City of Malad, Idaho

Environmental Assessment

May 2018

Prepared by:

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This planning project is funded by:
- City of Malad
- Idaho Department of Environmental Quality Grant No. WWG-375-2015-5

City of Malad, Idaho

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THE CITY OF MALAD

"Where Idaho Begins"

PROFESSIONAL ENGINEER LICENSED 17715 5-14-18 STATE OF IDAHO JONATHAN BAY FARRELL

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Common Acronyms and Abbreviations

A	Area
AAF	Average Annual Flow
AC	Asbestos Cement Pipe
ACOE	Army Corps of Engineers
ADF	Average Daily Flow
ADWF	Average Dry Weather Flow
AOTR	Actual Oxygen Transfer Rate
AWWF	Average Wet Weather Flow
BNR	Biological Nutrient Reduction
BOD_5	5-Day Biochemical Oxygen Demand
BPR	Biological Phosphorus Reduction
CA	Compliance Activities
$CBOD_5$	5-Day Carbonaceous Biochemical Oxygen Demand
CD	Cadmium
CEC	Cation Exchange Capacity
cf (CF)	Cubic Feet
CFR	U.S. Code of Federal Regulations
cfs	Cubic Feet Per Second
cfu	Colony Forming Units
CMOM	Capacity, Management, Operations, and Maintenance
CMU	Concrete Masonry Units
COD	Chemical Oxygen Demand
CRF	Capital Recovery Factor
CUP	Conditional Use Permit
D	Depth
DBP	Disinfection By-Products
DEQ	Department of Environmental Quality
DIP	Ductile Iron Pipe
DO	Dissolved Oxygen
DMR	Discharge Monitoring Report
E. coli	Escherichia coliform bacteria
EA	Each
EID	Environmental Information Document
EPA	U.S. Environmental Protection Agency
ERU	Equivalent Residential Unit
ESA	Endangered Species Act
fpm	Feet Per Minute
fps	Feet Per Second
n HRT	Nominal Hydraulic Residence Time
N/A	Not Available or Not Applicable
ND	Non-Detectable
ft	Feet
gal	Gallons
GAO	Glycogen Accumulating Organism
gfd	Gallons Per Square Per Day
gpcd	Gallons Per Capita Day
gpd	Gallons Per Day
gph	Gallons Per Hour
gpm	Gallons Per Minute
HDPE	High Density Polyethylene
hp	Horsepower
HRT	Hydraulic Residence Time
HVAC	Heating/Ventilation/Air Conditioning
I/I	Inflow and Infiltration
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
kW	Kilowatt
kwh	Kilowatt-Hour
L	Length
L:D	Length to Depth Ratio
L:W	Length to Width Ratio
lb/day	Pounds Per Day
LS	Lump Sum
MBR	Membrane Bioreactor
MCC	Motor Control Center
MCL	Maximum Contaminant Level
MDF	Maximum/Minimum Daily Flow
MF	Micro Filtration
MG	Million Gallons
mg/l	Milligram Per Liter (Parts Per Million – ppm)
MGD	Million Gallons Per Day
ML	Minimum Level
ml	Milliliter
MLSS	Mixed Liquor Suspended Solids
MLVSS	Mixed Liquor Volatile Suspended Solids
MMF	Maximum Month Flow
MN	Manhole
MPN	Most Probable Number
MSL (msl)	Mean Sea Level
SOR	Surface Overflow Rate
SOTR	Standard Oxygen Transfer Rate
SRF	State Revolving Fund

ng/L	Nanogram Per Liter (Parts Per Trillion – ppt)
NH_3-N	Ammonia Expressed as Nitrogen
NO_3-N	Nitrate Expressed as Nitrogen
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and Maintenance
O_2	Oxygen
OD	Oxidation Ditch
ORP	Oxidation Reduction Potential
OSHA	Occupational Safety and Health Administration
Pb	Lead
PF	Peaking Factor
pg/L	Picogram Per Liter (Parts Per Quadrillion – ppq)
PHF	Peak Hourly Flow
PLC	Programmable Logic Controller
POTW	Publicly Owned Treatment Work
ppb	Parts Per Billion (µg/L)
ppd	Pounds Per Day
pph/sf	lb/hr/sf
ppm	Parts Per Million (mg/L)
ppq	Parts Per Quadrillion (pf/L)
ppt	Parts Per Trillion (ng/L)
PQL	Practical Quantitation Limit
PVC	Polyvinyl Chloride
RAS	Return Activated Sludge
RD	Rural Development (Division of US Department of Agriculture)
SRT	Solids Retention Time
SS	Stainless Steel
STEP	Septic Tank Effluent Pump
SVI	Sludge Volume Index
TDH	Total Dynamic Head
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TMP	Trans-Membrane Pressure
TN	Total Nitrogen
TOC	Total Organic Carbon
TP	Total Phosphorus
TSS	Total Suspended Solids
UF	Ultra Filtration
µg	Microgram Per Liter (Parts Per Billion – ppb)
USGS	United States Geological Survey
UV	Ultra Violet Radiation
V (vol)	Volume
VCO	Voluntary Consent Order
VFA	Volatile Fatty Acid
VFD	Variable Frequency Drive
VOC	Volatile Organic Compounds
W	Width
WAS	Waste Activated Sludge
WL	Water Level
WQS	Water Quality Standards
WWTP	Wastewater Treatment Plant
Zn	Zinc

1. Purpose and Need for Proposal

The existing Malad City wastewater treatment system has various facility and effluent disposal deficiencies. The primary needs and deficiencies of the existing system are:

- Leaking wastewater treatment lagoons
- Inadequate separation between the bottom of the lagoons and groundwater
- Inadequate capacity for effluent disposal
- Inadequate reuse and land application site
- Aging collections infrastructure

Malad City is seeking funding from government agencies for design and/or construction of improvements to address deficiencies with their wastewater system. These agencies and programs include the United States Department of Agriculture (USDA) Water & Environmental Programs (WEP), Idaho Department of Environmental Quality (IDEQ) State Revolving Fund (SRF), United States Army Corps of Engineers (USACE) federal grants, and Idaho Department of Commerce Community Development Block Grants (CDBG).

USDA, Rural Development is a mission area that includes three federal agencies – Rural Business-Cooperative Service, Rural Housing service, and Rural Utilities Service. The agencies have in excess of 50 programs that provide financial assistance and a variety of technical and educational assistance to eligible rural and tribal populations, eligible communities, individuals, cooperatives, and other entities with a goal of improving the quality of life, sustainability, infrastructure, economic opportunity, development, and security in rural America. Financial assistance can include direct loans, guaranteed loans, and grants in order to accomplish program objectives.

USDA requires development of an Environmental Assessment (EA) for distribution of WEP Water & Waste Disposal Loans & Grants. IDEQ requires development of an Environmental Information Document (EID) if SRF loan money is used. Anticipating that WEP and SRF loan money may be used, this environmental report is structured in accordance with both USDA EA requirements and IDEQ EID requirements to determine impacts of the selected improvements and mitigation measures that may be necessary.

2. Proposed Alternatives

2.1 Existing Wastewater Facility

The Malad Wastewater Collection System and Wastewater Treatment Plant (WWTP) serve the City of Malad and nearby surrounding area. Malad's wastewater system is comprised of gravity collection lines throughout the city, two lift stations, and the WWTP.

The original WWTP was constructed in 1961 and includes four (4) evaporative, non-aerated lagoons. The WWTP is located approximately one mile south of the City in section 34 of Township 14 South, Range 36 East, B.M. The system has undergone minor upgrades since its initial construction and currently consists of the following components:

- Influent flow measurement facilities
- Four evaporative, non-aerated lagoons, 32 acres
- Transfer structures
- Chlorine disinfection system (not used)
- Chlorine contact chamber (not used)
- Land application pump and sprinkler wheel line (not used), 16.7 acres

The WWTP was originally designed for zero discharge of wastewater meaning that all treated wastewater was disposed of by evaporation and seepage into the ground. During recent years, the City has had capacity concerns at the WWTP, especially during abnormally wet years. In 2013 the City received a notice of violation letter from DEQ regarding the excessive seepage rate of Lagoons #1 and #4 in their wastewater treatment system. Water balance calculation revealed that when the lagoons are lined, as required to comply with DEQ's seepage limits, the remaining evaporative capacity of the existing lagoons will be inadequate to serve the City's current population.

The Malad WWTP currently has an expired Wastewater Land Application Permit (WLAP):

- **DEQ Wastewater Land Application Permit No. LA-000159-01:** This permit authorizes the WWTP to discharge effluent to land application on an adjacent agricultural field.

In 2009, the City initiated a renewal process of their land application permit, but it was determined that a permit would likely not be approved for the existing reuse site without significant changes to comply with recent DEQ reuse regulations and guidance. In addition, a lagoon seepage test in June 2010 revealed that seepage in at least one of the lagoons exceeds the maximum allowable seepage rate.

Flows

Influent and effluent wastewater flow data records were collected and analyzed. Projections were developed based on population growth and historic flows and loads. Flows and loads to the City's wastewater treatment facilities were projected over the 20-year and 40-year planning periods.

Table 2-1 summarizes the estimated current 2017, 20-year, and 40-year projected influent flows.

Table 2-1 Current and Projected Influent Flows

Parameter	Year 2017 (Current) (gpd)	Year 2037 (gpd)	Year 2057 (gpd)	Peaking Factor*
Average Day Flow	165,040	178,400	192,880	-
Maximum Month Flow	215,434	232,873	251,774	1.31
Peak Day Flow	326,441	352,866	381,507	1.98
Peak Hour Flow	590,843	638,672	690,510	3.58
Average Annual Volume (MG – million gallons)	60.2	65.1	70.4	

*Average peaking factors for 2012-2015 are used.

Loads

Estimated values for the various water quality parameters were obtained using literature values for typical constituent loadings. **Table 2-2** provides the projected plant loadings that were used to evaluate the existing facilities and future alternatives.

Table 2-2 Design WWTF Loadings in 2037

Parameter	Annual Average	Maximum Month	Peak Day
Flow (MGD)	0.178	0.233	0.353
BOD (ppd)	491	643	971
TSS (ppd)	558	730	1104
TKN (ppd)	71.4	93	141
TP (ppd)	16.9	22	34

2.2 Deficiencies/Alternatives

The primary needs and deficiencies of the existing facility are:

- Excessive seepage in Cells 1 and 4
- Inadequate evaporative capacity for existing and design flows if Cells 1 and 4 are relined
- Shallow groundwater requiring that the existing lagoons be raised to meet the DEQ rule for 2 feet of separation between maximum groundwater and the bottom of the lagoon
- Unsuitable existing reuse area due to:
    - Excessive salts and sodium levels in the soil
    - Poorly drained with excessively high ground water levels
    - Very poor water infiltration characteristics
    - Toxic levels of boron
    - Soil pH level too high to grow agronomic crops
    - No water rights for supplemental irrigation water
- Inability to discharge to existing reuse area due to:
    - Expired reuse permit (current DEQ regulations may require improvements for buffer zones, supplemental irrigation water source, crop maintenance and harvesting, and signage.)
    - No aeration in lagoons to provide oxidation as required for Class A through D reuse

    - Deteriorated gas chlorination facilities for disinfection as required for Class A through D reuse
    - Deteriorated reuse pumping and irrigation facilities
- Inability to discharge to existing irrigation ditch outfall due to:
    - No NPDES permit for discharge to surface water
- Need to dredge and dispose of the solids in lagoons if cells are relined

To address these needs and deficiencies, this chapter identified the following alternatives for initial screening:

- Alternative 1 – No Action
- Alternative 2 – Optimize Operation of Existing WWTP
- Alternative 3 – Regionalization
- Alternative 4 – Total Containment Only
    - 4A – Raise & Reline Cells 1 and 4 Only
    - 4B – Raise & Reline Cells 1 and 4 Only and Add Cell 5
    - 4C – Raise & Reline All Cells and Add Cell 5
- Alternative 5 – Lagoons with Reuse via Land Application
    - 5A – Reuse on New Site and Raise & Reline Cells 1, 2, and 3
    - 5B – Reuse on New Site and Construct System on New Site
    - 5C – Reuse on New Site and Mechanic Treatment on Existing Site
- Alternative 6 – Lagoons with Rapid Infiltration Basins
- Alternative 7 – Mechanical Treatment with Groundwater Discharge
- Each of these alternatives will be discussed in more detail below followed by comparative tables to rank the feasible alternatives.

2.3 Alternative 1 – No Action

As noted, the existing facilities have significant deficiencies that will continue if the No Action alternative is selected. DEQ is requiring that the City address the excessive seepage measured in Cells 1 and 4 and bring them into compliance with regulatory maximum seepage limits. Failure to do so will eventually result in compliance violations and heavy fines.

For these reasons, the No Action Alternative was deemed infeasible and dropped from further consideration.

2.4 Alternative 2 – Optimize Operation of Existing WWTP

Optimizing the operation of the existing WWTP was considered to eliminate or delay the need for improvements. However, the existing total containment lagoons are a very simple system that does not lend itself to making operational adjustments that would address the excessive seepage issue or the inadequate capacity.

For these reasons, the Optimize Operation of Existing WWTP Alternative was deemed infeasible and dropped from further consideration.

2.5 Alternative 3 - Regionalization

The next nearest public wastewater collection system to the City of Malad of any significant size is over 10 miles away and separated by mountainous and difficult terrain. The cost of conveying wastewater this distance would be very high and impractical.

For these reasons, the Regionalization Alternative was deemed infeasible and dropped from further consideration.

2.6 Alternative 4 – Total Containment Only

The existing WWTP operates as a total containment system that relies on evaporation and seepage as the primary mechanisms for wastewater disposal. This alternative considers continued implementation of this operation. A key benefit of total containment is that it avoids the need for permitting of a discharge through DEQ/EPA. However, because it primarily relies on evaporation for wastewater disposal, the water surface area requirements can be very large, even for smaller municipalities.

2.6.1 Alternative 4A – Raise & Reline Cells 1 and 4 Only

Currently, only Cells 1 and 4 have measured seepage rates in excess of the regulatory limit and are out of compliance. This alternative considered only relining these two cells and continuing with total containment operation. In addition, relining Cells 1 and 4 will require importing large quantities of fill to raise all the cells approximately 10 feet in order to meet the groundwater separation requirement.

An additional concern with this alternative is the condition of the existing liners in Cells 2 and 3. There is potential risk that these liners could also develop excess seepage over the next 20 years and require replacement. This suggests that this solution may not offer a reliable 20-year service life. Additional surface area (i.e. lagoons) would be required if Cells 2 and 3 were relined since seepage would be reduced.

For these reasons, Alternative 4A was dropped from further consideration.

2.6.2 Alternative 4B – Raise & Reline Cells 1 and 4 Only and Add Cell 5

This alternative considered relining Cells 1 and 4 and adding a new, lined Cell 5 which would be sized to add sufficient evaporative surface area to continue with total containment operation and provide adequate capacity for future 2037 Design Flows.

The excessive land area requirements, costs to construct a new Cell 5 and raise the other cells above groundwater, and long-term concerns with the existing liners in Cells 2 and 3 made Alternative 4B unfavorable, and it was dropped from further consideration.

2.6.3 Alternative 4C – Raise & Reline All Cells and Add Cell 5

This alternative considered raising and relining all of the existing four cells and adding a new, lined Cell 5 which would be sized to add sufficient evaporative surface area to continue with total containment operation and provide adequate capacity for future 2037 Design Flows.

The most significant advantage of this alternative is the very low costs of operation and maintenance. However, the capital costs overshadow these savings and make this the costliest alternative on a Net Present Worth basis. The very large lagoon surface area requirements for total containment make this method of wastewater disposal very rare for communities the size of Malad.

2.7 Alternative 5 – Lagoons with Reuse via Land Application

2.7.1 Overview

For this alternative, a Reuse Permit would be needed from DEQ allowing for land application. The regulatory framework governing the reuse of effluent includes the following: IDAPA 58.01.17 Recycled Water Rules; IDAPA 58.01.16 Wastewater Rules; and IDAPA 58.01.11 Groundwater Quality Rules.

2.7.2 Alternative 5A – Reuse on New Site and Raise & Reline Cells 1, 2, and 3

This alternative considered that treatment would be provided in the existing lagoons and reuse with plant effluent would occur on a new reuse area. Three major components are required: Lagoon Treatment System, Winter Storage, and Reuse Area.

If Alternative 5A is implemented, the recommended alternative is to re-purpose Cell 4 for sludge storage and dispose of the sludge once it dries several years from now. It should be noted that it may be difficult to evenly dry this amount of sludge. It may need to be turned occasionally and there is a chance it would generate odors during wet weather.

The following is a list of the major improvements needed for this alternative:

- Upgrade Influent Lift Station to Accommodate Raised Cells
- Dredge Cells 1, 2, and 3 and store all solids in Cell 4 for surface drying and disposal
- Raise and Reline Cells 1, 2, and 3
- Convert Cell 1 to a three cell partially mix aerated lagoon system for treatment
- Convert Cells 2 and 3 to Winter Storage
- Upgrade Disinfection
- Purchase new land for reuse area
- Construct Effluent Pumping and Conveyance to the New Reuse Site, presumably 120 ft higher elevation
- Install Irrigation Equipment – Pivots, Wheelines, and/or Handlines

The costs of this alternative are dominated by the capital costs to raise and line the lagoons, purchase land, and dredge the existing biosolids while they are still wet. It is also important to note that this alternative would require a multi-year construction window to keep the existing WWTP in service while taking each cell individually off-line for reconstruction since the existing plant is already at capacity. Mobilization costs will increase the construction costs significantly since the contractor will need to spread the work out over the course of 3-4 years.

2.7.3 Alternative 5B – Reuse on New Site and Construct System on New Site

To avoid the challenges with the existing site, Alternative 5B would include moving the lagoon treatment system and land application site to a new location nearby.

Alternative 5B assumes new lagoons would be located at the same new site as reuse. Both Alternatives 5A and 5B would need to pump to a new site out of the valley floor, so the actual pumping costs would turn out to be very similar with the main difference being whether the pump station was pumping raw wastewater or treated wastewater.

Adding a pivot irrigation system would be more water efficient than wheel lines and hand lines. A pivot system would be less labor intensive and provide time for the operator to focus on other aspects of the treatment system.

The following is a list of the major improvements needed for this alternative:

- Acquire land for new lagoon treatment system and reuse area (In the following discussion, a potential new site has been identified; however, the City has not completed purchase of the new site.)
- Upgrade Influent Lift Station to provide lift up to the new site
- Construct new lagoons for aeration, polishing, and winter storage
- Construct new disinfection system
- Install Irrigation Equipment – Pivots, Wheelines, and/or Handlines
- Decommission the existing WWTP and reuse site
    - Dry the existing biosolids in-situ to reduce disposal volume by 90-95% and simplify disposal by creating dried biosolids rather than having to dredge wet biosolids

Figure 2-1 provides a depiction of how this alternative may be configured on the new proposed site.

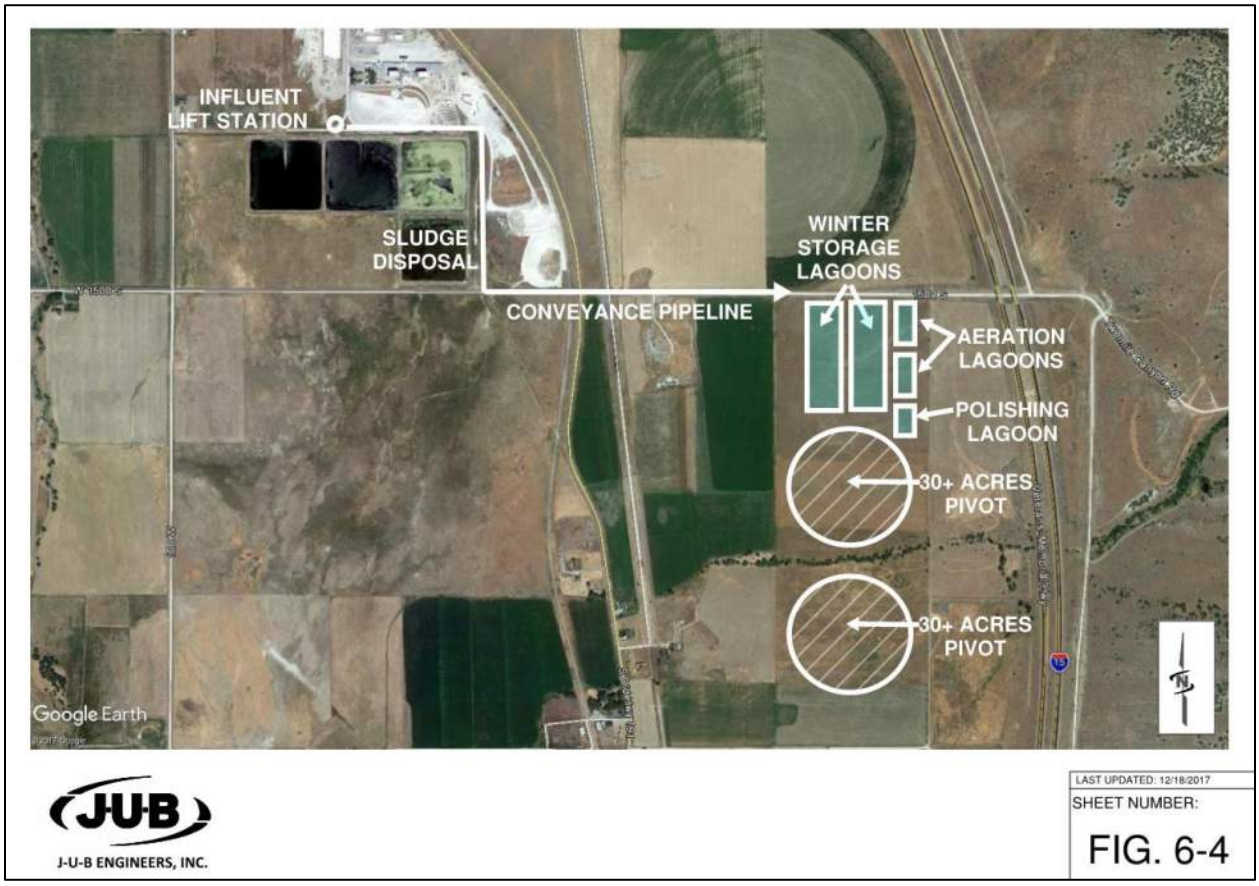

Figure 2-1 Conceptual Layout for Alternative 5B (exact site location to be determined)

Advantages

- The new site soils appear suitable for embankment construction and wastewater reuse
- The new site is downwind of the city and residential properties
- The new site currently has Deep Creek Irrigation water rights and the City would try to acquire water rights for providing supplemental irrigation water
- No wetlands, floodplains, or prime farmland are known to be located on the new site
- Deep groundwater. Shallowest groundwater observed in Feb. 2018 was just over 50 feet deep
- Enough acreage available to design system for 20 years capacity based on design flows & loads

Disadvantages

- The new site elevation is higher than the existing WWTP, requiring a lift station
- New treatment lagoons, chlorination, and reuse equipment will be required

2.7.4 Alternative 5C – Reuse on New Site and Mechanical Treatment on Existing Site

An alternative to treatment lagoons is mechanical treatment. The mechanical treatment system would not have the same groundwater separation requirements as the lagoon treatment systems and therefore could be constructed on the existing site although special foundation consideration may be necessary due to the high groundwater. A new site would still need to be acquired for reuse.

The mechanical treatment system would include headworks (mechanical screen and grit removal), biological activated sludge, clarification/filtration, sludge pumping, sludge storage tank, solids dewatering, effluent pumping and piping to the reuse irrigation system.

The City would still be required to acquire additional land for reuse. As previously discussed, over 65 acres would be required for reuse, buffer zones, and access roads. It is assumed that the activated sludge treatment facilities could be constructed at the existing lagoon site.

2.8 Alternative 6 – Rapid Infiltration

Another alternative for effluent disposal is to beneficially reuse the effluent for rapid infiltration (RI) basins (also known as soil-aquifer treatment). This alternative utilizes lagoon treatment and discharging of the effluent to rapid infiltration (RI) basins. Rapid infiltration systems can typically be operated year round, which is a key advantage over seasonal irrigation systems.

Rapid infiltration systems are highly dependent on site specific soil, topography and hydrogeologic conditions. Minimum soil depths of 5 to 10 feet beneath the RI basins are typically required for adequate treatment of the percolate. This could perhaps be the most challenging aspect of a RI system since groundwater is shallow at the current WWTP site. Similar to what was found in Alternative 5, the new lagoons and RI basin would need to be constructed on a new site since groundwater monitoring at the existing reuse site indicates maximum groundwater is at ground level.

The viability of this alternative is questionable since the Malad area is a IDEQ Nitrate Priority Area and the application of lagoon effluent in an area with shallow groundwater would come under heavy scrutiny by regulators. Implementation of RI would likely require more advanced nutrient removal processes adding to the costs and complexity of treatment beyond that required for reuse. Operation of RI basins during a cold winter can also present operational challenges. Based on these concerns and risk, this alternative was dropped from further consideration.

2.9 Alternative 7 – Mechanical Treatment with Ground Water Discharge

Treated effluent may also be reused by discharging to groundwater, which is known as ground water recharge. In this disposal method, highly treated effluent is applied to a relatively level land surface and allowed to rapidly seep through the soil and eventually to groundwater. This method differs from RI Basins in that treatment is not provided within the soil matrix. Since treatment does not occur in the soil, an advanced mechanical treatment system to produce Class A effluent is required prior to discharge.

Advantages

- Mechanical systems tend to have a much smaller footprint than lagoons.

- A mechanical facility could be incorporated into the existing WWTP site.
- Effluent could be continuously applied to the recharge area whereas RI basins are meant to be used intermittently.

Disadvantages

- High capital and O&M costs and complexity of operation.
- Energy intensive compared to lagoons.
- IDEQ may require that the solids are removed prior to conversion to recharge basins. For the purposes of this Facility Plan, it was assumed that the accumulated solids could remain in the existing lagoons.
- The APE is located within a Nitrate Priority Area which could mean that stricter TN limits could be imposed for GW recharge systems.
- A geotechnical and/or hydrogeologic study would be required as part of the design for this alternative in order to better understand the subsurface conditions and their amenability to groundwater recharge.

2.10 Alternative 8 – Surface Water Discharge

The existing WWTP does not have a National Pollutant Discharge Elimination System (NPDES) permit authorizing discharge to surface water. The availability of surface water suitable for discharge in the Malad Valley at a reasonable distance to the WWTP is very limited.

The City of Malad was not granted a waste load allocation during the previous TMDL process because it was not actively discharging to the Malad River or its tributaries. Therefore, it may be difficult for IDEQ to grant any capacity to Malad for discharge. As a new discharge, an anti-degradation review would also be required. The findings of the review would likely find that other means of effluent disposal are possible and would not look favorably upon a surface water discharge.

Discharge to a surface water would require a mechanical treatment facility which would have both a high capital and O&M costs. Based on experience with other facilities in Southeastern Idaho and facilities discharging to waters under a TMDL, we would expect discharge limits to be exceptionally stringent. In particular, phosphorous limits tend to be most prohibitive and would likely require advanced treatment that would include filtration and chemical removal. Meeting these strict limits and the associated costs make this alternative unfavorable compared to other alternatives.

In addition to complex and costly treatment, conveyance to the discharge point would require a lengthy pipeline and pumping system. The most likely receiving water would be the Malad River which is to the west near Pleasantville. As the crow flies, this is a distance of roughly 4.5 miles. For planning purposes, a large pump station and a discharge pipeline length of at least 5 miles could be assumed which would be very costly.

For these reasons, this alternative was considered to be impractical and was dropped from further consideration.

2.11 Comparison and Screening of Alternatives

From the preceding sections, the following five alternatives are still under consideration:

- Alternative 4C – Reline all cells and add Cell 5
- Alternative 5A – Reuse on New Site and Raise & Reline Cells 1, 2, and 3

- Alternative 5B – Reuse on New Site and Construct System on New Site
- Alternative 5C – Mechanical Treatment and Reuse and Reline Cells 1, 2, and 3
- Alternative 7 – Mechanical treatment with groundwater discharge

To screen these alternatives, the following evaluation criteria were considered:

- Present worth of life cycle costs
- Environmental criteria
- Other miscellaneous criteria including impacts to water supply systems, reliability, implementability, and ability to meet future regulations

Table 2-3 summarizes the present worth (PW) of life cycle costs comparison for each alternative.

Table 2-3 Present Worth of Life Cycle Costs Comparison

Alternative	Capital Cost	Annual O&M Cost	PW of O&M Cost	Total PW Life Cycle Cost
Alternative 4C – Raise & Reline All Cells and Add Cell 5	$44,183,344	$54,060	$735,000	$44,918,344
Alternative 5A – Reuse on New Site and Raise & Reline Cells 1, 2, and 3	$27,480,132	$110,000	$1,495,000	$28,975,132
Alternative 5B - Reuse on New Site and Construct System on New Site	$14,764,424	$112,000	$1,522,000	$16,286,424
Alternative 5C – Reuse on New Site and Mechanical Treatment on Existing Site	$27,042,144	$183,290	$2,491,000	$29,533,144
Alternative 7 – Mechanical Treatment with Groundwater Recharge	$28,258,376	$261,000	$3,547,000	$31,805,376

2.11.1 Environmental Criteria Comparison

Table 2-4 summarizes the environmental concerns for the five alternatives still under consideration. In **Table 2-4,** relative potential for impacts is denoted by colors. Green denotes no or minimal impact; yellow denotes increased impact; and red denotes more significant impact.

Table 2-4 Environmental Criteria Screening

Environmental Criteria	Alternative 4C – Total Containment Lagoons	Alternative 5A – Reuse on New Site and Raise & Reline Cells 1, 2, and 3	Alternative 5B – Reuse on New Site and Construct System on New Site	Alternative 5C – Reuse on New Site and Mechanical Treatment on Existing Site	Alternative 7 – Mechanical Treatment with Groundwater Discharge
Climate/Physical Aspects (topography/geology/and soils)	High Land Use, Shallow Groundwater, Imported Fill needed, and Reuse site unsuitable	Shallow Groundwater, Imported Fill needed, and Reuse site unsuitable	New Reuse site required, balance cut/fill on sloped terrain, deep groundwater	New Reuse site required, mechanical plant is energy intensive	Mechanical plant is energy intensive. Smallest footprint..
Population, Economic, and Social Profile	Increase user rates	Increase user rates	Increase user rates	Increase user rates	Increase user rates
Land Use	Large increase in land requirements due to imported fill and new lagoons	Large increase in land requirements due to imported fill and reuse area	Large increase in land requirements for lagoons and reuse	Large increase in land requirements for new reuse area	Additional land may be required for recharge basins.
Floodplain Development	Minimal long term impact	Minimal long term impact	Minimal long term impact	Minimal long term impact	Minimal long term impact
Water Quality	Minimal long term impact since very little seepage expected	Minimal long term impact with properly managed reuse site	Minimal long term impact with properly managed reuse site	Minimal long term impact with properly managed reuse site	Potential long term impacts to groundwater quality/salinity
Wetlands	Minimal long term impact	Minimal long term impact	Minimal long term impact	Minimal long term impact	Minimal long term impact with properly managed recharge site
Wild & Scenic Rivers	No Wild and Scenic Rivers within project vicinity	No Wild and Scenic Rivers within project vicinity	No Wild and Scenic Rivers within project vicinity	No Wild and Scenic Rivers within project vicinity	No Wild and Scenic Rivers within project vicinity
Cultural Resources	Potential short term impacts during construction	Potential short term impacts during construction	Potential short term impacts during construction	Potential short term impacts during construction	Little to no impacts expected on existing site

Environmental Criteria	Alternative 4C – Total Containment Lagoons	Alternative 5A – Reuse on New Site and Raise & Reline Cells 1, 2, and 3	Alternative 5B – Reuse on New Site and Construct System on New Site	Alternative 5C – Reuse on New Site and Mechanical Treatment on Existing Site	Alternative 7 – Mechanical Treatment with Groundwater Discharge
Flora and Fauna	Disturbance to land for new lagoon.	Properly managed reuse site should improve conditions. Potential short term impacts during construction. Disturbance to land for lagoon reconstruction.	Properly managed reuse site should improve conditions. Potential short term impacts during construction. Disturbance to land for new lagoons.	Properly managed reuse site should improve conditions. Potential short term impacts during construction.	Short term impacts during construction of mechanical facility. No long term impacts expected.
Recreation/Open Space	Loss of land due to new lagoon.	Reuse site will provide open space but public access restricted.	Reuse site will provide open space but public access restricted.	Reuse site will provide open space but public access restricted.	Long term preservation of open space at recharge areas.
Agricultural Lands	Loss of land due to new lagoon.	Properly managed reuse site should improve conditions	Properly managed reuse site should improve conditions	Properly managed reuse site should improve conditions	No impacts to agricultural lands.
Air Quality	Potential for occasional odors from lagoons.	Potential for occasional odors if reuse and storage site not properly managed	Potential for occasional odors if reuse and storage site not properly managed	Potential for occasional odors if reuse and storage site not properly managed	Potential for occasional odors from mechanical WWTF.
Energy	Increase in energy consumption for pumping to new lagoons.	Increase in energy consumption for aeration and pumping.	Increase in energy consumption for aeration and pumping.	Increase in energy consumption for aeration and pumping.	Significant increase in energy consumption for mechanical WWTF.
Public Health	Minimal long term impact	Buffers at reuse and storage site required to limit public access	Buffers at reuse and storage site required to limit public access	Buffers at reuse and storage site required to limit public access	Minimal long term impact

2.11.2 Miscellaneous Criteria Comparison

Table 2-5 summarizes the results of screening the alternatives for other miscellaneous criteria. Again, green denotes no or minimal impact; yellow denotes increased impact; and red denotes more significant impact.

Table 2-5 Miscellaneous Screening Criteria

Miscellaneous Criteria	Alternative 4C – Total Containment Lagoons	Alternative 5A – Reuse on New Site and Raise & Reline Cells 1, 2, and 3	Alternative 5B – Reuse on New Site and Construct System on New Site	Alternative 5C – Reuse on New Site and Mechanical Treatment on Existing Site	Alternative 7 – Mechanical Treatment with Groundwater Discharge
Impacts to Water Supply Systems	Minimal seepage from newly lined lagoons.	Slight chance of well impacts if over-irrigating	Slight chance of well impacts if over-irrigating	Slight chance of well impacts if over-irrigating	Chance of well impacts from recharge
Reliability	Highly reliable, but required effluent pumping to new lagoon. May have issues during extreme wet weather cycles.	Simple system with storage available for upsets, but requires effluent pumping	Simple system with storage available for upsets, but requires influent and effluent pumping	Mechanical treatment more prone to upsets and requires effluent pumping	Mechanical treatment more prone to upsets and failures
Implementability	Land and earthwork requirements are large.	Additional land needed, earthwork requirements are large, but system is widely practiced in region	Additional land needed, but system is widely practiced in region	Additional land needed for reuse and additional operator training for mechanical system	No land needed, need to confirm soil compatibility with hydrogeologic modeling, and need additional operator training for mechanical system

Based on this screening, Alternative 5B appears to be the preferred alternative. The City received judicial confirmation to proceed in January 2018. **Section 3** provides an overview of implementation of Alternative 5B as the preferred alternative.

3. Preferred Alternative and Implementation

3.1 Phasing and Capital Improvement Plan

Alternative 5B ranked the highest in the screening process and is recommended as the preferred alternative. The first phase would focus on constructing the new treatment system and reuse area. Phase 2 would focus on decommissioning the existing site after the new system is brought online. Phase 3 would focus on replacing critical areas in the collection system. The following general phasing of improvements was assumed for the purposes of generating opinions of probable costs for this study.

Phase 1 would make the required improvements needed to construct a new treatment and reuse system at a new site:

- Acquire land for new lagoon treatment system and reuse area
- Upgrade Influent Lift Station to provide lift up to the new site
- Construct new conveyance pipeline up to the new site
- Construct new lagoons for aeration, polishing, and winter storage
- Construct new disinfection system
- Install new irrigation pipelines and reuse pump station
- Install Irrigation Equipment – Pivots, Wheelines, and/or Handlines
- Plant vegetation/crops as needed for reuse

Phase 2 would make the required improvements needed to decommission the existing site:

- Decommission the existing WWTP and reuse site
    - Dry the existing biosolids in-situ for 2-5 years to reduce surface disposal volume and simplify disposal by creating dried biosolids rather than having to dredge wet biosolids
- Regrade the existing site for final site closure

Phase 3 would replace critical areas of the collection system.

To address the compliance schedule, the City should begin steps immediately to implement Phase 1. The timing of Phase 2 will depend on the time it takes for the biosolids to dry out.

Based on current information and assumptions, the capital cost opinions for Phase 1 and Phase 2 are summarized as follows:

- Phase 1 – $12.4 M
  Phase 2 – $1.3 M[(1)]
- Phase 3 – $1.1 M
- Total – $14.8 M

(1) Costs for Phase 2 are in 2019 dollars assuming an inflation rate of 3% dollars and will need to be adjusted accordingly for the year when Phase 2 is actually constructed and using actual inflation rates over this period.

It is important to note that the engineer's opinions of probable cost presented in this Facility Plan are based on a number of assumptions and are considered "feasibility level" (AACE Class 4) whereas a 25% contingency has been added.

3.2 Anticipated Schedule

The anticipated schedule for implementation of the improvements is summarized in **Table 3-1**.

Table 3-1 Anticipated Project Schedule for Phase 1

	2018				2019				2020				2021				2022			
Task	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Complete FPS	X																			
Complete EID	X	X	X																	
Apply for grant and loan funding [A]		X	X	X																
Obtain full funding [A]					X	X														
Design with agency reviews						X	X	X	X	X	X									
Advertise and open bids											X	X								
Award												X	X							
Construction [B]													X	X	X	X	X	X		
Seepage testing [C]																		X	X	
Start up																			X	X
Project complete																				X

[A] These timeframes will be dependent on funding agency requirements, application periods, and approvals. Property and right-of-way acquisition may also affect timeframes.

[B] Construction may need to shut down during winter months.

[C] Seepage testing of the relined lagoons will be required during non-freezing months.

4. Affected Environmental and Anticipated Impacts

4.1 Area of Potential Effect/Proposed Project Planning Area

4.1.1 Area of Potential Effect

The Area of Potential Effect (APE) is shown on **Figure 4-1**. The APE consists of the existing WWTP site where a lift station would be constructed. The APE also consists of the 132 acres of land the City plans to acquire for the new treatment system and a narrow corridor connecting the existing a new site where an underground pressure main would be constructed to convey wastewater up to the new site. The new site is currently located within Oneida county and zoned Multi-Purpose use. **Appendix 4-A** includes the "City of Malad Zoning Map" which shows the existing lagoons in the industrial zoning area. It also contains correspondence from the county stating that an "Official Zoning Map of Oneida County" does not exist; rather, the county decided approximately 7 years ago to "revert back to an old zoning ordinance that makes the county all "multi-use"."

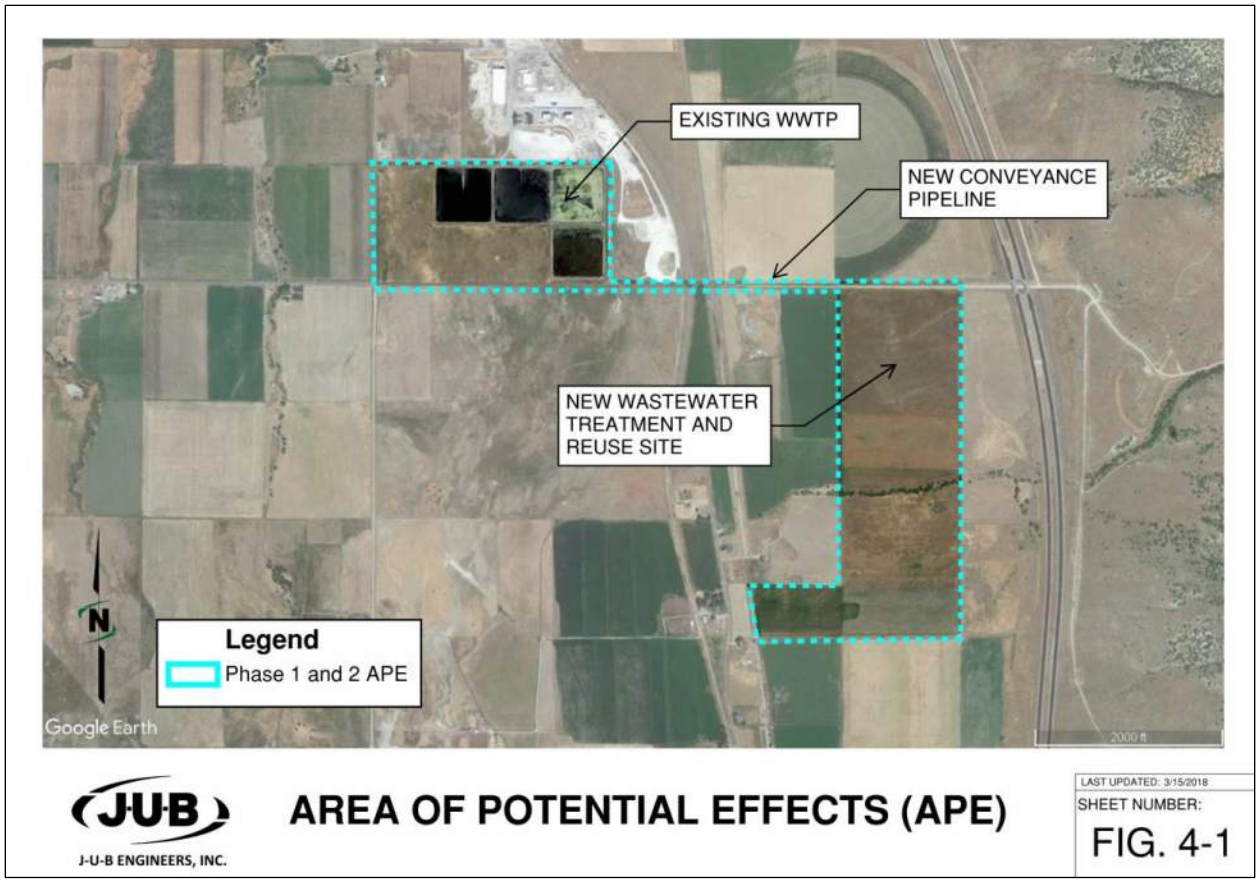

Figure 4-1 Area of Potential Effects (APE)

The new site appears to be suitable site for relocation of the wastewater treatment and reuse systems. A geotechnical evaluation was conducted in February 2018 on the new site and reported that the native soils are suitable for constructing lagoon embankments (see **Appendix 4-B**). A soil evaluation was conducted in November 2017 and concluded that the site is suitable for crop production with

wastewater reuse (see **Appendix 4-C**). A site tour was conducted in November 2017 with DEQ, SICOG, USDA, the City, and J-U-B Engineers and no significant red-flags to use the site were noted.

The proposed improvements are anticipated to have positive effects on groundwater due to increased separation from groundwater, improved reuse soils, and adequate land to construct a wastewater treatment system sized for the next 20 years in order to prevent unpermitted discharge of wastewater. The proposed project is divided into three phases. The APE for shown in Figure 4-1 encompasses both Phase 1 and Phase 2 improvements.

4.1.2 Planning Area

The City of Malad is located in southeastern Idaho in the eastern portion of Oneida County. The City is adjacent to the Malad Range and Wasatch Fault on the east and the Malad River on the west. The City of Malad is located within Township 14S Range 36 E of the Public Land Survey.

The planning area includes the City of Malad and immediately adjacent areas served by the Malad wastewater system. This Facility Plan is based on population projections which the City can reasonably be expected to serve within a 20 year design period from 2017 to 2037. Flows based on 40-year projected growth will be used for sizing collection lines.

Figure 4-2 shows the Planning Area for this study along with the current city boundary. Sufficient land was included in the Planning Area to accommodate projected residential, commercial, and industrial growth, and allow some flexibility in future development. A number of factors were considered in delineating the geographical boundary of the Planning Area, including recent developmental patterns, location of existing water and wastewater system facilities, expandability of the existing wastewater system, land use designations, topography of the area and discussions with City personnel regarding areas of anticipated growth.

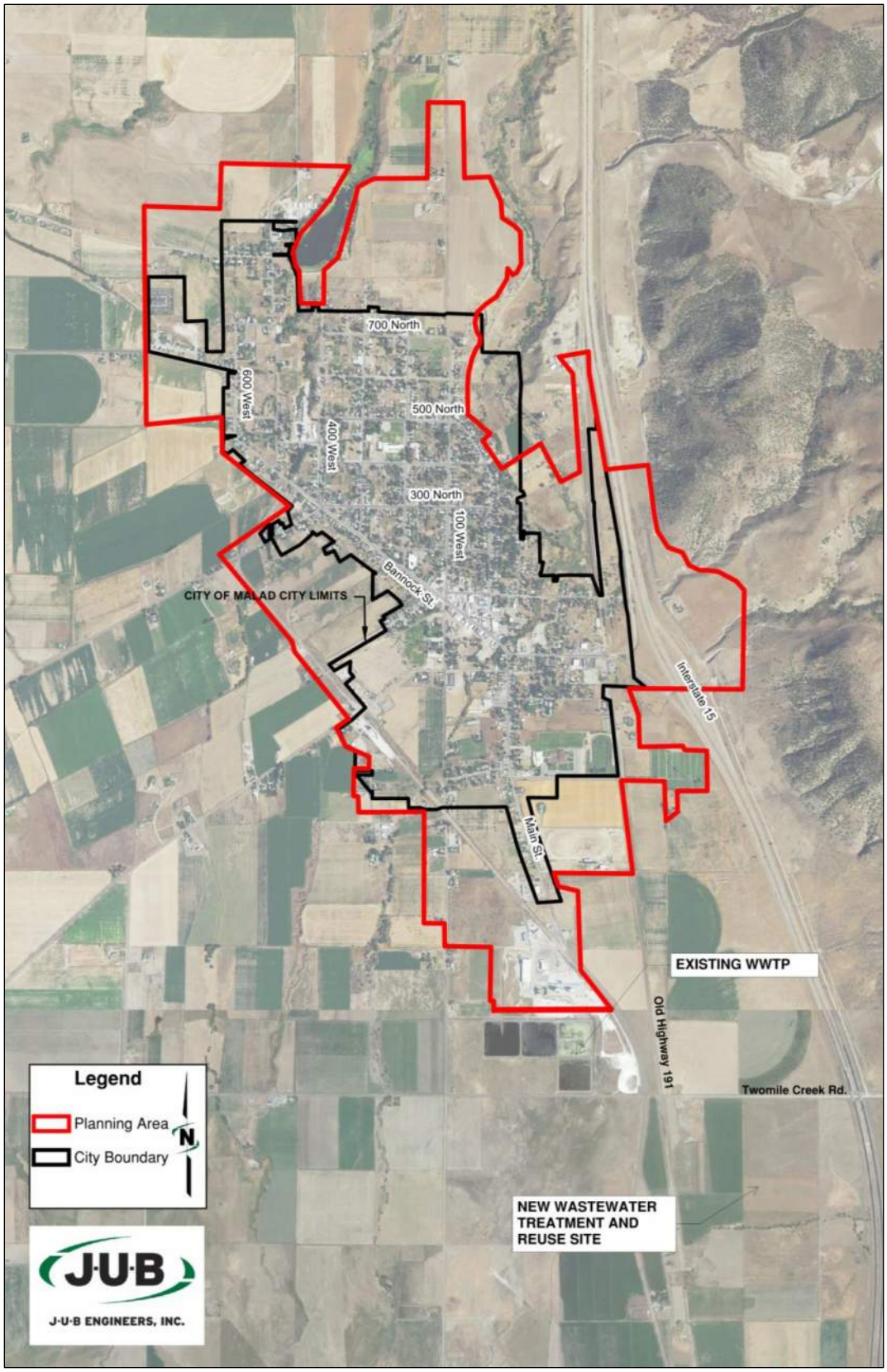

Figure 4-2 Malad Planning Area and City Limits

4.2 Land Use

4.2.1 Affected Environment

Physical Aspects: Topography, Soils, and Geology

The topography of the Malad area is depicted on the U.S. Geologic Survey (USGS) topographic map in **Figure 4-3**. As shown on the map, the topography of the Malad area lies on the east side of Malad Valley, which is mostly flat prairie land to the north, south, and west covered mostly with sagebrush and grassland. Malad Valley transitions into mountains and hills which are also mostly covered with sagebrush and grassland. To the east of Malad, foothill highlands transition to ridges of mountains. Elevations of the City of Malad range from 4,500 feet above mean sea level (AMSL) in the south to 4,720 feet AMSL in the north. The majority of the area is situated on relatively flat land at an average elevation of 4,600 feet AMSL. Elevation typically decreases from east to west and from north to south.

The subsurface is composed mainly of sedimentary rock and basaltic volcanic rock deposits, as well as limestone, dolomite, quartzite, and sandstone. Malad Valley contains substantial deposits of lake and windblown silt loam, which make up much of the rich soils that support Idaho's agricultural economy.

According to the United States Department of Agriculture (USDA) soil surveys, the soils of the Malad area consist primarily of well-drained silt loams. These soils are found at 0 to 4 percent slopes and have developed in mixed alluvium and/or lacustrine deposits. Typically, this soil is found in lake terrace regions at an elevation ranging from 4,400 to 5,200 feet AMSL. The majority of the region's agricultural area consists of this type of soil.

The rooting depth of well-drained silt loam can range from 4 to more than 40 inches. The water capacity is low and the permeability is moderate. Runoff is slow and the hazard of erosion is minimal. While such droughty soil conditions limit crop production, proper irrigation management can increase plant growth. Overall, silt loam is mainly used for agriculture with the production of potatoes, hay, small grain, and grass seed.

East of the City of Malad are hills and mountains which are part of the Caribou National Forest. The soils on the foothill regions are predominantly well-drained gravelly loam. These soils are found at 4 to 12 percent slopes and developed from mixed alluvium and lacustrine deposits. The soils on the mountain slopes consist of well-drained cobbly loam. These soils are found at 30 to 60 percent slopes and developed from colluvium and residuum weathered from limestone. Typically this soil is found in mountain slopes at an elevation ranging from 4,400 to 8,000 feet AMSL.

A Natural Resource Conservation Service (NRCS) Web Soil Survey Map of the Malad area is included in **Appendix 4-D**. Major soil classifications in the area include the following:

Existing Site APE

- Parleys silt loam, 0 to 2 percent slopes
- Collinston silt loam, 0 to 2 percent slopes
- Tickason very fine sandy loam, 2 to 4 percent slopes
- Samaria-Sterling complex, 4 to 12 percent slopes

New Site APE

- Parleys silt loam, 0 to 2 percent slopes
- Kearns silt loam, 0 to 2 percent slopes
- Kearns silt loam, 2 to 4 percent slopes
- Samaria-Sterling complex, 4 to 12 percent slopes

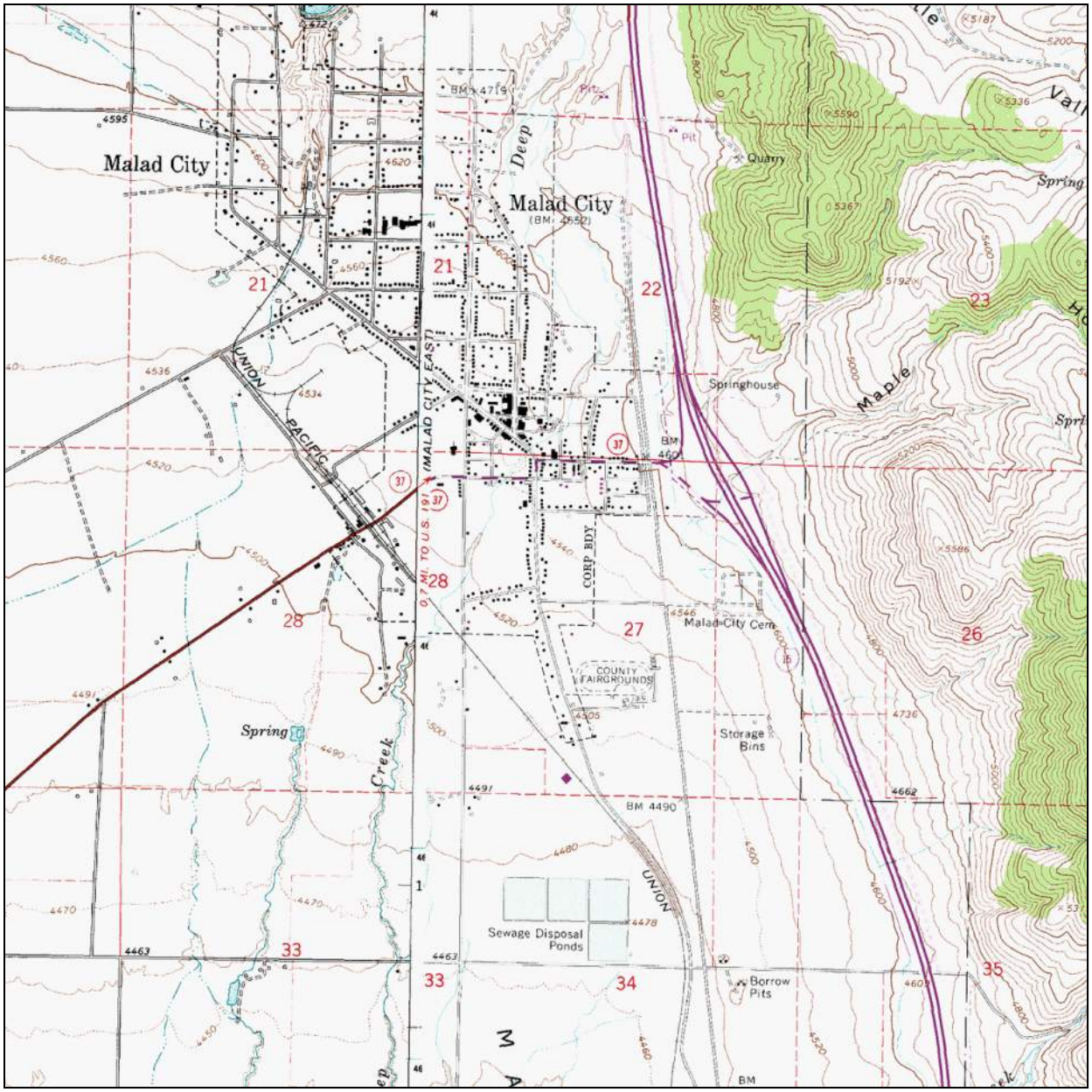

Figure 4-3 Malad USGS Topographic Map

Important Farmland Protection

The new site location in the APE does not contain prime farmland according to the USDA NRCS. A USDA NRCS map showing farmlands classification in the vicinity of the city is included in **Appendix 4-E**.

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. 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, slope range from 0 to 6 percent, acceptable drainage and few to no rocks.

Formally Classified Land

A search of formally classified lands was conducted using the online resources listed below. These search results showed that no formally classified lands exist within the new project location.

- Idaho State Parks, Recreation, Wildlife Area's, Trails: http://parksandrecreation.idaho.gov/
- National Parks, Historic Sites & Monuments: http://www.nps.gov/state/ID/
- Natural Landmarks: https://www.nps.gov/subjects/nnlandmarks/state.htm?State=ID
- Oregon Trail: http://www.nps.gov/oreg/parkmgmt/index.htm
- Lewis & Clark Trail: http://www.nps.gov/lecl/
- USFWS Wildlife Refuges: http://www.fws.gov/refuges/refugeLocatorMaps/Idaho.html
- Fish & Game WMA: https://idfg.idaho.gov/visit/wildlife-management-areas

4.2.2 Environmental Impacts

Whereas the new site is already used for agriculture, no negative impacts are expected to APE land due to wastewater reuse. The new wastewater lagoons will be lined and should not adversely impact the long-term use of the land. Malad City has contacted land owners to begin the process of land acquisition for this project.

The improvements are not expected to contribute to changes in land use associated with recreation, mining, or large industrial developments. The proposed improvements increase capacity for existing and future flows from reasonable growth and reduce risk of permit violations. Even as the community grows, it is not likely that there will be an overall significant impact on land use in the area.

4.3 Floodplains

4.3.1 Affected Environment

The APE is not located in a mapped floodplain, as shown in **Figure 4-4**. The Deep Creek runs along the eastern border of Malad City and travels through the southern part of the city. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for the City of Malad, included in **Appendix 4-F**, the majority of the area near the Deep Creek is classified as Zone A2 and Zone B under the Special Flood Hazard Areas (SFHAs) subject to inundation by the 1.0 percent annual chance flood. Zone A2 areas are those for which a base flood elevation and flood hazard factors have been determined. Zone B areas are moderate flood hazard areas between the limits of the 100-year base flood and the 500-year flood.

Appendix 4-F also contains flood maps from Oneida County showing the Floodplain Overlay Zoning Districts. These maps were copied from the "Oneida County Multi-Jurisdiction all Hazard Mitigation Plan." The project APE location is overlaid on the maps. The project APE is not located in floodplains according to the county maps.

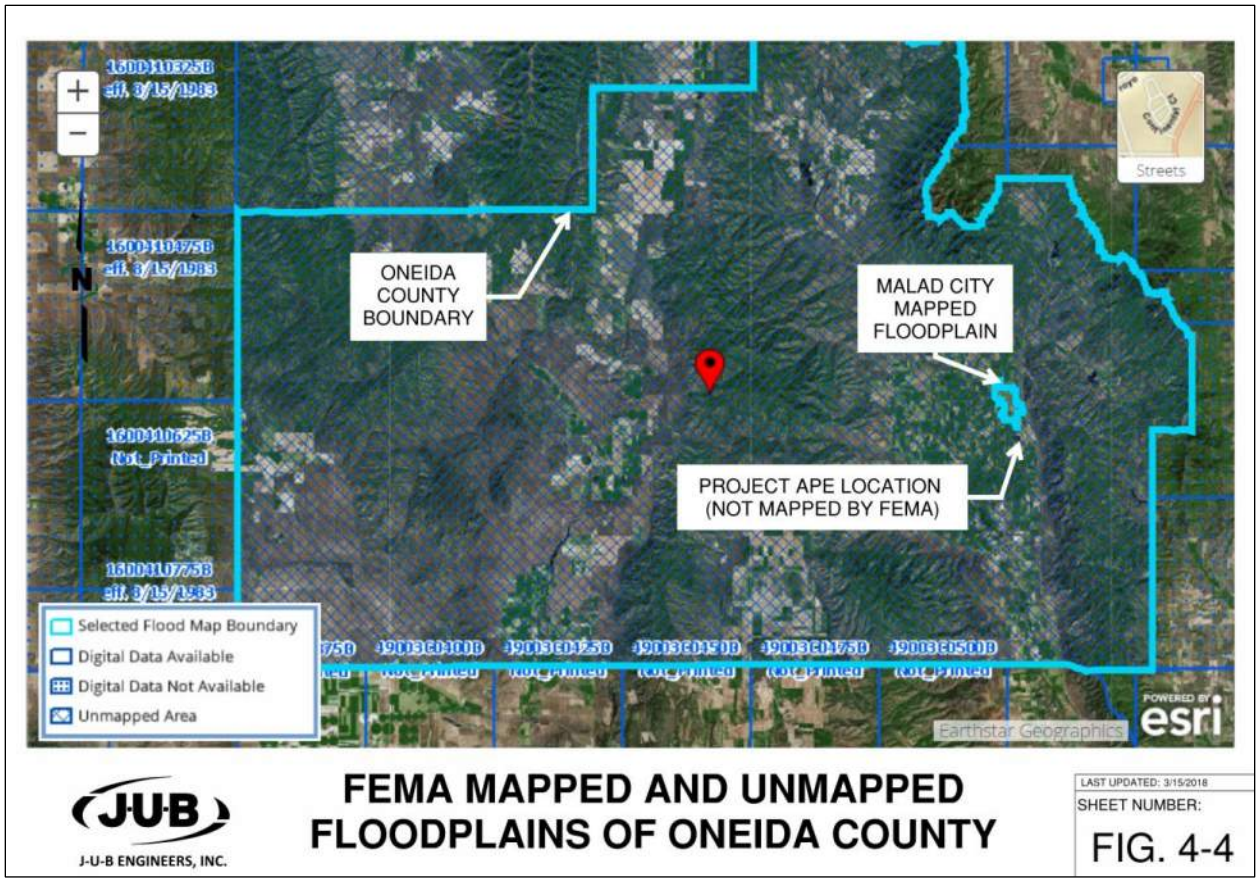

Figure 4-4 Oneida County Mapped and Unmapped Floodplains

4.3.2 Environmental Impacts

No negative impacts are expected due to flooding. Idaho Department of Water Resource's (IDWR) NFIP Coordinator confirmed they had no comments regarding the proposed project.

4.4 Wetlands

4.4.1 Affected Environment

Based on the NWI maps, there are no classified wetlands inside the new site location in the APE. Wetland maps and information is included in **Appendix 4-G**. Wetland areas in the Malad area are associated with creeks, rivers, and reservoirs. Types of wetland areas include Freshwater Emergent, Freshwater Pond, and Other. These classifications are generally described as follows:

1. **Freshwater Emergent**: Herbaceous marsh, fen, swale, and wet meadow
2. **Freshwater Pond**: Pond
3. **Other**: Farmed wetland, saline seep and other miscellaneous wetland.

The existing reuse area at the WWTP site contains approximately 5.5 acres at the east end that is designated as Freshwater Emergent Wetlands by the National Wetlands Inventory (NWI) maps. Visual observation of this area raised the question as to whether the area is actually wetlands. A survey of the existing reuse area was conducted by a certified wetlands biologist for this project. The survey showed that only 0.33 acres at the east and west ends are in fact palustrine emergent marsh wetlands. **Figure 4-5** shows the wetlands delineation map for the existing land application area from this survey.

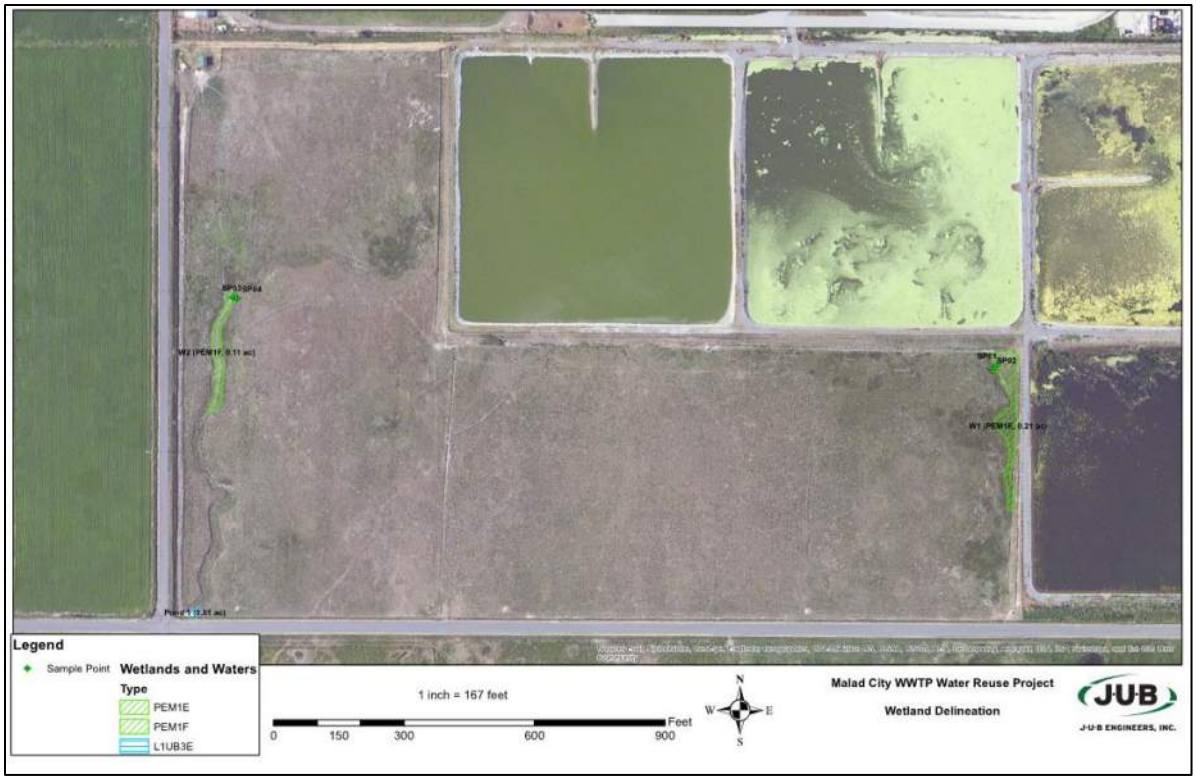

Figure 4-5 Malad City Land Application Site Wetland Delineation

4.4.2 Environmental Impacts

Because no construction is anticipated within the footprint of known wetlands, no negative impacts are expected to wetlands.

