PROJECT DESCRIPTION
RESERVOIR MAINTENANCE – T.13S, R.01E, SEC.27
MAY 21, 2014

WHO

Riddle Ranches Inc. (permitee) retains a grazing permit in the Riddle Allotment of the Bruneau Field Office, BLM. The permitee proposes to cooperate with BLM in performance of specific maintenance activities at a dug-out reservoir to improve the reservoir's water holding effectiveness.

WHAT

Current design captures runoff from an unnamed tributary to Shoofly Creek, as it flows from northwest to southeast. The feature consists of two adjacent pools—the larger down-gradient from the smaller—arranged to resemble the number eight when viewed from above. Runoff enters the feature via a short channel above the smaller pool and fills the system. One infers from the lack of a spillway, that designers intended for overland flow to simply bypass the inlet, once the feature itself became full.

The permitee proposes to repair the breached earthen dam (Figure 1) by using fill material from the adjacent borrow area (Figure 2). The increased water holding capacity of the reservoir depends on the amount of material removed from the adjacent borrow area. Grading the borrow area from its current level to that of the existing reservoir pit floor, for example may increase capacity by anywhere from 50 to 100 percent, by estimation. Leaving the grade higher would dampen this effect. Vegetation taken from the borrow area would be scattered below the earthen dam along the existing channel.

Proposed Project Specifications for Little Shoofly

Feature	Existing	Proposed
Reservoir Impoundment Area	0.27 acres	0.64 acres[1]
Borrow Area	-	0.64 acres
Heavy Equipment Operation Area	-	1.6 acres
Total Water Storage	0.5 acre feet[2]	Up to 2 acre feet anually[3]

[1]Assumes that creating the borrow area would effectively increase the impoundment area.
[2]Estimated during site visit
[3]Valid existing water right

DRAFT

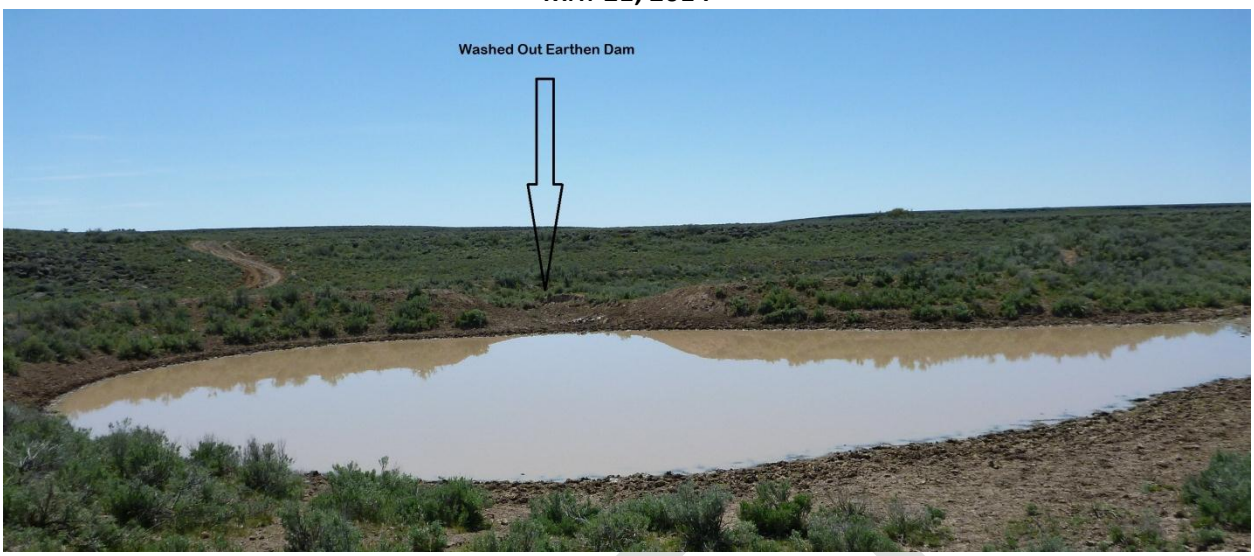


Figure 1. Little Shoofly Reservoir, May 13, 2014

Figure 2. Borrow area proposed for source of material to fix washed out earthen dam

WHEN

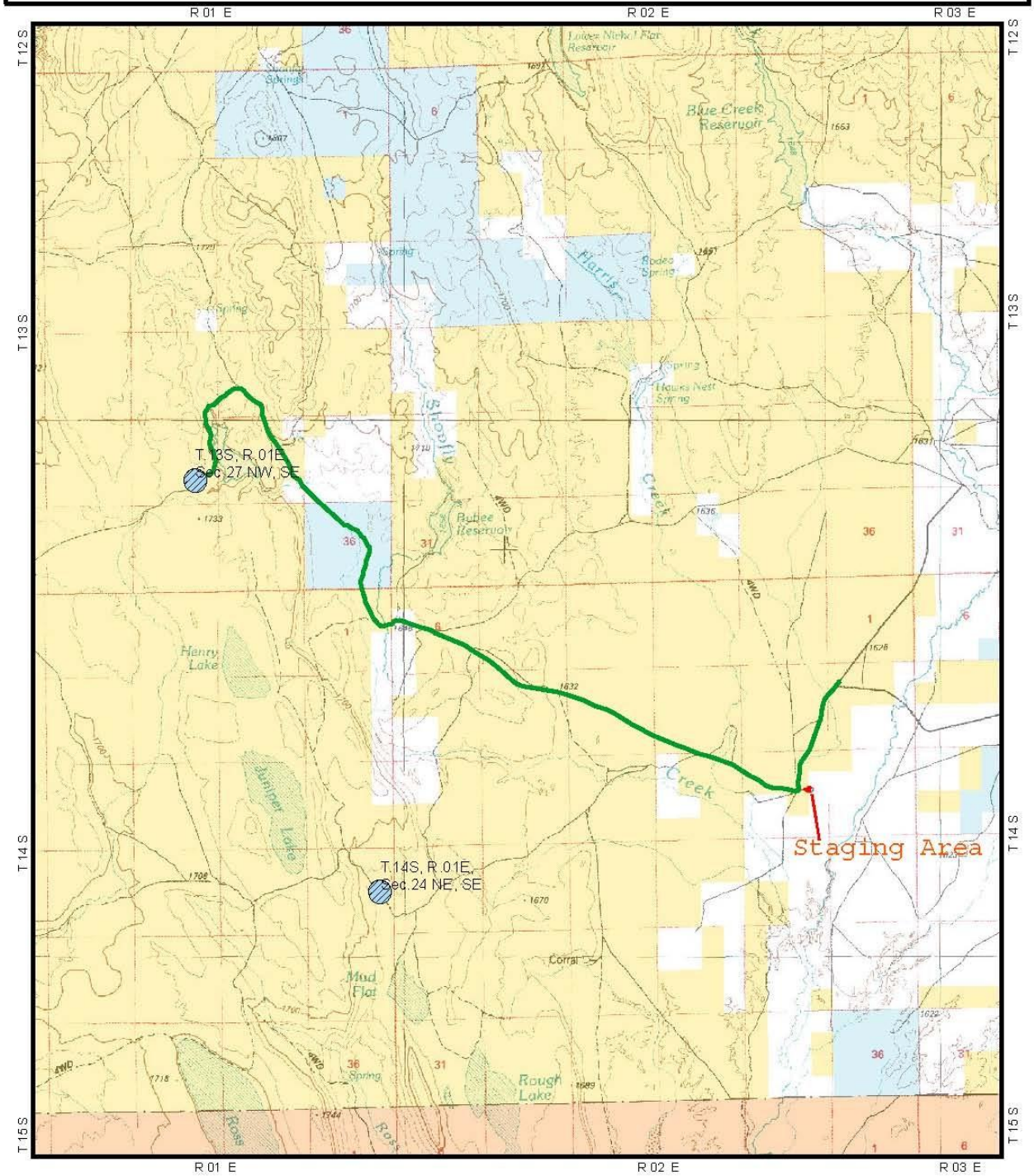
A specific date is not yet identified. Maintenance activity timing will be constrained by a combination of factors. Specific maintenance timing is dependent on equipment availability, cost, and resource issues yet to be determined.

