



Upgrade Alternatives

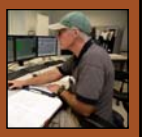
- Collection System Repairs
  - Replace/Repair Priority 1 Areas (Major collectors and 1930 era construction)
    - Estimated Cost = $925,000
  - Replace/Repair Priority 2 Areas (1930 and 1960 era major collectors)
    - Estimated Cost = $372,000
  - No Action





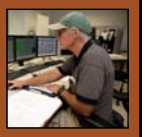
Upgrade Alternatives

- Collection System Improvements
  - Priority 1 only
  - Priority 1 and Priority 2
  - No Action



Wastewater Plant Upgrade Alternatives

1. No Action
2. Regionalization – Greenleaf considered
3. Land Application – Aerated Lagoons
4. Rapid Infiltration – Activated Sludge
5. River Discharge – Activated Sludge
6. Privatization – proved to be non-viable

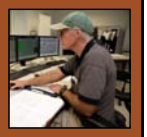


Alternative Cost Comparison

Alt.	Description	Capital Cost	Yearly O&M Cost	Total Present Worth
1	No Action	$0	$51,200	$910,000
2	Regionalization	$4,200,000	$102,232	$6,010,000
3	Land Application - Aerated Lagoons	$2,375,000	$89,370	$3,960,000
4	Rapid Infiltration - Activated Sludge	$4,320,000	$131,600	$6,650,000
5	River Discharge - Activated Sludge	$4,290,000	$176,600	$7,410,000

Treatment Alternative Comparison

- Cost Based (and corresponding user rate)
- Qualitative (advantages / disadvantages)
- Environmental Impacts



Alternative 1 - No Action	
Advantages	**Disadvantages**
Will not impact user rates	High risk of fines and enforcement action Risk of third party lawsuit Long-term financial burden Does not address environmental concerns
Alternative 2 - Regionalization	
Advantages	**Disadvantages**
Eliminates City's responsibility for operating the treatment facility and meeting permit conditions Lower cost than Alternatives 4 and 5 Sludge handling not required	City would have reduced control of wastewater operation and potentially community growth Higher cost than Alternative 3
Alternative 3 - Land Application - Aerated Lagoons	
Advantages	**Disadvantages**
Lowest cost alternative Does not require higher level of treatment operator Sludge handling not required City maintains control of the wastewater system and community growth Addresses environmental concerns	Requires a land application permit Requires a licenced land application operator Requires a land application site
Alternative 4 - Rapid Infiltration - Activated Sludge	
Advantages	**Disadvantages**
Eliminates EPA surface water discharge permit	Substantial testing required for permitting due to nitrate priority area (groundwater) Requires a land application permit High level of treatment required Higher level of treatment operator Requires a land application site Highest cost alternative
Alternative 5 - River Discharge - Activated Sludge	
Advantages	**Disadvantages**
Addresses environmental concerns No land application permit required	High level of treatment required Higher level of treatment operator Higher cost than Alternative 2 and 3

Wastewater Plant Upgrade Alternatives

Recommend Alternative 3 in a Phased Approach

- Phase 1 – Immediate Project to meet Current Permit
  - Priority 1 and 2 collection system improvements
  - Dredge lagoons
  - Install lagoon screen
  - Construct disinfection system
  - Install lagoon aeration
  - Install flow measurement
  - Install power

Wastewater Plant Upgrade Alternatives

Recommend Alternative 3 in a Phased Approach

- Phase 2 – Land Application
  - Acquire land (or execute a long-term lease)
  - Install irrigation pump station
  - Install piping from lagoons to land application site
  - Construct land application site improvements (fencing, signage, water delivery, monitoring wells)

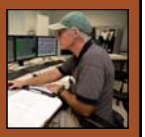
Project Summary

Item	Estimated Cost
Phase 1 Lagoon Improvements	$805,000
Priority 1 Collection System Improvements	$925,000
Priority 2 Collection System Improvements	$372,000
Collection System Investigation and CCTV	$70,000
Estimated Project Total	$2,172,000

The community passed a $2,200,000 revenue bond in November of 2015 to fund the improvements.

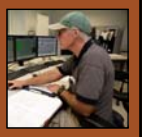
Financing Approach

- Why is a loan required?
  - Community must be invested in resolving wastewater issues
  - Required to qualify for funding
    - *Grants and Low Interest Loans*



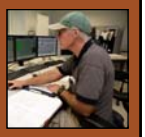
Financing and Project Goals

- Planning includes construction and operational cost estimates
  - Aggressively pursue grant funds
    - USDA-Rural Development
      - Funding application in progress for construction
    - Idaho DEQ
      - Funding available if necessary for construction
    - Idaho Community Development Program
      - Grant funds secured for collection system investigation and engineering



Financing

- Current Wastewater Rate per User = $34/month
- Maximum Wastewater Rate per User Goal = Comparable and Affordable per USDA
- Loan Amount Goal = Defined by User Rate
- Grant Amount Goal = As much as possible – grants do not need to be paid back
- Potential End Rate = approximately $50-53/month maximizing available grant funds



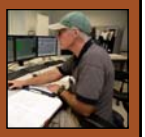
Next Steps

Notus Wastewater System Improvements

Upcoming Events

- Public Comments Received
- Council to Select Alternative
- Submit Environmental Document
- Secure Funding

Questions and Comments

MOUNTAIN WATERWORKS

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