4.5 Water Resources

4.5.1 Affected Environment

Wild and Scenic Rivers

According to the Wild and Scenic Rivers Act, rivers designated as Wild and Scenic have been identified as, "possess[ing] outstanding remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values." A Wild and Scenic River is protected to preserve the character of the river and to protect its "outstanding remarkable resources."

No National Wild and Scenic River segments have been designated in Oneida County or near the planning area. See **Appendix 4-H** for a map of the national wild and scenic river locations.

Proximity to Sole Source Aquifer

The Sole Source Aquifer program was established under Section 1424(e) of the Safe Drinking Water Act of 1974. The program allows individuals and organizations to petition the EPA to designate aquifers as the "sole or principal" source of drinking water for an area. To meet the sole source criteria, an aquifer must supply at least 50 percent of the drinking water consumed in the area overlying the aquifer. The EPA guidelines also stipulate that these areas can have no alternative drinking water source(s) that could physically, legally and economically supply all those who depend upon the aquifer for drinking water.

Malad is not located within a sole source aquifer boundary as designed by the EPA. The APE is located approximately 10 miles south of the ridgeline that delineates the southern boundary of the Eastern Snake River Plain Aquifer Source Area, as shown in **Appendix 4-I**.

Surface Water

Approximately 1360 linear feet of Twomile Creek passes through the project area and is considered Waters of the United States based on a preliminary jurisdictional determination (PJD) by the US Army Corps of Engineers (USACE). Other surface waters within the Malad area includes the Malad River, the Little Malad River, Devil Creek, Deep Creek, Daniels Reservoir, and Crowthers Reservoir. The Little Malad River, Deep Creek, and Devil Creek are major tributaries to the Malad River. The identified creeks and rivers are typically very low flow watercourses and drainages during much of the year. Twomile Creek is fed by springs and snow melt; it has a diversion structure east of I-15 to capture water for irrigation. Twomile Creek source is associated with one (1) Idaho Department of Water Resources (IDWR) Water Right No. 15-7118 which permits 3.22 cubic feet per second diversion flow between April 1 and November 1.

Because the identified creeks and rivers in the Malad valley are typically very low flow watercourses and drainages during much of the year, they are not considered viable options for a surface water discharge. Even the Malad River located over 4 miles to the southwest resembles more a wetland-filled drainage than a river during summer months. If the City pursued a surface water discharge permit, getting a TMDL allocation for phosphorus and suspended solids would be a very difficult, extended process. Based on experience with other communities that discharge into Bear River tributaries, the phosphorus allocation would likely require treatment to very low levels (e.g. 0.05 mg/L or less).

It is expected that DEQ will continue monitoring the water quality of the Bear River and its tributaries assessing the progress made in achieving the target water quality parameters. At some point in the future, other "pollutants of concern" may also join total phosphorus and suspended solids as "listed pollutants" at some point in the future if further water quality testing of the rivers indicates impairment due to these pollutants.

Groundwater Hydrology

Malad is within the Malad Designated Nitrate Priority Area per http://www.deq.idaho.gov/media/1117846/ranking-list-2014.pdf.

A geotechnical evaluation was conducted at the new site location in the APE. The shallowest groundwater was observed at 52 ft below the surface along the western border of the property.

According to the Idaho Department of Water Resources' (IDWR) Groundwater Resources of Idaho report, the source of groundwater in Malad Valley is a 170 to 200 feet thick deposit of sand and gravel containing intermittent layers of clay. This serves as a shallow aquifer for the flow system and provides water to irrigation wells. Primary recharge for the aquifer is from percolation of irrigation, precipitation, and snowmelt along with infiltration from rivers and canals.

According to correspondence with local property owners in Malad, artesian wells and shallow groundwater surround the existing WWTP. At certain times of the year, groundwater levels are even with the ground elevation in the monitoring wells surround the WWTP. A topographical survey of the lagoons showed that the bottom of the lagoons are lower than the surrounding ground elevations.

High groundwater levels at the existing WWTP are at or near the ground surface. **Figure 4-6** provides a summary of groundwater levels for the wells. Major modifications to the existing WWTP will require that the lagoons meet the DEQ groundwater separation rule: a minimum separation of two (2) feet

between the bottom of the pond and the maximum groundwater elevation shall be maintained (IDEQ Wastewater Rules IDAPA 58.01.16 Section 493.05(b)). **Figure 4-7** illustrates the groundwater levels relative to the bottom of the existing lagoons.

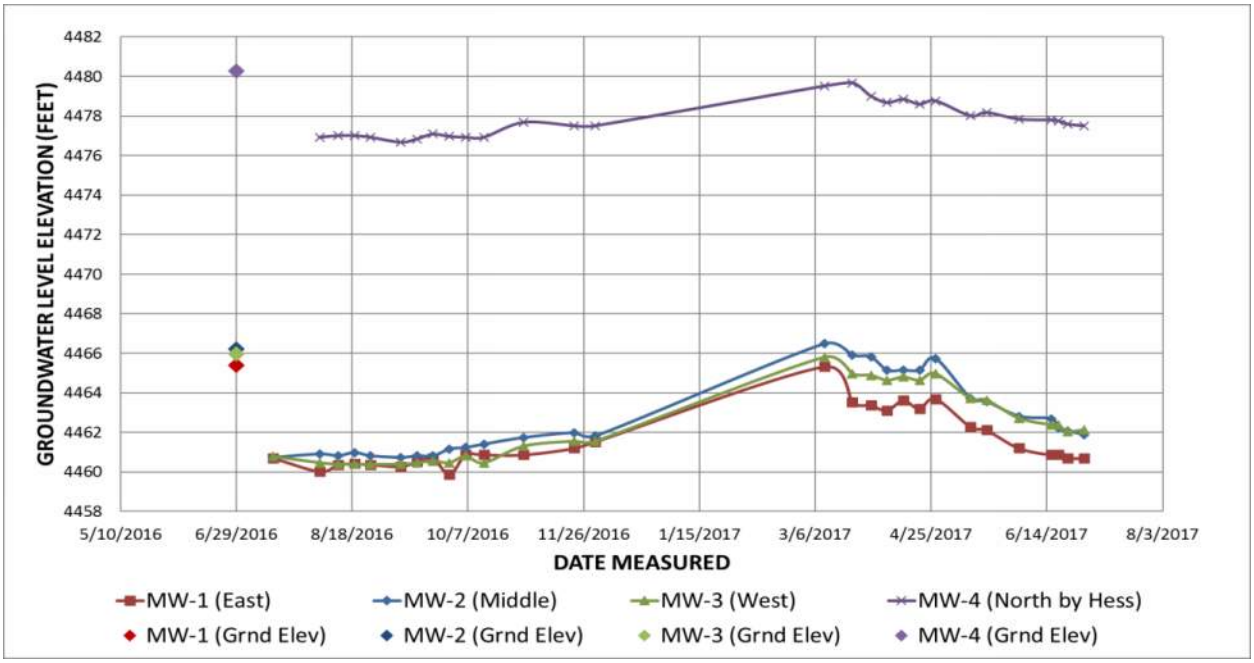

Figure 4-6 Groundwater Monitoring Well Data

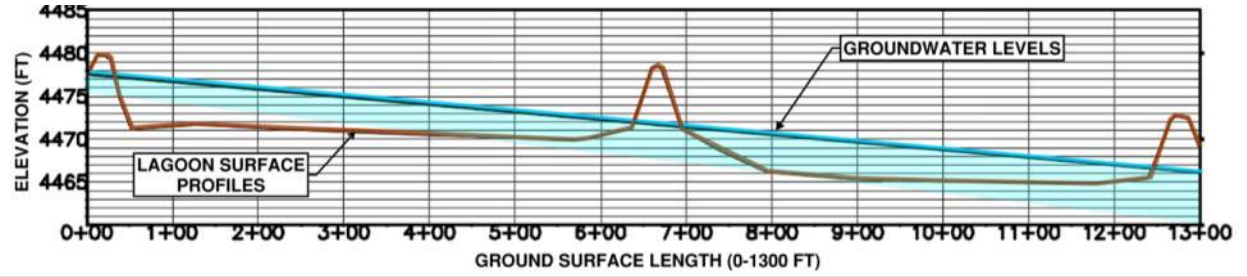

Figure 4-7 Groundwater Levels and Lagoon Elevations

The location of the existing groundwater monitoring wells are identified on **Figure 4-8**. Groundwater samples were collected from Monitoring Wells 1-4. Water quality results are summarized in **Table 4-1**. Samples were collected after purging three casing volumes. Samples were measured by IAS Envirochem (Pocatello, ID). Results show excessively high nitrate levels in the upgradient monitoring well (MW-4) near the industrial park which will require additional work to determine the source for the high nitrate. The downgradient wells reported non-detect levels of nitrate. DEQ requires an upgradient well from the potential reuse site in order to show that land application of wastewater is not causing a negative impact on the groundwater quality.

Figure 4-8 Location of Monitoring Wells and Industrial Park

Table 4-1 Monitoring Well Water Quality on June 19, 2017

Parameter	MW-4 (Upgradient) Results	MW-2 (Downgradient) Results	Rules [A]	Units	Method
Depth of Well	16.57	18.10		ft	
Static Water Level	0.6 to 3.6	0 to 5.50		ft	
Ammonia as N	.12	< 0.05		mg/L	350.1
Biochemical Oxygen Demand	15	2		mg/L	5210B
Chemical Oxygen Demand	95	70		mg/L	410.4
Fecal Coliforms	< 1	< 1	< 1	MPN/100 mL	Fecal Coliform
Nitrate/Nitrite as N	117.3	< 0.05	10/1	mg/L	300.0
pH	6.9	6.8	6.5-8.25	Units	150.1
Specific Conductance	2090	2070		µS/cm	120.1
Total Coliforms	< 1.0	< 1.0	1	MPN/100 mL	9223B
Total Dissolved Solids	1574	1328	500	mg/L	2540C
Total iron	0.10	< 0.05	0.3	mg/L	6010C
Total Kjeldahl Nitrogen	< 0.5	< 0.5		mg/L	351.2
Total Manganese	0.11	0.09	.05	mg/L	6010C
Total Phosphorus as P	0.12	0.13		mg/L	365.2

(A) IADAP Groundwater Rules 58.01.11.200

4.5.2 Environmental Impacts

The proposed improvements to the WWTP are not anticipated to adversely affect water rights, the available quantity, or the quality of groundwater. The project will improve the existing WWTP system by providing a new site with significantly greater separation from groundwater which will alleviate concerns with seepage and groundwater contamination. The new site will be designed to provide at least 20 years treatment capacity which will avoid unpermitted wastewater discharge.

The proposed improvements will also greatly expand the amount of land available for reuse. The additional of land area will provide flexibility for the City to apply treated wastewater for land application rather than relying on seepage and evaporation along. This will also reduce the areal nitrogen loading to the current reuse site and the potential for nitrate pollution of the groundwater at that location which has been a concern in the past.

The USACE noted that "A Department of the Army (DA) authorization may be required if [the project proposes] to perform work or place dredged and/or fill material into Twomile Creek. However work in other areas of the project site that are upland would not require DA authorization under Section 404 of the Clean Water Act (CWA)." All lagoon construction is expected to take place upland of the creek and therefore no DA permit would be required. A DA permit may be required for the reuse pipeline that crosses Twomile Creek to irrigate the south field. A DA permit would be required for Phase 2 work to decommission the lagoons on the existing site if the fill material from the embankments and/or biosolids has the potential to cover any of the existing wetlands.

The DEQ Pocatello Regional Office was also consulted as part of the environmental review for the proposed improvements. The DEQ recommended incorporating Best Management Practices (BMPs) as well as developing a Stormwater Pollution Prevention Plan (SWPPP) in accordance with federal requirements. The proposed improvements will disturb more than 1 acre; therefore a SWPPP is required.

Short-term impacts may occur due to ground disturbance but will be mitigated through the use of BMPs. Cumulative adverse effects are not anticipated.

4.6 Coastal Resources

4.6.1 Affected Environment

There are no coastal resources located in the APE.

4.7 Biological Resources

4.7.1 Affected Environment

Fauna, Flora, and Natural Communities

The primary habitats and ecosystems in the Malad area include uplands, grasslands, sagebrush shrublands, wetlands, rivers, and streams. There is a variety of animals in the Malad area, including mule deer, elk, moose, songbirds, waterfowl, small mammals, and various fish species. Predominate tree species in Malad include juniper, maple, cottonwood, chokecherry, and pine. Understory plants in the area include wheatgrass, bluegrass, wildrye, and big sagebrush.

Endangered Species

There are zero threatened, endangered, or candidate species within the APE as reported in the IPaC official species list. **Appendix 4-J** contains the official species list. An updated list can be requested online from the U.S. Fish and Wildlife Services website: https://ecos.fws.gov/ipac/location/KHJLST4NHJECPIBH3WXHCEXALM/resources#endangered-species.

Migratory Birds

Table 4-2 lists 12 migratory birds that warrant special attention in the APE. This is not a list of every bird that may be found at the location. Any migratory bird in the APE is expected to be found within the existing treatment lagoons. Construction at the new site is not expected to disturb birds.

Table 4-2 Migratory Birds of Concern within the APE [A]

Common Name	Scientific Name	Level of Concern	Breeding Season
Bald Eagle	*Haliaeetus leucocephalus*	Non-BCC Vulnerable	Breeds Dec 1 to Aug 31
Brewer's Sparrow	*Spizella breweri*	BCC - BCR	Breeds May 15 to Aug 10
Clark's Grebe	*Aechmophorus clarkii*	BCC Rangewide (CON)	Breeds Jan 1 to Dec 31
Golden Eagle	*Aquila chrysaetos*	BCC - BCR	Breeds Dec 1 to Aug 31
Green-tailed Towhee	*Pipilo chlorurus*	BCC - BCR	Breeds May 1 to Aug 10
Lesser Yellowlegs	*Tringa flavipes*	BCC Rangewide (CON)	Breeds elsewhere
Long-billed Curlew	*Numenius americanus*	BCC Rangewide (CON)	Breeds Apr 1 to Jul 31
Pinyon Jay	*Gymnorhinus cyanocephalus*	BCC Rangewide (CON)	Breeds Feb 15 to Jul 15
Sage Thrasher	*Oreoscoptes montanus*	BCC - BCR	Breeds Apr 15 to Aug 10
Virginia's Warbler	*Vermivora virginiae*	BCC Rangewide (CON)	Breeds May 1 to Jul 31
Willet	*Tringa semipalmata*	BCC Rangewide (CON)	Breeds Apr 20 to Aug 5
Willow Flycatcher	*Empidonax traillii*	BCC - BCR	Breeds May 20 to Aug 31

(A) Information accessed online 4/17/2018: https://ecos.fws.gov/ipac/location/KHJLST4NHJECPIBH3WXHCEXALM/resources#migratory-birds

4.7.2 Environmental Impacts

Idaho Department of Fish and Game was consulted and responded that application of appropriate BMPs will have minimal impact on the areas fish and wildlife resources. No responses were received from the U.S. Fish & Wildlife Service (USFWS) indicating that there would be significant impacts to fish or wildlife as a result of the proposed improvements. After construction of the new treatment lagoons, the water and plants in the existing lagoons are expected to dry up and/or be removed which would eliminate habitat for bird species. Fortunately, there are adjacent wetlands to the south of the existing lagoons for habitat and the new lagoons will provide new water surface area for birds.

4.8 Cultural Resources and Historic Properties

4.8.1 Affected Environment

Cultural and Historic Resources

Malad is the county seat for Oneida County. It is located 50 miles south of Pocatello and approximately 13 miles north of the Idaho-Utah border. Malad is an easy distance from Yellowstone National Park, Jackson Hole, Lava Hot Springs, Pebble Creek Ski Area, and the Grand Tetons. With the residents in such close proximity to recreational areas, they are able to enjoy year-round outdoor activities such as alpine, cross-country, and water skiing; hunting; fishing; camping; and snowmobiling.

Malad is the hub of Interstate-15 and State Highway-38, making the City easily accessible by cars, trucks, and buses. Interstate 15 runs parallel to the eastern boundaries of the City. Highway-38 runs through the southern part of the City and leads to Pleasantview and the Holbrook area.

According to the history of Malad presented on www.malad.com, fifteen families first settled in Malad in 1856. But the first permanent resident was A.W. Vanderwood in 1863. According to the history of Oneida County presented on www.maladidaho.org, the first successful attempt to colonize in the Malad City area was 1864 when an irrigated farming community was established by a group of about seven men and boys. By 1886, “Malad City was the fastest growing village in eastern Idaho”, and Malad City’s first hotel was built in 1871.

There are seven places in the Malad area listed on the National Register of Historic Places maintained by the Idaho State Historic Preservation Office (SHPO). None of these places are located within the APE.

1. Co-Op Block and J.N. Ireland Bank
2. Evans, D.L., Sr., Bungalow
3. Jones, Jedd House
4. Malad Second Ward Tabernacle
5. Oneida County Courthouse
6. Samaria Historic District
7. United Presbyterian Church

Housing, Industrial, and Commercial Development

The City of Malad service area includes a mix of residential, industrial, and commercial land-use areas. The local economy is supported by agriculture, a grain mill, a Diesel Exhaust Fluid (DEF) manufacturer, and a pumice factory, along with a number of service and retail stores. The industrial park located north of the WWTP was recently expanded providing additional land for industrial development.

The primary residential development in the City impact area is a subdivision on the west side of the city which has been developed slowly over the past many years. Other residential development has generally consisted of a few lots at a time and has been located where services are easily extended. In general, the population of Malad has not been growing. According to city-data.com, the population change since 2000 is negative 4.4% annually.

4.8.2 Environmental Impacts

To determine if there are any current or potential cultural resources at the WWTP site, the Idaho State Historic Preservation Officer (SHPO) was consulted. SHPO recommended a Cultural Resources Inventory (CRI) be conducted of the APE. The CRI was done by Sundance Consulting, Inc. A full copy of the report is contained in **Appendix 4-K**. The CRI concluded that two eligible sites, the Oregon Short Line Railroad and Old Highway 191, passed through the APE; however, the proposed boring under the site "will have no adverse effect." There are no other historic properties on the APE site. The following is an excerpt from the conclusion of the CRI report:

> The 222-acre Area of Potential Effect was intensively surveyed in its entirety for cultural resources, using transects no more than 30 meters apart; one previously recorded site was identified and two newly identified historic sites were recorded. The Project area has been previously disturbed by agricultural use and road development. Site 71-17930 – Oregon Short Line Railroad (Malad Valley branch) has been determined eligible for the National Register of Historic Places (NRHP); however, the proposed Project would bore under the site and would have no adverse effect. Although site US 191 – Old Highway 191 is recommended eligible for the NRHP, the proposed Project would bore under the site and would have no adverse effect. The existing wastewater lagoons are historic in age, but the site is recommended not eligible for the NRHP. The proposed Project will have no adverse effect to historic properties.

There were no responses from any of the tribes. As good practice, in the event that archeological artifacts (such as beads, arrowheads, pottery, fabric, glass, metal fragments, or other human-made objects that appear to predate 1960) or human remains are inadvertently discovered during project construction, work will cease and State Historical Preservation Officer (SHPO), the Shoshone Bannock Tribes, the Shoshone-Paiute Tribe, and the Northwest Band, Shoshone will be notified. Mitigation measures will be conducted as the SHPO and tribe(s) direct. Work will not resume at the discovery site without consent of the SHPO and tribe(s).

4.9 Aesthetics

4.9.1 Affected Environment

The existing treatment lagoons are visible from the Interstate. Lagoons on the new site will also be visible from the Interstate. Construction of new treatment lagoons with added capacity will help prevent uncontrolled and unpermitted wastewater discharge to the surrounding area which could otherwise result in increase odors.

4.9.2 Environmental Impacts

None of the agencies consulted expressed aesthetic concerns. Landscaping was not included in the project but could be implemented in the future, if needed or requested by the public.

4.10 Air Quality

4.10.1 Affected Environment

The Malad area generally enjoys good air quality and is located in an attainment area. Idaho DEQ defines an attainment area as a geographic area that meets or has pollutant levels below the National Ambient Air Quality Standards. An area that exceeds the air quality standards is considered to be a "non-attainment area" (NAA) for a particular component, or total air quality. There are several NAA's in Idaho, with the closest being the Cache Valley and Portneuf Valley NAAs.

4.10.2 Environmental Impacts

The DEQ Pocatello Regional Office was consulted as part of the environmental review for the proposed improvements. The DEQ stated, "we have not identified negative environmental impacts associated with the project." The DEQ also included the rules for control of fugitive dust, IDAPA 58.01.01.650 and 651, requiring all reasonable precautions be taken to prevent particulate matter from becoming airborne.

Short-term impacts are anticipated in association with construction emissions; however the contractor will be required to implement BMPs to monitor, prevent, and control generation of dust and other airborne particulate matter. Impact to air quality is not anticipated to exceed state or federal limits. Reasonable controls will be developed and implemented during construction and maintenance to prevent the generation of smoke and fugitive dust during all phases of the project.

4.11 Social Impact Assessment/Environmental Justice

4.11.1 Affected Environment

Socioeconomic Profile

The population of Malad in 2013 was 2,063 with 52.7 percent male and 47.3 percent female. Races in Malad consist of 94.7 percent White, 2.9 percent Hispanic, 0.4 percent American Indian, 0.8 percent Asian, and 1.2 percent Other. The median resident age is 37.3 years. The average income per household in 2013 was $34,465, with an average house value of $115,940.

A third party income survey was conducted by SICOG and results approved by the Department of Commerce on November 20, 2017. Results from the survey indicated a 57.6% LMI for the City of Malad. **Appendix 4-L** contains a copy of the report and signed copy of the results tabulation.

According to the Oneida Soil and Water Conservation District's Five-Year Resource Conservation Plan for July 2014 through June 2019, the economic trend is encouraging. The economy appears to be stabilizing due to an increase in nonfarm employment. The unemployment rate was 5.3%, as of the 2014 report, which is one of the lowest since year 1999.

Environmental Justice

It is not expected that any specific population segment will unfairly benefit from an improvement project. However, the community in general will collectively benefit from improving the wastewater facilities.

4.11.2 Environmental Impacts

The anticipated annual residential user rates are expected to be in the range of 2% to 2.4% of the community's average household income, which would qualify the city for disadvantaged loans. The city is concerned that increased user rates can be a burden to people in the community, especially those with low income.

4.12 Noise

4.12.1 Affected Environment

Noise in the Malad area is relatively low and is generally limited to normal traffic and commercial activities. Noise levels higher than normal may be caused by increased vehicle traffic on Interstate 15, air traffic at the Malad Airport, or rail traffic along the Malad Valley Railway, none of which would directly be a result of the proposed project.

4.12.2 Environmental Impacts

Noise levels higher than normal may be caused short-term, during construction. Long-term noise levels are anticipated to be nearly equivalent to the existing noise levels.

4.13 Transportation

4.13.1 Affected Environment

The conveyance pipeline and electrical service between the existing WWTP and the new site will need to pass underneath a railroad track and Old Highway 191. Construction will take place primarily in the new site of the APE with some construction taking place in the existing WWTP for the new lift station.

4.13.2 Environmental Impacts

Short-term impacts are expected due to construction activity. Traffic is light on the roads to/from the APE and the railroad tracks are used infrequently. Construction is anticipated to occur over the space of two-years, primarily during non-winter seasons. Earthwork equipment will need to be brought to/from the new site and contractors will increase the traffic coming to/from the site. There are two direct routes to the new site from the interstate. The first requires routing through the city and then along Old Highway 191. The other route can bypass the city by taking the frontage road that runs to the east of the interstate. The frontage roads stops at a tee where vehicles can head directly west along Twomile Creek Rd. The northern property line of the new site is located on Twomile Creek Rd. The northeast corner of the new site is located approximately 900 feet west of Frontage Road tee.

4.14 Human Health and Safety

4.14.1 Affected Environment

The nearest overhead high-voltage electric transmission lines are located approximately 1200 feet to the west of the new site in the APE. No substations, cell or microwave towers are located within the APE. Electrical service will need to be extended from the existing site to the new site.

Public health is improved by the collection and treatment of wastewater. An unpermitted discharge of the wastewater due to inadequate storage at the WWTP and excessive seepage into the ground through the bottom of the lagoons are potential public health concerns that are being addressed with this project. In Southeast Idaho, the vectors of most concern are mosquitos, ticks, and flies.

4.14.2 Environmental Impacts

No negative impacts to human health and safety are expected from electromagnetic fields (EMF) in the APE. Positive long-term impacts are expected from the improved ability to meet permit requirements and reduced seepage that could impact groundwater.

4.15 Corridor Analysis

4.15.1 Affected Environment

The conveyance pipeline between the existing WWTP and the new site will need to pass underneath a railroad track and Old Highway 191—located approximately 900 to 1200 feet west of the southeast corner of the existing WWTP. From there the pipeline would continue westward approximately 2000 to 3000 feet to the new site. Electrical service will need to be extended along the same route and distance to the new site of the APE.

4.15.2 Environmental Impacts

The City and electrical utility (Rocky Mountain Power) will need to obtain right-of-ways for the conveyance pipeline and electrical service.

4.16 Environmental Impact Mitigation

Table 4-3 summarizes the environmental impact mitigation measures identified by consulted agencies for the proposed improvements.

Table 4-3 Environmental Impact Mitigation

Affected Environment Section		Regulatory Agency Consulted	Mitigation Measure(s)
4.8	Cultural Resources and Historic Properties	Idaho State Historical Society	• A cultural resources inventory was conducted of the area of potential effects (APE). Survey included both archaeology and the built environment, and was conducted by an individual or firm meeting the Secretary of the Interior's Professional Qualifications for both archaeology and architectural history.
4.2	Agricultural Lands	IDEQ, State Office (email 2/5/2018)	• Complete form AD-1006 if conversion of prime or important farmland to non-agricultural uses.
4.5	Water Resources	US Army Corps of Engineers	• Acquire DA permit if project proposed to place dredged and/or fill material into Twomile Creek or wetland(s).

Affected Environment Section		Regulatory Agency Consulted	Mitigation Measure(s)
		IDEQ, Pocatello Regional Office	• Mitigation: install reuse pipeline that crosses Twomile Creek by boring underneath the creek or installing when the creek is seasonally dry • Mitigation: avoid placing dredged material from the existing lagoon site into wetlands when decommissioning • Mittigation: implement construction site runoff control in the stormwater pollution prevention plan (SWPPP) • Development of a SWPPP is recommended. • Implementation of Best Management Practices (BMPs) and/or Best Available Technology (BAT) for storm water management is recommended. • The Idaho Release , Reporting, and Corrective Action Regulations (IDAPA 58.01 .02 .851 and .852), require notification within 24 hours of any spill of petroleum product greater than 25 gallons and notification for the release of lesser amounts if they cannot be cleaned up within 24 hours.
		IDEQ, State Office (scoping meeting)	• Idaho Ground Water Quality Rule (IDAPA 58.01.11.301.02.a), the activities at the facility shall be managed in a manner which maintains or improves existing ground water quality through the use of best management practices and best practical methods to the maximum extent practical
4.7	Biological Resources	Idaho Department of Fish and Game	• Application of appropriate Best Management Practices will have minimal impact on the areas fish and wildlife resources.
4.8	Cultural Resources and Historic Properties	Idaho State Historical Society	• A cultural resources inventory was conducted of the area of potential effects (APE). Survey included both archaeology and the built environment, and was conducted by an individual or firm meeting the Secretary of the Interior's Professional Qualifications for both archaeology and architectural history.
4.10	Air Quality	IDEQ, Pocatello Regional Office	• All reasonable precautions must be taken to prevent the generation of fugitive dust. • Take all reasonable precautions to prevent particulate matter (dust) from becoming airborne. (i.e. use of water or chemicals, application of dust suppressants, use of control equipment, covering of trucks, paving, removal of earth or stored materials)

4.17 Cumulative Effects

Quantitative

The existing wastewater treatment system is at the end of its design life. Two of the existing lagoons have excessive seepage rates and the system cannot treat more flow without overflowing the lagoons. The new wastewater system would be designed to meet the forecasted wastewater flow for a 20-year planning period (Year 2037). The forecasted growth would be consistent with the draft 2015 Comprehensive Plan, which assumed an annual average 0.39% growth rate over the planning period. This would be slightly higher than the historical growth rate of 0.31% experienced between 1970 and 2010.

Based on the projected slow growth rate, the City would not be expected to realize much revenue from impact fees. Thus, increases in user fees would be the logical means to fund the improvements, or at least partially fund them in combination with grants and loans. Based on preliminary estimates by consultants and USDA, estimated user rate fees may increase from $10.50/month to $60-$70/month over the course of the next 20 to 40 years, depending on the duration of the loan.

Qualitative

The qualitative cumulative effects of the project are summarized back in **Table 2-4** and **Table 2-5** for Alternative 5-B.

5. Agency Correspondence

5.1 Agencies Consulted

DEQ conducted a State Environmental Review Process (SERP) scoping meeting on February 2, 2018, in order to coordinate the information required for this EA/EID document. Notes from the meeting are contained in **Appendix 5-A**. Following the meeting, USDA sent a list of the agencies that require consultation. **Table 5-1** lists these agencies which were consulted for the EA and includes dates that agency responses were received, if applicable. All letters and emails were sent out on March 15, 2018. Copies of agency consultation letters and responses received are included in **Appendix 5-B.**

Table 5-1 Agency Consultation List

Agency	Contact	Address	Response Received
U.S. Army Corps of Engineers	James Joyner	900 N. Skyline Dr., Suite. A Idaho Falls, ID 83402-1718 (james.m.joyner@usace.army.mil)	5/4/2018
Department of Environmental Quality, Pocatello Regional Office	Tom Hepworth	444 Hospital Way #300 Pocatello, ID 83201 (tom.hepworth@deq.idaho.gov)	3/23/2018
Idaho State Historical Society	Matt Halitsky, Historic Preservation Review Officer	210 Main Street Boise, ID 83702 (matt.halitsky@ishs.idaho.gov)	3/23/2018
Department of Environmental Quality, State Office	Micahel Stambulis	1410 N. Hilton Boise, ID 83706 (michael.stambulis@deq.idaho.gov)	no comments received
Idaho Department of Water Resources	Maureen O'Shea State Floodplain Coordinator	322 East Front Street Boise, ID 83720 (maureen.oshea@idwr.idaho.gov)	3/19/2018
Idaho Department of Water Resources		900 N Skyline Drive, Suite A Idaho Falls, ID 83402	no comments received
U.S. Fish and Wildlife Service, Eastern Idaho Field Office		4425 Burley Drive, Suite A Chubbuck, ID 83202	no comments received
Shoshone-Bannock Tribes	Carolyn Boyner Smith, Cultural Resources Coordinator	Consultation conducted through the IDEQ Boise office	no comments received
Northwestern Band, Shoshone	Patti Timbimboo, Cultural Resource Officer	862 S. Main Street, Suite 6 Brigham City, UT 84302 (ptimbimboo@nwbshoshone.com)	no comments received
Shoshone-Paiute Tribe	Ted Howard, Cultural Resources Program	PO Box 219 Owyhee, NV 89832 (howard.tedl@shopai.org)	no comments received
Bureau of Land Management – Idaho Falls District	Mary D/Aversa / Melissa Warren	1405 Hollipark Dr. Idaho Falls, ID 83401 (mdaversa@blm.gov)	3/16/2018
Federal Aviation Administration		1601 Lind Avenue SW Renton, WA 98057	no comments received

Agency	Contact	Address	Response Received
Idaho Department of Commerce	Sharon Deal	700 W State St Boise, ID 83702 (sharon.deal@commerce.idaho.gov)	3/16/2018
Idaho Department of Fish and Game	Jim Mende / Mark Gamblin Regional Supervisor	1345 Barton Road Pocatello, ID 83204 (jim.mende@idfg.idaho.gov)	3/29/2018 (email); 4/5/2018 (letter)
Malad City	Joan Hawkins Mayor	59 Bannock St Malad City, ID 83252 (hawkinsjfw@gmail.com)	3/21/2018
NRCS/USDA Field Office	Laren Nalder District Conservationist	137 N 100 W Malad City, ID 83252 (laren.nalder@id.usda.gov)	no comments received
Oneida County	Planning & Zoning Department	10 Court Street Malad City, ID 83252	4/9/2018
Southeast Idaho Council of Governments, Inc.	Susan Lorenz Economic Development Director	214 E Center PO Box 6079 Pocatello, ID 83205 (lorenz@sicog.org)	3/21/2018

Table 5-2 summarizes the responses received from all agencies that responded by email or letter. Copies of agency consultation letters and responses received are included in **Appendix 5-B**.

Table 5-2 Agency Responses

Agency	Response Received
US Army Corps of Engineers	DA permit required if project proposes to place dredged and/or fill material into Twomile Creek.
Department of Environmental Quality, Pocatello Regional Office	No identified negative impacts known. Recommended BMPs for: Storm Water Management, Air Quality, Hazardous Waste, and Engineering Review
Idaho State Historical Society	Concerned proposed project may have potential to affect historic properties. A cultural resources inventory was conducted of the APE and final report received 5/3/2018.
Idaho Department of Water Resources	No comments, project not located within a mapped floodplain.
Idaho Department of Commerce	No comments, no known environmental issues associated with the proposed project.
Bureau of Land Management – Idaho Falls District	No comments or concerns at this time.
Idaho Department of Fish and Game	Apply BMPs
Malad City	No comments or issues.
Oneida County	No comments or issues.
Southeast Idaho Council of Governments, Inc.	No comments or issues.

6. Public Notices

6.1 Public Participations

At a regularly scheduled City Council meeting on February 8, 2017, the Malad City council recommended relining the existing lagoons and implementing reuse as the preferred alternative. However, the recommendation was preliminary based on information available at the time. Since then, results from the groundwater study, topographical survey, and field agronomy reports showed that due to deficiencies of the existing WWTP site, the project costs would be much higher than what was previously estimated.

After evaluating additional alternatives, the challenges with the previous alternative were presented at a Council Meeting on September 13, 2017, and a new alternative to replace the treatment plant and reuse system at a new site was proposed.

Malad City council held a Public Hearing on October 11, 2017 where the plan to pursue judicial confirmation was proposed. At the meeting, a review of the project was presented along with the alternatives under consideration. The City held a special council meeting on October 25, 2017, where a resolution was passed to proceed with judicial confirmation.

On October 26, 2017, a public notice in the local newspaper announced a public hearing to be held regarding the City's intent to pursue an Idaho Community Development Block Grant (ICDBG). During a Public Hearing at the regularly scheduled City council meeting on November 8, 2017, the alternatives under consideration and estimated costs were presented including the new alternative to construct the improvements at a new site, and the CDBG grant application was discussed. News of the wastewater project and judicial confirmation were published on the front page of the local newspaper on November 8, 2017.

Judicial confirmation was approved on January 16, 2018, following a public hearing on January 5, 2018, before the judge at the County Courthouse. The revised and updated Facility Plan Study was technically approved by USDA on February 2, 2018 and by DEQ on March 8, 2018.

6.1.1 Public Notices

Public notices were distributed as follows:

1. Public Notices printed in The Idaho Enterprise, the Malad City local newspaper:
    a. Display ad for a Public Hearing to be held on October 11, 2017 to consider proceeding with judicial confirmation (published September 21, 2017)
    b. Notice for a Public Hearing to be held November 8, 2017 to apply for CDBG grant (published October 26, 2017)
    c. Notice of filing of a petition for judicial confirmation and for a Public Hearing to be held January 5, 2018 (published December 14 through 28, 2017)
2. Malad City Hall notices
    a. Notice for a Public Hearing to apply for CDBG grant (posted October 25, 2017 through November 8, 2017)
    b. Notice of filing of a petition for judicial confirmation and for a Public Hearing to be held January 5, 2018 (posted December 14 through 28, 2017)

6.1.2 Locations of Facility Plan Addendum for Review

Hard and digital copies of the revised and updated Facility Plan Study were sent to the City Hall for review on January 9, 2018. DEQ technical approval of the plan was received on March 8, 2018. The City Council recommended Alternative 5B as the preferred alternative on April 11, 2018.

6.1.3 Public Meetings

In-person public comment opportunities were given during Malad City Council meetings and other public meetings with the following topics and dates:

1. Council Meeting - February 10, 2016: Wastewater Facilities Plan Presentation
2. Council Meeting - December 14, 2016: Wastewater Facilities Plan Presentation
3. Council Meeting - August 2, 2017: Wastewater Facilities Plan Presentation update
4. Council Meeting - September 13, 2017: Presentation regarding challenges with existing site and proposal for new site
5. Council Meeting - February 8, 2017: Resolution signed to initially recommend Alternative 5C as the preferred alternative
6. Public Hearing - October 11, 2017: Consideration to file a petition for judicial confirmation
7. Council Meeting - October 25, 2017: Passed a resolution to proceed with judicial confirmation.
8. Public Hearing - November 8, 2017: Wastewater improvement alternatives and estimated costs and intent of City to apply for CDBG grant presented
9. Public Hearing - January 5, 2018: Hearing before judge regarding judicial confirmation
10. Council Meeting - April 11, 2018: Resolution signed to recommend Alternative 5B as the preferred alternative

Except for minor verbal questions, no significant public comments were received as part of the above meetings.

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8. Appendices

Appendix 4-A – Malad City and Oneida County Zoning

Appendix 4-B – STRATA Geotechnical Evaluation Report

Appendix 4-C – Stukenholtz New Site Suitability Report

Appendix 4-D – NRCS Soil Survey Map

Appendix 4-E – NRCS Farmland Classification Map

Appendix 4-F – Malad City FIRM and Oneida County Floodplain Maps

Appendix 4-G – Wetland Map

Appendix 4-H – Wild and Scenic Rivers Map

Appendix 4-I – Sole Source Aquifer Map

Appendix 4-J – IPaC Official Species List

Appendix 4-K – Cultural Resources Inventory Report

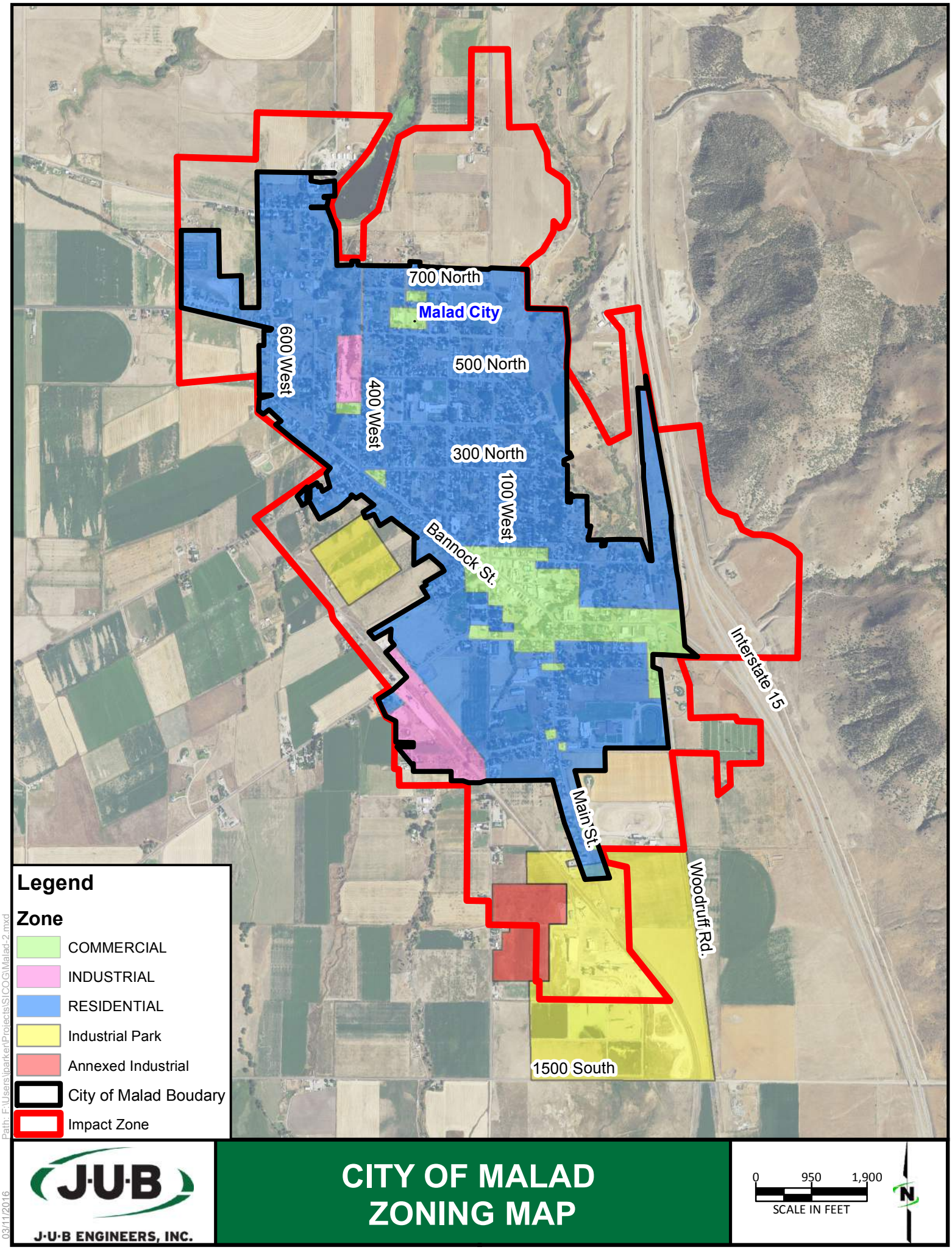
Appendix 4-L – Income Survey Report

Appendix 5-A – SERP Scoping Meeting Minutes

Appendix 5-B – Agency Correspondence Sample Letter and Responses

Appendix 4-A

Malad City and Oneida County Zoning


700 North
Malad City
500 North
600 West
400 West
300 North
100 West
Bannock St.
Interstate 15
Main St.
Woodruff Rd.
1500 South
Legend
Zone
COMMERCIAL
INDUSTRIAL
RESIDENTIAL
Industrial Park
Annexed Industrial
City of Malad Boudary
Impact Zone
J·U·B ENGINEERS, INC.
CITY OF MALAD
ZONING MAP
0
950
1,900
SCALE IN FEET
N
Path: F:\Users\parker\Projects\SICOG\Malad-2.mxd
03/11/2016

Jon Farrell

From: Lola Bott <lbott@co.oneida.id.us>
Sent: Monday, May 7, 2018 3:00 PM
To: Jon Farrell
Subject: RE: copies

Jon,
Right now we don't have an "Official Zoning Map of Oneida County". About seven years ago the commissioner's decided to revert back to an old zoning ordinance that makes the county all "multi-use". Planning and Zoning is working to change this but it will be quite some time before we get the Development Code ready for Public hearing and get it implemented in.
Lola

From: Jon Farrell [mailto:jfarrell@jub.com]
Sent: Monday, May 07, 2018 2:36 PM
To: Lola Bott <lbott@co.oneida.id.us>
Subject: RE: copies

Hi Lola,

Those flood maps work great. Please send me the "**Official Zoning Map of Oneida County**" too. This is for the Malad City environmental assessment for the wastewater improvements project.

Thank you,

JON FARRELL, P.E.
J-U-B ENGINEERS, Inc.
c 208 221 2806 *o* 208 232 1313 ext 8008

From: Lola Bott <lbott@co.oneida.id.us>
Sent: Monday, May 7, 2018 2:22 PM
To: Jon Farrell <jfarrell@jub.com>
Subject: copies

Jon,
Here are the maps that we have in the All Hazard Mitigation Plan that I have. It is a 2009 copy. I'm not real sure what you are wanting so please let me know if I can help with anything else.
Lola Bott
Oneida County Planning & Zoning Administrator

Appendix 4-B

STRATA Geotechnical Evaluation Report

STRATA
Integrity from the Ground Up

April 4, 2018
File: PO17072A

Mr. Alan Giesbrecht, P.E.
J-U-B Engineers, Inc.
275 South 5th Avenue Suite 220
Pocatello, ID 83201
Phone: (208) 232-1313
Email: ASG@jub.com

RE: **Preliminary Geotechnical Engineering Evaluation**
Malad Wastewater Treatment Lagoons
Malad City, ID 83252

Greetings Mr. Giesbrecht:

Strata, Inc. (STRATA) has performed an authorized preliminary geotechnical engineering evaluation for the proposed Wastewater Treatment Lagoons to be located near Malad City, Idaho. The intent of our geotechnical engineering evaluation was to explore subsurface conditions and provide preliminary engineering recommendations based on our findings. In the attached report, we summarize our field and laboratory test results and present our geotechnical engineering opinions and recommendations.

We understand the project will consist of construction of a new series of wastewater treatment lagoons that will replace the existing lagoons currently in use. The following report provides specific geotechnical recommendations for use during project planning, design, and construction. It is our opinion that geotechnical continuity with the project team throughout construction will assist in confirming our design assumptions and recommendations. Furthermore, we recommend that when preliminary design has advanced, and a specific site selected, additional exploration should occur to confirm soil conditions in the area of the site improvements.

The project owner, design team, and construction team must read, understand, and implement our recommendations in their entirety. Report portions cannot be relied upon individually without the supporting text of remaining sections, appendices, and/or plates. The success of the proposed construction will depend on following the report recommendations; good construction practices; and providing the necessary construction monitoring, testing, and consultation to verify that work has been completed as recommended. We recommend STRATA be retained during construction to provide monitoring, testing, and consultation services to verify our report recommendations are implemented.

We appreciate the opportunity to continue our professional relationship with J-U-B Engineers, Inc. We look forward to our continued involvement on this project by aiding with the planning process and throughout construction. Please do not hesitate to contact us if you have any questions or comments.

Sincerely,
STRATA

Rocky V. Benedetti, E.I.T.
Staff Engineer

Mitch H. Quick, P.E.
Project Engineer

Dan P. Gado, P.E.
Senior Engineer

RVB/MHQ/DPG/ap

Preliminary Geotechnical Engineering Evaluation
Malad Wastewater Treatment Lagoons
Malad City, ID 83252

PREPARED FOR:
J-U-B Engineers, Inc.
Mr. Alan Giesbrecht, P.E.
275 South 5th Avenue Suite 220
Pocatello, ID 83201

PREPARED BY:
STRATA, Inc.
2815 Garrett Way, Ste C
Pocatello, Idaho 83201
Telephone (208) 237-3400

April 4th, 2018

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Malad City, ID 83252

INTRODUCTION

Strata, Inc. (STRATA) is pleased to provide our preliminary geotechnical engineering evaluation for the Malad Wastewater Treatment Lagoon project located south of Malad City, ID 83252, at the approximate World Geodetic System of 1984 (WGS84) coordinates of 42.161211° N, and 112.226223° W. We understand the project will consist of construction of a new series of wastewater treatment lagoons for the City of Malad. We accomplished this evaluation referencing our revised proposal, dated January 15, 2018 and authorized January 29, 2018. To accomplish our evaluation, STRATA performed the following services:

1. Discussed project requirements with Mr. Alan Giesbrecht and Mr. Jon Farrell of J-U-B Engineers, Inc. (JUB), with respect to existing site conditions, proposed construction, and required engineering parameters.
2. Reviewed current and historical site photographs, areal imagery, well reports, and geologic maps to gain an understanding of anticipated surface and subsurface conditions.
3. Coordinated exploration timing and location with JUB, the project owner, and the regional utility locate service to reduce the potential for damage to existing utilities.
4. Observed the advancement of 7 exploratory borings, and 6 exploratory test pits at the project location. The borings were advanced between February 20 and February 22, 2018, and the test pits were advanced on February 20, 2018, at locations approved by JUB. We present the approximate exploration locations on Plate 1: *Exploration Location Plan,* and the WGS84 coordinates for each exploration location, obtained via a recreational grade handheld global positioning system, are shown on the exploration logs, presented in Appendix A.
5. Performed laboratory tests referencing *ASTM International* (ASTM) procedures. The soil index properties are included on the boring and test pit logs presented in Appendix A, and the laboratory testing summary, located in Appendix B of this report.
6. Performed engineering analyses to provide preliminary geotechnical design and construction recommendations. Our engineering analyses provides geotechnical earthwork and embankment recommendations for the proposed construction.
7. Prepared and provided an electronic copy of our geotechnical findings and opinions.

PROJECT UNDERSTANDING

Site Description

The primarily undeveloped project site contains three separate proposed locations for construction of the new lagoon systems (Site A, Site B, and Site C), with approximate boundaries shown on Plate 1. Each site is approximately 30 acres in size. The proposed project site's northern edge is located approximately ¾ of a mile east along Two-Mile Canyon Rd, in relation to the existing lagoons. The topography of the sites slopes from the east to the south and west with surficial elevation changes of up to approximately 70 feet and the steepest slopes (approximately 6% to7%) observed at the Site A location.

The site is surrounded by undeveloped and agricultural land, with a few residential properties located to the west, Veterans' Memorial Highway (I-15) located to the east, and the small centrally-located Two-mile Creek, flowing seasonally from east to west. The site also is boarded by Two-Mile Canyon Road on the north and by 2200 S. on the south.

Proposed Construction

We understand Malad City (City) plans to construct a series of new wastewater lagoons that will replace the four existing wastewater lagoons (cells 1–4) which are currently in use. We understand that the new lagoons may be constructed in one of three potential locations (sites A, B and C), and Site A is currently the assumed location that will be utilized. We anticipate site development will include a series of five connected lagoons of varying size, all constructed with synthetic liners. We understand that the lagoons are planned to be constructed with excavation cuts up to 14 feet deep, and embankment fills up to 19 feet in height. Furthermore, we understand that due to elevation changes observed at the site, terracing or stepping of the lagoons will likely be required to facilitate construction of the lagoons with the sloping topography. Anticipated lagoon side slopes may be as steep as 2H:1V for both inboard and outboard slopes, with shallower slopes being considered for inboard slopes, if necessary, to accommodate the proposed liner design.

FIELD EXPLORATION

Subsurface Exploration

A STRATA engineer observed the advancement of seven (7) exploratory borings utilizing a CME 75 truck-mounted drill rig equipped with 8-inch outside-diameter (4.25” inside dia.), hollow-stem augers. The borings were advanced to depths of between 51.5 and 61.5 feet below existing grade between the dates of February 20, and February 22, 2018. STRATA obtained disturbed and relatively undisturbed soil samples of the soil at 2.5-foot intervals in the upper 10 feet, and at 5-foot intervals thereafter, with occasional intermediate samples obtained when necessary. Sampling was completed via a 2-inch outside diameter split-spoon sampler (Standard Penetration Test or SPT), a 3.0-inch outside diameter Modified California sampler, and/or a 3.0-inch outside diameter Shelby Tube sampler. Sampling was accomplished in general accordance with ASTM D1586, ASTM D3550, and ASTM D1587, respectively, for the referenced samplers. Samples recovered were packaged, labeled, and transported back to our laboratory for testing.

The SPT was accomplished by driving the 2-inch outside diameter split-spoon sampler with a 140-pound automatic hammer falling 30 inches. The blow counts for every 6 inches of driving were recorded on the logs until the sampler was driven 1.5 feet, or to refusal. It is considered SPT sample refusal when blow counts exceed 50 for a given 6-inch interval. The SPT N-Values (in blows per foot) were determined by adding the last two 6-inch increments. The blows (per 6-inch increment) obtained while using the Modified California sampler were modified, according to the Lacroix and Horn method, using a factor of 0.615 in order to obtain the SPT N-Values.

We also observed the advancement of six (6) exploratory test pits utilizing a CAT 314C, equipped with a 20-inch wide bucket. Test pits were excavated to depths of 12-feet below existing ground surface on February 20, 2018. We recovered disturbed and relatively undisturbed (2.5-inch outside diameter rings) soil samples with hand tools at select locations and depths for classification and laboratory testing. We visually classified and logged the soil encountered within test pits referencing the USCS.

The installation of the monitoring well at the B05-STR-18 location was not completed as originally planned. Due to the presence of medium dense to very dense gravels and cobbles, we were unable to advance the larger 6-inch inside diameter augers that were required to facilitate the installation of the 4-inch diameter monitoring well.

We include a brief explanation of the USCS in Appendix A that should be used to interpret terms presented on the exploration logs in this report. At the end of our explorations, borings were backfilled with bentonite as required by IDWR regulations, and test pits were loosely backfilled with excavated soil to generally level with the existing ground surface.

SUBSURFACE CONDITIONS

Prior to accessing the site, we reviewed aerial photographs, State of Idaho Department of Water Resources (IDWR) well drilling reports, as well as the geologic map titled "Geologic map Compilation of the Malad City 30 x 60 Minute Quadrangle, Idaho (2007)" by Long, S.P. and Link, P.K., published in 2007, by Long, S.P., and Link, P.K. This geologic map showed that the project area was primarily underlain by alluvial fan deposits, which corresponds to the subsurface conditions encountered.

Subsurface conditions across the site were variable, but we generally encountered surficial sandy silt with gravel topsoil with vegetation, underlain by alluvial fan deposits consisting primarily of clayey sand and clayey gravel with interbedded layers of lean clay. Additional subsurface details are provided within the exploration logs and fence diagram located in Appendix A of this report. We provide a general description of each soil unit's stratigraphic properties and location below:

- **Topsoil** - We encountered brown to dark brown, loose, and moist (frozen in the upper 4") sandy silt with gravel and significant organics (topsoil) to a depth of approximately 6 to 24 inches below grade at all exploration locations.
- **Lean Clay** - We encountered brown to tan, moist, medium stiff to very stiff, low to medium plastic, lean clay beneath the topsoil at each location except TP01-STR-18 through TP03-STR-18. The encountered Lean Clay (CL) was observed to contain variable sand and gravel content, and had varying classifications including lean clay, lean clay with sand, sandy lean clay, sandy lean clay with gravel and lean clay with gravel. We also encountered material in a few select locations that exhibited similar soil properties, but had slightly lower plasticity, and classified as silt with sand (ML). These layers were observed between the surface and 61.5 feet below grade and generally appeared in layers between 2 and 9.75-feet, apart from a 27.5-foot layer encountered in boring B05-STR-18. This material will be referred to as native clay throughout this report.
- **Sand**- We encountered brown to grey, moist, loose to very dense sand with variable amounts of silt/clay and gravel in approximately half of the exploration locations. The encountered sand classified as silty sand (SM), silty sand with gravel (SM), clayey sand (SC), clayey sand with gravel (SC), and poorly graded sand with clay and gravel (SP-SC). The sand layers were observed between 1 and 29-feet below grade and generally appeared in layers between 4 and 9.25-feet, apart from a 23.5-foot layer encountered in boring B04-STR-18. This material will be referred to as native sand throughout this report.
- **Gravel** - We encountered brown to grey, moist to wet, sub-rounded to angular, medium dense to very dense gravel with variable amounts of silt/clay, sand, and cobbles in all exploration locations. The encountered gravel also classified as clayey gravel with sand (GC) and silty gravel with sand (GM). Particle sizes varied but cobbles up to 8 inches in diameter were observed. The gravel layers were observed between the 1.5 and 61.5-feet below grade and generally appeared in layers between 2and 23.25-feet, apart from a 43-foot layer encountered in boring B02-STR-18. This material will be referred to as native gravel throughout this report.

We encountered groundwater during our exploration at only the B05-STR-18 location at a depth of 52.4 feet below grade. In the project vicinity, groundwater levels are influenced primarily by local precipitation and the nearby Two-mile Creek that runs through the property. Other factors such as the Malad River and Little Malad River located in the valley bottom approximately 3.5- to 5-miles west, local irrigation, and urban and industrial developments can also influence groundwater levels. Seasonal high groundwater will likely occur between spring runoff and summer irrigation season. We do not anticipate static groundwater levels will negatively influence the proposed construction or design.

LABORATORY TESTING

We returned representative soil samples collected in the field to our laboratory for further classification and testing. We accomplished laboratory testing referencing ASTM procedures, and present these results in Appendix B. We also include index-testing results on the test pit logs in Appendix A. We used these laboratory test results, in conjunction with our field observations, as the basis for our analysis and recommendations. Our laboratory-testing program for this project included:

- Moisture contents (ASTM D 2216)
- Grain size distributions (ASTM D 6913)
- Atterberg limits (ASTM D 4318)
- Modified Proctor (ASTM D 1557)
- Unit weight determinations (ASTM D2937)
- Triaxial Shear UU tests for undisturbed sample (ASTM D4767)
- Direct Shear (ASTM D3080)
- One dimensional consolidation (ASTM D5333)

GEOTECHNICAL CONSTRAINTS AND OPPORTUNITIES

Based on observations made during field exploration, laboratory testing results and our engineering analysis, we anticipate the following considerations will be the primary project constraints and opportunities from a geotechnical standpoint:

- **Variable Soil Conditions:** Soil conditions including presence, thickness and consistency of clay layers varied across sites A, B and C. Based on these variations and the current but potentially not final selection of site A for construction, the recommendations presented within this report are preliminary. Additional exploration via test pits should be performed as preliminary design advances at the selected site to confirm soil conditions and the applicability of the recommendations within this report. This should occur prior to completing final design.
- **Site Topography:** Surficial elevation changes of up to approximately 70 feet were observed across the project site and may require a terraced, or stepped approach for design of the lagoons on grade. Furthermore, due to the preliminary nature of the proposed lagoon geometry, our recommendations presented within this report, especially regarding slope stability modeling, should be confirmed once final configuration of the lagoons is completed.
- **Site Soil Re-usability:** Non-organic site soil is suitable for re-use in the construction of new lagoon embankments. We provide additional discussion related to re-use of site soil in the Soil Reusability section of this report.

GEOTECHNICAL OPINIONS AND RECOMMENDATIONS

We present the following preliminary geotechnical recommendations to assist planning, design and construction of the Malad Wastewater Treatment Lagoons project. In this report we provide specific earthwork and geotechnical design criteria, and recommendations that are preliminary in nature for the water treatment lagoon construction. This information must be reviewed by the owner, structural designer, civil designer, and construction teams to verify the applicability to the planned construction. We base our preliminary recommendations on the results of our field evaluation, laboratory testing, our experience with similar soil conditions, and our understanding of the proposed construction.

If design plans change or if the subsurface conditions encountered during construction vary from those observed during our preliminary field evaluation, please notify us to review the report recommendations and make necessary revisions. Boring and test pit exploration only allow us to observe a small portion of the site subsurface conditions. Subsurface variations are possible outside of the exploration locations and may not be apparent until construction. Where such variations exist,

they may influence the opinions and recommendations presented within this report, as well as construction timing and costs.

Soil Reusability

Embankment Construction

We anticipate planned excavations at the site to a depth of up to 14 feet will encounter a variety of soil types as described in the *Subsurface Conditions* section of this report, however we anticipate the primary soils types encountered will consist of topsoil overlying a combination of lean clay, sands, and gravels that contain significant percentages of clay or silt and vary in classification. The upper topsoil with significant roots as described in the Subsurface Condition Section of this report is not acceptable for reuse as embankment fill but can be stockpiled for future landscaping. The materials used as embankment/structural fill, must comply with the following stipulations:

- Soil must be classified as GW, GP, GP-GC, GP-GM, GC, GM, SP, SW, SP-SM, SP-SC, SM, SC, CL, or ML according to the USCS.
- Soil must consist of inert earth materials with less than 3 percent organics or other deleterious substances (Wood, Metal, Plastic, Waste…etc.).
- Soil may not contain particles larger than 6 inches in median diameter
- Soil must exhibit plasticity Index of less than 20

The structural fill must be prepared and compacted as described in the *Site Preparation* and *Fill Placement and Compaction* Sections of this report.

The onsite fine-grained materials (lean clay) are moisture-sensitive and will require moisture-conditioning to near optimum moisture content to facilitate compaction. At the time of our exploration, the moisture content of the onsite soils varied, but was generally below optimum moisture content near the surface, with moisture contents gradually increasing to above optimum moisture content with depth. During periods of inclement weather, these native soils may be difficult to utilize as structural/ embankment fill. We provide additional discussion concerning use of these soils during inclement weather in the *Cold and Wet Weather/Soil Construction* Section of this report

Shrink Factors

We provide the following shrink factors that have been estimated based on soil type correlations and the results of laboratory testing.

Table 1. Shrinkage Factors

Factor	Native Clay	Native Sand	Native Gravel
Shrinkage (Bank to Compacted)	15 to 20%	10 to 15%	5 to 10%

Earthwork and Embankment Construction

Excavation Characteristics

We anticipate near-surface soil may be excavated using conventional excavation techniques. The existing clayey gravel with cobbles have variable calcium carbonate cementation which may require excavators or dozers with ripper teeth to excavate strongly cemented gravel. We do not anticipate excavations will be advanced below the groundwater elevation. We recommend the earthwork contractors closely review subsurface conditions presented in this report, as well as the design limits of excavation, in order to select appropriate excavation methods.

Temporary Slopes

Unsupported site excavations must be sloped in accordance with the *Occupational Safety and Health Administration* (OSHA) regulations and local codes. The site soil encountered in the upper 61.5-feet varies in classification. Primarily, lean clay with varying sand and gravel content, classified as OSHA soil type "B" and alluvial fan sand and gravel deposits with variable clay/silt content classified as OSHA soil type "C", are anticipated to be exposed in excavations throughout the project area. We recommend type "B" soils be temporarily sloped at 1H:1V (horizontal to vertical) and type "C" soils be temporarily sloped at 1.5H:1V, in accordance with OSHA recommendations, for excavations up to 20 feet. A licensed professional engineer must design excavations of greater than 20 feet. Construction vibrations can cause excavations to slough or cave and should be considered by the contractor during daily task planning. Surcharges must not be allowed within a horizontal distance equal to one-half the excavation depth. Ultimately, the contractor is solely responsible for site safety and excavation configurations.

Site Preparation

We observed approximately 12 to 18 inches of surficial vegetation and organic rich soil (topsoil) across the site, with locally deeper areas extending to approximately 24" below grade. Topsoil and vegetation present within the construction area is not suitable for use as structural fill and cannot be allowed to remain beneath site improvements. As such, remove and stockpile all topsoil and vegetation from beneath the planned improvements for reuse as landscaping or remove it from the site.

We did not encounter undocumented fill during exploration, however, any *existing*, *non-native* soil or native soil that has been disturbed at the project site is considered undocumented fill that is not considered suitable to support site improvements. Contact STRATA immediately if undocumented fill is encountered during construction activities.

For construction of new embankments, remove all topsoil and excavate the exposed subgrade to the project design elevations and tolerances. Excavations must be sloped as discussed in the *Temporary Slopes* section of this report. (Where terracing of embankments will be accomplished on slopes steeper than 10H:1V the ground surface should be excavated in horizontal benches approximately 10 to 12 feet in width such that embankment fill will be placed on level benches.) The embankment subgrade should be scarified to a depth of 8 inches, moisture conditioned to within 3% of optimum moisture, and compacted to a minimum of 90% of ASTMD 1557 Modified Proctor compaction, as observed by Strata personnel. If any weaving or pumping is observed during compaction, unstable areas should be evaluated by the geotechnical engineer. Possible remedies could include removal and replacement with drier structural fill. Alternatively, a woven geotextile equivalent to Contech C 200 could possibly be placed over the subgrade prior to placing drier or granular structural fill.

The geotechnical engineer or his representative must observe subgrade preparations, and any subsequent fill placement. Observing that vegetation, topsoil, and undocumented fill (if encountered), has been removed, and that the native and fill soils are prepared as recommended in this report. This is a critical aspect of the geotechnical design process.

The site preparation procedures discussed above must be implemented prior to initiating new embankment construction. It will be important to prequalify the earthwork contractor to verify their experience constructing with moisture sensitive silt/clay soils.

Fill Placement and Compaction Requirements

Structural fill for use in embankment construction should be placed in uniform, maximum 8-inch-thick, loose lifts, and compacted to a minimum of 92 percent of maximum dry density of the soil per ASTM D 1557 (Modified Proctor). We recommend that STRATA be retained to perform field density testing of structural fill to verify contractor compliance with the above minimum compaction criteria. The recommended lift thickness assumes large, appropriate compaction equipment with a sheepsfoot

drum weight of at least 5 tons or greater is used to attempt compaction. Since the on-site soil are typically clay, clayey sand or clayey gravel, a sheepsfoot roller shall be used to compact these fine grain soil. If smaller or lighter compaction equipment is provided, a reduced lift thickness may be necessary to meet the compaction requirements presented herein.

Fill placed outside any embankment may be placed as non-structural fill (i.e. landscape fill), providing there are no structures (vaults, drains, slabs, etc.) planned directly above the landscape fill. We recommend landscape fill be compacted to a minimum of 85 percent of the maximum dry density of the soil according to ASTM D1557 (Modified Proctor).