WHERE

Maintenance work would be done at the existing reservoir located northwest of the Southeast quarter of Section 27, Township 13 south, Range 1 East. A project overview map depicts location of the reservoir and access routes (Figure 3). A more detailed map of the maintenance area is also provided (Figure 4).

PROJECT DESCRIPTION
RESERVOIR MAINTENANCE – T.13S, R.01E, SEC.27
MAY 21, 2014

Figure 3. Reservoir Maintenance Location and Access Overview



U.S. Department of the Interior
Bureau of Land Management, Idaho
Boise District, Bruneau Field Office
Map date: Feb 26, 2014

Scale
1 : 100,000

0 0.5 1 2 Miles

Legend

- Reservoir
- Access Route

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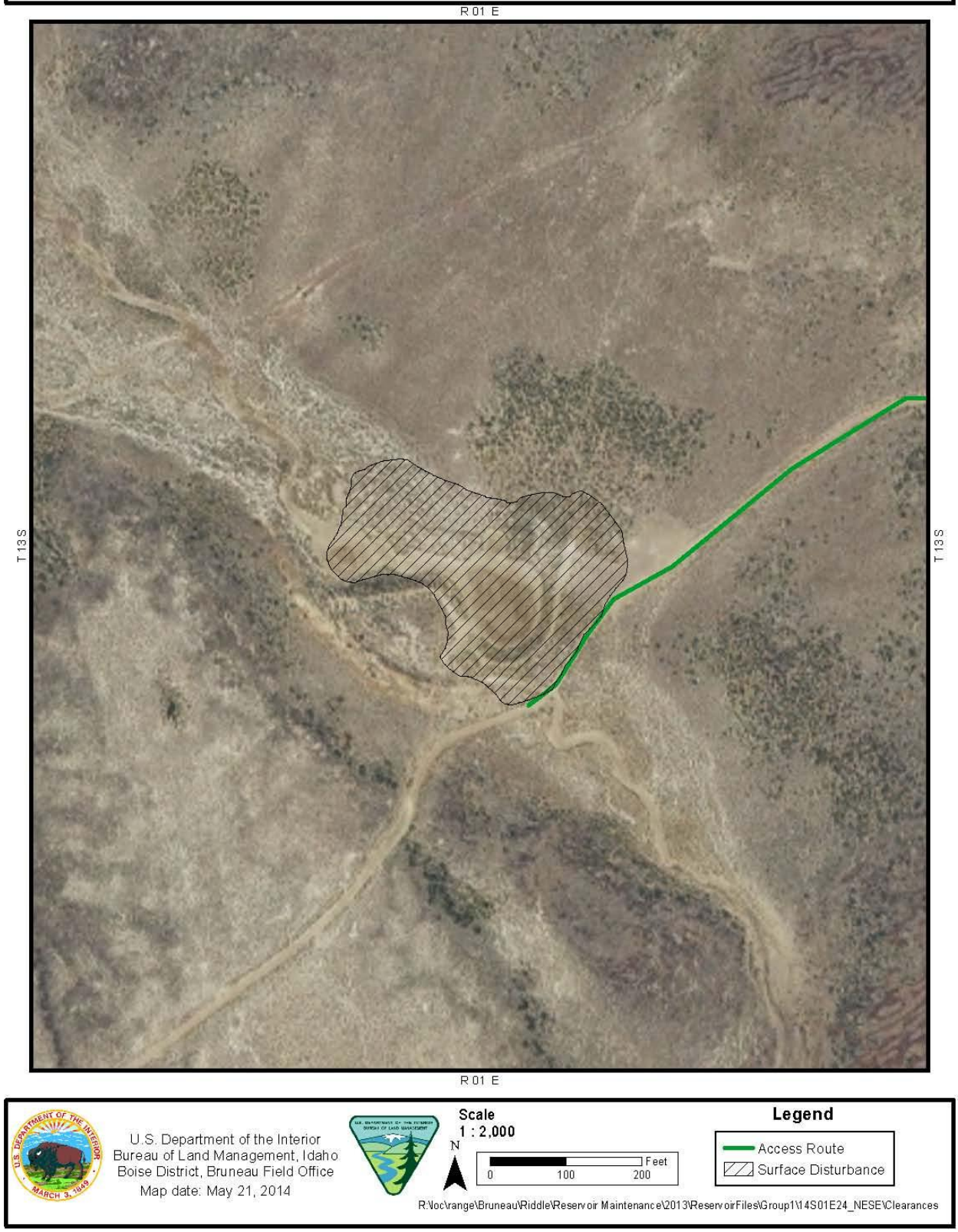
Figure 4. Reservoir 13S01E27 Surface Distrubance Area



HOW

Work would be performed with a combination of heavy equipment such as front loader with backhoe (Figure 5), tractor, and scraper (Figure 6). Heavy equipment would be driven to the maintenance area via the access route (Figure 3). The approximate area of surface disturbance at the reservoir maintenance site would total less than two acres. The dimensions of the finished project would retain up to two acre-feet per year of surface water, per the terms of the associated water right.