Any material with greater than 30 percent retained above the ¾-inch sieve is too coarse for proctor density testing but may be used as granular structural fill. Coarse fill that is used for this purpose must be compacted using a "method specification" which is developed during construction based on material characteristics, compaction equipment, and conditions encountered. As a minimum requirement, all oversized material must be placed in maximum 18 inches lifts and compacted with 5 complete passes of a 10-ton, vibratory roller. The vibratory rollers used must have a dynamic force of at least 30,000 pounds per impact per vibration, and at least 1,000 vibrations per minute. In addition, coarse fill must be compacted to a dense, interlocking, and unyielding surface. Attention needs to be taken when compacting this soil to preclude rework.

Cold and Wet Weather/Soil Construction

Do not place fill on frozen soil. Frozen soil may not be used as fill or backfill. Remove frozen soil, snow, or ice from the subgrade or fill soils, prior to continuing with construction. Limit winter excavations to areas small enough to be refilled to finished grade, or higher, on the same day.

We strongly recommend earthwork construction take place during dry weather conditions. The on-site soils encountered (especially the lean clay and clayey sand/gravel) will be susceptible to pumping and/or rutting from heavy loads such as rubber-tired equipment or vehicles any time of the year when it becomes wet. If pumping occurs, notify the geotechnical engineer in order to provide appropriate recommendations for stabilizing these soils prior to structural fill placement. If construction commences before soil can dry after precipitation or during wet periods of the year, we recommend completing earthwork with low pressure, track-mounted equipment that will spread and reduce vehicle load.

Contractors must protect exposed subgrades from sources of water. During construction, intersect and divert surface runoff from rainfall or snowmelt to help reduce water ponding on the project site. Slope subgrades to daylight to help direct water away from subgrades after the end of each construction day or before precipitation. Allowing water to infiltrate into the subgrade soil can be detrimental to the long-term performance of the site improvements.

Embankment Design

Seismicity and Liquefaction

STRATA utilized our observations of the site soil, geologic data, the project location, the International Building Code (IBC), and ASCE - 7 to establish a Seismic Site Classification of "D" at the project site. We recommend seismic design reference the seismic parameters provided in Table 2 based on the soil conditions and project location.

Table 2. Seismic Response Criteria (IBC/ASCE - 7) [1]

Period (seconds)	Standard Acceleration Coefficients for Site (g)	Site Factor for Site Class D	Modified Acceleration Coefficient for Site Class D (g)
0.0 (Peak)	PGA = 0.288	F_{PGA} = 1.224	PGA_M = 0.353
0.2 (Short)	S_S = 0.741	F_a = 1.207	S_{DS} = 0.596
1.0	S_1 = 0.227	F_v = 1.946	S_{D1} = 0.294

1. Values for location Latitude: 42.15892°N Longitude: 112.22732°W

Based on the results of our evaluation we consider the potential for liquefaction and lateral spread to be low based on the depth to groundwater, primary soil types and in place density/consistency of the material.

Settlement

We understand the proposed embankments are planned to be constructed with maximum fill heights of up to 19 feet, with inboard and outboard slopes of 2H:1V. The underlying native clay has low to moderate compressibility. The native sands and gravels encountered below the clay materials were estimated to be loose to medium dense, and medium dense to very dense respectively.

Considering an embankment fill height of 19 feet (referencing existing slopes), we estimate total settlement of approximately 3 to 4 inches could occur. We anticipate up to 1.5 inches of settlement will occur during embankment construction. Post construction embankment settlement of 2 to 3 inches could occur over a period of approximately 1 year. If embankment sizes greater than anticipated are determined necessary as project planning and design advance these settlement estimates should be revised.

Slope Stability

Our preliminary slope stability analyses are based on evaluating the proposed embankment slopes and geometry based on the preliminary lagoon layout drawings for Site A, provided by you. We understand that the proposed side slopes are planned to be 2H:1V for outboard and inboard slopes, and that shallower slopes will be considered if determined necessary during design.

We recommend this model and associated analysis be updated once design plans advance and additional information is available.

STRATA evaluated physical and engineering strength properties for the native materials based on laboratory testing of undisturbed and remolded samples of the native materials as well as correlations based on soil type. The properties used in our stability analyses as presented in Table 3.

Table 3: Physical and Engineering Properties of Soils

Soil/Model Layer	Soil Description	In-situ Moist Unit Weight (pcf)	Soil Friction Angle (°)	Cohesion (psf)
Structural/Embankment Fill	Compacted Lean Clay	114.7	32.0	25
Native fine-grained soil	Native Lean Clay	107.0	25.6	64
Native coarse-grained soil	Native Gravel	129.0	34.0	25

STRATA accomplished our slope stability analyses using the computer program GEOSTUDIOS SLOPE/W. We performed our analyses with an assumed line of seepage initiating at the water

surface in the lagoon and extending through a portion of the embankment fill as shown in Appendix C. For the purpose of the analyses, we have conservatively assumed the synthetic liner leaks and seepage will occur in the embankment and foundation soils. This is a conservative assumption, considering the synthetic liner will be tested and inspected during construction. Each cross-section was evaluated for the critical leaking liner condition with an assumed line of seepage as discussed above and presented in Appendix C. Considering the use of a synthetic liner the effects of a rapid drawdown scenario were not evaluated.

Our slope stability analyses were performed utilizing terraced embankments with an anticipated maximum embankment height of approximately 18 feet with excavation cuts up to 10 feet to the base of the lagoons, as shown in Appendix C and as described in the proposed construction section of this report,

Table 4 below shows the results of the slope stability analyses performed for the inboard and outboard slopes of the proposed new lagoons including a global analysis of the proposed lagoon geometry as a whole, as well as an internal analysis of the embankments between lagoons. Our analyses showed a minimum factor of safety (FOS) of 4.55 exists for the global stability analyses, and a minimum FOS of 1.50 for the internal stability analyses, both under static conditions. Under seismic loading, the FOS exceed 1.0 for all analyzed slopes. These factors of safety are equal to or greater than a minimum FS of 1.5 for static, and 1.0 for seismic, conditions, which is the standard of practice for embankments under static and seismic conditions, respectively.

Table 4: Slope Stability Analysis Results

Analysis Condition	Factor of Safety
Global Stability	
Static – Lower Lagoon Filled	4.68
Seismic – Lower Lagoon Filled	1.47
Static – Lower Lagoon Empty	4.55
Seismic – Lower Lagoon Empty	1.60
Outboard Slope Stability	
Static – Lower Lagoon Filled	1.65
Seismic – Lower Lagoon Filled	1.20
Static – Lower Lagoon Empty	1.50
Seismic – Lower Lagoon Empty	1.04
Inboard Slope Stability	
Static – Cut Slope	2.59
Seismic – Cut Slope	1.41
Static – Fill Slope	1.99
Seismic – Fill Slope	1.14

Based on our preliminary stability analysis, it is our opinion the proposed 2H:1V inboard and outboard slopes for the new lagoon embankments will be stable, based on the preliminary design and construction recommendations provided in this report.

Subgrade Considerations for Application of Synthetic Liner

Subgrades that will interface with synthetic liners should comply with installation recommendations from the manufacture of the product specified for use. In general, subgrades should be smooth and free of sharp edged rocks, stones, sticks/roots, construction debris and other foreign matter that could adversely affect the synthetic liner. The subgrade should be compacted to a firm unyielding condition and rolled with a smooth-drum compactor of sufficient weight to remove excessive wheel ruts or other

abrupt grade changes. No standing water, mud, vegetation, snow, frozen soil or excessive moisture should be present at the time of synthetic liner placement.

Onsite clayey soil will include fine and coarse-grained soil with angular sand and gravel particles. These angular particles may be difficult to compact to a smooth surface free of protruding angular rocks. Selective stockpiling and use of on-site fine-grained soil with limited gravel and coarse sand content below the liner is an option, however it is extremely difficult to estimate the quantity of suitable material that may be encountered for this purpose. Placement of an 8-ounce non-woven cushioning geotextile below the synthetic liner may also be considered to reduce liner contact with subgrade containing angular rock.

Exterior Grading

We recommend the ground surface adjacent to the new embankments slope a minimum of five percent away within 10 feet of the outboard embankment toe to rapidly convey surface water or runoff away from embankments. Improper management of surface or near-surface water, by not providing an effective grading and drainage design, can result in moisture entering subgrade and embankment soils which can result in a decrease in subgrade support characteristics and slope instability. Possible sources of surface and near-surface water include, but are not limited pressurized irrigation water, rainwater, snowmelt, or leaking water lines.

ADDITIONAL RECOMMENDED SERVICES

Additional Exploration

we recommend that when preliminary design has advanced, and a specific site selected, then additional exploration should occur to confirm soil conditions in the area of the proposed site improvements. We recommend STRATA complete the additional exploration via excavation of test pits. Based on the variability of site soils observed, the additional test pit exploration will allow confirmation of assumptions made during our analysis and allow the opportunity to confirm the applicability of the provided recommendations.

Review of Plans and Specifications

We recommend STRATA be retained to review the earthwork and construction portions of the plans and specifications as they become available. It has been our experience having STRATA review the construction documents lessens the potential for errors and reduces costly changes to the contract during construction.

Geotechnical Design Continuity

We base the information contained in this report on the preliminary information provided, which may change as project planning and designs progress. The properties of the existing embankments, as well as site improvement geometry, can significantly alter our opinions and design recommendations. Specifically, changes in new lagoon cut and embankment fill geometry will require additional analyses specific to the actual anticipated construction conditions. It is critical STRATA provide geotechnical continuity through final planning and design for the planned construction as individual aspects become available during design development phases of the project. It has been our experience that having consultants from the design team review the construction documents prior to bidding helps reduce the potential for errors, and also reduces costly changes to the contract during construction. If we are not provided such opportunities, we cannot be responsible for soil-related design or construction-related errors, omissions, delays or increased costs that are identified during construction.

Construction Observation Monitoring

We recommend STRATA be retained to provide construction monitoring to verify the soil conditions and that report recommendations are incorporated into the actual construction. Such observation is an important part of the geotechnical design process and can help reduce the potential for soil

engineering or construction-related errors or omissions. If we are not retained to provide the recommended plan review and construction monitoring services, we cannot be responsible for soil engineering-related construction errors or omissions.

EVALUATION LIMITATIONS

As discussed herein, this report is preliminary in nature and has been prepared to assist project planning design and construction of the proposed Malad Wastewater Treatment Lagoon project located just south of Malad City, ID 83252, at the approximate WGS84 coordinates of 42.161211° N, and 112.226223° W. Our current scope of work addresses construction of embankments for the proposed new lagoon system. If modifications to the existing embankments are required, we will finalize our preliminary evaluation in a future phase of the project. We have developed our geotechnical findings and opinions based on the authorized subsurface exploration and laboratory testing, as well as our understanding of the project at this time. Our geotechnical design recommendations are specific to the planned treatment lagoons design and should not be extrapolated to other future site developments without allowing adequate geotechnical consultation by STRATA.

Our services consist of professional opinions and findings made in accordance with generally accepted geotechnical engineering principles and practices in southeastern Idaho at the time of this report. The geotechnical recommendations provided herein are based on implementation of appropriate geotechnical consultation during subsequent design phases and an adequate program of tests and observations will be conducted by STRATA during construction to verify compliance with our recommendations and to confirm conditions between exploration locations. This acknowledgment is in lieu of all warranties either express or implied.

The following plates accompany this report:

Plate 1:	Exploration Location Plan
Appendix A:	Unified Soil Classification System (USCS), Exploration Logs, & Fence Diagram
Appendix B:	Laboratory Test Results
Appendix C:	Stability Analyses of New Lagoon Embankments

LEGEND

B01-STR-18	Approximate boring location observed by STRATA between February 20, and February 22, 2018.
TP01-STR-18	Approximate test pit location observed by STRATA on February 20, 2018.
	Approximate site boundary

VICINITY MAP

NOT TO SCALE

EXPLORATION LOCATION PLAN
Malad Wastewater
Management Lagoons
Malad City, Idaho

0 175 350 700

SCALE: 1 inch = 350 ft

(Drawing scale applies to 11" X 17" sheet size.)

STRATA
Integrity from the Ground Up

DRAWING DATE: 2/26/2018

DRAWING BY: R. Benedetti | CHECKED BY: M. Quick

Client: J-U-B Engineers, Inc. | Project No.: PO17072A | SHEET: 1

APPENDIX A

Unified Soil Classification System (USCS), Exploration Logs, & Fence Diagram

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL NAMES
COARSE GRAINED SOIL	GRAVEL	CLEAN GRAVEL		GW	Well–Graded Gravel, Gravel–Sand Mixtures.
				GP	Poorly–Graded Gravel, Gravel–Sand Mixtures.
		GRAVEL WITH FINES		GM	Silty Gravel, Gravel–Sand–Silt Mixtures.
				GC	Clayey Gravel, Gravel–Sand–Clay Mixtures.
	SAND	CLEAN SAND		SW	Well–Graded Sand, Gravelly Sand.
				SP	Poorly–Graded Sand, Gravelly Sand.
		SAND WITH FINES		SM	Silty Sand, Sand–Silt Mixtures.
				SC	Clayey Sand, Sand–Clay Mixtures.
FINE GRAINED SOIL	SILT AND CLAY LIQUID LIMIT LESS THAN 50%			ML	Inorganic Silt, Sandy or Clayey Silt.
				CL	Inorganic Clay of Low to Medium Plasticity, Sandy or Silty Clay.
				OL	Organic Silt and Clay of Low Plasticity.
	SILT AND CLAY LIQUID LIMIT GREATER THAN 50%			MH	Inorganic Silt, Micaceous Silt, Plastic Silt.
				CH	Inorganic Clay of High Plasticity, Fat Clay.
				OH	Organic Clay of Medium to High Plasticity.
				PT	Peat, Muck and Other Highly Organic Soil.

BORING LOG SYMBOLS

- Standard 2–Inch OD Split–Spoon Sample
- California Modified 3–Inch OD Split–Spoon Sample
- Rock Core
- Shelby Tube 3–Inch OD Undisturbed Sample

GROUNDWATER SYMBOLS

- Groundwater After 24 Hours
- (7–3–07) Indicates Date of Reading
- Groundwater at Time of Drilling

TEST PIT LOG SYMBOLS

- BG — Baggie Sample
- BK — Bulk Sample
- RG — Ring Sample

Shorthand Notation:
BGS = Below Existing Ground Surface
N.E. = None Encountered

STRATA
Integrity From the Ground Up

USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS	Remarks
								Pocket Penetrometer, TSF ▲ 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 SPT, N-Value ● % Passing No. 200 Sieve ★ PL MC LL 20 40 60 80	Note: BGS = Below Ground Surface
		4533.0							
SANDY SILT WITH GRAVEL, (ML) brown, loose, moist, weak HCL reaction, frozen to 4"	0		ML		2 4 4	8			42.16302°N, 112.22615°W Significant organics observed in the upper 12"-18" BGS Cobbles present
CLAYEY GRAVEL WITH SAND, (GC) brown, subrounded to subangular, medium dense to very dense, moist, strong HCL reaction		4531.5			12 14 15	29			Low to medium plasticity
	5				13 18 13	31			
					8 7 11	18			
	10		GC		10 21 33	33*		11 ★	
	15				28 40 32	72			
SANDY LEAN CLAY, (CL) tan, stiff to very stiff, moist, strong HCL reaction		4514.8							Iron staining, cemented
	20				4 5 5	10			
			CL				83.2	19 28 20 ★	
	25				5 11 4	15			
CLAYEY GRAVEL WITH SAND, (GC) brown, subrounded to angular, very dense to medium dense, moist, strong HCL reaction		4505.0							Grinding between 28' and 46' BGS
	30		GC		14 28 24	52			Cobbles likely

STRATA BOREHOLE - STRATA.GDT - 3/29/18 10:23 - M:\CLIENTS\J\J U B ENGINEERS, INC\PO17072A - MALAD WASTE WATER TREATMENT LAGOONS\ELECTRONIC LOGS\PO17072A - BORING LOGS.GPJ

Client: J-U-B Engineers, Inc.
Project: PO17072A - Malad Lagooons
Drill Rig: CME 75
Depth to Groundwater: N.E.

Boring Number: B01-STR-18
Date Drilled: 02-21-2018
Borehole Diameter: 8" OD HSA
Logged By: R. Benedetti

STRATA
Integrity From the Ground Up

EXPLORATORY BORING LOG

(Continued Next Page)

USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS	Remarks
CLAYEY GRAVEL WITH SAND, (GC) brown, subrounded to angular, very dense to medium dense, moist, strong HCL reaction *(continued)*	35		GC		18 31 40	71		Pocket Penetrometer, TSF ▲ 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 SPT, N-Value ● % Passing No. 200 Sieve ★ PL MC LL 20 40 60 80	Note: BGS = Below Ground Surface
	40				26 31 24	55			Grinding between 28' and 46' BGS
	45				12 10 10	20			
LEAN CLAY WITH GRAVEL, (CL) tan brown, very stiff to stiff, moist, weak to strong HCL reaction		4487.0	CL						
	50				3 4 5	9			
Borehole Terminated at 51.5 Feet.		4481.5							* Modified California N values corrected using a factor of 0.615 (Lacroix and Horn)

Client: J-U-B Engineers, Inc.	**Boring Number:** B01-STR-18
Project: PO17072A - Malad Lagooons	**Date Drilled:** 02-21-2018
Drill Rig: CME 75	**Borehole Diameter:** 8" OD HSA
Depth to Groundwater: N.E.	**Logged By:** R. Benedetti

STRATA Integrity From the Ground Up

EXPLORATORY BORING LOG

Sheet 2 Of 2

STRATA BOREHOLE - STRATA.GDT - 3/29/18 10:23 - M:\CLIENTS\JUJUB ENGINEERS, INC\PO17072A - MALAD WASTE WATER TREATMENT LAGOONS\ELECTRONIC LOGS\PO17072A - BORING LOGS.GPJ

USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS	Remarks
								Pocket Penetrometer, TSF ▲ 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 SPT, N-Value ● % Passing No. 200 Sieve ★ PL MC LL 20 40 60 80	Note: BGS = Below Ground Surface
		4579.0							
SANDY SILT WITH GRAVEL, (ML) brown, loose, moist, weak HCL reaction, frozen to 4"	0	4578.0	ML		3 4 5	9			42.16205°N, 112.22390°W Significant organics observed in the upper 9"-12" BGS
SILTY SAND WITH GRAVEL, (SM) tan, loose, moist, strong HCL reaction			SM		2 3 4	7			
SILT WITH SAND, (ML) gray green, medium dense, moist	5	4574.0	ML		8 14 14	28		26 38 21 ★	
SANDY LEAN CLAY, (CL) tan gray, stiff to very stiff, moist, strong HCL reaction		4572.5	CL		8 18 42	37*			Possible gravel layer between 6' and 7' BGS
CLAYEY GRAVEL WITH SAND, (GC) brown, subrounded to angular, very dense to medium dense, moist, strong HCL reaction	10	4570.5			17 35 42	77			Grinding below 10', cobbles present
	15				24 32 48	80			
	20		GC		28 21 32	53		10 ★	Moderate cementation throughout
	25				15 24 27	51			
	30				20 42 38	80			

Client: J-U-B Engineers, Inc.
Project: PO17072A - Malad Lagooons
Drill Rig: CME 75
Depth to Groundwater: N.E.

Boring Number: B02-STR-18
Date Drilled: 02-22-2018
Borehole Diameter: 8" OD HSA
Logged By: R. Benedetti

STRATA
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EXPLORATORY BORING LOG

Sheet 1 Of 2

(Continued Next Page)

STRATA BOREHOLE - STRATA.GDT - 3/29/18 10:23 - M:\CLIENTS\JUJUB ENGINEERS, INC\PO17072A - MALAD WASTE WATER TREATMENT LAGOONS\ELECTRONIC LOGS\PO17072A - BORING LOGS.GPJ

USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS	Remarks
								Pocket Penetrometer, TSF ▲ 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 SPT, N-Value ● % Passing No. 200 Sieve ★ PL MC LL 20 40 60 80	Note: BGS = Below Ground Surface
CLAYEY GRAVEL WITH SAND, (GC) brown, subrounded to angular, very dense to medium dense, moist, strong HCL reaction *(continued)*	35		GC		48 50/2.0"	50+		50+	
	40				25 33 41	74			
	45				27 50/5.0"	50+		50+	
	50	4527.5			18 30 34	64			
Borehole Terminated at 51.5 Feet.									* Modified California N values corrected using a factor of 0.615 (Lacroix and Horn)

Client: J-U-B Engineers, Inc.	**Boring Number:** B02-STR-18	STRATA Integrity From the Ground Up	**EXPLORATORY BORING LOG**
Project: PO17072A - Malad Lagooons	**Date Drilled:** 02-22-2018		
Drill Rig: CME 75	**Borehole Diameter:** 8" OD HSA		Sheet 2 Of 2
Depth to Groundwater: N.E.	**Logged By:** R. Benedetti		

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USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS	Remarks
								Pocket Penetrometer, TSF ▲ 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 SPT, N-Value ● % Passing No. 200 Sieve ★ PL MC LL 20 40 60 80	Note: BGS = Below Ground Surface
GRAVELLY SILT, (ML) brown, loose, moist, weak HCL reaction, frozen to 4"	0	4506.0	ML		2 3 2	5			42.16145°N, 112.22848°W Significant organics observed in the upper 12"-24" BGS
SANDY LEAN CLAY, (CL) tan brown, stiff, moist, weak to strong HCL reaction		4504.0	CL		5 5 8	13		18 33 13 ★	
	5				7 6 7	13			
CLAYEY GRAVEL WITH SAND, (GC) brown, subrounded to angular, very dense to medium dense, moist, strong HCL reaction		4498.5	GC		16 46 44	90			Grinding on cobbles
	10				30 50/4.0"	50+		50+	
	15				7 8 15	23		○ 11 ★	Increased clay content
	20				19 25 20	45			
	25				9 26 29	55			Grinding
	30				10 23 35	58			

Client: J-U-B Engineers, Inc.
Project: PO17072A - Malad Lagooons
Drill Rig: CME 75
Depth to Groundwater: N.E.

Boring Number: B03-STR-18
Date Drilled: 02-20-2018
Borehole Diameter: 8" OD HSA
Logged By: R. Benedetti

STRATA
Integrity From the Ground Up

EXPLORATORY BORING LOG

Sheet 1 Of 2

(Continued Next Page)

STRATA BOREHOLE - STRATA.GDT - 4/4/18 17:03 - V:\CLIENTS\JUJUB ENGINEERS, INC\PO17072A - MALAD WASTE WATER TREATMENT LAGOONS\ELECTRONIC LOGS\PO17072A - BORING LOGS.GPJ

USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS	Remarks
								Pocket Penetrometer, TSF ▲ 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 SPT, N-Value ● % Passing No. 200 Sieve ★ PL MC LL 20 40 60 80	Note: BGS = Below Ground Surface
CLAYEY GRAVEL WITH SAND, (GC) brown, subrounded to angular, very dense to medium dense, moist, strong HCL reaction *(continued)*	35				27 41 50	91		○ 5 ★	
	40		GC		10 25 26	51			
	45				11 10 15	25			Clay lense (approx. 4" thick) starting at 45.5' BSG
	50	4454.5			25 38 9	47			
Borehole Terminated at 51.5 Feet.									* Modified California N values corrected using a factor of 0.615 (Lacroix and Horn)

Client: J-U-B Engineers, Inc.	**Boring Number:** B03-STR-18	STRATA Integrity From the Ground Up	**EXPLORATORY BORING LOG**
Project: PO17072A - Malad Lagooons	**Date Drilled:** 02-20-2018		
Drill Rig: CME 75	**Borehole Diameter:** 8" OD HSA		Sheet 2 Of 2
Depth to Groundwater: N.E.	**Logged By:** R. Benedetti		

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USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS	Remarks
								Pocket Penetrometer, TSF ▲ 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 SPT, N-Value ● % Passing No. 200 Sieve ★ PL MC LL 20 40 60 80	Note: BGS = Below Ground Surface
		4518.0							
SANDY SILT WITH GRAVEL, (ML) brown dark brown, loose, moist, weak HCL reaction, frozen to 4"	0		ML		2 3 3	6			42.15880°N, 112.22388°W Significant organics observed in the upper 12"-18" BGS
		4516.5							
LEAN CLAY WITH GRAVEL, (CL) dark brown, very stiff, moist, weak to strong HCL reaction, with organics - Topsoil			CL		4 11 5	16			
	5	4512.5			4 11 20	31			
POORLY GRADED SAND WITH CLAY AND GRAVEL, (GP-GC) brown, subrounded to angular, medium dense to very dense, moist, strong HCL reaction					20 38 50/4.0"	50+		50+	Grinding on cobbles throughout gravel layers
	10				15 19 25	44			
	15		GP-GC		27 50/4.5"	50+		50+	
	20				19 38 40	78		○ 5 ★	Slight fines increase
	25				18 20 24	44			
		4489.0							
SANDY LEAN CLAY, (CL) brown tan, medium stiff, moist, weak HCL reaction	30		CL		1 2 3	5		▲ 18 ○ 20 33 ★	
		4486.5	GC						

Client: J-U-B Engineers, Inc.	**Boring Number:** B04-STR-18
Project: PO17072A - Malad Lagooons	**Date Drilled:** 02-20-2018
Drill Rig: CME 75	**Borehole Diameter:** 8" OD HSA
Depth to Groundwater: N.E.	**Logged By:** R. Benedetti

STRATA Integrity From the Ground Up

EXPLORATORY BORING LOG

Sheet 1 Of 2

(Continued Next Page)

USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS	Remarks
								Pocket Penetrometer, TSF ▲ 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 SPT, N-Value ● % Passing No. 200 Sieve ★ PL MC LL 20 40 60 80	Note: BGS = Below Ground Surface
CLAYEY GRAVEL WITH SAND, (GC) brown, subrounded to angular, very dense to dense, moist, strong HCL reaction *(continued)*	35		GC		20 39 50	89			Shelby tube refusal after 4" Cobbles present
	40				50/5.5"	50+		50+	
	45				19 23 50/4.0"	50+		50+	
	50	4466.5			9 13 20	33			
Borehole Terminated at 51.5 Feet.									* Modified California N values corrected using a factor of 0.615 (Lacroix and Horn)

Client: J-U-B Engineers, Inc.	**Boring Number:** B04-STR-18	STRATA Integrity From the Ground Up	**EXPLORATORY BORING LOG**
Project: PO17072A - Malad Lagooons	**Date Drilled:** 02-20-2018		
Drill Rig: CME 75	**Borehole Diameter:** 8" OD HSA		Sheet 2 Of 2
Depth to Groundwater: N.E.	**Logged By:** R. Benedetti		

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USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS	Remarks
								Pocket Penetrometer, TSF ▲ 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 SPT, N-Value ● % Passing No. 200 Sieve ★ PL MC LL 20 40 60 80	Note: BGS = Below Ground Surface
		4498.0							
SANDY SILT WITH GRAVEL, (ML) brown dark brown, loose, moist, weak HCL reaction, frozen to 4"	0		ML		3 3 3	6			42.15895°N, 112.22850°W Significant organics observed in the upper 12"-18" BGS
		4496.5							
LEAN CLAY WITH SAND, (CL) brown tan, very stiff to stiff, moist, weak to strong HCL reaction					5 9 12	21			
	5				7 7 7	14			
					3 4 4	8			
	10				5 5 5	6*	88.2	20 36 25	
	15		CL		7 5 2	7			
	20				3 4 4	8			
	25				8 15 10	25			Increased sand content and trace gravel
		4469.0							
SANDY LEAN CLAY, (CL) tan gray, very stiff, moist, weak HCL reaction	30		CL		10 11 11	22		17	

Client: J-U-B Engineers, Inc.	**Boring Number:** B05-STR-18
Project: PO17072A - Malad Lagooons	**Date Drilled:** 02-22-2018
Drill Rig: CME 75	**Borehole Diameter:** 8" OD HSA
Depth to Groundwater: 52.4'	**Logged By:** R. Benedetti

STRATA Integrity From the Ground Up

EXPLORATORY BORING LOG

Sheet 1 Of 2

(Continued Next Page)

USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS	Remarks
								Pocket Penetrometer, TSF ▲ 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 SPT, N-Value ● % Passing No. 200 Sieve ★ PL MC LL 20 40 60 80	Note: BGS = Below Ground Surface
CLAYEY GRAVEL WITH SAND, (GC) brown, medium dense, moist, weak to strong HCL reaction	35	4464.8	CL / GC						Intermittent grinding
		4462.0			36 15 14	29			
LEAN CLAY, (CL) brown red, very stiff, moist, weak to strong HCL reaction		4459.8	CL						
CLAYEY GRAVEL WITH SAND, (GC) brown, medium dense, moist, weak to strong HCL reaction	40		GC		7 27 29	34*	107.4	○ 13 ★	Cobbles likely
	45				22 24 22	46			
Very moist	50				22 43 34	77			
Wet			02-22-18						
	55				5 19 24	43			
	60	4436.5			16 30 30	60			
Borehole Terminated at 61.5 Feet.									* Modified California N values corrected using a factor of 0.615 (Lacroix and Horn)

Client: J-U-B Engineers, Inc.	**Boring Number:** B05-STR-18
Project: PO17072A - Malad Lagooons	**Date Drilled:** 02-22-2018
Drill Rig: CME 75	**Borehole Diameter:** 8" OD HSA
Depth to Groundwater: 52.4'	**Logged By:** R. Benedetti

STRATA Integrity From the Ground Up

EXPLORATORY BORING LOG

Sheet 2 Of 2

STRATA BOREHOLE - STRATA.GDT - 3/29/18 10:23 - M:\CLIENTS\JUJU B ENGINEERS, INC\PO17072A - MALAD WASTE WATER TREATMENT LAGOONS\ELECTRONIC LOGS\PO17072A - BORING LOGS.GPJ

USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS	Remarks
								Pocket Penetrometer, TSF ▲ 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 SPT, N-Value ● % Passing No. 200 Sieve ★ PL MC LL 20 40 60 80	Note: BGS = Below Ground Surface
	0	4551.0							
SANDY SILT WITH GRAVEL, (ML) brown dark brown, loose, moist, weak HCL reaction, frozen to 4"			ML		5 4 4	8			42.15413°N, 112.22385°W Significant organics observed in the upper 12"-18" BGS Intermittent grinding, cobbles possible
		4549.5							
SILTY GRAVEL WITH SAND, (GM) brown, subangular to angular, medium dense, moist, strong HCL reaction			GM		12 10 9	19			
		4546.0							
SANDY LEAN CLAY, (CL) brown, stiff, moist, strong HCL reaction	5				6 6 7	13		8 19 29	
			CL		4 5 6	11			
	10				5 5 5	10		11	
		4539.5							
CLAYEY GRAVEL WITH SAND, (GC) brown, medium dense, moist			GC		13 13 7	20			
		4532.0							
CLAYEY SAND WITH GRAVEL, (SC) brown tan, medium stiff to stiff, moist, weak to strong HCL reaction	20				6 5 7	7*	90.2	19	Decreased drilling difficulty at 19' BGS
			SC						
	25				4 5 5	10			Intermittent grinding between 28' and 43' BGS
		4522.8							
CLAYEY GRAVEL WITH SAND, (GC) brown, dense to very dense, moist, strong HCL reaction	30		GC		10 20 27	47			

Client: J-U-B Engineers, Inc.
Project: PO17072A - Malad Lagooons
Drill Rig: CME 75
Depth to Groundwater: N.E.

Boring Number: B06-STR-18
Date Drilled: 02-21-2018
Borehole Diameter: 8" OD HSA
Logged By: R. Benedetti

STRATA
Integrity From the Ground Up

EXPLORATORY BORING LOG

Sheet 1 Of 2

(Continued Next Page)

USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS	Remarks
CLAYEY GRAVEL WITH SAND, (GC) brown, dense to very dense, moist, strong HCL reaction *(continued)*	35		GC		17 24 17	41		Pocket Penetrometer, TSF ▲ 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 SPT, N-Value ● % Passing No. 200 Sieve ★ PL MC LL 20 40 60 80	Weakly cemented
	40				3 17 40	57			Clay lense (approx. 7" thick) starting at approx. 40.3' BGS
		4507.8							
SANDY LEAN CLAY, (CL) brown tan, stiff to very stiff, moist, weak HCL reaction	45		CL		3 5 5	10			
	50				5 12 9	21			Potential transition to sandy gravel at 52.75' BGS
		4498.0							
Borehole Terminated at 53.0 Feet.									* Modified California N values corrected using a factor of 0.615 (Lacroix and Horn)

Client: J-U-B Engineers, Inc.	**Boring Number:** B06-STR-18	STRATA Integrity From the Ground Up	**EXPLORATORY BORING LOG**
Project: PO17072A - Malad Lagooons	**Date Drilled:** 02-21-2018		
Drill Rig: CME 75	**Borehole Diameter:** 8" OD HSA		Sheet 2 Of 2
Depth to Groundwater: N.E.	**Logged By:** R. Benedetti		

STRATA BOREHOLE - STRATA.GDT - 3/29/18 10:23 - M:\CLIENTS\JUJU B ENGINEERS, INC\PO17072A - MALAD WASTE WATER TREATMENT LAGOONS\ELECTRONIC LOGS\PO17072A - BORING LOGS.GPJ

USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS	Remarks
								Pocket Penetrometer, TSF ▲ 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 SPT, N-Value ● % Passing No. 200 Sieve ★ PL MC LL 20 40 60 80	Note: BGS = Below Ground Surface
SANDY SILT WITH GRAVEL, (ML) brown dark brown, loose, moist, weak HCL reaction, frozen to 4"	0	4519.0	ML		3 3 4	7			42.15542°N, 112.22850°W Significant organics observed in the upper 12"-18" BGS
SILTY GRAVEL WITH SAND, (GM) brown, rounded to angular, dense, moist, strong HCL reaction		4517.5	GM		10 20 14	34			Weak to medium cementation
CLAYEY SAND, (SC) brown tan, medium dense, moist, strong HCL reaction	5	4515.0	SC		11 12 16	28			
					8 10 14	24			
SILTY SAND, (SM) brown tan, stiff to very stiff, moist, weak HCL reaction	10	4509.5	SM		5 6 5	11			
	15				8 10 16	16*	97.2	13 ★	
SILTY GRAVEL WITH SAND, (GM) brown gray, dense to very dense, moist, weak to strong HCL reaction	20	4500.8	GM		21 18 23	41			Grinding on cobbles throughout gravel layers
	25				11 19 30	49			
	30				25 21 24	45		7 ★	

Client: J-U-B Engineers, Inc.
Project: PO17072A - Malad Lagooons
Drill Rig: CME 75
Depth to Groundwater: N.E.

Boring Number: B07-STR-18
Date Drilled: 02-20-2018
Borehole Diameter: 8" OD HSA
Logged By: R. Benedetti

STRATA
Integrity From the Ground Up

EXPLORATORY BORING LOG

Sheet 1 Of 2

(Continued Next Page)

USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS	Remarks
								Pocket Penetrometer, TSF ▲ 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 SPT, N-Value ● % Passing No. 200 Sieve ★ PL MC LL 20 40 60 80	Note: BGS = Below Ground Surface
SILTY GRAVEL WITH SAND, (GM) brown gray, dense to very dense, moist, weak to strong HCL reaction *(continued)*	35		GM		26 50/5.5"	50+		50+	
	40				32 25 12	37			
SANDY LEAN CLAY WITH GRAVEL, (CL) tan, stiff to very stiff, moist		4478.0	CL						
CLAYEY GRAVEL WITH SAND, (GC) brown gray, very dense, moist, weak to strong HCL reaction		4476.0							
	45		GC		35 50/5.5"	50+		50+	
	50				14 34 42	76			
Borehole Terminated at 51.5 Feet.		4467.5							* Modified California N values corrected using a factor of 0.615 (Lacroix and Horn)

Client: J-U-B Engineers, Inc.	**Boring Number:** B07-STR-18	STRATA Integrity From the Ground Up	**EXPLORATORY BORING LOG**
Project: PO17072A - Malad Lagooons	**Date Drilled:** 02-20-2018		
Drill Rig: CME 75	**Borehole Diameter:** 8" OD HSA		Sheet 2 Of 2
Depth to Groundwater: N.E.	**Logged By:** R. Benedetti		

STRATA BOREHOLE - STRATA.GDT - 3/29/18 10:24 - M:\CLIENTS\JUJUB ENGINEERS, INC\PO17072A - MALAD WASTE WATER TREATMENT LAGOONS\ELECTRONIC LOGS\PO17072A - BORING LOGS.GPJ

USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS	Remarks
								Pocket Penetrometer, TSF ▲ 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 SPT, N-Value ● % Passing No. 200 Sieve ★ PL MC LL 20 40 60 80	Note: BGS = Below Ground Surface
SANDY SILT WITH GRAVEL, (ML) brown dark brown, loose, moist, weak HCL reaction, frozen to 4"	0.0	4542.0							42.16210°N, 112.22498°W Significant organics observed in the upper 6"-9" BGS
		4541.3	ML						
CLAYEY GRAVEL WITH SAND, (GC) brown, rounded to subangular, medium dense to dense, moist, strong HCL reaction	2.5		BK						In place nuclear density test at 1.3' BGS: Wet Density = 127.1 pcf Moisture = 19.4%
	5.0		GC						In place nuclear density test at 3.7' BGS: Wet Density = 129.0 pcf Moisture = 14.3%
	7.5		BK					11 ○ 20 30 ★	Few cobbles
	10.0		BK						Cobbles up to 8" in size observed.
		4530.0							
Test Pit Terminated at 12.0 Feet.									

Client: J-U-B Engineers, Inc.	**Test Pit Number:** TP01-STR-18	STRATA Integrity From the Ground Up	**EXPLORATORY TEST PIT LOG**
Project: PO17072A - Malad Lagooons	**Date Excavated:** 02-20-2018		
Backhoe: CAT 314C	**Bucket Width:** 20"		
Depth to Groundwater: N.E.	**Logged By:** B. Keyes		Sheet 1 Of 1

STRATA BOREHOLE - STRATA.GDT - 3/29/18 10:25 - M:\CLIENTS\JUJUB ENGINEERS, INC\PO17072A - MALAD WASTE WATER TREATMENT LAGOONS\ELECTRONIC LOGS\PO17072A - TEST PIT LOGS.GPJ

USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS	Remarks
								Pocket Penetrometer, TSF ▲ 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 SPT, N-Value ● % Passing No. 200 Sieve ★ PL MC LL 20 40 60 80	Note: BGS = Below Ground Surface
SANDY SILT WITH GRAVEL, (ML) brown dark brown, loose, moist, weak HCL reaction, frozen to 4"	0.0	4491.0	ML	BK					42.16045°N, 112.22733°W Significant organics observed in the upper 18"-24" BGS
CLAYEY GRAVEL WITH SAND, (GC) brown, subrounded to angular, medium dense to dense, moist, strong HCL reaction	2.5	4489.0	GC	BK					Gravel content increasing with depth Cobbles up to 4" in size observed throughout test pit
	5.0			BK					
	7.5								
	10.0			BK				18 32 11	
Test Pit Terminated at 12.0 Feet.		4479.0							

Client: J-U-B Engineers, Inc.	**Test Pit Number:** TP02-STR-18
Project: PO17072A - Malad Lagooons	**Date Excavated:** 02-20-2018
Backhoe: CAT 314C	**Bucket Width:** 20"
Depth to Groundwater: N.E.	**Logged By:** B. Keyes

STRATA
Integrity From the Ground Up

EXPLORATORY TEST PIT LOG

Sheet 1 Of 1

STRATA BOREHOLE - STRATA.GDT - 3/29/18 10:25 - M:\CLIENTS\JUJUB ENGINEERS, INC\PO17072A - MALAD WASTE WATER TREATMENT LAGOONS\ELECTRONIC LOGS\PO17072A - TEST PIT LOGS.GPJ

USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS	Remarks
								Pocket Penetrometer, TSF ▲ 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 SPT, N-Value ● % Passing No. 200 Sieve ★ PL MC LL 20 40 60 80	Note: BGS = Below Ground Surface
SANDY SILT WITH GRAVEL, (ML) brown dark brown, loose, moist, weak HCL reaction, frozen to 4"	0.0	4529.0	ML						42.15950°N, 112.22530°W Significant organics observed in the upper 12"-18" BGS
SILTY GRAVEL WITH SAND, (GM) brown, subrounded to angular, medium dense to dense, moist, strong HCL reaction	2.5	4527.5	GM	BK				16 ★	In place nuclear density test at 2.0' BGS: Wet Density = 110.2 pcf Moisture = 23.3% Cobbles up to 7" in size observed. In place nuclear density test at 3.3' BGS: Wet Density = 118.6 pcf Moisture = 16.9%
SILTY SAND WITH GRAVEL, (SM) tan, medium dense, moist, strong HCL reaction, (approx. 2" minus particle size)	5.0 7.5 10.0	4521.0	SM	BK					
Test Pit Terminated at 12.0 Feet.		4517.0							

Client: J-U-B Engineers, Inc.	**Test Pit Number:** TP03-STR-18
Project: PO17072A - Malad Lagooons	**Date Excavated:** 02-20-2018
Backhoe: CAT 314C	**Bucket Width:** 20"
Depth to Groundwater: N.E.	**Logged By:** B. Keyes

STRATA
Integrity From the Ground Up

EXPLORATORY TEST PIT LOG

Sheet 1 Of 1

STRATA BOREHOLE - STRATA.GDT - 3/29/18 10:25 - M:\CLIENTS\JUJUB ENGINEERS, INC\PO17072A - MALAD WASTE WATER TREATMENT LAGOONS\ELECTRONIC LOGS\PO17072A - TEST PIT LOGS.GPJ

USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS: Pocket Penetrometer, TSF ▲ (0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5); SPT, N-Value ●; % Passing No. 200 Sieve ★; PL MC LL (20 40 60 80)	Remarks
SANDY LEAN CLAY, (CL) brown dark brown, soft to stiff, moist, weak HCL reaction, frozen to 4"	0.0	4498.0	CL	BK			72.2	PL 20, MC 13, LL 36; 13; ★	42.15803°N, 112.22738°W Significant organics observed in the upper 9"-12" BGS Ring sample obtained from between 2.5' and 3' BGS In place nuclear density test at 2.4' BGS: Wet Density = 89.6 pcf Moisture = 16.5%
	2.5								
	5.0								
	7.5								
CLAYEY GRAVEL WITH SAND, (GC) tan, medium dense, moist, strong HCL reaction		4489.0							
	10.0		GC	BK					
Test Pit Terminated at 12.0 Feet.		4486.0							

Client: J-U-B Engineers, Inc.	**Test Pit Number:** TP04-STR-18
Project: PO17072A - Malad Lagooons	**Date Excavated:** 02-20-2018
Backhoe: CAT 314C	**Bucket Width:** 20"
Depth to Groundwater: N.E.	**Logged By:** B. Keyes

STRATA
Integrity From the Ground Up

EXPLORATORY TEST PIT LOG

Sheet 1 Of 1

STRATA BOREHOLE - STRATA.GDT - 3/29/18 10:25 - M:\CLIENTS\JUJUB ENGINEERS, INC\PO17072A - MALAD WASTE WATER TREATMENT LAGOONS\ELECTRONIC LOGS\PO17072A - TEST PIT LOGS.GPJ

USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS	Remarks
								Pocket Penetrometer, TSF ▲ 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 SPT, N-Value ● % Passing No. 200 Sieve ★ PL MC LL 20 40 60 80	Note: BGS = Below Ground Surface
SANDY SILT, (ML) brown dark brown, loose, moist, frozen to 4"	0.0	4523.0	ML						42.15560°N, 112.22505°W Significant organics observed in the upper 9"-12" BGS
SANDY LEAN CLAY WITH GRAVEL, (CL) brown tan, subrounded to angular, soft to stiff, moist	2.5	4522.0	CL	BK					In place nuclear density test at 1.5' BGS: Wet Density = 95.2 pcf Moisture = 18.1%
CLAYEY GRAVEL WITH SAND, (GC) brown, medium dense to dense, moist	5.0	4520.0	GC	BK					In place nuclear density test at 4.0' BGS: Wet Density = 123.4 pcf Moisture = 15.2%
	7.5			BK				10 21 30 ★	Increased fines content below 7'
Test Pit Terminated at 12.0 Feet.	10.0	4511.0							

Client: J-U-B Engineers, Inc.	**Test Pit Number:** TP05-STR-18	STRATA Integrity From the Ground Up	**EXPLORATORY TEST PIT LOG**
Project: PO17072A - Malad Lagooons	**Date Excavated:** 02-20-2018		
Backhoe: CAT 314C	**Bucket Width:** 20"		
Depth to Groundwater: N.E.	**Logged By:** B. Keyes		Sheet 1 Of 1

STRATA BOREHOLE - STRATA.GDT - 3/29/18 10:25 - M:\CLIENTS\JUJUB ENGINEERS, INC\PO17072A - MALAD WASTE WATER TREATMENT LAGOONS\ELECTRONIC LOGS\PO17072A - TEST PIT LOGS.GPJ

USCS Description	Depth (ft)	Elevation	Symbol	Sample Type	SPT Blows Per 6 Inches	SPT N	Dry Density (pcf)	TEST RESULTS	Remarks
								Pocket Penetrometer, TSF ▲ 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 SPT, N-Value ● % Passing No. 200 Sieve ★ PL MC LL 20 40 60 80	Note: BGS = Below Ground Surface
SANDY SILT, (ML) brown dark brown, loose, moist, frozen to 4"	0.0	4484.0	ML						42.15327°N, 112.22775°W Significant organics observed in the upper 12"-18" BGS
LEAN CLAY WITH SAND, (CL) brown, loose to medium dense, moist, strong HCL reaction	2.5	4482.5	CL	BK			88.4	22	Ring sample obtained from between 2.0' and 2.5' BGS In place nuclear density test at 2.3' BGS: Wet Density = 108.6 pcf Moisture = 24.3%
CLAYEY SAND WITH GRAVEL, (SC) brown, loose to medium dense, moist, strong HCL reaction	5.0	4480.2	SC	BK				11 19 ★ 31	
CLAYEY GRAVEL WITH SAND, (GC) brown, medium dense, moist, weak to strong HCL reaction	7.5	4475.2	GC	BK					
Test Pit Terminated at 12.0 Feet.	10.0	4472.0							

Client: J-U-B Engineers, Inc.	**Test Pit Number:** TP06-STR-18
Project: PO17072A - Malad Lagooons	**Date Excavated:** 02-20-2018
Backhoe: CAT 314C	**Bucket Width:** 20"
Depth to Groundwater: N.E.	**Logged By:** B. Keyes

STRATA Integrity From the Ground Up

EXPLORATORY TEST PIT LOG

Sheet 1 Of 1

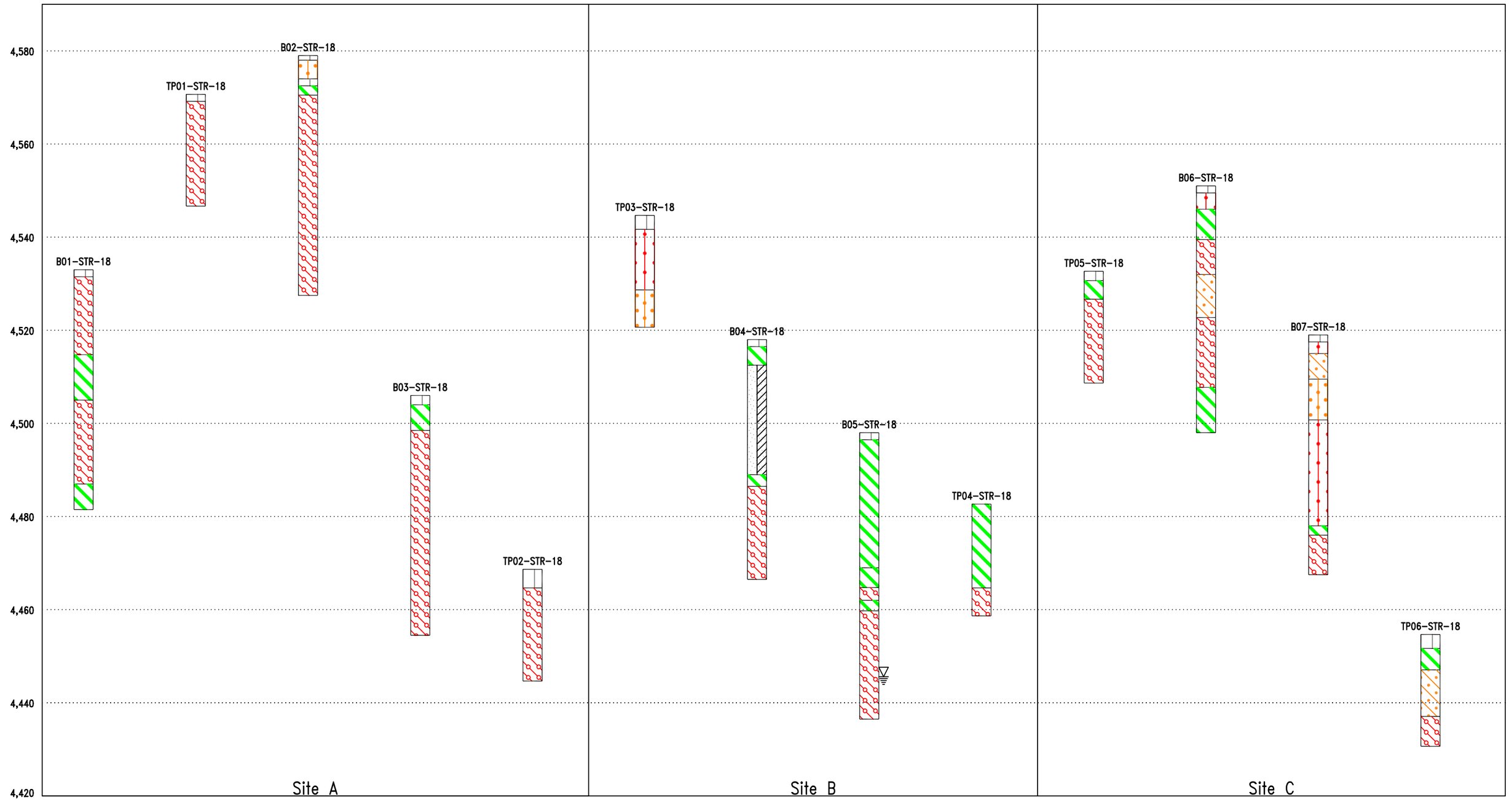
STRATA BOREHOLE - STRATA.GDT - 3/29/18 10:25 - M:\CLIENTS\JUJUB ENGINEERS, INC\PO17072A - MALAD WASTE WATER TREATMENT LAGOONS\ELECTRONIC LOGS\PO17072A - TEST PIT LOGS.GPJ

STRATA
Integrity From the Ground Up

FENCE DIAGRAM

CLIENT: J-U-B Engineers, Inc.
PROJECT NUMBER: P017072A
PROJECT NAME: Malad Wastewater Treatment Lagoons
PROJECT LOCATION: Malad City, Idaho

Legend
- USCS Silt
- USCS Silty Sand
- USCS Clayey Sand
- USCS Clayey Gravel
- USCS Poorly-graded Sand with Clay
- USCS Low Plasticity Clay
- USCS Silty Gravel



APPENDIX B

Laboratory Test Results

STRATA

Integrity from the Ground Up

Summary of Test Results

Project: Malad Wastewater Treatment Lagoons
Client: J-U-B Engineers, Inc.

Project Number: PO17072A
Date: 4/4/2018

Location	Depth, feet	Lab Number	Soil Classification (USCS)	In Situ Moisture, %	Passing No. 200, %	Atterberg			Fines Class	Dry Unit Weight, pcf
						LL	PL	PI		
B01-STR-18	10-11.5	PO1800026	Clayey Gravel with Sand (GC)	10.8%	22%					
B01-STR-18	22.5-24	PO1800027	Lean Clay (CL)	19.9%	86%	28	19	9	CL	83.2
B01-STR-18	35-36.5	PO1800028	Clayey Gravel with Sand (GC)	5.0%	13%					
B02-STR-18	5-6.5	PO1800029	Silt with Sand (ML)	20.7%	71%	38	26	12	ML	
B02-STR-18	8-8.5	PO18000	Lean Clay (CL)	28.6%	86%	39	22	17	CL	82.0
B02-STR-18	20-21.5	PO1800030	Clayey Gravel with Sand (GC)	9.6%	23%					
B03-STR-18	2.5-4	PO1800031	Sandy Lean Clay (CL)	13.2%	66%	33.0	18.0	15.0	CL	
B03-STR-18	15-16.5	PO1800032	Clayey Gravel with Sand (GC)	11.4%	43%					
B03-STR-18	35-36.5	PO1800033	Clayey Gravel with Sand (GC)	5.3%	14%					
B04-STR-18	20-21.5	PO1800034	Poorly Graded Sand with Silt and Gravel (SP-SM)	4.7%	12%					
B04-STR-18	30-31.5	PO1800035	Sandy Lean Clay (CL)	20.1%	50%	33.0	18.0	15.0	CL	
B05-STR-18	10-11.5	PO1800036	Lean Clay with Sand (CL)	24.7%	75%	36	20	16	CL	88.2
B05-STR-18	30-31.5	PO1800037	Sandy Lean Clay (CL)	16.9%	58%					
B05-STR-18	40-41.5	PO1800038	Clayey Gravel with Sand (GC)	13.1%	22%					107.4
B06-STR-18	5-6.5	PO1800039	Sandy Lean Clay (CL)	8.1%	57%	29.0	19.0	10.0	CL	
B06-STR-18	10-11.5	PO1800040	Sandy Lean Clay (CL)	10.6%	50%					
B06-STR-18	20-21.5	PO1800041	Clayey Sand with Gravel (SC)	18.7%	40%					90.2
B07-STR-18	15-16.5	PO1800042	Silty Sand (SM)	12.9%	44%	NV	NP	NV	ML	97.2
B07-STR-18	30-31.5	PO1800043	Silty Gravel with Sand (GM)	6.5%	13%					
TP01-STR-18	6-9	PO1800044	Clayey Gravel with Sand (GC)	10.5%	17%	30	20	10	CL	
TP02-STR-18	9-12	PO1800045	Clayey Gravel with Sand (GC)	11.4%	33%	32.0	18.0	14.0	CL	
TP03-STR-18	2-4	PO1800046	Silty Gravel with Sand (GM)	16.3%	23%					
TP04-STR-18	1-4	PO1800047	Sandy Lean Clay (CL)	12.5%	68%	36.0	20.0	16.0	CL	
TP04-STR-18	2.5-3	PO1800048	Sandy Lean Clay (CL)	12.7%						72.2
TP05-STR-18	7-12	PO1800049	Clayey Gravel with Sand (GC)	10.4%	41%	30.0	21.0	9.0	CL	
TP06-STR-18	3.8-6	PO1800050	Clayey Sand with Gravel (SC)	11.1%	22%	31	19	12	CL	
TP06-STR-18	2-2.5	PO1800051	Clayey Sand with Gravel (SC)	22.0%						88.4

MOISTURE-DENSITY RELATIONSHIP CURVE
ASTM D1557
Method C

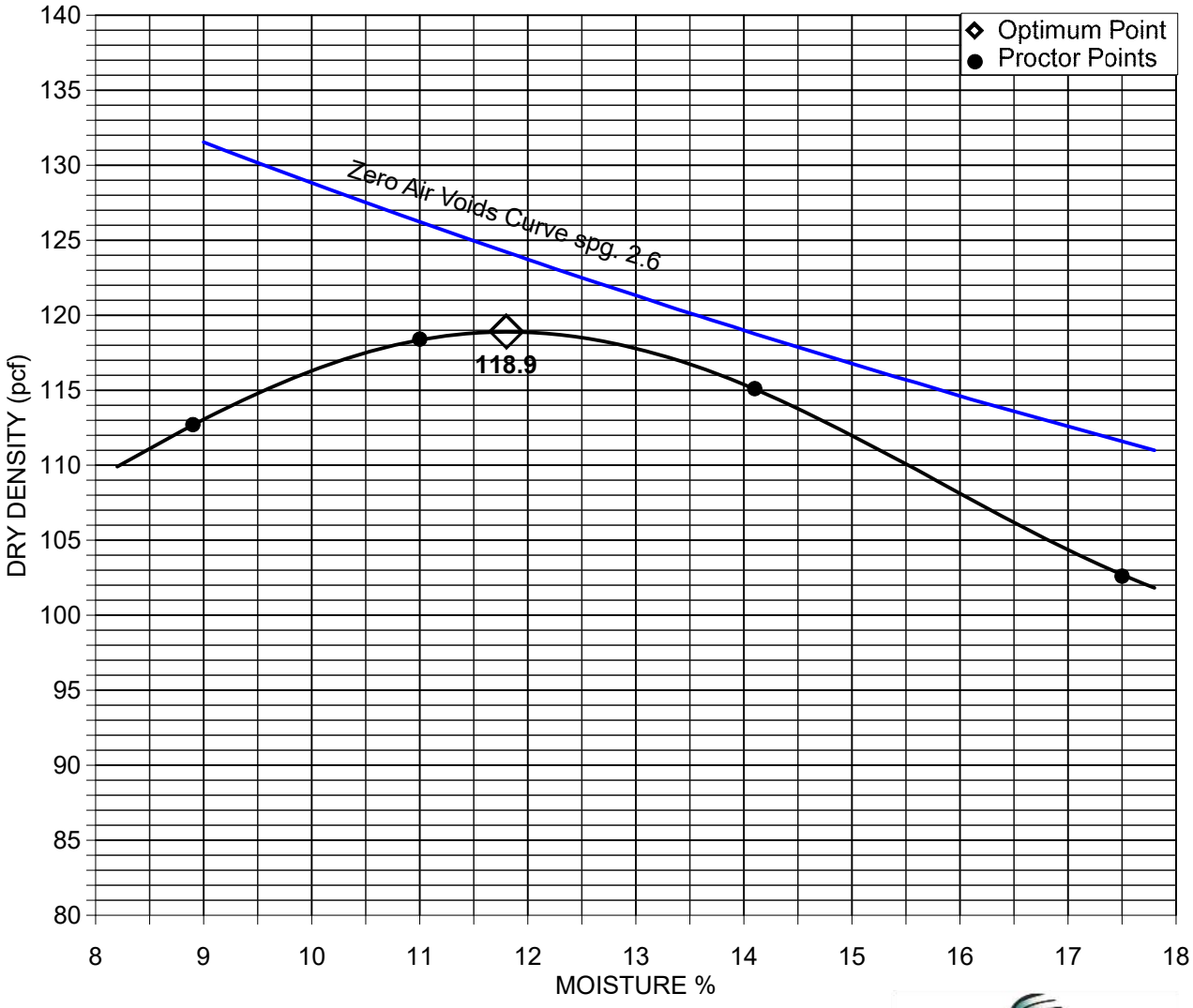
Project: Malad Wastewater Treatment Lagoons
Client Name: J-U-B Engineers, Inc.
Project ID.: PO17072A
Sample No.: PO1800045
Sample Source: TP02-STR-18 9'-12'
Sample Classification: Clayey Gravel with Sand (GC)
Date Sample: 2/20/2018
Sampled By: R. Benedetti - STRATA
Date Tested: 3/13/2018
Tested By: S. Myers - STRATA
Soil Tempered: Yes
Rammer Type: Mechanical

GRADING ANALYSIS

SCREEN SIZE	% PASSING	AS TESTED
6 inch	100	
3 inch	93	
2 inch	90	
3/4 inch	82	100
3/8 inch	70	
#4 screen	57	

Maximum Dry Density, pcf : 118.9
Optimum Moisture Content, %: 11.8

Corrected Dry Density, pcf: 124.3
Corrected Moisture Content, %: 9.8
Coarse Aggregate Correction, %: 18.0
Bulk Specific Gravity (assumed): 2.56



STRATA
Integrity From the Ground Up

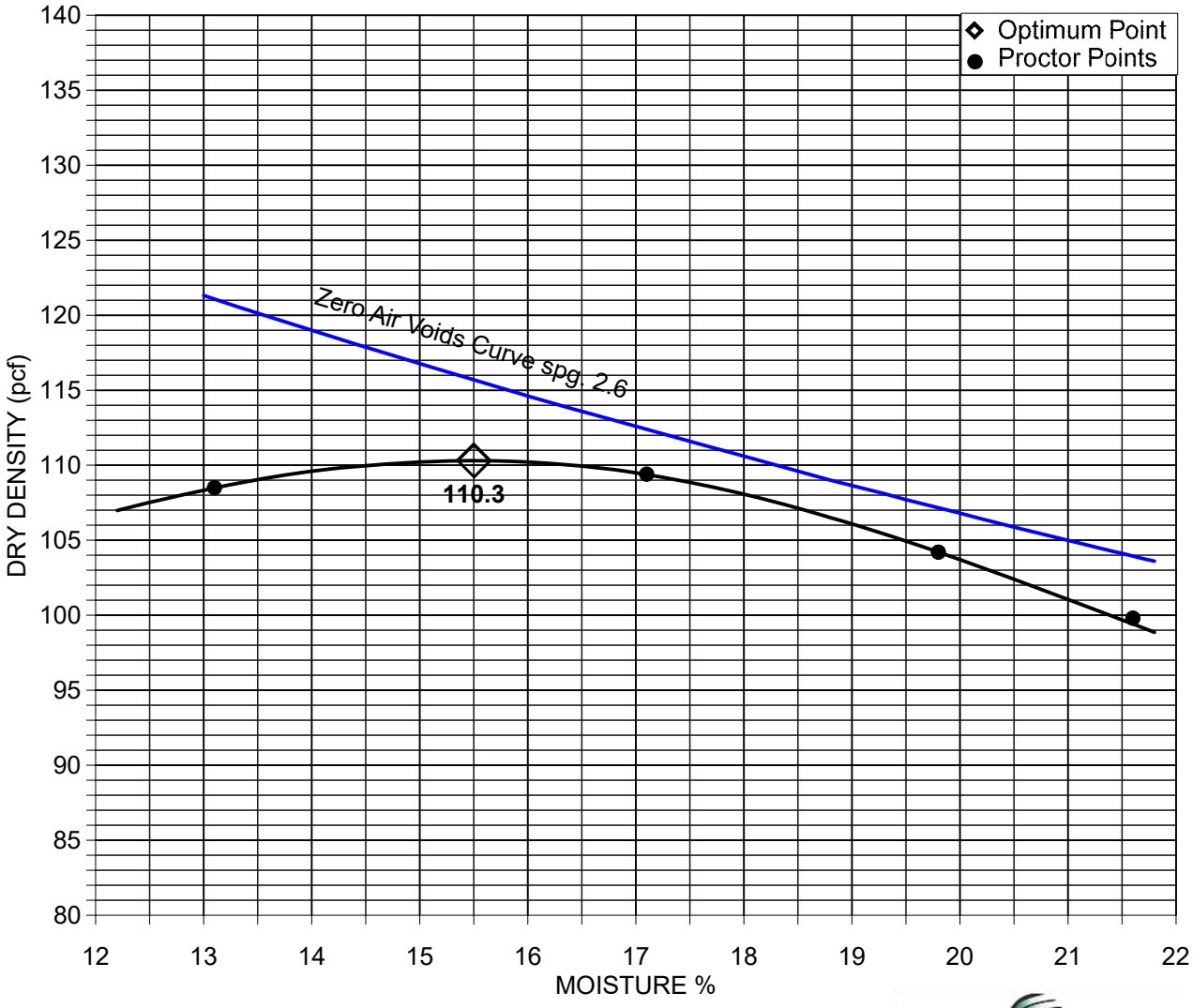
MOISTURE-DENSITY RELATIONSHIP CURVE
ASTM D1557
Method B

Project: Malad Wastewater Treatment Lagoons
Client Name: J-U-B Engineers, Inc.
Project ID.: PO17072A
Sample No.: PO1800047
Sample Source: TP04-STR-18 1'-4'
Sample Classification: Sandy Lean Clay (CL)
Date Sample: 2/20/2018
Sampled By: R. Benedetti - STRATA
Date Tested: 3/13/2018
Tested By: S. Myers - STRATA
Soil Tempered: Yes
Rammer Type: Mechanical

Maximum Dry Density, pcf : 110.3
Optimum Moisture Content, %: 15.5

GRADING ANALYSIS

SCREEN SIZE	% PASSING	AS TESTED
6 inch		
3 inch		
2 inch	100	
3/4 inch	98	100
3/8 inch		
#4 screen		



STRATA
Integrity from the Ground Up

MOISTURE-DENSITY RELATIONSHIP CURVE
ASTM D1557
Method C

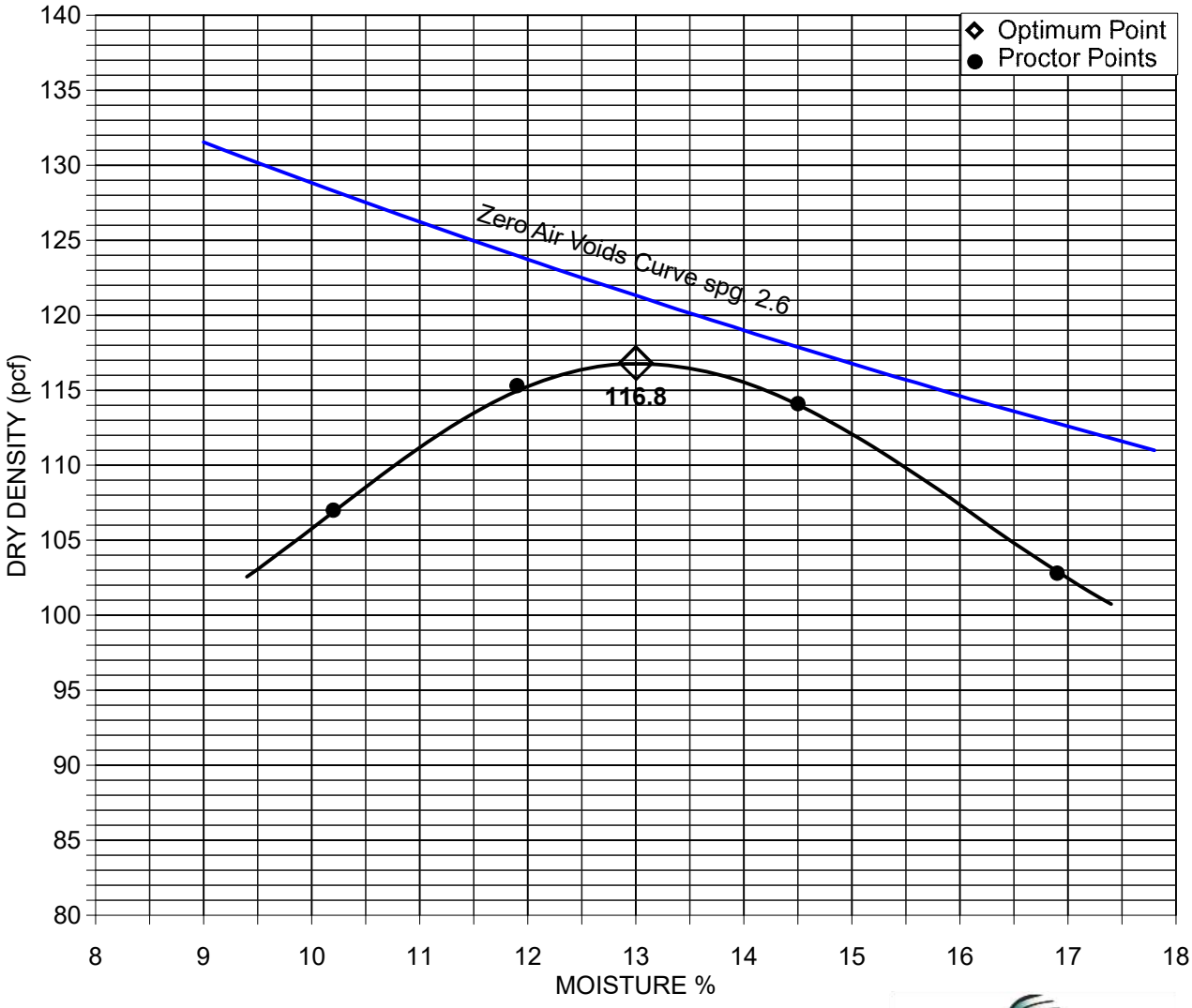
Project: Malad Wastewater Treatment Lagoons
Client Name: J-U-B Engineers, Inc.
Project ID.: PO17072A
Sample No.: PO1800049
Sample Source: TP05-STR-18 7'-12'
Sample Classification: Clayey Gravel with Sand (GC)
Date Sample: 2/20/2018
Sampled By: R. Benedetti - STRATA
Date Tested: 2/20/2018
Tested By: S. Myers - STRATA
Soil Tempered: Yes
Rammer Type: Mechanical

GRADING ANALYSIS

SCREEN SIZE	% PASSING	AS TESTED
6 inch		
3 inch		
2 inch	100	
3/4 inch	89	100
3/8 inch	79	
#4 screen	68	

Maximum Dry Density, pcf : 116.8
Optimum Moisture Content, %: 13.0

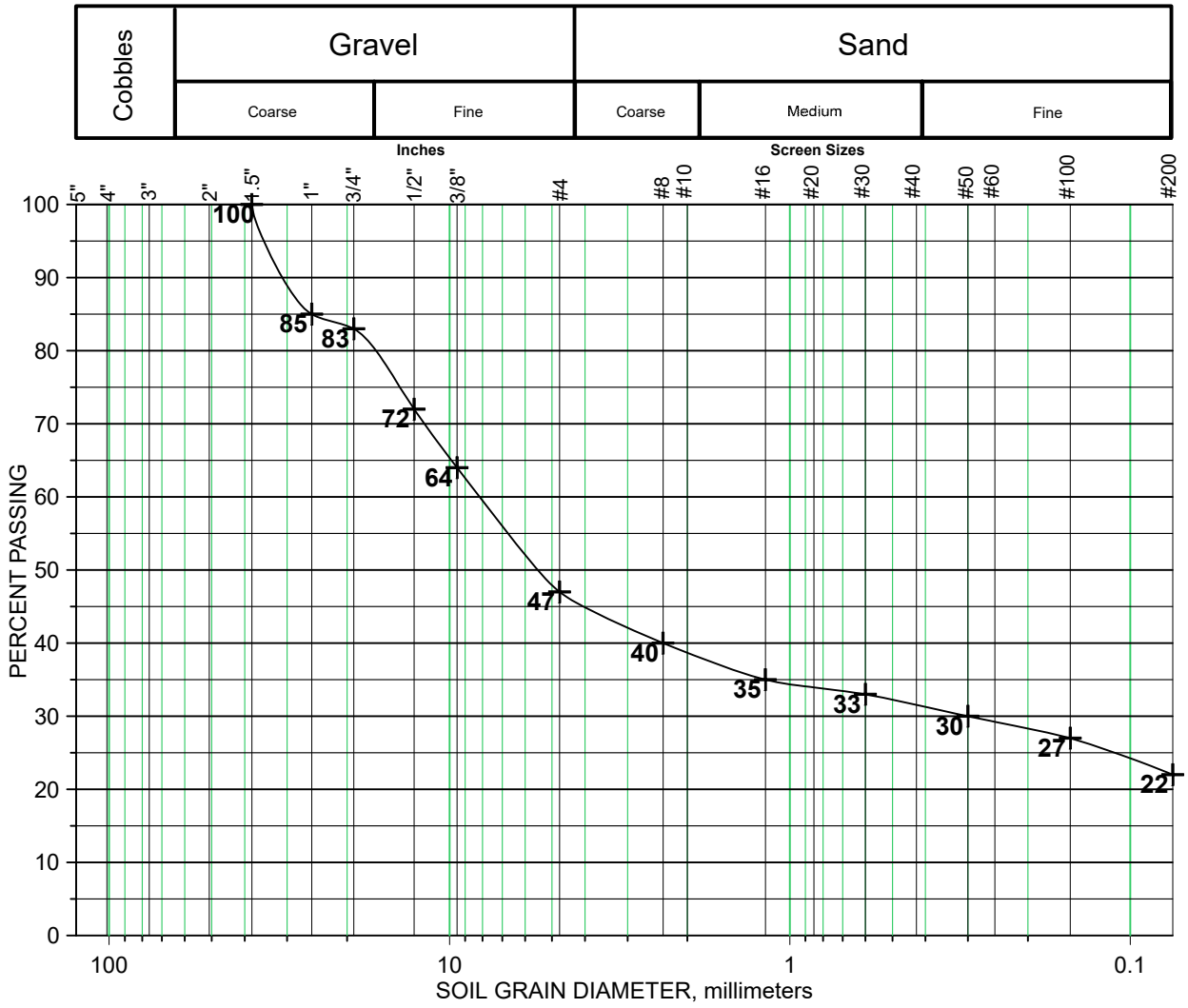
Corrected Dry Density, pcf: 120.3
Corrected Moisture Content, %: 11.3
Coarse Aggregate Correction, %: 11.0
Bulk Specific Gravity (assumed): 2.56



STRATA
Integrity From the Ground Up

GRADATION ANALYSIS
ASTM C136

Project: Malad Wastewater Treatment Lagoons
Client: J-U-B Engineers, Inc.
Project Number: PO17072A
Lab Number: PO1800026
Sample Identification: B01-STR-18 10'-11.5'
Sample Classification: Clayey Gravel with Sand (GC)
Date tested: 3/8/2018 By: S. Myers - STRATA



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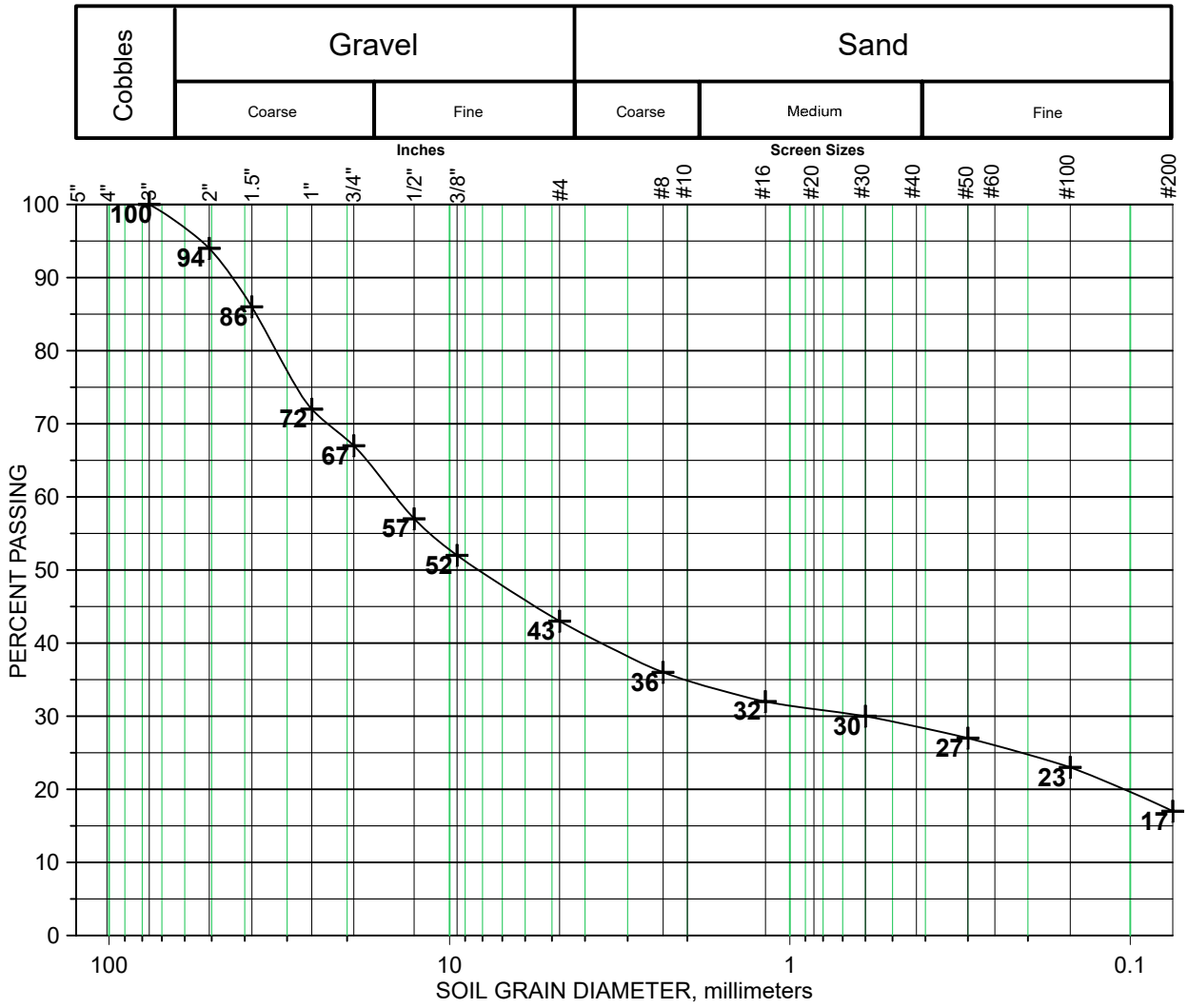
Integrity from the Ground Up

GRADATION ANALYSIS
ASTM C136

Project: Malad Wastewater Treatment Lagoons
Client: J-U-B Engineers, Inc.
Project Number: PO17072A
Lab Number: PO1800044
Sample Identification: TP01-STR-18 6'-9'
Sample Classification: Clayey Gravel with Sand (GC)
Date tested: 3/8/2018 By: S. Myers - STRATA



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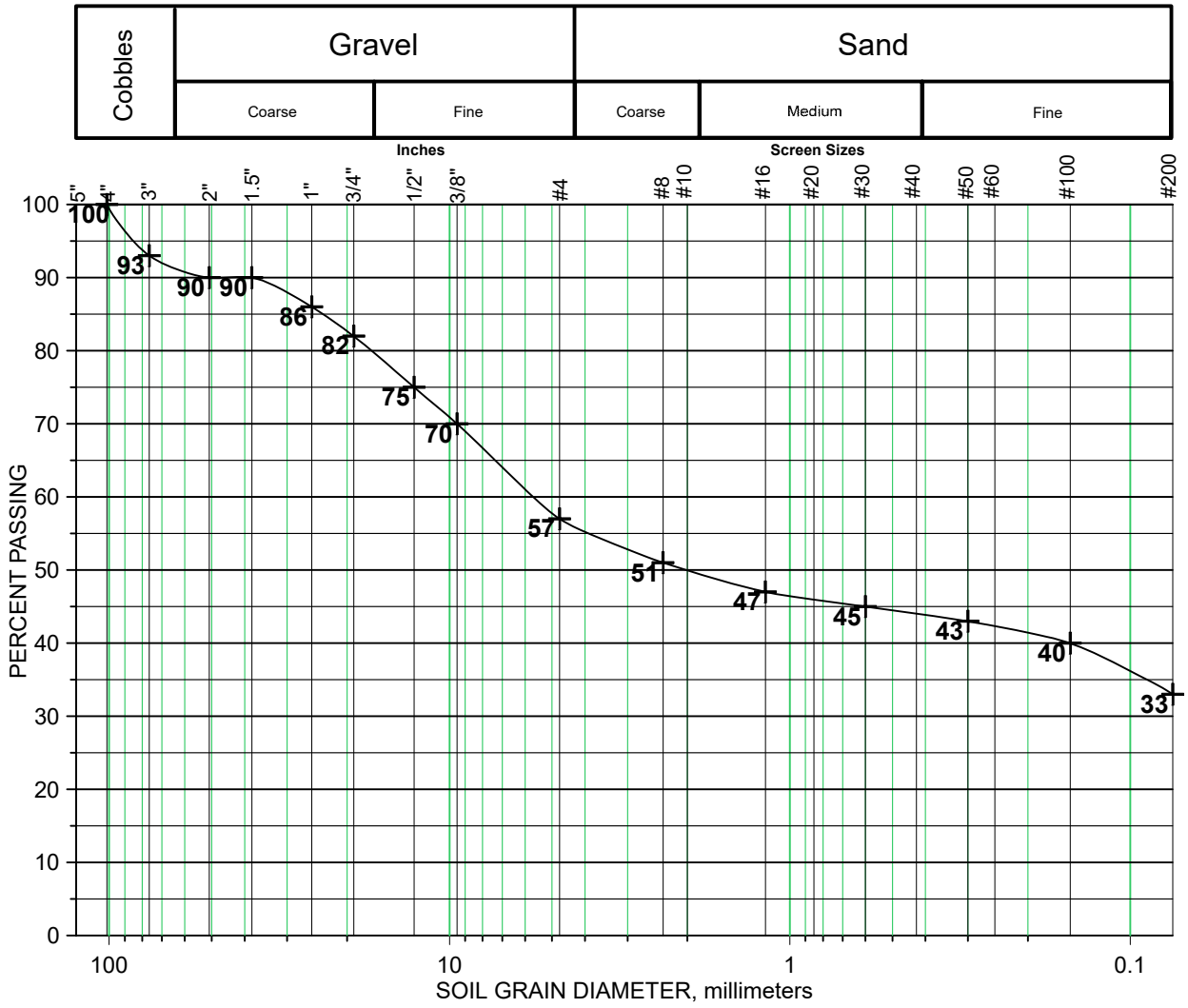
GRADATION ANALYSIS
ASTM C136

Project: Malad Wastewater Treatment Lagoons
Client: J-U-B Engineers, Inc.
Project Number: PO17072A
Lab Number: PO1800045
Sample Identification: TP02-STR-18 9'-12'
Sample Classification: Clayey Gravel with Sand (GC)
Date tested: 3/8/2018 By: S. Myers - STRATA



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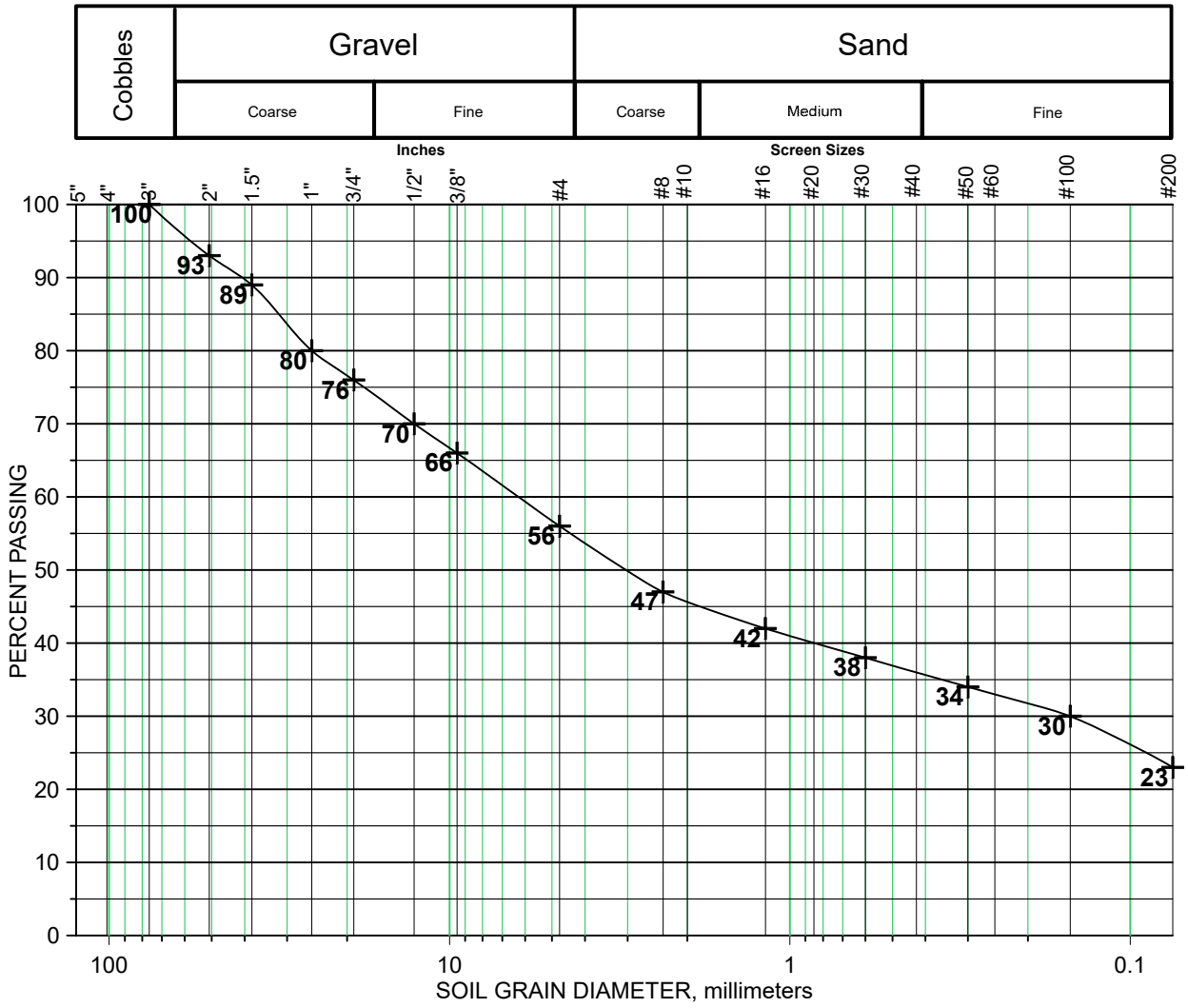
GRADATION ANALYSIS
ASTM C136

Project: Malad Wastewater Treatment Lagoons
Client: J-U-B Engineers, Inc.
Project Number: PO17072A
Lab Number: PO1800046
Sample Identification: TP03-STR-18 2'-4'
Sample Classification: Silty Gravel with Sand (GM)
Date tested: 3/8/2018 By: S. Myers - STRATA



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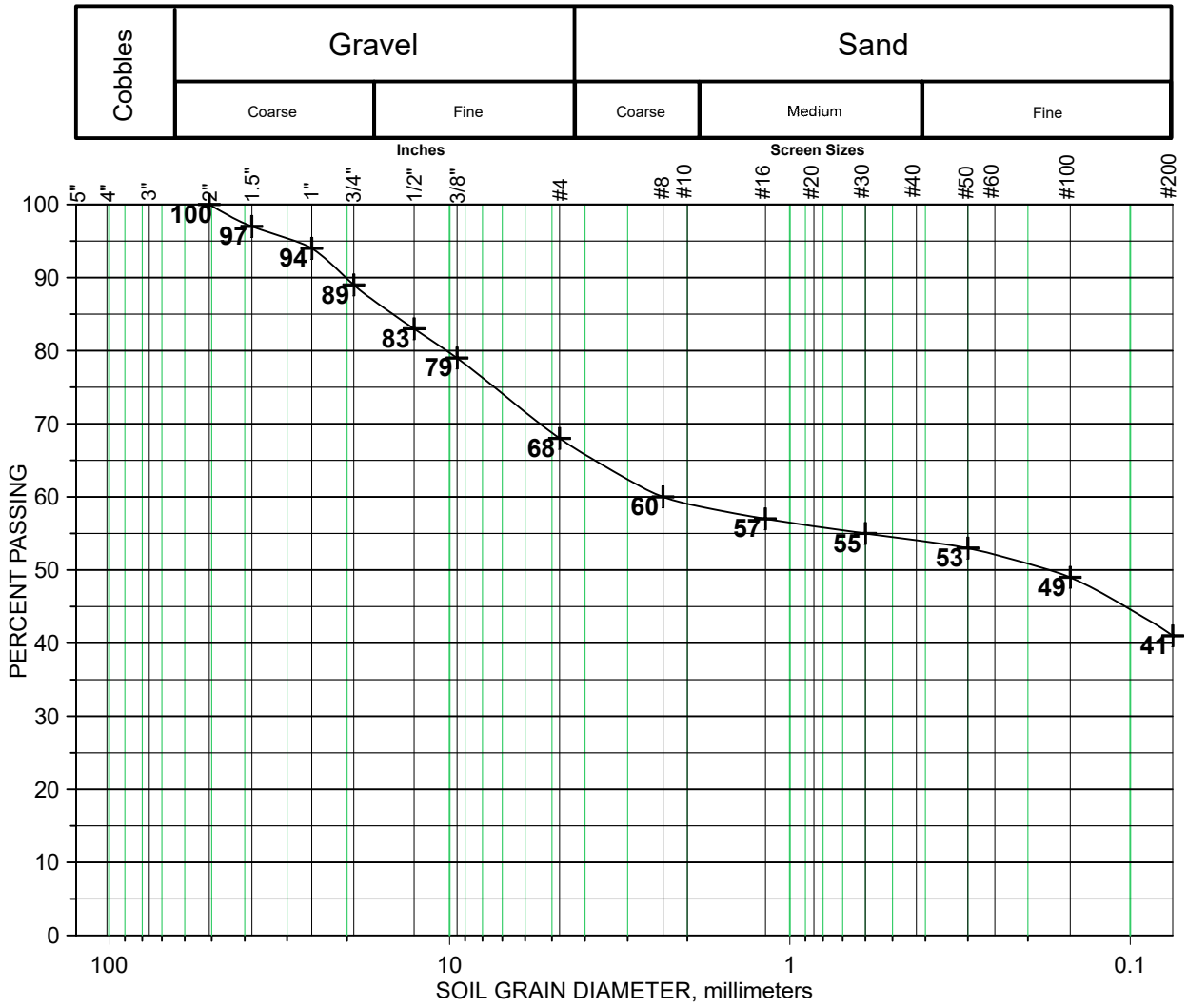
GRADATION ANALYSIS
ASTM C136

Project: Malad Wastewater Treatment Lagoons
Client: J-U-B Engineers, Inc.
Project Number: PO17072A
Lab Number: PO1800049
Sample Identification: TP05-STR-18 7'-12'
Sample Classification: Clayey Gravel with Sand (GC)
Date tested: 3/8/2018 By: S. Myers - STRATA



STRATA
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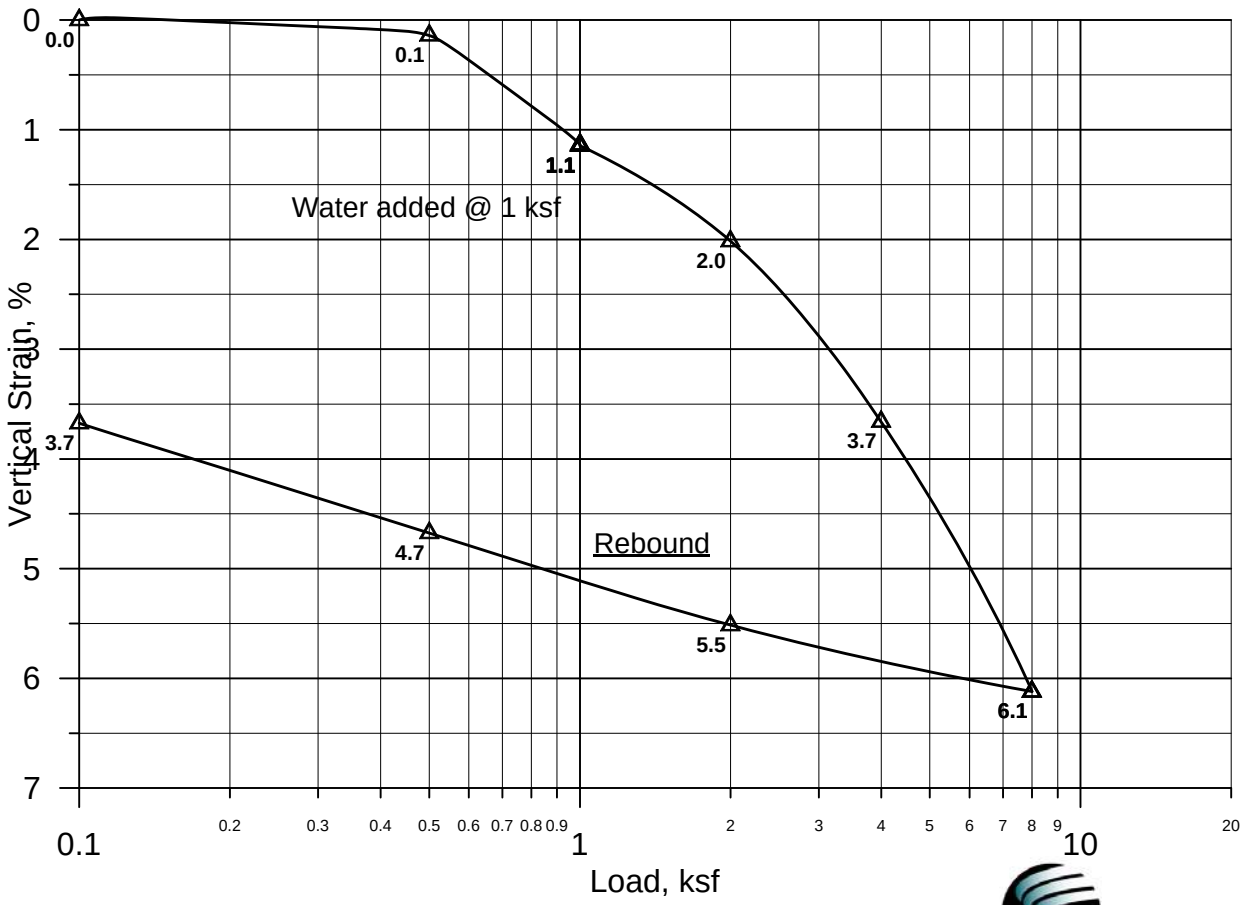
CONSOLIDATION TEST RESULTS
ASTM D 2435 (Method A)

Project: Malad Wastewater Treatment Lagoons
Client: J-U-B Engineers, Inc.
Project Number: PO17072A
Sample Number: BL1800102
Sample Location: B01-STR-18 @ 22.5'-24'
Sample Classification: Lean Clay
Sample: In-Situ Tube (Condition: Good)
Date Tested: 3/27/18 By: K. Wildman
Sample Dry Unit Weight: 83.2 pcf
Moisture Content: 19.9%



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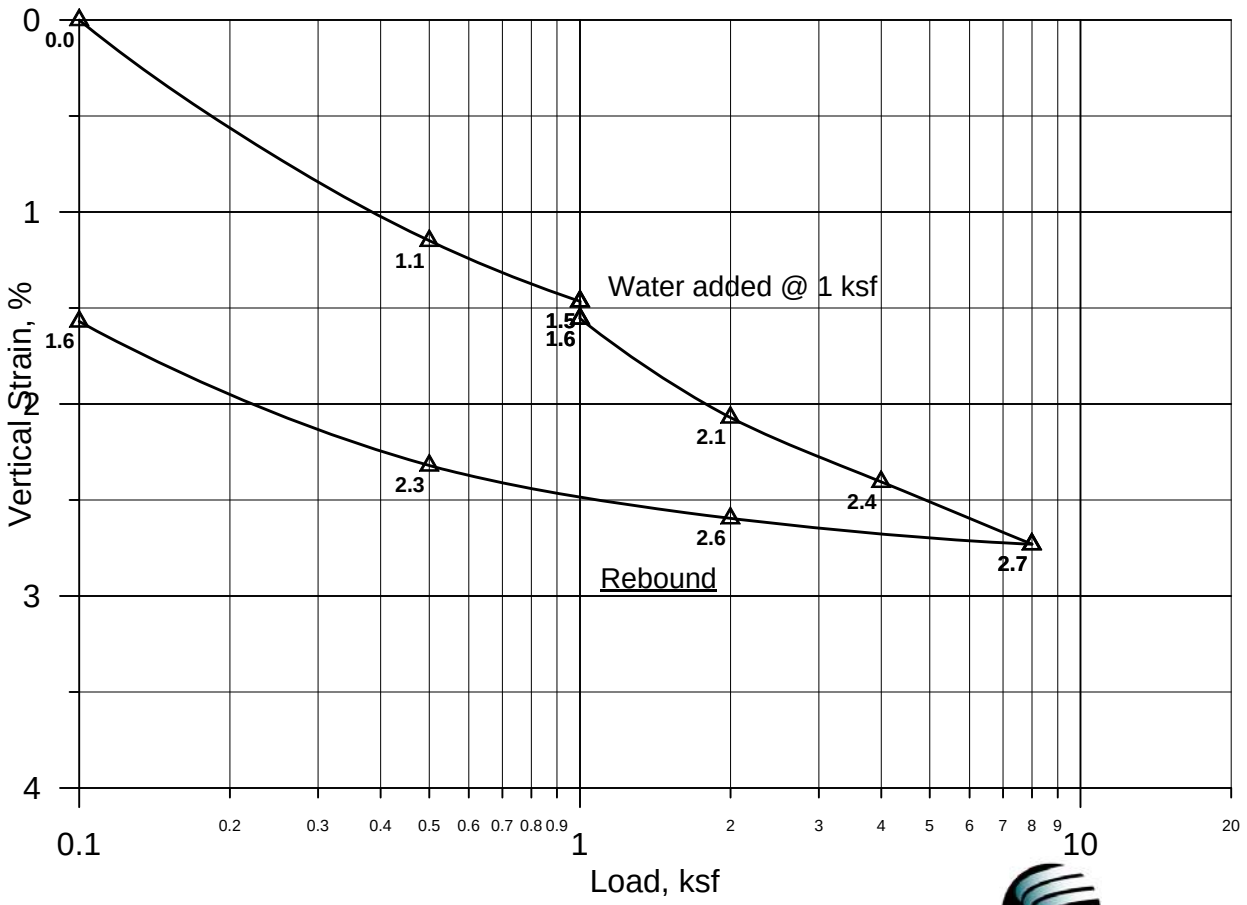
CONSOLIDATION TEST RESULTS
ASTM D 2435 (Method A)

Project: Malad Wastewater Treatment Lagoons
Client: J-U-B Engineers, Inc.
Project Number: PO17072A
Sample Number: BL1800103
Sample Location: BO5-STR-18 @ 10'-11.5'
Sample Classification: Lean Clay with Sand
Sample: In-Situ Tube (Condition: Good)
Date Tested: 3/27/18 By: K. Wildman
Sample Dry Unit Weight: 85.6 pcf
Moisture Content: 24.7%



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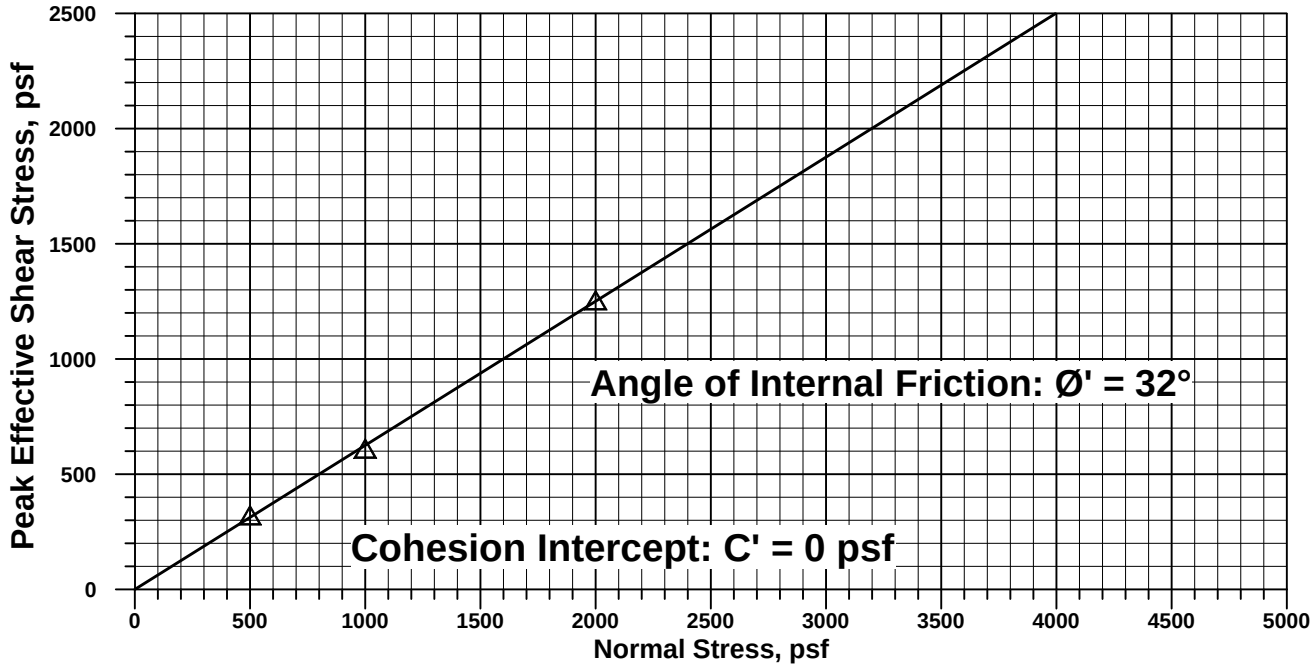
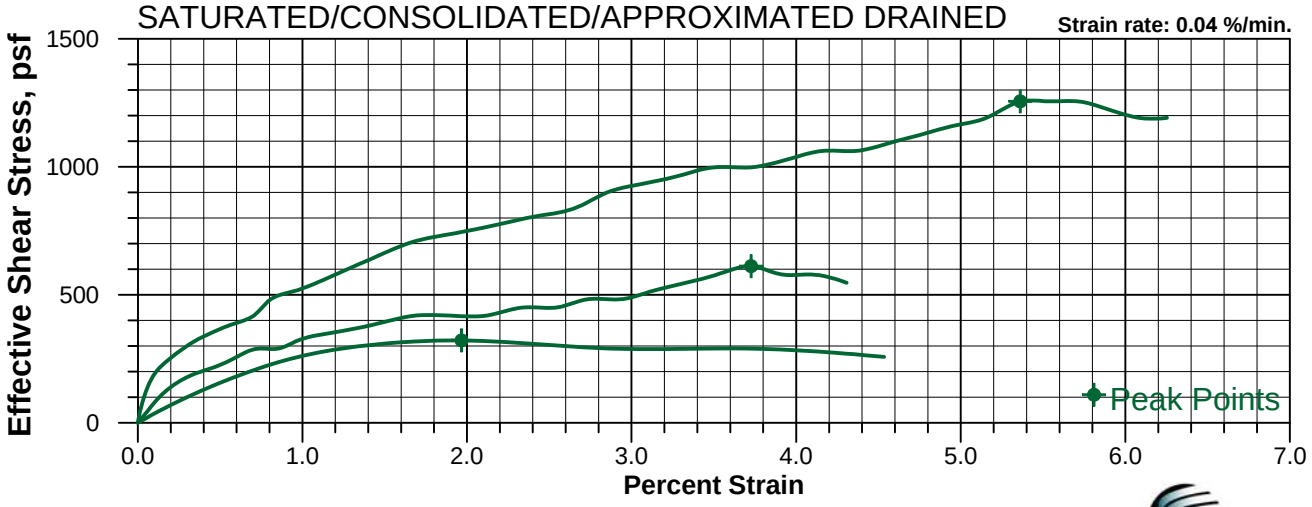
Integrity from the Ground Up

DIRECT SHEAR
AASHTO T 236

Project: Malad Wastewater Treatment Lagoons
Client: J-U-B Engineers, Inc.
Sample Location: B02-STR-18 @ 8'-8.5'
Sample Classification*: Lean Clay
Moisture: 28.6 %
Dry Unit Weight: 82.0 pcf

Project Number: PO17072A
Sample Number: BL1800164
Date Tested: 3/23/18
By: K. Wildman





STRATA
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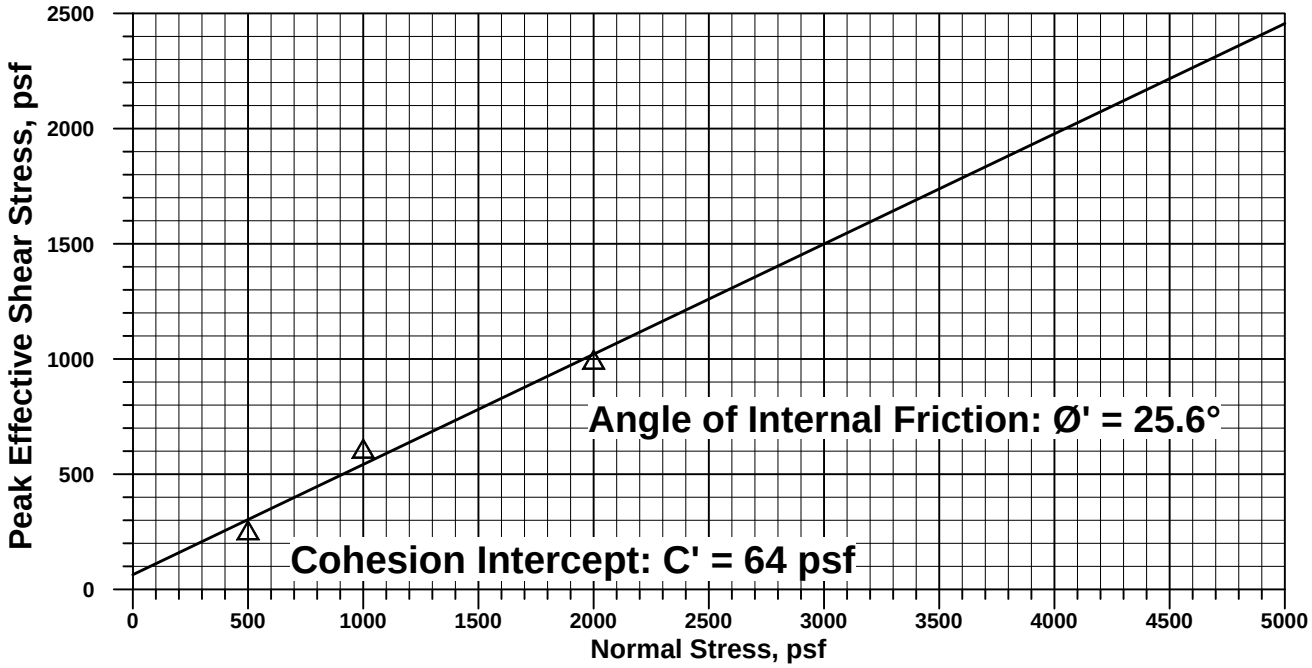
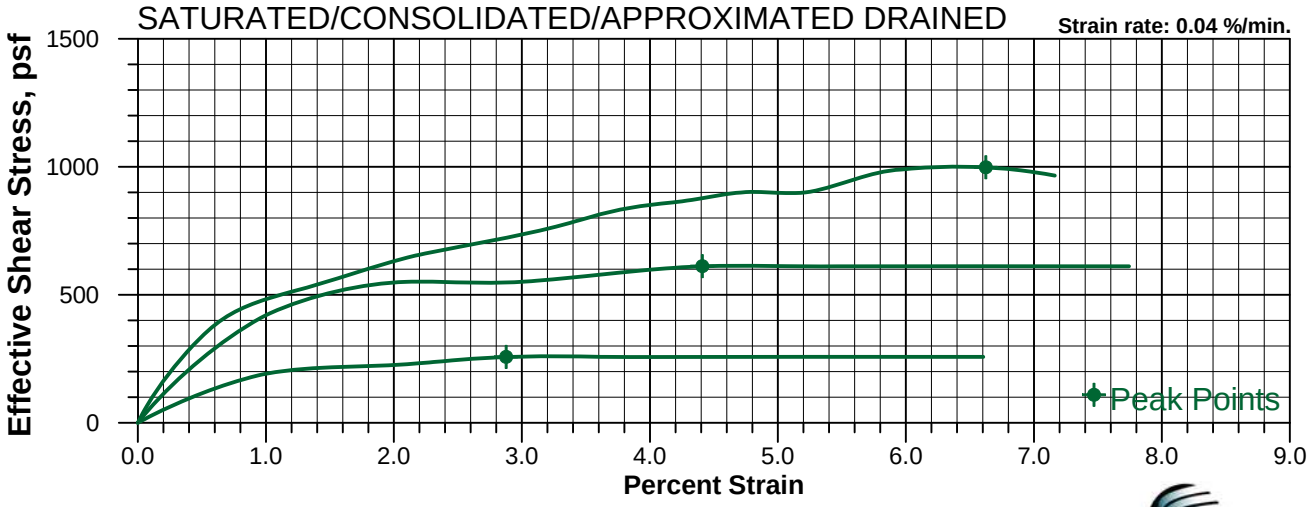
DIRECT SHEAR
ASTM D 3080

Project: Malad Wastewater Treatment Lagoons
Client: J-U-B Engineers, Inc.
Sample Location: B05-STR-18 @ 10'-11.5'
Sample Classification*: Lean Clay with Sand
Moisture: 24.7 %
Dry Unit Weight: 88.2 pcf

Project Number: PO17072A
Sample Number: BL1800103
Date Tested: 3/25/18
By: K. Wildman





STRATA
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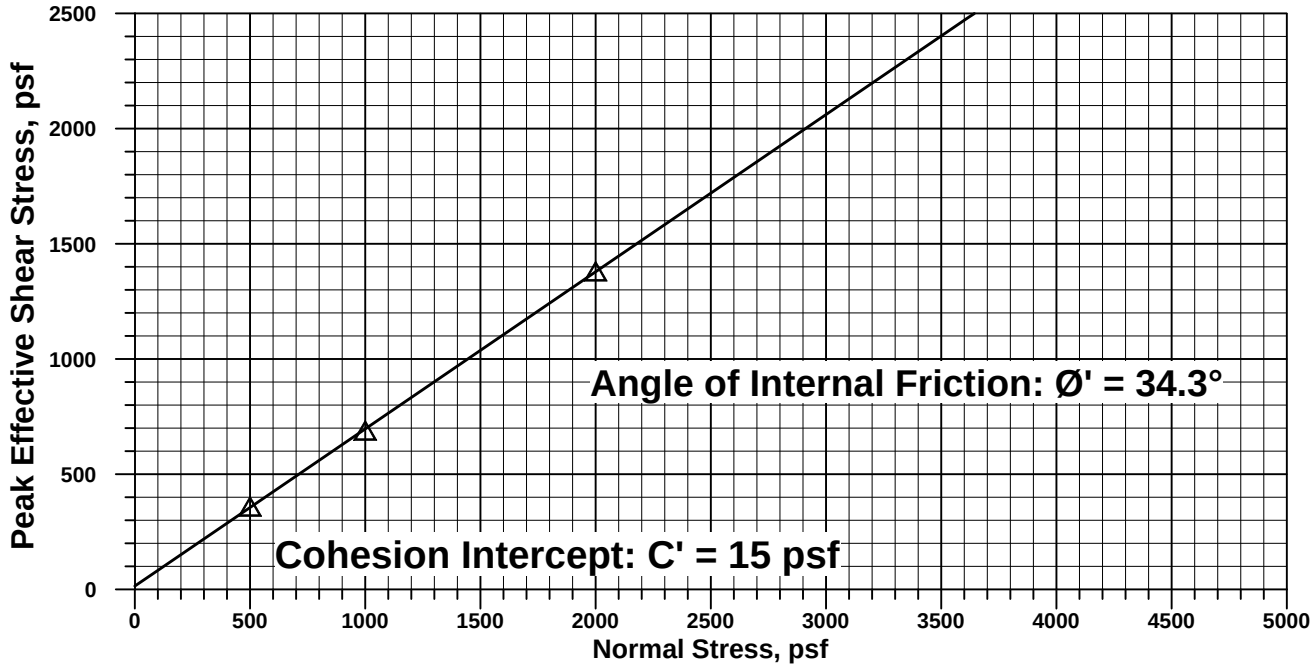
Integrity from the Ground Up

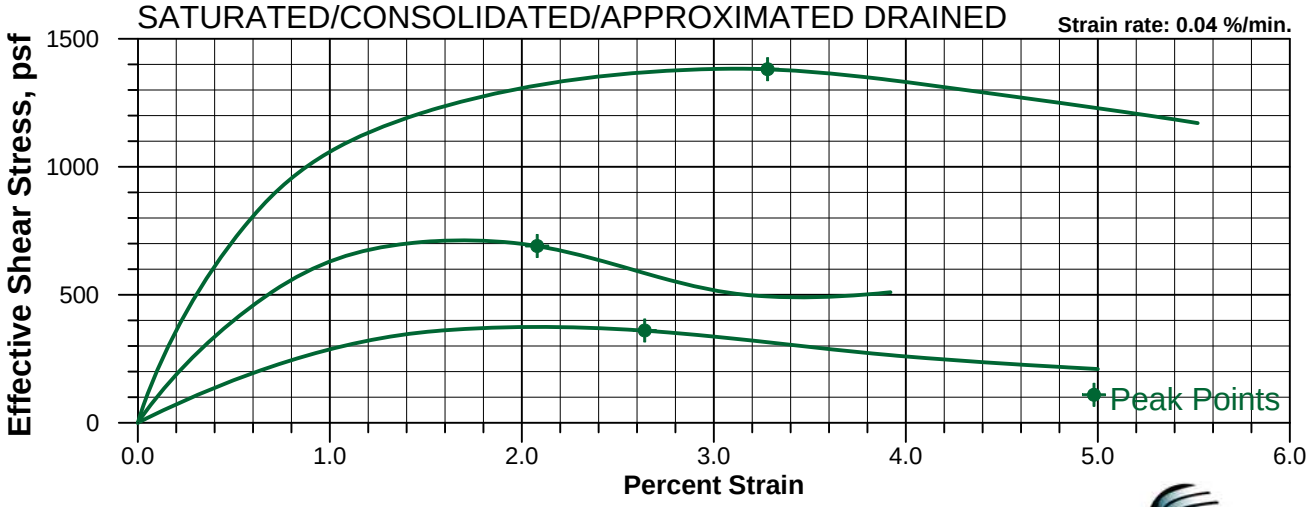
DIRECT SHEAR
ASTM D 3080

Project: Malad Wastewater Treatment Lagoons
Client: J-U-B Engineers, Inc.
Sample Location: TP04-STR-18 @ 1'-4'
Sample Classification*: Sandy Lean Clay
Moisture: 17.0 %
Dry Unit Weight: 100.1 pcf

Project Number: PO17072A
Sample Number: BL1800162
Date Tested: 3/26/18
By: K. Wildman

*Remold unit weight was based on the supplied ASTM D1557 B proctor. Test specimens were remolded to 90% utilizing the minus #10 material to comply with ASTM procedures. Internal friction angles are typically higher with the plus #10 portion included.





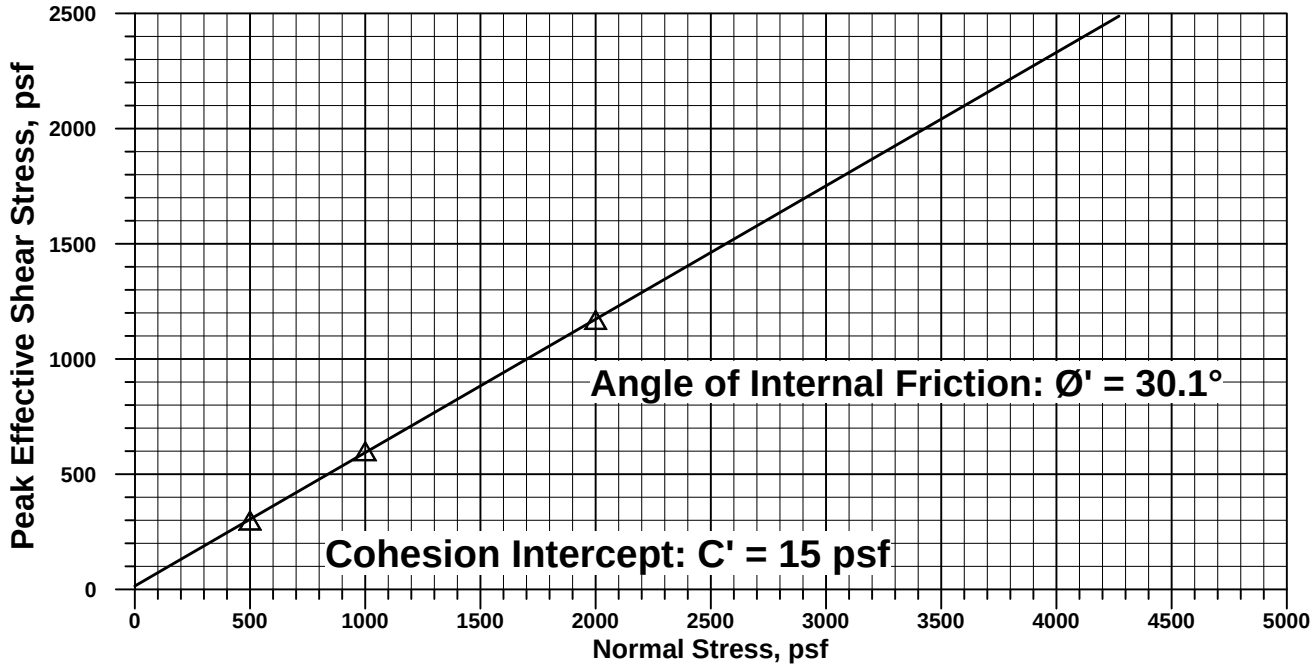
STRATA
A Professional Services Corporation
Integrity from the Ground Up

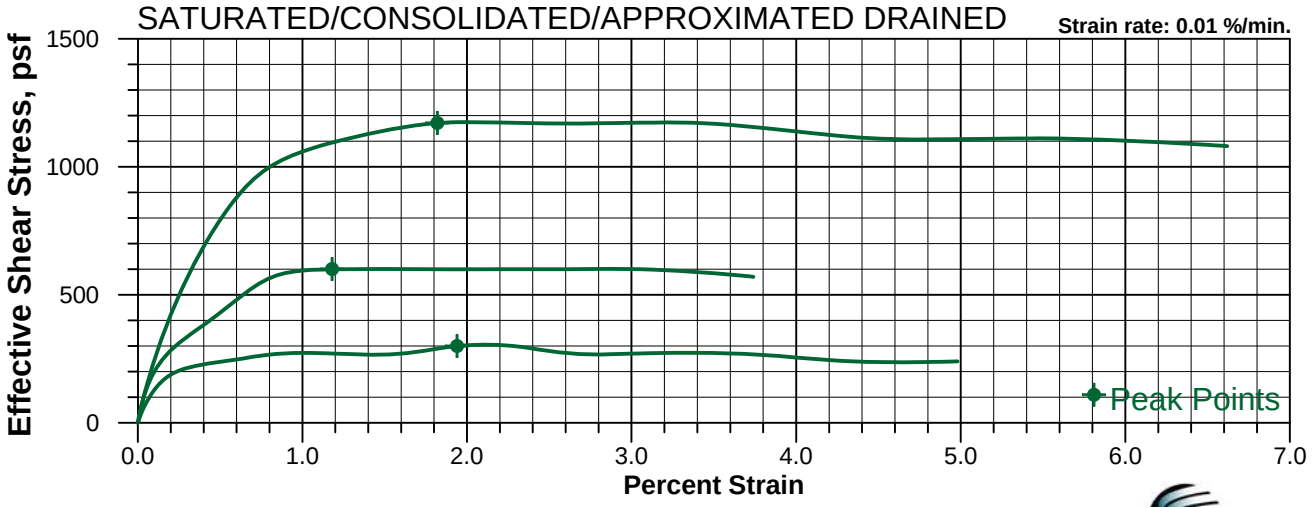
DIRECT SHEAR
ASTM D 3080

Project: Malad Wastewater Treatment Lagoons
Client: J-U-B Engineers, Inc.
Sample Location: TP05 -STR-18 @ 7'-12'
Sample Classification*: Clayey Sand
Moisture: 12.5 %
Dry Unit Weight: 108.3 pcf

Project Number: PO17072A
Sample Number: BL1800163
Date Tested: 3/27/18
By: K. Wildman

*Remold unit weight was based on the supplied ASTM D1557 C proctor. Test specimens were remolded to 90% utilizing the minus #10 material to comply with ASTM procedures. Internal friction angles are typically higher with the plus #10 portion included.





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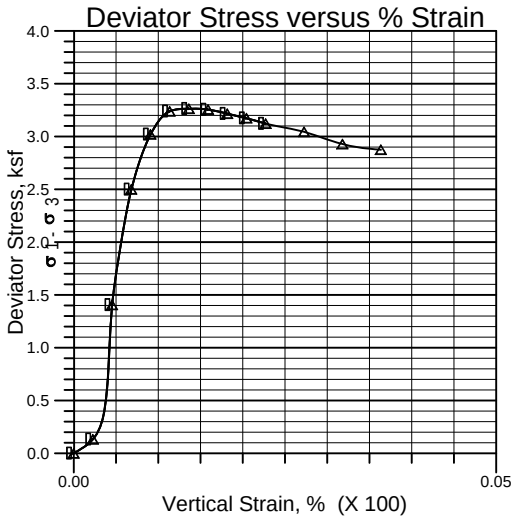
TRIAXIAL SHEAR
ASTM D 2850 (UU Saturated)

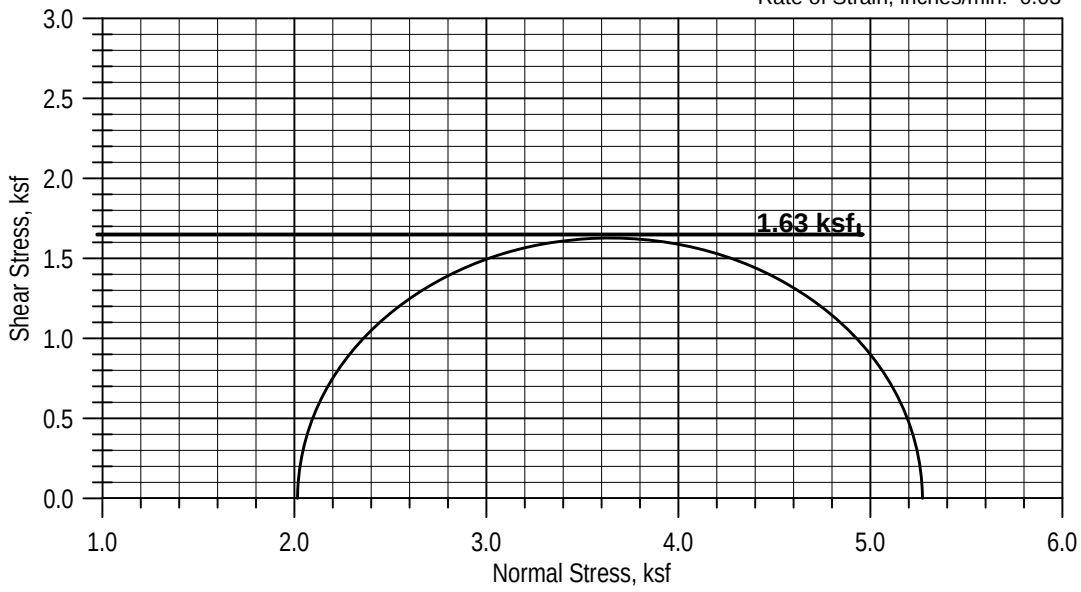
Project: Malad Wastewater Treatment Lagoons
Client: J-U-B Engineers, Inc.
Project Number: PO17072A
Sample Number: BL1800102
Sample Identification: B01-STR-18 @ 22.5'-24'
Sample Classification: Lean Clay
Date Tested: 3/20/18 By: K. Wildman
Atterberg Limits: LL= 28, PL= 9 (CL)

Dry Unit Weight: 82.9 pcf
Moisture Content: 21.4%
Height to Diameter Ratio: 2.07:1
Confinement Pressure: 14.0 psi (2.02 ksf)
Max. Deviator Stress: 3.26 ksf @ 1.4% Strain



At Failure

Rate of Strain, inches/min: 0.03



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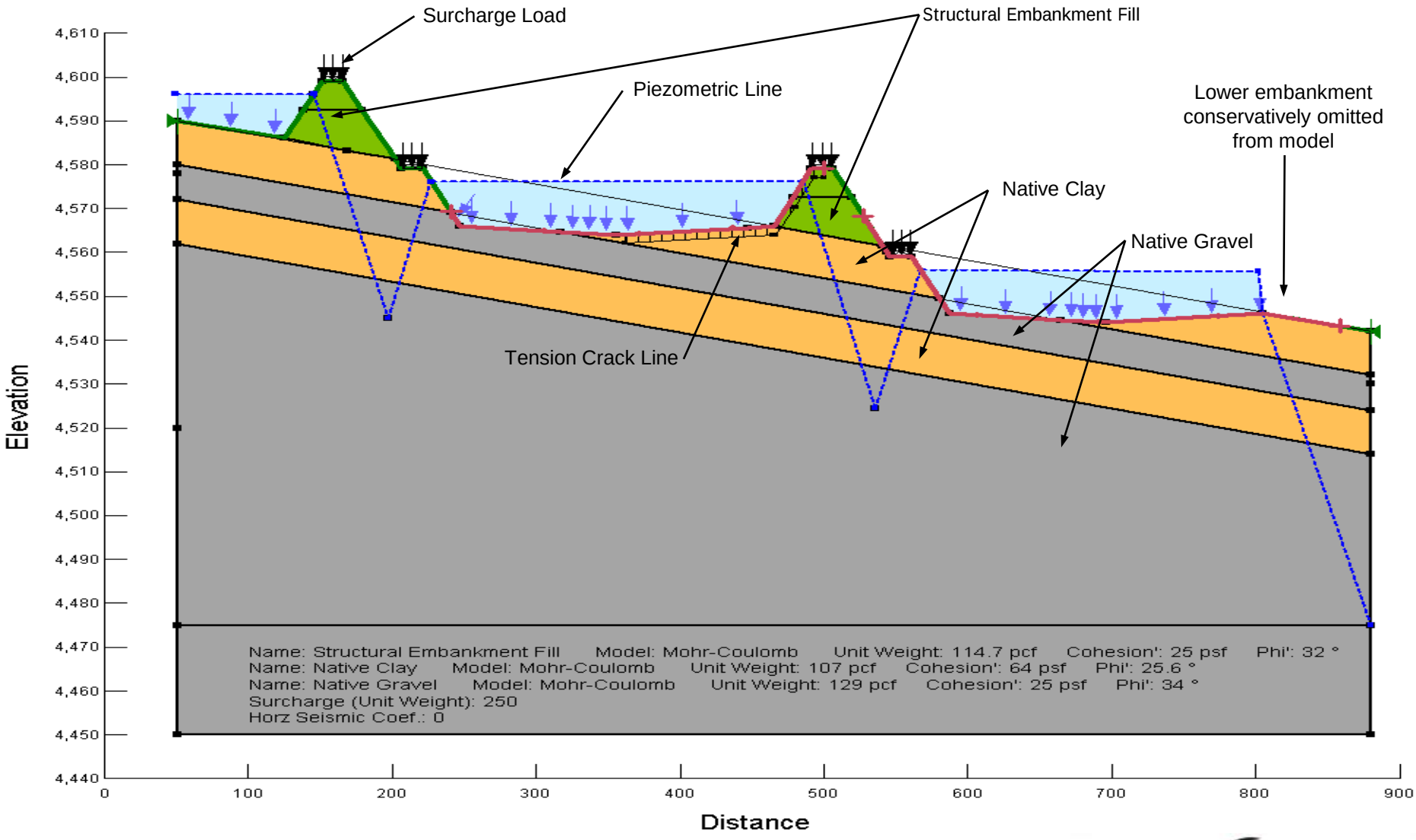
A Professional Services Corporation
Integrity from the Ground Up

APPENDIX C

Stability Analyses of New
Lagoon Embankments

Malad Wastewater Treatment Lagoons

Slope Stability Base Model



Notes:

1. Subsurface conditions interpreted from our exploration program and regional geology.
2. Geotechnical properties based on laboratory tests and experience with similar materials.
3. Geometry based on proposed geometry for “Site A” provided by JUB.
4. Morgenstern-Price method of slices.