The following maintenance stipulations would be in effect:

1. Disturbed areas will be graded to resemble existing landscape contours to minimize visual contrast.
2. Maintenance work will be restricted to periods when the soil is dry and firm enough to support vehicles without creating ruts.
3. No new roads or blading will be allowed in moving equipment to the reservoir site.

Figure 5. Front Loader and backhoe

Figure 6. Example of tractor and scraper

DRAFT

PROJECT DESCRIPTION
RESERVOIR IMPROVEMENT – T.14S, R.01E, SEC.24
MAY 21, 2014

WHO

Riddle Ranches Inc. (permitee) retains a grazing permit in the Riddle Allotment of the Bruneau Field Office, BLM. The permitee proposes to cooperate with BLM in performance of specific maintenance and improvement activities at a dug-out reservoir to improve the reservoir's water holding effectiveness.

WHAT

At this location, Mr. Jackson communicated his desire to redesign the reservoir. The current design consists of a horseshoe-shaped earthen dam (berm) which partially surrounds an unlined dug-out reservoir pit floor (Figure 1). The original design appears to have included a short (approximately 100ft.) channel connecting the adjacent natural drainage with the reservoir, allowing capture and storage of natural runoff during periods of high flow. The connection channel's grade at the point of diversion was presumably only slightly higher than that of the adjacent natural drainage, enabling natural runoff capture and bypass once full. Degradation has entrenched the natural drainage course's grade, leaving the point of diversion high and dry, so to speak. The reservoir no longer functions to its potential.

Mr. Jackson believes that raising the grade of the natural drainage course, by placing fill material into the channel for example, would only be a short-term solution because natural erosion would eventually erode the natural channel's grade, lowering it again leaving the same problem.

As an alternative, Mr. Jackson proposes to re-design the feature by constructing a new earthen dam, lengthening the reservoir's shape, and constructing a new inlet channel (Figure 2). The existing earthen dam would continue to function as the impoundment structure. Rather than elevating the grade of the eroded natural drainage at the old point of diversion, a new point of diversion would be created by constructing a new channel. Material from new feature construction would be used onsite to construct a new earthen dam placed to divert water from ephemeral drainages upslope into the new channel and reservoir (Figures 3 and 4). The existing short channel would become a spillway, allowing effluent to flow back into the natural drainage after the feature fills.

Proposed Project Specifications for Yatahoney #1:

Feature	Existing	Proposed
Reservoir Impoundment Area	0.16 acres	0.23 acres
New Diversion Channel	-	175 feet long Between 2 and 8 feet wide
New Earthen Dam	-	180 feet long Width variable
Heavy Equipment Operation Area	-	1.14 acres
Total Water Storage	< 3 acre feet / yr.[1]	Up to 3 acre feet annually[2]