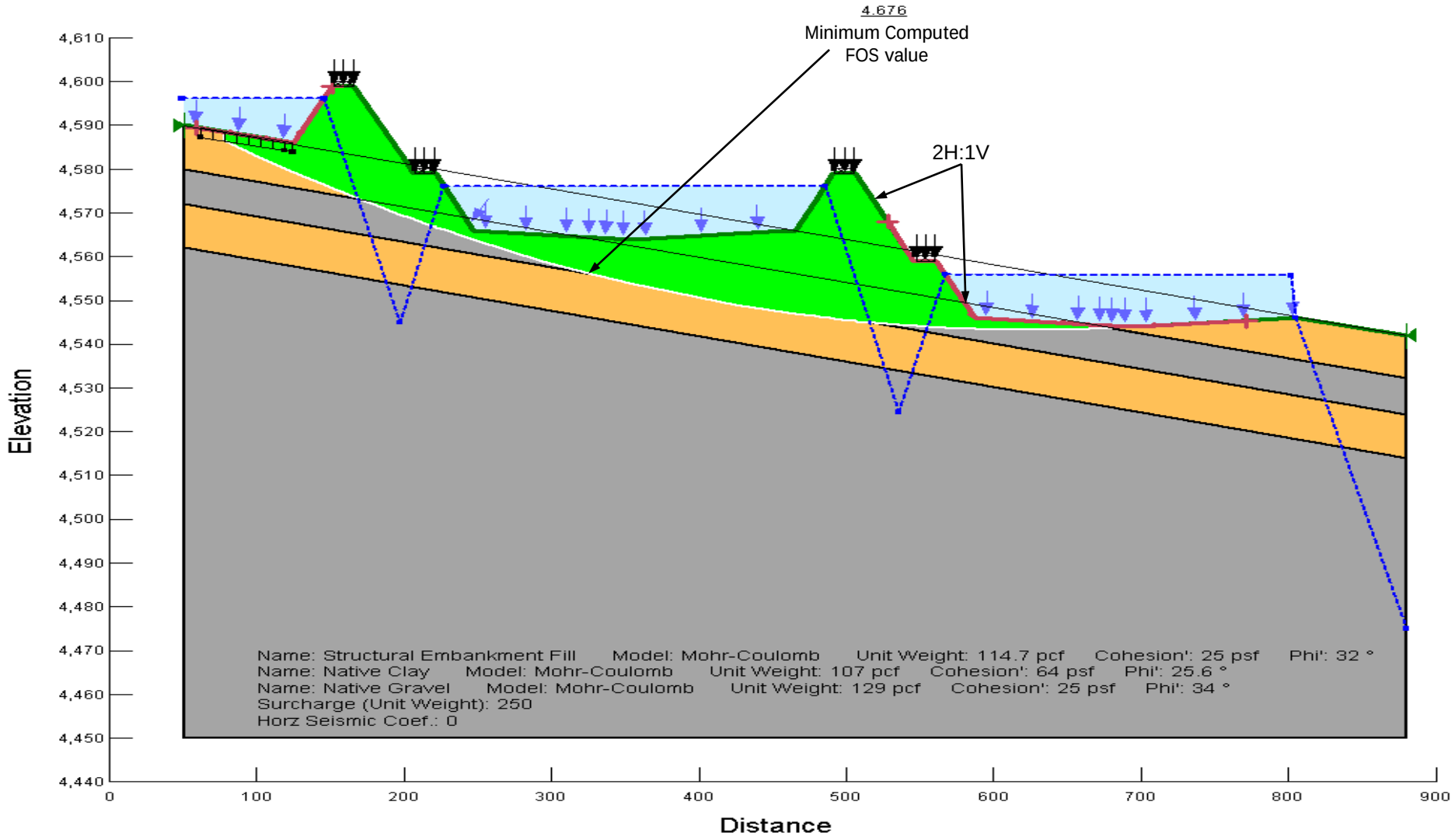
STRATA
Integrity from the Ground Up

Scale as Shown April 4, 2018 PO17072A Figure 1

Malad Wastewater Treatment Lagoons

Global Stability

Static - Lower Lagoon Filled, Slopes at 2H:1V



Notes:

1. Subsurface conditions interpreted from our exploration program and regional geology.
2. Geotechnical properties based on laboratory tests and experience with similar materials.
3. Geometry based on proposed geometry for “Site A” provided by JUB.
4. Morgenstern-Price method of slices.

STRATA

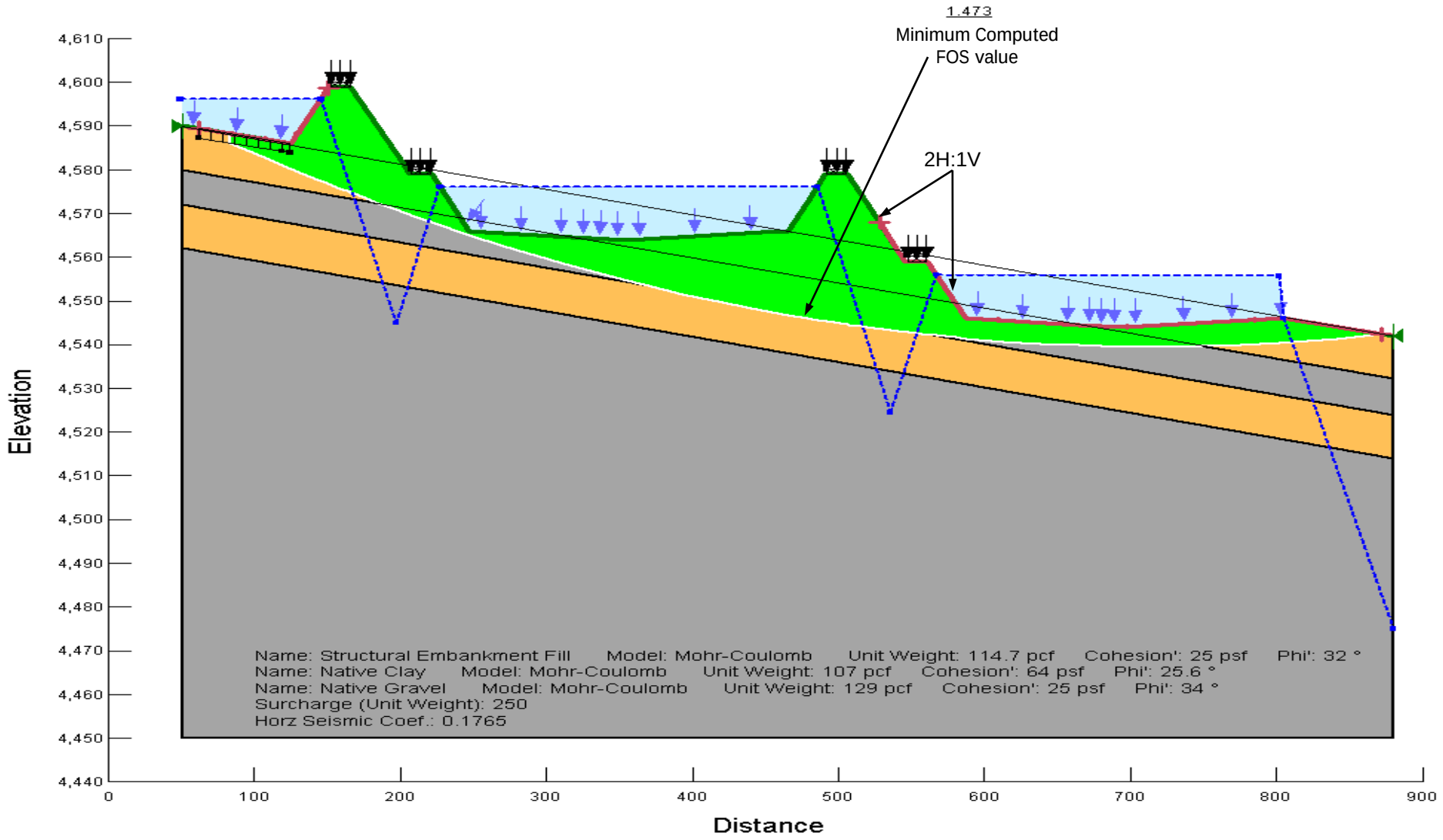
Integrity from the Ground Up

Scale as Shown April 4, 2018 PO17072A Figure 2

Malad Wastewater Treatment Lagoons

Global Stability

Seismic - Lower Lagoon Filled, Slopes at 2H:1V



Notes:

1. Subsurface conditions interpreted from our exploration program and regional geology.
2. Geotechnical properties based on laboratory tests and experience with similar materials.
3. Geometry based on proposed geometry for “Site A” provided by JUB.
4. Morgenstern-Price method of slices.

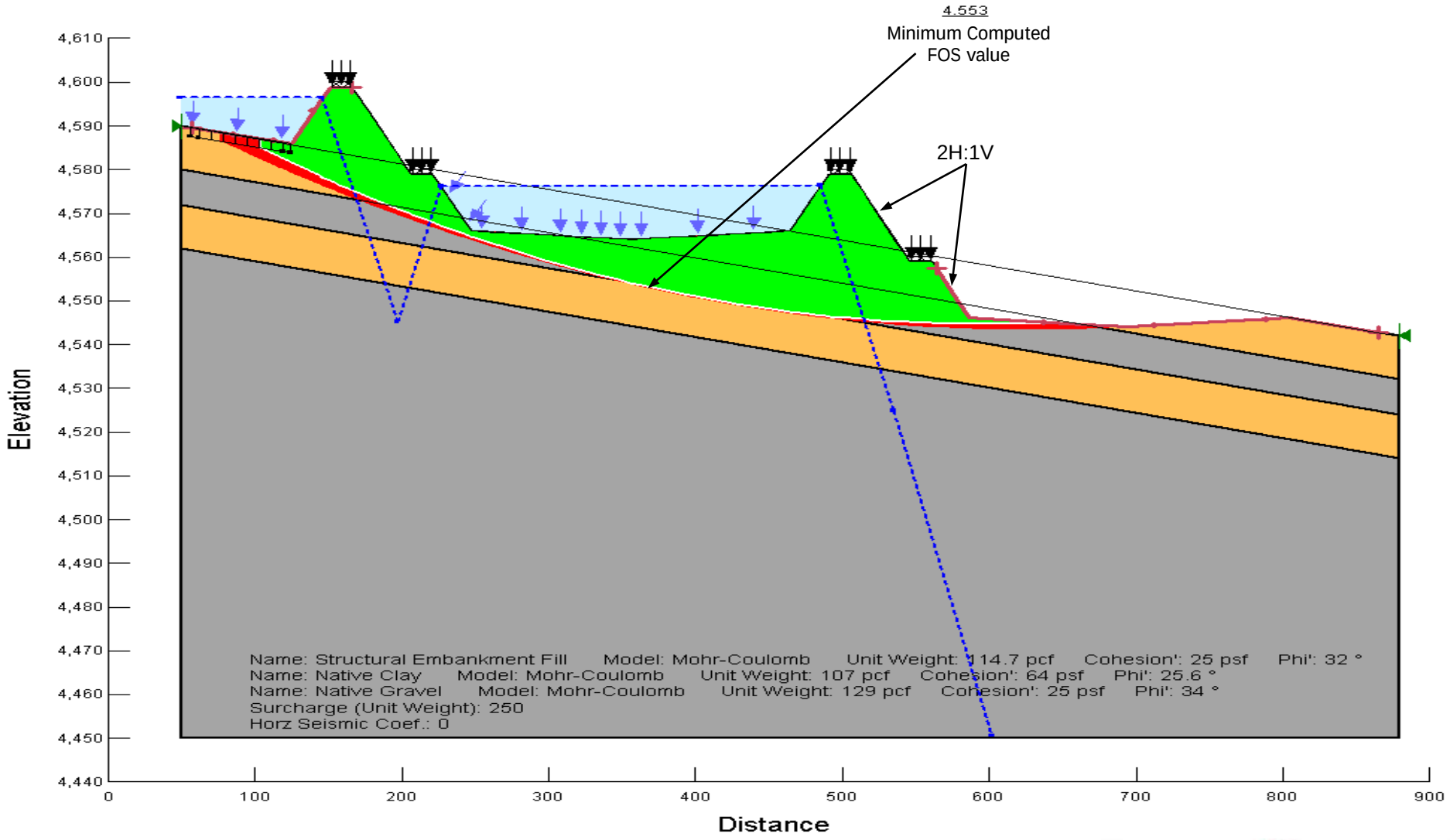
STRATA
Integrity from the Ground Up

Scale as Shown April 4, 2018 PO17072A Figure 3

Malad Wastewater Treatment Lagoons

Global Stability

Static - Lower Lagoon Empty, Slopes at 2H:1V



Notes:

1. Subsurface conditions interpreted from our exploration program and regional geology.
2. Geotechnical properties based on laboratory tests and experience with similar materials.
3. Geometry based on proposed geometry for “Site A” provided by JUB.
4. Morgenstern-Price method of slices.

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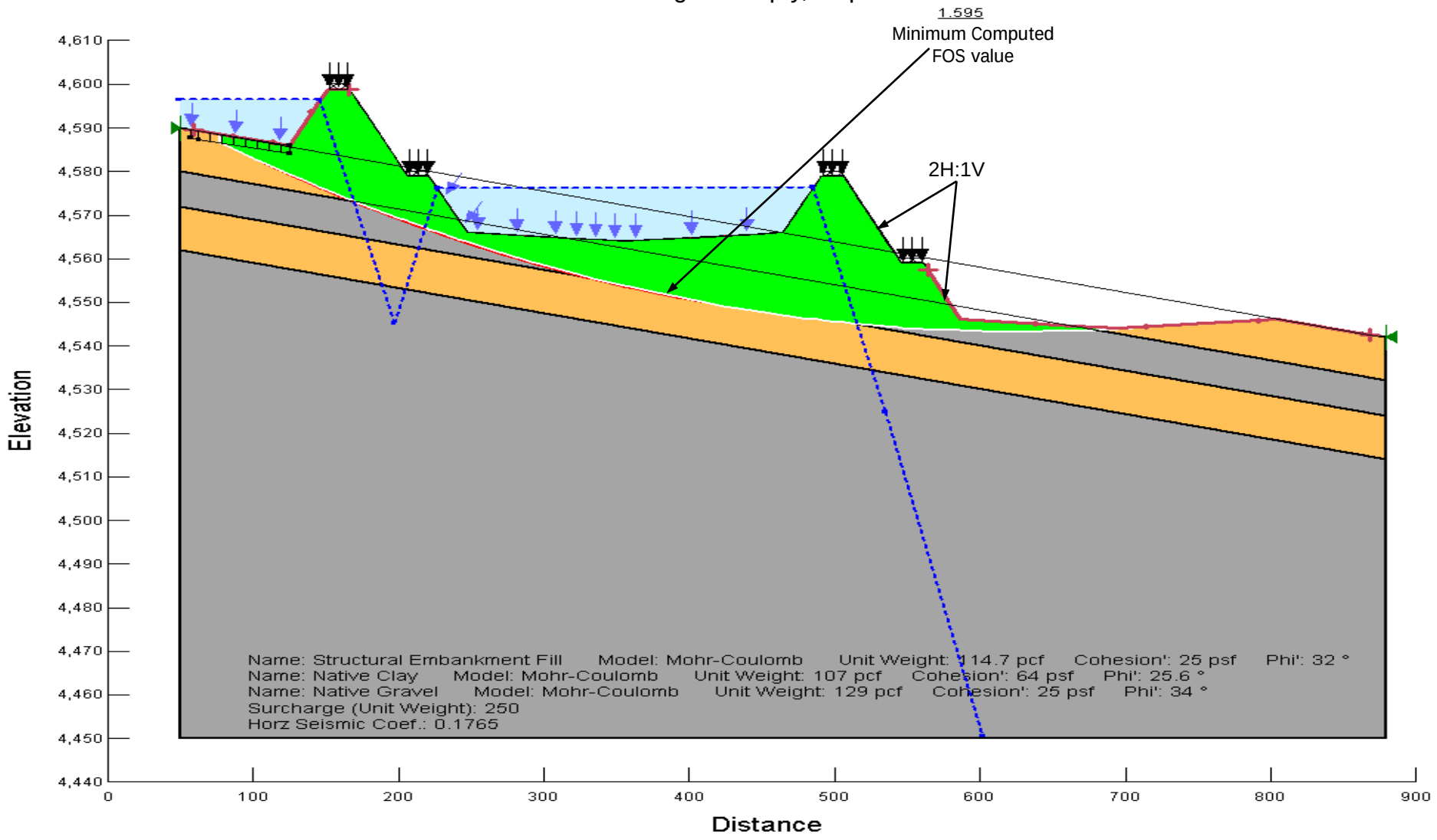
Integrity from the Ground Up

Scale as Shown April 4, 2018 PO17072A Figure 4

Malad Wastewater Treatment Lagoons

Global Stability

Seismic – Lower Lagoon Empty, Slopes at 2H:1V



Notes:

1. Subsurface conditions interpreted from our exploration program and regional geology.
2. Geotechnical properties based on laboratory tests and experience with similar materials.
3. Geometry based on proposed geometry for “Site A” provided by JUB.
4. Morgenstern-Price method of slices.

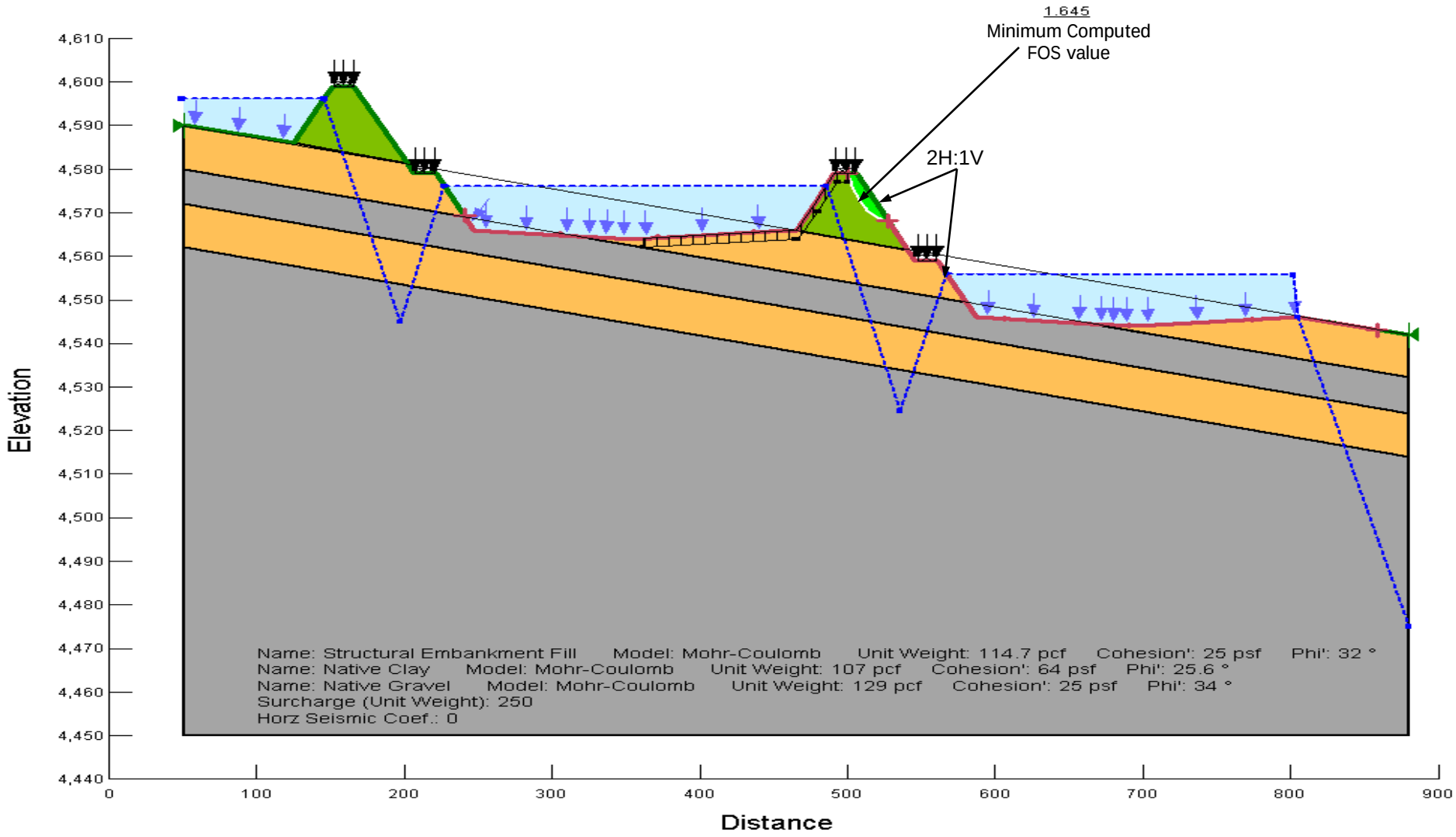
STRATA
Integrity from the Ground Up

Scale as Shown April 4, 2018 PO17072A Figure 5

Malad Wastewater Treatment Lagoons

Outboard Slope Stability

Static – Lower Lagoon Filled, Slopes at 2H:1V



Notes:

1. Subsurface conditions interpreted from our exploration program and regional geology.
2. Geotechnical properties based on laboratory tests and experience with similar materials.
3. Geometry based on proposed geometry for “Site A” provided by JUB.
4. Morgenstern-Price method of slices.

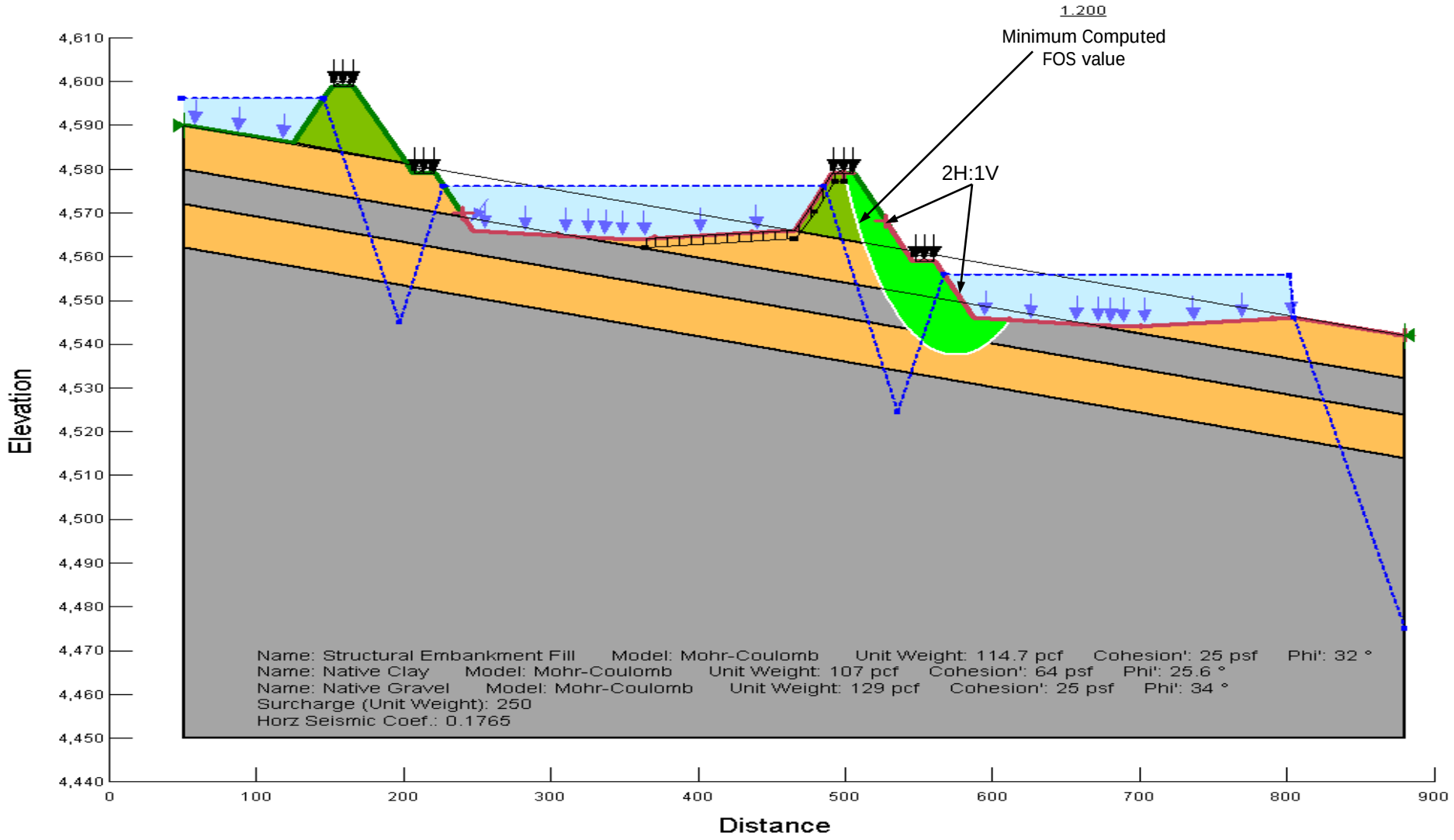
STRATA
Integrity from the Ground Up

Scale as Shown April 4, 2018 PO17072A Figure 6

Malad Wastewater Treatment Lagoons

Outboard Slope Stability

Seismic – Lower Lagoon Filled, Slopes at 2H:1V



Notes:

1. Subsurface conditions interpreted from our exploration program and regional geology.
2. Geotechnical properties based on laboratory tests and experience with similar materials.
3. Geometry based on proposed geometry for “Site A” provided by JUB.
4. Morgenstern-Price method of slices.

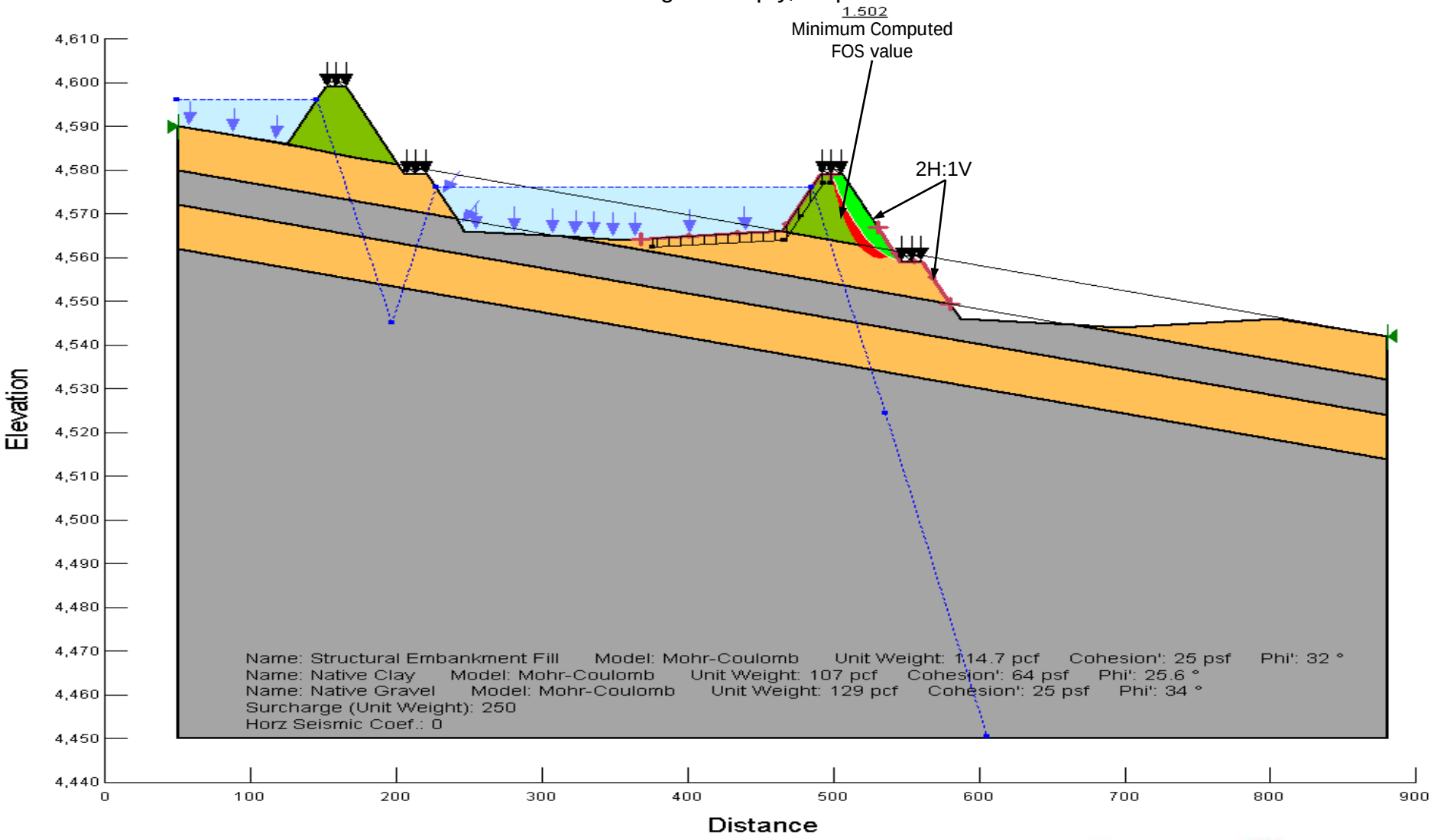
STRATA
Integrity from the Ground Up

Scale as Shown April 4, 2018 PO17072A Figure 7

Malad Wastewater Treatment Lagoons

Outboard Slope Stability

Static – Lower Lagoon Empty, Slopes at 2H:1V



Notes:

1. Subsurface conditions interpreted from our exploration program and regional geology.
2. Geotechnical properties based on laboratory tests and experience with similar materials.
3. Geometry based on proposed geometry for “Site A” provided by JUB.
4. Morgenstern-Price method of slices.

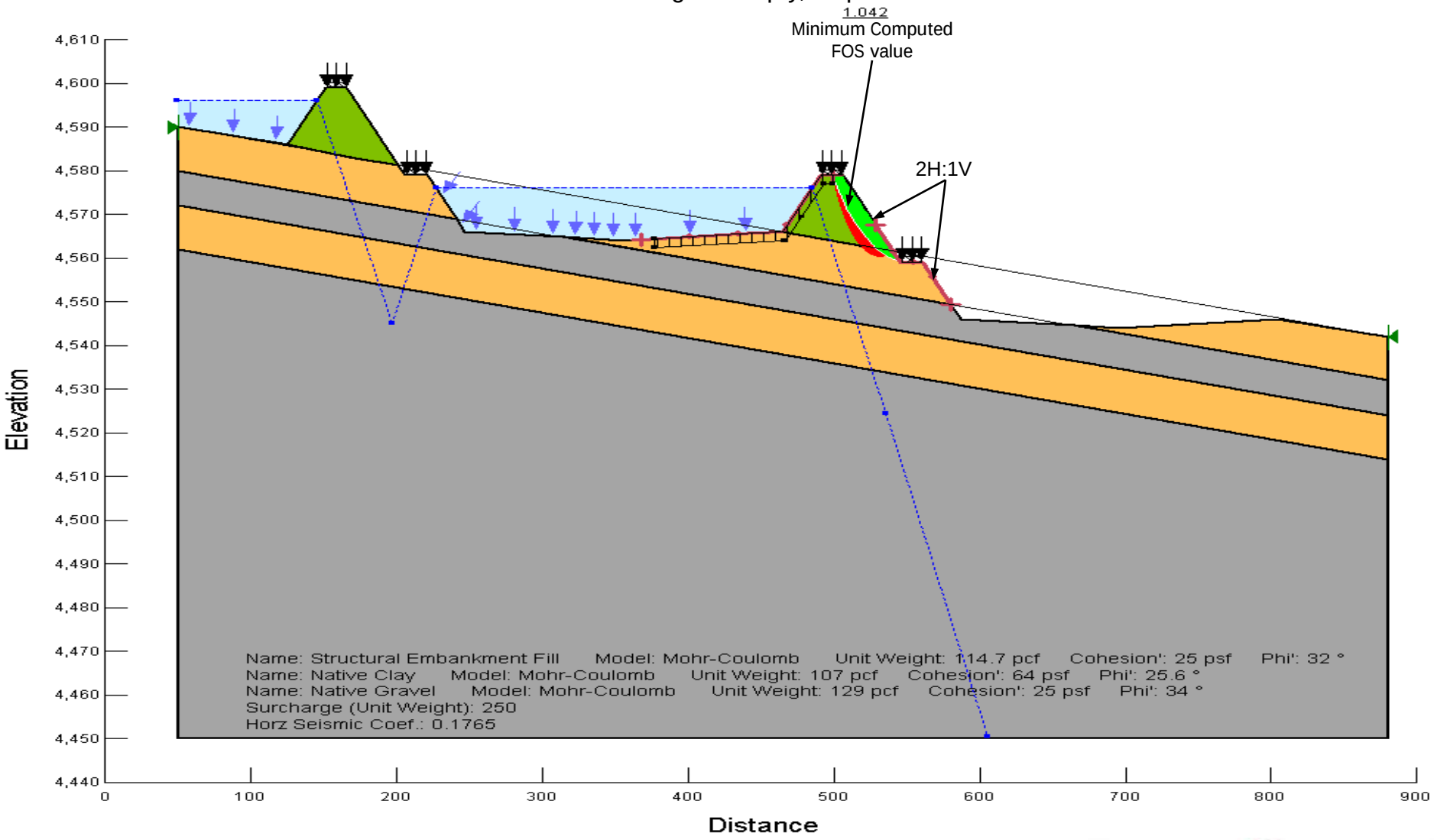
STRATA
Integrity from the Ground Up

Scale as Shown April 4, 2018 PO17072A Figure 8

Malad Wastewater Treatment Lagoons

Outboard Slope Stability

Seismic – Lower Lagoon Empty, Slopes at 2H:1V



Notes:

1. Subsurface conditions interpreted from our exploration program and regional geology.
2. Geotechnical properties based on laboratory tests and experience with similar materials.
3. Geometry based on proposed geometry for “Site A” provided by JUB.
4. Morgenstern-Price method of slices.

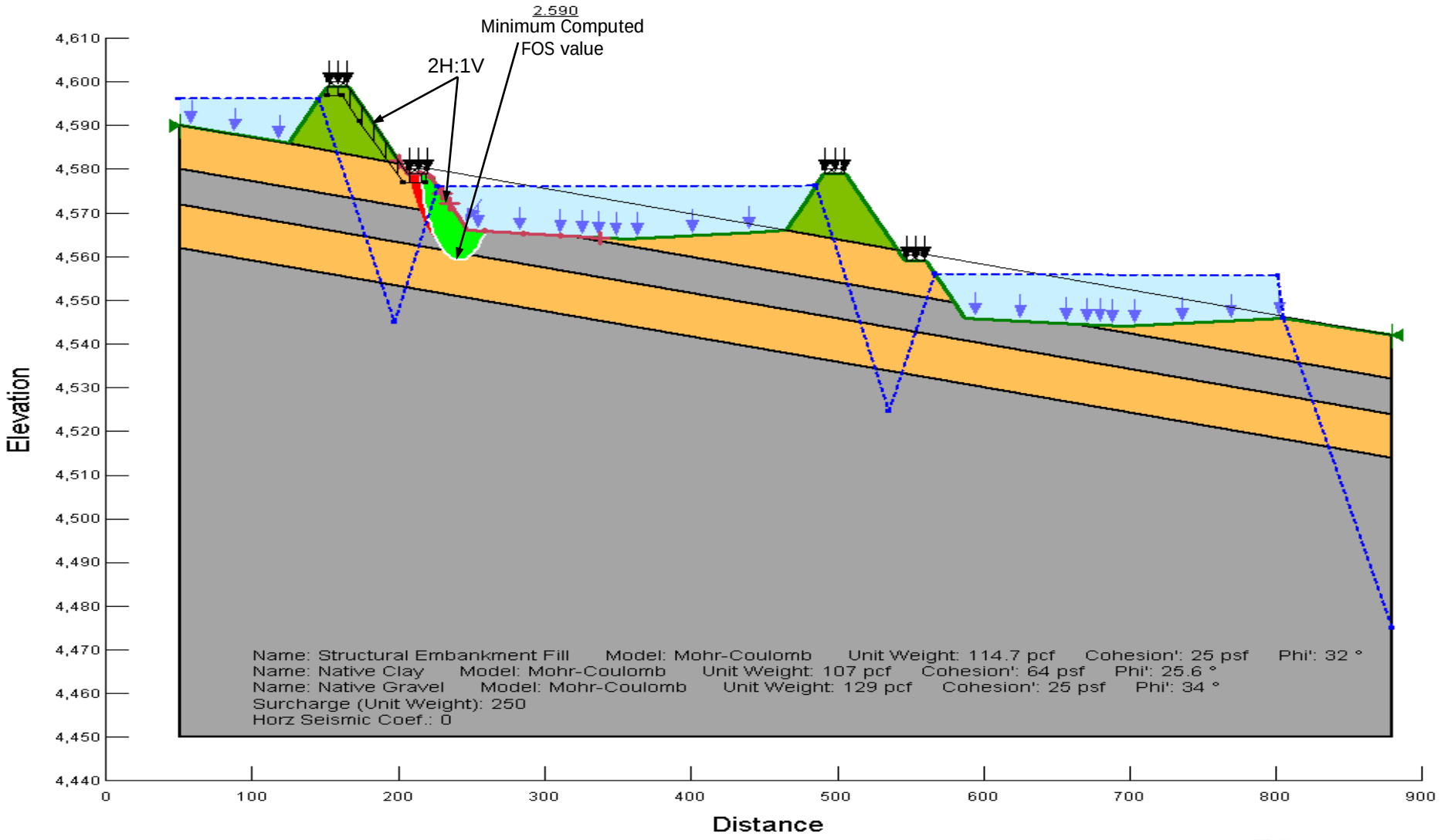
STRATA
Integrity from the Ground Up

Scale as Shown April 4, 2018 PO17072A Figure 9

Malad Wastewater Treatment Lagoons

Inboard Slope Stability

Static – Cut Slope, Slopes at 2H:1V



Notes:

1. Subsurface conditions interpreted from our exploration program and regional geology.
2. Geotechnical properties based on laboratory tests and experience with similar materials.
3. Geometry based on proposed geometry for “Site A” provided by JUB.
4. Morgenstern-Price method of slices.

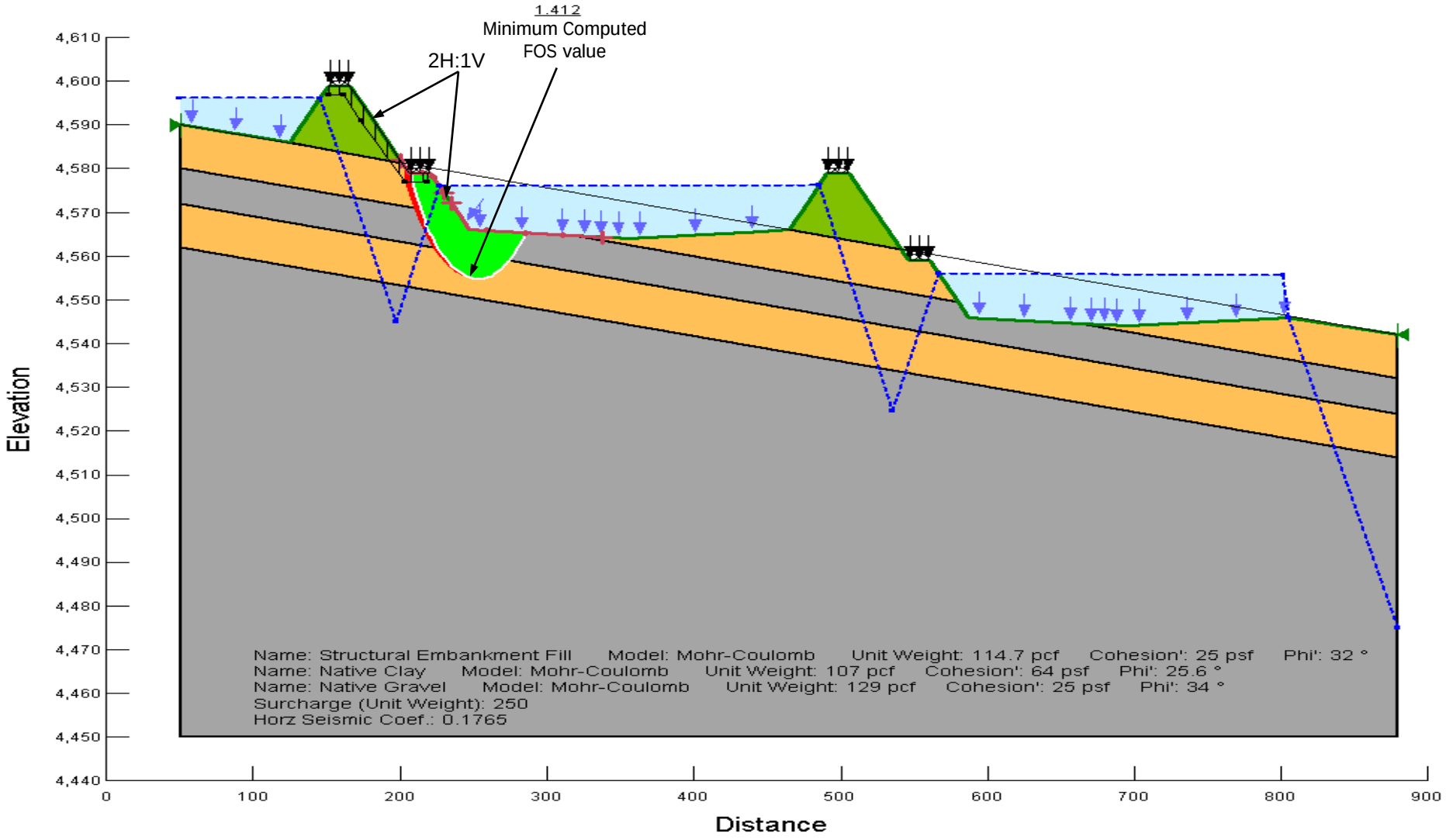
STRATA
Integrity From the Ground Up

Scale as Shown April 4, 2018 PO17072A Figure 10

Malad Wastewater Treatment Lagoons

Inboard Slope Stability

Seismic – Cut Slope, Slopes at 2H:1V



Notes:

1. Subsurface conditions interpreted from our exploration program and regional geology.
2. Geotechnical properties based on laboratory tests and experience with similar materials.
3. Geometry based on proposed geometry for “Site A” provided by JUB.
4. Morgenstern-Price method of slices.

STRATA

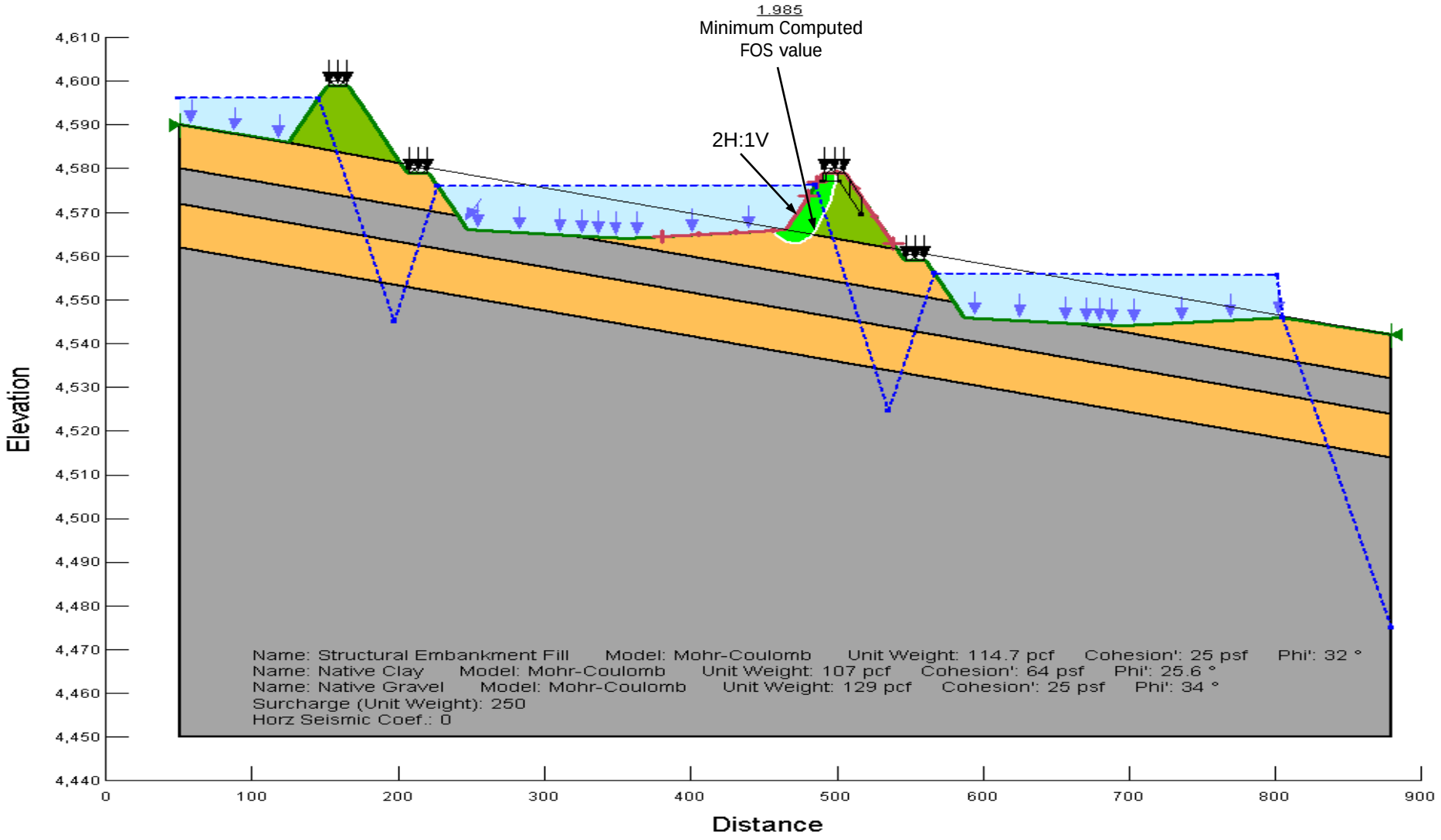
Integrity from the Ground Up

Scale as Shown April 4, 2018 PO17072A Figure 11

Malad Wastewater Treatment Lagoons

Inboard Slope Stability

Static – Fill Slope, Slopes at 2H:1V



Notes:

1. Subsurface conditions interpreted from our exploration program and regional geology.
2. Geotechnical properties based on laboratory tests and experience with similar materials.
3. Geometry based on proposed geometry for “Site A” provided by JUB.
4. Morgenstern-Price method of slices.

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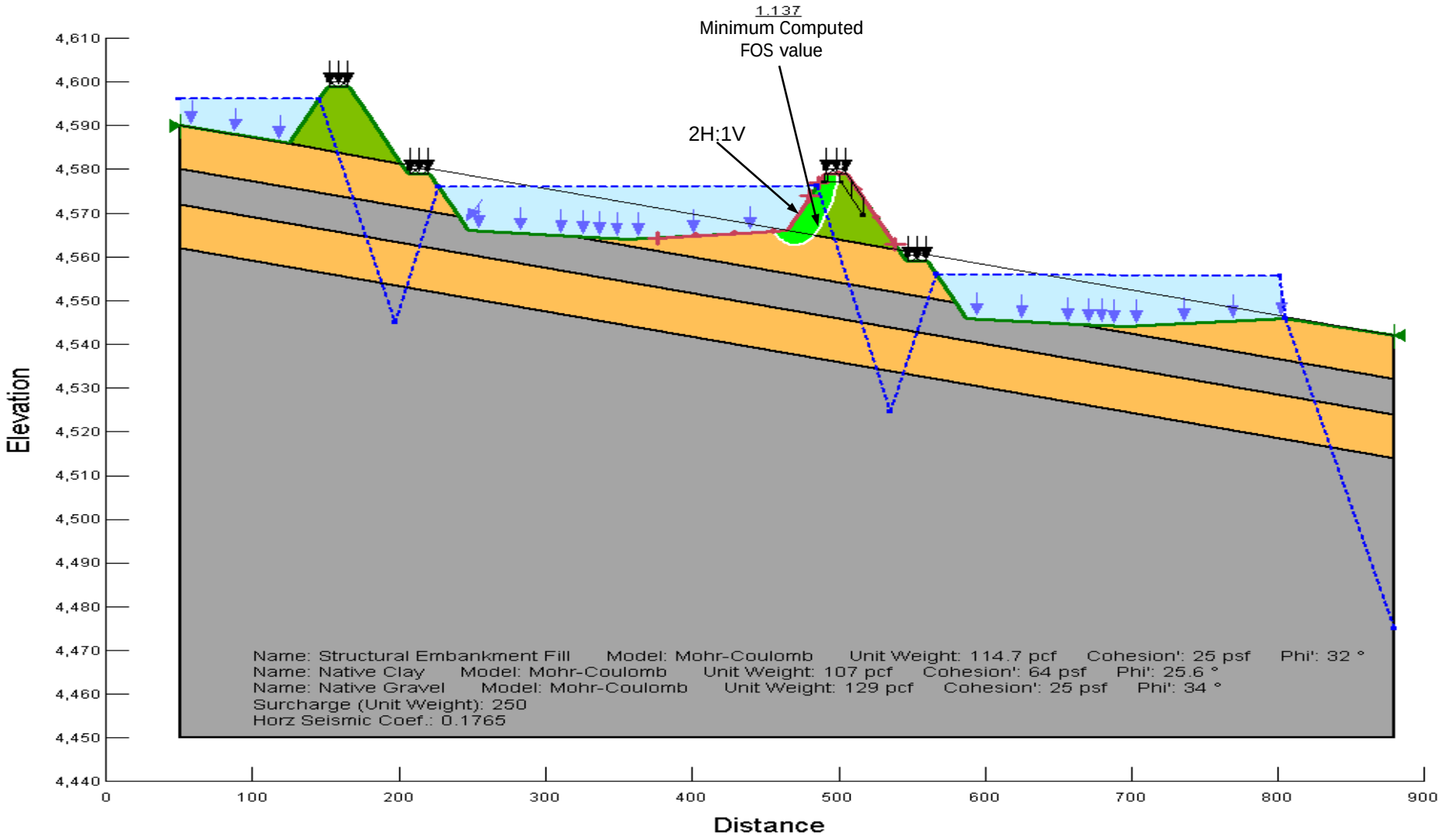
Integrity from the Ground Up

Scale as Shown April 4, 2018 PO17072A Figure 12

Malad Wastewater Treatment Lagoons

Inboard Slope Stability

Seismic – Fill Slope, Slopes at 2H:1V



Notes:

1. Subsurface conditions interpreted from our exploration program and regional geology.
2. Geotechnical properties based on laboratory tests and experience with similar materials.
3. Geometry based on proposed geometry for “Site A” provided by JUB.
4. Morgenstern-Price method of slices.

STRATA

Integrity from the Ground Up

Scale as Shown April 4, 2018 PO17072A Figure 13

Appendix 4-C

Stukenholtz New Site Suitability Report

Stukenholtz Laboratory, Inc.
ADDISON AVENUE EAST • P.O. BOX 353 • TWIN FALLS, IDAHO 83303-0353
PHONE (208) 734-3050 • 800-759-3050 • FAX (208) 734-3919

10 November 2017

Soil Quality and Suitability Assessment for the Second City of Malad Effluent Application Site "North and South Pivots"

Conclusion

The City of Malad effluent application site called "North and South Pivots" is suitable for wastewater application. The site appears to have adequate drainage and a soil suitable for alfalfa cultivation and consequent nutrient removal. In order to establish a good stand of alfalfa, nitrogen, magnesium, zinc and elemental sulfur fertilizer should be applied. In addition, the application of the saline and high SAR effluent water will require a yearly topdress application of gypsum and/or elemental sulfur in order to maintain soil permeability.

Topography and Drainage

The North and South Pivots proposed wastewater application area appears to have adequate drainage for wastewater application purposes. The soil varies in depth from 12 inches to deeper than 36 inches. Underlying the soil is broken rock and gravel that should provide adequate drainage to the soil. There were no areas of elevated ground water levels noted, and no surface indications of shallow water tables such as precipitated surface salts. Soil soluble salts were low from the soil surface down to a depth of three feet showing that the fields have had adequate drainage in the past.

Soil Condition

Both the North and South pivots are low in soluble salts and soil sodium down to a depth of three feet. (report #'s 92895-92900). The base saturation of sodium is less than 3% and soil SAR values are less than 2.0 on all samples. Soil potassium is naturally very high and very high potassium levels can have detrimental effects on water infiltration. However, the combination of potassium and sodium is low enough that I do not expect there to be soil dispersion or water infiltration problems.

The soil texture of both the North and South pivots is a "Loam" (Reports 92901, 92902,92896-92900) at all three soil depths. A loam soil has a even mix of sand, silt, and clay and is considered an excellent soil texture for crop growth and a very good soil texture for drainage. Since soil soluble salts are low down to a depth of three feet, it appears that soil drainage is adequate.

Soil Fertility and Nutrition

The fertilizer recommendations on the first foot soil samples, 92895 and 92896, would provide maximum economic yields for alfalfa grown on the North and South pivots. However, since the purpose of these fields is to accept wastewater that is high in nitrogen and phosphorus, phosphorus fertilizer should not be applied and the nitrogen should only be applied the first year in order to establish the alfalfa stand. This lack of phosphorus will initially reduce alfalfa yields, but will maintain more reserve capacity for the soil to absorb wastewater phosphorus. The recommended Magnesium, Zinc, and Elemental Sulfur should be applied prior to planting to maximize alfalfa stand establishment and subsequent nutrient removal.

Water Condition

Although the soil is low in sodium, the salinity and sodium content of the application water will require some management and product application to maintain soil water infiltration. Based on the water test

I708161-01 on 8/16/2017 by IAS EnviroChem, the salinity of the water is 1592 uS/cm (1.59 mmhos/cm). This water salinity level itself would cause approximately a 20% yield loss in an alfalfa crop if it is used exclusively. A water of this salinity has a leaching fraction of around 20%. In other words, 20% more water must be added to the soil than the crop uses each year in order to keep soil salinity level constant. This 20% excess water must pass down through the soil so that it can leach away the excess soluble salts. The boron level of the water was not analyzed. If the water boron level is excessive, then the leaching fraction of the water may have to be higher to keep soil boron levels adequately low.

Much more importantly, however, the water Sodium Absorption Ratio (SAR) is 11.44. The SAR is a weighted fraction of the concentration of calcium, magnesium, and sodium in the water. A water with a SAR above 6 causes a soil to become sodic (alkali) over time. Sodium in the water replaces calcium in the soil with detrimental impacts on the soil structure. This effect can be countered by adding calcium to the water or to the surface of the soil. If the above water test is typical of the water applied to the soil year around, then 3.1 T/Ac of pure gypsum (4.1 T/Ac typical natural gypsum) must be applied to the soil per 1 Acre-ft of effluent applied.

Disintegrating elemental sulfur can serve as a replacement to gypsum as long as the soil contains excess lime. Elemental sulfur depends on soil microbial action and takes 2 to 4 months longer than gypsum to become effective. However if done on a planned and consistent basis, the elemental sulfur can supplant or replace the gypsum application. Each pound of elemental sulfur replaces five pounds of pure gypsum. Therefore 1,240 pounds of disintegrating elemental sulfur would have to be applied per Acre-ft of effluent applied. If the gypsum/elemental sulfur application is done, the soil should be able to accept the waste water application indefinitely.

If you have any questions about this report or the corrective actions recommended, please do not hesitate to call.

Thank You,

Paul Stukenholtz, CCA
Stukenholtz Laboratory

STUKENHOLTZ LABORATORY, INC.

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3005

KRUCKEBERG, J.P.
3250 HORNBACHER ROAD

AMERICAN FALLS ID 83211

208/226-7307 /000-0000
Report No.: 92895
Date Received: 10/31/17
Date Reported: 11/01/17

SOIL TEST DATA	Sample 1		Sample 2
pH	8.0	H	
Salts, mmhos/cm	0.7	VL	
Chlorides, ppm	15	L	
Sodium, meq/100g	0.4	VL	
CEC, meq/100g	24.2	H	
Excess Lime, %	2.2		
Organic Matter, %	2.68	H	
Organic N, lb/Acre	95	H	
Ammonium - N, ppm	4.3	VL	
Nitrate - N, ppm	5	VL	
Phosphorus, ppm	12	M	
Potassium, ppm	2295	VH	
Calcium, meq/100g	13.8	M	
Magnesium, meq/100g	2.3	M	
Sulfate - S, ppm	4	VL	
Zinc, ppm	0.5	VL	
Iron, ppm	7.8	M	
Manganese, ppm	6.0	H	
Copper, ppm	0.7	M	
Boron, ppm	0.90	M	

	Sample 1	Sample 2
Grower:	**JUB ENG**	
Sample Identity	**S PVT 0-12**	
Crop	**ALFALFA**	
Yield Goal	**6 T**	
Acres		
Prev. Crop T/Acre	**GRASS**	
Manure T/Acre		
Prev. Applied Nutrients		

RECOMMENDATIONS, lbs. Nutrients or Units Per Acre.

Nitrogen	55
P_2O_5 - Phosphate	150
K_2O - Potash	0
Calcium	0
Magnesium	15
Sulfate - Sulfur	50
Zinc	10
Iron	0
Manganese	0
Copper	0
Boron	0
Elemental Sulfur	200

RELATION OF CEC TO SOIL TEXTURE	
0 - 5	Sand
5 - 12	Loamy Sand
12 - 18	Sandy Loam
18 - 24	Silt Loam
24 -36	Clay Loam
36 +	Clay

ACTUAL AND RECOMMENDED PERCENT OF CEC

SAMPLE	Actual % Potassium	Recommended Potassium	Actual % Calcium	Recommended Calcium	Actual % Magnesium	Recommended Magnesium	Actual % Sodium	Recommended Sodium
1	31.6	3.0 - 6.0 %	57.0	65 - 80 %	9.5	15 - 25 %	1.7	< 3.0 %
2								

Crop1: SAR 0.84

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KRUCKEBERG, J.P.
3250 HORNBACHER ROAD

AMERICAN FALLS ID 83211

208/226-7307 /000-0000
Report No.: 92896\92897
Date Received: 10/31/17
Date Reported: 11/01/17

SOIL TEST DATA	Sample 1		Sample 2	
pH	8.2	H	8.3	H
Salts, mmhos/cm	0.8	L	0.8	L
Chlorides, ppm	14	L	12	L
Sodium, meq/100g	0.6	VL	0.6	VL
CEC, meq/100g	23.9	H	22.3	H
Excess Lime, %	2.0	M	7.7	
Organic Matter, %	2.30	M	2.06	M
Organic N, lb/Acre	85	M	80	M
Ammonium - N, ppm	2.1	VL	1.6	VL
Nitrate - N, ppm	4	VL	4	VL
Phosphorus, ppm	8	L	3	VL
Potassium, ppm	1955	VH	1620	VH
Calcium, meq/100g	13.5	M	12.0	L
Magnesium, meq/100g	3.3	H	4.3	VL
Sulfate - S, ppm	3	VL	2	VL
Zinc, ppm	0.3	VL	0.2	VL
Iron, ppm	6.4	M	6.1	M
Manganese, ppm	4.6	M	3.8	M
Copper, ppm	0.7	M	0.6	L
Boron, ppm	0.80	M	0.70	M

	Sample 1	Sample 2
Grower:	**JUB ENG**	
Sample Identity	**S PVT 12-24**	**S PVT 24-36**
Crop	**ALFALFA**	**ALFALFA**
Yield Goal		
Acres		
Prev. Crop T/Acre	**PASTURE**	**PASTURE**
Manure T/Acre		
Prev. Applied Nutrients		

RECOMMENDATIONS, lbs. Nutrients or Units Per Acre.

Nitrogen	
P_2O_5 - Phosphate	
K_2O - Potash	
Calcium	
Magnesium	
Sulfate - Sulfur	
Zinc	
Iron	
Manganese	
Copper	
Boron	
Elemental Sulfur	

RELATION OF CEC TO SOIL TEXTURE	
0 - 5	Sand
5 - 12	Loamy Sand
12 - 18	Sandy Loam
18 - 24	Silt Loam
24 -36	Clay Loam
36 +	Clay

SAMPLE	ACTUAL AND RECOMMENDED PERCENT OF CEC							
	Actual % Potassium	Recommended Potassium	Actual % Calcium	Recommended Calcium	Actual % Magnesium	Recommended Magnesium	Actual % Sodium	Recommended Sodium
1	27.3	3.0 - 6.0 %	56.5	65 - 80 %	13.8	15 - 25 %	2.5	< 3.0 %
2	24.2		53.8		19.3		2.7	

Crop1: SAR 0.76, Crop2: SAR 1.86

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3005

KRUCKEBERG, J.P.
3250 HORNBACHER ROAD

AMERICAN FALLS ID 83211

208/226-7307 /000-0000
Report No.: 92898
Date Received: 10/31/17
Date Reported: 11/01/17

SOIL TEST DATA	Sample 1		Sample 2
pH	8.0	H	
Salts, mmhos/cm	0.9	L	
Chlorides, ppm	16	L	
Sodium, meq/100g	0.4	VL	
CEC, meq/100g	22.3	H	
Excess Lime, %	2.7	M	
Organic Matter, %	3.26	H	
Organic N, lb/Acre	110	H	
Ammonium - N, ppm	4.7	VL	
Nitrate - N, ppm	6	L	
Phosphorus, ppm	19	M	
Potassium, ppm	1735	VH	
Calcium, meq/100g	13.7	M	
Magnesium, meq/100g	2.4	M	
Sulfate - S, ppm	5	L	
Zinc, ppm	0.9	L	
Iron, ppm	6.6	M	
Manganese, ppm	6.7	H	
Copper, ppm	0.7	M	
Boron, ppm	1.05	M	

	Sample 1	Sample 2
Grower:	**JUB ENG**	
Sample Identity	**N PVT 0-12**	
Crop	**ALFALFA**	
Yield Goal	**6 T**	
Acres		
Prev. Crop T/Acre	**GRASS**	
Manure T/Acre		
Prev. Applied Nutrients		

RECOMMENDATIONS, lbs. Nutrients or Units Per Acre.

Nitrogen	**40**
P_2O_5 - Phosphate	**90**
K_2O - Potash	**0**
Calcium	**0**
Magnesium	**10**
Sulfate - Sulfur	**50**
Zinc	**8**
Iron	**0**
Manganese	**0**
Copper	**0**
Boron	**0**
Elemental Sulfur	**200**

RELATION OF CEC TO SOIL TEXTURE	
0 - 5	Sand
5 - 12	Loamy Sand
12 - 18	Sandy Loam
18 - 24	Silt Loam
24 -36	Clay Loam
36 +	Clay

ACTUAL AND RECOMMENDED PERCENT OF CEC

SAMPLE	Actual % Potassium	Recommended Potassium	Actual % Calcium	Recommended Calcium	Actual % Magnesium	Recommended Magnesium	Actual % Sodium	Recommended Sodium
1	25.9	3.0 - 6.0 %	61.4	65 - 80 %	10.8	15 - 25 %	1.8	< 3.0 %
2								

Crop1: SAR 1.26

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3005

KRUCKEBERG, J.P.
3250 HORNBACHER ROAD

AMERICAN FALLS ID 83211

208/226-7307 /000-0000
Report No.: 92899\92900
Date Received: 10/31/17
Date Reported: 11/01/17

SOIL TEST DATA	Sample 1		Sample 2	
pH	8.3	H	8.3	H
Salts, mmhos/cm	0.7	VL	0.8	L
Chlorides, ppm	12	L	14	L
Sodium, meq/100g	0.5	VL	0.7	VL
CEC, meq/100g	24.5	H	26.9	H
Excess Lime, %	5.1	H	6.3	
Organic Matter, %	3.55	H	2.80	H
Organic N, lb/Acre	120	H	100	H
Ammonium - N, ppm	2.5	VL	1.1	VL
Nitrate - N, ppm	6	L	5	VL
Phosphorus, ppm	12	M	8	L
Potassium, ppm	1575	VH	2380	VH
Calcium, meq/100g	15.9	M	15.4	M
Magnesium, meq/100g	2.8	M	2.9	VL
Sulfate - S, ppm	4	VL	4	VL
Zinc, ppm	1.4	M	0.8	L
Iron, ppm	7.0	M	5.3	M
Manganese, ppm	4.1	M	4.1	M
Copper, ppm	0.7	M	0.6	L
Boron, ppm	1.45	H	1.15	H

	Sample 1	Sample 2
Grower:	**JUB ENG**	
Sample Identity	**N PVT 12-24**	**N PVT 24-36**
Crop	**ALFALFA**	**ALFALFA**
Yield Goal		
Acres		
Prev. Crop T/Acre	**GRASS**	**GRASS**
Manure T/Acre		
Prev. Applied Nutrients		

RECOMMENDATIONS, lbs. Nutrients or Units Per Acre.

Nitrogen	
P_2O_5 - Phosphate	
K_2O - Potash	
Calcium	
Magnesium	
Sulfate - Sulfur	
Zinc	
Iron	
Manganese	
Copper	
Boron	
Elemental Sulfur	

RELATION OF CEC TO SOIL TEXTURE	
0 - 5	Sand
5 - 12	Loamy Sand
12 - 18	Sandy Loam
18 - 24	Silt Loam
24 -36	Clay Loam
36 +	Clay

SAMPLE	ACTUAL AND RECOMMENDED PERCENT OF CEC							
	Actual % Potassium	Recommended Potassium	Actual % Calcium	Recommended Calcium	Actual % Magnesium	Recommended Magnesium	Actual % Sodium	Recommended Sodium
1	21.4	3.0 - 6.0 %	64.9	65 - 80 %	11.4	15 - 25 %	2.0	< 3.0 %
2	29.5		57.2		10.8		2.6	

Crop1: SAR 0.89, Crop2: SAR 0.97

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SOIL TEXTURE ANALYSIS

208/226-7307
/000-0000

KRUCKEBERG, J.P.
3250 HORNBACHER ROAD

AMERICAN FALLS ID 83211

Report No.: 92902
Account No.: 3005
Date Received: 11/01/17
Date Reported: 11/02/17

Sampled for: JUB ENG **Sample ID: S PVT 0-12**

SOIL TEXTURE: LOAM
% SAND: 34.1
% SILT: 45.9
% CLAY: 20.0

Supervised by: Paul Stukenholtz

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SOIL TEXTURE ANALYSIS

208/226-7307
/000-0000

KRUCKEBERG, J.P.
3250 HORNBACHER ROAD

AMERICAN FALLS ID 83211

Report No.: 92896
Account No.: 3005
Date Received: 11/01/17
Date Reported: 11/13/17

Sampled for: JUB ENG **Sample ID: S PVT 12-24**

SOIL TEXTURE: LOAM
% SAND: 36.1
% SILT: 44.5
% CLAY: 19.4

Supervised by: Paul Stukenholtz

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SOIL TEXTURE ANALYSIS

208/226-7307
/000-0000

KRUCKEBERG, J.P.
3250 HORNBACHER ROAD

AMERICAN FALLS ID 83211

Report No.: 92897
Account No.: 3005
Date Received: 11/01/17
Date Reported: 11/13/17

Sampled for: JUB ENG **Sample ID: S PVT 24-36**

SOIL TEXTURE: LOAM
% SAND: 33.4
% SILT: 46.3
% CLAY: 20.3

Supervised by: Paul Stukenholtz

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SOIL TEXTURE ANALYSIS

208/226-7307
/000-0000

KRUCKEBERG, J.P.
3250 HORNBACHER ROAD

AMERICAN FALLS ID 83211

Report No.: 92901
Account No.: 3005
Date Received: 11/01/17
Date Reported: 11/02/17

Sampled for: JUB ENG **Sample ID: N PVT 0-12**

SOIL TEXTURE: LOAM
% SAND: 31.4
% SILT: 42.4
% CLAY: 26.2

Supervised by: Paul Stukenholtz

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SOIL TEXTURE ANALYSIS

208/226-7307
/000-0000

KRUCKEBERG, J.P.
3250 HORNBACHER ROAD

AMERICAN FALLS ID 83211

Report No.: 92899
Account No.: 3005
Date Received: 11/01/17
Date Reported: 11/13/17

Sampled for: JUB ENG **Sample ID: N PVT 12-24**

SOIL TEXTURE: LOAM
% SAND: 30.1
% SILT: 45.2
% CLAY: 24.7

Supervised by: Paul Stukenholtz

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SOIL TETURE ANALYSIS

208/226-7307
/000-0000

KRUCKEBERG, J.P.
3250 HORNBACHER ROAD

AMERICAN FALLS ID 83211

Report No.: 92900
Account No.: 3005
Date Received: 11/01/17
Date Reported: 11/13/17

Sampled for: JUB ENG **Sample ID: N PVT 24-36**

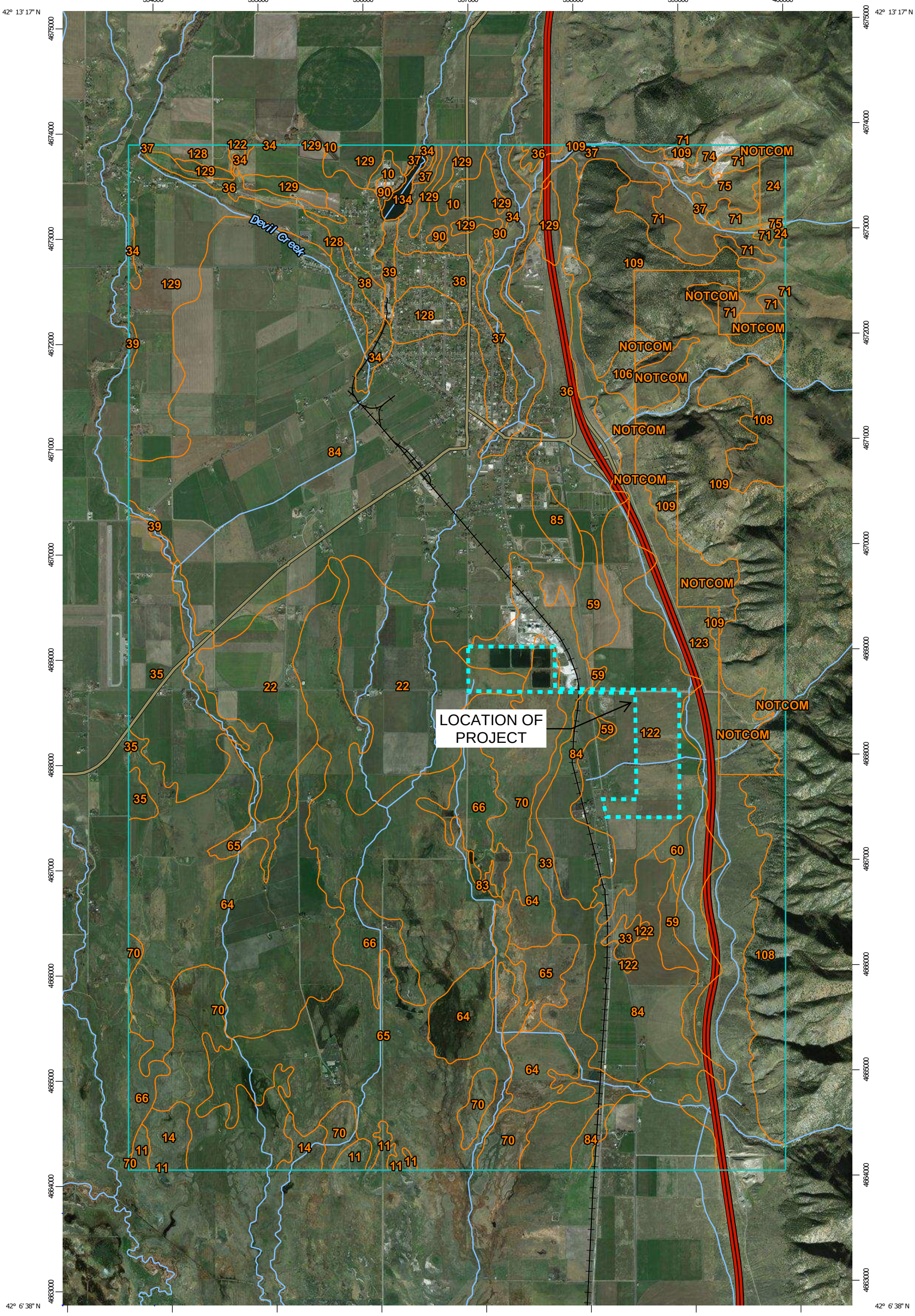
SOIL TEXTURE: LOAM
% SAND: 29.3
% SILT: 43.7
% CLAY: 27.0

Supervised by: Paul Stukenholtz

Appendix 4-D

NRCS Soil Survey Map

Soil Map—Caribou National Forest, Idaho and Wyoming, and Oneida County Area, Idaho
(Malad, ID)



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 1:24,000.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
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: Caribou National Forest, Idaho and Wyoming
Survey Area Data: Version 5, Sep 9, 2017

Soil Survey Area: Oneida County Area, Idaho
Survey Area Data: Version 11, Sep 21, 2017

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: May 22, 2005—Nov 13, 2016

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

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
24	Copenhagen-Lonigan-Manila association, 12 to 50 percent slopes	40.8	0.3%
75	Manila-Broadhead complex, 12 to 30 percent slopes	3.5	0.0%
108	Ridgecrest-Hondoho-Lizdale association, 30 to 60 percent slopes	150.3	1.0%
109	Ridgecrest-Hymas association, 30 to 60 percent slopes	777.5	5.1%
NOTCOM	No Digital Data Available	279.5	1.8%
Subtotals for Soil Survey Area		**1,251.6**	**8.3%**
Totals for Area of Interest		**15,125.9**	**100.0%**

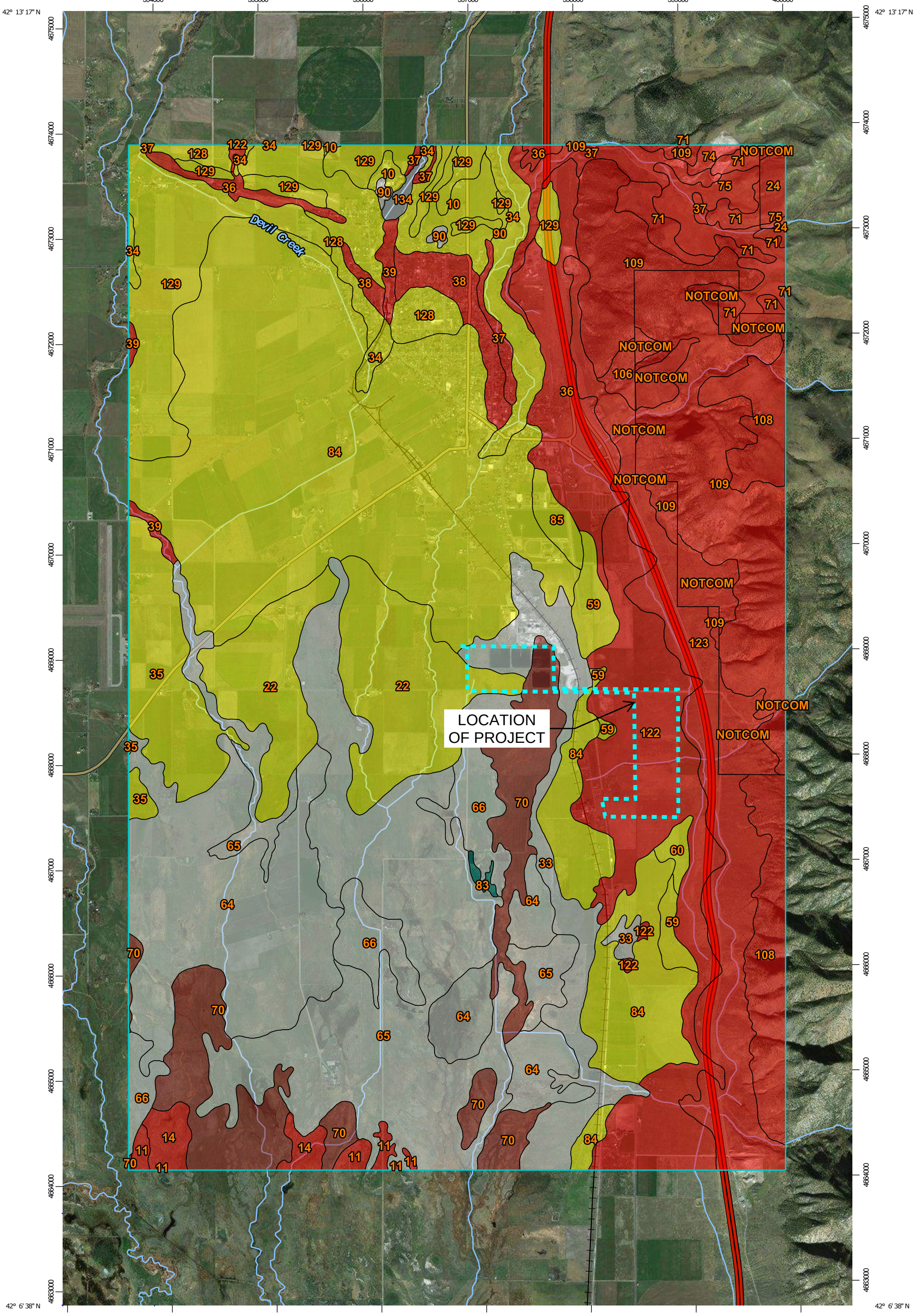
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
10	Bingham-Tirod complex, 0 to 2 percent slopes	156.9	1.0%
11	Bloor-Brinnum complex, 0 to 2 percent slopes	52.0	0.3%
14	Brinnum-Logan-Langless complex, 0 to 2 percent slopes	92.1	0.6%
22	Collinston silt loam, 0 to 2 percent slopes	824.1	5.4%
33	Fridlo silt loam, 0 to 2 percent slopes	465.8	3.1%
34	Goosenawt gravelly loam, 0 to 2 percent slopes	214.5	1.4%
35	Hans silt loam, 0 to 2 percent slopes	379.9	2.5%
36	Highcreek-Sterling complex, 4 to 12 percent slopes	443.0	2.9%
37	Highcreek-Sterling complex, 12 to 25 percent slopes	172.9	1.1%
38	Hillfield-Kucera complex, 4 to 30 percent slopes	151.0	1.0%
39	Hillfield-Kucera complex, 30 to 50 percent slopes	51.0	0.3%
59	Kearns silt loam, 0 to 2 percent slopes	124.2	0.8%
60	Kearns silt loam, 2 to 4 percent slopes	29.7	0.2%
64	Lagonot silt loam, 0 to 3 percent slopes	1,261.8	8.3%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
65	Langless silt loam, 0 to 2 percent slopes	1,660.0	11.0%
66	Langless-Logan complex, 0 to 2 percent slopes	345.7	2.3%
70	Logan silt loam, 0 to 2 percent slopes	726.4	4.8%
71	Lonigan-Lizdale association, 6 to 40 percent slopes	156.2	1.0%
74	Manila-Broadhead complex, 4 to 12 percent slopes	17.8	0.1%
75	Manila-Broadhead complex, 12 to 30 percent slopes	163.3	1.1%
83	Parehat silt loam, 0 to 2 percent slopes	10.7	0.1%
84	Parleys silt loam, 0 to 2 percent slopes	3,017.5	19.9%
85	Parleys silt loam, 2 to 4 percent slopes	55.1	0.4%
90	Pits, gravel	15.4	0.1%
106	Ridgecrest-Hondoho complex, 30 to 60 percent slopes	31.7	0.2%
108	Ridgecrest-Hondoho-Lizdale association, 30 to 60 percent slopes	265.9	1.8%
109	Ridgecrest-Hymas association, 30 to 60 percent slopes	332.6	2.2%
122	Samaria-Sterling complex, 4 to 12 percent slopes	934.9	6.2%
123	Sterling very gravelly loam, 12 to 20 percent slopes	763.6	5.0%
128	Tickason very fine sandy loam, 2 to 4 percent slopes	286.2	1.9%
129	Tirod silt loam, 0 to 2 percent slopes	652.4	4.3%
134	Water	19.8	0.1%
Subtotals for Soil Survey Area		**13,874.3**	**91.7%**
Totals for Area of Interest		**15,125.9**	**100.0%**

Appendix 4-E

NRCS Farmland Classification Map

Farmland Classification—Caribou National Forest, Idaho and Wyoming, and Oneida County Area, Idaho



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 1:24,000.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
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: Caribou National Forest, Idaho and Wyoming
Survey Area Data: Version 5, Sep 9, 2017

Soil Survey Area: Oneida County Area, Idaho
Survey Area Data: Version 11, Sep 21, 2017

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: May 22, 2005—Nov 13, 2016

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.

Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
24	Copenhagen-Lonigan-Manila association, 12 to 50 percent slopes	Not prime farmland	40.8	0.3%
75	Manila-Broadhead complex, 12 to 30 percent slopes	Not prime farmland	3.5	0.0%
108	Ridgecrest-Hondoho-Lizdale association, 30 to 60 percent slopes	Not prime farmland	150.3	1.0%
109	Ridgecrest-Hymas association, 30 to 60 percent slopes	Not prime farmland	777.5	5.1%
NOTCOM	No Digital Data Available	Not prime farmland	279.5	1.8%
Subtotals for Soil Survey Area			**1,251.6**	**8.3%**
Totals for Area of Interest			**15,125.9**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
10	Bingham-Tirod complex, 0 to 2 percent slopes	Prime farmland if irrigated	156.9	1.0%
11	Bloor-Brinnum complex, 0 to 2 percent slopes	Not prime farmland	52.0	0.3%
14	Brinnum-Logan-Langless complex, 0 to 2 percent slopes	Not prime farmland	92.1	0.6%
22	Collinston silt loam, 0 to 2 percent slopes	Prime farmland if irrigated	824.1	5.4%
33	Fridlo silt loam, 0 to 2 percent slopes	Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium	465.8	3.1%
34	Goosenawt gravelly loam, 0 to 2 percent slopes	Prime farmland if irrigated	214.5	1.4%
35	Hans silt loam, 0 to 2 percent slopes	Prime farmland if irrigated	379.9	2.5%
36	Highcreek-Sterling complex, 4 to 12 percent slopes	Not prime farmland	443.0	2.9%
37	Highcreek-Sterling complex, 12 to 25 percent slopes	Not prime farmland	172.9	1.1%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
38	Hillfield-Kucera complex, 4 to 30 percent slopes	Not prime farmland	151.0	1.0%
39	Hillfield-Kucera complex, 30 to 50 percent slopes	Not prime farmland	51.0	0.3%
59	Kearns silt loam, 0 to 2 percent slopes	Prime farmland if irrigated	124.2	0.8%
60	Kearns silt loam, 2 to 4 percent slopes	Prime farmland if irrigated	29.7	0.2%
64	Lagonot silt loam, 0 to 3 percent slopes	Farmland of statewide importance, if irrigated	1,261.8	8.3%
65	Langless silt loam, 0 to 2 percent slopes	Farmland of statewide importance, if irrigated and drained	1,660.0	11.0%
66	Langless-Logan complex, 0 to 2 percent slopes	Farmland of statewide importance, if irrigated and drained	345.7	2.3%
70	Logan silt loam, 0 to 2 percent slopes	Prime farmland if irrigated and drained	726.4	4.8%
71	Lonigan-Lizdale association, 6 to 40 percent slopes	Not prime farmland	156.2	1.0%
74	Manila-Broadhead complex, 4 to 12 percent slopes	Not prime farmland	17.8	0.1%
75	Manila-Broadhead complex, 12 to 30 percent slopes	Not prime farmland	163.3	1.1%
83	Parehat silt loam, 0 to 2 percent slopes	Prime farmland if irrigated and reclaimed of excess salts and sodium	10.7	0.1%
84	Parleys silt loam, 0 to 2 percent slopes	Prime farmland if irrigated	3,017.5	19.9%
85	Parleys silt loam, 2 to 4 percent slopes	Prime farmland if irrigated	55.1	0.4%
90	Pits, gravel		15.4	0.1%
106	Ridgecrest-Hondoho complex, 30 to 60 percent slopes	Not prime farmland	31.7	0.2%
108	Ridgecrest-Hondoho-Lizdale association, 30 to 60 percent slopes	Not prime farmland	265.9	1.8%
109	Ridgecrest-Hymas association, 30 to 60 percent slopes	Not prime farmland	332.6	2.2%
122	Samaria-Sterling complex, 4 to 12 percent slopes	Not prime farmland	934.9	6.2%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
123	Sterling very gravelly loam, 12 to 20 percent slopes	Not prime farmland	763.6	5.0%
128	Tickason very fine sandy loam, 2 to 4 percent slopes	Prime farmland if irrigated	286.2	1.9%
129	Tirod silt loam, 0 to 2 percent slopes	Prime farmland if irrigated	652.4	4.3%
134	Water		19.8	0.1%
Subtotals for Soil Survey Area			**13,874.3**	**91.7%**
Totals for Area of Interest			**15,125.9**	**100.0%**

Description

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.

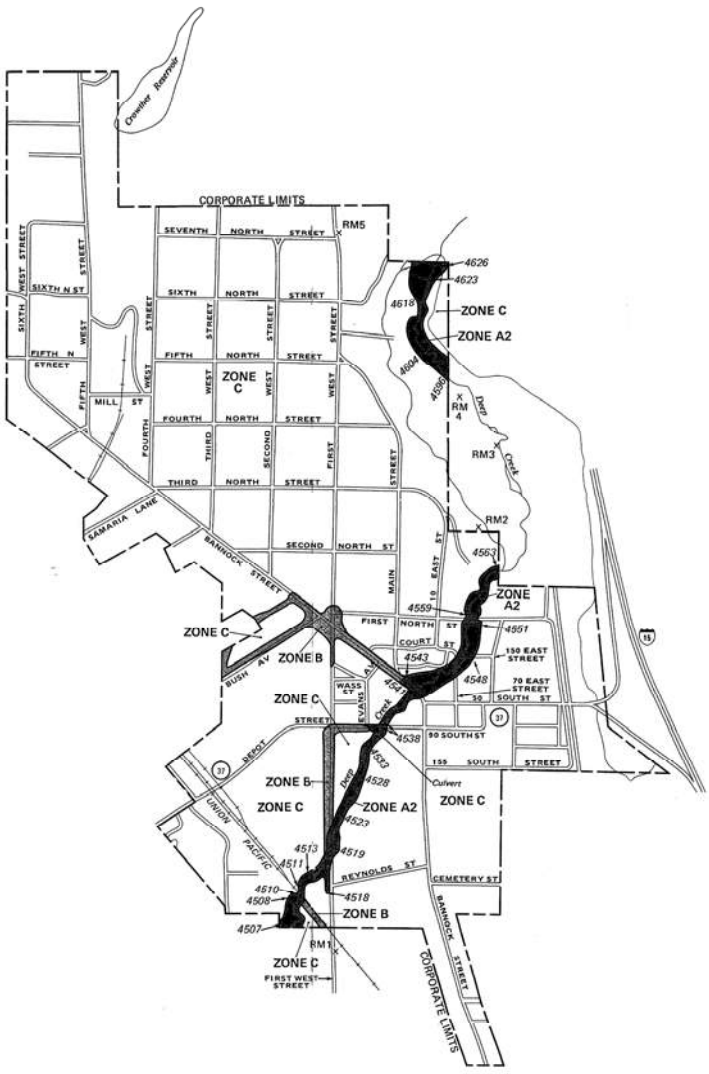
Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Appendix 4-F

FEMA Flood Insurance Map



PROJECT LOCATION
(NOT MAPPED)

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION (FT. NGVD)	DESCRIPTION OF LOCATION
RM1	4511.95	Brass cap on steel post marked "U.S. Department of Agriculture-Forest Service Site Survey Marker, elevation 4512 13, 1964," located south of railroad tracks on First West Street east side of road, 1.5 feet south, 1.2 feet west of end post on chain link fence.
RM2	4576.08	½-inch steel rod in concrete, located 34 feet west of fence junction, .5 foot north of eastwest fence, 2 feet west of large cottonwood tree.
RM3	4584.59	Top of sharp rock in concrete anchor of first fence post, located on west bank of Deep Creek, post has a top cap and a cable tied at the ground to support the chain link fence across the creek, south fence of LDS park at Deep Creek.
RM4	4599.77	Concrete base of 12ch post from west edge of creek on north side post, on first concrete base east of barbed wire fence from north, north fence of LDS park.
RM5	4719.33	Cylindrical concrete monument projecting 3-inches above ground, located 0.9 mile north along First West Street, from junction of Bannock Street to the intersection of Seventh North Street, 25.5 feet southeast from fence corner, 6.7 feet northeast from street intersection corner, 5.5 feet north from pole number 23, 1.5 feet west of fence, 46 feet east from center of First Street.

500-Year Flood Boundar
100-Year Flood Boundar
Zone Designations

100-Year Flood Boundar
500-Year Flood Boundar
Base Flood Elevation Lir
With Elevation In Feet**
Base Flood Elevation In
Where Uniform Within Z
Elevation Reference Mar
Zone D Boundary
River Mile
**Referenced to the Nat

EXPLANATIOI

ZONE

A — Areas of 1 flood hazarc
A0 — Areas of 1 are between of inundatic are determir
AH — Areas of 1 are betweer elevations a are determir
A1-A30 — Areas of 1 flood hazarc
A99 — Areas of 1 protection elevations a
B — Areas betwe year flood; ing with ave the contribu mile; or are (Medium sh
C — Areas of mir
D — Areas of ur
V — Areas of 1(action); base not determi
V1-V30 — Areas of 1(action); base determined.

NC

Certain areas not in the may be protected by floc
This map is for flood in sarily show all areas su all planimetric features o

INITI

FLOOD HAZAR C

FLOOD INSUR SE

Refer to the FLOOD IN shown on this map to structures in the zones lished.
To determine if flood contact your insurance Program, at (800) 638-6

APPROX 1:000

NATI

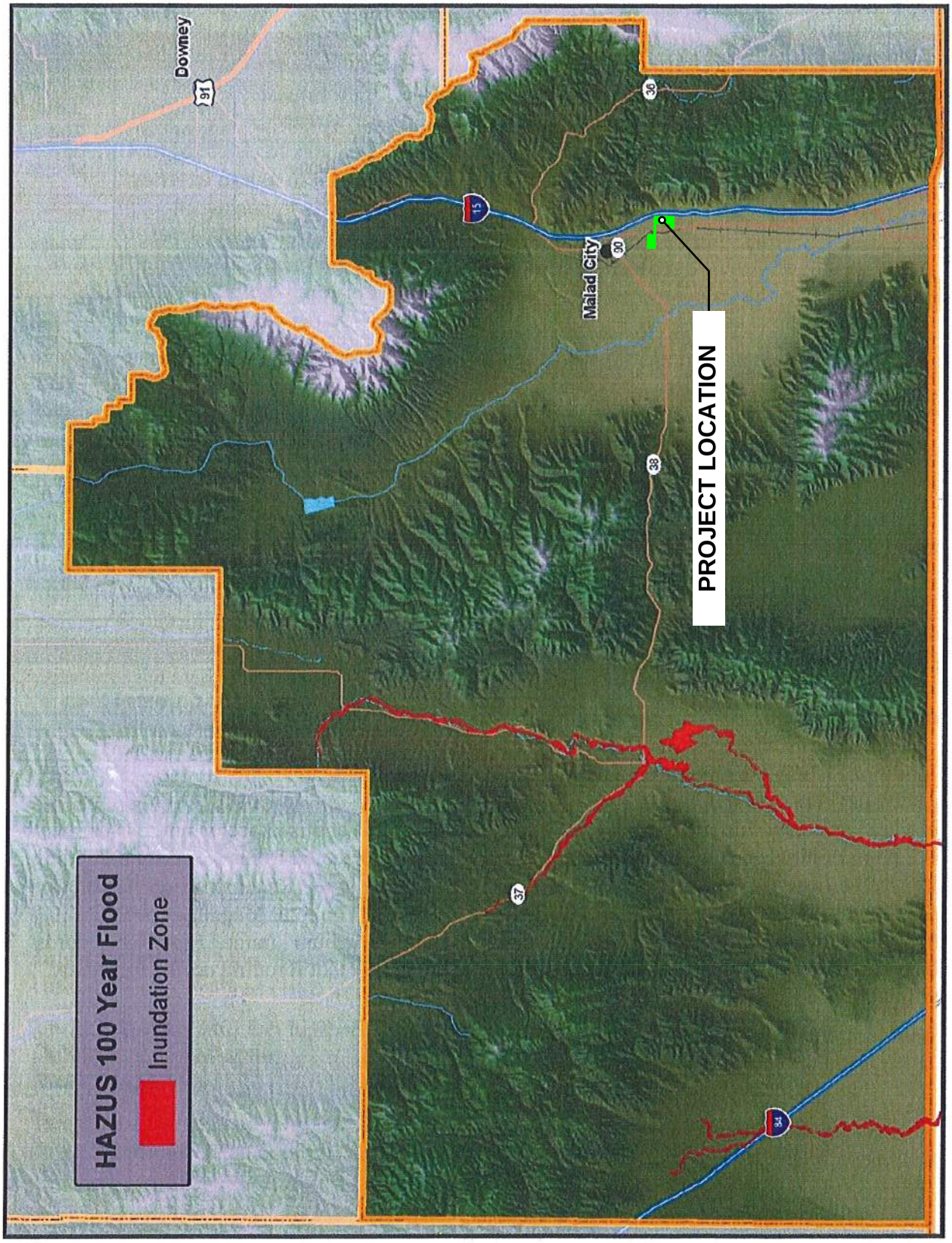
FI
FLO

CIT
MA
ID
ONI

ONL

Federa

Figure 4.2.3 HAZUS Flood Map



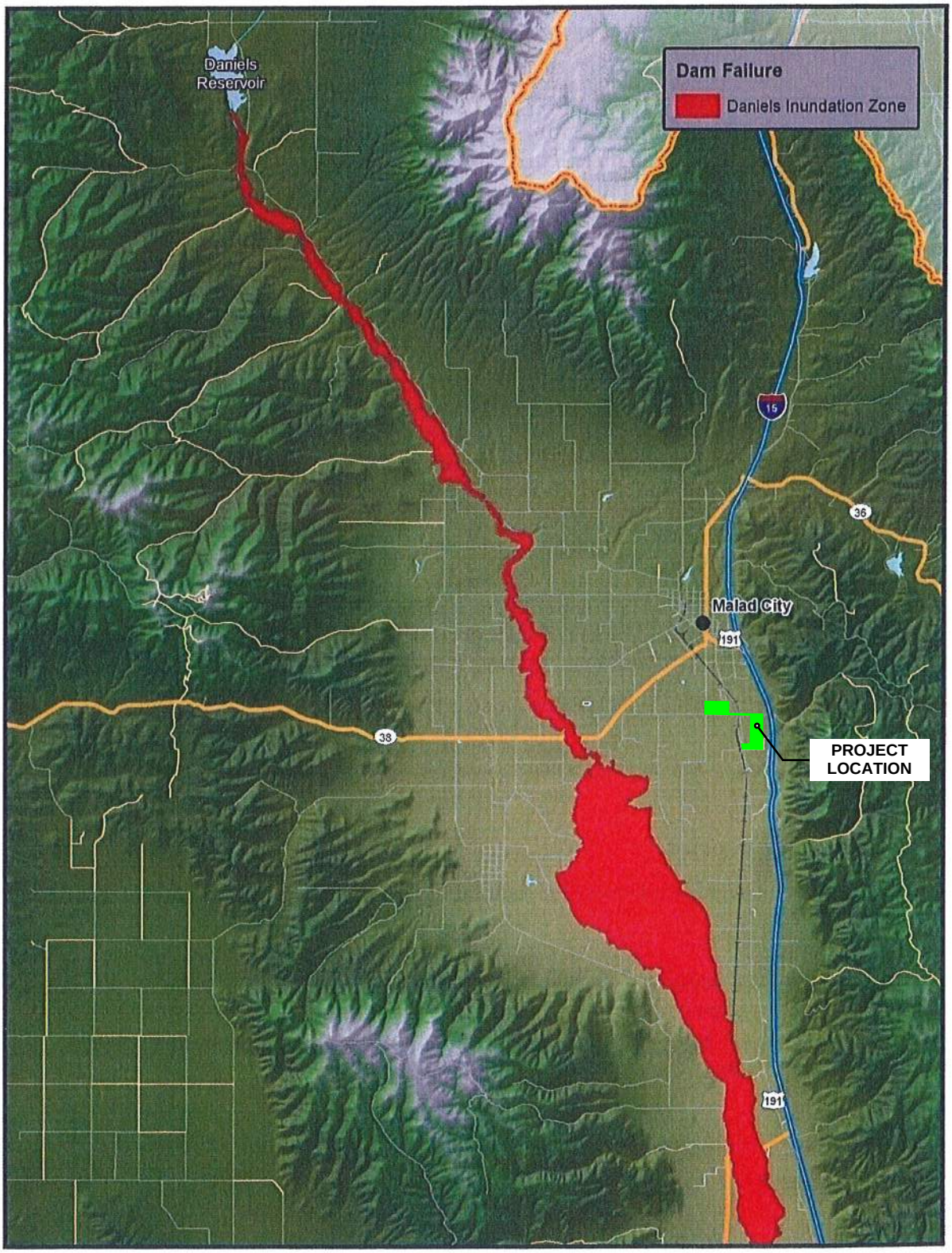


Figure 4.2.4 Daniels Dam Failure Map

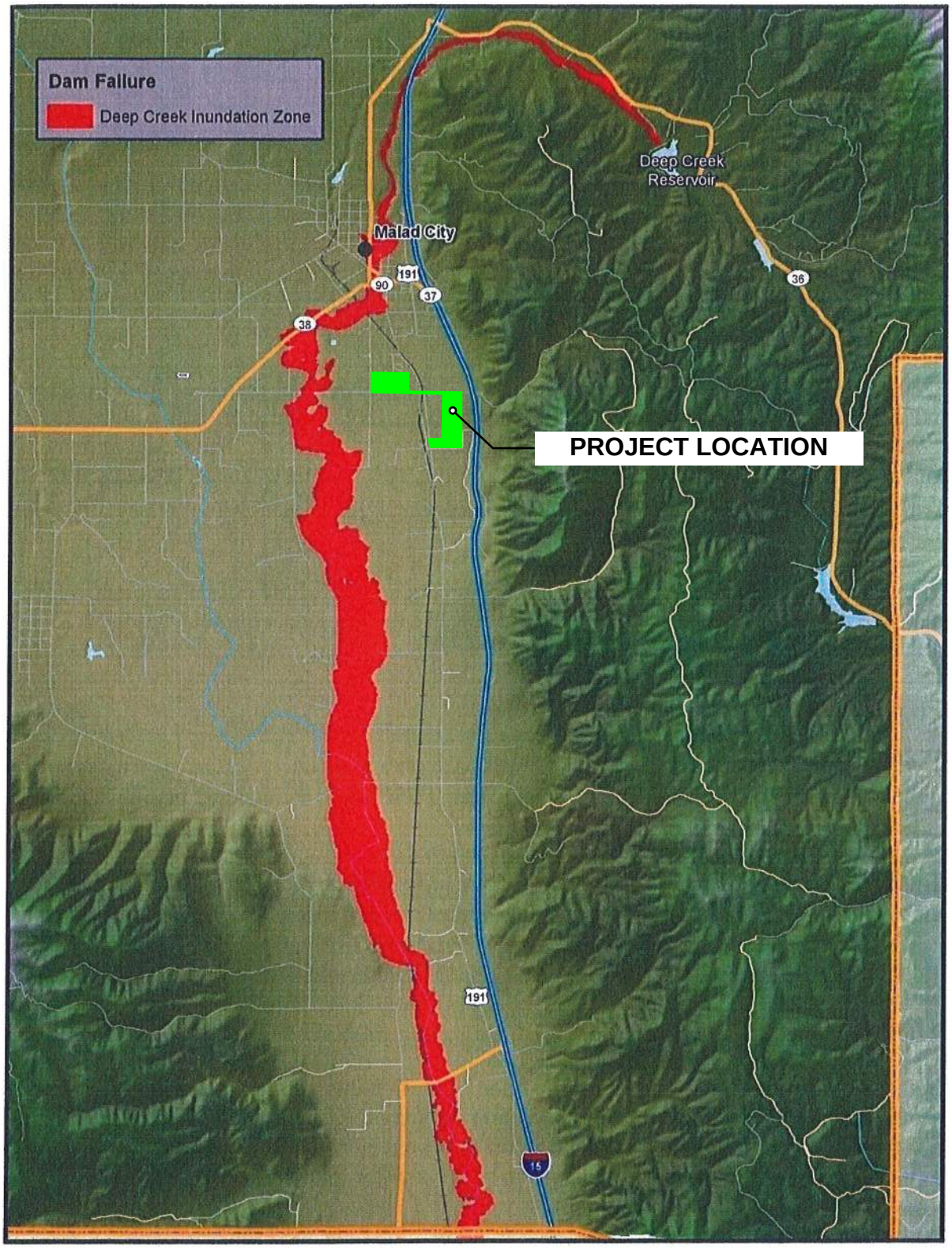
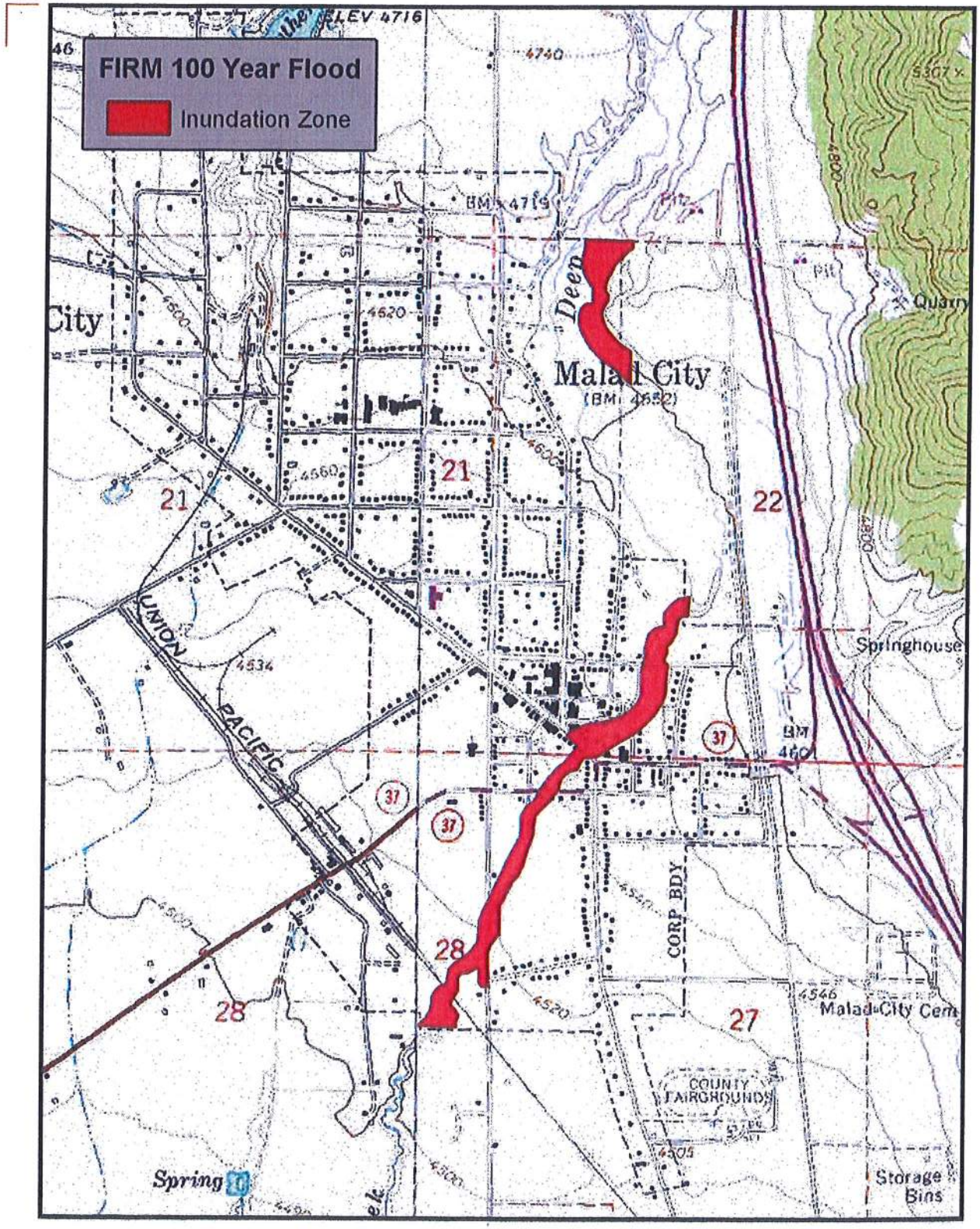


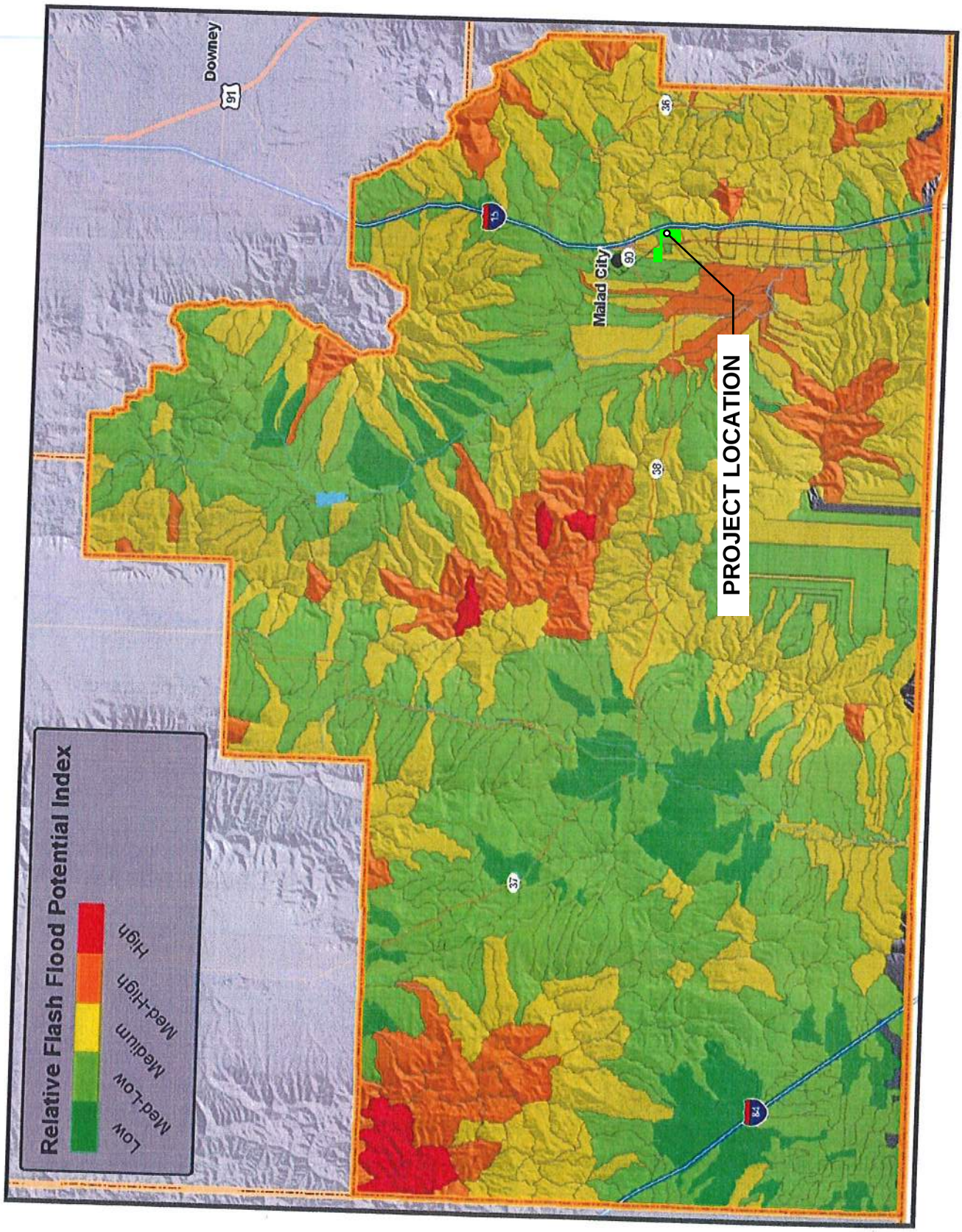
Figure 4.2.5 Deep Creek Dam Failure Map

Figure 4.2.1-100 Year Firm Floodplain in Malad City



PROJECT LOCATION
(NOT MAPPED)

Figure 4.2.2 Relative Flash Flood Potential Index (RFFPI)

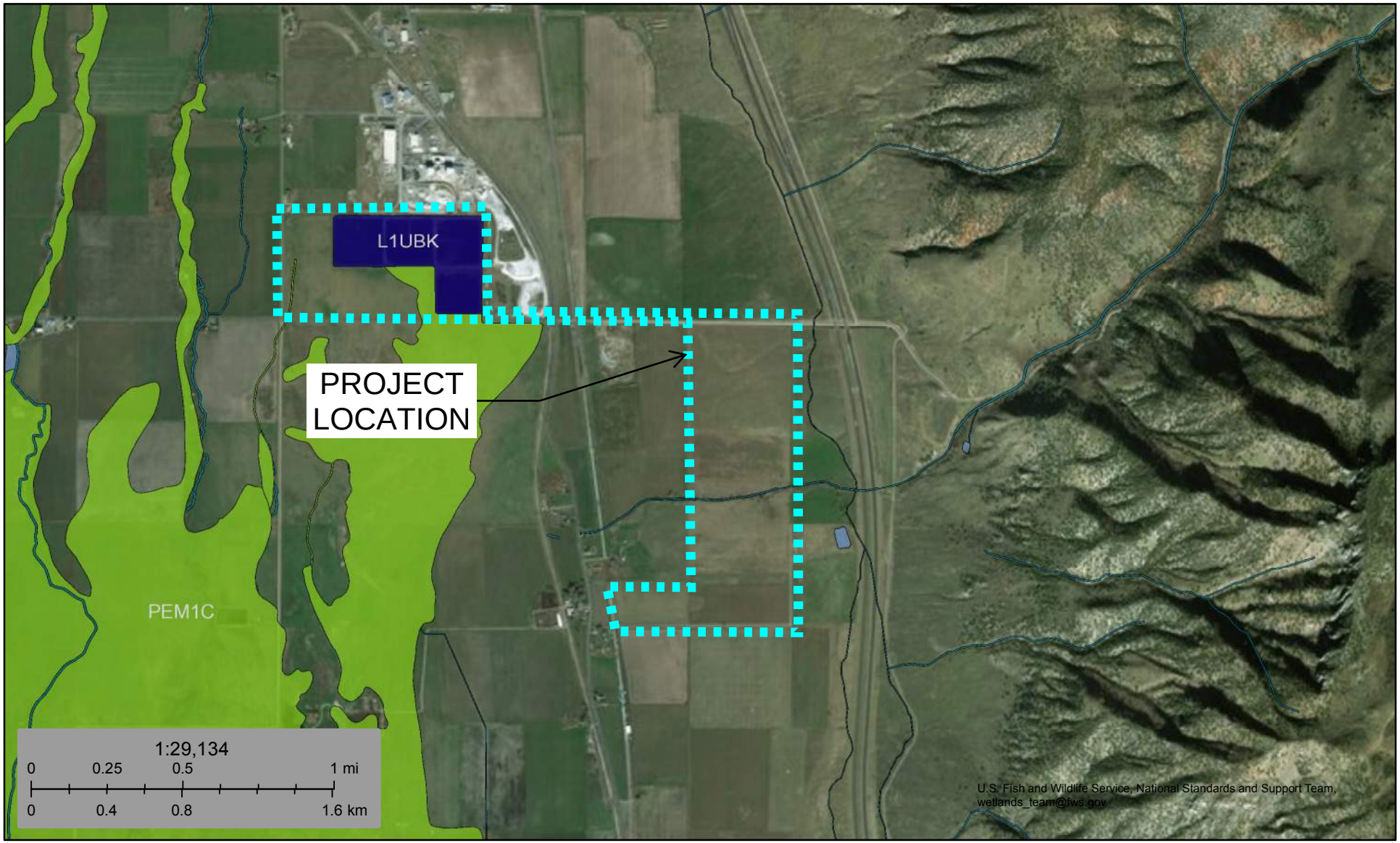


Appendix 4-G

Wetland Maps

U.S. Fish and Wildlife Service
National Wetlands Inventory

Area of Potential Effects (APE)



April 18, 2018

Wetlands

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

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.

Appendix 4-H

Wild and Scenic Rivers Map

NATIONAL WILD AND SCENIC RIVERS SYSTEM

Designations as of November 2016

The National Wild and Scenic Rivers System

Established by Congress under the Wild and Scenic Rivers Act of 1968, the National Wild and Scenic Rivers System was created to preserve the free-flow, water quality, and outstanding natural, cultural, and recreational values of select rivers for the enjoyment of present and future generations. The Act is notable for safeguarding the special character of these rivers, while also recognizing the potential for their appropriate use and development. It encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection.

More information about the National Wild and Scenic Rivers System or specific designated rivers can be found at the Interagency Wild & Scenic Rivers Coordinating Council's website, www.rivers.gov, or by contacting one of the federal river administering agencies:

U.S. Forest Service
www.fs.fed.us

National Park Service
www.nps.gov/wsr

Bureau of Land Management
www.blm.gov

U.S. Fish and Wildlife Service
www.fws.gov

Names of Numbered Wild and Scenic Rivers

1 Sandy
2 Zig Zag
3 Middle Fork Hood
4 East Fork Hood
5 Fifteenmile Creek
6 White
7 Salmon
8 Clackamas
9 Collawash
10 Fish Creek
11 South Fork Clackamas
12 Roaring and South Fork Roaring
13 Eagle Creek
14 Metolius
15 Deschutes
16 North Fork Crooked
17 Whychus Creek
18 North Fork Smith
19 River Styx
20 Big Marsh
21 Crescent Creek
22 Little Deschutes
23 Crooked
24 North Fork Crooked
25 South Fork John Day
26 North Fork John Day
27 North Powder
28 Joseph Creek
29 Lostine
30 Donner und Blitzen
31 Wildhorse Creek and Kiger Creek
32 North Fork Owyhee
33 Red Canyon
34 South Fork Owyhee
35 Battle Creek
36 Deep Creek
37 Dickshooter Creek
38 Little Jacks Creek
39 Big Jacks Creek
40 Duncan Creek and Wickahoney Creek
41 Cottonwood Creek
42 Sheep Creek

MALAD CITY
(PROJECT LOCATION)

Scale 1:5,800,000
Albers Equal Area Conic
0 50 100 200 300 400 Miles
0 80 160 320 480 640 Kilometers

Scale: 1:8,000,000
Albers Equal Area Conic
0 35 70 140 210 280 Miles
0 60 120 240 360 480 Kilometers

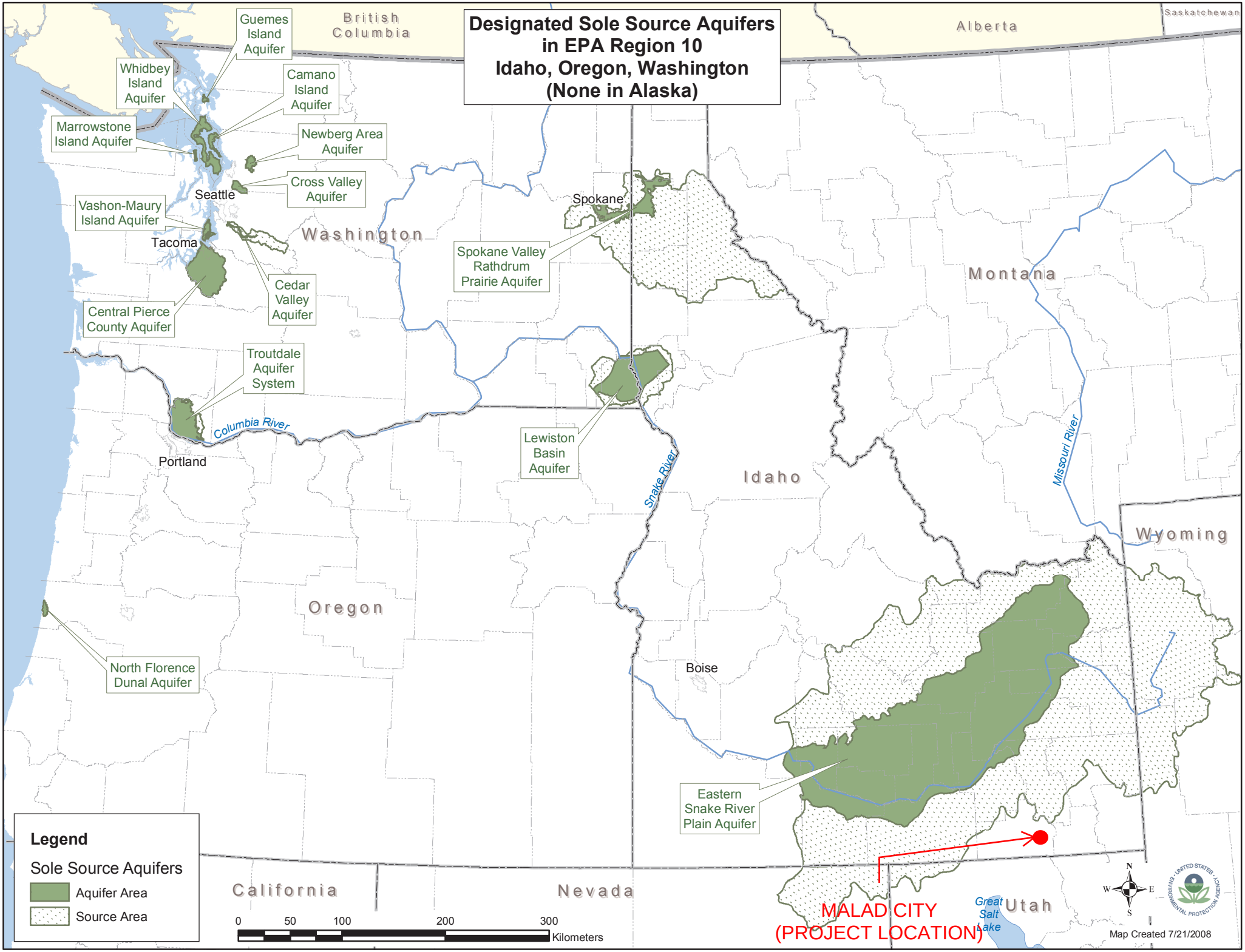
Scale: 1:2,000,000
Albers Equal Area Conic
0 10 20 40 60 80 Miles
0 15 30 60 90 120 Kilometers

Prepared by the USDA Forest Service
Geospatial Service and Technology Center Salt Lake City, UT 2016

The USDA Forest Service uses the most current and complete data available. GIS data and product accuracy may vary. Using GIS products for purposes other than those for which they were intended may yield inaccurate or misleading results.

Appendix 4-I

Sole Source Aquifer Map


Designated Sole Source Aquifers
in EPA Region 10
Idaho, Oregon, Washington
(None in Alaska)
Guemes Island Aquifer
Whidbey Island Aquifer
Camano Island Aquifer
Marrowstone Island Aquifer
Newberg Area Aquifer
Cross Valley Aquifer
Seattle
Vashon-Maury Island Aquifer
Tacoma
Cedar Valley Aquifer
Central Pierce County Aquifer
Troutdale Aquifer System
Portland
Columbia River
Spokane
Spokane Valley Rathdrum Prairie Aquifer
Lewiston Basin Aquifer
Snake River
Missouri River
North Florence Dunal Aquifer
Boise
Eastern Snake River Plain Aquifer
MALAD CITY
(PROJECT LOCATION)
Great Salt Lake
British Columbia
Alberta
Saskatchewan
Washington
Oregon
California
Nevada
Idaho
Montana
Wyoming
Utah
Legend
Sole Source Aquifers
Aquifer Area
Source Area
0 50 100 200 300
Kilometers
N
W
E
S
Map Created 7/21/2008

Appendix 4-J

IPaC Official Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Idaho Fish And Wildlife Office
1387 South Vinnell Way, Suite 368
Boise, ID 83709-1657
Phone: (208) 378-5243 Fax: (208) 378-5262

In Reply Refer To: May 07, 2018
Consultation Code: 01EIFW00-2018-SLI-1152
Event Code: 01EIFW00-2018-E-02417
Project Name: Malad City Wastewater Improvements

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_fedreg_unit3_draft.jpg
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(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Idaho Fish And Wildlife Office
1387 South Vinnell Way, Suite 368
Boise, ID 83709-1657
(208) 378-5243

Project Summary

Consultation Code: 01EIFW00-2018-SLI-1152

Event Code: 01EIFW00-2018-E-02417

Project Name: Malad City Wastewater Improvements

Project Type: WASTEWATER FACILITY

Project Description: Project to construct new wastewater lagoon and recycled wastewater land application site. Completing environmental assessment (EA) for USDA RD funding. USDA requested "official species list from IPaC" be included in the EA.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.15977650556589N112.22622252657726W

Counties: Oneida, ID

Endangered Species Act Species

There is a total of 0 threatened, endangered, or candidate species on this 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.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Appendix 4-K

Cultural Resources Inventory Report

Malad City Wastewater System Improvements Project

Cultural Resources Survey

Project No. 2018-522

May 2018

By: David N. Larsen, MA, RPA

Sundance Consulting, Inc.
305 N. 3rd Avenue, Suite B, Pocatello, ID 83201

Abstract/Management Summary

Malad City is planning to acquire 132 acres for proposed improvements to their wastewater treatment system. The existing wastewater lagoons are located on an 80-acre parcel. The proposed Project would include upgrading an influent lift station, and constructing or installing a conveyance pipeline, winter storage lagoons, polishing lagoon, and two 30-acre pivots.

Malad City is working with the U.S. Department of Agriculture Rural Development for Project funding; therefore, proposed improvements are considered an undertaking requiring compliance with Section 106 of the National Historic Preservation Act. The Project is located on private land approximately 1.5 miles south of Malad City, Idaho.

The 222-acre Area of Potential Effect was intensively surveyed in its entirety for cultural resources, using transects no more than 30 meters apart; one previously recorded site was identified and two newly identified historic sites were recorded. The Project area has been previously disturbed by agricultural use and road development. Site 71-17930 – Oregon Short Line Railroad (Malad Valley branch) has been determined eligible for the National Register of Historic Places (NRHP); however, the proposed Project would bore under the site and would have no adverse effect. Although site US 191 – Old Highway 191 is recommended eligible for the NRHP, the proposed Project would bore under the site and would have no adverse effect. The existing wastewater lagoons are historic in age, but the site is recommended not eligible for the NRHP. The proposed Project will have no adverse effect to historic properties.

The proposed Malad City Wastewater Improvement Project will have no adverse effect to historic properties and no additional work is recommended.

Certification of Results

I certify that this investigation was conducted and documented according to Secretary of Interior's Standards and guidelines and that the report is complete and accurate to the best of my knowledge.

May 2, 2018

Signature of Principal Investigator | Date

Key Information

PROJECT NAME

Malad City Wastewater Improvement Project Cultural Resources Survey

PROJECT NUMBER(S)

2018-522

LOCATION

Oneida County

USGS QUADS

Malad City East

LEGAL LOCATION OF SURVEY

Township 14 South, Range 36 East, Sections 34 & 35
Township 15 South, Range 36 East, Sections 2 & 3

PROJECT AREA

222 Acres

AREA SURVEYED

222 Acres Intensive Survey
0 Acres Reconnaissance Survey

PROJECT DATA

1 Previously recorded cultural resource
2 New cultural resources located and/or recorded

AUTHORS

David N. Larsen, MA, RPA

FEDERAL AGENCY

U.S. Department of Agriculture

REPORT PREPARED FOR

J-U-B Engineers, Inc.

REPOSITORY

Sundance Consulting, Inc., 305 N. 3rd Avenue, Suite B, Pocatello, ID 83201

PRINCIPAL INVESTIGATOR

David N. Larsen, MA, RPA

REPORT DATE

5/2/2018

Table of Contents

Project Description

Malad City is planning to acquire an additional 132 acres for proposed improvements to their existing wastewater treatment system. The proposed Project would include upgrading an influent lift station, and constructing or installing a conveyance pipeline, winter storage lagoons, polishing lagoon, and two 30-acre pivots.

The original Malad Wastewater Treatment Plant (WWTP) was constructed in 1961 and includes four evaporative, non-aerated lagoons. The existing wastewater lagoons are located on an 80-acre parcel. The WWTP was originally designed for zero discharge of wastewater meaning that all treated wastewater was disposed of by evaporation and seepage into the ground. During recent years, Malad City has had capacity concerns at the WWTP, especially during abnormally wet years. In 2013, the City received a notice of violation from the Idaho Department of Environmental Quality (IDEQ) regarding the excessive seepage rate of WWTP Lagoon #1 and Lagoon #4. IDEQ's seepage limits require that the lagoons be lined. Water balance calculations revealed that when the lagoons are lined, the remaining evaporative capacity of the existing lagoons will be inadequate to serve Malad City's current population.

Due to shallow groundwater, poor soil conditions, and constructability concerns at the existing WWTP, it was determined that construction of a WWTP and reuse system at a new site would be the most feasible alternative to continue providing wastewater services to Malad City's existing and future users.

The following is a list of the proposed improvements required to construct a treatment and reuse system at a new site.

- Acquire approximately 132 acres of land for new lagoon treatment system and reuse area.
- Upgrade the Influent Lift Station to provide lift to the new site.
- Construct new conveyance pipeline to the new site.
- Construct new lagoons for aeration, polishing, and winter storage.
- Construct new disinfection system.
- Install new irrigation pipelines and reuse pump station.
- Install irrigation equipment – pivots, wheelines, and/or handlines.
- Plant vegetation/crops as needed for reuse.
- Decommissioning the existing site and collection system upgrades.

Malad City is working with the U.S. Department of Agriculture Rural Development for Project funding; therefore, proposed improvements are considered an undertaking requiring compliance with Section 106 of the National Historic Preservation Act (NHPA). The proposed Project will result in ground disturbance that could have direct and indirect impacts to cultural resources; it is therefore necessary to evaluate the proposed Project for potential impacts to cultural resources.

The objective of the cultural resource survey was to identify and assess potential impacts to historic properties located near proposed improvements. The area investigated included the location of the proposed improvements, staging areas, and access routes associated with the Project. The investigation included a record search through the Archaeological Survey of Idaho, review of General Land Office (GLO) plat maps, and a general understanding of Native American and pre-contact use of the region.

Project Area of Potential Effect (APE)

The proposed Area of Potential Effect is located on private land approximately 1.5 miles south of Malad City, Idaho (Appendix A, Figure 1). Construction access to the site will be along the existing Old Highway 191. The APE for this project encompasses approximately 222 acres and includes the access routes, staging areas, and work areas associated with improvement efforts (Appendix A and B). The APE has been previously disturbed by agricultural use.

Environmental Setting

The Project area is located within the Malad Valley, where topography is generally flat at an average elevation of 4,485 feet. The Malad River passes through the west side of the valley and is heavily utilized for irrigation. Twomile Creek passes through the eastern portion of the Project area and is also utilized for irrigation. The Project area is in the Malad and Cache Valleys of the Central Basin and Range with unglaciated ecoregions composed of lake terraces, benches, stream terraces, valley bottoms, alluvial fans, hills, and foothills. Mountain-fed streams occur and provide water to municipalities and to agriculture (McGrath et al, 2002). Soils are mostly Quaternary alluvium, Quaternary colluvium, or Pleistocene lake sediments. Vegetation primarily consists of sagebrush steppe. In well-drained areas, vegetation includes: bluebunch wheatgrass, western wheatgrass, bluegrass, Great Basin wildrye, cheatgrass, and big sagebrush. On wet floodplains, vegetation consists of: reeds, sedges, foxtail, saltgrass, and wiregrass. On poorly-drained low lake terraces, vegetation includes saltgrass and greasewood (McGrath et al, 2002). Adjacent vegetation is sagebrush steppe. Land use in the area is primarily agriculture and grazing and includes irrigated cropland and pastures, dryland farming, livestock farms, dairies, and orchards. Crops include alfalfa, barley, wheat, vegetables, silage corn, sugar beets, apples, and peaches. Urban, suburban, commercial, and industrial activity also occurs.

Project overview facing south

Cultural Setting

The Malad Valley has been used by pre-contact and historic cultures for subsistence and settlement for thousands of years. Until the 19th century, these groups existed as hunter-gatherers.

Lohse (1993) describes three broad cultural periods represented in the Malad Valley: Early Big Game Hunting (ca. 14,000 – 7,800 years before present [B.P.]), Archaic (7,800 – 1,300 B.P.), and Late (1300 – 150 B.P.). The Early Big Game Hunting Period has been argued as representing a cultural adaptation focused on the procurement of now extinct megafauna and it is assumed that diet also included plants and small game. The Archaic Period is the stage in North American prehistory characterized by generalized hunting-and-gathering economies in physical environments basically similar to those of today. Hunters took modern bison, mountain sheep, deer, and small game. Plant resources were an important, dominant part of the diet. It is assumed that the atlatl and dart weapon system enters the archaeological record during the Archaic Period, as reflected in the smaller and more variable types of projectile point types. The Late Period is better known than any of the preceding periods in regional prehistory, and most likely represents pre-contact and protohistoric Shoshoneans occupying the Upper Snake and Salmon River country.

Two cultural hallmarks are indicative of this period: Shoshonean Intermountain Ware pottery tradition and use of the bow and arrow.

The transition from protohistoric to historic Shoshonean groups, which hinges on finding European trade goods in association with aboriginal materials, has not been well demonstrated in the archaeological record of this region (Lohse, 1993). Some time after about 300 B.P., horses came to the Shoshone and other Plateau tribes, and metal and glass goods began passing north in trade from the Spanish Southwest (Lohse, 1993). The boundary between protohistoric and historic periods for Shoshone has been arbitrarily set at the year 1805, when the first written records of the Upper Snake River Basin were produced by Meriwether Lewis and William Clark (Reed et al, 1986).

During ethnographic and historic times, the Malad Valley was a traditional home district or territory of the Shoshone-speaking group – the Promontory (or Malad Valley) Shoshone (Arkush, 2013; Steward, 1938). The Promontory group's Shoshone name was either hukuntikka 'eaters of needlegrass seeds' (Steward, 1938), or hukkantikka 'eaters of pickleweed seeds' (Thomas et al, 1986). By 1868, the Fort Hall Treaty forced many Native Americans onto the reservation.