[1]Estimated during site visit
[2]Valid existing water right

Figure 1. Yatahoney #1 as it appeared May 13, 2014

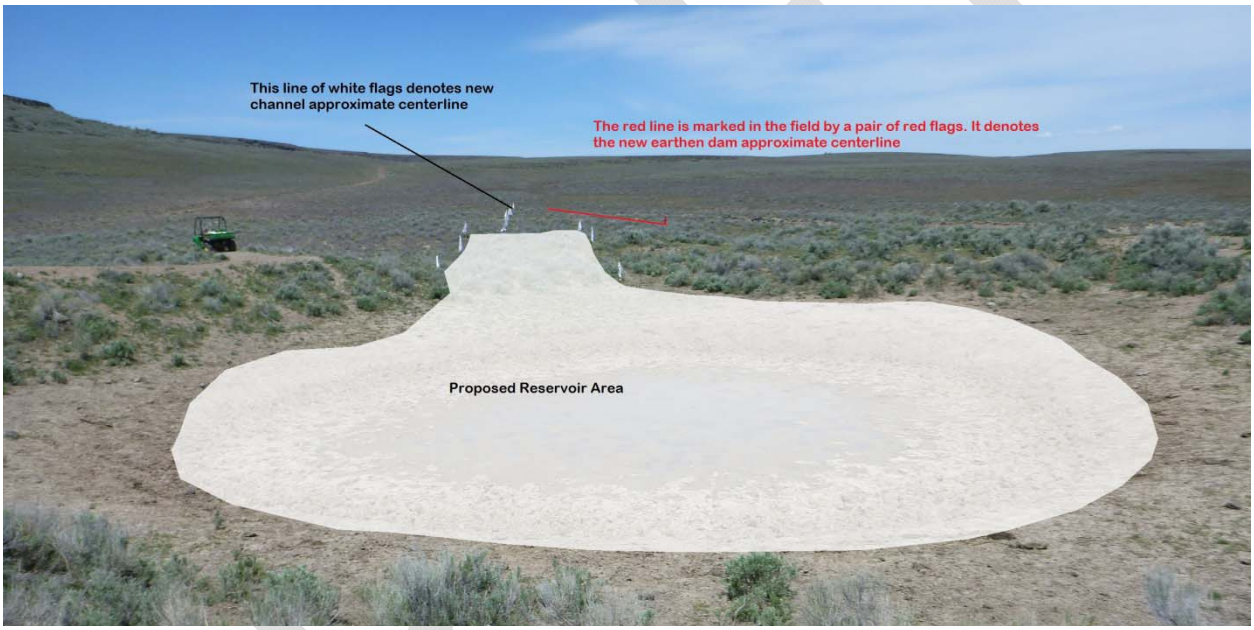


Figure 2. Yatahoney #1 proposed by Mr. Jackson on May 13, 2014

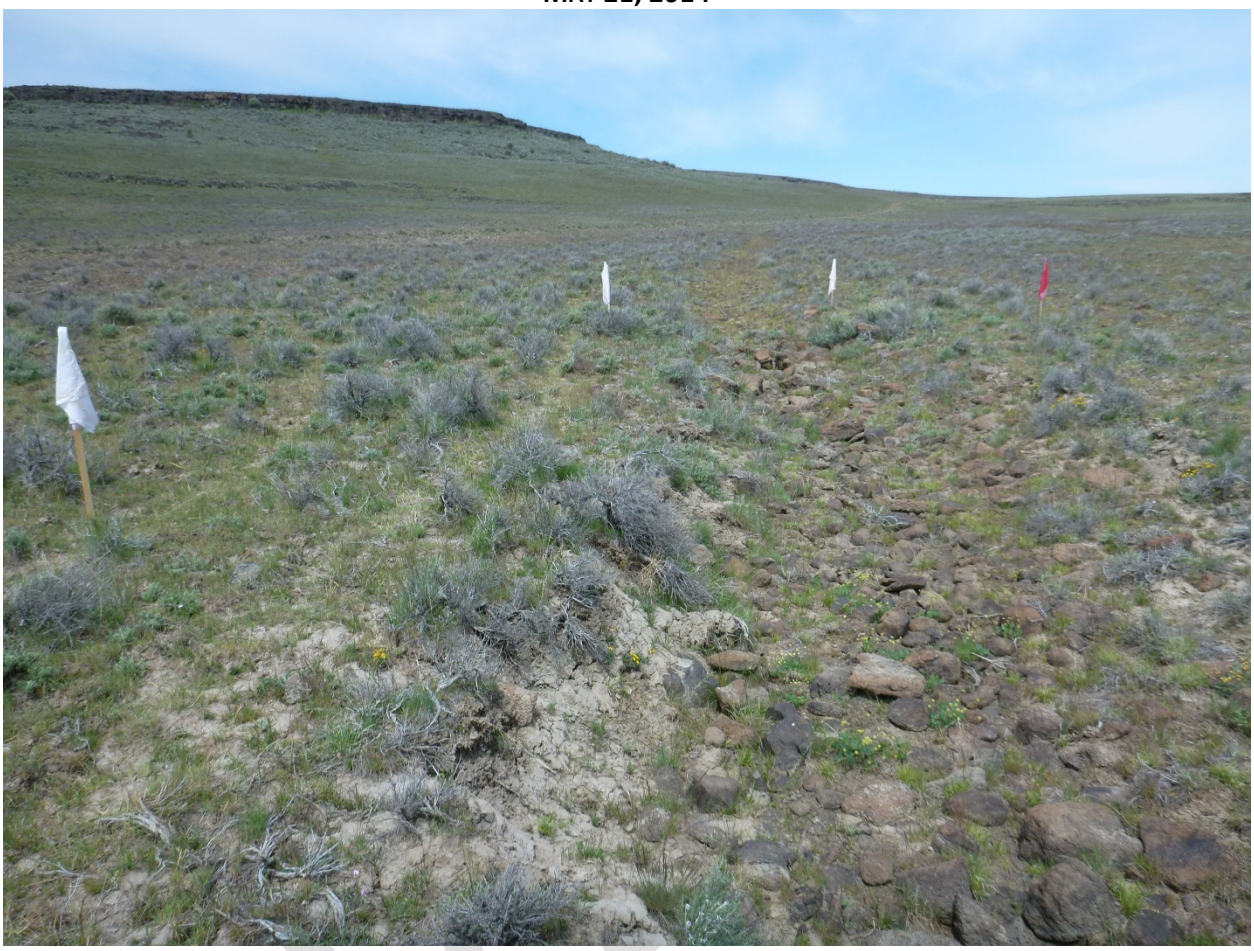


Figure 3. Proposed point of diversion. Upper end of proposed channel (white flags) and berm (red flag) at Yatahoney #1, as proposed by Mr. Jackson on May 13, 2014

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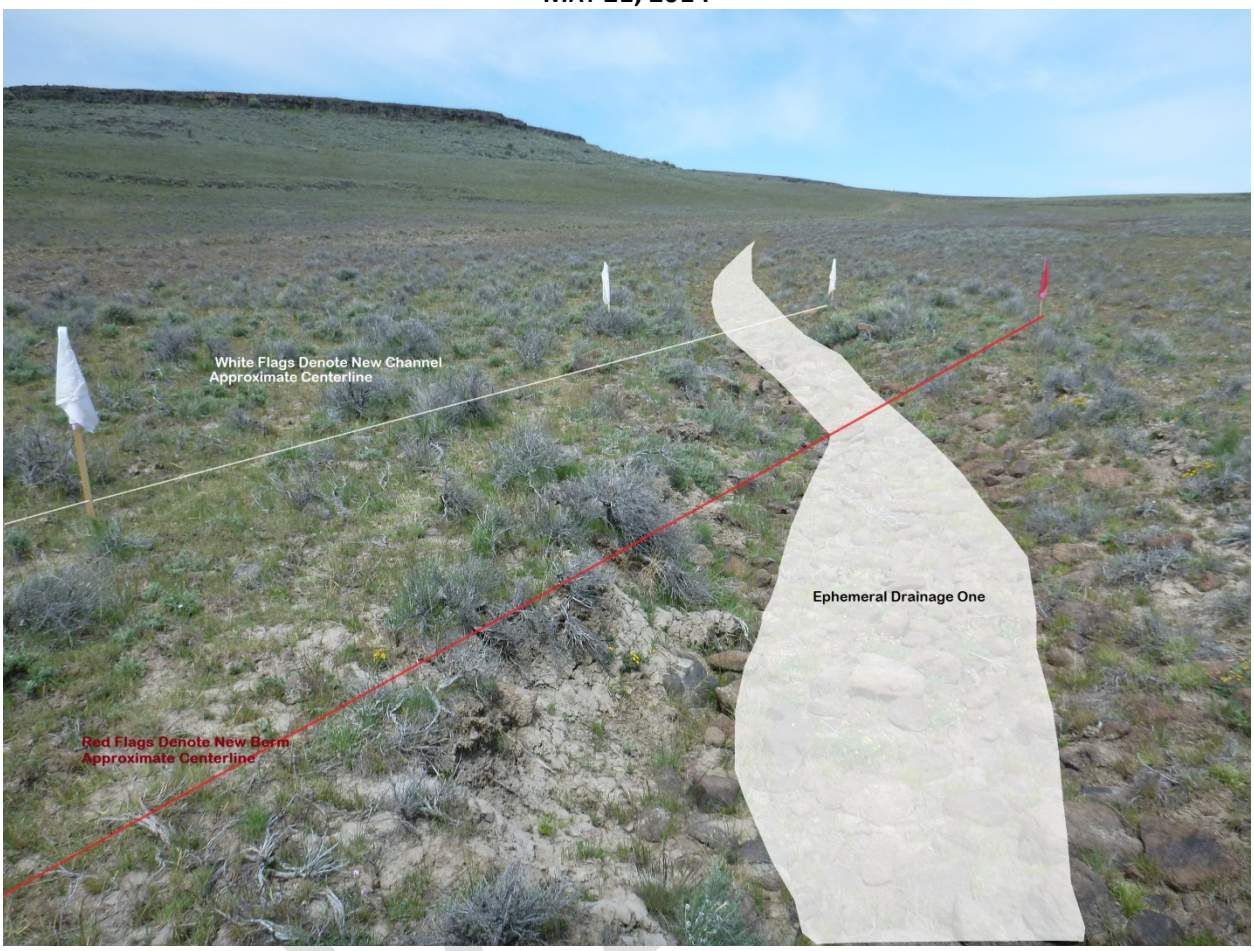


FIGURE 4. Proposed point of diversion. Upper end of proposed channel (white flags) and berm (red flag) at Yatahoney #1, as proposed by Mr. Jackson on May 13, 2014. The proposed channel and berm would divert another ephemeral drainage similar to the one depicted here. The second ephemeral drainage is behind (and left of) the photographer in this view.

WHEN

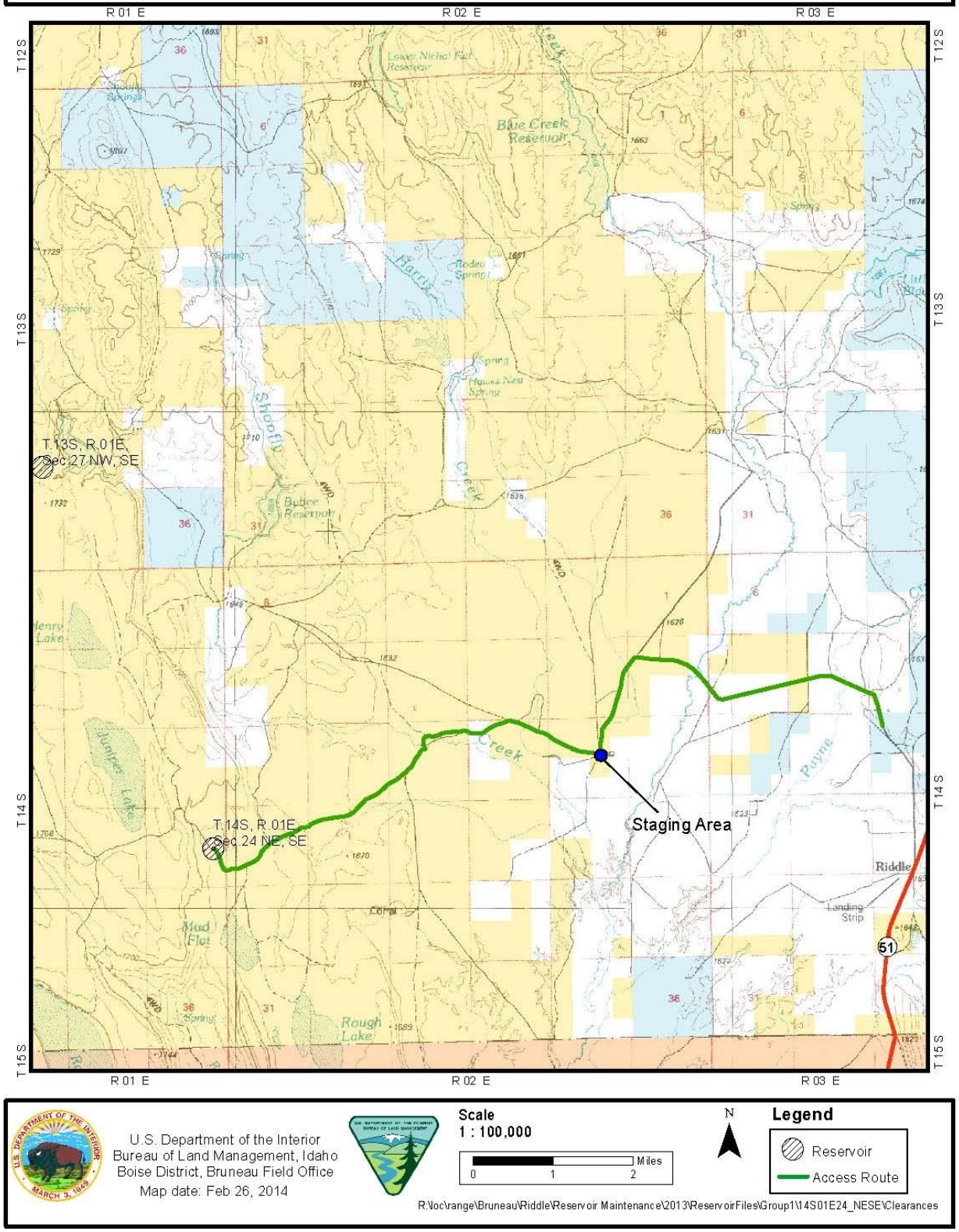
A specific date is not yet identified. Maintenance activity timing will be constrained by a combination of factors. Specific maintenance timing is dependent on equipment availability, cost, and resource issues yet to be determined.

WHERE

Maintenance work would be done at the existing reservoir located northeast of the Southeast quarter of Section 24, Township 14 South, Range 1 East. The project overview map depicts location of the reservoir and access routes (Figure 4). A more detailed map of the maintenance area work site is also provided (Figures 5 and 6).

PROJECT DESCRIPTION
RESERVOIR IMPROVEMENT – T.14S, R.01E, SEC.24
MAY 21, 2014

Figure 4. Reservoir Maintenance Location and Access Overview



PROJECT DESCRIPTION
RESERVOIR IMPROVEMENT – T.14S, R.01E, SEC.24
MAY 21, 2014

Figure 5. Reservoir 14S01E24 Maintenance Area

U.S. Department of the Interior
Bureau of Land Management, Idaho
Boise District, Bruneau Field Office
Map date: May 21, 2014

Scale
1 : 2,000
N
0 100 200 Feet

Legend
Surface Distrubance Area
Access Route

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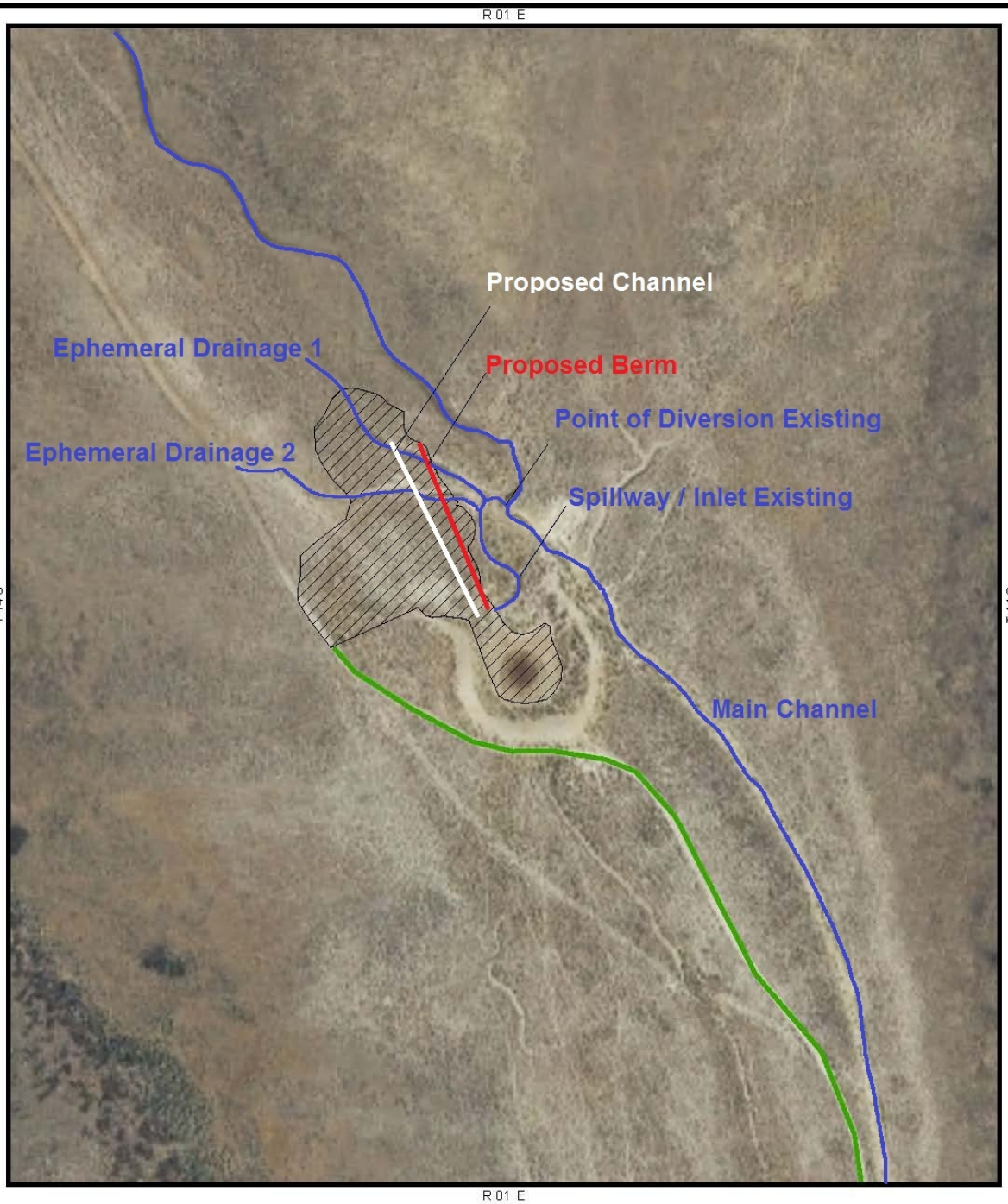
Figure 6. Reservoir 14S01E24 Maintenance Area



U.S. Department of the Interior
Bureau of Land Management, Idaho
Boise District, Bruneau Field Office
Map date: May 21, 2014

Scale
1 : 2,000
N
0 100 200 Feet

Legend
Surface Distrubance Area
Access Route

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HOW

Work would be performed with heavy equipment including a backhoe, tractor, and scraper (Figure 7). The equipment would be driven along the access route to the reservoir worksite (Figure 3). Materials originating off site used in construction would be staged at either the staging area depicted in Figure 1, or on the existing reservoir pit floor. The approximate area of surface disturbance at the reservoir maintenance site would total less than 1.25 acres. The dimensions of the finished project would retain up to three acre-feet per year of surface water, per the terms of the associated water right.

The following maintenance stipulations would be in effect:

1. Disturbed areas will be graded to resemble existing landscape contours to minimize visual contrast.
2. Maintenance work will be restricted to periods when the soil is dry and firm enough to support vehicles without creating ruts.
3. No new roads or blading will be allowed in moving equipment to the reservoir site.

Figure 7. Example of tractor and scraper

Hoof Butte Wetland Construction Project Description

Who
The Bruneau Field Office Ecologist

What
This wetland construction project would transform one to two acres of mesic meadow and silver sagebrush habitat into ephemeral wetland. Construction would require heavy equipment (i.e., tracked bull dozer and excavator). The wetland would be constructed to dry out each year but would hold approximately 12 – 40 inches of water over an area of one to two acres for a period of at least 10 months (December– August) each year. Wetland construction would be accomplished by constructing a ground water dam and reshaping the land behind the dam (Figure 1).

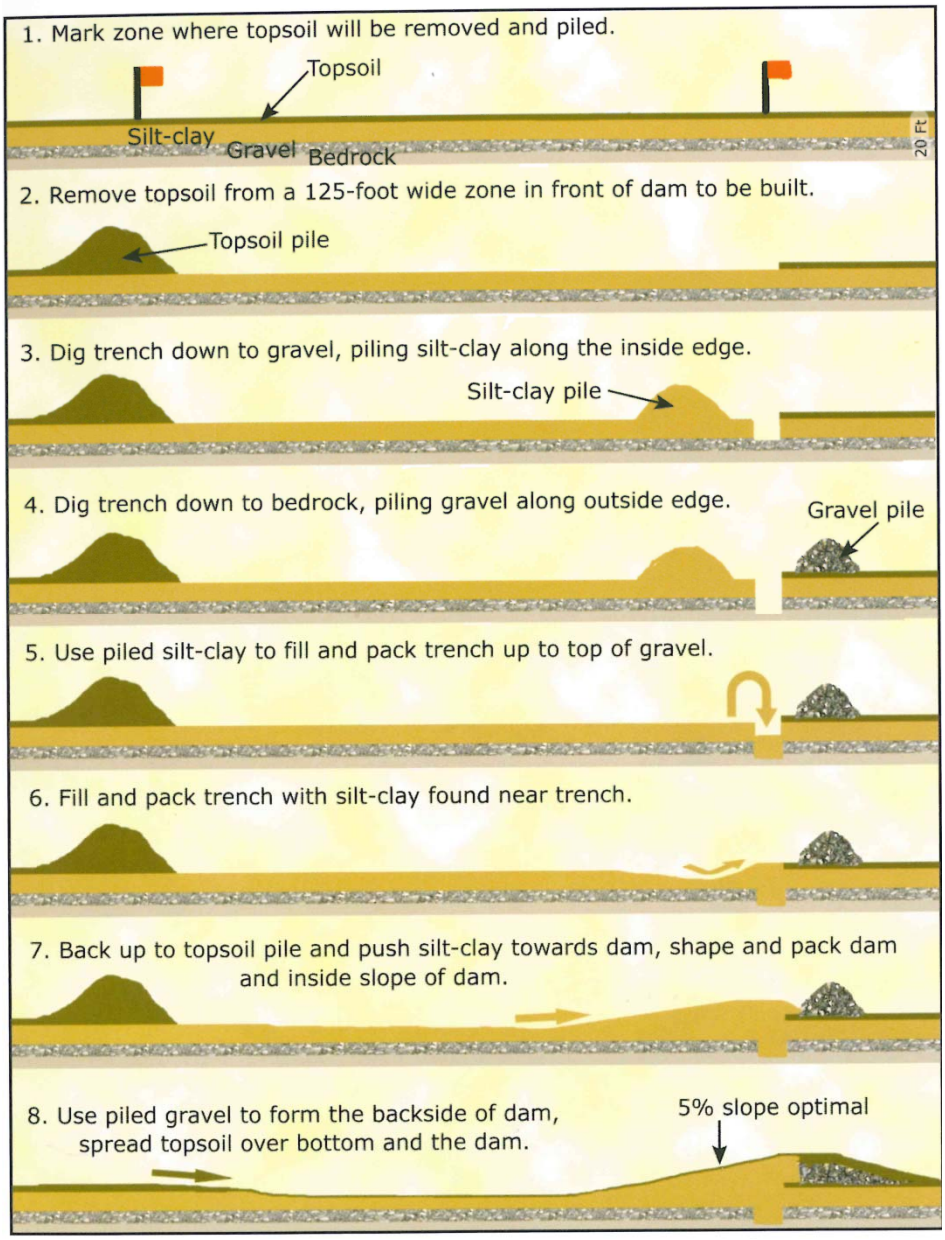


Figure 1. Hoof Butte Wetland Construction Concept (Figure by Amy Reges, OtterTailArt.com)

Hoof Butte Wetland Construction Project Description

The wetland would be constructed by installing a horseshoe-shaped groundwater dam around the wetland's lower edge. Topsoil would be removed from a 125-foot wide zone in front of the dam and stockpiled at the constructed wetland's upper end. A 12-foot wide trench would be excavated to a depth of 36 – 48 inches around the wetland's lower edge. The trench would be dug to the depth of gravels or bedrock for a length of 400 feet. Clay would be compacted into the trench to form the dam's foundation. A one-acre area behind the dam would be formed into the shape of a shallow bowl. Picture a radar dish lying in the ground. In the process of forming the wetland, clay soils would be pushed towards the dam to a height of approximately two to three feet above grade. All construction materials for the wetland itself are available onsite. Construction activity would require a staging area where a fuel truck would be available for refueling the heavy equipment.

The finished wetland would be fenced away from livestock. Fence would be either barbed wire or buck and pole design, depending on funding, and would be designed to Field Office Wildlife Biologist specifications. All fencing materials would be imported. Bare soils would be mulched and seeded using plant materials native to the region. Table 1 summarizes design features of the constructed wetland.

Table 1. Design Features of the Hoof Butte Constructed Wetland

Feature	Quantity
Dam	440 ft. long; 100 ft. wide at base; 10 ft. wide at top; 2.5 ft. above grade
Spillway	30 ft. long; 115 ft. wide at base; 12 ft. wide at top, 1.5 ft. above grade
New Fence	5,160 feet surrounds a 46-acre area
Straw Mulch (WoodStraw®)	12 bales (50 lbs. each.)
Native Plant Seed Mix (FEID/ ERNA10/LODI)	10 lbs.
Constructed Ephemeral Wetland Habitat	one to two acres
Estimated Cost	$19,000 - $25,0000

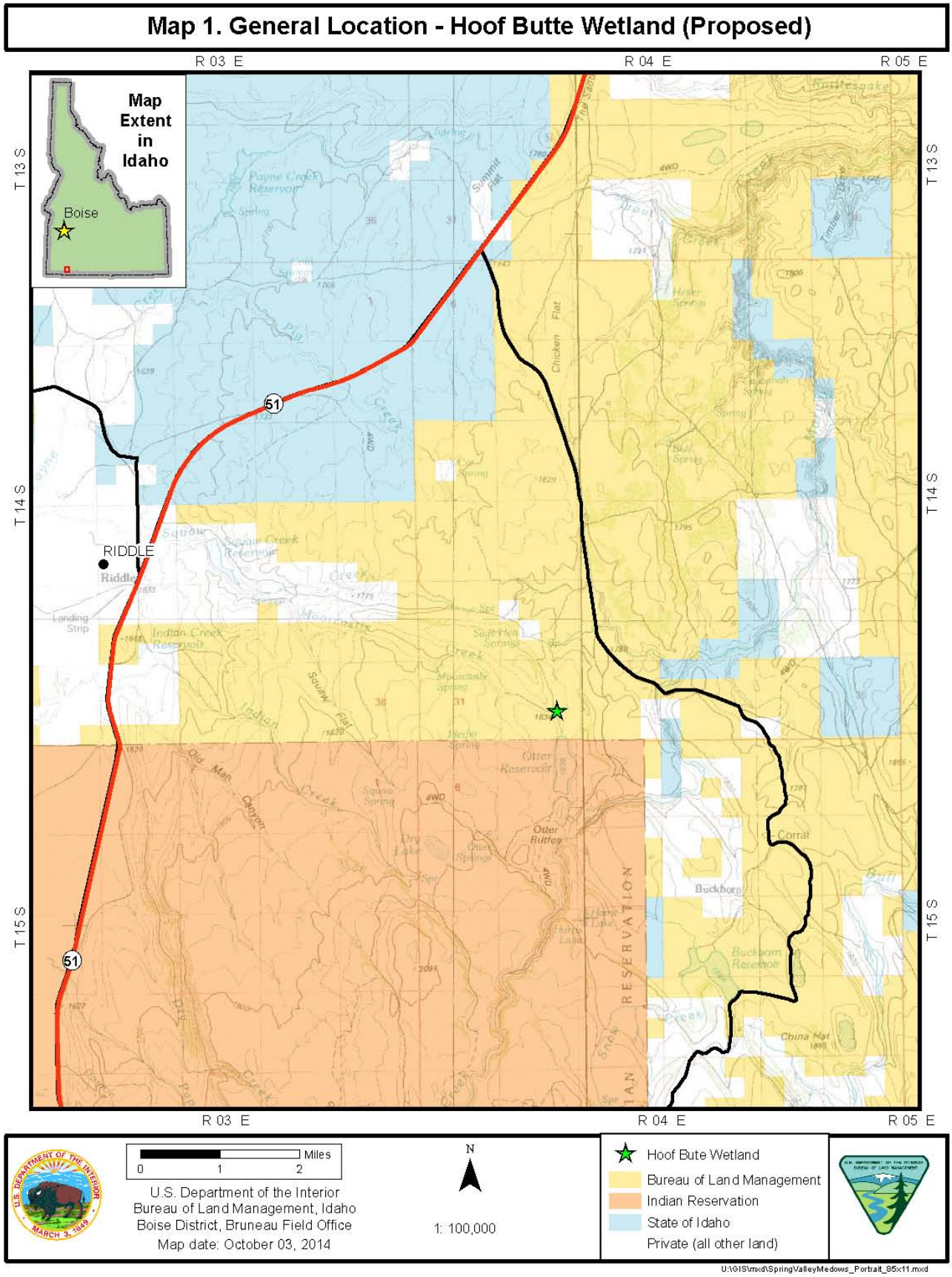
When

Construction activities would occur when soils are dry and firm enough to support heavy equipment. Construction is not feasible when soils are saturated.

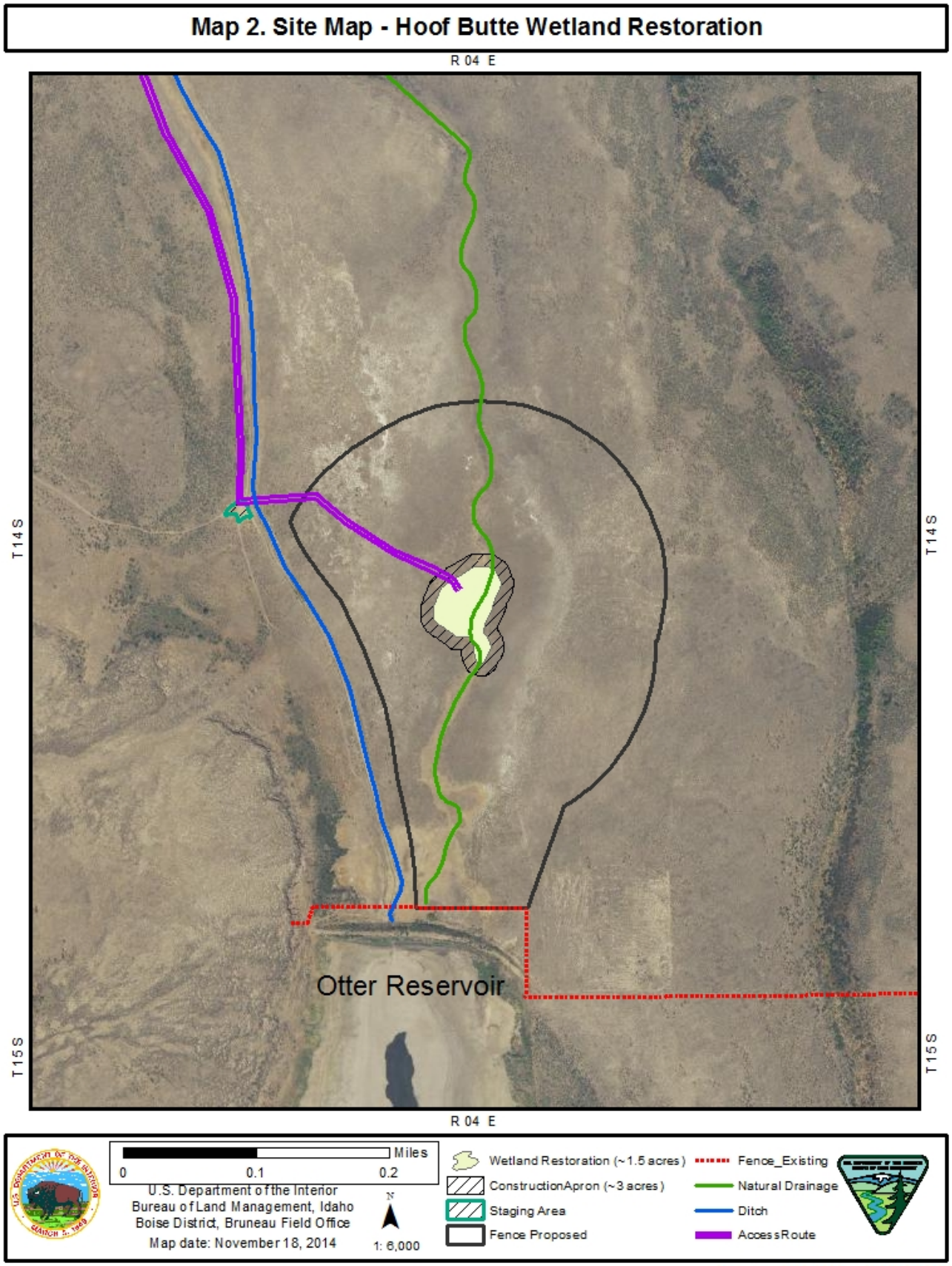
Where

The project would be constructed in section 32 of Township 14 South, Range 4 East of the Boise Meridian. The project's general location is depicted in Map 1. The site map provides more detail (Map 2). Figure 2 is a photograph of the wetlands approximate extent. Access to the worksite for heavy equipment may require temporary modification of the existing drainage ditch. An excavator would be used to pull back the berms on each side of the ditch to flatten a path across. Material would be pulled back from the ditch and staged in the staging area (Map 2). The single ditch crossing would be repaired to its original configuration as part of this project.

Hoof Butte Wetland Construction Project Description



Hoof Butte Wetland Construction Project Description



Photographs

Figure 2. Hoof Butte Wetland construction area and surrounding landscape.