The presence of Euro-Americans increased significantly throughout the region beginning in the mid-1800s with the development of Mormon agricultural settlements in southeast Idaho. In 1855, Brigham Young scouted out Malad Valley, looking for prospective settlement sites. The Malad Valley was selected as a settlement site by Young, and the next year a fort was established at Malad by Ezra Barnard and 15 families. The fort and settlement was abandoned in 1858 due to conflicts with local Indian groups (Malad City, 2018). The first permanent settler was A.W. Varderwood in 1863. The railroad was built to Malad in 1906, resulting in an increase in population. The settlement of Euro-Americans by the mid-19th century introduced domestic stock, irrigation, and farming.

Pre-Field Research

A record search through the Idaho State Historic Preservation Office (SHPO) was requested and results were received on April 26, 2018 (Record Search #18225). The results of the record search identified six previously conducted cultural resource inventories and four previously recorded sites within one mile of the Project area.

Previous Cultural Resources Studies

A total of six previously conducted cultural resource inventories have been completed within one mile of the APE; however, none of these studies occurred within the APE. The previously conducted inventories are summarized in Table 1.

Table 1. Previously Conducted Inventories

SHPO Report Number	Title	Author	Year	Acres
1989/1995	Annual Report of Archaeological Investigations	Gaston, J.	1984	0
1989/2081	South Main & Jenkins, Malad	Gaston, J.	1986	10
2005/321	Thayne Daniels Sprinkler System	Vrem, D.	2004	10
2008/724	Lumber, Stone & Concrete: Administrative Facilities of the Caribou Targhee National Forest, 1891-1955. Historic Context Statement and Evaluations	Wilson, R, and Godfrey, A.	2007	72
2013/243	Oneida County Industrial Park Roadway Project	Crockett, S.	2013	3
2018/331	Class III Cultural Resource Inventory and Visual Impact Assessment for the Pumice-A Communication Facility, Oneida County, Idaho	Boyle, M., Cannon, K., Martin, H, and Sladek, R,	2018	1

The previous cultural resource inventories have been conducted by various agencies. Each of the previous inventories consisted of small block surveys of less than 100 acres, conducted by one to four persons using current and standard archaeological methods, for various improvement projects. One survey (2018/331) identified the historic alignment of the Oregon Short Line (OSL) Railroad (Malad Valley branch), which passes through the project APE. The remaining surveys did not result in the identification of archaeological sites within the APE.

In addition to the record search, the National Register of Historic Places (NRHP) database was reviewed, as well as the GLO survey plat for Township 14 South, Range 36 East and Township 15 South, Range 36 East both filed September 26, 1873. Sections 34 and 35 were reviewed in T14S, R36E and the "Road to Montana" and Twomile Creek are noted. The road alignment passes through the APE. Sections 2 and 3 were reviewed in T15S, R36E and the "Road to Montana" was noted. The railroad (constructed by 1906) and the road alignment pass through the APE. The railroad has been recorded as 71-17930, and the road alignment is recorded as Old Highway 191. No additional features were identified on the survey plats.

Expected Cultural Resources

Evidence of pre-contact and historic cultures could be present within the APE. Previously documented cultural resources are primarily historic resources associated with environmental variables such as landforms and water. The Malad River and tributaries within the valley drew settlement and developed agriculture. The APE has been impacted by agricultural use. The area surrounding the APE has been used for agricultural purposes over the last 100 years and historic features, such as water diversion equipment and associated features along streams within the Malad Valley, may be expected due to the long history of irrigation in the area. Broad themes of past anthropogenic use primarily include settlement, agriculture, and transportation. It is likely that any shallowly buried subsurface cultural zone situated within the plow zone would be represented by upwardly turbated surface artifacts.

Four previously recorded sites have been documented within one mile of the Project area. These include one archaeological site, two historic sites, and one historic linear site; however, only one of these sites (71-17930) is located within the project APE. Previously recorded cultural resources are summarized in Table 2.

Table 2. Previously Recorded Cultural Resources

SITE NUMBER	TYPE OF PROPERTY	ARTIFACTS/FEATURES	NRHP ELIGIBILITY
71-729	Historic	Stone House Near US 191	Undetermined
71-17920	Historic	Malad Warehouse Site	Not Eligible
71-17930	Historic	Oregon Short Line Railroad (Malad Valley branch)	Eligible
10OA371	Prehistoric	Lithics	Not Eligible

Field Methodology

Mr. David Larsen, MA, a Registered Professional Archaeologist with over 14 years of professional experience, conducted fieldwork on April 22, 2018. His education and experience exceeds the requirements of the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (Federal Register, Volume 48, No. 190, September 29, 1983, 44716-44742).

The inventory included an intensive pedestrian survey of the entire APE. A total of 222 acres was systematically surveyed using parallel transect intervals spaced no more than 30 meters apart. Survey transects began at the northwest corner of the survey area and continued east-west moving south through the APE. This methodology provided the most efficient coverage of the Project areas, and resulted in 100 percent (%) survey coverage of the APE. Surface visibility was generally good (50% to 75%) within the APE due to the type of vegetation present. The ground surface within the APE was primarily pasture grass. Access routes to be used during the Project consist of existing Old Highway 191 and Twomile Canyon Road.

Results

The survey identified one previously recorded site (71-17930) and two newly recorded sites: Old Highway 191 and the existing wastewater treatment lagoons. No isolates were recorded as a result of the survey. Modern barbed wire fences, irrigation pipes, and modern roadways were noted within the APE.

No issues or survey limitations were encountered during fieldwork. The Project area was accessed easily by vehicle and on foot. The survey areas were primarily covered with grasses; however, exposed cut banks and rodent burrows were observed within the Project area and provided some subsurface visibility. The exposed cut banks were thoroughly investigated, and where possible, a boot scrape was made to further assess subsurface context.

Since no surface artifacts were encountered during inventory, it is unlikely that shallow subsurface cultural zones are present. Cutbank inspections, including boot scrapes, were conducted as well as inspection of rodent burrows to assess the presence of deeply buried cultural zones (see below under Results); no artifacts or features were observed.

The results of the cultural resources inventory, which includes cultural resources present within the APE, are described below.

71-17930 – Oregon Short Line Railroad (Malad Valley Branch)

The site is a segment of the Malad Valley branch of the OSL Railroad. A 1,000-foot segment of the historic railroad was recorded as part of this Project at its intersection with Twomile Canyon Road in Malad City, Idaho. The Malad Valley branch of the OSL Railroad (also known as the Malad Valley Railroad) was constructed between 1905 and 1906 by the Malad Valley Railroad Company (French, 1914; Howell, 1960; Railroad Commission of Oregon, 1908). The new branch extended an existing route between Corrinne, Utah and Garland, Utah into southeastern Idaho, terminating at Malad City. The Malad Valley Railroad Company was organized by the Utah Sugar

Company to facilitate industrial transportation activities for a newly constructed sugar beet factory in Garland (French, 1914; Archibald, n.d.).

The Malad Valley Railroad was leased to the OSL Railroad in 1906 and formally purchased in 1910 (Railroad Commission of Oregon, 1908). During this time, the OSL Railroad was a subsidiary of the Union Pacific Railroad Company, which had originally organized the OSL and Utah Northern Railway in 1889 (Strack, 1994). By the turn of the 20th century, the OSL Railroad controlled key routes in northern Utah, particularly those north of Salt Lake City and Ogden. After its completion in 1906, the Malad Valley branch of the OSL Railroad supported economic development and growth in the Malad Valley by providing transportation for agricultural products to larger markets in northern Utah (French, 1914; Howell, 1960). Today, the recorded segment of the Malad Valley branch of the OSL Railroad retains its historical alignment and continuity of use.

The site consists of a mainline railroad grade constructed of gravel and a set of modern standard-gauge tracks with wooden ties. The tracks are oriented in a northwest-southeast direction. The railroad grade measures approximately 15 feet in width, and the right-of-way measures approximately 25 feet in width. A modern wood railroad crossing is located at its intersection with Twomile Canyon Road. The site is located on private property. No historic artifacts, features, or structures were observed during fieldwork.

The historic site is in good condition. Although the historic railroad has been subject to modern upgrading, the site retains its historic alignment and continuity of use as a railroad in the Malad Valley. Impact agents to the site include road/highways and industrial activities from the nearby pumice manufacturing plant. The site is situated on a bladed railroad grade located on a small high in the center of the Malad Valley.

The site has been determined eligible for inclusion for the NRHP under Criterion A for its association with events significant to the transportation history, economic development, and growth of Malad Valley during the early 20th century. The segment of the Malad Valley branch of the OSL Railroad retains its integrity of location, design, and association. The site is not known to be associated with the lives of specific individuals (Criterion B). In the recorded segment, the historic railroad has undergone modern upgrading and lacks historic features, structures, and artifacts; therefore, the site does not embody any distinctive characteristics of a type, period, or method of construction (Criterion C). Furthermore, the site is not eligible under Criterion D (information potential) given that the site does not contain historic features, structures, or an artifact assemblage that may yield additional historical information about the site.

US191 – Old Highway 191

Old Highway 191 is a historic road alignment that was originally formed as a wagon road from Utah, through southern Idaho, and into Montana. The road appears on the GLO plat map for T14S, R36E and T15S, R36E both filed in 1873, as the "Road to Montana." The actual alignment of the road has changed over time, as has the material and size, as the roadway has been improved to accommodate modern traffic. Highway 191 first appears at the current alignment of South Cherry Creek-Woodruff Road in the 1940 *Rand McNally Road Map: Idaho*. The general alignment of the road is also noted on the 1925 *Rand McNally Auto Trails Map Idaho-Montana-Wyoming*. The roadway appears as the Malad Valley Highway in the 1924 *Geologic Map of Power and Oneida*

Counties, Idaho (Piper, 1924). The segment of the highway runs north for approximately 40 miles from Plymouth/Fielding, Utah to Downey, Idaho. The highway was designated in 1926 and its routing has changed drastically through the years. The modern US 191 bears almost no resemblance to the original route, which was primarily in the state of Idaho; the alignment was changed sometime after 1968 to the current alignment of Old Highway 191. A historic segment of the original US 191 is abandoned and is adjacent to the southern portion of the Project APE. No remnants of the original roadway exist within the limits of the proposed Project. The segment of the original alignment of US 191 that historically passed through the Project APE is no longer present and has been reclaimed by agricultural fields.

The site is recommended eligible for inclusion on the NRHP under Criterion A for its association with events significant to the transportation history, economic development, and growth of the Malad Valley during the early 20th century. No known persons of importance are associated with the site (Criterion B). It is not unique nor an example of a type (Criterion C). The site is unlikely to yield data beyond initial recording and would not contribute important information to our understanding of regional history (Criterion D).

WWTP01 – Malad City Wastewater Treatment Lagoons

The original Malad WWTP was constructed in 1961 and includes four evaporative, non-aerated lagoons. The WWTP was originally designed for zero discharge of wastewater meaning that all treated wastewater was disposed of by evaporation and seepage into the ground. The four lagoons are square in shape and range in size from 625 feet by 625 feet to 580 feet by 580 feet and 7 acres to 9 acres in area. The earthen basins are 8 to 10 feet in depth.

The anaerobic lagoons are not aerated, heated, or mixed. The lagoons are used to pretreat raw wastewater for Malad City. Pretreatment includes separation of settleable solids, digestion of solids, and treatment of the liquid portion.

Modern improvements to the site include piping, a pump house, and monitoring wells.

The site is recommended not eligible for inclusion on the NRHP. The WWTP does not contribute to a historic theme significant to the region (Criterion A). No known persons of importance are associated with the site (Criterion B). It is not unique nor an example of a type (Criterion C). The site is unlikely to yield data beyond initial recording and would not contribute important information to our understanding of regional history (Criterion D).

Management Recommendations

Two historic properties are located within or adjacent to the proposed project APE (OSL Railroad – Malad Valley branch and Old Highway 191). Site 71-17930 – OSL Railroad (Malad Valley branch) has been determined eligible for the NRHP, and site US191 – Old Highway 191 is recommended eligible for the NRHP. The proposed Project will bore under the railroad and roadway for placement of a pipeline and would have no impact on either the railroad or road grade. The portion of each site within the APE has been altered by modern upgrades, including modern material of the railway and widening and resurfacing of the roadway. The railway and road have been continually maintained and remain in use. The proposed Project would not alter the alignment

of the railway or roadway. The railway and roadway would continue to exist in their original location, will not experience a material change, and will continue to reflect their original character. Original historic use would remain for each site. The proposed Project would have no adverse effect to these historic properties. The historic segment of the original US 191 that has been abandoned is located adjacent, but outside of the project APE and would be avoided.

The existing WWTP is recommended not eligible for the NRHP. Proposed improvement to the WWTP would not be an adverse effect as the site is not a historic property.

No additional work is recommended, and the proposed Project will have no adverse effect on historic properties.

Avoidance, Minimization, or Mitigation Options

A jack-and-bore method with steel casings would be utilized to pass under site 71-17930 and Old Highway 191. This method is recommended as appropriate for this Project, as the site to be avoided is historic in age, linear in nature, and has been adequately documented. Ingress and egress points shall be placed sufficiently away from the railroad and road grade. Any appurtenance associated with the points shall be placed and/or shielded so that sites are not visually impacted. No additional avoidance or mitigation measures are warranted.

Conclusions

The proposed Malad City Wastewater Improvement Project will have no adverse effect to historic properties and no additional work is recommended. One previously recorded site was identified, and two new historic sites were recorded as result of the survey. Site 71-17930 – OSL Railroad (Malad Valley branch) has been determined eligible for the NRHP; however, the proposed Project would bore under the site and would have no adverse effect. Site US 191 – Old Highway 191 is recommended eligible for the NRHP; however, the proposed Project would bore under the site and would have no adverse effect. The existing wastewater lagoons are historic in age, but the site is recommended not eligible for the NRHP. The proposed Project will have no adverse effect to historic properties.

Original survey records, field notes, and photographs are located at:

Sundance Consulting, Inc.
305 North 3rd Avenue, Suite B
Pocatello, ID 83201

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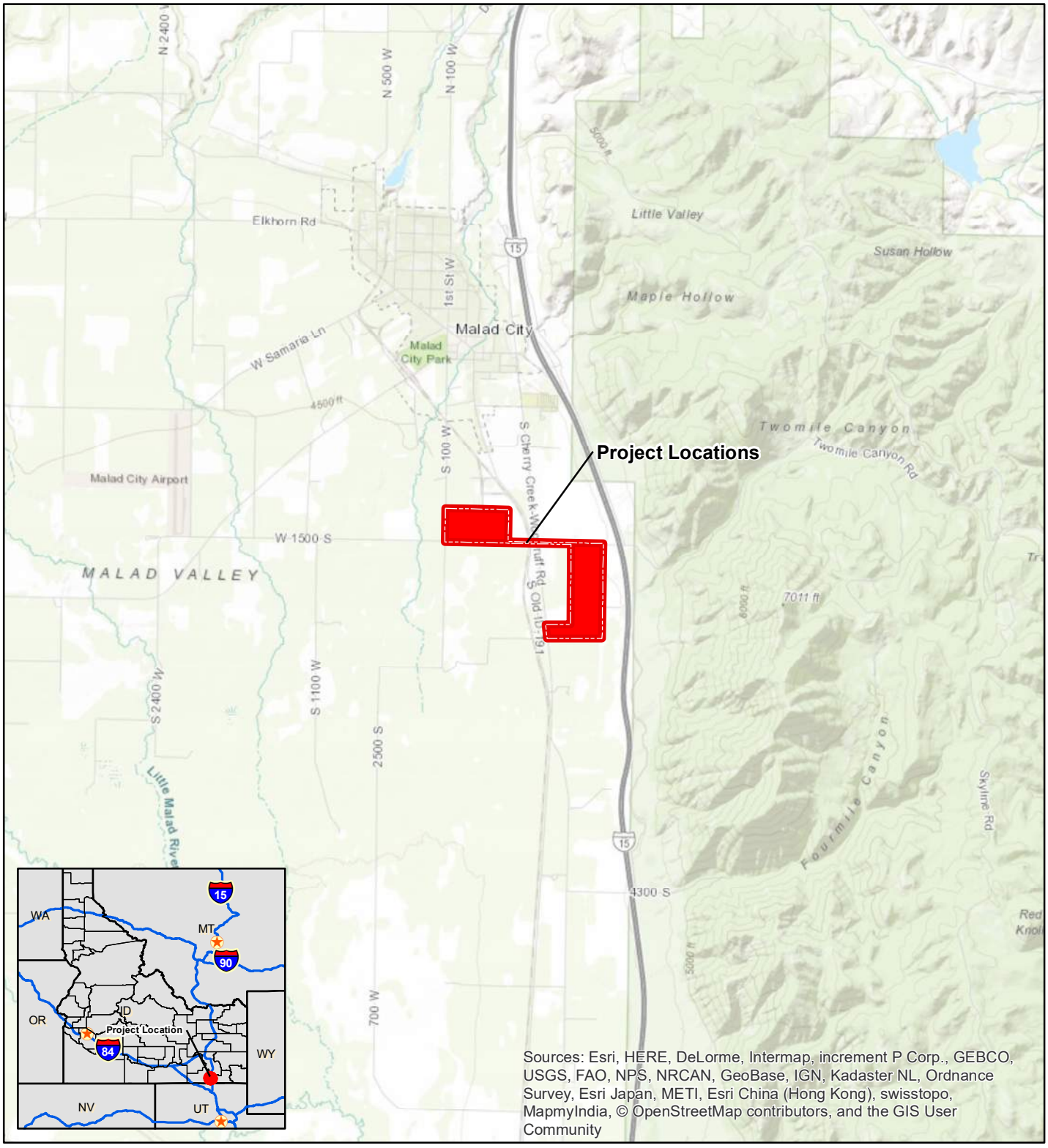
Appendix A

Figures

Figure 1 - Project Location
Malad City Wastewater Improvement Project



N
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Scale 1:70,000

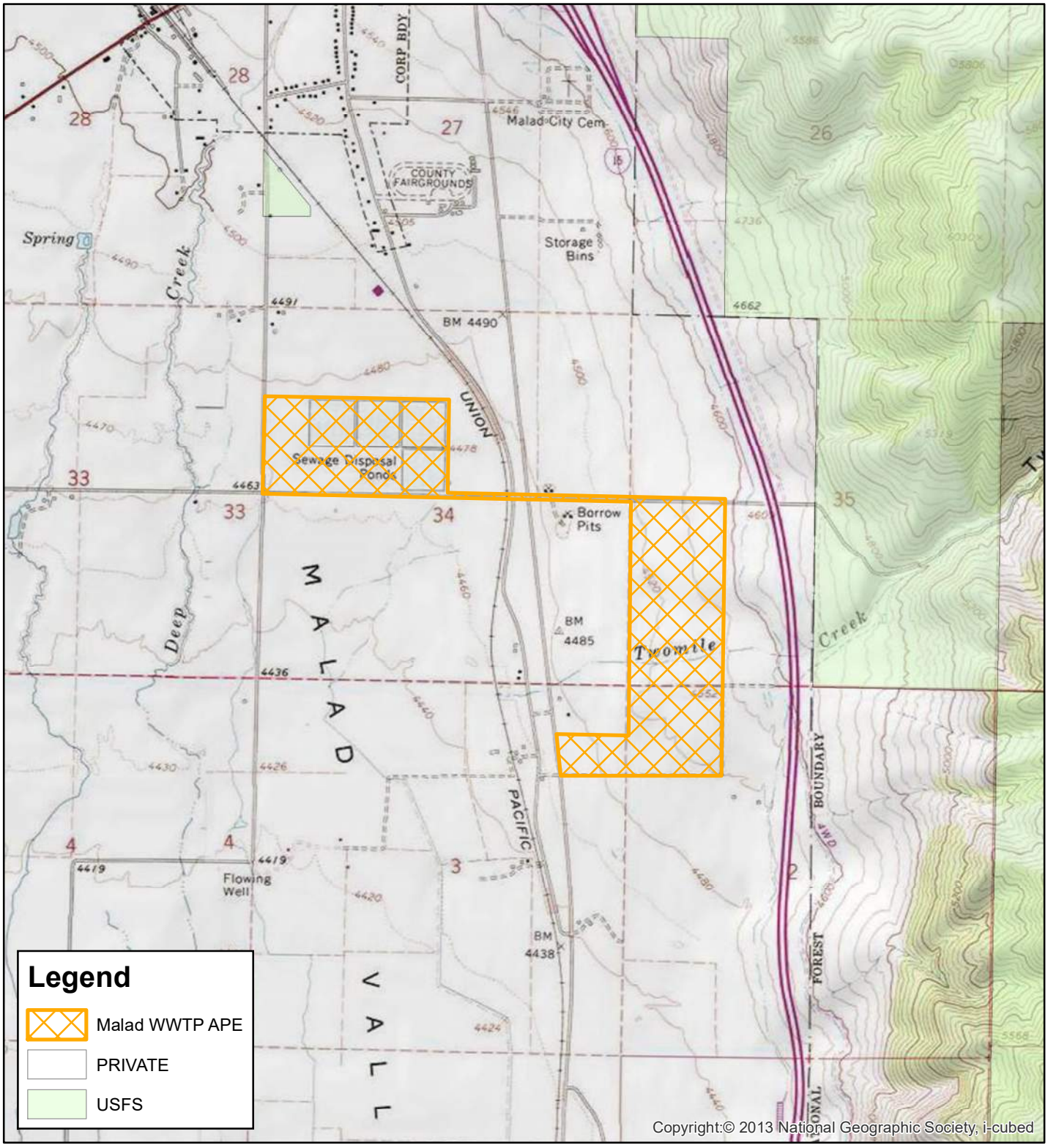
Data Displayed in UTM Zone 12, NAD83

0 0.5 1 2 Miles

0 1.5 3 Kilometers

Date Created: 4/20/2018

Figure 2 - Project Area
Malad City Wastewater Improvement Project



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Data Displayed in UTM Zone 12, NAD83

T14S, R36E / T15S, R36E

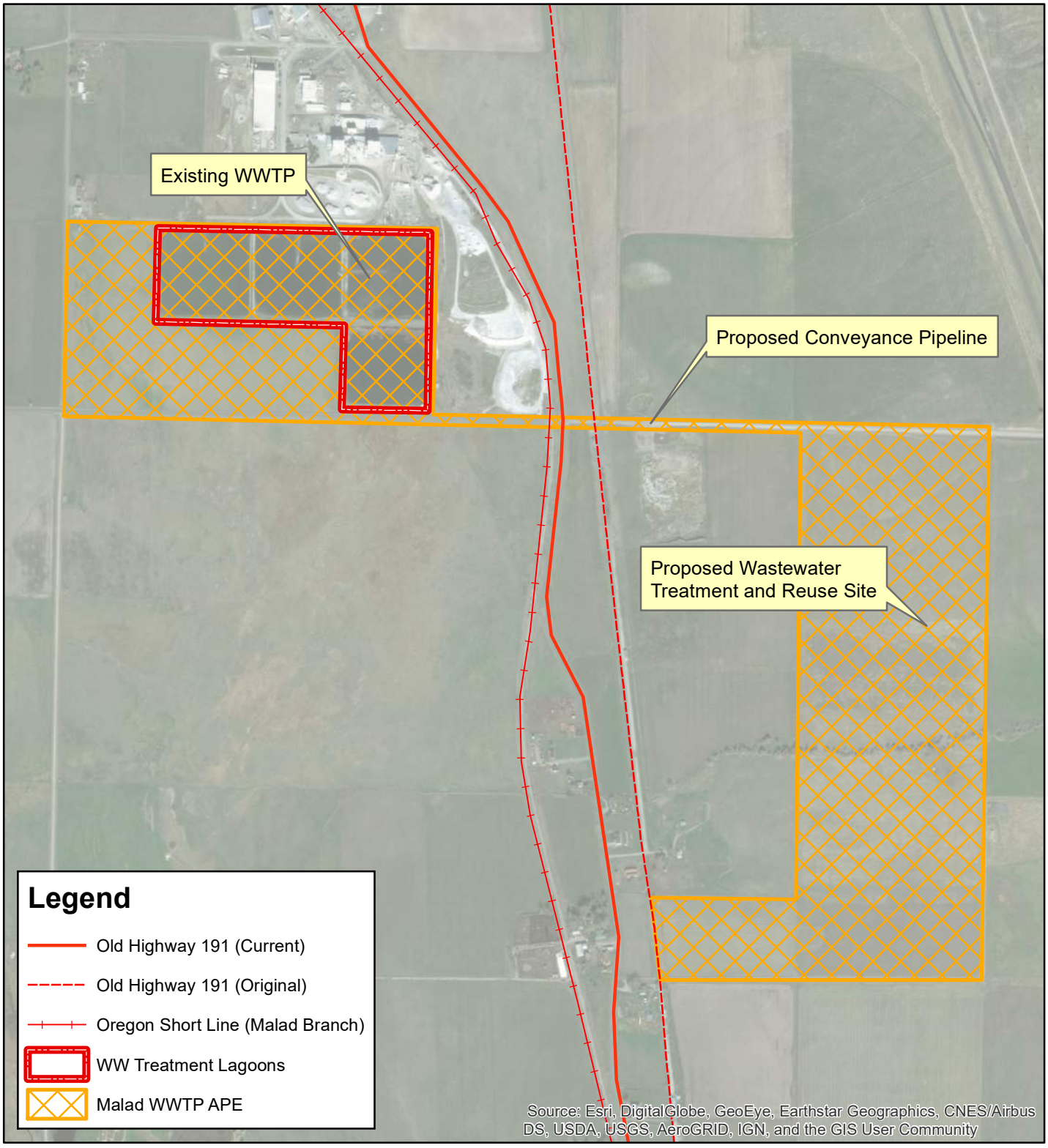
USGS Quadrangle: Malad City East

0 0.5 1 Kilometers

0 0.5 1 Miles

Date Created: 4/20/2018

Figure 3 - Project Area
Malad City Wastewater Improvement Project



N
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Scale 1:12,000

Data Displayed in UTM Zone 12, NAD83

T14S, R36E / T15S, R36E

USGS Quadrangle: Malad City East

0 250 500 Meters

0 750 1,500 Feet

Date Created: 5/1/2018

Appendix B

Photographs

P4220001: Project area overview facing northwest

P4220010: Project area overview (proposed pipeline) facing east

P4220018: Project area overview facing northeast

P4220030: Project area overview facing north

Appendix C

Site Forms

Submitted Separately to SHPO and Not Bound to This Report

IDAHO HISTORIC SITES INVENTORY FORM

PROPERTY NAME: Oregon Short Line Railroad (Malad Valley branch) | FIELD#: 71-17930

STREET: | RESTRICT ☐

CITY: Malad City | VICINITY ☑ | COUNTY CD: 71 | COUNTY NAME: Oneida

SUBNAME: | BLOCK: | SUBLOT: | ACRES: | LESS THAN ☐

TAX PARCEL: | UTMZ: 12 | EASTING: 397958 | NORTHING: 4668642

TOWNSHIP: 14 | N_S: S | RANGE: 36 | E_W: E | SECTION: 34 | NW ¼, ¼ | SE ¼

QUADRANGLE: MALAD CITY EAST | OTHERMAP:

SANBORN MAP: | SANBORN MAP#: | PHOTO#: Digital

PROPERTY TYPE: Structure | CONST/ACT1: Original Construction | ACTDATE1: 1905 | CIRCA1 ☐

CONST/ACT2: | ACTDATE2: | CIRCA2 ☐

ASSOCIATED FEATURES: | TOTAL # FEATURES:

ORIGINAL USE: Transportation | WALL MATERIAL:

ORIGSUBUSE: rail-related | FOUND. MATERIAL:

CURRENT USE: Transportation | ROOF MATERIAL:

CURSUBUSE: rail-related | OTHER MATERIAL: STONE

ARCHSTYLE: No Style | PLAN: linear | CONDITION: Good

NR REF #: | NPS CERT: | ACTIONDATE: | FUTURE ELIG DATE:

DIST/MPLNAME1: | DIST/MPLNAME2:

Individually Eligible ☑ | Contributing in a potential district ☐ | Noncontributing ☐ | Future eligibility ☐

Not Eligible ☐ | Multiple Property Study ☐ | Not evaluated ☐

CRITERIA A ☑ B ☐ C ☐ D ☐ | CRITERIA CONSIDERATION A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G ☐

AREA OF SIGNIF: Transportation | AREA OF SIGNIF: Commerce

COMMENTS: The site is a segment of the Malad Valley branch of the Oregon Short Line (OSL) Railroad. A 1,000 foot segment of the historic railroad was recorded as part of this project at its intersection with Twomile Canyon Road in Malad City, Idaho. The Malad Valley branch of the OSL Railroad (also known as the Malad Valley Railroad) was constructed between 1905 and 1906 by the Malad Valley Railroad Company (French 1914; Howell 1960; Railroad Commission of Oregon 1908). The new branch extended an

PROJ/RPT TITLE: Malad City Wastewater Improvement Project | SVY DATE: 04/22/18 | SVY LEVEL: Intensive

RECORDED BY: David N. Larsen, MA, RPA | PH: 208-233-2929 | ADDRESS: 305 N. 3rd Ave, Suite B, Pocatello, ID 83201

SUBMITTED PHOTOS ☑ NEGS ☐ SLIDES ☐ SKETCH MAP ☑

SVY RPT #: | ******** FOR ISHPO USE ONLY ******** | IHSI#: 71-17930

MS RPT #: | SITS#:

IHPR #: | HABS NO. ID-: | HAER NO. ID-: | REV#:

CS #: | IHSI# REF: | NR REF# 2: | REV# REF:

SVY RPT# 1: | SVY RPT# 2: | SVY RPT# 3: | MS RPT# 1: | MS RPT# 2:

ADD'L NOTES:

MORE DATA ☑

ATTACH ☑

REV# | SITS# | IHSI#

OF PHOTOS: | NEGBOX#: | # OF SLIDES: | SHPO DETER: | DETER DATE:

INITIALED: | ENTRY DATE: | REVISE1: | REVISE2: | REVISE3:

IDAHO HISTORIC SITES INVENTORY FORM

PROPERTY NAME: Oregon Short Line Railroad (Malad Valley branch) | IHSI#: 71-17930

FIELD#: 71-17930 | COUNTY NAME: Oneida

OTHER NAME:

COUNTY CD: 71 | CITY: Malad City | VICINITY: ☑

UTM REF2: | UTM REF3: | UTM REF4:

OTHER MATERIAL2: METAL:Iron | CULTAFFIL: Historic: Non-Aboriginal | AGENCYCERT: Statewide

SIGNIFDATE: 1906 | SIGNIFPERIOD: 1905-1960 | SIGNIFPERSON:

ARCH/BUILD: | ARCHPLANS: ☐ | TAXEASE: ☐ | TAXCERT: ☐

OWNERSHIP: Private | PROPOWN: Union Pacific Railroad

MORE DATA: ☑ | ATTACH: ☑

DOCSOURCE:

ADD'L NOTES:

COMMENTS:

The site is a segment of the Malad Valley branch of the Oregon Short Line (OSL) Railroad. A 1,000 foot segment of the historic railroad was recorded as part of this project at its intersection with Twomile Canyon Road in Malad City, Idaho. The Malad Valley branch of the OSL Railroad (also known as the Malad Valley Railroad) was constructed between 1905 and 1906 by the Malad Valley Railroad Company (French 1914; Howell 1960; Railroad Commission of Oregon 1908). The new branch extended an existing route between Corrinne, Utah and Garland, Utah into southeastern Idaho, terminating at Malad City. The Malad Valley Railroad Company was organized by the Utah Sugar Company to facilitate industrial transportation activities for a newly constructed sugar beet factory in Garland (French 1914; Archibald n.d.).

The Malad Valley Railroad was leased to the OSL Railroad in 1906 and formally purchased in 1910 (Railroad Commission of

PHOTO LOG: ☐ | IHSI# REF: | INITIALED: | DATEENTERED:

SKETCH: ☑

REV#

SITS#

IHSI#

IDAHO HISTORIC SITES INVENTORY FORM

PROPERTY NAME: Oregon Short Line Railroad (Malad Valley branch) IHSI#: 71-17930

FIELD#: 71-17930 COUNTY NAME: Oneida

COMMENTS:

The site is a segment of the Malad Valley branch of the Oregon Short Line (OSL) Railroad. A 1,000 foot segment of the historic railroad was recorded as part of this project at its intersection with Twomile Canyon Road in Malad City, Idaho. The Malad Valley branch of the OSL Railroad (also known as the Malad Valley Railroad) was constructed between 1905 and 1906 by the Malad Valley Railroad Company (French 1914; Howell 1960; Railroad Commission of Oregon 1908). The new branch extended an existing route between Corrinne, Utah and Garland, Utah into southeastern Idaho, terminating at Malad City. The Malad Valley Railroad Company was organized by the Utah Sugar Company to facilitate industrial transportation activities for a newly constructed sugar beet factory in Garland (French 1914; Archibald n.d.).

ATTACH ☑

The Malad Valley Railroad was leased to the OSL Railroad in 1906 and formally purchased in 1910 (Railroad Commission of Oregon 1908). At this time, the OSL Railroad was a subsidiary of the Union Pacific Railroad Company, which had originally organized the Oregon Short Line and Utah Northern Railway in 1889 (Strack 1994). By the turn of the twentieth century, the OSL Railroad controlled key routes in northern Utah, particularly those north of Salt Lake City and Ogden. After its completion in 1906, the Malad Valley branch of the OSL Railroad supported economic development and growth in Malad Valley by providing transportation for agricultural products to larger markets in northern Utah (French 1914; Howell 1960). Today, the recorded segment of the Malad Valley branch of the OSL Railroad retains its historical alignment and continuity of use.

The site consists of a mainline railroad grade constructed of gravel and a set of modern standard-gauge track with wooden ties. The tracks are oriented in a northwest-southeast direction. The railroad grade measures approximately 15 ft in width, and the right-of-way measures approximately 25 ft in width. A modern wood railroad crossing is located at its intersection with Twomile Canyon Road. The site is located on private property. No historic artifacts, features, or structures were observed during fieldwork.

The historic site is in good condition. Although the historic railroad has been subject to modern upgrading, the site retains its historic alignment and continuity of use as a railroad in Malad Valley. Impact agents to the site include road/highways and industrial activities from the nearby pumice manufacturing plant. The site is situated on a bladed railroad grade located on a small high in the center of Malad Valley.

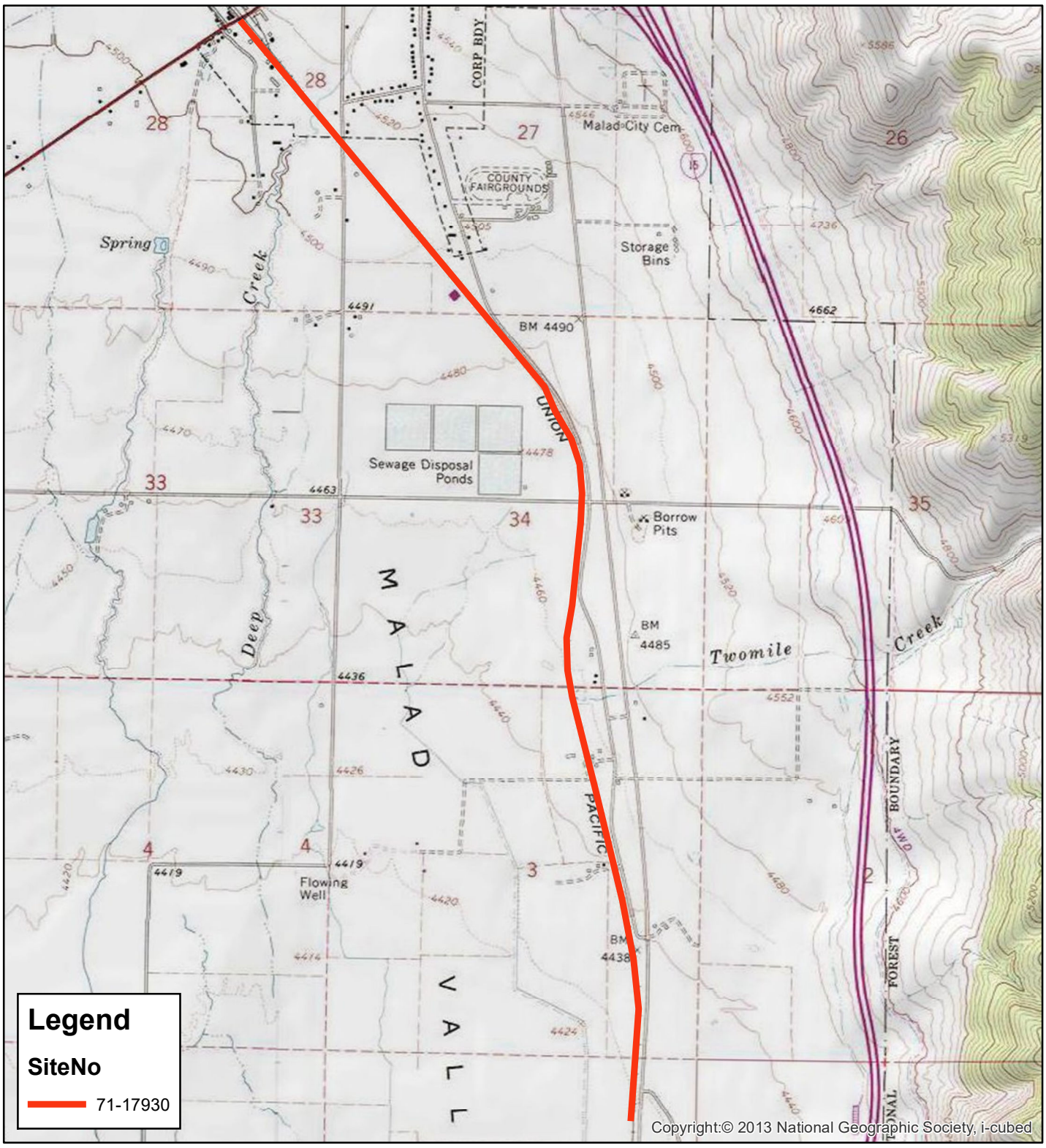
The site has been determined eligible for inclusion for the NRHP under criterion A for its association with events significant to the transportation history, economic development, and growth of Malad Valley during the early twentieth century. The segment of the Malad Valley branch of the OSL railroad retains its integrity of location, design, and association. The site is not known to be associated with the lives of specific individuals (criterion B). In the recorded segment, the historic railroad has undergone modern upgrading and lacks historic features, structures, and artifacts; therefore, the site does not embody any distinctive characteristics of a type, period, or method of construction (criterion C). Furthermore, the site is not eligible under criterion D (information potential) given that the site does not contain historic features, structures, or an artifact assemblage that may yield additional historical information about the site.

IHSI# _____

SITS# _____

REV# _____

71-17930
Figure 1 - Site Map



N
W E
S

Scale 1:24,000

0 0.5 1 Kilometers

0 0.5 1 Miles

Data Displayed in UTM Zone 12, NAD83

T14S, R36E / T15S, R36E

USGS Quadrangle: Malad City East

Date Created: 4/30/2018

71-17930
Figure 2 - Site Map

N
W E
S

Scale 1:6,000

Data Displayed in UTM Zone 12, NAD83

T14S, R36E

USGS Quadrangle: Malad City East

0 150 300 Meters

0 500 1,000 Feet

Date Created: 4/30/2018

P4220005: Site overview facing southeast

P42200062: Site overview facing north

P4220010: Site overview facing east

P4220012: Site overview (crossing) facing west

IDAHO HISTORIC SITES INVENTORY FORM

PROPERTY NAME: Malad City Wastewater Treatment Lagoons | FIELD#: WWTP1

STREET: Twomile Canyon Road and Old Highway 191 | RESTRICT ☐

CITY: Malad City | VICINITY ☑ | COUNTY CD: 71 | COUNTY NAME: Oneida

SUBNAME: | BLOCK: | SUBLOT: | ACRES: | LESS THAN ☐

TAX PARCEL: | UTMZ: 12 | EASTING: 397991 | NORTHING: 4668633

TOWNSHIP: 14 | N_S: N | RANGE: 36 | E_W: E | SECTION: 34 | SE ¼, ¼ NW ¼

QUADRANGLE: MALAD CITY EAST | OTHERMAP:

SANBORN MAP: | SANBORN MAP#: | PHOTO#: Digital

PROPERTY TYPE: Structure | CONST/ACT1: Original Construction | ACTDATE1: 1961 | CIRCA1 ☐

CONST/ACT2: | ACTDATE2: | CIRCA2 ☐

ASSOCIATED FEATURES: | TOTAL # FEATURES:

ORIGINAL USE: Industry/Processing | WALL MATERIAL: EARTH

ORIGSUBUSE: waterworks | FOUND. MATERIAL: EARTH

CURRENT USE: Industry/Processing | ROOF MATERIAL:

CURSUBUSE: waterworks | OTHER MATERIAL:

ARCHSTYLE: No Style | PLAN: L-plan | CONDITION: Good

NR REF #: | NPS CERT: | ACTIONDATE: | FUTURE ELIG DATE: 0

DIST/MPLNAME1: | DIST/MPLNAME2:

Individually Eligible ☐ | Contributing in a potential district ☐ | Noncontributing ☐ | Future eligibility ☐

Not Eligible ☑ | Multiple Property Study ☐ | Not evaluated ☐

CRITERIA A ☐ B ☐ C ☐ D ☐ | CRITERIA CONSIDERATION A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G ☐

AREA OF SIGNIF: | AREA OF SIGNIF:

COMMENTS: The original Malad Wastewater Treatment Plant (WWTP) was constructed in 1961 and includes four evaporative, non-aerated lagoons. The WWTP was originally designed for zero discharge of wastewater meaning that all treated wastewater was disposed of by evaporation and seepage into the ground. The four lagoons are square in shape and range in size from 625ft x 625ft to 580ft x 580 feet and 0 acres to 7 acres in area. The earthen basins are 8 – 10ft in depth.

PROJ/RPT TITLE: Malad City Wastewater Improvement Project | SVY DATE: 04/22/18 | SVY LEVEL: Intensive

RECORDED BY: David N. Larsen, MA, RPA | PH: 208-233-2929 | ADDRESS: 305 N. 3rd Ave, Suite B, Pocatello, ID 83201

SUBMITTED PHOTOS ☑ NEGS ☐ SLIDES ☐ SKETCH MAP ☑

SVY RPT #: | MS RPT #: | IHPR #: | HABS NO. ID-: | HAER NO. ID-:

********** FOR ISHPO USE ONLY **********

IHSI#: WWTP1 | SITS#: | REV#:

CS #: | IHSI# REF: | NR REF# 2: | REV# REF:

SVY RPT# 1: | SVY RPT# 2: | SVY RPT# 3: | MS RPT# 1: | MS RPT# 2:

ADD'L NOTES:

MORE DATA ☑

ATTACH ☑

OF PHOTOS: | NEGBOX#: | # OF SLIDES: | SHPO DETER: | DETER DATE:

INITIALED: | ENTRY DATE: | REVISE1: | REVISE2: | REVISE3:

REV# | SITS# | IHSI#

IDAHO HISTORIC SITES INVENTORY FORM

PROPERTY NAME: Malad City Wastewater Treatment Lagoons
IHSI#: WWTP1
FIELD#: WWTP1
COUNTY NAME: Oneida
OTHER NAME:
COUNTY CD: 71
CITY: Malad City
VICINITY: ☑
UTM REF2: 12/398192/4667515
UTM REF3:
UTM REF4:

OTHER MATERIAL2:
CULTAFFIL:
AGENCYCERT:
SIGNIFDATE:
SIGNIFPERIOD:
SIGNIFPERSON:
ARCH/BUILD:
ARCHPLANS: ☐
TAXEASE: ☐
TAXCERT: ☐
OWNERSHIP: Public-Local
PROPOWN: Malad City
MORE DATA: ☑
ATTACH: ☑

DOCSOURCE:

ADD'L NOTES:

COMMENTS:

The original Malad Wastewater Treatment Plant (WWTP) was constructed in 1961 and includes four evaporative, non-aerated lagoons. The WWTP was originally designed for zero discharge of wastewater meaning that all treated wastewater was disposed of by evaporation and seepage into the ground. The four lagoons are square in shape and range in size from 625ft x 625ft to 580ft x 580 feet and 9 acres to 7 acres in area. The earthen basins are 8 – 10ft in depth.

The anaerobic lagoons are not aerated, heated, or mixed. The lagoons are used to pretreat raw wastewater for Malad City. Pretreatment includes separation of settlable solids, digestion of solids, and treatment of the liquid portion.

Modern improvements to the site include piping, a pump house, and monitoring wells

PHOTO LOG: ☐
IHSI# REF:
INITIALED:
DATEENTERED:

SKETCH: ☑

REV#
SITS#
IHSI#

IDAHO HISTORIC SITES INVENTORY FORM

PROPERTY NAME: Malad City Wastewater Treatment Lagoons

IHSI#: WWTP1

FIELD#: WWTP1

COUNTY NAME: Oneida

COMMENTS:

The original Malad Wastewater Treatment Plant (WWTP) was constructed in 1961 and includes four evaporative, non-aerated lagoons. The WWTP was originally designed for zero discharge of wastewater meaning that all treated wastewater was disposed of by evaporation and seepage into the ground. The four lagoons are square in shape and range in size from 625ft x 625ft to 580ft x 580 feet and 9 acres to 7 acres in area. The earthen basins are 8 – 10ft in depth.

The anaerobic lagoons are not aerated, heated, or mixed. The lagoons are used to pretreat raw wastewater for Malad City. Pretreatment includes separation of settlable solids, digestion of solids, and treatment of the liquid portion.

Modern improvements to the site include piping, a pump house, and monitoring wells.

The site site is recommended ineligible for inclusion on the NRHP. The WWTP does not contribute to a historic theme significant to the region (Criterion A). No known persons of importance are associated with the site (Criterion B). It is not unique nor an example of a type (Criterion C). The site is unlikely to yield data beyond initial recording and would not contribute important information to our understanding of regional history (Criterion D).

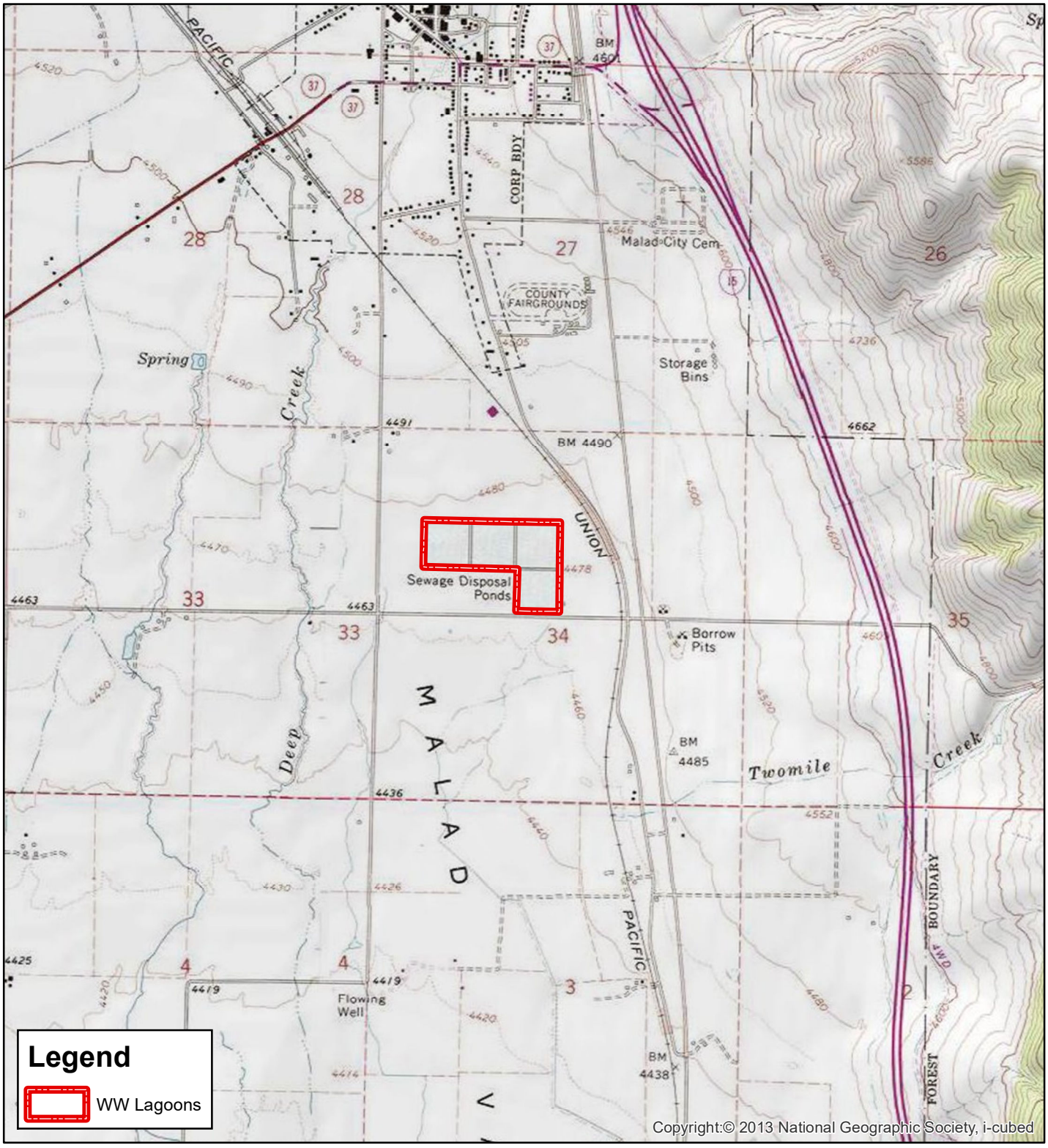
ATTACH ☑

IHSI#

SITS#

REV#

Malad City Wastewater Lagoons
Figure 1 - Site Map



N
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Scale 1:24,000

Data Displayed in UTM Zone 12, NAD83

T14S, R36E / T15S, R36E

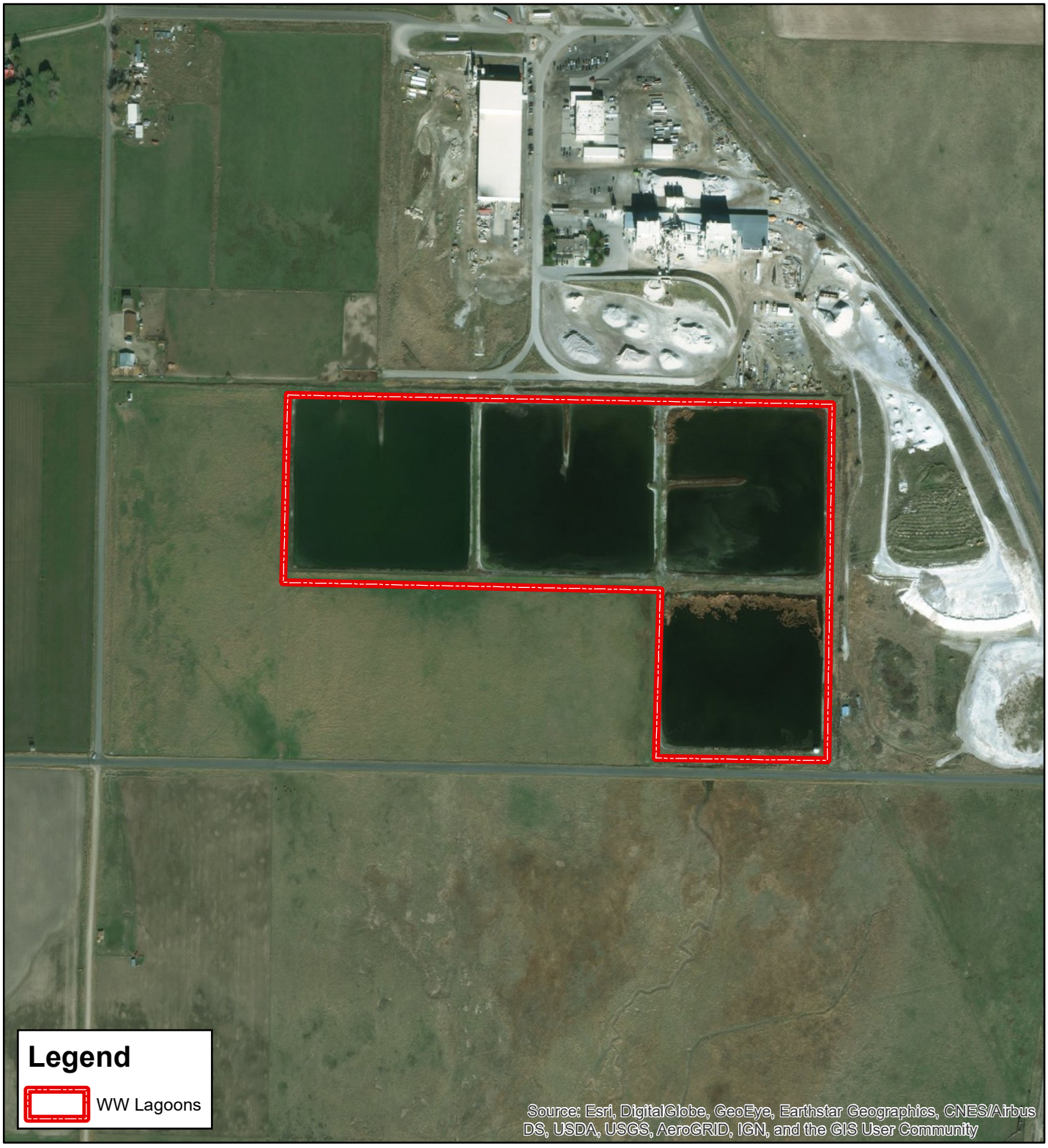
USGS Quadrangle: Malad City East

0 0.5 1 Kilometers

0 0.5 1 Miles

Date Created: 4/30/2018

Malad City Wastewater Lagoons
Figure 2 - Site Map



N
W E
S

Scale 1:6,000

Data Displayed in UTM Zone 12, NAD83

T14S, R36E

USGS Quadrangle: Malad City East

0 150 300 Meters

0 500 1,000 Feet

Date Created: 4/30/2018

P4220001: Site overview (southeast lagoon) facing northwest

P42200004: Site overview (southeast lagoon) facing west

20180422_114255: Site overview (west lagoon) facing south

20180422_114508: Site overview (west and central lagoon) facing south

20180422_114855: Site overview (northeast lagoon) facing southwest

20180422_115053: Site overview (southeast lagoon) facing west

IDAHO HISTORIC SITES INVENTORY FORM

PROPERTY NAME: Old Highway 191 | FIELD#: US191

STREET: Old Highway 191 / | RESTRICT ☐

CITY: Malad City | VICINITY ☑ | COUNTY CD: 71 | COUNTY NAME: Oneida

SUBNAME: | BLOCK: | SUBLOT: | ACRES: | LESS THAN ☐

TAX PARCEL: | UTMZ: 12 | EASTING: 397538 | NORTHING: 4668936

TOWNSHIP: 14 | N_S: N | RANGE: 36 | E_W: E | SECTION: 34 | NW ¼, ¼ | SE ¼

QUADRANGLE: MALAD CITY EAST | OTHERMAP:

SANBORN MAP: | SANBORN MAP#: | PHOTO#: Digital

PROPERTY TYPE: Structure | CONST/ACT1: Original Construction | ACTDATE1: 1924 | CIRCA1 ☑

CONST/ACT2: Alteration | ACTDATE2: 1968 | CIRCA2 ☐

ASSOCIATED FEATURES: | TOTAL # FEATURES:

ORIGINAL USE: Transportation | WALL MATERIAL:

ORIGSUBUSE: road-related (vehicular) | FOUND. MATERIAL:

CURRENT USE: Transportation | ROOF MATERIAL:

CURSUBUSE: road-related (vehicular) | OTHER MATERIAL: ASPHALT

ARCHSTYLE: No Style | PLAN: linear | CONDITION: Good

NR REF #: | NPS CERT: | ACTIONDATE: | FUTURE ELIG DATE:

DIST/MPLNAME1: | DIST/MPLNAME2:

Individually Eligible ☑ | Contributing in a potential district ☐ | Noncontributing ☐ | Future eligibility ☐

Not Eligible ☐ | Multiple Property Study ☐ | Not evaluated ☐

CRITERIA A ☑ B ☐ C ☐ D ☐ | CRITERIA CONSIDERATION A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G ☐

AREA OF SIGNIF: Transportation | AREA OF SIGNIF: Transportation

COMMENTS: Old Highway 191 is a historic road alignment that was originally formed as a wagon road from Utah, through southern Idaho, and into Montana. The road appears on GLO plat map for T14S, R36E and T15S, R36E both filed in 1873, as the "Road to Monata". The actual alignment of the road has changed over time, as has the material and size, as the roadway has been improved to accommodate modern traffic. Highway 191 first appears at the current alignment of South Cherry Creek Woodruff Road in the

PROJ/RPT TITLE: Malad City Wastewater Improvement Project | SVY DATE: 04/22/18 | SVY LEVEL: Intensive

RECORDED BY: David N. Larsen, MA, RPA | PH: 208-233-2929 | ADDRESS: 305 N. 3rd Ave, Suite B, Pocatello, ID 83201

SUBMITTED PHOTOS ☑ NEGS ☐ SLIDES ☐ SKETCH MAP ☑

SVY RPT #: | MS RPT #: | IHPR #: | HABS NO. ID-: | HAER NO. ID-:

********** FOR ISHPO USE ONLY **********

IHSI#: US191 | SITS#: | REV#:

CS #: | IHSI# REF: | NR REF# 2: | REV# REF:

SVY RPT# 1: | SVY RPT# 2: | SVY RPT# 3: | MS RPT# 1: | MS RPT# 2:

ADD'L NOTES:

MORE DATA ☑

ATTACH ☑

OF PHOTOS: | NEGBOX#: | # OF SLIDES: | SHPO DETER: | DETER DATE:

INITIALED: | ENTRY DATE: | REVISE1: | REVISE2: | REVISE3:

REV# | SITS# | IHSI#

IDAHO HISTORIC SITES INVENTORY FORM

PROPERTY NAME: Old Highway 191 | IHSI#: US191

FIELD#: US191 | COUNTY NAME: Oneida

OTHER NAME:

COUNTY CD: 71 | CITY: Malad City | VICINITY: ☑

UTM REF2: | UTM REF3: | UTM REF4:

OTHER MATERIAL2: STONE | CULTAFFIL: Historic: Non-Aboriginal | AGENCYCERT: Local

SIGNIFDATE: 1924 | SIGNIFPERIOD: 1924-1968 | SIGNIFPERSON:

ARCH/BUILD: | ARCHPLANS: ☐ | TAXEASE: ☐ | TAXCERT: ☐

OWNERSHIP: Public-State | PROPOWN: Oneida County

MORE DATA: ☑ | ATTACH: ☑

DOCSOURCE:

ADD'L NOTES:

COMMENTS: Old Highway 191 is a historic road alignment that was originally formed as a wagon road from Utah, through southern Idaho, and into Montana. The road appears on GLO plat map for T14S, R36E and T15S, R36E both filed in 1873, as the “Road to Monata”. The actual alignment of the road has changed over time, as has the material and size, as the roadway has been improved to accommodate modern traffic. Highway 191 first appears at the current alignment of South Cherry Creek-Woodruff Road in the 1940 Rand McNally Road Map: Idaho. The genral alignment of the road is also noted on the 1925 Rand McNally Auto Trails Map Idaho-Montana-Wyoming. The roadway appears as the Malad Valley Highway in the 1924 Geologic Map of Power and Oneida Counties, Idaho (Piper 1924). The segment of the highway runs north for approximatley 40 miles from Plymoth/Fielding, Utah to Downey, Idaho. The highway was designated in 1926 and its routing has changed drastically through the years. The modern US 191 bears almost no resemblance to the original route, which was primarily in the state of Idaho

PHOTO LOG: ☐ | IHSI# REF: | INITIALED: | DATEENTERED:

SKETCH: ☑

REV#

SITS#

IHSI#

IDAHO HISTORIC SITES INVENTORY FORM

PROPERTY NAME Old Highway 191 IHSI# US191

FIELD# US191 COUNTY NAME Oneida

COMMENTS:

Old Highway 191 is a historic road alignment that was originally formed as a wagon road from Utah, through southern Idaho, and into Montana. The road appears on GLO plat map for T14S, R36E and T15S, R36E both filed in 1873, as the “Road to Monata”. The actual alignment of the road has changed over time, as has the material and size, as the roadway has been improved to accommodate modern traffic. Highway 191 first appears at the current alignment of South Cherry Creek-Woodruff Road in the 1940 Rand McNally Road Map: Idaho. The genral alignment of the road is also noted on the 1925 Rand McNally Auto Trails Map Idaho-Montana-Wyoming. The roadway appears as the Malad Valley Highway in the 1924 Geologic Map of Power and Oneida Counties, Idaho (Piper 1924). The segment of the highway runs north for approximatley 40 miles from Plymoth/Fielding, Utah to Downey, Idaho. The highway was designated in 1926 and its routing has changed drastically through the years. The modern US 191 bears almost no resemblance to the original route, which was primarily in the state of Idaho. The alignment of US 191 was changed sometime after 1968 to the curentl alignment of Old Highway 191. A historic segment of the original US 191 is abandoned and is adjacent to the southern portion of the project APE. No remnants of the original roadway exist within the limits of the proposed project. The segment of the original alignment of US 191 that historically passed through the project APE is no longer present and has been reclaimed by agricultural fields.

The site site is recommended eligible for inclusion on the NRHP under Criterion A. The road contributes to the transportation growth and development in Idaho and the Malad Valley (Criterion A). No known persons of importance are associated with the site (Criterion B). It is not unique nor an example of a type (Criterion C). The site is unlikely to yield data beyond initial recording and would not contribute important information to our understanding of regional history (Criterion D).

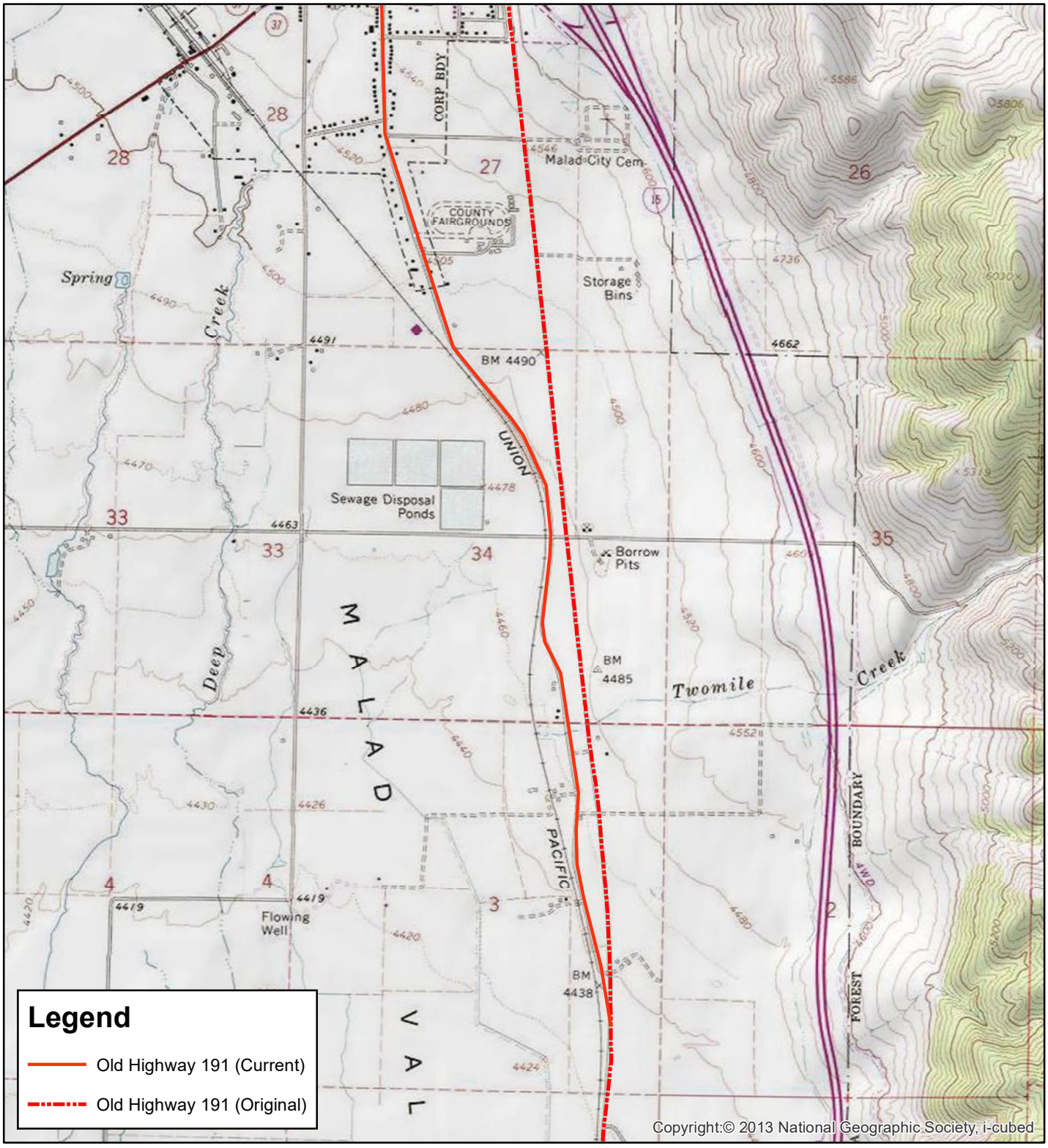
ATTACH ☑

IHSI#

SITS#

REV#

US 191
Figure 1 - Site Map



N
W E
S

Scale 1:24,000

0 0.5 1 Kilometers

0 0.5 1 Miles

Data Displayed in UTM Zone 12, NAD83

T14S, R36E / T15S, R36E

USGS Quadrangle: Malad City East

Date Created: 4/30/2018

US 191
Figure 2 - Site Map

N
W E
S

Scale 1:7,000

Data Displayed in UTM Zone 12, NAD83

T14S, R36E / T15S, R36E

USGS Quadrangle: Malad City East

0 200 400 Meters

0 500 1,000 Feet

Date Created: 4/30/2018

P4220008: Modern alignment overview facing southeast

P42200009: Modern alignment overview facing north

P4220023: Original alignment overview facing west

P4220024: Original alignment overview facing southwest

P4220027: Original alignment overview facing northwest

P4220028: Original alignment overview facing southwest

Appendix 4-L

Income Survey Report

City of Malad
Survey Report 2017

Type of Survey Conducted:
The City is made up of more than 50 households; therefore, a random survey was conducted. The total number of households in the project benefit area is **861**.

Survey Method Used:
The City chose to conduct the survey by mail and door to door if necessary. See the attached map of the survey area. A survey was mailed to randomly selected households.

When Was the Survey Conducted:
Surveys were mailed on September 20st, 2017 and again on October 4th, 2017. As part of their methodology, the City opted to conduct door-to-door surveys if they did not reach the minimum response rate (75%). The volunteers were charged with completing the surveys by November 8th, 2017. All surveys were completed and turned into SICOG by November 8, 2017. Surveys were tallied on November 9, 2017.

Who Conducted the Survey:
The survey was conducted by Krystal Harmon and Susan Lorenz, Grant Administrators, (SICOG) and The City of Malad.

Survey Systems Website:
The survey system website located at http://www.surveysystem.com/sscalc.htm was used to determine the sample size for the survey. This simple process, provided by the Idaho Department of Commerce, indicated that a sample size of **266** was appropriate for the Malad survey.

A website was also used to generate the random numbers for the survey. That site is located at http://www.random.org/.

Sample Size Indicated:
The sample size indicated, using the confidence interval 5, was **266.** Based on the 75% return rate, the City required a minimum of **200** surveys to produce an adequate sample size.

Tying the Residential Addresses to the Random Numbers Generated:
The City of Malad provided a list of addresses for all households connected to the system. All duplicates, commercial, government and industrial addresses were removed.

First Rate of Return (%): 34% (68 households) was attained in the first attempt.

Second Attempt Total: A second mail attempt was necessary to obtain the remaining 132 households to meet the 75% required return rate. Twenty-four (24) households (12%) were obtained.

Third Attempt Total: Because the City did not reach the 75% return rate after the second attempt, they decided to go door to door to meet the requirement. Seven volunteers were trained and conducted door to door interviews of homes that were nonresponsive to mailing attempts. Ultimately, 202 valid responses were received and 13 invalid responses were obtained after the third attempt bringing the total to 215.

It was not necessary to go above the initial sample size.

Results of the survey indicated a 57.6% LMI for the City of Malad. The Survey Methodology and results was approved by The Idaho Dept. of Commerce on November 20, 2017.

11-20-2017

Exhibit B

SURVEY TABULATION FORM

Total Number of Households in Project Benefit Area ~~145~~ 861

Household Size	ABOVE		BELOW		Total	Total
	Households	Persons	Households	Persons	Households	Persons
One	11	11	39	39	50	50
Two	36	72	38	76	~~112~~ 74	148
Three	11	33	18	54	29	87
Four	9	36	10	40	19	76
Five	6	30	6	30	12	60
Six	3	18	7	~~36~~ 42	10	~~60~~ 60
Seven	2	14	4	28	6	42
Eight	~~3~~ 2	16	—		2	16
Nine						
Ten						
Eleven						
TOTALS	80	230	122	309	202	539

Total Number of Surveys Distributed	266
Total Number of Valid Household Responses	202
Total Number of Invalid Responses Received	13
Total Number of Persons Surveyed	539
Total Number of LMI Persons Surveyed	309
Total LMI Person Surveyed ÷ Total Persons Surveyed = LMI %	57.33

Appendix 5-A

SERP Scoping Meeting Minutes

Form 5-C
SERP Scoping Meeting

Project Name: City of Malad Wastewater Treatment Plant

Date of Meeting: 2018-02-01

Meeting Attendees: Mike Stambulis (DEQ-SO), Adam Oliver (DEQ-SO), Andrew Fellows (DEQ-SO), Lana Duke (USDA-RD), Noel LaRoque (USDA-RD), Jon Farrell (JUB), Alan Giesbrecht (JUB), Sharon Deal (DOC), Mayor Joan Hawkins (City of Malad), Susan Lorenz (SICOG)

Grant #: WWG-375-2015-5

FP Folder TRIM: 2017AFM587

FP TRIM:

FP approved for public comment? ○Yes ◉No

Recapitalization dollars used? ○Yes ◉No

Notes: Per Tim W. email on 2/2/2018

Engineering Project Manager:

EID Preparer, if separate:

Applicant Contact
(who will public contact to view documents?):

Project overview/description and cost:

The City currently has 4 total containment (evaporative) lagoons, but 2 of them need to be relined due to exceeding DEQ's seepage limits. The selected alternative will relocate the lagoons and land application area to the east of the current wastewater treatment plant. A second scoping meeting was held because the location of the lagoons and land application are had to be moved because the first selected location was not feasible due to high groundwater and inadequate soils.

What funding sources are being considered? ☑ SRF ☑ USDA ☑ CDBG

☑ USACE ☐ IDWR ☐ Other Please describe:

Today's discussion applies only to DEQ environmental review requirements; other funding agencies may have different requirements.

Do federal cross-cutting authorities apply? ◉Yes ○No Notes:

Is the project eligible for a categorical exclusion? Why or why not?

Categories:

☐ Existing footprint or adjacent to it
☐ *All* project impacts that could trigger a consultation are addressed through construction-related permitting or other regulatory action

DWSRF Program:

☐ Drinking water POU system

CWSRF Program:

☐ Onsite WW system replacement

☐New or replacement well

Narrative:

Extraordinary Circumstances

Significant extraordinary circumstances (ineligible for CatEx if any "Y," N/A if crosscutter):

Excessive population growth	○Yes	◉No	○?	
Potential significant impacts to human environment	○Yes	○No	◉?	
Land use or population distribution	○Yes	○No	◉?	
Public controversy	○Yes	○No	◉?	
Disproportionately high adverse effects on any community, e.g., minority/tribal, low-income	○Yes	○No	◉?	○N/A
T/E spp. or significant fish and wildlife habitat	○Yes	○No	◉?	○N/A
Cultural Resources	○Yes	○No	◉?	○N/A
Wetlands, floodplains, significant agricultural lands or Wild and Scenic Rivers	○Yes	○No	◉?	○N/A
Significant adverse air quality effects	○Yes	○No	◉?	○N/A

DEQ Objectives

Does the project (add narrative below each item):

☐ Implement surface and ground water quality protection using a watershed approach?

☐ Reduce the pollutants in surface water to meet water quality standards and beneficial uses?

☑ Protect and improve ground water quality?

By replacing existing lagoons that did not meet the seepage rate standard, the project will reduce the amount of pollutants discharged from the lagoon and potentially reduce the impact to ground water.

☐ Assist/support public water systems in the delivery of safe/reliable drinking water?

☑ Encourage reuse?

The City needs to find an alternative to their current 4-lagoon evaporation system. The City is planning land application (reuse).

☐ Prevent and control

Screening Level Environmental Analysis--Review and discuss (where necessary) using categories below

Potential effects of recommended alternative (*cross-cutters)

Item	In FP? If Y, list FP sec.	Issues	Notes/Add'l Info Req'd	Consult Req'd?
C.5(a) Physical aspects				N
C.5(b) Population				N
C.5(c) Economics and social profile				N
C.5(d) Floodplain Development (100-yr)*			msc.fema.gov/portal/ Site location not mapped.	Y
C.5(e) Wetlands*			www.fws.gov/wetlands/	Y
C.5(f) Wild & Scenic Rivers*		None	www.rivers.gov/mapping-gis.php	N
C.5(g) Cultural Resources*				Y
C.5(h) Flora & Fauna				Y
T&E Species/Critical Habitat*			www.ecos.fws.gov/ipac	Y
Essential Fish Habitat*		None	www.deq.idaho.gov/media/1118596/salmon-essential-fish-habitat-map.pdf	N
Other Wildlife				Y
C.5(i) Prime Farmlands*			websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx	Y
C.5(j) Air Quality*			www.deq.idaho.gov/attainment-non attainment	N
C.5(k) Surface water quality and quantity			www.deq.idaho.gov/water-quality/surface-water/tmdls/table-of-sbas-tmdls/	N
C.5(l) Ground water (CWSRF projects)			Impacts to groundwater assessed via reuse permitting process.	N
C.5(m) Safe Drinking Water Act (sole source aquifer)*		None	Not in sole source aquifer	N
Adding potential new source of contamination to SSA or source area (consult if Y)?		None	www.deq.idaho.gov/water-quality/ground-water/sole-source-aquifers.aspx	N
C.5(n) Reuse/land application or subsurface disposal system			Covered by consultation with IDEQ Pocatello Regional Office.	Y
C.5 (o) Nonpoint water quality problems (DWSRF projects)	N/A			N

Determine agencies to consult for DEQ

Consultation contacts by region are at

Review limited English proficiency (LEP) data Census Table S1602 from

0.5% per 2012-2016 American Community Survey 5-Year Estimates

Discuss public participation requirements (applies to FONSI or CatEx)

1. Limited English Proficiency (LEP) population in the project area? See item C.5(c) above. If so, discuss options for outreach specific to the needs of this population.
2. **Publish notice** of public mtg, typically in newspaper of record, reasonably in advance. Include mtg date/time/location; explain how public can review documents and provide comment; when decision will be made and by whom; provide Affidavit of Publication in appendix
3. **Public comment period** must be minimum of 14 days from publication date to decision, longer if local ordinances require it or project is expected to be controversial; provide written comments and resolution in appendix
4. **Public meeting** (does not have to be a hearing) with presentation of alternatives, including environmental screening analysis; send sign-in sheets (ask for *mailing* addresses, not physical addresses) to DEQ separately (not as part of EID or FP), so we can send postcards
5. Council/Board resolution *explicitly* ***select an alternative***; provide minutes in appendix

Discuss advantages to phasing project

Establish preliminary timelines/schedule

Typical problems with EIDs prepared to support FONSI

1. EID discussion of issues determined above not to be significant can be limited to "brief presentation of why they will not have a significant effect …" 40 CFR 1501.7(a)(3).
2. Council/Board resolution approves facility plan but *does not explicitly select an alternative*
3. Purpose & Need should emphasize public health, regulatory compliance and environmental issues caused by existing facility
4. EID Abstract should *briefly* describe recommended alternative, potential environmental effects and significant mitigation measures; no more than 1 page

Notes and Action Items

1. Noel LaRoque circulated a list of agencies with whom the City of Malad is required to consult regarding potential environmental impacts. We advised to narrow the proposed project planning area (PPPA) as much as possible before issuing the consultation letters. However, it is acceptable to include the entire area identified in Figure 6-3 if necessary.
2. The City of Malad or their consultants will produce the endangered species/critical habitat report from the IPaC website. www.ecos.fws.gov/ipac
3.

4. DEQ route copy of this filled-out form to attendees

Conclusion

The City of Malad has contacted land owners to begin the process of land acquisition for this project. The geotechnical evaluation will begin within the next month or two to determine if this site is viable for the proposed project. If so, the City of Malad will move forward to negotiations.

The City of Malad has requested a revised compliance schedule with DEQ to extend deadlines to accommodate investigation of the new site.

Attachments

Primary DEQ Environmental Review contact for this project

☐ Aimee Hill, , (208) 373-0556

☑ Mike Stambulis, , (208) 373-0123

☐ MaryAnna Peavey, , (208) 373-0122

Note: Participation in the scoping meeting provides the documentation necessary to conclude the facility has requested a Categorical Exclusion (CatEx/CE) in accordance with IDAPA 58.01.04, 58.01.12, 58.01.22, and 58.01.20.

Appendix 5-B

Agency Correspondence Sample Letter and Responses

March 15, 2018

U.S. Army Corps of Engineers
James Joyner
900 N. Skyline Dr.
Suite A
Idaho Falls, ID 83402

Intergovernmental Review & Environmental Screening

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

Dear Mr. Joyner,

(1) We are initiating the Executive Order 12372, "Intergovernmental Review of Federal Programs" process on behalf of the U.S. Department of Agriculture, Rural Development (Agency). The Agency is being asked to consider providing financial assistance for the proposal described below and your comments are invited on this proposal regarding:

1. Consistency with State and local government planning goals;
2. Extent to which the proposal duplicates, runs counter to, or needs to be coordinated with other activities, or might be revised to increase its effectiveness;
3. Contribution to achieving State or local government goals relating to natural and human resources or economic and community development;
4. Extent of environmental impacts and alternatives that should be considered in the Agency's environmental review;
5. Influence on area growth or delivery of services, including any disproportionate effects on minority groups;
6. Impacts on energy resource supply and demand;
7. Possible displacement of people or businesses;

(2) We are seeking information from your agency regarding any known environmental issues associated with the proposed project. Your comments are being solicited as part of National Environmental Policy Act (NEPA) compliance, related cross-cutting act compliance and agency regulatory requirements.

The following information is being provided to aid in your evaluation of the proposal:

1. **Area of Potential Effect**:
   The Malad Wastewater Collection System and Wastewater Treatment Plant (WWTP) serve the City of Malad and nearby surrounding area. The City of Malad is located just off Interstate 15 thirteen miles north of the Idaho-Utah border in Oneida County. Figure 1 defines the planning area and city limits. A figure defining the Area of Potential Effects (APE) for the proposed project (Malad Wastewater Treatment Upgrades – Phase 1) is shown in Figure 2.

a 275 South 5th Avenue, Suite 220, Pocatello, ID 83201 *p* 208 232 1313 *f* 208 232 3489 *w* www.jub.com

2. **Locations:**
   Below are the Township (T), Range (R), and Section (Sec) locations for Project.
   a. Phase 1 – Construct new treatment and reuse site
      i. Public Land Survey Location: T 14S R 36E Sec 34 & 35 and T 15S R 36E Sec 2 & 3

3. **Federal Agencies Involved**:
   a. United States Departments of Agriculture – Rural Development (USDA-RD)
   b. Idaho Department of Environmental Quality (IDEQ)
   c. Idaho Department of Commerce
   d. US Army Corps of Engineers (USACE)

4. **Project Description:**

Background and Problems
The original Malad WWTP was constructed in 1961 and includes four (4) evaporative, non-aerated lagoons. The WWTP was originally designed for zero discharge of wastewater meaning that all treated wastewater was disposed of by evaporation and seepage into the ground. During recent years, the City has had capacity concerns at the WWTP, especially during abnormally wet years. In 2013, the City received a notice of violation letter from DEQ regarding the excessive seepage rate of Lagoons #1 and #4 in their wastewater treatment system. Water balance calculations revealed that when the lagoons are lined, as required to comply with DEQ's seepage limits, the remaining evaporative capacity of the existing lagoons will be inadequate to serve the City's current population.

Due to shallow groundwater, poor soil conditions, and constructability concerns, at the existing WWTP site, it was determined that construction of a WWTP and reuse system at a new site would be the most feasible alternative to continue providing wastewater services to the City's existing and future users.

Project Improvements
The following is a list of the proposed improvements required to construct a treatment and reuse system at a new site:

- Acquire approximately 132 acres of land for new lagoon treatment system and reuse area
- Upgrade the Influent Lift Station to provide lift up to the new site
- Construct new conveyance pipeline up to the new site
- Construct new lagoons for aeration, polishing, and winter storage
- Construct new disinfection system
- Install new irrigation pipelines and reuse pump station
- Install Irrigation Equipment – Pivots, Wheelines, and/or Handlines
- Plant vegetation/crops as needed for reuse

Future phases may include decommissioning the existing site and collection system upgrades.

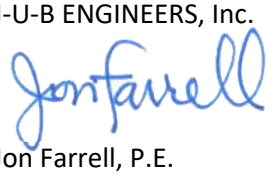
Project Costs
Based on current information and assumptions, the capital cost opinion in 2019 dollars for Phase 1 is $12.4 million.

5. **Environmental Information:**
   Environmental information relating to compliance of the proposed activity with applicable environmental statutes, description of the current environmental condition of the proposed site, and potential impacts to protected resources is described in Section 2 of the draft Facility Plan Study (FPS). Section 8 of the FPS relates to the environmental criteria comparison. Below is a link to the draft FPS:
   <https://transfer.jub.com/message/YTfEPnyVlZdP729myl2vKB>.

6. **Attachments:**
   a. Figure 1 – Map defining the planning area and city limits for the project.
   b. Figure 2 – Map depicting the location of the APE for the project.
   c. Figure 3 – Conceptual layout showing where proposed Phase 1 improvements will occur.
   d. Figure 4 – Photos of the new wastewater treatment and reuse site.

Please provide your comments on the enclosed comment sheet or by letter within 30-days of the date of this letter. If you have any questions regarding the proposed project, please contact Jon Farrell with J-U-B ENGINEERS, Inc. via email at jfarrell@jub.com or phone at 208-232-1313.

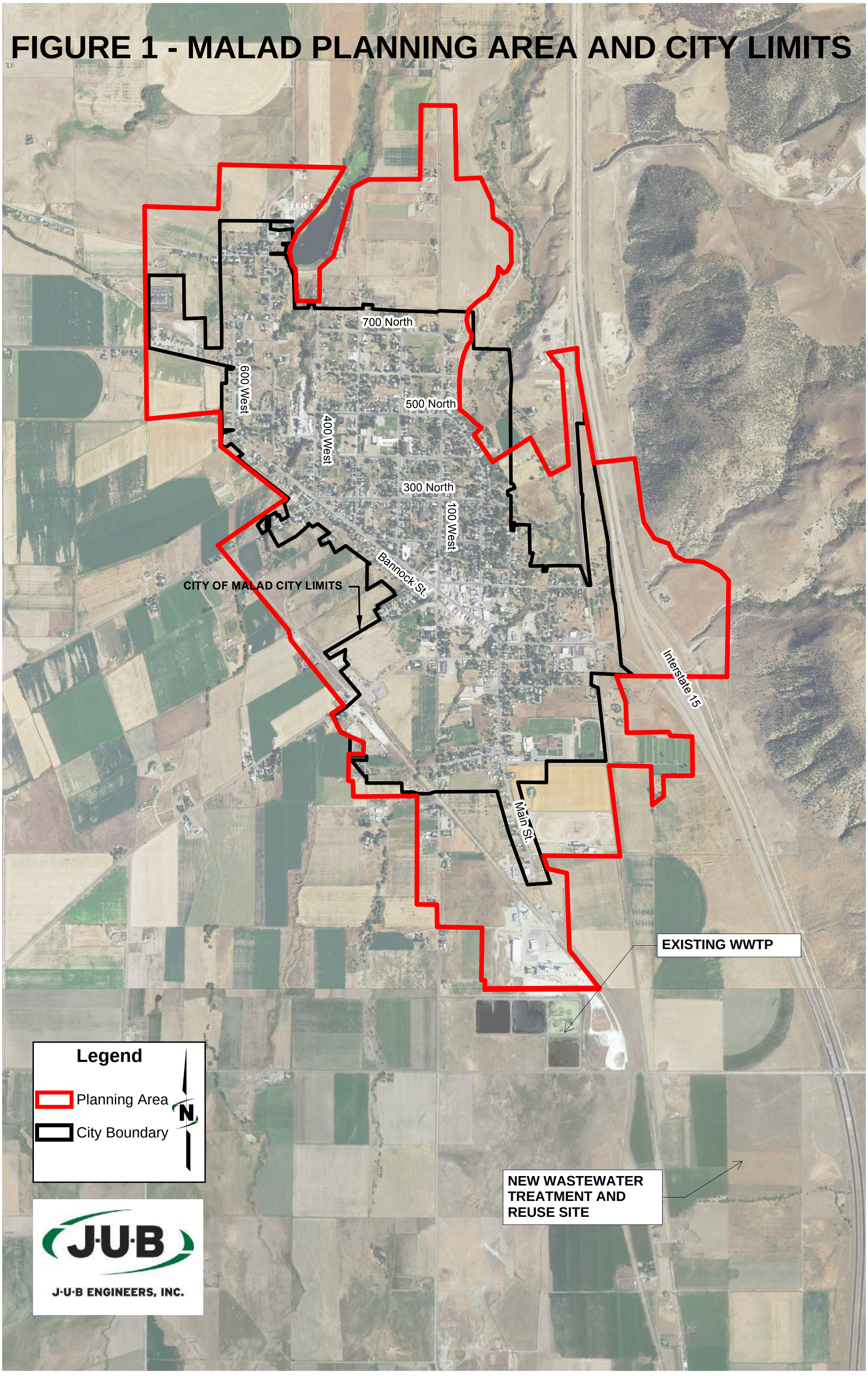
Sincerely,
J-U-B ENGINEERS, Inc.

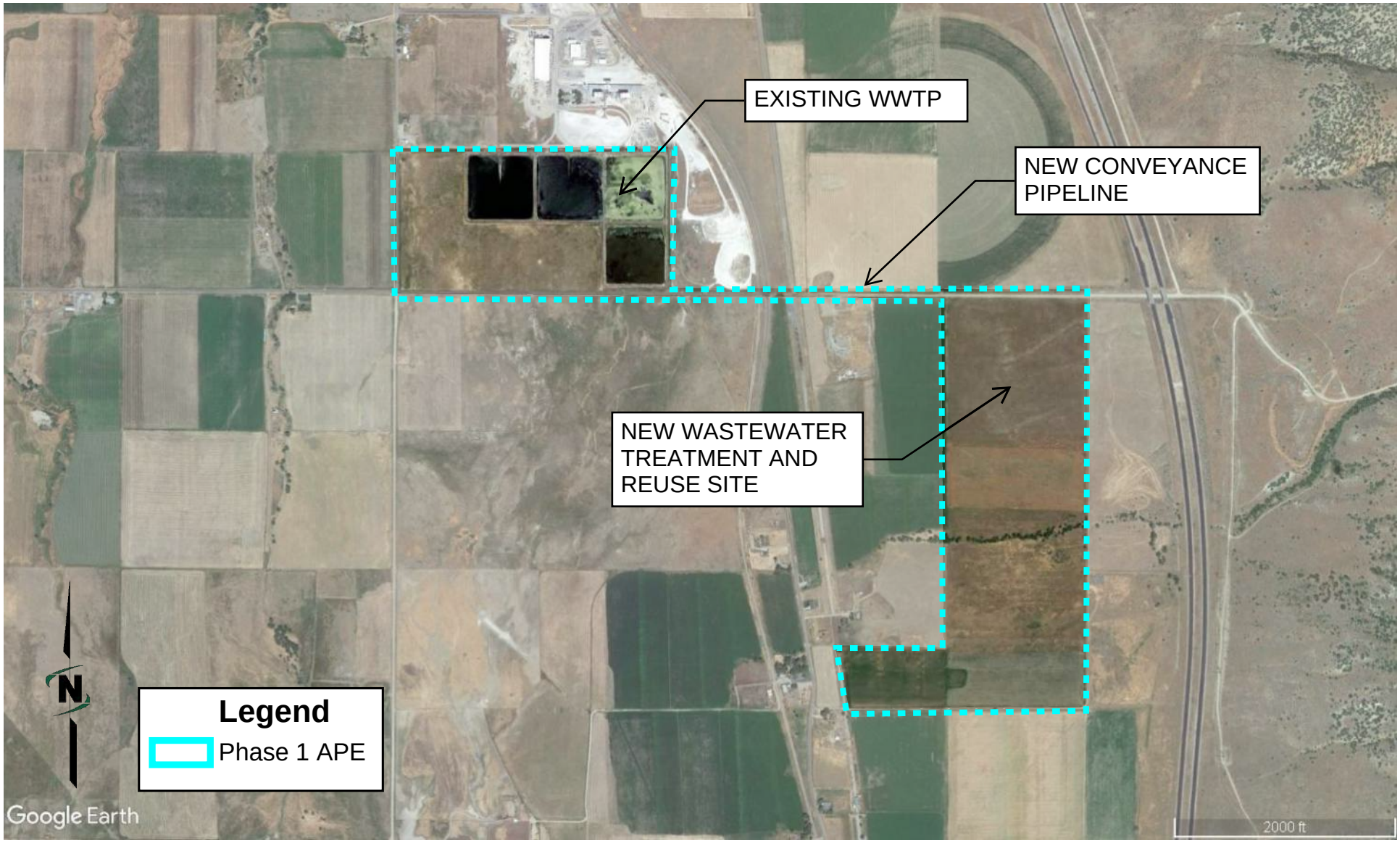


Jon Farrell, P.E.

Attachments
cc: USDA, Rural Development Area Office

FIGURE 1 - MALAD PLANNING AREA AND CITY LIMITS





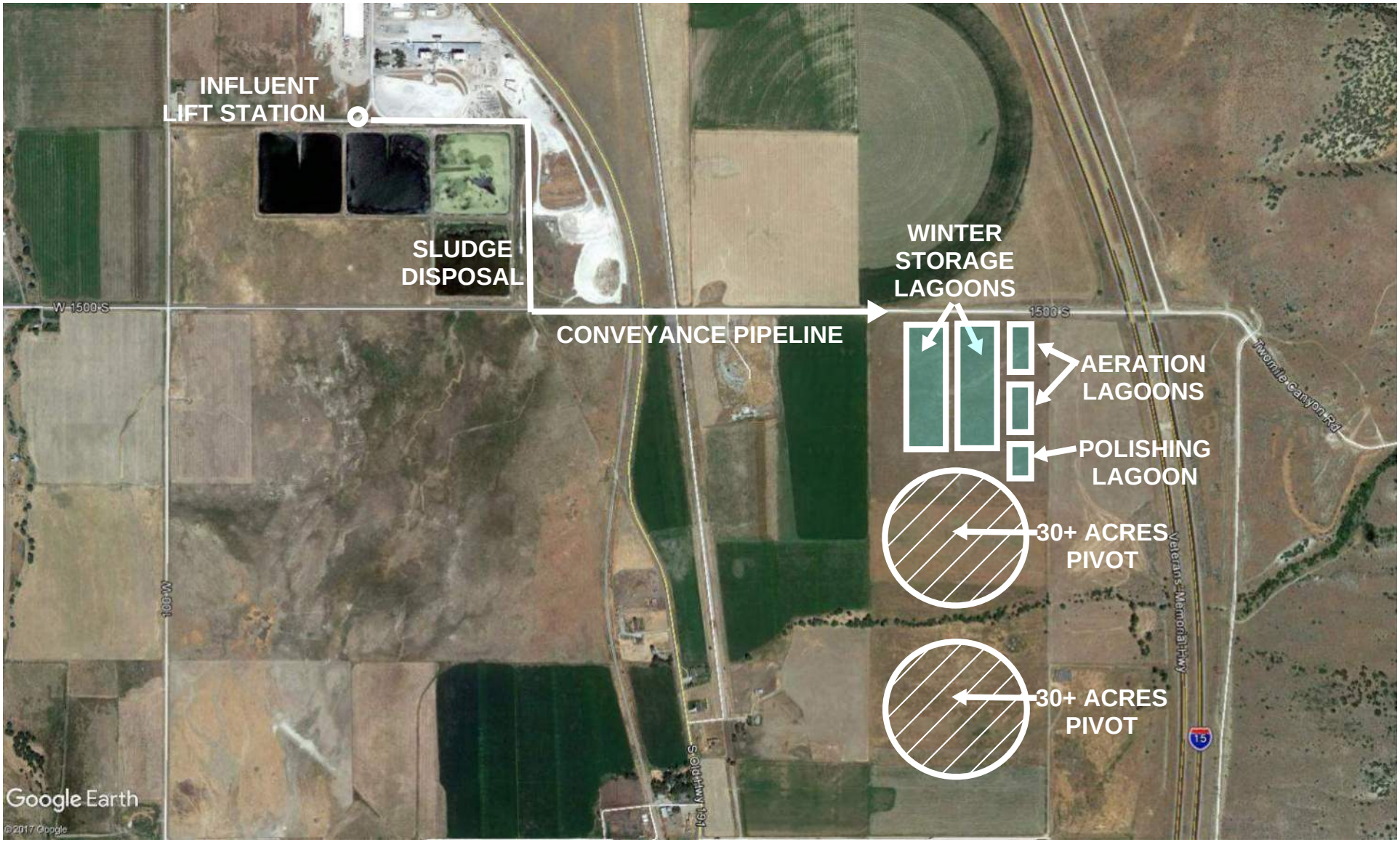
J-U-B ENGINEERS, INC.

AREA OF POTENTIAL EFFECTS (APE)

LAST UPDATED: 3/15/2018

SHEET NUMBER:

FIG. 2



J-U-B ENGINEERS, INC.

PROJECT CONCEPTUAL LAYOUT (PHASE 1)

LAST UPDATED: 3/15/2018

SHEET NUMBER:

FIG. 3

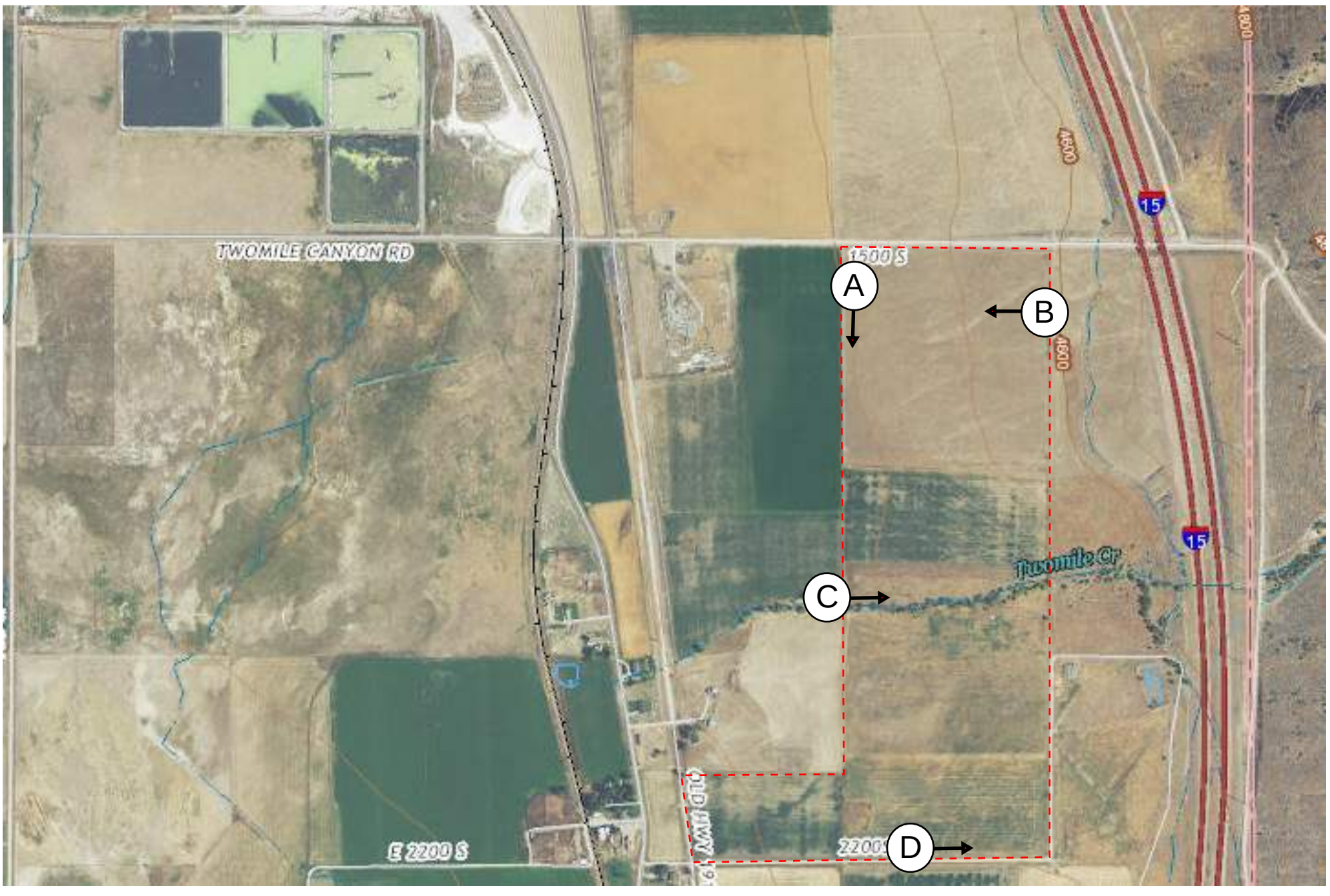
FIGURE 4 - PHOTOS OF PROPOSED WW AND REUSE SITE

PHOTO A - VIEW LOOKING SOUTH FROM THE NW PROPERTY CORNER

PHOTO B - VIEW LOOKING WEST FROM NEAR THE NE PROPERTY CORNER

PHOTO B - VIEW LOOKING EAST FROM ALONG THE SOUTH PROPERTY LINE

PHOTO B - TWOMILE CREEK (IRRIGATION SUPPLY)



PROPOSED WASTEWATER TREATMENT AND REUSE SITE - PHOTO LOCATIONS AND VIEWPOINTS

Jon Farrell

From: Warren, Melissa <mdwarren@blm.gov>
Sent: Friday, March 16, 2018 1:51 PM
To: Jon Farrell
Cc: Blaine Newman; Danny Miller
Subject: Fwd: Intergovernmental Review & Environmental Screening - Malad WWTP
Attachments: image001.png; BLM_Malad WWTP EID letter_2018-03-15.pdf; Intergovernmental Review Comment Sheet.pdf

Good afternoon Jon,
Mary forwarded your proposal to me for review and response as the BLM administered lands in the Malad area are within my field office boundaries. I appreciate your allowing BLM the opportunity to review and comment on your project. I have reviewed your document and BLM does not have any comments or concerns at this time. If you have any questions, please feel free to contact me.

Sincerely,

Melissa Warren
Field Manager
Pocatello Field Office
4350 S. Cliffs Dr.,
Pocatello, ID 83204
(208)478-6341

---------- Forwarded message ----------
From: **D'Aversa, Mary** <mdaversa@blm.gov>
Date: Fri, Mar 16, 2018 at 1:14 PM
Subject: Fwd: Intergovernmental Review & Environmental Screening - Malad WWTP
To: "Warren, Melissa" <mdwarren@blm.gov>

Would you please respond on my behalf. Thanks.

---------- Forwarded message ----------
From: **Jon Farrell** <jfarrell@jub.com>
Date: Thu, Mar 15, 2018 at 4:56 PM
Subject: Intergovernmental Review & Environmental Screening - Malad WWTP
To: "mdaversa@blm.gov" <mdaversa@blm.gov>
Cc: "Duke, Lana - RD, Blackfoot, ID" <Lana.Duke@id.usda.gov>

Dear Mary,

Attached is a copy of a letter requesting your review & environmental screening of the proposed Malad Wastewater Treatment Upgrades project. A hardcopy letter is also being mailed to your office.

Please provide your comments on the enclosed comment sheet or by letter within 30-days of the date of this letter. We look forward to receiving your comments.

Thank you,

Jon Farrell, P.E.

Project Engineer

J-U-B ENGINEERS, Inc.

275 S 5th Ave Suite 220, Pocatello, ID 83201

e | jfarrell@jub.com *w* | www.jub.com

c | 208 221 2806 *o* | 208 232 1313 ext 8008

--
Mary D'Aversa
District Manager
Idaho Falls Distirct
BLM Idaho
mdaversa@blm.gov
208-524-7540
208-497-8058 (cell)

Jon Farrell

From: Sharon Deal <Sharon.Deal@commerce.idaho.gov>
Sent: Friday, March 16, 2018 7:34 AM
To: Jon Farrell
Cc: Duke, Lana - RD, Blackfoot, ID
Subject: RE: Intergovernmental Review & Environmental Screening - Malad WWTP

Good morning Jon,

The Department of Commerce has not comments on any known environmental issues associated with the proposed project.

Thank you

Sharon Deal | Senior Community Development Specialist
Idaho Commerce
700 W State Street, Boise, Idaho 83702
Office: 208.287-0774
Sharon.deal@commerce.idaho.gov

From: Jon Farrell [mailto:jfarrell@jub.com]
Sent: Thursday, March 15, 2018 5:12 PM
To: Sharon Deal <Sharon.Deal@commerce.idaho.gov>
Cc: Duke, Lana - RD, Blackfoot, ID <Lana.Duke@id.usda.gov>
Subject: Intergovernmental Review & Environmental Screening - Malad WWTP
Importance: High

Dear Sharon,

We are in the process of sending out the agency review letters for the Malad Wastewater Treatment Upgrades project. Attached is a copy of the letter that we are also mailing to your office.

Please provide your comments on the enclosed comment sheet or by letter within 30-days of the date of this letter. We look forward to receiving your comments.

We look forward to working with you further on this project.

Thank you,

Jon Farrell, P.E.
Project Engineer

J-U-B ENGINEERS, Inc.
275 S 5th Ave Suite 220, Pocatello, ID 83201
e | jfarrell@jub.com *w* | www.jub.com

Jon Farrell

From: O'Shea, Maureen <Maureen.OShea@idwr.idaho.gov>
Sent: Monday, March 19, 2018 10:55 AM
To: Jon Farrell
Cc: Duke, Lana - RD, Blackfoot, ID
Subject: RE: Intergovernmental Review & Environmental Screening - Malad WWTP

Jon,

The County of Oneida participates in the Emergency Phase of the National Flood Insurance Program. Oneida County has not been mapped for flood risk. The Malad WWTP is not located within a mapped floodplain, therefore I have no comments.

Thank you,
Maureen O'Shea, AICP, CFM
State NFIP Coordinator
Idaho Dept. of Water Resources
322 E. Front Street, P.O. Box 83720
Boise, ID 83720-0098
Office # 208-287-4928
Cell # 208-830-4174
Maureen.OShea@idwr.idaho.gov
https://www.idwr.idaho.gov/floods/

From: Jon Farrell [mailto:jfarrell@jub.com]
Sent: Thursday, March 15, 2018 5:03 PM
To: O'Shea, Maureen <Maureen.OShea@idwr.idaho.gov>
Cc: Duke, Lana - RD, Blackfoot, ID <Lana.Duke@id.usda.gov>
Subject: Intergovernmental Review & Environmental Screening - Malad WWTP
Importance: High

Dear Maureen,

Attached is a copy of a letter requesting your review & environmental screening of the proposed Malad Wastewater Treatment Upgrades project. A hardcopy letter is also being mailed to your office.

Please provide your comments on the enclosed comment sheet or by letter within 30-days of the date of this letter. We look forward to receiving your comments.

Thank you,

Jon Farrell, P.E.
Project Engineer

J-U-B ENGINEERS, Inc.
275 S 5th Ave Suite 220, Pocatello, ID 83201
e | jfarrell@jub.com *w* | www.jub.com
c | 208 221 2806 *o* | 208 232 1313 ext 8008

Jon Farrell

From: Joan Hawkins <hawkinsjfw@gmail.com>
Sent: Wednesday, March 21, 2018 10:10 AM
To: Jon Farrell
Subject: Re: Intergovernmental Review & Environmental Screening - Malad WWTP
Attachments: WWTP.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Jon,

Attached is my Comment Sheet. I hope I understood all of the questions correctly!

Joan

Joan Hawkins
Mayor, Malad City, Idaho

On Wed, Mar 21, 2018 at 10:04 AM, Joan Hawkins <hawkinsjfw@gmail.com> wrote:

> Hi Jon,
>
> Are you aware that we also have a City Planning and Zoning Commission? Just curious if they would need to be part of this or just the County P&Z.
>
> Joan
>
> Joan Hawkins
> Mayor of Malad City, Idaho
>
> On Thu, Mar 15, 2018 at 5:08 PM, Jon Farrell <jfarrell@jub.com> wrote:
>
> > Dear Mayor Hawkins,
> >
> > As part of the preparing the Environmental Information Document (EID) for the wastewater project, we send out letters to federal agencies so that they can review the project and provide comments. We are also sending a letter to Oneida County Planning & Zoning and yourself. Attached is a copy of the letter requesting your review & environmental screening of the proposed Malad Wastewater Treatment Upgrades project. A hardcopy letter is also being mailed to the City office.
> >
> > Please provide your comments on the enclosed comment sheet or by letter within 30-days of the date of this letter. We look forward to receiving your comments.

Thank you,

Jon Farrell, P.E.

Project Engineer

J-U-B ENGINEERS, Inc.

275 S 5th Ave Suite 220, Pocatello, ID 83201

e | jfarrell@jub.com *w* | www.jub.com

c | 208 221 2806 *o* | 208 232 1313 ext 8008

(Optional Comment Sheet)

USDA Rural Development Intergovernmental Review Consultation Form

Project Name: Malad Wastewater Treatment Upgrades – Phase 1

1) Is the proposal consistent with State or local government planning goals?

☒ Yes ☐ No

2) Does the proposal duplicate, run counter to, or need to be coordinated with other activities, or might it be revised to increase its effectiveness?

☐ Yes ☒ No

3) Will the proposal contribute to achieving state or local government goals relating to natural and human resources or economic and community development?

☒ Yes ☐ No

4) Are there environmental impacts and alternatives that should be considered in the Agency's environmental review?

☐ Yes ☒ No

5) Will the proposal influence area growth or delivery of services, including any disproportionate effects on minority groups?

☒ Yes ☐ No

6) Will the proposal impact energy resource supply and demand?

☐ Yes ☒ No

7) Will the proposal displace people or businesses?

☐ Yes ☒ No

8) Will the proposal be located in a Coastal Zone or Coastal Barrier Resource Area and is it consist with any State coastal management plan?

☐ Yes ☒ No

Comments:

Joan Hawkins

Signature/Title

Date 3-21-18

MAYOR
MALAD City, IDAHO

Jon Farrell

From: Susan Lorenz <lorenz@sicog.org>
Sent: Wednesday, March 21, 2018 11:01 AM
To: Jon Farrell
Subject: FW: Scanned image from MX-6070N
Attachments: scans@sicog.org_20180321_130029.pdf

Hi Jon,
This is the Intergovernmental Review response from SICOG on the Malad Project.

-----Original Message-----
From: scans@sicog.org [mailto:scans@sicog.org]
Sent: Wednesday, March 21, 2018 12:00 PM
To: lorenz@sicog.org
Subject: Scanned image from MX-6070N

Reply to: scans@sicog.org <scans@sicog.org> Device Name: Not Set Device
Model: MX-6070N
Location: Not Set

File Format: PDF (Medium)
Resolution: 200dpi x 200dpi

Attached file is scanned image in PDF format.
Use Acrobat(R)Reader(R) or Adobe(R)Reader(R) of Adobe Systems Incorporated to view the document.
Adobe(R)Reader(R) can be downloaded from the following URL:
Adobe, the Adobe logo, Acrobat, the Adobe PDF logo, and Reader are registered trademarks or trademarks of Adobe Systems Incorporated in the United States and other countries.

http://www.adobe.com/

(Optional Comment Sheet)

USDA Rural Development Intergovernmental Review Consultation Form

Project Name: Malad Wastewater Treatment Upgrades – Phase 1

1) Is the proposal consistent with State or local government planning goals?

☑ Yes ☐ No

2) Does the proposal duplicate, run counter to, or need to be coordinated with other activities, or might it be revised to increase its effectiveness?

☐ Yes ☑ No

3) Will the proposal contribute to achieving state or local government goals relating to natural and human resources or economic and community development?

☑ Yes ☐ No

4) Are there environmental impacts and alternatives that should be considered in the Agency's environmental review?

☐ Yes ☑ No

5) Will the proposal influence area growth or delivery of services, including any disproportionate effects on minority groups?

☐ Yes ☑ No

6) Will the proposal impact energy resource supply and demand?

☐ Yes ☑ No

7) Will the proposal displace people or businesses?

☐ Yes ☑ No

8) Will the proposal be located in a Coastal Zone or Coastal Barrier Resource Area and is it consist with any State coastal management plan?

☐ Yes ☑ No

Comments:

Signature/Title Date 3/21/18

Susan Lorenz / Economic Development Facilitator

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

444 Hospital Way, #300 • Pocatello, Idaho 83201 • (208) 236-6160
www.deq.idaho.gov

C.L. "Butch" Otter, Governor
John H. Tippets, Director

March 19, 2018

Jon Farrell, P.E.
J.U.B. Engineers
275 South 5th Ave, Suite 220
Pocatello, ID 83201

RE: Environmental Information Document (EID) Review, Environmental Impacts for City of Malad Wastewater Improvements

Dear Mr. Farrell,

The Idaho Department of Environmental Quality (IDEQ) has reviewed information you provided in preparation of an Environmental Information Document (EID) required to describe potential environmental impacts associated with the subject project.

In general, we have not identified negative impacts known to be associated with the project as described. Please see the following specific comments and recommendations.

Storm Water Management

Land disturbance activities associated with development (i.e. road building, stream crossings, land clearing) have the potential to impact water quality and riparian habitats through the generation and transport of sediment laden run-off and related contaminants. The Department recommends the development of a Storm-Water Pollution Prevention Plan (SWPPP) in accordance with federal requirements.

The Department strongly recommends that the city incorporate Best Management Practices (BMPs) and/or Best Available Technology (BAT) for storm water management. BMPs and/or BAT should be implemented as an integral part of any construction or modification associated with this project.

Air Quality

Land development projects are generally required to follow applicable regulations outlined in the Rules for the control of Air Pollution in Idaho. Of particular concern is IDAPA 58 .01.01.650 and 651 Rules for Control of Fugitive Dust.

Section 650 states, "The purpose of sections 650 through 651 is to require that all reasonable precautions be taken to prevent the generation of fugitive dust." Section 651 states "All reasonable precautions shall be taken to prevent particulate matter from becoming airborne. In determining what is reasonable, consideration will be given to factors such as the proximity of dust emitting operations to human habitations and/or activities and atmospheric conditions which might affect the movement of particulate matter. Some of the reasonable precautions may include, but are not limited to, the following:

1. Use of Water or Chemicals. Use, where practical, of water or chemicals for control of dust in the demolition of existing building or structures, construction operations, the grading of roads, or the clearing of land.
2. Application of Dust Suppressants. Application, where practical of asphalt, oil, water or suitable chemicals to, or covering of dirt roads, materials stockpiles, and other surfaces which can create dust.
3. Use of Control Equipment. Installation and use, where practical, of hoods, fans and fabric filters or equivalent systems to enclose and vent the handling of dusty materials. Adequate containment methods should be employed during sandblasting or other operations.
4. Covering of Trucks. Covering, when practical, open bodied trucks transporting materials likely to give rise to airborne dusts.
5. Paving. Paving of roadways and their maintenance in a clean condition, where practical.
6. Removal of Materials. Prompt removal of earth or other stored materials from streets, where practical."

Hazardous Waste

Accidental surface spills of petroleum hydrocarbon products (i.e. fuel, oil, and similar products)are most commonly associated with the transportation and delivery of fuel to work sites or facilities. The Idaho Release, Reporting, and Corrective Action Regulations (IDAPA 58.01 .02 .851 and .852), require notification within 24 hours of any spill of petroleum product greater than 25 gallons and notification for the release of lesser amounts if they cannot be cleaned up within twenty-four (24) hours. The cleanup requirements are also contained in those regulations. Both federal and Idaho regulations require the cleanup of any spill or release of used oil. [IDAPA 58.01.05.015; [40 CFR 279.22(d)(3)].

Engineering Review

In accordance with Idaho Code 3 9-118, construction plans & specifications prepared by a professional engineer are required for DEQ review and approval prior to construction if the proposed system upgrade is to serve a public water system.

Thanks for the opportunity to provide comments on this important project for the City of Malad. If you have questions or comments, please contact me at 236-6160 or via email at tom.hepworth@deg.idaho.gov.

Sincerely,

Tom Hepworth
Engineering Regional Manager

CC. Bruce Olenick, Regional Administrator, Pocatello Regional Office, Idaho DEQ (email)

File: TRIM Reference: 2018AGE51

IDAHO STATE HISTORICAL SOCIETY

20 March 2018

C.L. "Butch" Otter
Governor of Idaho

Janet Gallimore
Executive Director
State Historic
Preservation Officer

Administration:
2205 Old Penitentiary Rd.
Boise, Idaho 83712
208.334.2682
Fax: 208.334.2774

Idaho State Museum:
610 Julia Davis Dr.
Boise, Idaho 83702
208.334.2120

Idaho State Archives and State Records Center:
2205 Old Penitentiary Rd.
Boise, Idaho 83712
208.334.2620

State Historic Preservation Office:
210 Main St.
Boise, Idaho 83702
208.334.3861

Old Idaho Penitentiary and Historic Sites:
2445 Old Penitentiary Rd.
Boise, Idaho 83712
208.334.2844

HISTORY.IDAHO.GOV

Jon Farrell
JUB Engineers, Inc.
275 South 5th Avenue, Suite 220
Pocatello, Idaho 83201

Re: Malad Wastewater System Improvements / SHPO# 2018-522

Dear Mr. Farrell:

Thank you for consulting with our office on the above referenced project. We understand the scope of work includes improvements to the City of Malad wastewater system, located in Oneida County, Idaho.

Based on the information received 19 March 2018, our office is concerned the proposed project actions may have the potential to affect historic properties. We recommend a cultural resources inventory be conducted of the area of potential effects (APE). This survey should include both archaeology and the built environment, and be conducted by an individual or firm meeting the Secretary of the Interior's Professional Qualifications for both archaeology and architectural history.

If you have any questions, please contact me via phone or email at 208.488.7468 or matt.halitsky@ishs.idaho.gov.

Sincerely,

M. Halitsky

Matthew Halitsky, AICP
Historic Preservation Review Officer
Idaho State Historic Preservation Office

Jon Farrell

From: Mende,Jim <jim.mende@idfg.idaho.gov>
Sent: Thursday, March 29, 2018 3:13 PM
To: Jon Farrell
Subject: RE: Intergovernmental Review & Environmental Screening - Malad WWTP
Attachments: Malad Wastewater impr. 03.29.18.pdf

Jon:

Our comments are attached…jim

Jim Mende
Environmental Staff Biologist
Idaho Department of Fish and Game
Southeast Region
1345 Barton Road
Pocatello, Idaho 83204
(208) 232-4703 (front desk)
(208) 236-1246 (office)
(208) 241-3452 (cell)

https://idfg.idaho.gov

From: Jon Farrell [mailto:jfarrell@jub.com]
Sent: Thursday, March 15, 2018 5:00 PM
To: Mende,Jim
Cc: Duke, Lana - RD, Blackfoot, ID
Subject: Intergovernmental Review & Environmental Screening - Malad WWTP
Importance: High

Dear Jim,

Attached is a copy of a letter requesting your review & environmental screening of the proposed Malad Wastewater Treatment Upgrades project. A hardcopy letter is also being mailed to your office.

Please provide your comments on the enclosed comment sheet or by letter within 30-days of the date of this letter. We look forward to receiving your comments.

Thank you,

Jon Farrell, P.E.
Project Engineer

J-U-B ENGINEERS, Inc.
275 S 5th Ave Suite 220, Pocatello, ID 83201
e | jfarrell@jub.com *w* | www.jub.com

IDAHO DEPARTMENT OF FISH AND GAME
Southeast Region
1345 Barton Rd
Pocatello, ID 83204

C.L. "Butch" Otter / Governor
Virgil Moore / Director

March 29, 2018

Jon Farrell
J-U-B Engineering, Inc.
275 South 5th Avenue, Suite 220
Pocatello, ID 83201

Re: Malad Wastewater Collection System and Wastewater Treatment Plant (WWTP) - Intergovernmental Review & Environmental Screening

Dear Mr. Farrell:

Idaho Department of Fish and Game, Southeast Region has received a request for an intergovernmental review and environmental screening concerning relocation, new construction and associated upgrades to the City of Malad, Wastewater Collection System and Wastewater Treatment Plant (WWTP). Department personnel have reviewed the project description and site maps provided and believe that with the application of appropriate **Best Management Practices,** this project will have minimal impact on the areas fish and wildlife resources.

Issues regarding wild & scenic rivers, endangered species and associated designated critical habitats are the responsibilities of the **US Fish and Wildlife Service** (USFWS).

Issues regarding wetland areas are the responsibility of the **US Army Corps of Engineers** (ACOE).

Thank you for the opportunity to review and provide comment on this project. If you have further questions please contact Jim Mende, Environmental Staff Biologist (208) 236-1246.

Sincerely,

Mark Gamblin
Regional Supervisor

Jon Farrell

From: Duke, Lana - RD, Blackfoot, ID <Lana.Duke@id.usda.gov>
Sent: Friday, April 6, 2018 12:08 PM
To: Jon Farrell
Subject: RE: Intergovernmental Review & Environmental Screening - Malad WWTP

Just indicate no response on this one. I will see if I can come with a different address for future applications.

Lana Duke
Area Specialist
Rural Development
U.S. Department of Agriculture
98 East 800 North, Suite 1, Preston, ID 83263
Phone: 208-244-3937 | Fax: 855-505-1568 | Cell: 208-251-0100
www.rd.usda.gov/ID "Committed to the Future of Rural Communities"

Stay Connected with USDA:

From: Jon Farrell [mailto:jfarrell@jub.com]
Sent: Friday, April 06, 2018 10:24 AM
To: Duke, Lana - RD, Blackfoot, ID <Lana.Duke@id.usda.gov>
Subject: RE: Intergovernmental Review & Environmental Screening - Malad WWTP

Hi Lana,

Yes, we sent a letter to Caroly Boyer Smith for the Shoshone-Bannock Tribes. By the way, Patty Timbimboo with the Northwest Band Shoshone Tribe has been unreachable to email and letter. Let me know if you have updated contact information for them, otherwise I'll just list them as no response if we don't hear back by April 15.

JON FARRELL, P.E.
J-U-B ENGINEERS, Inc.
c 208 221 2806 *o* 208 232 1313 ext 8008

From: Duke, Lana - RD, Blackfoot, ID <Lana.Duke@id.usda.gov>
Sent: Friday, April 6, 2018 9:43 AM
To: Jon Farrell <jfarrell@jub.com>
Subject: RE: Intergovernmental Review & Environmental Screening - Malad WWTP

Hello Jon
I was just going through the Malad application to get it updated. In reviewing the intergovernmental letters, I just wanted to make sure a letter went out to the Sho-Ban Tribe in Fort Hall. I assume you sent some via snail mail and that this one was included. It is an item on my checklist I have to make sure I can mark as yes.

Lana Duke
Area Specialist
Rural Development
U.S. Department of Agriculture
98 East 800 North, Suite 1, Preston, ID 83263
Phone: 208-244-3937 | Fax: 855-505-1568 | Cell: 208-251-0100
www.rd.usda.gov/ID "Committed to the Future of Rural Communities"

Stay Connected with USDA:

From: Jon Farrell [mailto:jfarrell@jub.com]
Sent: Thursday, March 15, 2018 5:04 PM
To: ptimbimboo@nwbshoshone-nsn.gov
Cc: Duke, Lana - RD, Blackfoot, ID <Lana.Duke@id.usda.gov>
Subject: Intergovernmental Review & Environmental Screening - Malad WWTP
Importance: High

Dear Patti,

Attached is a copy of a letter requesting your review & environmental screening of the proposed Malad Wastewater Treatment Upgrades project. A hardcopy letter is also being mailed to your office.

Please provide your comments on the enclosed comment sheet or by letter within 30-days of the date of this letter. We look forward to receiving your comments.

Thank you,

Jon Farrell, P.E.
Project Engineer

J-U-B ENGINEERS, Inc.
275 S 5th Ave Suite 220, Pocatello, ID 83201
e | jfarrell@jub.com *w* | www.jub.com
c | 208 221 2806 *o* | 208 232 1313 ext 8008

(Optional Comment Sheet)

USDA Rural Development Intergovernmental Review Consultation Form

Project Name: Malad Wastewater Treatment Upgrades – Phase 1

1) Is the proposal consistent with State or local government planning goals?

☒ Yes ☐ No

2) Does the proposal duplicate, run counter to, or need to be coordinated with other activities, or might it be revised to increase its effectiveness?

☐ Yes ☒ No

3) Will the proposal contribute to achieving state or local government goals relating to natural and human resources or economic and community development?

☒ Yes ☐ No

4) Are there environmental impacts and alternatives that should be considered in the Agency's environmental review?

☐ Yes ☒ No

5) Will the proposal influence area growth or delivery of services, including any disproportionate effects on minority groups?

☐ Yes ☒ No

6) Will the proposal impact energy resource supply and demand?

☐ Yes ☒ No

7) Will the proposal displace people or businesses?

☐ Yes ☒ No

8) Will the proposal be located in a Coastal Zone or Coastal Barrier Resource Area and is it consist with any State coastal management plan?

☐ Yes ☒ No

Comments:

Signature/Title Date 4/4/18

Linda D Daniels

Chairmen Planning & Zoning

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
IDAHO FALLS REGULATORY OFFICE
900 NORTH SKYLINE DRIVE, SUITE A
IDAHO FALLS, IDAHO 83402

May 4, 2018

Regulatory Division

SUBJECT: NWW-2018-167-I02, City of Malad Proposed Wastewater Treatment Plant and Conveyance Line

City of Malad
c/o Mr. Jon Farrell
J-U-B Engineers, Inc.
275 South 5th Avenue, Suite 220
Pocatello, Idaho 83201

Dear Mr. Farrell:

Our preliminary jurisdictional determination (PJD) indicates your client's proposed project site may include Waters of the United States, namely Twomile Creek. The remainder of the proposed project site appears to be upland. Your proposed project site is located within Section(s) 35 of Township 14 South, Range 36 East and Sections 1 and 2 of Township 15 South, Range 36 East, near latitude 42.157321º N and longitude -112.226488º W, in Oneida County, in Malad, Idaho. Your request has been assigned file number NWW-2018-167-I02, which should be referred to in future correspondence with our office regarding this site.

Enclosed are two copies of the Preliminary Jurisdictional Determination Form. Please review the document and any attachments thereto. If you consent to jurisdiction as set forth, please sign both copies, return one copy to the Corps at the address in the above letterhead and keep the other copy for your records. This PJD shall remain in effect unless an approved jurisdictional determination is requested or new information supporting a revision is provided to this office.

Although this determination is advisory in nature and may not be appealed under the Corps of Engineers Administrative Appeal Procedures, as defined in 33 CFR 331, the enclosed *Notification of Administrative Appeal Options and Process Fact Sheet and Request for Appeal Form* (RFA) explains your options, if you do not agree with this determination.

Section 404 of the Clean Water Act (CWA) requires that a DA permit be obtained for the discharge of dredged and/or fill material into Waters of the U.S., including jurisdictional wetlands (33 U.S.C. 1344). Waters of the U.S. include most perennial and intermittent rivers and streams, natural and man-made lakes and ponds, as well as irrigation and drainage canals and ditches that are tributaries to other Waters, and wetlands. A Department of the Army (DA) authorization may be required if you propose to perform work or place dredged and/or fill material into Twomile Creek. However work in other areas of the project site that are upland would not require DA authorization under Section 404 of the CWA.

Please be aware, this PJD treats all Waters on the project site as Waters of the U.S. subject to Corps jurisdiction, and may be submitted with a permit application for computation of impacts and compensatory mitigation requirements.

This determination applies only to Department of the Army permitting jurisdiction and does not authorize any injury to property or excuse you from compliance with other Federal, State, or local statutes, ordinances, regulations, or requirements which may affect these areas, or work you would propose to conduct in these areas. Please obtain all required permits before starting work in the Waters or wetland areas identified on this property.

CUSTOMER SERVICE

We actively use feedback to improve our delivery and provide you with the best possible service. Please take our online customer service survey to tell us how we are doing. Follow this link to take the survey:
http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey

If you have questions or if you would like a paper copy of the survey, call our office at 208-433-4464.

For more information about the Walla Walla District Regulatory program, visit us online at http://www.nww.usace.army.mil/BusinessWithUs/RegulatoryDivision.aspx.

If you have any questions or need additional information about this permit, you can contact me at (208) 522-1676, by mail at the address in the letterhead, or email at james.m.joyner@usace.army.mil.

Sincerely,

James M. Joyner

James M. Joyner
Sr. Project Manager, Regulatory Division

Enclosures:

Appendix 2 - PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD: May 4, 2018

B. NAME AND ADDRESS OF PERSON REQUESTING PJD: City of Malad, c/o J-U-B Engineers, 275 South 5th Avenue, Suite 220, Pocatello, Idaho 83201.

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: Walla Walla District, City of Malad Proposed Wastewater Treatment Plant and Conveyance Line, NWW-2018-167-I02.

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION: (USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES)

State: Idaho County/parish/borough: Oneida City: Malad

Center coordinates of site (lat/long in degree format):
Latitude: 42.157321 Longitude: -112.226488

Name of nearest waterbody: Twomile Creek

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date: May 4, 2018

☐ Field Determination. Date(s):

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORYJURISDICTION

Site Number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amt of aquatic resource in review area (acreage/linear feet, if applicable)	Type of aquatic resource (wetland vs. non-wetland)	Geographic auth which the aquatic resource "may be" subject (Sec 404 or 10/404)
Two Mile Creek	42.15701	-112.22608	1360 feet	Other Water	Section 404

1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.

2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre- construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD, which does not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a PJD constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the Corps will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there "may be" waters of the U.S. and/or that there "may be" navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for PJD (check all that apply)

Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

☒ Maps, plans, plots or plat submitted by or on behalf of the PJD requestor: Figures 1-4, undated.

☐ Data sheets prepared/submitted by or on behalf of the PJD requestor.

☐ Office concurs with data sheets/delineation report.

☐ Office does not concur with data sheets/delineation report. Rationale:

☐ Data sheets prepared by the Corps:

☐ Corps' navigable waters' study:

☐ U.S. Geological Survey Hydrologic Atlas:

☐ USGS NHD data.

☐ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:24K (Malad City East)

☒ Natural Resources Conservation Service Soil Survey. Citation: NRCS (Web Soil Survey)

☒ National wetlands inventory map(s). Cite name: USFWS (Wetlands Mapper)

☐ State/local wetland inventory map(s):

☐ FEMA/FIRM maps:

☐ 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)

☒ Photographs: ☒ Aerial (Name & Date): Google Earth Aerials

Or ☐ Other (Name & Date):

☐ Previous determination(s). File no. and date of response letter:

☐ Other Information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

James M. Joyner

May 4, 2018

Signature and date of Regulatory staff member completing PJD	Signature and date of person requesting PJD (REQUIRED, unless obtaining the signature is impracticable)[1]

[1] Districts may establish timeframes for requestor to return signed PJD forms. If the requestor does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: City of Malad	File Number: NWW-2018-167-I02	Date: 4 May 2018
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
X	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found in Corps regulations at 33 CFR Part 331, or at http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/FederalRegulation.aspx

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

US Army Corps of Engineers, Walla Walla District
Attn: Ms. Kelly J. Urbanek, Chief, Regulatory Division
720 E. Park Boulevard, Suite 245
Boise, Idaho 83712-7757 Telephone: 208-433-4464
Kelly.J.Urbanek@usace.army.mil

If you only have questions regarding the appeal process you may also contact:

US Army Corps of Engineers, Northwestern Division
Attn: Ms. Melinda Witgenstein, Regulatory Appeals Review Officer
P.O. Box 2870
Portland, OR 97208-2870 Telephone (503) 808-3888
Melinda.M.Witgenstein@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number: