ONEOK BAKKEN PIPELINE, L.L.C.

Demicks Lake Pipeline Project

McKenzie County, North Dakota

Response to North Dakota Public Service Commission

Request for Information dated 1/14/2019

Regarding:

The Consolidated Application for Certificate of Corridor Compatibility and Route Permit

Docket PU-18-399

November 2018 (Original filing)

February 2019 (Amendment)

43 PU-18-399 Filed 04/03/2019 Pages: 520
Exhibit 3 - Response to PSC staff Information Request on January 14, 2019
ONEOK Bakken Pipeline, L.L.C.

ONEOK Bakken Pipeline, L.L.C. Demicks Lake Pipeline PU-18-399 Response to ND PSC Staff's January 14, 2019 Information Request			
Item	***Request for Information***	***Response***	***Attachment***
1	Copies of all correspondence with U.S. Forest Service (USFS), U.S. Fish and Wildlife Service (USFWS), USFWS, McKenzie Board of Commissioners, McKenzie County Water Resource District, Western Area Water Supply Authority, North Dakota State Historical Preservation Office (NDSHPO), and the Office of the State Engineer.	ONEOK remains in active consultation and discussion with the USFS regarding its review of the Project and the crossing of the USFS-administered Little Missouri National Grassland, which requires a Special Use Permit. As noted it the Application (and subsequent Amendment filed on February 7, 2019), the USFS is currently working to finalize its Biological Assessment (BA) and Environmental Assessment (EA) of the Project. In association with their review, the USFS is engaged with the USFWS regarding federally-listed threatened and endangered species, and with the NDSHPO regarding federally protected cultural resources. Formal correspondences with these agencies will be filed with the Commission upon receipt. To date, ONEOK has not received responses from the other agencies noted in Item 1 (McKenzie County Board of Commissioners/Water Resource District, Western Area Water Supply Authority, and the North Dakota State Water Commission - Office of the State Engineer). As noted in the Amendment filed on February 7, 2019, ONEOK submitted follow up emails to all agencies via email regarding modifications to the project route which fell outside of the original one-mile-study area for the Project. All agency responses will be filed with the Commission upon receipt.	No
2	A table listing all permits required for the Project and status of each permit application.	Please see the ONEOK Environmental Permit Tracking table attached to this response.	Yes
3	The status of the Class III Cultural Resource Survey Report that is to be first submitted to the USFS referenced on page 28 of the application, subsequently to the NDSHPO, and then subsequently to the North Dakota Public Service Commission (NDPSC). Describe any objections of concerns with the Class III report and the status of NDSHPO concurrence.	ONEOK conducted Class III inventory surveys throughout the Project Corridor and submitted its Class III Cultural Resource Inventory report to USFS for an interagency review in November 2018. The USFS provided questions on the report and a revised report was submitted to the USFS on January 18, 2019. In addition, ONEOK submitted the testing report for site 32MZ767 to the USFS for review on January 18, 2019. When finalized, the USFS will submit the Class III inventory and site 32MZ767 testing reports to the SHPO for their review and concurrence. Following agency review of the report, ONEOK will work with the USFS and SHPO to clarify National Register of Historic Places recommendations and finalize avoidance and mitigation measures. ONEOK anticipates filing an addendum to the Class III report directly to the SHPO for surveys conducted solely on private lands, as well as the testing report for sites 32MZ449, 32MZ2943, 32MZ3199, and 32MZ3200 after the USFS submits the main Class III report in February 2019. ONEOK will file relevant future correspondence with USFS and SHPO to the Commission upon receipt.	No
4	Copies of the signed waivers of the residences, schools, and places of business located within 500 feet of the Project route. Provide the status of any waivers that have not yet been signed and describe any ongoing issues or objections that have been raised.	Please refer to Section 7.2.5 of the application Amendment filed on February 7, 2019. ONEOK is working to secure one remaining landowner waiver for the Project (for structures near milepost 20.7), which will be filed with the Commission upon receipt.	No
5	ONEOK's consultation with the USFWS with respect to the Migratory Bird Treaty, Bald and Golden Eagle Protection Acts (MBTA and BGEPA), federally protected species review, and wetland and grassland easements as indicated in Sections 5.3.2, 5.3.3, 6.2.1, and 6.2.4, respectively.	To date, ONEOK has not received a response from USFWS to its original Project notification and consultation request submitted 5/21/2018, nor follow up consultation letters submitted 8/1/2018 and 1/29/2019. Please see the response to Item 1 in this submittal and the application Amendment filed on February 7, 2019 for further information.	No
6	Appendices E, F, G, and H of Natural Resources Survey report	Please refer to Exhibit C of the application Amendment filed on February 7, 2019.	No

7	Page two of the application lists the pipeline's maximum operating pressure as 1,480 pounds per square inch gauge (psig) and the maximum operating temperature as 120 degrees Fahrenheit (F). The technical block diagram in Exhibit A details a typical block valve with a maximum operating pressure and temperature of 1,440 psig and 100 degrees F, respectively. Explain the reason for why they are different.	The Project's maximum operating pressure at 100 degrees Fahrenheit is 1,480 psig, and the Project's maximum operating temperature is 120 degrees Fahrenheit. Please refer to Section 1.2 and Exhibit A of the application Amendment filed on February 7, 2019.	No
8	The Biological Evaluation (BE) and the USFS Sensitive Species Survey reports that were shared with the USFS.	A copy of the USFS Sensitive Species Report is included as an attachment to this response. The BE is still under review by the USFS. A copy of the Final BE will be provided to the NDPSC as soon as it is received from the USFS.	Yes
9	Identification of the "unique terrain and soils" mentioned in Section 9.3. What is the plan for these areas and when does ONEOK expect to complete additional studies?	Baseline soils analysis and additional studies data were compiled to assist ONEOK in construction design and support restoration efforts due to inconsistent and sometimes shallow topsoil depths. The analysis was conducted by Duraroot Environmental Consulting and the final report is included as an attachment to this response as *Ecozone Reclamation Plan*; also included as Attachment A of Item 15k - Revegetation Plan.	Yes
10	The process ONEOK used to determine the location of USFWS easements. Provide all correspondence with USFWS.	To date, ONEOK has not received a response from USFWS to its original project notification and consultation request submitted 5/21/2018, nor follow up consultation letters submitted 8/1/2018 and 1/29/2019. Please see the response to Item 1 in this submittal and the application Amendment filed on February 7, 2019 for further information. ONEOK has been in discussions with each landowner along the Project route regarding conservation easements. Based on these discussions, and individual landowner knowledge, ONEOK has not identified any parcels that are crossed that contain USFWS wetland or grassland easements.	No
11	Completion status for the natural resource and cultural resources surveys, which are 97.6 and 99.6% complete, respectively. If not complete, what is the timeframe to complete?	With the recent route modifications, approximately 93.6 and 96.3 percent of the Project Corridor has been surveyed for natural resources and cultural resources, respectively. ONEOK plans to finish environmental field surveys in spring 2019 or earlier if field conditions allow. Results from these surveys will be filed with the Commission upon completion. Please refer to Section 5 of the application Amendment filed on February 7, 2019 for further information.	No
12	The date of aerial photographs used for Exhibits B.2 - B.4	The aerial imagery used in Exhibits B.2 – B.4 is from the 2017 U.S. Department of Agriculture's (USDA) National Agriculture Imagery Program (NAIP).	No
13	A description of facilities/buildings near mile markers 13.5, 14, and 23 on Exhibit B.3.	Milepost 13.5-14: ONEOK's Garden Creek Gas Plant (south of MP 13) and Oasis Wild Basin Gas Plant (northwest of MP 13) Milepost 23: a residential subdivision/development that is currently under construction.	No
14	The reason the corridor jettisons and strays away from the pipeline centerline between mile markers 8 and 8.5, 39 and 39.5, 24 and 24.5, 36 and 36.5, 47 and 47.5, 44.5 and 45, 60 and 60.5; and also near mile markers 59 and 66.	With the exception of areas noted at mileposts 24-24.5 and 59, the Project Corridor strays away from the centerline to accommodate workspace need for HDD crossings of roads or other features. The area referenced near milepost 24 - 24.5 is no longer relevant as the Amended route (see filing dated February 7, 2019) avoids this area. At milepost 59, the Corridor is the standard width of 300' but is not centered on the route due to existing utilities located west of the proposed route.	No
15	**The following Project control documents, and for those not complete, provide the status and completion date(s):**		
15a	Emergency Procedures Plan	Draft plan included as an attachment to this response. To be finalized prior to construction.	Yes
15b	10-year spill history report	Included as an attachment	No
15c	Wetland delineation report	Please refer to Exhibit C of the application Amendment filed on February 7, 2019.	No
15d	Construction and Environmental Program Plan	Draft plan included as an attachment to this response. To be finalized prior to construction.	Yes

15e	Unanticipated Discoveries Plan (UDP) and training documents detailing the training of contractors and construction crews on the proper identification of unanticipated discoveries and the correct procedures regarding such a discovery.	Draft UDP is included as an attachment to this response; training will be conducted prior to construction (see response to Item 15n), which will include a discussion of cultural resources and unanticipated discoveries. To be finalized prior to construction.	Yes
15f	Erosion Control Plan	Erosion control details are included in the Project SWPPP. See response to Item 15g.	No
15g	Storm Water Pollution Prevention Plan	Draft plan included as an attachment to this response. To be finalized prior to construction.	Yes
15h	MBTA plan and training documents detailing the environmental training of contractors and construction crews on the proper identification of unique, rare, protected, or special bird species, their habitats, and correct procedures regarding a sighting.	Draft MBTA Plan is included as an attachment to this response; training will be conducted prior to construction (see response to Item 15n), which will include a discussion of migratory birds. To be finalized prior to construction.	Yes
15i	Spill prevention and control plan	Draft plan included as an attachment to this response. To be finalized prior to construction.	Yes
15j	Horizontal directional drilling inadvertent release control and mitigation contingency plan	Draft plan included as an attachment to this response. To be finalized prior to construction.	Yes
15k	Revegetation plan	Draft plan included as an attachment to this response. To be finalized prior to construction.	Yes
15l	Weed management plan, and all county specific weed management plan(s)	Draft plan included as an attachment to this response. To be finalized prior to construction.	Yes
15m	Dust Control Plan	Draft plan included as an attachment to this response. To be finalized prior to construction.	Yes
15n	Environmental Training Plan	Prior to commencing construction of the Project, ONEOK will conduct a comprehensive environmental training for all Project personnel and contractors who will be working in the field. ONEOK will conduct a Project-specific training presentation for Project personnel that covers all aspects of environmental expectations, regulations, and ONEOK policy. Topics covered will include General Guidelines & Contractor Expectations, Project Staff, Project Permits and Plans, Compliance and Mitigation Measures, Migratory Bird Treaty Act, Cultural Resources and Unanticipated Discoveries, Environmentally Sensitive Areas, and Public Relations. An open question and answer session will be provided to ensure contractors and all Project personnel have an understanding of Project-related environmental requirements and processes.	No
15o	Baseline soil analysis to determine topsoil depth along the Project.	Refer to response to Item 9.	No

ONEOK Bakken Pipeline, L.L.C. - Demicks Lake Pipeline Environmental Permit Summary			
Agency	**Permit / Approval**	**Resource**	**Permit Status**
Federal Permits			
U.S. Forest Service (USFS)	USFS Special Use Permit (SUP) SF299; Environmental Assessment (EA)	Crossing of USFS-administered Little Missouri National Grasslands	Application for SUP submitted 5/18/2019; revised application submitted 6/22/2018. Draft EA submitted to USFS 11/19/2018 and is under review. ONEOK is in regular and continuous consultation with USFS.
U.S. Fish and Wildlife Service (USFWS) - North Dakota Field Office	Endangered Species Act - Section 7 Consultation / Biological Assessment (BA)	Federally-listed threatened and endangered species	Ongoing / Concurrent with USFS process; Draft BA submitted 2/5/2019.
U.S. Army Corps of Engineers (USACE) - Omaha District	Nationwide Permit (NWP) 12 (Utility Line Activities)	Waters of the U.S.	As currently designed, a Pre-Construction Notification (PCN) will not be required (to be confirmed pending final project design).
State Permits (North Dakota)			
North Dakota Public Service Commission	Certificate of Corridor Compatibility and Route Permit	Siting of Project Corridor / Route	Application submitted 11/28/2018; Amendment submitted 2/7/2019.
State Historic Society of North Dakota (SHPO)	Cultural Resources Consultation (Section 106-National Historic Preservation Act)	National Register of Historic Places - eligible cultural resources	Concurrent with USFS SUP process (see above). Class III Cultural Resources Report was submitted to USFS on 1/18/2019. USFS to coordinate review with SHPO.
North Dakota Department of Health (NDDH) - Division of Water Quality	General Permit for Temporary Dewatering / Hydrostatic Testing NDG07-0000	Waters of the State / Hydrostatic Discharge	Applicability to be determined pending finalization of the hydrostatic testing plan. If required, application to be submitted at least 30 days prior to discharge activities.
NDDH - Division of Water Quality	North Dakota Pollution Discharge Elimination System (NDPDES) General Stormwater Permit NDR10-0000	Waters of the State / Construction Stormwater	North Dakota recognizes federal Clean Water Act Section 402(l)(2), which exempts oil and natural gas projects from obtaining construction stormwater permit coverage. As such, ONEOK is not currently planning on securing this permit; however, ONEOK has developed a Stormwater Pollution Prevention Plan (SWPPP) which will be utilized during construction activities.
NDDH - Division of Water Quality	Section 401 Water Quality Certification	Waters of the State - Water Quality	Concurrent with NWP 12; automatically granted for projects eligible for coverage under NWP 12.
North Dakota State Water Commission (NDSWC)	Temporary Water Permit	Waters of the State - Appropriation	ONEOK is currently reviewing its options for sourcing water for dust control, drilling mud, and hydrostatic testing. If surface or ground waters will be utilized, ONEOK will submit an application for a Temporary Water Permit with NDSWC at least 2 weeks prior to appropriating water.
Local/County Permits			
McKenzie County Weed Board	Weed Management Plan	State- and county-listed noxious weeds	Project requires a Weed Management Plan be submitted to the County for approval. A draft Weed Management Plan has been developed and will be submitted to McKenzie County for review and approval in March 2019.
McKenzie County Road Department / Engineer	Road Crossing Permits	Public Roads	To be obtained prior to construction



FOREST SERVICE SENSITIVE SPECIES SURVEY REPORT - 2018

DEMICKS LAKE PIPELINE PROJECT - NORTH DAKOTA

ONEOK BAKKEN PIPELINE, LLC

Midwest Natural Resources, Inc.
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MNR
MIDWEST NATURAL RESOURCES

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Project Overview

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Demicks Lake Pipeline Project (Project) consisting of approximately 76 miles of 20-inch-diameter new steel pipeline to transport natural gas liquids (NGLs). The Project originates at ONEOK's planned Demicks Lake Natural Gas Processing Plant in McKenzie County, North Dakota and terminates in Richland County, Montana at a planned interconnection with a ONEOK affiliate pipeline. Construction will begin as early as February 2019 and will be completed in approximately 5-6 months. After construction is complete, restoration/reclamation of the right-of-way will continue as necessary. A portion of this proposed project runs through the U.S. Forest Service Little Missouri National Grasslands (LMNG) as illustrated in **Figure A-1 (Appendix A)**.

Midwest Natural Resources, Inc. (MNR) was contracted by Merjent to conduct surveys for Forest Service Sensitive Species (RFSS) associated with the component of the Project that crosses through the LMNG in McKenzie County, North Dakota.

Survey Limits and Existing Data

MNR conducted pedestrian field surveys within the LMNG between June and July 2018. MNR surveyed a 300-foot-wide corridor, generally centered over the proposed centerline, for sensitive plant species, and incidental observations of sensitive wildlife species, with the exception of insects.

MNR, accompanied by Gerald Selby, a qualified Dakota skipper surveyor, documented incidental observations of sensitive insect species during individual surveys for the federally-threatened Dakota skipper between June 27 and July 17, 2018. These surveys were conducted within a 500-meter-wide survey corridor centered over the proposed centerline. The timing of the survey coincided with the flight periods of all three RFSS insect species for the Little Missouri National Grassland (Ottoe skipper, regal fritillary, and tawny crescent).

A summary of the incidental observations of sensitive insects is included below; however, the results of the Dakota skipper individual surveys are detailed in a separate survey report and are not discussed further in this report.

MNR staff evaluated the LMNG Biological Survey Guidelines (2018) document (**Appendix B**) as well as distribution data pertaining to vascular plants. This distribution data consists of county distribution maps prepared by the Biota of North America Program (BONAP). MNR staff additionally evaluated regional herbaria records to determine optimal survey windows for targeted species. The list of RFSS plants for the LMNG is provided in **Table 1**.

Table 1. RFSS plants in the Little Missouri National Grasslands

Scientific Name	Common Name	Documented Habitat in the LMNG
Chenopodium subglabrum	Smooth goosefoot	Sandbars, terraces, & dune complexes along rivers & creeks. Exposed sandy substrates in uplands, blowouts, outcrops, colluvium, etc.
Collinsia parviflora	Blue lips	Woody understories, including green ash/elm draws, Rocky Mountain juniper, mesic shrub communities, & occasional xeric shrub communities.
Cryptantha torreyana	Torrey's cryptantha	Two population sites discovered during 2013 were located along scoria ridgelines, Also reported from dry plains, rock outcrops, escarpments, pine slopes.
Eriogonum cernuum	Nodding buckwheat	Exposed sand substrates w/ low plant cover in grasslands, hillsides, sandstone outcrops.

Scientific Name	Common Name	Documented Habitat in the LMNG
Eriogonum visheri	Dakota buckwheat	Relatively exposed clay/silt substrates with low plant cover such as outwash zones around eroding buttes, saddles, steep convex slopes, erosional breaks on prairie slopes. Occasional populations among dense saltgrass communities.
Escobaria missouriensis	Missouri foxtail cactus	Prairie slopes & plains, stony to loamy to clayey short-grass to mixed-grass prairies. Also reported in woodlands of ponderosa pine or *Quercus* spp.
Leucocrinum montanum	Sand lily	Generally shortgrass communities w/ fine textured substrates but also found in crested wheatgrass communities. Reported from open coniferous woodlands & hillsides, sagebrush scrub, & sandy flats, but common name seems to be a misnomer.
Mentzelia pumila	Dwarf mentzelia	Scoria exposures & colluvium w/low plant cover. Also reported on slopes & sandy plains; occasionally on hard clays & rocky soils.
Phlox alyssifolia	Alyssum-leaved phlox	Sandy or gravelly soil on & around Bullion Butte. Also reported on clay banks & limestone ridges of open prairie.
Pinus flexillis	Limber pine	Semi-arid exposed rocky ridges & foothills in the Limber Pines RNA.
Populus x *acuminata*	Lanceleaf cottonwood	Mesic woody draws, often w/springs/seeps, occasional near springs on open hillsides. Floodplains & stream banks.
Sporobolus airoides	Alkali sacaton	Secondary succession on clay outwash where tolerant of saline conditions, also on dry to moist sandy or gravelly soil.
Townsendia exscapa	Easter daisy	Low to moderate plant cover on dry plains, hillsides, gravelly benches & weathered scoria, but often clay matrix subsoil.
Townsendia hookeri	Hooker's Townsendia	Dry plains & hillsides, often w/ loamy or increased soil development & increased plant cover relative to *T. hookeri*.

According to BONAP, only the Dakota buckwheat, Missouri foxtail cactus, and Hooker's Townsendia have been documented in McKenzie County as of 2013.

The RFSS wildlife list includes seven species of birds, two mammals, three insects, and one species of fish as indicated in **Table 2**.

Table 2. RFSS wildlife in the Little Missouri National Grasslands

Scientific Name	Common Name	Animal Category
Ammodramus bairdii	Baird's sparrow	Bird
Anthus spragueii	Sprague's pipit	Bird
Athene cunicularia	Burrowing owl	Bird
Centrocercus urophasianus	Greater sage-grouse	Bird
Haliaeetus leucocephalus	Bald eagle	Bird
Lanius ludovicianus	Loggerhead shrike	Bird
Numenius americanus	Long-billed curlew	Bird
Cynomys ludovicianus	Black-tailed prairie dog	Mammal

Scientific Name	Common Name	Animal Category
Ovis canadensis	Bighorn sheep	Mammal
Hesperia ottoe	Ottoe skipper	Insect
Speyeria idalia	Regal fritillary	Insect
Phyciodes batesii	Tawny crescent	Insect
Chrosomus (Phoxinus) eos	Red-bellied dace	Fish

Methods

RFSS Plants (Targeted Survey)

Surveys for sensitive plants involved intuitive meander surveys through the environmental survey corridor by teams of two. Each team was led by a field botanist; a brief biography of each botanical survey lead is provided in **Appendix C**. Surveys were conducted entirely on foot, and the rate of progress for each team varied from 0.75 to 2.0 miles per day.

Survey crews targeted likely sensitive plant habitat based on a review of the habitat information provided in **Table 1** along with other resources reviewed prior to survey efforts. Sensitive plants, when found, were documented spatially either as isolated individuals or larger populations that required the delineation of a given population. The latter was done by marking the extent of the population via data points and a population boundary was generated via a desktop delineation using those data points. Spatial data were collected with submeter GPS units (Trimble Geo XT 6000). The number of individuals for each point or polygon was estimated and included in the attribute data. Documentation included completion of the data forms specified in the LMNG Biological Survey Guidelines prepared by the U.S. Forest Service (2018) (**Appendix B**).

RFSS Wildlife (Incidental Observations)

Survey crews were instructed to note any incidental observations of sensitive wildlife during the course of field surveys and document any observations on the wildlife data forms as specified in the LMNG Biological Survey Guidelines (2018) (**Appendix B**).

RFSS Insects (Incidental Observations)

As noted above, incidental observations of sensitive insect species were documented during presence/absence surveys for the federally listed Dakota skipper. Surveys were focused on areas that were identified during habitat mapping surveys as having suitable Dakota skipper habitat and were led by a qualified Dakota skipper surveyor (Gerald Selby) with MNR assisting, utilizing the USFWS 2018 Dakota Skipper (*Hesperia dacotae*) North Dakota Survey Protocol (USFWS, 2018g). Surveys were conducted during the Dakota skipper flight period which coincides with the flight period for the three sensitive insect species for the Little Missouri National Grassland. Incidental observations of sensitive insects were recorded on the wildlife data forms as specified in the LMNG Biological Survey Guidelines (2018) (**Appendix B**).

Results and Discussion

The general project area is located in open, hilly terrain with badlands occurring periodically throughout. Land use is primarily grazed rangeland dominated by crested wheatgrass (*Agropyron cristatum*). Prairie

communities are generally restricted to hillsides and hilltops where cattle activity is limited. These areas are typically vegetated with little bluestem (*Schizachyrium scoparium*) with purple coneflower (*Echineacea angustifolia*), needle-and-thread grass (*Hesperostipa comata*), sideoats grama (*Bouteloua curtipendula*), prairie coneflower (*Ratibida columnifera*), prairie sagewort (*Artemisia frigida*), toothed evening primrose (*Calylophus serrulatus*), harebell (*Campanula rotundifolia*), purple prairie clover (*Dalea purpurea*), prairie ragwort (*Packera plattensis*), and western wheatgrass (*Pascropyrum smithii*) also common. Representative photographs of the general land use are provided in **Appendix D**.

RFSS Plants (Targeted Survey)

Of the 14 vascular plants on the RFSS list, only five (Dakota buckwheat, Missouri foxtail cactus, Sand lily, Easter daisy, and Hooker's Townsendia) have suitable habitat present within the environmental survey corridor (**Table 3**). Of these species, the Missouri foxtail cactus, Easter daisy, and Hooker's Townsendia were documented during survey efforts. Representative photos of the documented RFSS plants are provided in **Appendix D**, with the required U.S. Forest Service data forms in **Appendix E**.

Table 3. RFSS plant habitat suitability within survey corridor

Scientific Name	Common Name	Suitable habitat present within survey corridor on USFS Land
Chenopodium subglabrum	Smooth goosefoot	No
Collinsia parviflora	Blue lips	No
Cryptantha torreyana	Torrey's cryptantha	No
Eriogonum cernuum	Nodding buckwheat	No
Eriogonum visheri	Dakota buckwheat	Yes
Escobaria missouriensis	Missouri foxtail cactus	Yes
Leucocrinum montanum	Sand lily	Yes
Mentzelia pumila	Dwarf mentzelia	No
Phlox alyssifolia	Alyssum-leaved phlox	No
Pinus flexillis	Limber pine	No
Populus x acuminata	Lanceleaf cottonwood	No
Sporobolus airoides	Alkali sacaton	No
Townsendia exscapa	Easter daisy	Yes
Townsendia hookeri	Hooker's Townsendia	Yes

The Missouri foxtail cactus was found frequently throughout the environmental survey corridor within the LMNG. This species was beginning to flower during survey efforts, with most detections relying on vegetative distinctions from the other ball cactus species (*Escobaria vivipara*). Each population/colony is represented by a unique feature identification number. Estimated numbers of individual plants are provided in **Appendix F**, and plant locations are illustrated in the figures provided in **Appendix A**.

The Easter daisy was observed at a single location and only one individual was found. This individual was in fruit at the time of observation. The feature identification number is provided in **Appendix F**, and the location is depicted in **Figure A-11 (Appendix A)**.

Hooker's Townsendia was found at a number of locations throughout the survey area. This species was in the fruiting stage at the time of survey, with the fruits providing beneficial contrast against the surrounding vegetation. Feature identification numbers and population estimates are provided in **Appendix F**, and locations are depicted in the figures provided in **Appendix A**.

RFSS Wildlife (Incidental Observations)

Of the 13 RFSS animals, eight have suitable habitat present within the survey corridor (**Table 4**). Two of the insect species, Ottoe skipper and regal fritillary, were incidentally observed during the course of individual surveys for the Dakota skipper.

Table 4. RFSS animal habitat suitability within survey corridor

Scientific Name	Common Name	Animal Category	Suitable habitat present within survey corridor on USFS Land
Ammodramus bairdii	Baird's sparrow	Bird	Yes
Anthus spragueii	Sprague's pipit	Bird	Yes
Athene cunicularia	Burrowing owl	Bird	No
Centrocercus urophasianus	Greater sage-grouse	Bird	No
Haliaeetus leucocephalus	Bald eagle	Bird	Yes
Lanius ludovicianus	Loggerhead shrike	Bird	Yes
Numenius americanus	Long-billed curlew	Bird	Yes
Cynomys ludovicianus	Black-tailed prairie dog	Mammal	No
Ovis canadensis	Bighorn sheep	Mammal	No[1]
Hesperia ottoe	Ottoe skipper	Insect	Yes
Speyeria idalia	Regal fritillary	Insect	Yes
Phyciodes batesii	Tawny crescent	Insect	Yes
Chrosomus (Phoxinus) eos	Red-bellied dace	Fish	No

[1] The project area is not within the boundary of the primary bighorn sheep range (NDGF 2013). https://gf.nd.gov/gnf/maps/species/bighorn-sheep.pdf.

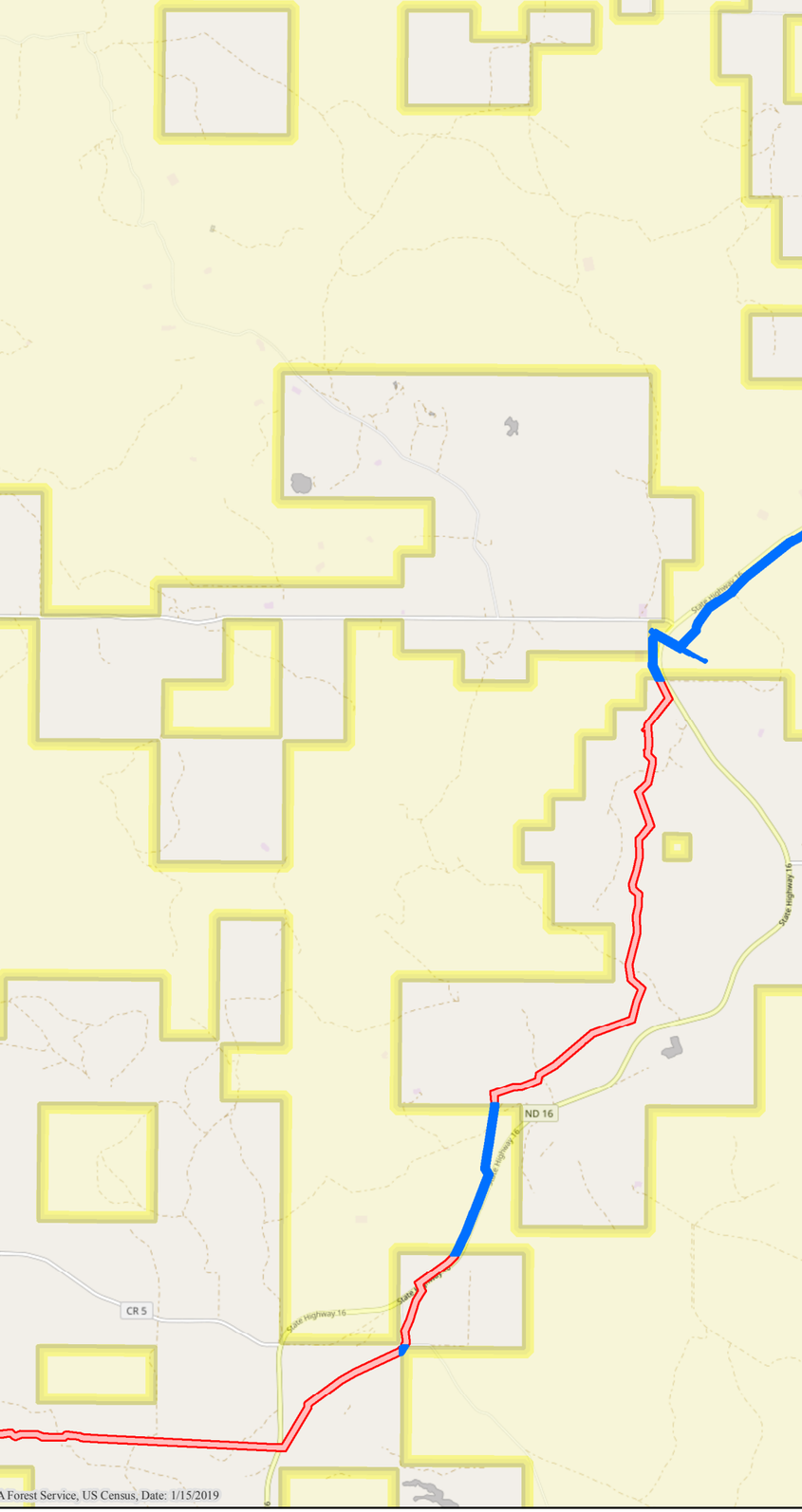
RFSS Insects (Incidental Observations)

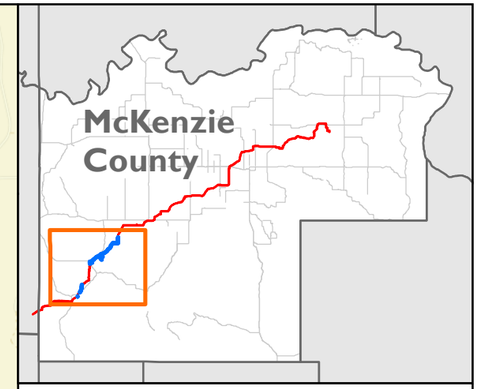
Incidental observations of the two sensitive insect species occurred within prairie habitat patches during individual surveys for the Dakota skipper. A total of 19 regal fritillary individuals were observed at 13 different patches, and total of six Ottoe skipper individuals were observed at five additional habitat patches. These locations are included with the figures displaying RFSS plant observations (**Appendix A**). Representative photos of the documented RFSS insects are provided in **Appendix D**, with required U.S. Forest Service data forms in **Appendix G**.

Appendix A

Project Figures

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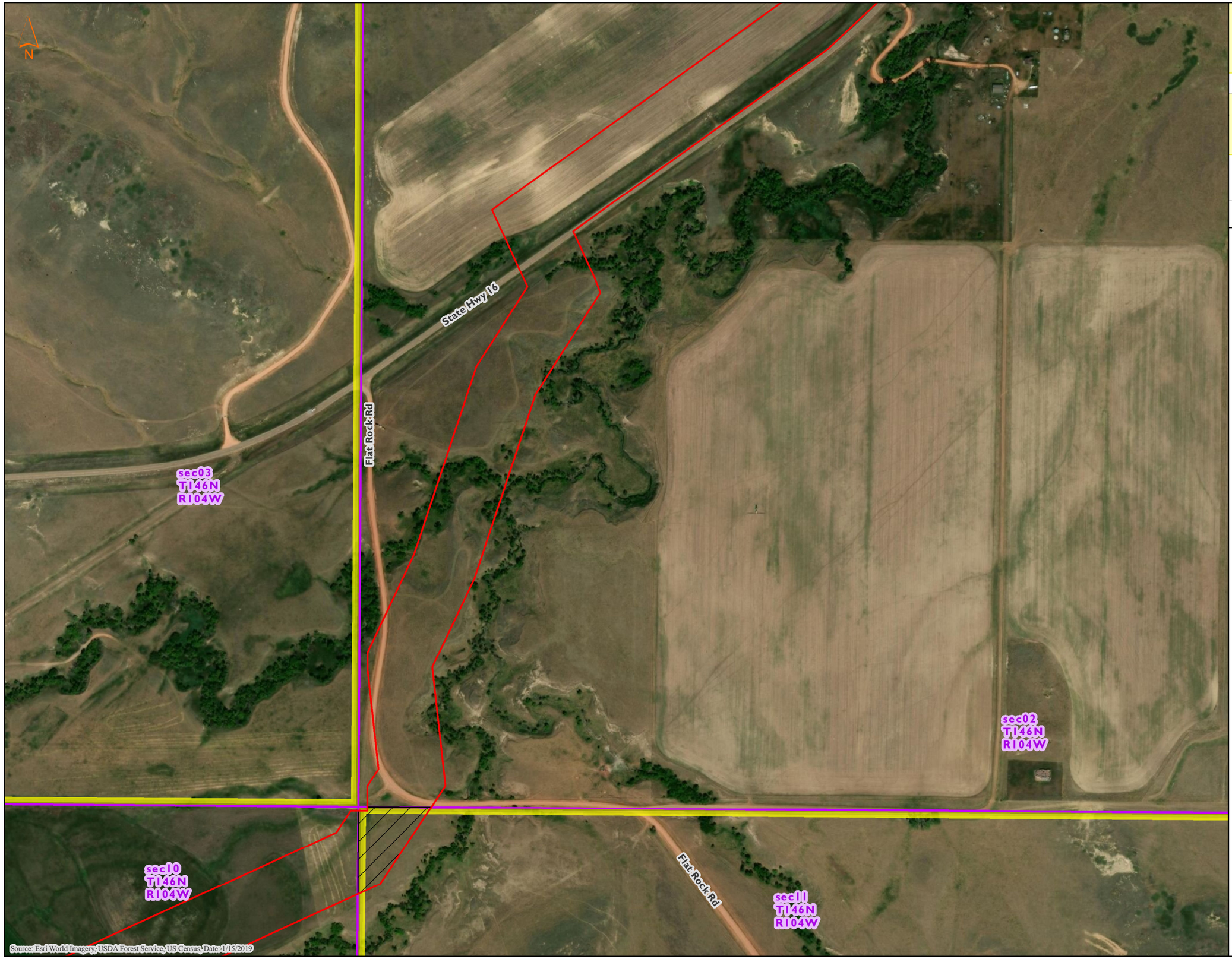
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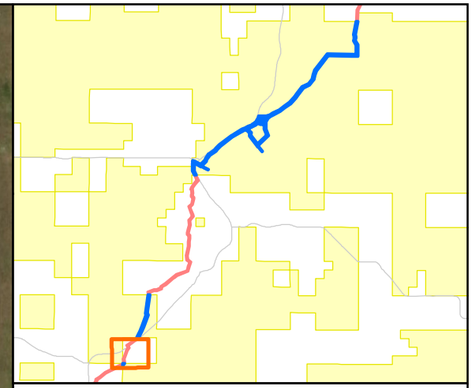
Project Overview on USFS Land
Demicks Lake Pipeline Project
ONEOK Bakken Pipeline, L.L.C.
McKenzie County, North Dakota

Figure A-1

Area Surveyed (USFS Land)
Survey Corridor
Little Missouri National Grassland

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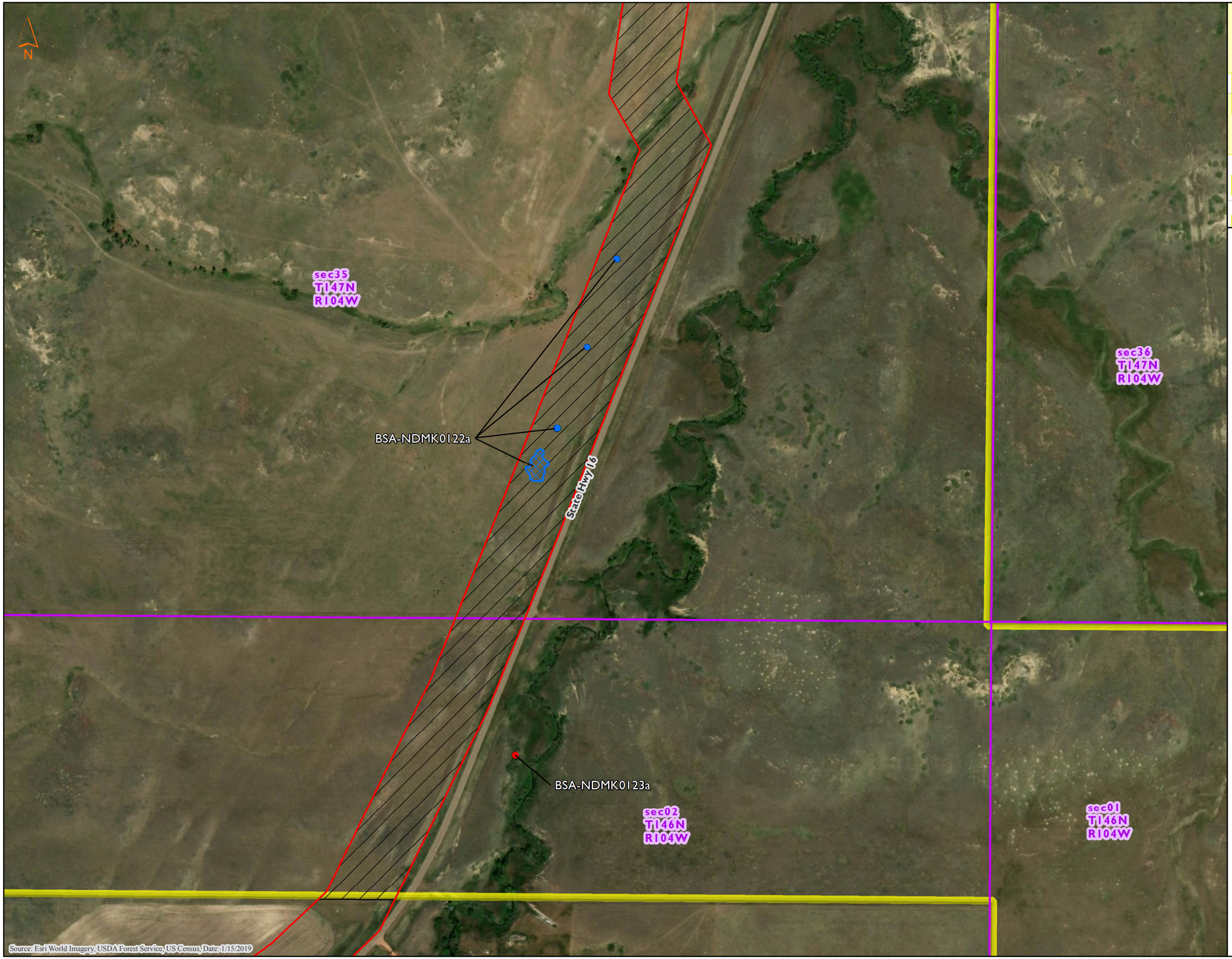
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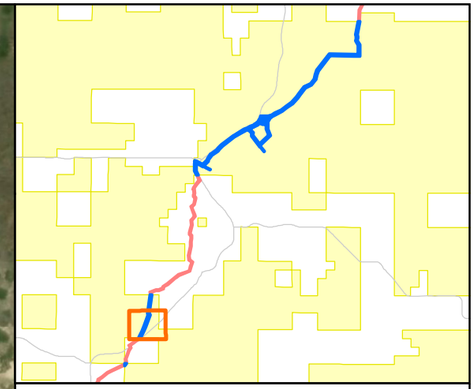
RFSS Observations on USFS Land
Demicks Lake Pipeline Project
ONEOK Bakken Pipeline, L.L.C.
McKenzie County, North Dakota

Figure A-2

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- *Townsendia exscapa*
- *Townsendia hookeri*
- *Escobaria missouriensis*
- *Townsendia hookeri*
- *Hesperia ottoe*
- *Speyeria idalia*
- Area Surveyed (USFS Land)
- Little Missouri National Grassland Boundary
- PLSS Section
- Survey Corridor

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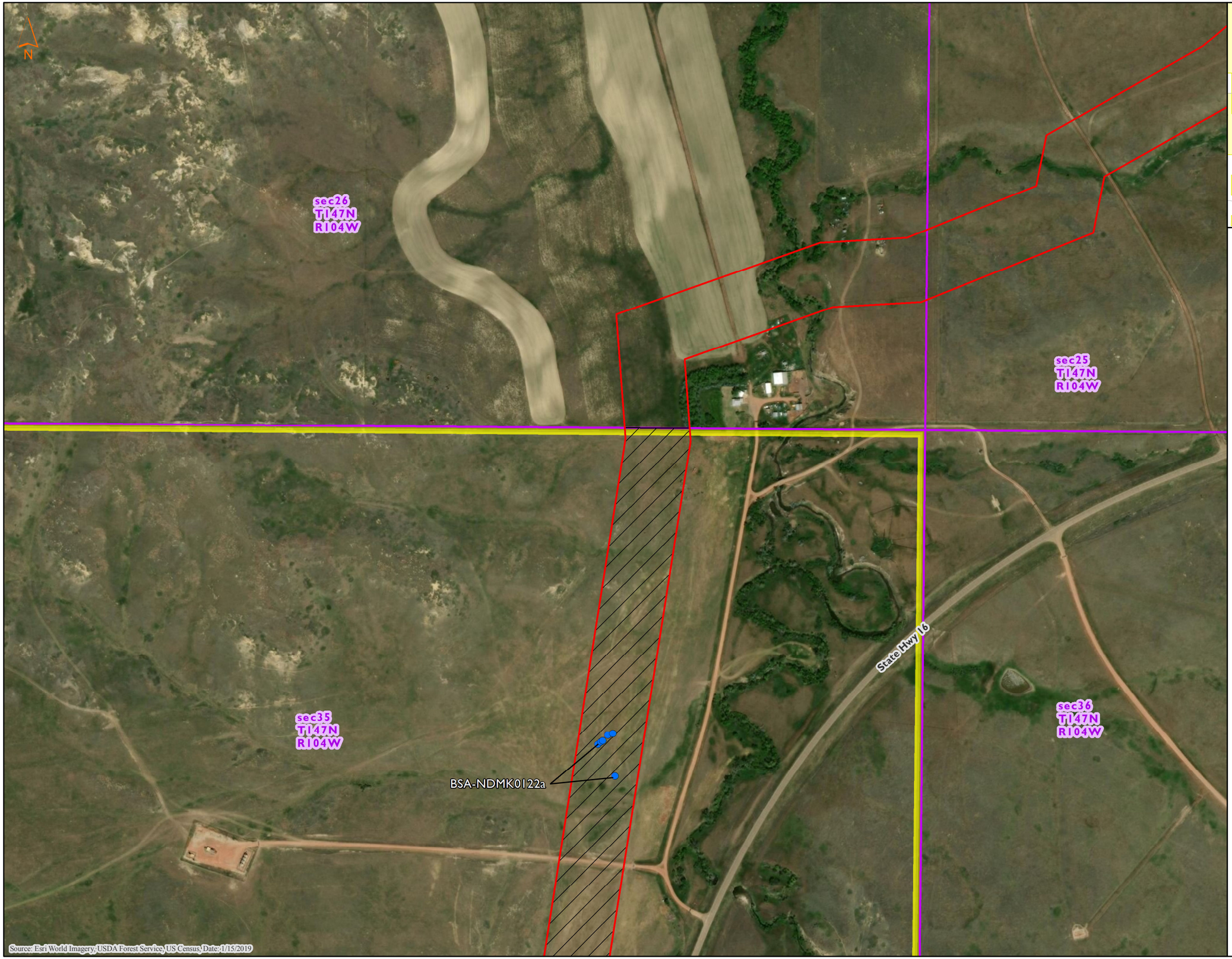
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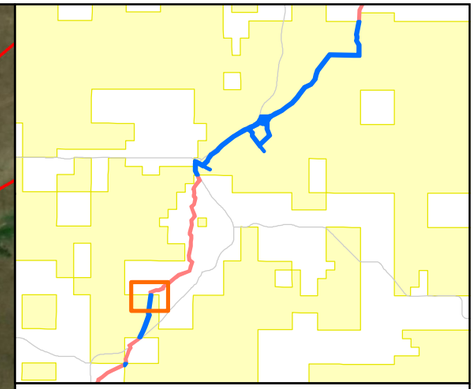
RFSS Observations on USFS Land
Demicks Lake Pipeline Project
ONEOK Bakken Pipeline, L.L.C.
McKenzie County, North Dakota

Figure A-3

- *Escobaria missouriensis*
- *Townsendia exscapa*
- *Townsendia hookeri*
- *Escobaria missouriensis*
- *Townsendia hookeri*
- *Hesperia ottoe*
- *Speyeria idalia*
- Area Surveyed (USFS Land)
- Little Missouri National Grassland Boundary
- PLSS Section
- Survey Corridor

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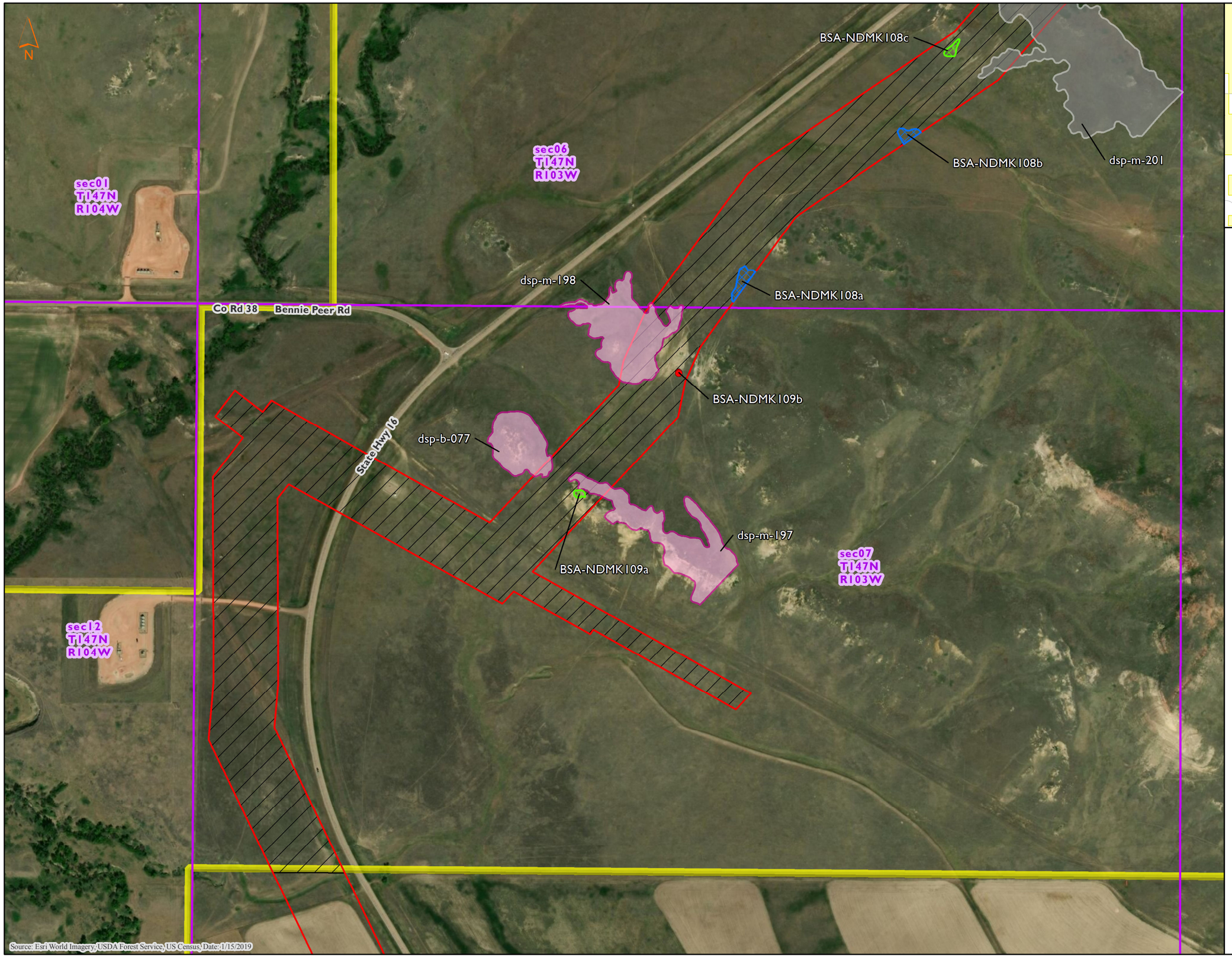
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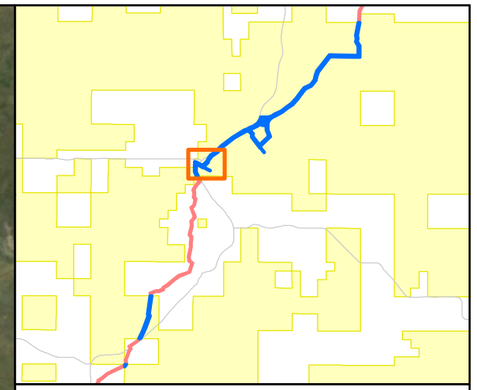
RFSS Observations on USFS Land
Demicks Lake Pipeline Project
ONEOK Bakken Pipeline, L.L.C.
McKenzie County, North Dakota

Figure A-4

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- Area Surveyed (USFS Land)
- Little Missouri National Grassland Boundary
- PLSS Section
- Survey Corridor

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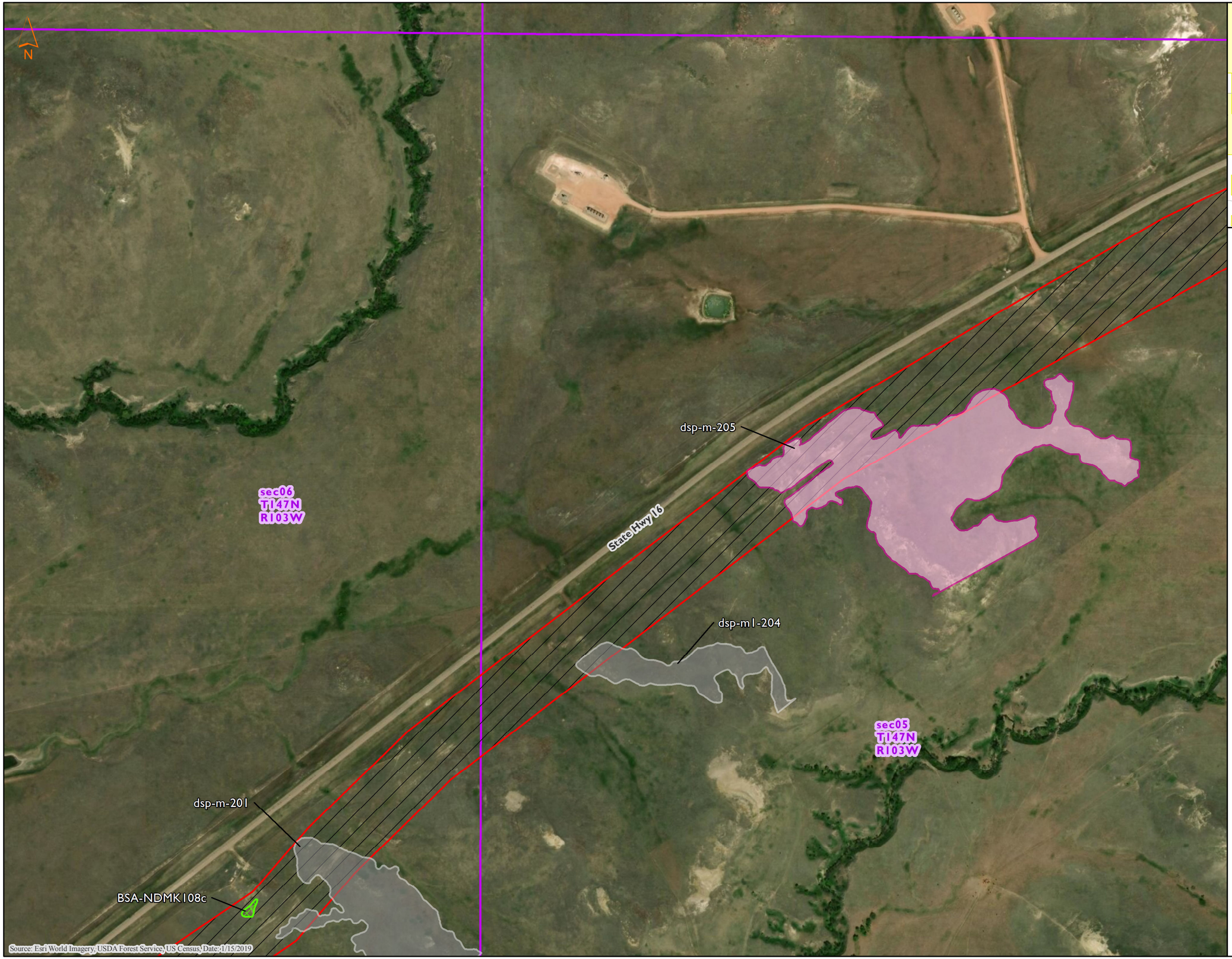
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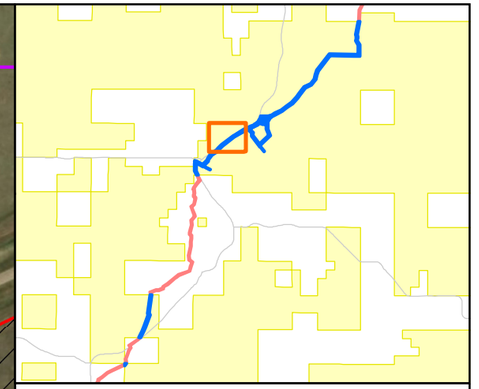
RFSS Observations on USFS Land
Demicks Lake Pipeline Project
ONEOK Bakken Pipeline, L.L.C.
McKenzie County, North Dakota

Figure A-5

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- *Speyeria idalia*
- Area Surveyed (USFS Land)
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- PLSS Section
- Survey Corridor

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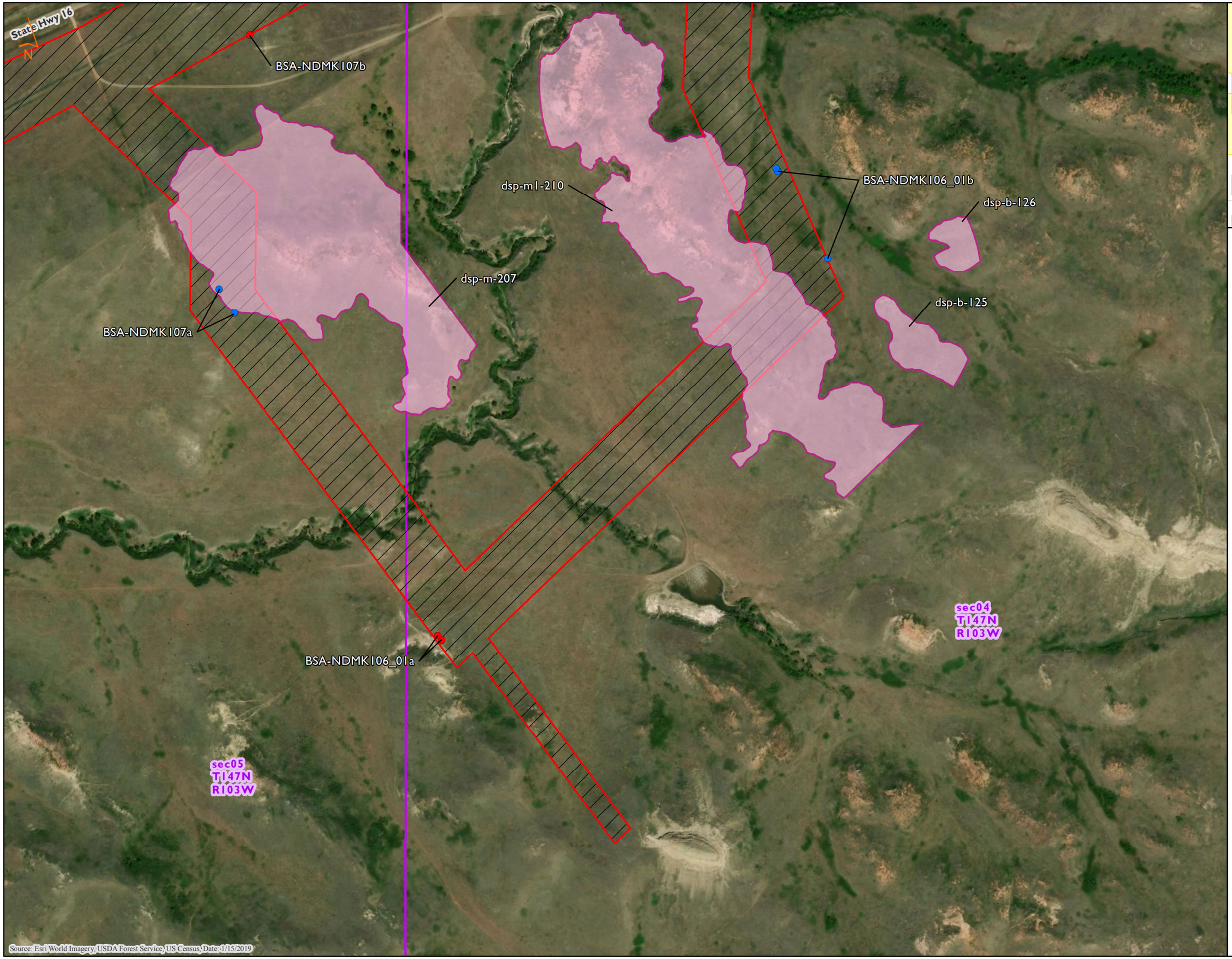
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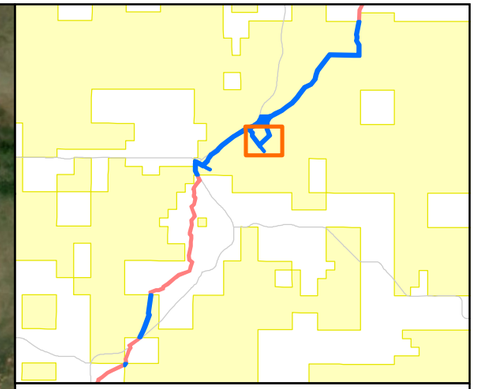
RFSS Observations on USFS Land
Demicks Lake Pipeline Project
ONEOK Bakken Pipeline, L.L.C.
McKenzie County, North Dakota

Figure A-6

- *Escobaria missouriensis*
- *Townsendia exscapa*
- *Townsendia hookeri*
- *Escobaria missouriensis*
- *Townsendia hookeri*
- *Hesperia ottoe*
- *Speyeria idalia*
- Area Surveyed (USFS Land)
- Little Missouri National Grassland Boundary
- PLSS Section
- Survey Corridor

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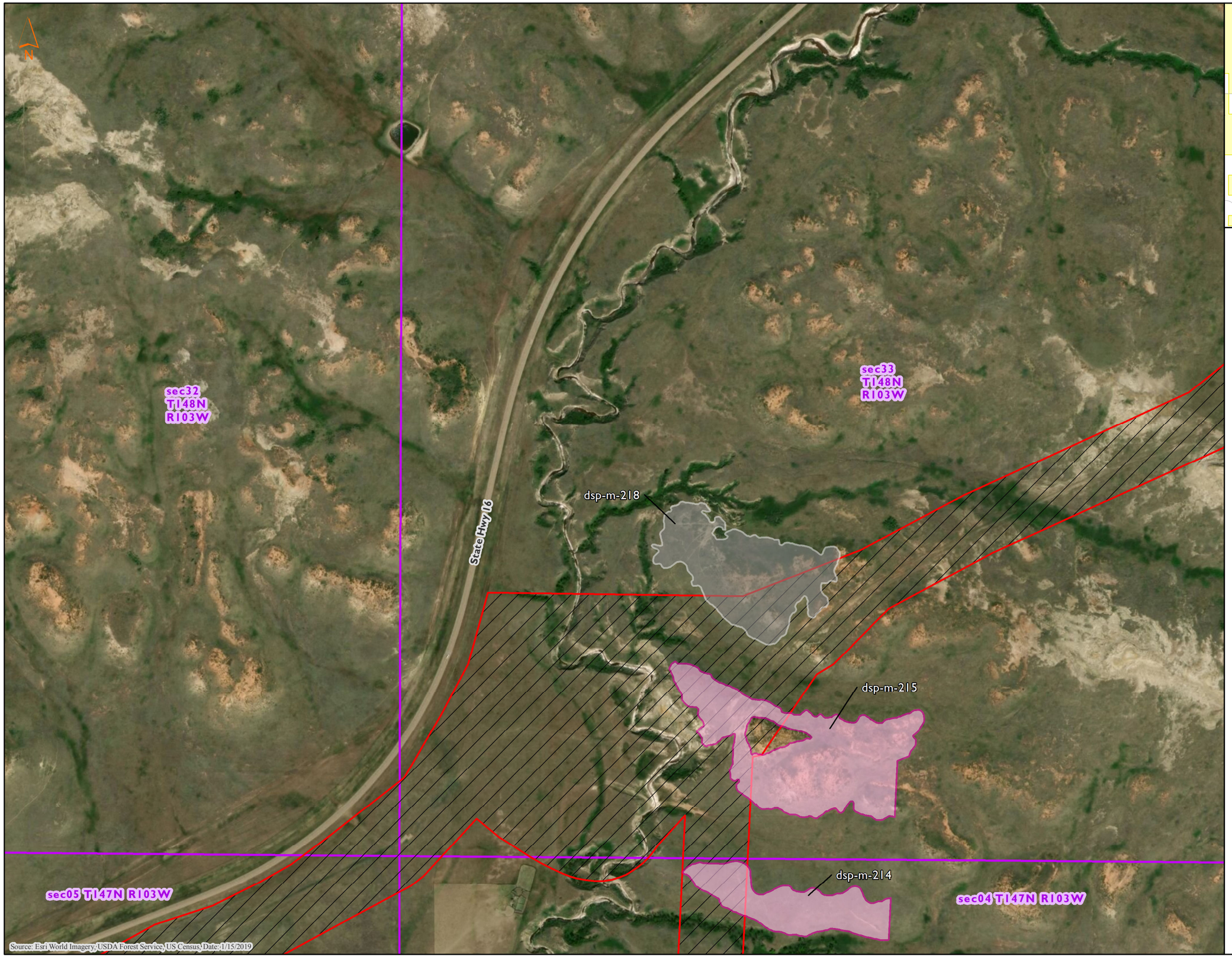
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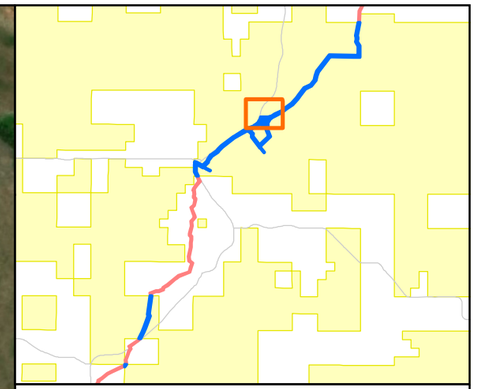
RFSS Observations on USFS Land
Demicks Lake Pipeline Project
ONEOK Bakken Pipeline, L.L.C.
McKenzie County, North Dakota

Figure A-7

- *Escobaria missouriensis*
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- *Townsendia hookeri*
- *Escobaria missouriensis*
- *Townsendia hookeri*
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- Area Surveyed (USFS Land)
- Little Missouri National Grassland Boundary
- PLSS Section
- Survey Corridor

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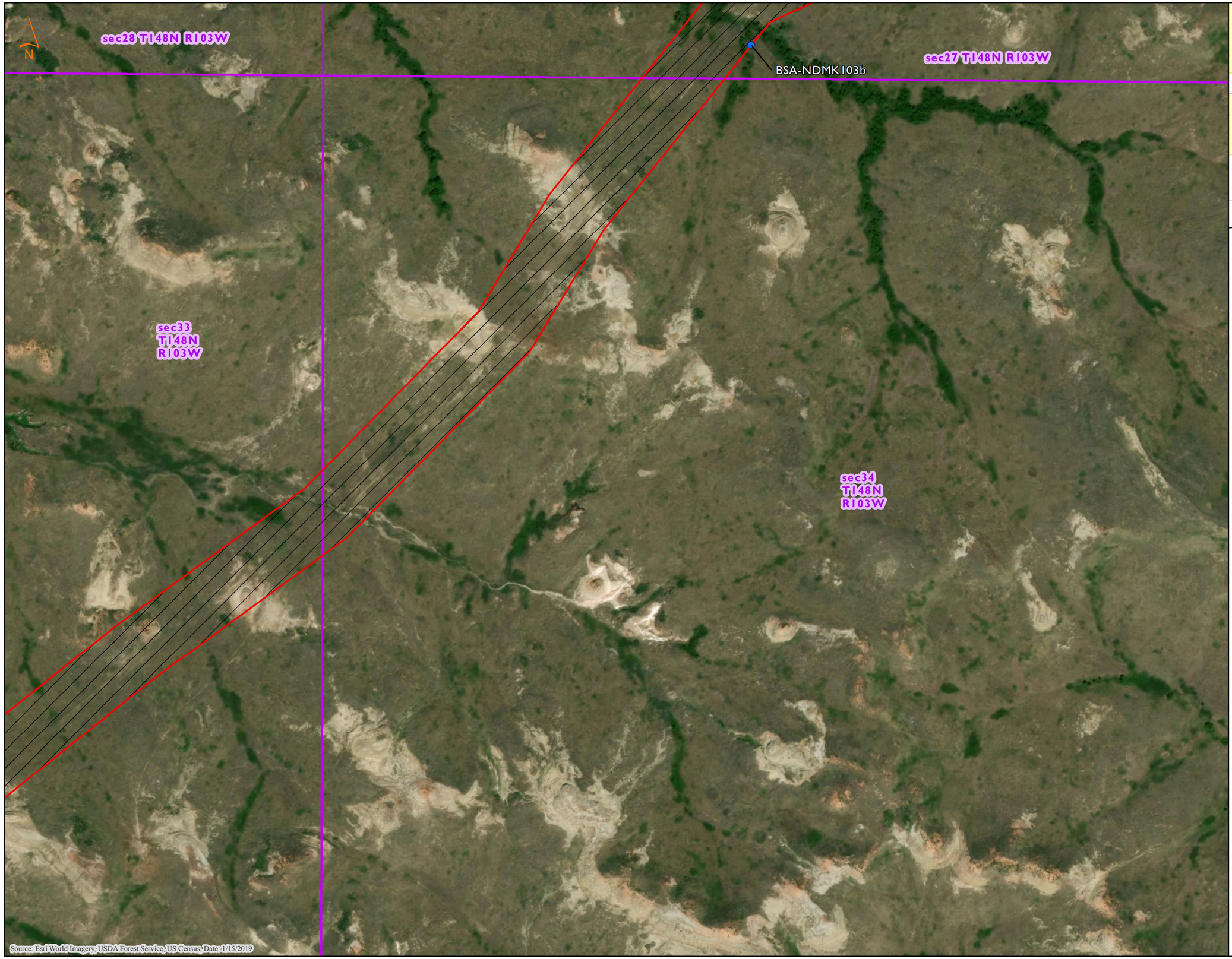
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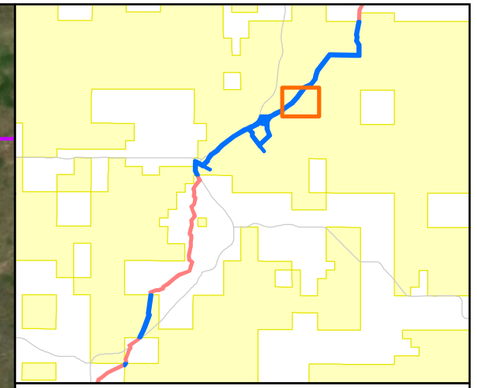
RFSS Observations on USFS Land
Demicks Lake Pipeline Project
ONEOK Bakken Pipeline, L.L.C.
McKenzie County, North Dakota

Figure A-8

- *Escobaria missouriensis*
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- *Townsendia hookeri*
- *Escobaria missouriensis*
- *Townsendia hookeri*
- *Hesperia ottoe*
- *Speyeria idalia*
- Area Surveyed (USFS Land)
- Little Missouri National Grassland Boundary
- PLSS Section
- Survey Corridor

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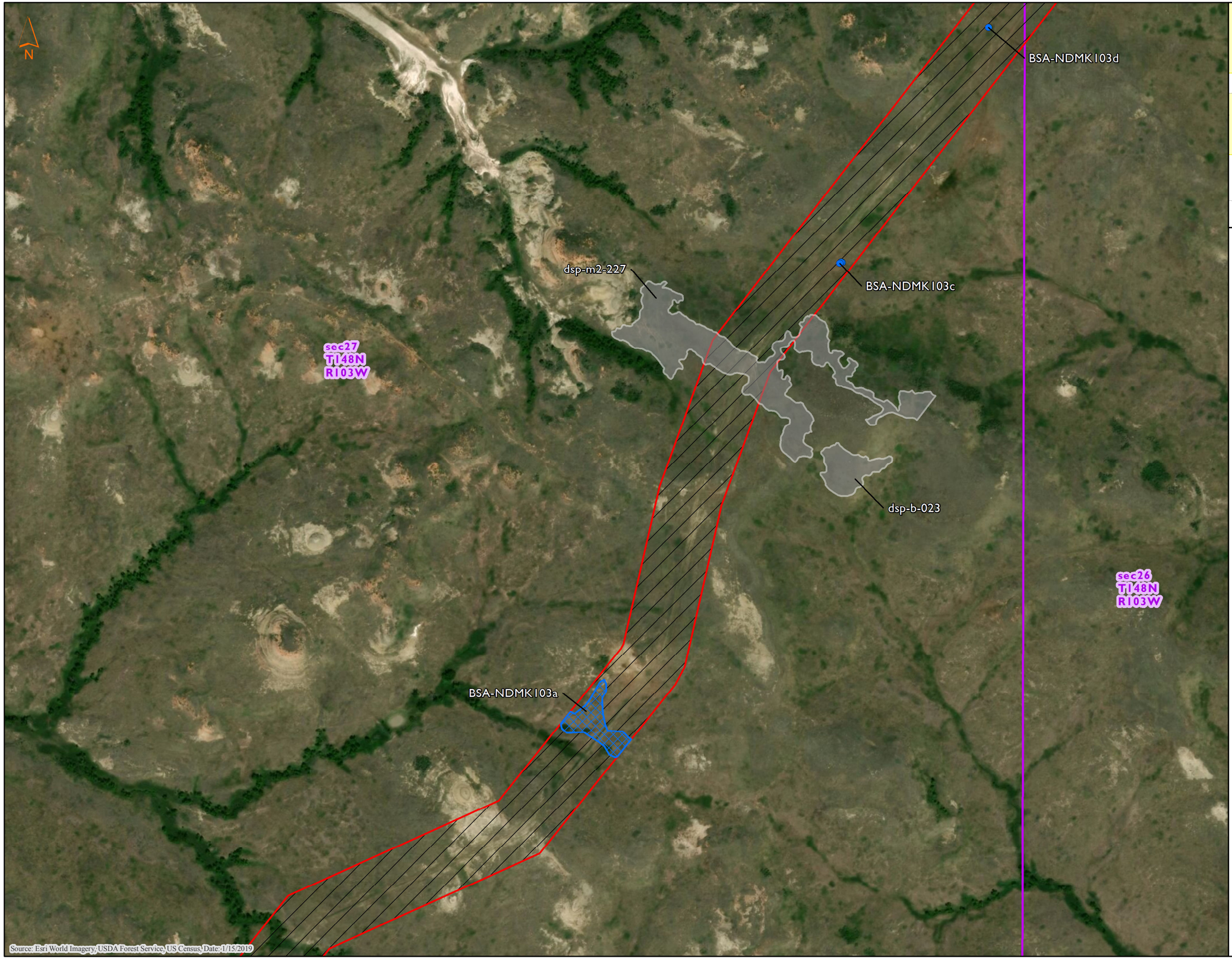
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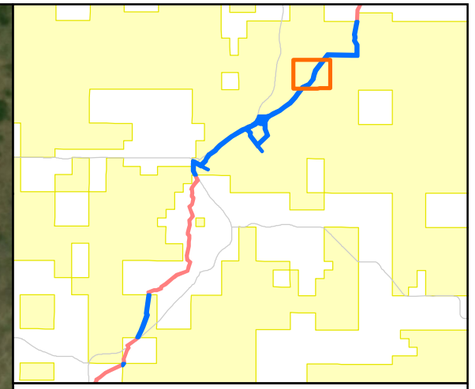
RFSS Observations on USFS Land
Demicks Lake Pipeline Project
ONEOK Bakken Pipeline, L.L.C.
McKenzie County, North Dakota

Figure A-9

- *Escobaria missouriensis*
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- Area Surveyed (USFS Land)
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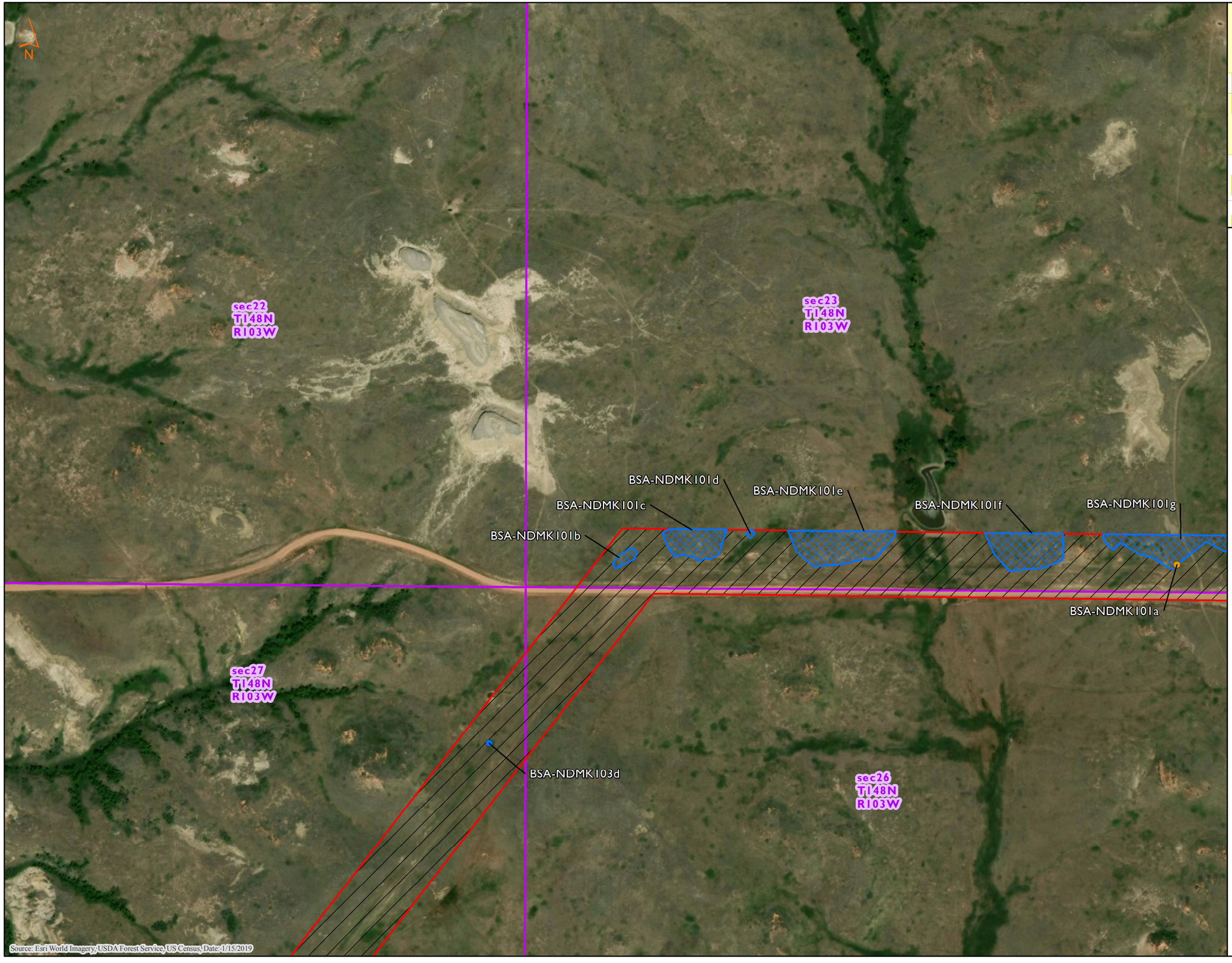
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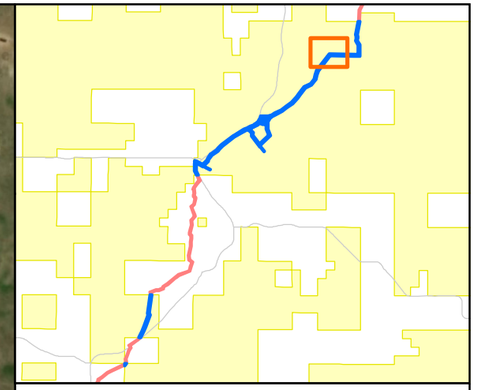
RFSS Observations on USFS Land
Demicks Lake Pipeline Project
ONEOK Bakken Pipeline, L.L.C.
McKenzie County, North Dakota

Figure A-10

- *Escobaria missouriensis*
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- *Townsendia hookeri*
- *Escobaria missouriensis*
- *Townsendia hookeri*
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- *Speyeria idalia*
- Area Surveyed (USFS Land)
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- PLSS Section
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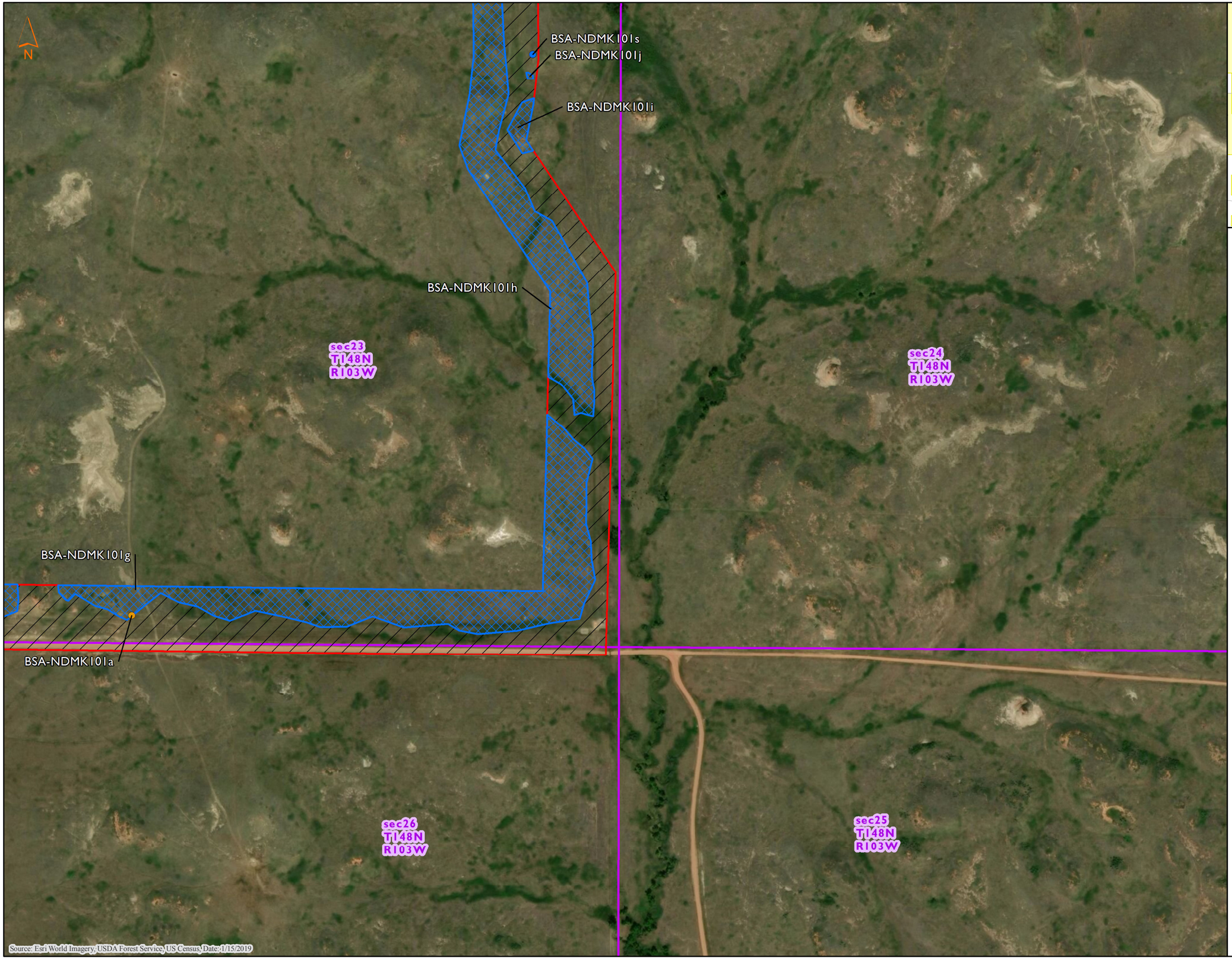
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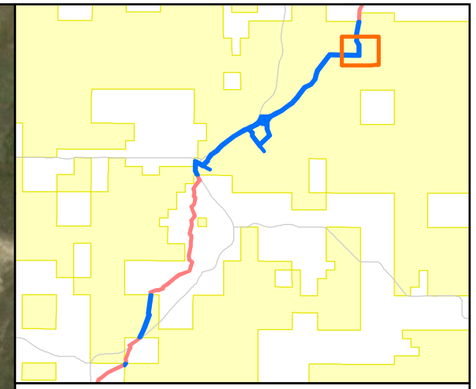
RFSS Observations on USFS Land
Demicks Lake Pipeline Project
ONEOK Bakken Pipeline, L.L.C.
McKenzie County, North Dakota

Figure A-11

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- *Townsendia hookeri*
- *Escobaria missouriensis*
- *Townsendia hookeri*
- *Hesperia ottoe*
- *Speyeria idalia*
- Area Surveyed (USFS Land)
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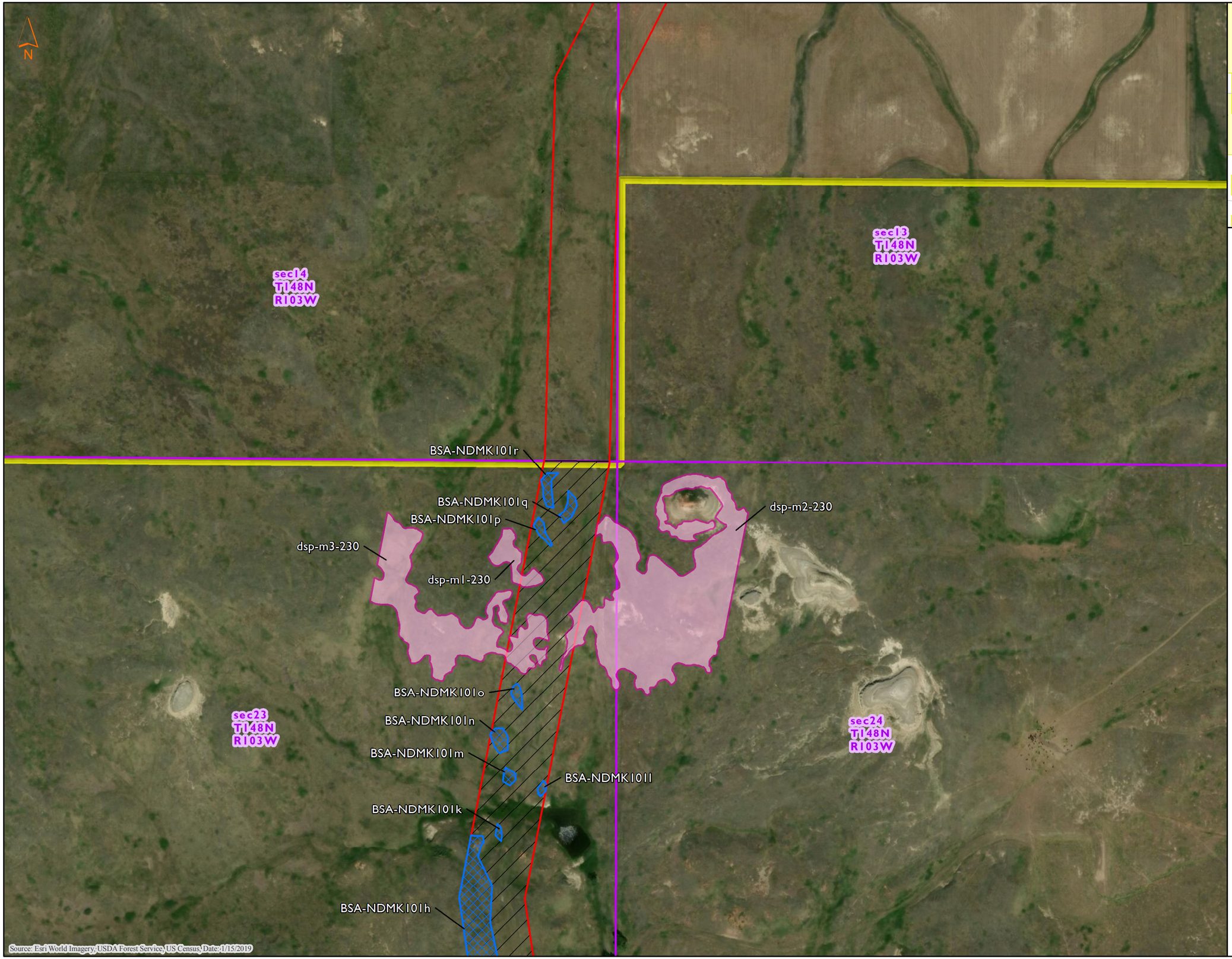
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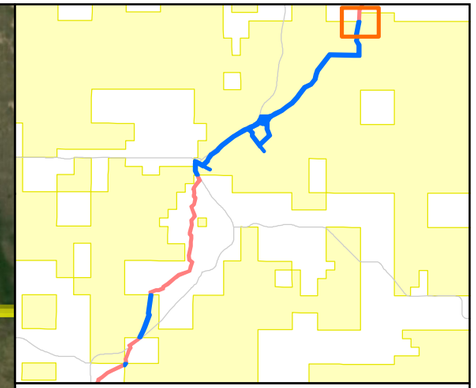
RFSS Observations on USFS Land
Demicks Lake Pipeline Project
ONEOK Bakken Pipeline, L.L.C.
McKenzie County, North Dakota

Figure A-12

- *Escobaria missouriensis*
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- *Townsendia hookeri*
- *Escobaria missouriensis*
- *Townsendia hookeri*
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RFSS Observations on USFS Land
Demicks Lake Pipeline Project
ONEOK Bakken Pipeline, L.L.C.
McKenzie County, North Dakota

Figure A-13

- *Escobaria missouriensis*
- *Townsendia exscapa*
- *Townsendia hookeri*
- *Escobaria missouriensis*
- *Townsendia hookeri*
- *Hesperia ottoe*
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Appendix B

LMNG Biological Survey Guidelines

Biological Survey Guidelines

Little Missouri National Grassland

McKenzie Ranger District &
Medora Ranger District,
Dakota Prairie Grasslands,
U.S. Forest Service

2018



In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at http://www.ascr.usda.gov/complaint_filing_cust.html and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.

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General Introduction

Information listed below is for the Little Missouri National Grassland (LMNG), which includes the McKenzie Ranger District and the Medora Ranger District. For survey protocols on other grasslands within the Dakota Prairie Grasslands (DPG) please contact Meghan Dinkins (Contacts list on page 1). Furthermore, please refer to the excel spreadsheets sent with this letter: "DPG TES Plant Survey Form" and "DPG Wildlife Survey Field Form" in concert with this letter for information on how to collect data on DPG; these sheets are formatted for printing on 8 ½ by 11 inch paper.

Survey and Biological Evaluation Protocols apply to LMNG as a whole. **Notify DPG staff prior to conducting surveys on the LMNG. A survey report must be submitted to the DPG for all surveys conducted on the LMNG by December 15th of the survey year.**

By early May, updated GIS shapefiles of known sensitive species locations will be distributed by email. If you do not receive the updated GIS information, please contact DPG staff. Digital survey data for the DPG are updated annually. Prior to beginning surveys for a new proposed project, contractors may consider contacting district botanists and wildlife biologists to determine whether additional data may be available for the project area.

Information about ESA listed species sightings and locations must be turned in as soon as possible after sighting; this information can be transferred through a brief e-mail or phone message to at least one person at the district office and Meghan Dinkins.

Important Contacts

Note: all phone numbers are land lines.

McKenzie Ranger District, Watford City ND

- Laurie Gawin, Botanist: (701)842-8516; lgawin@fs.fed.us
- Sarah Wold, Wildlife Technician: (701)842-8500; sarahwold@fs.fed.us

Medora Ranger District, Dickinson ND

- Jack Dahl, Botanist: (701)227-7832; jdahl@fs.fed.us
- J.J. Nelson, Wildlife Biologist: (701)227-7848; josiahnelson@fs.fed.us
- Arden Warm, Supervisory Wildlife Biologist: (701)227-7815; awarm@fs.fed.us

Dakota Prairie Grasslands Supervisor's Office, Bismarck ND

- Meghan Dinkins, Biology Program Manager; Zone Sheyenne/Grand River Biologist: (701)989-7320; meghanfdinkins@fs.fed.us
- Phil Sjursen, GIS Coordinator: (701)989-7324; psjursen@fs.fed.us

US Fish and Wildlife Service Contacts, Bismarck, ND

- North Dakota Ecological Services Supervisor, (701)355-8503; kevin_shelley@fws.gov

Rules & Regulations

All activities on National Forest System (NFS) lands are required to conform to the Federal Code of Regulations and applicable laws. It is the responsibility of surveyors to be aware of any special orders in effect for the DPG, or individual Ranger Districts. Contact the local Ranger Station for information on special orders, or to obtain any required permits.

Off-road permits and collection permits, if traveling off-road or collecting materials, must be retained at all times while on NFS lands.

Any collections of sensitive or watch plant species must be approved by a FS permit. 36CFR261.9(d) prohibits "removing any plant that is classified as a threatened, endangered, sensitive, rare, or unique species"; with a fine in ND of $100. Details of collection will be outlined in the permit that can be obtained at a local FS office. If there is a question about possible identification of a sensitive species, surveyor should contact the local FS Botanist.

Collection of any plant species for personal use (not for resale) and not covered under 36CFR261.9(d) also requires a FS permit. A Forest Products Free Use Permit to collect plant specimens for personal use or species identification can be obtained at no charge from a local FS office.

Survey Report Requirements

Notify DPG staff prior to conducting surveys on the LMNG. Survey reports are required for all surveys conducted on the LMNG by December 15th of the survey year even if a project does not move forward and a biological evaluation is no longer required. Reports should be submitted electronically and should include the following information:

1. Survey dates
2. Locations (latitude and longitude; legal designations) and GPS/GIS files
3. Project description
4. Survey area descriptions (ecological sites, plant communities, terrain, etc.)
5. Species inventoried
6. Photographs of the survey area, notable plant species, and wildlife (if feasible)
7. Copies of field data sheets

Biological Evaluation Requirements

Referenced from Forest Service Manual (FSM) 2672.4.

Note: For the purposes of this document, biological evaluations are not the same as biological assessments. Biological assessments need to be done if the project has potential impacts on Endangered Species Act (ESA) listed species. Per current communication from the ND USFWS Ecological Services office, Biological Assessments should only include information about ESA listed species. For more information, please see Threatened & Endangered Species section later in this document.

Biological Evaluations

Review all FS planned, funded, executed, or permitted programs and activities for possible effects on endangered, threatened, proposed, or sensitive species. The biological evaluation is the means of conducting the review and of documenting the findings.

Biological evaluations are needed for new projects, or project additions but are not needed for existing developments, infrastructure, and/or maintenance activities. Surveys may also be exempted for proposed projects that have been covered by previous surveys within the last 3-5 years. Sensitive plant surveys may be exempted from proposed projects that have been covered by previous surveys within the **last 3-5 years**; projects proposed in areas with a low potential for occurrence of any sensitive plant species; projects that would result in a low degree of disturbance, or potential to appreciably affect current conditions. Any waivers of surveys must be approved by the appropriate FS specialist.

Objectives of the Biological Evaluation and Biological Assessment

1. To ensure that Forest Service actions do not contribute to loss of viability of any native or desired non-native plant or contribute to animal species or trends toward Federal listing of any species.

2. To comply with requirements of the Endangered Species Act that actions of Federal agencies not jeopardize or adversely modify critical habitat of federally listed species.

3. To provide a process and standard by which to ensure that threatened, endangered, proposed, and sensitive species receive full consideration in the decision making process.

Minimum Requirements for Biological Evaluation

Please include the following in the biological evaluations:

1) An identification of all listed, proposed, and sensitive species known or expected to be in the project area or that the project potentially affects. Contact the USFWS as part of the informal consultation process for a list of endangered, threatened, or proposed species that may be present in the project area. An identification and description of all occupied and unoccupied habitat recognized as essential for listed or proposed species recovery, or to meet Forest Service objectives for sensitive species.

2) An analysis of effects of the proposed action on species, their occupied habitat, or on any unoccupied habitat required for recovery.

3) A discussion of cumulative effects resulting from the planned project in relationship to existing conditions and other related projects.

   A cumulative effects analysis is used to determine the temporal and spatial extent to which the proposed project's direct/indirect effects contribute to other effects on the species in question, whether habitat or population. If there are no direct or indirect effects to the species or habitat, then there would be no contribution to cumulative effects and an analysis is not necessary. Conversely, it is incorrect to necessarily conclude that the individual project "would not result in cumulative effects due to its small size of a few acres", or that when viewed on its own the project would have negligible impacts on the landscape. An analysis of the cumulative effects must be addressed with respect to past, present, and reasonably foreseeable future effects whenever there are any direct/indirect effects to sensitive plant species or native plant resources. For plant species, a one-half mile radius around the project site should be used as a Cumulative Effects analysis area unless a more logical and defendable area can be identified. For wildlife sensitive species, the Cumulative Effects analysis area

would differ depending on the species life histories for example, bighorn sheep could encompass a larger area (100+'s of acres) than a Baird's sparrow (10+'s of acres).

Items to think about (not exhaustive):

a) Species being analyzed: population and potential habitat being impacted;

b) Number of discrete disturbances over the past number of years;

c) Total acres of disturbance, such as roads, and pads;

d) Other management activities such as cattle grazing, recreational activities, oil and gas, etc.;

e) Activities on adjacent private and state lands should be calculated in as well.

4) A **determination** of no impact, may impact, will impact, or beneficial impact (see below) on the species with the process and rationale for determination. These are documented in the environmental analysis document for the public.

Effects to sensitive plant and wildlife species fall into the following categories. Region 1 direction is to specifically use the language to make a determination. Please adhere to these.

a) **No Impact**: A determination of "No Impact" for sensitive species occurs when a project or activity will have no environmental effects on habitat, individuals, a population or a species. If any effects are listed for a sensitive species, then a "No Impact" conclusion is not appropriate.

b) **May Impact:** Individuals Or Habitat, But Will Not Likely Contribute To A Trend Towards Federal Listing Or Cause a Loss of Viability To the Population or Species:

Impacts to individuals or habitat of sensitive species should be given careful consideration. Loss of populations or meta-populations is often the basis for eventual species extinction. Rationale should be provided regarding **why** the effects would not contribute to federal listing or cause a loss of viability to the population or species.

c) **Will Impact**: Individuals Or Habitat With A Consequence That The Action Will Contribute To A Trend Towards Federal Listing Or Cause a Loss of Viability To the Population or Species:

Loss of individuals or habitat can be considered significant when the potential effect may contribute to a trend toward federal listing. The loss of individuals is significant when there are few populations and/or few individuals within populations. For these situations, any effects to the species may lead to a loss of viability and contribute towards federal listing.

Projects or activities that adversely affect many individuals of a species with limited population numbers, or even a few individuals with a limited number of small populations should probably receive this conclusion.

d) **Beneficial Impact**: Projects or activities that are designed or happen to benefit sensitive species should receive this conclusion.

5) Recommendations for removing, avoiding, or compensating for any adverse effects.

Design Criteria/Mitigation Measures: The report should include suggested design criteria or mitigation measures, to alleviate adverse effects and avoid unnecessary disturbances to sensitive plant

species, native plant communities, and wildlife species or habitat. Examples include recommendations for avoiding impacts to certain plant communities or species, or incorporating the control of invasive species within the scope of project development and design. Be as specific as possible with design criteria. Identifying adverse effects in the analysis but concluding that no mitigation measures are necessary is not logical. For example, if herbicide treatments or infested soil containment are warranted, specify where they should be conducted. Rational for invasive species treatments decreases when areas surrounding the project area are increasingly dominated by invasive species. For instance, it would not be very effective to pre-treat a well site for crested wheatgrass if the surrounding area is overwhelmingly dominated by the same species with a certainty of re-invading the site.

6) A reference of any informal consultation with the USFWS as well as a list of contacts, contributors, sources of data, and literature references used in developing the biological evaluation.

A suggested procedure for determining when a project-level field survey for endangered, threatened, or sensitive species is necessary is outlined in Appendix A.

Botany Surveys

General Information

See Table 1 in Appendix B for a list of sensitive plant species that occur on the LMNG. The sensitive plant survey season for the LMNG begins on May 15[1] and extends through September 15, weather and growth conditions permitting. Plant surveys must be conducted at the appropriate period(s) to identify sensitive and watch plant species with potential to occur in the survey area, as well as to accurately describe the vegetation community. When populations of sensitive species are found, consultants must contact and coordinate with District botanists within seven days. See the protocol below for details.

Contractor Qualifications

a) A degree in Botany or Plant Ecology, or thoroughly demonstrated botanical experience and knowledge to accurately inventory and document plant species and vegetation conditions.

b) Demonstrated skill in plant identification, use of plant taxonomic keys, and rare plant surveys. Knowledge of flora and plant habitat of the northern Great Plains.

c) Ability to analyze effects of a proposed project on botanical resources through knowledge of ecological theory and plant community dynamics in response to disturbance.

d) Ability to prepare technical reports and apply FS procedures and directives in preparation of Biological Evaluations (BE).

[1] On the LMNG, two sensitive *Townsendia* species are commonly found in the Charlson area where oil, gas and other related projects are commonly proposed. Flowering for these species typically begins in mid spring before this date. While surveys can be conducted for these species in vegetative form during the official survey season, the most effective time to locate and identify populations of these plants begins prior to 15 May. To the extent that other populations of these species are known and therefore likely in a proposed project area, surveys may be conducted for them prior to 15 May. However, if contractors choose to conduct field work in late April or early May for these particular species, surveys will also need to be conducted later in the growing season for other sensitive plant species in the proposed project areas.

e) Ability to apply Standards and Guidelines identified in the DPG Land and Resource Management Plan (2001) to proposed projects.

Survey Protocol

Sensitive plant species surveys must be conducted in a manner that provides a high probability of locating any sensitive plants that may be present. Survey botanist must obtain an accurate map of the site and proposed areas of disturbance from the permit applicant, and the *field site must be accurately marked or flagged prior to the survey*. All habitats likely to be disturbed by the proposed project must be surveyed.

The following guidelines must be followed when conducting plant surveys on the LMNG:

a) Plant surveys must be conducted when sensitive species are most identifiable, such as during periods of flowering or in phenological stages that facilitate their discovery. Survey dates of **May 15 through September 15** span a period of active growth or identifiable litter for most sensitive plant species on the LMNG. These dates encompass the acceptable survey season unless otherwise specified by FS District staff botanists. Compromises inevitably occur because there are 14 sensitive plant species on the LMNG, all with different periods of growth and flowering. Sensitive plant surveys must be delayed or discontinued during adverse weather conditions such as drought, delayed spring growth, or plant-killing frost. When these situations occur, reasonable effort must be given to revisiting sites at a more appropriate time. If in doubt, contact the District botanist.

   If potential occurrences of a sensitive species are noted, but cannot be ascertained due to the growth stage, it may be necessary for the contractor to revisit the site during another season, or perhaps the following year, to verify/identify the species. Exceptions may occur if the proposed development is relocated to avoid the suspected population. In such cases, Forest Service (FS) District botanist(s) must be notified of the suspected occurrence and the actions taken to avoid them.

   When a sensitive plant species is discovered within the area that would be adversely affected by the project, surveyor needs to contact the FS **within seven days**. This provides DPG district botanists the opportunity to verify species' occurrence in a timely manner. If the occurrence is not reported within seven days, it may result in delaying concurrence of the survey and biological evaluation until the next year's survey season.

   When a sensitive plant population is identified within the area that would be directly disturbed by the proposed project, it is the contractor's responsibility to find acceptable alternatives to the project by coordinating adjustments with FS staff and company representatives.

b) Developments, such as roadways, pipelines, and utility lines will be surveyed at a minimum distance of 125 ft. on each side of the centerline of disturbance. However, survey widths can be decreased to 50 ft. on either side of electric lines, fiber optic cables, or other utilities that are plowed into place with low degrees of disturbance if the entire route is accurately and clearly flagged prior to the survey. If the route is not marked the survey corridor will remain at 250 ft. A minimum of 10 acres will be surveyed around well sites where one bore hole is anticipated, but the survey area should be increased for sites where multiple bore holes and larger well pads are expected. **The total area of survey is referenced as the *project area***.

c) A *Site and Setting Field Form* and *Plant Survey Form* (see excel spreadsheets for "TES Plant Survey Field Form-2018", and "DPG Sensitive Plant Field Form-2018") will be completed for

every proposed project for which a field survey is conducted. For each site, record latitude and longitude in degrees, minutes, and seconds, in NAD83 datum.

Provide detailed descriptions of, or graphically identify, plant communities (Ecological Sites) within the surveyed area. In addition, map, or describe, areas of suitable habitat for the 14 Sensitive species.

Plant communities dominated by invasive plants within the project area also must be graphically delineated. Further, plant communities dominated by native species, with consistent inclusions of invasive species must be described, including the extent and location delineated on site maps.

d) Watch species have the potential to occur on the LMNG. These species are not currently documented and/or have not been substantiated on either district. Survey botanists should familiarize themselves with characteristics of the twenty-four watch species, and document any occurrences in the same manner as sensitive plant species. Effects analyses on watch plant species habitat are not required within the BE. However, when populations of watch plants are discovered, complete an effects analysis for any found within the surveyed area.

   If a watch plant species is discovered within the area that would be adversely affected by the project, the surveyor will contact the FS **within seven days**. If the occurrence is not reported within seven days, it may result in delaying concurrence of the survey and BE until the next year's survey season. Please do not collect these species without DPG approval.

e) Contractor must complete a *Sensitive/Watch Plant Population Survey Form* whenever a sensitive or watch plant species is discovered. Copies of the completed form must be submitted to the FS Botanist within **seven days**. Topographic maps or aerial photographs delineating the plant population should be included. Photographs, and any additional notes on the occurrence, must be included. See the Survey GIS and GPS Protocols section below for more details regarding ArcMap GIS shape files. See Table 2 in Appendix B for a list of codes for completing the Sensitive/Watch Plant Population Survey Form.

Wildlife Surveys

Consult the USFWS Information for Planning and Consultation (IPaC) tool for listed species, migratory birds, and wetlands within the National Wetlands Inventory within the project/analysis area. This tool is available online at https://ecos.fws.gov/ipac.

Gaining access to the North Dakota Game and Fish GIS hub will provide a key piece of information to bighorn sheep lambing concerns. The layer of interest, in particular, is the one where an approximate line of sight zone is drawn around bighorn sheep lambing areas. Of note: the zone around Mikes Creek Area does not currently have any bighorn sheep within the polygon. The area is a future desired reintroduction site for the agency. Contact NDGF in Bismarck for access to the site.

Also, available as a guide to species occurrences, golden eagle nest sites, grouse leks, and known or historical locations for other raptors (e.g. prairie falcons and ferruginous hawks), are GIS layers that can be obtained from the DPG Supervisor's Office in Bismarck or contact Meghan Dinkins (see the Contacts list on page 1).

Wildlife Surveyor Contractor Qualifications

Surveys should be conducted by qualified individuals with a combination of education, training, and/or experience in conducting surveys of wildlife and habitats. More specialized experience is needed for Northern Long-Eared Bat and Dakota skipper surveyors; please see Dakota skipper (*Hesperia dacotae*) and Northern Long-eared Bat (*Myotis septentrionalis*) sections for more information.

General Survey Guidelines

Surveys should evaluate habitat potential for Forest Service designated sensitive species, raptor species (see Raptors section below), threatened/endangered species, and migratory birds. The scale of potential project impacts, as well as the ecology of various wildlife species must be considered when determining buffer distances for wildlife surveys. Assessments of species occurrence should also consider survey timing in relation to migratory species as well as survey effort in relation to occurrence of more cryptic wildlife species. The DPG provides and encourages use of a wildlife survey form (in printable Excel format).

Observations of Forest Service designated sensitive species, raptor species (including GPS locations of any active or unoccupied nests), threatened/endangered species, and migratory birds must be recorded and submitted in a survey report to the DPG by December 15th of the survey year. Further, the DPG has developed a list of wildlife watch species that are of interest on the LMNG (see Appendix C, Table 4). Please include any observations of wildlife watch species as well as dates and GPS locations in survey reports.

Threatened & Endangered Species

Consult the USFWS Information for Planning and Consultation (IPaC) tool for listed species within the project/analysis area. This tool is available online at https://ecos.fws.gov/ipac.

Under section 7(a)(2) of the ESA, federal agencies or their designated non-federal representatives must consult with FWS on any action that may affect any species listed as threatened or endangered or its critical habitat. For more information on ESA consultation, please see: https://www.fws.gov/midwest/endangered/section7/pdf/BAGuidance.pdf.

Part of consulting with the USFWS is writing a Biological Assessment. General information about writing a Biological Assessment may be seen at: https://www.fws.gov/midwest/endangered/section7/pdf/BAGuidance.pdf.

For permit and authorization requirements related to listed species, see: http://www.fws.gov/Midwest/endangered/permits/index.html

Dakota Skipper (*Hesperia dacotae*)

General Information

Dakota skipper was listed under the Endangered Species Act (ESA) as "Threatened" in October, 2014. As of March, 2018, McKenzie County is the only county on the Little Missouri National Grassland with Dakota skipper sightings. Counties that are associated with Dakota skipper can be found at: https://www.fws.gov/midwest/endangered/insects/dask/pdf/CntyOccurrencesDASKNov2017.pdf

Additionally, Dakota Skipper Critical Habitat occurs on the McKenzie Ranger District. For information about Dakota skipper critical habitat, please see:

https://www.federalregister.gov/articles/2015/10/01/2015-24184/endangered-and-threatened-wildlife-and-plants-designation-of-critical-habitat-for-the-dakota-skipper. and https://www.fws.gov/midwest/endangered/insects/dask/faqfinalchsept2015.html.

When working in areas associated with critical habitat, it is very important to determine whether your project will have an influence on the Primary Constituent Elements of the Dakota Skipper Critical Habitat; these can be found on pages 59275-59276 of the first link above.

Please refer to the following for information on Consultation requirements for Dakota skipper: https://www.fws.gov/midwest/endangered/insects/dask/pdf/DakotaSkipperS7GuidanceV1.1.pdf

Dakota Skipper Analysis

Reconnaissance of an action area before the flight season could identify whether or not the area contains Dakota skipper habitat. Reconnaissance should consist of a combination of Desktop GIS analysis verified by on-the-ground observation. An **initial desktop survey** should be conducted to assess and map the extent of the proposed project disturbance, and to assess and map the habitat potential for Dakota skipper. Depending on the results of the desktop survey, a **qualitative and/or quantitative** survey may be required. Results of subsequent vegetation surveys conducted onsite need to be submitted in report form to the DPG upon survey completion and should also be included in an appendix to subsequent biological evaluations/assessments.

The process put forth in this document for the analysis of potential project impacts to Dakota skipper involves two distinct components: habitat assessment and occurrence surveys. A procedure is presented in Appendix F to help inform the Dakota skipper analysis process. The purpose of this procedure is to gather sufficient information to determine potential impacts and to better predict skipper occurrence prior to USFWS consultation and to prepare for Dakota skipper presence/absence surveys, if suitable habitat is found. The intent is to increase confidence in determinations and to provide better evidence/support for USFWS consultations. The action unit needs to give enough information to determine whether or not the habitat could contain Dakota skipper. Furthermore, if suitable habitat exists, Dakota skipper occurrence surveys must be done to determine presence or absence. This data will also aid in siting decisions to avoid or minimize risk. Project areas must be preview well before the flight period to delineate Dakota skipper survey areas.

For both Dakota skipper habitat assessments and Dakota skipper occurrence surveys, the surveyors must obtain an accurate map of the site with proposed areas of disturbance from the permit applicant, and the field site must be accurately marked or flagged prior to the survey. All potential Dakota skipper habitat likely to be disturbed by the proposed project must be systematically surveyed and results must be presented, including GIS polygons of surveyed areas, to indicate the quality of the habitat. General descriptions such as “area does not contain Dakota skipper or habitat” without reasoning could postpone a project and slow consultation with the USFWS.

Dakota Skipper Habitat Assessment

Dakota skipper habitat often occurs in a patchy arrangement in native grassland communities due to underlying site characteristics, prior or current land uses and other factors. The species is not likely to be present in cropped areas, previously cropped areas, non-native haylands, pastures or grasslands dominated by non-native species, or in areas where trees or shrubs predominate. The species occurs in some grazed lands that are dominated by native prairie species. See Appendix E. for a description of Dakota skipper habitat, key habitat characteristics, and lists of requisite plant species.

All potential Dakota skipper habitat patches need to be identified within 1 km (0.62 mile) buffer around (or from centerline of linear features) the impacted area. Notes about the landscape beyond the 1 km buffer should also be presented (rangeland, row crop agriculture, badlands, water, disturbed areas, shelterbelts, if suitable habitat is beyond the 1 km boundary, etc.); this general landscape context can be obtained from general GIS data and line of sight observations. Analyzing surrounding areas ensures that the direct and indirect effects of project activities can be thoroughly assessed. If survey permissions cannot be obtained for neighboring areas, the use of general GIS data and line of sight observations for potential prairie habitat and unsuitable habitat will have to be done.

When assessing potential Dakota skipper habitat, it is also important to look at the landscape context and how the native prairie habitats may be connected by "dispersal habitat" that the skippers may fly over to get to higher quality native prairie patches. According to the Federal Register, dispersal habitat consists of "undeveloped open areas dominated by perennial grassland with limited or no barriers to dispersal including tree or shrub cover less than 25 percent of the area and no row crops such as corn, beans, potatoes, or sunflowers."

Habitat Assessment Contractor Qualifications

Refer to Contractor Qualifications for botany surveys.

Desktop Analysis

Previous Dakota skipper Habitat and Occurrence Surveys: It is recommended that the North Dakota Field Office of the USFWS (NDFO, 701-250-4402) and DPG (see Forest Service Contacts) be contacted for further assistance. The USFWS and USFS will give the most current information available concerning whether there is data available from previous surveys that may have occurred within or near the action area and may help identify if additional Dakota skipper surveys are necessary. Please give plenty of turn-around time for contacting the USFS and the USFWS regarding Dakota skipper surveys. USFS will likely have information regarding surveys on USFS lands, USFWS may have survey information for neighboring areas that may be applicable.

Dakota skipper GIS Tools: DPG has a GIS tool to help identify Dakota skipper habitat. This GIS tool is just a general screen that should be used in addition to ground truthing, to get a general idea of what areas may be more likely to contain Dakota skipper habitat; the GIS tool is available upon request from DPG. There are also other GIS tools available that a contractor may use that may be more recent or detailed, with proper reasoning and explanation, these models may be used. GIS tools are a desktop screening tool, each area will also be field-verified with different levels of survey requirements (qualitative, quantitative), depending upon habitat suitability as determined in the field. In areas where desktop and/or field verification suggest that possible habitat is present, field survey requirements will be more comprehensive (quantitative).

Broken Lands Layer, Aerial Imagery, Tree/Shrub Layers: Dakota skipper not likely to be present in broken lands (i.e. cropped areas, previously cropped areas, previously dug up areas), or in areas where trees or shrubs predominate (greater than 50% total plant cover). There is a broken lands GIS layer for DPG, however, they should ground truthed.

Ecological Site: See Glossary of Terms section**.** Some information about soils can be extrapolated from the Ecological Site Descriptions. Past Dakota skipper observations appear to be correlated with areas that are characterized by loamy and sandy soils. Ecological site mapping or information may not be fine scale enough or mapped properly to give a definitive answer about habitat characteristics.

Dakota Skipper Habitat Field Survey

Qualitative Survey

- Note: A quantitative survey may be conducted in lieu of a qualitative survey. Qualitative surveys are intended to be ocular estimates that verify results from the desktop screening approach or, alternatively, reveal the need for follow-up quantitative surveys. They also provide basic ecological information about the area. Data to be collected during the qualitative surveys include the following: Requisite plant species are noted in Appendix E, Table 7. At a minimum, one requisite grass species and one requisite forb species need to be present to meet Dakota skipper habitat requirements.
- Ocular estimates of percent plant cover (see Glossary of Terms section) and percent cover of each requisite plant species (Appendix E).
- Use Landscape Appearance Protocol in to estimate general cattle forage utilization. Forms and instructions for this protocol (ND-CPA-415) can be found at: https://efotg.sc.egov.usda.gov/references/public/ND/forms.pdf
- General description of topography
- Photographic documentation of the project area (landscape setting, dominant vegetation components)
- General observations about non-native invasive plants (percentage of invasive plant cover), site condition, and other disturbances seen in the survey area.

Quantitative Survey

The purpose of a quantitative survey is to evaluate habitat quality in relation to Dakota skipper life history characteristics and vegetation requirements. A quantitative survey must be conducted if potential Dakota skipper habitat is present within the analysis area.

- Timing: Recommended May 15th through July 19th (ideally in late June based on forb abundance)
- Area to be characterized
    - Project Area: directly disturbed and adjacent habitats (1 kilometer [0.62 mile] buffer)
    - Survey locations should be placed to characterize the whole project area
- Survey Method: Point intercept
    - Sampling should focus on dominant/representative ecological sites within the project area
    - Minimum of one randomly located 75 meter transect per 5 acres of each ecological site sampled.
    - Measurements taken at 1 meter increments
    - More transects may be needed as appropriate to best represent vegetation heterogeneity

- Use Landscape Appearance Protocol to estimate general cattle forage utilization. This work may done in tandem with the point intercept survey. Forms and instructions for this protocol (ND-CPA-415) can be found at: https://efotg.sc.egov.usda.gov/references/public/ND/forms.pdf
- Record
    - General description of topography
    - General observations about non-native plants, site condition, and other disturbances seen in the survey area.
    - Photographic documentation of the project area and of each transect.
    - The vegetation cover of the project area should also be documented with high quality digital photos.
    - GPS transect locations
- Data analysis and presentation
    - Percent cover by native grass species, native forb species, woody plants, invasive species, and Type B Habitat requisite species; percent cover of each species
    - Requisite plant species are noted in Appendix E, Table 7. At a minimum, one requisite grass species and one requisite forb species need to be present to meet Dakota skipper habitat requirements.
    - Dominance: mean cover of Type B Habitat requisite species vs other species
        - Requisite dominance occurs under the following conditions:
            - Mean cover by a single Type B Habitat requisite species exceeds 50%
            - >50% of the dominant species are Type B Habitat requisite species
        - Use the 50/20 rule to identify dominant species
            - Rank species from most to least abundant
            - Select species from the ranked list until cumulative cover >50%
            - Select species with cover >20%
            - Count dominant Type B Habitat requisite species, dominant other species
            - If dominant requisite species exceeds 50%, then the dominance by Type B Habitat requisite species has been achieved, and if the habitat contains one of the requisite grass species and one of the requisite forb species (Appendix E, Table 7), the site contains potential Dakota skipper habitat.
    - Cattle Utilization Results from Landscape Appearance method.

- Provide maps depicting the location and extent of Dakota skipper habitat and non-habitat. Provide the GIS data that could be used to identify the location and extent of Dakota skipper habitat.

Dakota Skipper Occurrence Surveys

If features of Dakota skipper habitat are present in at least part of the action area, and the habitat with Dakota skipper features cannot be avoided by 1 km (0.62 miles), a presence/absence survey must be conducted (see Contractor Qualifications section below).

Surveys should be conducted during the flight period and limited to habitat patches that contain features or conditions typical of Dakota skipper habitat. To ensure that the results are robust to support reliable conclusions with regard to the Dakota skipper's presence at a site, we recommend coordinating with the North Dakota Field Office of the USFWS and USFS.

Contractor Qualifications

The reliability of a proper Dakota skipper survey depends on the abilities and expertise of the observer. The species is not readily identified in the field without very specialized training and experience; the species is very hard to tell apart from some other skipper species in western North Dakota. In order to determine whether or not Dakota skipper, therefore, are present in an area, the assistance of individuals who have 10 (a)(1) (A) permits to carry out scientifically credible surveys must be secured. Advanced planning is required to obtain the services of a permitted Dakota skipper surveyor. Without a survey by a 10(a) (1) (A) Dakota skipper permitted individual, the USFWS will not be able to support a presumption of Dakota skipper absence.

A list of persons who have obtained Dakota skipper 10(a)(1)(A) permits and who have agreed to allow the Service to release their contact information may be obtained from the USFWS; if a contractor cannot get ahold of the USFWS, please contact USFS (see Important Contacts section). As of March 2018, about 6 people have a Dakota skipper 10(a)(1)(A) permit. If the services of a Dakota skipper qualified surveyor cannot be obtained after contacting surveyors, please contact Meghan Dinkins.

It is important to keep clear lines of communication between the permitted butterfly surveyor, the DPG, and USFWS about the most recent Dakota skipper survey protocols. A 2017 draft Dakota skipper protocol is currently available (see Appendix G). If there are questions regarding Dakota skipper protocol, contact Meghan Dinkins. Contractors must ensure they are using the most recent USFWS Dakota skipper protocol.

Frequently the USFS gets phone calls if contractors can have one of their experienced entomologists get their own 10(a)(1)(A) permit. Obtaining a permit is a difficult process that takes multiple years of training and going through a slow paperwork process. Applying for a permit is not a guarantee that the person will get a permit or get the permit in a timely manner. Permitted individuals must have a demonstrated ability to complete surveys for Dakota skippers or similar species and prepare technical reports based on those surveys; and, previous experience surveying for and identifying Dakota skippers and other butterflies with similar appearance. Since Dakota skipper are so uncommon and there are so few permitted surveyors, it is difficult to gain experience with the species. If a person does not have Dakota skipper experience, USFWS might make exceptions for persons with prior experience with similar species and/or extensive experience with other rare butterfly species.

Occurrence Survey Methods

Guidelines for Dakota skipper survey protocol on based on current best judgement of DPG personnel, however, what is presented here should not supersede if an updated USFWS Dakota skipper survey protocol becomes available.

The survey timing relative to the Dakota skipper flight period is very important for the survey's reliability. Dakota skipper surveys must be conducted between June 12th and July 19th, however this is not the only consideration for timing of Dakota skipper surveys; the appropriate weather conditions, phenological indicators and the patterns for Dakota skipper emergence and die-off in the region must be considered. To ensure that surveys are conducted during the species' flight period, noting phenological indicators is important predicting the proper times to survey and to note in survey reports to indicate that the surveys are being conducted at appropriate times. Dakota skipper surveys should not be conducted concurrently with any other focused survey, such as plant surveys, bird surveys, etc. It is appropriate, however, to note phenological indicators observed during the Dakota skipper survey.

In survey areas where Dakota skipper has never been recorded, surveys should be continued at least until Dakota skipper is identified or the area has been surveyed enough according to USFWS to have the skipper be considered absent. Historically, this has been at least three surveys during the flight period with some number of days between each survey go-over. Please use the most current USFWS guidelines for the appropriate amount of time between survey days (See Appendix G).

Survey routes, the rate of survey, appropriate time of day for survey, and weather conditions appropriate for survey should be determined by the most recent Dakota skipper survey protocol. The landscape context beyond the 1 km buffer should also be considered (rangeland, row crop agriculture, badlands, water, disturbed areas, shelterbelts, if suitable habitat is beyond the 1 km boundary, etc.); this general landscape context can be obtained from general GIS data and line of sight observations.

Identification of Dakota skippers must be assured by netting and release, close-up (perched) examination, or photo-documentation. When taking photos, to the extent feasible, take ample photos from both the dorsal and ventral perspective.

Survey Reporting

If a Dakota skipper is observed, the McKenzie District Wildlife Technician (Sarah Wold); McKenzie District Botanist, (Laurie Gawin); and the DPG biology program manager (Meghan Dinkins) must be contacted within one day of the observation through phone message or simple e-mail with location information (see Important Contacts section).

Submit reports in electronic format (Microsoft Word and/or searchable .pdf, electronic format via email/flash drive) and include a summary of the survey in the appendices of any Biological Assessment.

Data to Collect and report

- An introduction summarizing the purpose of this project
- A description of the survey areas, methods, and techniques used
- Summary of the season's survey findings
- For every site, the following information must be included:
    - Record the route surveyed (GPS track log, provide GPS track log to USFS), number of surveyors (non-permitted surveyors should be within distance of permitted surveyors),

weather conditions (temperature, cloud cover, and wind speed), and observations about habitat conditions, threats, or management (try to keep this quantitative). Weather data should be recorded at beginning and end of survey, and at times Dakota skipper is observed.

- Record and list the location (GPS coordinates and projection) and date/time of any Dakota skipper observed.
- Record the numbers of other butterfly/skipper/skipperling species observed in each survey area; information is useful in evaluating survey results. Keep in mind there are other USFS sensitive lepidopterans other than Dakota skipper.
- To the extent feasible, record the sex and condition of each Dakota skipper observed.
- Handling affects the behavior of some butterflies after their release so information with respect to the post-release behavior of any Dakota skippers that are captured and released. The behavior of each captured and released butterfly will be noted and reported as follows:
    - Flew to and perched on herbaceous vegetation, low shrubs, or to out-of-sight location in herbaceous vegetation (e.g., into plant litter or duff layer or into bases of grasses);
    - Flew into tall shrubs or trees and out-of-sight;
    - Flew away – did not see butterfly perch or fly into vegetation; or,
    - Post-release behavior unknown.

- An appendix containing a copy of field notes
- Also in the appendix, current 10(a)(l)(A) permit of surveyors (please exclude detailed personal information from resumes and permits for security purposes)
- Photographs of habitat during surveys as well as photographs of Dakota skippers and other sensitive species encountered. Photograph files must be sent to the USFS at the highest resolution.
- Provide maps depicting the location and extent of Dakota skipper habitat at the survey site.
- Provide the electronic GIS data that could be used to identify the location and extent of the Dakota Skipper survey area, and survey routes. Include coordinate system, projection and datum with all GIS data. To facilitate annual updating of the Forest Service listed lepidopteran GIS shapefiles and Dakota skipper data points, please ensure that Dakota skipper requisite flora area and skipper siting data are described in the report in a format that can be easily matched to its location (unique IDs) on associated maps and shapefiles.

Northern Long-eared Bat (*Myotis septentrionalis*)

General Information

The Northern long-eared bat (NLEB) is federally listed as a threatened species under the Endangered Species Act as of April 2, 2015, due to population decline from white-nose syndrome (WNS). More information can be found at: http://www.fws.gov/midwest/endangered/mammals/nleb/.

The U.S. Fish and Wildlife Service has published a final 4(d) rule for areas within, and outside of, the known WNS range. As of February 2018, the Little Missouri National Grassland is outside of the WNS areas and have not had known occurrences of WNS. White-nose syndrome has been known, however, to spread quickly across vast geographic distances (900 km/year), and Minnesota, Manitoba, eastern ND, and South Dakota are in the WNS range. Further, the badlands region of North Dakota which includes the DPG offers the only known *natural* bat (any species) hibernacula in the state. Therefore, the LMNG is at risk for WNS invasion. Please refer to the above website when planning projects.

Currently, there are no known hibernacula on the DPG for NLEB. However, due to the inaccessibility and obscurity of potential hibernacula in the badlands, hibernacula are not easily identifiable. The NLEB are not known to migrate long-distances, typically less than 100 miles. Therefore, occurrences of NLEB in summer months suggest the possibility of hibernacula on the DPG.

There are no *recorded* maternity roosts on the LMNG. However, occurrence records, including captures of three post-lactating females on the LMNG, indicates that maternity colonies are present during the summer months. For more information on the locations of this capture data, or if you are interested in doing capture or acoustical bat surveys, please contact J.J. Nelson, Sarah Wold, Arden Warm, or Meghan Dinkins. See contacts list on page 1.

If any activities that potentially impact NLEB or NLEB habitat (tree cutting, bridge work, and large culvert work, etc.) are scheduled between April 1st and October 31st, please contact DPG wildlife biologists to determine if the activity might impact NLEB. Any tree cutting must have DPG approval, regardless of time of year. In the absence of data for bats, in areas with suitable habitat characteristics, communication with the USFWS may be necessary.

If there is reason to suspect there could be NLEBs in the area and an activity may have possible impacts to them, a letter describing the situation must be submitted to the USFWS; the USFWS must be given 30 days to reply to the letter. If USFWS does not reply within the 30-day timeframe, a decision document can be signed by USFS in terms of NLEB. Please refer to the NLEB 4d rule for more information: http://www.fws.gov/Midwest/endangered/mammals/nleb/pdf/FRnlebFinal4dRule14Jan2016.pdf.

If a USFWS consultation is being done in the area for another species (such as, Dakota skipper) the bat analysis will be done in a separate section of the consultation from other species.

Contractor Qualifications

Habitat Assessments

Habitat assessments should be done by individuals with a natural resources or related degree. Additional work experience or training, especially related to bat ecology and survey methodology, is preferred.

Acoustic Surveys

Acoustic surveys must be carried out by an individual(s) with sufficient experience conducting such acoustic surveys. Specialized experience is required for interpreting results from automated classifiers of species identification, or manual identification of species identification from echolocation calls.

Mist Net Surveys

Any survey that includes the physical capture of bats (i.e. mist netting) must be carried out by a qualified biologist. A qualified biologist is an individual that has obtained a USFWS Recovery Permit (Federal Fish and Wildlife Permit) for NLEB relevant to the state/region in which the survey is to be conducted and has been authorized by the appropriate state agency to net and handle NLEB. Several USFWS offices maintain lists of qualified bat surveyors, and if working in one of those states with authorizations in lieu of a Recovery Permits, the individual will either need to be on that list or submit qualifications to receive USFWS approval prior to conducting any field work.

A qualified biologist(s) must (1) select/approve mist-net set-ups in areas that are most suitable for capturing Northern long-eared bats, (2) be physically present at each mist-net site throughout the survey period, and (3) confirm all bat species identifications. This biologist may oversee other biological technicians and manage mist-net set-ups in close proximity to one another as long as the net-check timing (i.e., every 10 minutes) can be maintained while walking between nets.

Survey Methods

For general survey methods and guidelines, the recommends following the Range-wide Indian Bat Summer Survey Guidelines for conducting NLEB surveys: https://www.fws.gov/Midwest/endangered/mammals/inba/surveys/pdf/2017INBASummerSurveyGuidelines9May2017.pdf

To minimize potential for disease transmission, any equipment that comes in contact with bats should be kept clean and disinfected, following approved protocols; this is particularly a concern relative to white-nose syndrome (WNS). Disinfection of equipment to avoid disease transmission (e.g., WNS) is required; protocols are posted at http://www.whitenosesyndrome.org/. Federal and state permits may also have specific equipment restrictions and disinfection requirements.

If unusual bat (all species) morbidity or mortality is encountered during surveys, notify FS wildlife biologists as soon as possible. Please review and follow the USGS National Wildlife Health Center Bat White-Nose Syndrome (WNS)/*Pd* Surveillance Submission Guidelines for submission of carcasses to aid in national WNS surveillance efforts: https://www.nwhc.usgs.gov/disease_information/white-nose_syndrome/NWHC%20Winter%202017-2018%20Bat%20submission%20Guidelines.pdf

Survey Reporting

A report must be submitted to the DPG upon survey completion for all acoustic or mist net surveys conducted on FS land no later than December 15th of the survey year. If NLEB are physically observed during surveys, please notify FS wildlife biologists (email/phone call) during the next working day. For physical captures under USFWS permits, refer to permit requirements for reporting NLEB occurrences.

Submit reports in electronic format (Microsoft Word and/or searchable .pdf, electronic format via email/flash drive) and include a summary of the survey in the appendices of any biological evaluations. Include the following in survey reports:

1) An introduction summarizing the purpose of this project

2) A description of the survey areas, methods, and techniques used

3) Survey dates

4) Site locations (latitude and longitude; GPS/GIS files)

5) Summary of the survey findings including numbers of bats captured or acoustically documented (all species)

6) An appendix containing a copy of field notes

7) For mist net surveys: in the appendix, the current USFWS permit of surveyors (please exclude detailed personal information from resumes and permits for security purposes) or other documentation of USFWS approval.

8) For every site, the following information must be included:

   a) Date(s) of survey

   b) Weather Conditions during survey

   c) Photographs of habitat during surveys as well as photographs of any bats species captured. An effort should be made to document distinguishing characteristics used for species identification in photographs. Photograph files must be sent to the USFS at the highest resolution.

Forest Service Sensitive Species

See Appendix C, Table 3 for a list of Forest Service designated species that occur on the LMNG.

Raptors

General Information

Raptors are protected under the Migratory Bird Treaty Act (16 U.S.C. 702-712) and are often sensitive to human disturbance. Presence of nests or species occurrences for any raptor species encountered during surveys should be reported and impacts to nesting sites from project activities must be addressed. Bald and Golden eagles are also given further protections under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c). Therefore, nests and winter roosts for select raptor species are afforded special protections (not comprehensive) in the DPG Land and Resource Management Plan (LRMP; link below). See Appendix D (Table 5) for a comprehensive list of raptor species that occur on the LMNG, as well as associated minimum distances and timing limitations (species specific) for activities that may result in disturbances to select raptors (Table 6). To assess potential impacts to raptors for biological evaluations, it is only required to determine if known nests or potential nesting habitat occurs within a minimum distance of the project area. If a historic nest is located within the minimum distance or an undocumented nest is discovered during an initial survey, subsequent nest surveys may be required to determine the status of the nest if project activities are expected to occur during the nesting season and during the same year project activities are to be conducted. The responsible party for conducting nest surveys will be determined on an individual case basis in coordination with the DPG. Either ground-based or aerial surveys may be used. Ground-based surveys are conducted at ground level by traversing through an area to observe potential nesting habitat or by visiting pre-identified points to assess the presence of raptors or nesting sites through direct observation. Contact DPG biologists for any questions regarding impacts/mitigation for raptor species not specifically addressed in the LRMP.

Land and Resource Management Plan for the Dakota Prairie Grasslands:

https://www.fs.usda.gov/detailfull/dpg/landmanagement/?cid=stelprdb5340280&width=full

Survey Methods

Note: The following survey protocol is specific to cliff, tree, or high structure nesting raptor species. For ferruginous hawk (which may nest at ground level) and burrowing owl surveys, apply the same general methodology.

CAUTION: Several raptor species are sensitive to human disturbance. Care must be taken to not disturb nesting raptors to prevent site abandonment and nest failure. Disturbance of Bald or Golden Eagles that results in nest failure or site abandonment constitutes take and is prohibited under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c).

Ground Surveys

Inventory potential habitat by slowly walking and observing all potential nesting substrate. Establish observation posts during initial surveys of potential or known nest sites. Observation posts should provide unobstructed view of the nest or area being surveyed and be sufficiently far enough from away to effectively observe adult raptor (if present) behavior without causing disturbance. Observation posts should preferably be in front of, and below the nest site when allowed by terrain to reduce stress and disturbance risk if an incubating adult may be present. The distance of an observation post to the nest site should range from 300-700 meters (~0.2-0.4 miles) and be no more than 1600 meters away (~1 mile).

Dates for conducting surveys should be sensitive to local nesting chronologies for the raptor species being surveyed. Surveys should also be conducted during weather conditions that are favorable for observation from long distances. Periods of heavy rain, snow, high winds, or severe cold weather should be avoided. At least two observation periods lasting at least four hours and 30 days apart are required to designate a nest as unoccupied. Observers should focus on known historic nests while also searching for undocumented or new nest sites.

Observation periods should be a minimum of 4 hours, or until presence is confirmed, or adult behavior indicates presence of eggs or young, or observation indicates the observer may be causing a disturbance. Observation periods may be longer as needed to determine nesting chronologies. Ideally, observation periods should begin during morning hours around dawn or shortly after. However, observers should be conscious of the angle of the sun in relation to observation posts and the nest site. Some nest sites may be better observed later in the day. Local observation conditions should be considered prior to establishing observation periods.

The following data should be recorded for each site visit:

- Date
- Location (latitude, longitude) of nest site and nest ID (if designated in USFS GIS data)
- Location of observation post and distance from nest site
- Description of nest
- Weather conditions
- Time and duration of survey

- Time of specific observations
- Species observed and notes on behavior
- Approximate nest chronology (if determined)
- Photographs of nest site and birds (if feasible)

If a nest is determined to be active, please notify DPG district biologists within 7 days. All survey data should be included in a survey report and submitted to the DPG upon by December 15th of the survey year. Survey data should also subsequently be included in an appendix in the project biological evaluation.

Aerial Surveys

Refer to the USFWS Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations for aerial survey guidelines: https://www.fws.gov/southwest/es/oklahoma/documents/te_species/wind%20power/usfws_interim_goea_monitoring_protocol_10march2010.pdf

Migratory Birds

Executive Order (E.O.) 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds" (January 10, 2001) pertains to promoting the conservation of migratory bird populations. A Memorandum of Understanding to carry out the mandate of the E.O. was signed by the U.S. Forest Service and the U.S. Fish and Wildlife Service on December 8, 2008. To carry out this mandate, the U.S. Fish and Wildlife Service published "Birds of Conservation Concern 2008," which recommends that its lists be consulted in accordance with E.O. 13186.

Birds of Conservation Concern 2008:

https://www.fws.gov/migratorybirds/pdf/grants/BirdsofConservationConcern2008.pdf

Survey GIS and GPS Protocols

GIS Shapefiles and GPS Files for All Surveys

1) Data from biological surveys done on USFS lands must be shared with the USFS. Contractors must submit spatial data (GIS shapefiles/feature layers; GPS point data) for **all** areas surveyed during the field season by December 15 of that year, **even for alternatives/projects not brought forward.**

2) Shapefiles/feature layers and any GPS point data need to be submitted (in NAD83 datum) **with the biological evaluation** for the biological evaluation to be accepted.

3) Ensure files names easily reference back to the project surveyed

4) Submit files via email or flash drive with the biological evaluation.

Sensitive Plants

Where more than one or a few plants occur within a population, please use a polygon to GPS the extent of the population, noting the estimated number of individuals within the area. As field GPS units are not adequate to consistently relocate or differentiate a specific plant from an adjacent plant located 10 or even

30 ft. away, note that it is not necessary to GPS each sensitive plant in a small area and record the lat/long for each. If LMNG staff monitor any of the populations, we will use polygons with estimates of population size. Individual plants or new polygons should be delineated only when they are appreciably distant from other plants or subpopulations. Professional judgment is key here. Examples on the ground that merit separate spatial data include: excessive distance, crossing prominent landforms, or changes in aspect, slope, or topographic position.

To facilitate annual updating of FS sensitive plant GIS shapefiles, please ensure that each sensitive plant population described on a sensitive plant form can be easily matched to its location on associated maps and shapefiles. Use the “Local ID” field on the sensitive plant form to provide a unique ID for each population in the survey (for example, TOHO A, TOHO B, etc.), and use the same ID on maps and shapefiles.

Wildlife

All ESA listed, Forest Service Sensitive, Raptors, and Wildlife Watch Species seen during the survey need to be recorded using GPS. Any species, other than sensitive, threatened and endangered species, can be off set points just to show what was in area of the time of the survey. Any sensitive, threatened and endangered species seen during the survey need to have exact locations marked to show what habitat areas they were seen in. This is to facilitate updating of the Forest Service wildlife GIS shapefiles. Please ensure that every survey can be easily matched to its associated maps and shapefiles.

Glossary of Terms

Project Area: The area associated with a project wherein direct changes to the environment will result from the action.

Analysis Area: One or more capability areas combined for the purpose of analysis in formulating alternatives and establishing various impacts and effects. This area is often larger than the project area.

Biological Evaluation: A documented Forest Service review of Forest Service programs or activities in sufficient detail to determine how an action or proposed action may affect any threatened, endangered, proposed, or sensitive species.

Biological Assessment: Information prepared by or under the direction of the Federal agency concerning listed and proposed species and designated or proposed critical habitat that may be present in the action area and the evaluation of potential effects of the action on such species and habitat (50 CFR 402.02). A biological assessment is prepared for "major construction activities" considered to be Federal actions.

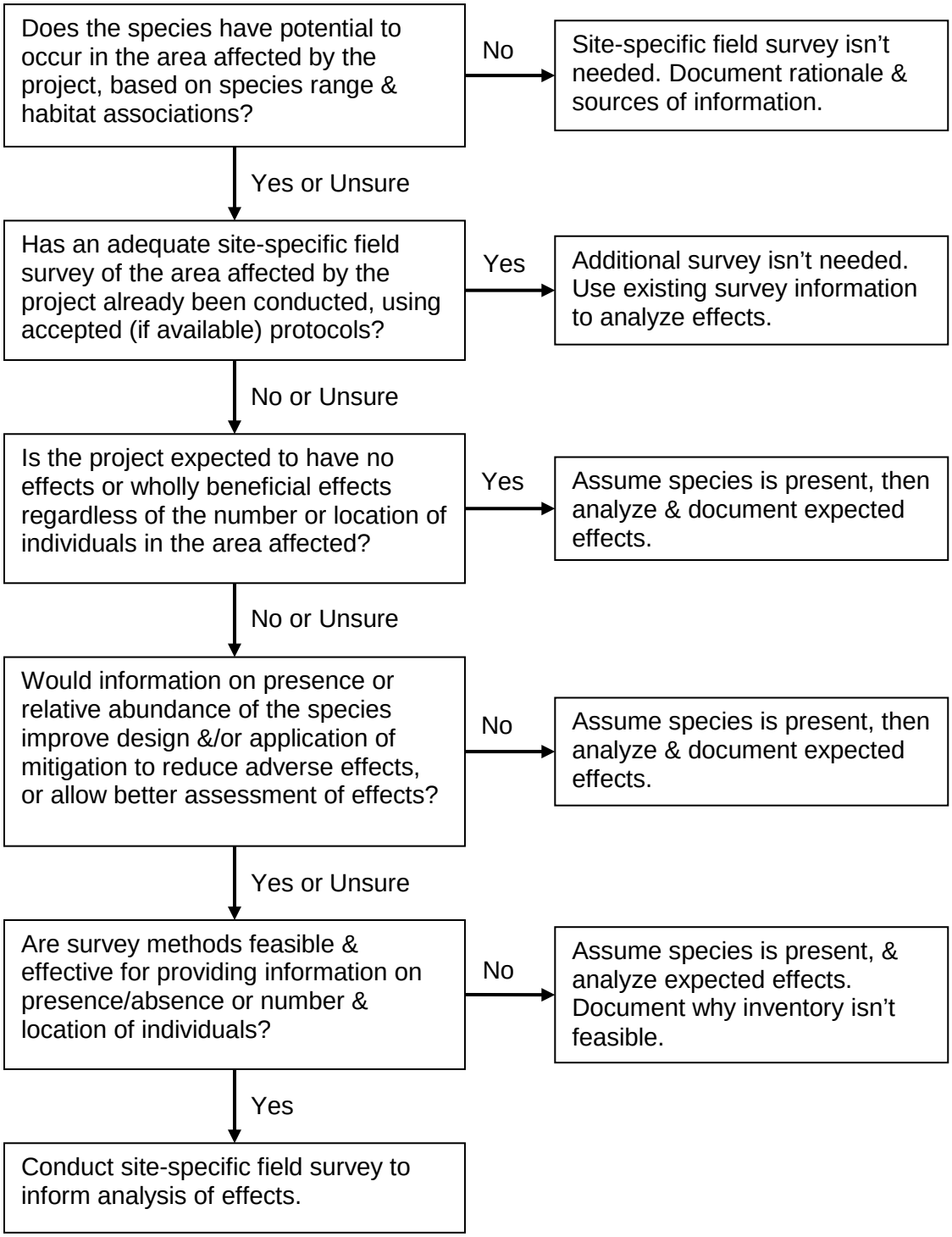
Ecological Site: A distinctive kind of land with specific soil and physical characteristics that differ from other kinds of land in its ability to produce a distinctive kind and amount of vegetation and its ability to respond similarly to management actions and natural disturbances.

Foliar Cover: The percentage of ground covered by the vertical projection of the aerial portion of plants. Small openings in the canopy and intraspecific overlap are excluded. Foliar cover is always less than canopy cover.

Landscape Appearance Method: Used to assess utilization by cattle. This method involves taking an ocular estimate of forage utilization which is based on the general appearance of the rangeland. Utilization levels are then determined by comparing observations with written descriptions of utilization classes.

Ocular Cover: A visual estimate of a plant species' percent cover in an area.

Appendix A. Procedure to Determine When Project-Level Field Survey for Endangered, Threatened, Proposed, or Sensitive Species is Necessary



Appendix B. Sensitive Plant Species List and Survey Codes

Table 1.Sensitive Plant Species and Habitat Information of the Little Missouri National Grassland

NRCS Code	Scientific Name	Common Name	Ranking	Documented Habitat on the LMNG
CHSU2	*Chenopodium subglabrum*	Smooth goosefoot	G2G4/S1	Sandbars, terraces, & dune complexes along rivers & creeks. Exposed sandy substrates in uplands, blowouts, outcrops, colluvium, etc.
COPA3	*Collinsia parviflora*	Blue lips	G5/S2	Woody understories, including green ash/elm draws, Rocky Mountain juniper, mesic shrub communities, & occasional xeric shrub communities.
CRTO4	*Cryptantha torreyana*	Torrey's cryptantha	G5/S1	Two population sites discovered during 2013 were located along scoria ridgelines, Also reported from dry plains, rock outcrops, escarpments, pine slopes.
ERCE2	*Eriogonum cernuum*	Nodding buckwheat	G5/S1	Exposed sand substrates w/ low plant cover in grasslands, hillsides, sandstone outcrops.
ERVI14	*Eriogonum visheri*	Dakota buckwheat	G3/S2S3	Relatively exposed clay/silt substrates with low plant cover such as outwash zones around eroding buttes, saddles, steep convex slopes, erosional breaks on prairie slopes. Occasional populations among dense saltgrass communities.
ESMI3	*Escobaria missouriensis*	Missouri foxtail cactus	G5/SNR	Prairie slopes & plains, stony to loamy to clayey short-grass to mixed-grass prairies. Also reported in woodlands of ponderosa pine or *Quercus* spp.
LEMO4	*Leucocrinum montanum*	Sand lily	G5/S2	Generally shortgrass communities w/ fine textured substrates but also found in crested wheatgrass communities. Reported from open coniferous woodlands & hillsides, sagebrush scrub, & sandy flats, but common name seems to be a misnomer.
MEPU3	*Mentzelia pumila*	Dwarf mentzelia	G4/S1	Scoria exposures & colluvium w/low plant cover. Also reported on slopes & sandy plains; occasionally on hard clays & rocky soils.
PHAL3	*Phlox alyssifolia*	Alyssum-leaved phlox	G5/S1S2	Sandy or gravelly soil on & around Bullion Butte. Also reported on clay banks & limestone ridges of open prairie.
PIFL2	*Pinus flexillis*	Limber pine	G5/S1	Semi-arid exposed rocky ridges & foothills in the Limber Pines RNA, likely of native-American origin.
POAC5	*Populus x acuminate*	Lanceleaf cottonwood	HYB/S2	Mesic woody draws, often w/springs/seeps, occasional near springs on open hillsides. Floodplains & stream banks.
SPAI	*Sporobolus airoides*	Alkali sacaton	G5/S2	Secondary succession on clay outwash where tolerant of saline conditions, also on dry to moist sandy or gravelly soil.
TOHO	*Townsendia hookeri*	Hooker's Townsendia	G5/S1	Low to moderate plant cover on dry plains, hillsides, gravelly benches & weathered scoria, but often clay matrix subsoil.
TOEX2	*Townsendia exscapa*	Easter daisy	G5/SNR	Dry plains & hillsides, often w/ loamy or increased soil development & increased plant cover relative to *T. hookeri*.

Table 2. Codes for Sensitive/Watch Plant Population Survey Form

Light Exposure Code	Name	Description
SUN	Full Sun	Full Sun characterizes the predominant light exposure condition across the EO (element occurrence).
PSH	Partial Shade	Partial Shade characterizes the predominant light exposure condition across the EO.
FSH	Full Shade	Full Shade characterizes the predominant light exposure condition across the EO.
Slope Position Code	**Name**	**Description**
BS	Backslope	The steepest portion of the slope where material is generally in transit.
FS	Footslope	The lower portion of the slope where material is generally re-deposited.
SH	Shoulder	The upper slope where material generally moves through creep processes.
SU	Summit	The uppermost slope.
TS	Toeslope	The lowermost slope position where material moves generally through alluvial processes.
Soil Moisture Code	**Name**	**Meaning**
D	Dry	No moisture observed, at the wilting point (>15 bars of tension, realizing that various perennials, shrubs, trees & other native vegetation have wilting points up to 66 bars of tension).
M	Moist	Moisture state is between the wilting point & field capacity.
W	Wet	The moisture state is at field capacity or wetter.
Soil Texture Code	**Name**	**Description**
C	Clay	A term used in the U.S. & by the International Society of Soil Science for a rock or mineral particle in the soil, having a diameter less than 0.002 mm (2 microns)
CL	Clay Loam	A soil containing 27-40% clay, 20-45% sand, & the remainder silt.
L	Loam	A rich, permeable soil composed of a friable mixture of relatively equal & moderate proportions of clay, silt, & sand particles, & usually containing organic matter
S	Sand	A term used in the U.S. for a rock or mineral particle in the soil, having a diameter in the range of 0.05-2 mm.
SI	Silt	A rock or mineral particle in the soil, having a diameter in the range of 0.002-0.05 mm.
SIL	Silt Loam	A soil containing 50-88% silt, 0-27% clay, & 0-50% sand; e.g. one with at least 50% silt & 12-27% clay, or one with 50-88% silt & less than 12% clay.
SL	Sandy Loam	A soil containing 43-85% sand, 0-50% silt, & 0-20% clay, or containing at least 52% sand & no more than 20% clay & having the percentage of silt plus twice the percentage of clay exceeding 30, or containing 43-52% sand, less than 50% silt, & less than 7% clay.
GR	Gravel	Rock fragments between 2 & 75 mm in diameter.

Appendix C. Forest Service Sensitive and Wildlife Watch Species of Interest

Table 3. Forest Service Sensitive Species for the Little Missouri National Grassland.

Birds	**Species Name**
Baird's sparrow	*Ammodramus bairdii*
Bald eagle	*Haliaeetus leucocephalus*
Burrowing owl	*Athene cunicularia*
Greater sage-grouse	*Centrocercus urophasianus*
Loggerhead shrike	*Lanius ludovicianus*
Long-billed curlew	*Numenius americanus*
Sprague's pipit	*Anthus spragueii*
Mammals	
Black-tailed prairie dog	*Cynomys ludovicianus*
Bighorn sheep	*Ovis canadensis*
Insects	
Ottoe skipper	*Hesperia ottoe*
Regal fritillary	*Speyeria idalia*
Tawny crescent	*Phyciodes batessi*
Fish	
Red-bellied dace	*Chrosomus (Phoxinus) eos*

Table 4. Wildlife watch species of interest for the Little Missouri National Grassland.

Amphibians	***Species***
Great Plains Toad	*Bufo cognatus*
Northern Leopard Frog	*Rana pipiens*
Plains Spadefoot	*Spea bombifrons*
Birds	***Species***
American Bittern	*Botaurus lentiginosus*
Black-billed Cuckoo	*Coccyzus erythropthalmus*
Brewer's Sparrow	*Spizella breweri*
Chestnut-collared Longspur	*Calcarius ornatus*
Dickcissel	*Spiza americana*
Grasshopper Sparrow	*Ammodramus savannarum*
Lark Bunting	*Calamospiza melanocorys*
McCown's Longspur	*Calcarius mccownii*
Red-headed Woodpecker	*Melanerpes erythrocephalus*
Sage Thrasher	*Oreoscoptes montanus*
Insects	***Species***
Monarch Butterfly	*Danaus plexippus*
Mammals	***Species***
Hispid Pocket Mouse	*Chaetodipus hispidus*
Merriam’s Shrew	*Sorex merriami*
Sagebrush Vole	*Lemmiscus curtatus*
Swift Fox	*Vulpes velox*
Reptiles	***Species***
Plains Hog-nosed Snake	*Heterodon nasicus*
Sagebrush Lizard	*Sceloporus graciosus*
Short-horned Lizard	*Phrynosoma hernandesi*
Smooth Green Snake	*Opheodrys vernalis*

Appendix D. Raptors and Disturbance Mitigation Criteria

Table 5. Raptor species potentially occurring on the Little Missouri National Grassland.

Common Name	Species
American Kestrel	*Falco sparverius*
Bald Eagle	*Haliaeetus leucocephalus*
Burrowing Owl	*Athene cunicularia*
Cooper's Hawk	*Accipiter cooperii*
Eastern Screech-Owl	*Megascops asio*
Ferruginous Hawk	*Buteo regalis*
Golden Eagle	*Aquila chrysaetos*
Great Horned Owl	*Bubo virginianus*
Gyrfalcon	*Falco rusticolus*
Long-eared owl	*Asio otus*
Merlin	*Falco columbarius*
Northern Goshawk	*Accipiter gentilis*
Northern Harrier	*Circus hudsonius*
Northern Saw-whet	*Aegolius acadicus*
Peregrine Falcon	*Falco peregrinus*
Prairie Falcon	*Falco mexicanus*
Red-tailed Hawk	*Buteo jamaicensis*
Rough-legged Hawk	*Buteo lagopus*
Short-eared Owl	*Asio flammeus*
Snowy Owl	*Bubo scandiacus*
Swainson's Hawk	*Buteo swainsoni*

Table 6. Disturbance mitigation criteria for select raptor species.

Species	Feature	Minimum Distance from Disturbance (Miles)	Timing Limitation
Bald Eagle (*Haliaeetus leucocephalus*)	Nest	1.00	2/1 to 7/31
Bald Eagle (*Haliaeetus leucocephalus*)	Winter Roost	1.00	11/15 to 3/1
Golden Eagle (*Aquila chrysaetos*)	Nest	0.50	2/1 to 7/31
Peregrine Falcon (*Falco peregrinus anatum*)	Nest	1.00	2/1 to 7/31
Prairie Falcon (*Falco mexicanus*)	Nest	0.25	4/1 to 7/31
Merlin (*Falco columbarius*)	Nest	0.50	4/1 to 8/15
Ferruginous Hawk (*Buteo regalis*)	Nest	0.50	3/1 to 7/31
Burrowing Owl (*Athene cunicularia*)	Nest	0.25	4/15 to 8/31

Appendix E. Dakota skipper Habitat Description and Requisite Plant Species for Type B Habitat [2]

Habitat Description

In western North Dakota, Dakota skippers inhabit a variant of 'Type B' habitats on rolling terrain over gravelly glacial moraine dominated by most commonly by little bluestem (*Schizachyrium scoparium*), as well as big bluestem, needlegrasses, or porcupine grasses (*Hesperostipa spp.*) (Royer et al. 2008). Western wheatgrass (*Pascopyrum smithii*) is also typical of a variant of 'Type B' habitat in western North Dakota (Royer et al. 2014).These habitats are often invaded by Kentucky bluegrass (*Poa pratensis*) (Royer and Marrone 1992). Dakota skipper habitats support a high diversity of native forbs, including: purple coneflower (*Echinacea angustifolia*), bluebell bellflower (*Campanula rotundifolia*), white prairie clover (*Dalea candida*), upright prairie coneflower (*Ratibida columnifera*), fleabane *(Erigeron* spp.), blanket flower (*Gaillardia* spp., including specifically common gaillardia, *G. aristata*), black-eyed Susan (*Rudbeckia hirta*), yellow sun drops (*Calylophus serrulatus*), prairie milkvetch (*Astragalus adsurgens*). These habitats also typically contain prairie lily, and in some areas, mountain death camas (Royer and Marrone 1992).

Other notable forbs associated with Dakota skipper include: purple prairie clover (*Dalea purpurea*), prairie groundsel (*Packera plattensis*), groundplum milkvetch (*Astragalus crassicarpus*), eastern pasqueflower (*Pulsatilla patens*), old man's whiskers (prairie smoke, *Geum triflorum*), western silver aster (*Symphyotrichum sericeum*), dotted blazing star (*Liatris punctata*), tall blazing star (*L. aspera*), meadow zizia (heartleaf golden alexanders; *Zizia aptera*), prairie sagewort (*Artemisia frigida*), and leadplant (*Amorpha canescens*).

References Cited

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Royer, R. A., R. A. McKenney, and W. E. Newton. 2008. A characterization of non-biotic environmental features of prairies hosting the Dakota skipper (Hesperia dacotae, Hesperiidae) across its remaining U.S. range. Journal of the Lepidopterists Society 62:1-17.

Royer, R. A., M. R. Royer, and E. A. Royer. 2014. Dakota skipper field survey and habitat assessment at twelve North Dakota sites during the 2014 season. A final report submitted to Twin Cities Field Office, U.S. Fish and Wildlife Service, Bloomington, MN. Minot State University, Minot, ND. 53 p.

[2] The following was adapted from information found in the USFWS Guidance for Interagency Cooperation under Section 7(a)(2) of the Endangered Species Act for the Dakota skipper, Dakota skipper Critical Habitat, and Poweshiek Skipperling Critical Habitat:
https://www.fws.gov/midwest/endangered/insects/dask/pdf/DakotaSkipperS7GuidanceV1.1.pdf

Habitat Characteristics & Plant Species

1) General Habitat Characteristics:

   a) High quality dry-mesic remnant untilled prairie on rolling terrain

   b) Gravelly glacial soil (loamy sands; sandy loams)

   c) Dominated by native grasses and flowering forbs

   d) Minimal tree or shrub cover (<5%)

2) Requisite Plants—Native grasses and native flowering forbs for larval and adult food and shelter, specifically:

   a) One or more of the following native grasses to provide larval food and shelter: little bluestem (*Schizachyrium scoparium*), Prairie dropseed (*Sporobolus heterolepis*)

   b) One or more of the following forbs in bloom to provide nectar and water sources during the flight period: Purple coneflower *(Echinacea angustifolia),* bluebell bellflower*(Campanula rotundifolia),* white prairie clover (*Dalea candida),* upright prairie coneflower *(Ratibida columnifera),*fleabane *(Erigeron* spp.), blanket flower *(Gaillardia* spp., including common gaillardia *G. aristata*), black-eyed Susan *(Rudbeckia hirta),* yellow sun drops *(Calylophus serrulatus),* prairie milkvetch *(Astragalus adsurgens).*

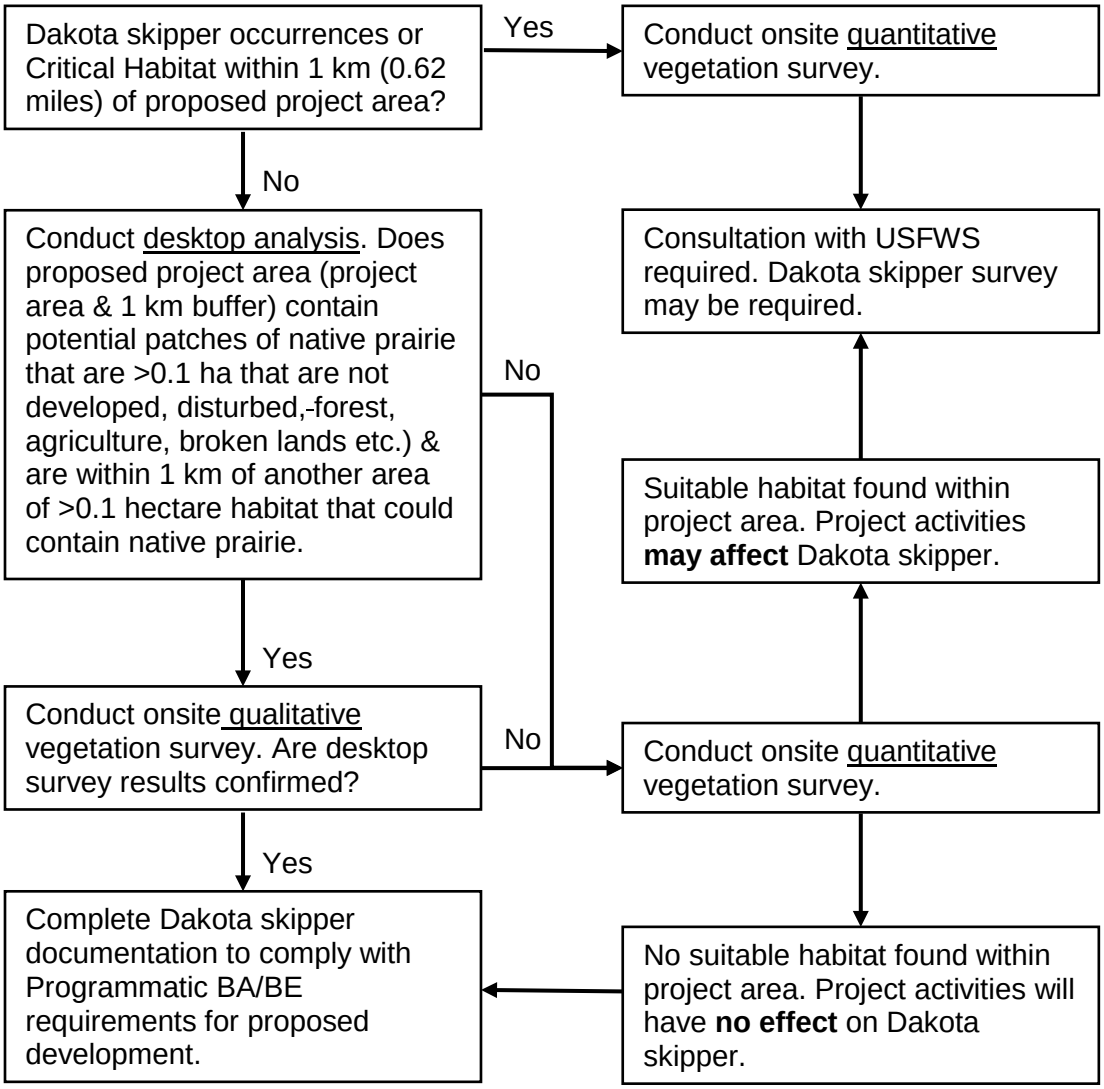
Table 7. Plant species common to Type B Dakota skipper habitat including requisite plant species.

Key Plant Species	Common Name	Forb or Grass
Amorpha canescens	Leadplant	Forb
Andropogon gerardii	Big bluestem	Grass
Artemisia frigida	Prairie sagewort	Forb
*Astragalus adsurgens**	prairie milkvetch	Forb
Astragalus crassicarpus	Groundplum milkvetch	Forb
Bouteloua curtipendula	Sideoats grama	Grass
*Calylophus serrulatus**	Yellow sundrops	Forb
*Campanula rotundifolia**	Bluebell bellflower	Forb
*Dalea candida**	White prairie clover	Forb
Dalea purpurea	Purple prairie clover	Forb
*Echinacea angustifolia**	Purple coneflower	Forb
*Erigeron spp.**	Fleabane	Forb
*Gaillardia aristata**	Common gaillardia/blanketflower	Forb
Geum triflorum	Old man's whiskers/prairie smoke	Forb
Hesperostipa comata	Needle-and-thread grass	Grass
Hesperostipa spartea	Porcupine grasses	Grass
Liatris aspera	Tall blazing star	Forb
Liatris punctata	Dotted blazing star	Forb
*Lilium philadelphicum**	Prairie Lily/Wood Lily	Forb
Packera plattensis	Prairie groundsel	Forb
Pascopyrum smithii	Western wheatgrass	Grass
Pulsatilla patens	Eastern pasqueflower	Forb
*Ratibida columnifera**	Upright prairie coneflower	Forb

Key Plant Species	Common Name	Forb or Grass
*Rudbeckia hirta**	Black-eyed susan	Forb
*Schizachyrium scoparium**	Little bluestem	Grass
Sorghastrum nutans	Indiangrass	Grass
*Sporobolus heterolepis**	Prairie dropseed	Grass
Symphyotrichum sericeum	Western silver aster	Forb
Zizia aptera	Meadow zizia/heartleaf golden alexanders	Forb
Requisite plant species (*) must include at least one grass species (Little bluestem and/or Prairie dropseed) in addition to one or more forb species to meet Dakota skipper habitat requirements.		

Appendix F. Dakota skipper Habitat Assessment Procedure

Note: A quantitative survey may be conducted in lieu of a qualitative survey.



Appendix G. DRAFT Dakota Skipper (*Hesperia dacotae*) Survey Protocol

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Dakota Skipper (*Hesperia dacotae*) Survey Protocol
North Dakota
June 2017



Dakota Skipper (*Hesperia dakotae*) U.S. Fish and Wildlife Photo

FISH AND WILDLIFE SERVICE
Mountain-Prairie Region
North Dakota Ecological Services Field Office
3425 Miriam Avenue
Bismarck, North Dakota 58501
NDFieldOffice@FWS.Gov
Office: 701-250-4402
Fax: 701-355-8513

Dakota Skipper Survey Protocol

Site Evaluation Procedures for Dakota Skipper Presence

Background & Purpose

This protocol is intended for surveys whose objective is to determine whether the Dakota skipper (*Hesperia dacotae*) may inhabit a specified area, especially where surveys for the species have not been performed. Habitat occupancy determinations made using data from surveys that follow this protocol will inform interagency cooperation between U.S. Fish and Wildlife Service (Service) and other federal agencies pursuant to section 7 of the Endangered Species Act. Data from this protocol will also aid non-federal decision-makers in developing biological/legal risk profiles, including siting decisions to avoid or minimize risk. This survey protocol is not intended for use in monitoring the species' abundance.

The following information is intended to be used to decide when, where, and how to conduct surveys for the Dakota skipper and how to report survey results to the Service. For additional information on Dakota skipper ecology and threats to its continued existence contact the U.S. Fish and Wildlife Service North Dakota Ecological Services Field Office (North Dakota Field Office) or visit the following website – http://www.fws.gov/midwest/endangered/insects/dask/index.html.

Range of Dakota Skipper

The Dakota skipper inhabits patches of remnant native prairie in north-central United States and southern Canada. In the United States, the species occurs in Minnesota, North Dakota, and South Dakota. The species appears to now be extirpated from Illinois and Iowa. Table 1 depicts the historical and current occurrence of the species within North Dakota.

Recommended Steps in the Survey Decision

Step 1: Desktop Review and Site Assessment

To determine whether a survey for Dakota skipper may be warranted, first delineate the area that would be affected, directly or indirectly, by the proposed or ongoing action – referred to as the *action area*.[1] If the action area is in one of the counties listed in Table 1 and encompasses native grassland containing the vegetative features indicative of Dakota skipper habitat (see U.S. Fish and Wildlife Service 2016, pp. 10-13), we recommend you call the North Dakota Field Office (NDFO, 701-250-4402) for further assistance. Representatives from the NDFO can tell you whether data are available from previous surveys that may have occurred within or near the action area. In these cases, prior survey results may be sufficient for determining Dakota skipper presence in the action area. Maps depicting locations of occupied Dakota skipper sites as well as previous survey locations can be made available through a formal data sharing agreement.

[1] Action area is defined as all areas that may be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. It encompasses the geographic extent of environmental changes (i.e., the physical, chemical and biotic effects) that will result directly and indirectly from the action. Action area is typically larger than the area directly affected by of the action.

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Table 1. Counties in which Dakota skipper may be present. The following counties contain sites where the Dakota skipper has been recorded and where the species may still be present based on the best available information.

North Dakota County	Species Status
Barnes	Possibly Extirpated
Bottineau	Extirpated
Burke	Unknown
Dunn	Present
Eddy	Unknown
Griggs	Possibly Extirpated
McHenry	Present
McKenzie	Present
McLean	Unknown
Mountrail	Present
Oliver	Extirpated
Ransom	Present
Richland	Extirpated
Rolette	Present
Sargent	Unknown
Stutsman	Unknown
Ward	Present
Wells	Present

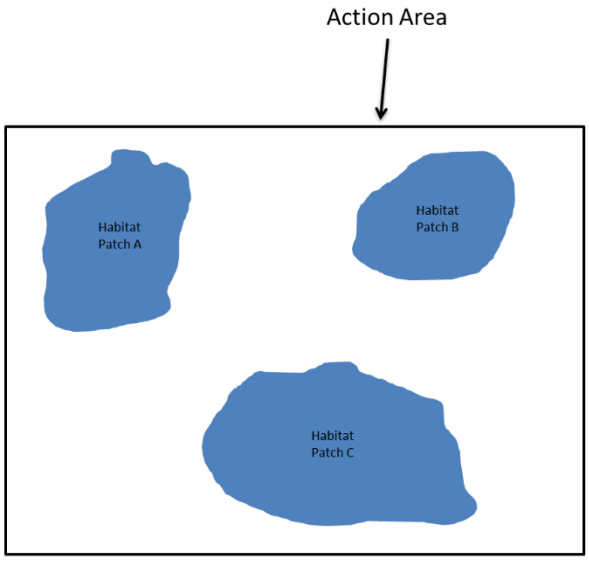


Figure 1. Schematic of an action area that contains patches with features of Dakota skipper habitat that would warrant surveys for the Dakota skipper. Reconnaissance of an action area before the flight season could identify parts of the area where surveys would not be necessary. Habitat patches, as shown above, would be synonymous with *survey area* as used in the text.

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Step 2: Vegetation Inventory and Description

The species is not likely to be present in cropped areas, previously cropped areas, non-native haylands, pasture or other grassland that is dominated by non-native species, or in areas where trees or shrubs predominate. The species occurs in some grazed lands that are dominated by native prairie species. Please refer to the Service's Dakota Skipper section 7 guidelines for a complete description of the two type of suitable Dakota skipper habitat present in North Dakota (U.S. Fish and Widlife Service 2016) and contact the NDFO (701-250-4402) to determine the most appropriate vegetative survey method.

Step 3: Occupancy Surveys

Reconnaissance of the action area to delineate habitat patches for survey should be done in advance of implementing the flight period surveys for the species. Dakota skipper habitat often occurs in a patchy arrangement in native grassland communities due to underlying site characteristics, prior or current land uses and other factors. Persons with proven expertise in prairie ecology and Dakota skipper life history should preview survey sites before the flight period to delineate survey areas. Surveys should be conducted during the flight period and limited to habitat patches that contain features or conditions typical of Dakota skipper habitat. To ensure that the results are robust to support reliable conclusions with regard to the Dakota skipper's presence at a site, we recommend that you also coordinate with the NDFO to complete this step.

Minimum Qualifications for Surveyors

The species is not readily identified in the field without specialized training and experience. Therefore, agencies and organizations who want to determine whether or not Dakota Skippers are present in an area must secure the assistance of individuals who are legally authorized and/or qualified to carry out scientifically credible surveys. To meet the minimum qualifications for the target species, individuals must meet the following criteria:

1. Demonstrated ability to complete surveys for Dakota skippers or similar species and prepare technical reports based on those surveys; and,
2. Previous experience surveying for and identifying Dakota skippers and other butterflies with similar appearance. Exceptions may be made for persons with prior experience with similar species and/or extensive experience with other butterfly species – e.g., extensive experience conducting surveys for rare butterfly species outside the range of the two target species.

Persons who may attempt to capture Dakota skippers during surveys need to obtain a permit from the Service (see, http://www.fws.gov/endangered/permits/how-to-apply.html). To obtain a permit please contact the Service's Endangered Species Permit Coordinators in the Midwest and Mountain-Prairie regional offices or download the permit application form at http://www.fws.gov/forms/3-200-55.pdf. A list of persons who have obtained such permits and who have agreed to allow the Service to release their contact information may be obtained from the NDFO (701-250-4402).

Occupancy Survey Guidelines

The reliability of surveys for Dakota skipper depends on several factors, including: the abilities and expertise of the observer; survey timing relative to the species' flight period; time of day; weather

conditions; and the species' density. The initiation and duration of the adult flight period varies each year depending on annual variations in weather (Dearborn and Westwood 2014).

We recommend that surveys adhere to the following guidelines to ensure that results will be useful for determining whether Dakota skippers may be present in the survey area.

Timing & Number of Surveys

Timing is a critical component of surveys for the Dakota skipper; multiple surveys are necessary to determine the species' status at a site. The start of the flight period "varies considerably" among years (Rigney 2013, p. 138; Dearborn and Westwood 2014), but typically begins in late June or early July. It occurs only once per year and may last 13-19 days or less at any given site (e.g., Rigney 2013, p. 138).

- To ensure that surveys are conducted during the species' flight period. See the section **Phenological Indicators**, below for further information that may be useful to ensure that surveys are conducted at appropriate times.
- *In survey areas where Dakota skipper has never been recorded*, continue surveys at least until (1) Dakota skipper is identified or (2) until at least three surveys of the entire survey area have been conducted during the flight period. Repeat surveys must be separated by at least two non-survey days[2] unless doing so may move subsequent surveys outside of the peak flight period or prolonged unfavorable weather conditions would preclude three surveys at a location during the flight period. The likelihood of detecting Dakota skippers is low early and late in the flight period and may be highest during an approximately five-day period when the male flight overlaps with the peak of the female flight (Rigney 2013, p. 140).
- Surveys should be conducted between 1000 and 1730 hours (10:00 am – 5:30 pm) and will not be conducted when the following weather conditions exist:
    - Fog, drizzle, or rain;
    - Sustained or gusting winds that average greater than 30 kilometers (19 miles) per hour measured over a 30 second period at a height of 1.2-1.8 meters (4-6 feet) above ground level (Beaufort Scale of 5 or greater);
    - Temperature in the shade at ground level is less than 21^0 C (70^0 F) when cloud cover is less than 50 percent, or less than 30^0 C (86^0 F) when cloud cover is 50 percent or more.

[2] The requirement to separate survey days is warranted to increase detection rates. Given the short nature of the Dakota skipper flight period, surveys will not be rejected when they are not separated by two non-survey days **if** justification is given; surveys are conducted at a different time of day during each of the three visits; and all surveys are conducted under optimal weather conditions.

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Phenological Indicators

Phenological indicators may be useful to determine when to conduct surveys and, in retrospect, whether previous surveys were appropriately timed for Dakota skipper. Rigney (2013, p. 140), for example, found the emergence of three different skipper species at Manitoba, Canada study sites preceded that of Dakota skipper, which in turn preceded that of two additional skipper species – in the following order: European skipper (*Thymelicus lineola*), long dash (*Polites mystic*), tawny-edged skipper *(P. themistocles),* Peck's skipper (*P. peckius*), Dakota Skipper, silver-spotted skipper (*Epargyreus clarus*) and dun skipper (*Euphyes vestris*). She found that Peck's skipper, which is similar in appearance to Dakota skipper, emerged "immediately before and at the same time as Dakota Skipper" and that dun skipper emerged "near the end of the Dakota Skipper flight period" (Rigney 2013, p. 141). She also found that the peak of the flight period for wood nymph (*Cercyonis pegala*), a conspicuous species in many Dakota skipper habitats, corresponded to the emergence of Dakota skippers. In addition to butterfly indicators, she found that where Dakota skipper co-occurred with porcupinegrass (*Heterostipa spartea*), its "seeds are very conspicuous with a darkened inflorescence" a few days prior to the Dakota skipper emergence. She wrote that at "the start of the Dakota Skipper flight period the fruits will start to be released when brushed, clinging especially to butterfly nets and clothing" (Rigney 2013, p. 142).

Survey Routes and Survey Area

- Surveys should be conducted by qualified surveyors walking along routes through the survey area. Establish enough routes to ensure the survey covers all of the survey area and assume a maximum detection distance of no more than five meters on each side of the route. The survey may be terminated in a given habitat patch and in all patches of suitable habitat within 0.5km of the occupied site once the species has been confirmed.

- Survey routes should be roughly parallel to each other, spaced approximately 10 meters apart, and within five meters of survey area boundaries to ensure adequate coverage of all Dakota skipper habitat.

- Adjustments to the survey area boundaries may be made during the survey if areas that do not contain Dakota skipper habitat are encountered. These areas should be mapped and described in the final survey report.

Identification of Dakota Skippers

- Identification of Dakota skippers must be assured by netting and release, close-up (perched) examination, or photo-documentation.

- Persons not qualified to conduct typical surveys for Dakota skipper may attempt to document the species' presence with photography without a permit. Surveys sufficient to support a presumption of absence, however, should follow the normal protocol. To ensure that species identity may be confirmed, ample photos should be taken from both the dorsal and ventral perspective (Rigney 2013, p. 141). Negative surveys conducted by persons who do not meet the minimum qualifications for surveyors, described above, will not be considered to be conclusive evidence of absence by the Service.

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General Guidelines

- Do not conduct Dakota skipper surveys concurrently with any other focused survey, such as plant surveys, bird surveys, etc.
- Conduct surveys at an average rate of 2-7 acres (1-3 hectares) per hour.[3]

Data to Collect

- Record the location (GPS coordinates and projection) and time of any Dakota skipper observed.
- Record the numbers of other butterfly species observed in each survey area. Data regarding the identity and numbers of other butterfly species present during surveys should be collected because it may be useful in evaluating survey results. Rigney (2013, p. 142), for example, indicated that the ratio of Dakota skippers to long dash, tawny-edged skippers, Peck's skippers, and European skipper may be indicative of habitat quality for Dakota skipper in her study sites.
- Record the route surveyed (GPS track log), number of surveyors, weather conditions (temperature, cloud cover, and wind speed), and observations about habitat conditions, threats, or management. To the extent feasible, record the sex and condition of each Dakota skipper observed.
- Handling affects the behavior of some butterflies after their release (Mallet et al. 1987, p. 328). Therefore, we are seeking information with respect to the post-release behavior of any Dakota skippers that are captured and released. The behavior of each captured and released butterfly will be noted and reported annually as follows:
    - Flew to and perched on herbaceous vegetation, low shrubs, or to out-of-sight location in herbaceous vegetation (e.g., into plant litter or duff layer or into bases of grasses);
    - Flew into tall shrubs or trees and out-of-sight;
    - Flew away – did not see butterfly perch or fly into vegetation; or,
    - Post-release behavior unknown.
- If a permit is conducted under the authority of an endangered species permit issued by the Service, ensure that any additional information is collected and reported to the appropriate location per the conditions of the permit.

Reporting Results

Provide in survey reports – or under separate cover to the North Dakota Field Office:

[3] This is based on the 35 m/minute survey pace and the assumption that five meters are effectively surveyed on either side of the observer, as reported by Royer and Royer (2012).

- Geographic coordinates of any Dakota skipper observed and a map depicting the survey area(s), and survey route(s).
- Provide maps depicting the location and extent of Dakota skipper habitat at the survey site. If possible, also provide the associated GIS data that could be used to identify the location and extent of Dakota skipper habitat, the survey area, and survey routes
    - Include coordinate system, projection and datum with all GIS data.
- For each survey include weather conditions: wind speed (or Beaufort Scale), air temperature, cloud cover, and the time at beginning and end of each survey route.

Survey Outcome

If surveys are completed for a specific project and result in three consecutive negative surveys, during a single flight period, the NORTH DAKOTA FIELD OFFICE will review survey reports and issue concurrence for the project to proceed within the surveyed area. If construction is not completed by the following flight period addition Dakota skipper surveys are recommended.

If a Dakota skipper is found during a survey, the NORTH DAKOTA FIELD OFFICE will assume the site is occupied for a minimum of three years. Additional surveys before the three year minimum occupancy period are not necessary; additional negative surveys during this time will not supersede the occupied status. After three years additional Dakota skipper surveys are recommend to review the occupancy status. A flowchart describing this process is included in Appendix A.

Literature Cited

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Rigney, C. L. 2013. Habitat characterization and biology of the threatened Dakota skipper (*Hesperia dacotae*) in Manitoba. Masters of Science. The University of Winnipeg, Winnipeg, Manitoba, Canada. 259 p.

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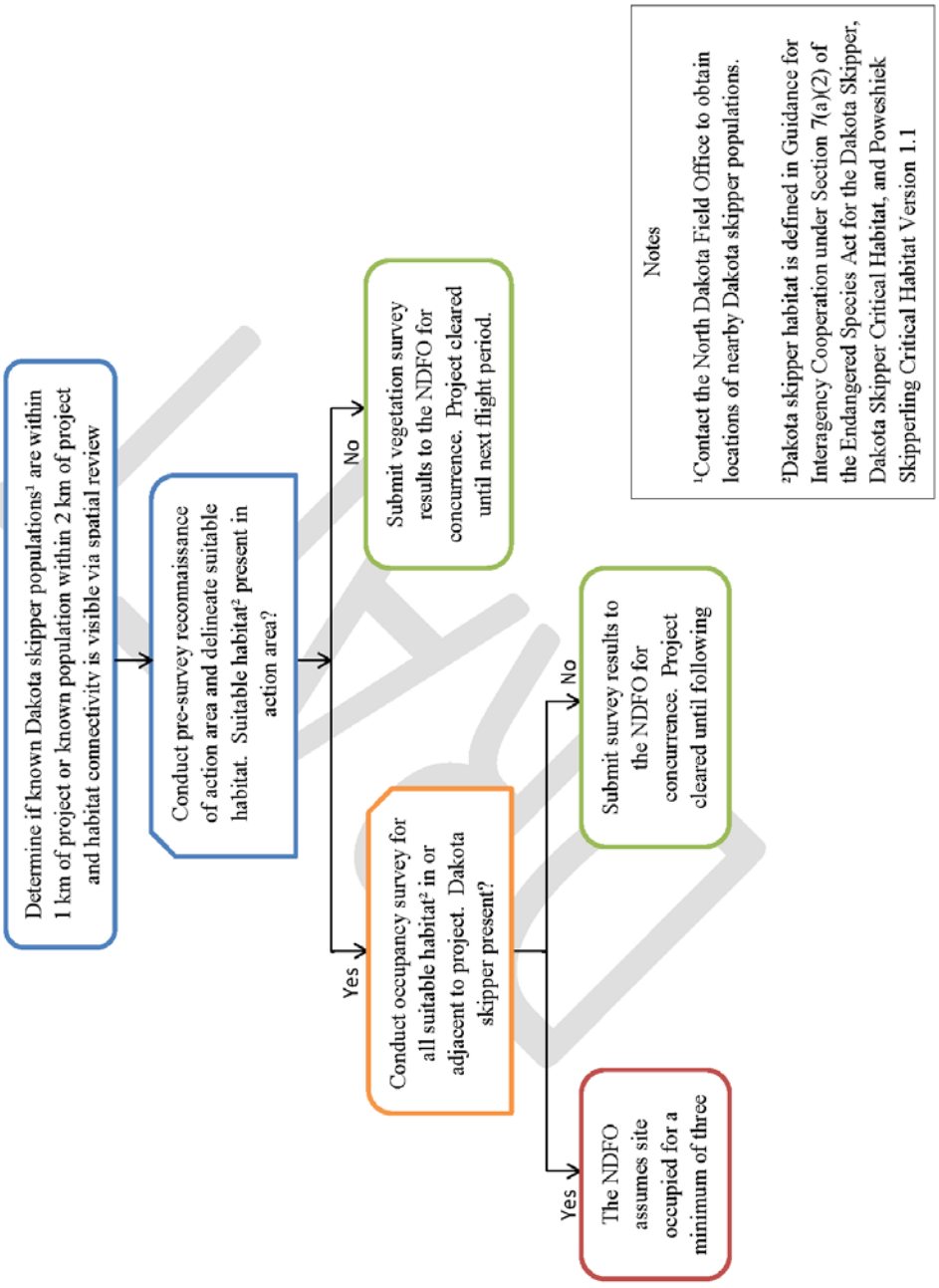
U.S. Fish and Wildlife Service. 2016. Guidance for Interagency Cooperation under Section 7(a)(2) of the Endangered Species Act for the Dakota skipper, Dakota skipper critical habitat, and Poweshiek Skipperling Critical Habitat, Version 1.1, May 2016: USFWS Regions 3 and 6. Bloomington, MN and Denver, CO. 32pp.

APPENDICES

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APPENDIX A
Dakota skipper Decision Tree



Appendix C

Biographies of Botanical Survey Leads

Scott Milburn, M.S.

Scott Milburn is a Senior Botanist at Midwest Natural Resources. He has a B.S. in Botany from Iowa State University and an M.S in Biological Sciences from the University of Mississippi. He has been working professionally as a field botanist since 2000. In that time he has conducted numerous rare plant surveys in the Chequamegon-Nicollet, Chippewa, DeSoto, and Superior National Forests, surveying over 25,000 acres. Finds have included a wide range of Regional Forester Sensitive Species (RFSS) plants from such cryptic groups as *Botrychium* or difficult groups like graminoids to Forest Service records for several state-protected species that were added to the RFSS list as a result.

Otto Gockman, B.S.

Otto Gockman is a Senior Botanist at Midwest Natural Resources. He has a B.S. in Natural Sciences from the University of Puget Sound. He has been working professionally as a field botanist since 2005. In that time he has conducted numerous rare plant surveys in the Chequamegon-Nicollet, Chippewa, DeSoto, and Superior National Forests, surveying over 35,000 acres. Finds have included numerous Regional Forester Sensitive Species (RFSS) vascular plants and RFSS lichens. He has also documented several state record vascular plants in Minnesota (*Rhynchospora capitellata* and *Botrychium crenulatum*) as well as 47 state record lichens in Minnesota.

Jake Walden, B.S.

Jake Walden is a Botanist at Midwest Natural Resources. He has a B.S. in Fisheries, Wildlife, and Conservation Biology and a minor in Plant Biology from the University of Minnesota. He has conducted a wide range of plant surveys for the U.S. Fish and Wildlife Service and worked to monitor and restore native prairie. He has documented numerous populations of Minnesota state-listed plants.

Appendix D

Representative Photographs



Dry hillside prairie dominated by little bluestem.



Flat, open rangeland dominated by western wheatgrass.



Escobaria missouriensis (in flower)



Escobaria missouriensis (vegetative)



Townsendia exscapa



Townsendia hookeri



Hesperia ottoe



Speyeria idalia

Appendix E

U.S. Forest Service Data Forms (Plants)

DPG TES Plant Survey Field Form - 2018 Version

- Data/comments entered in gray outlined cells, lookup formulas in white outlined cells **Revised 3/15/2018**

General Information

1) Survey ID:		2) Survey Name:		
3) Survey Status:		4) Source of Work:	Contract	
5a) Survey Type:	Focused (Intuitive Controlled	Survey Agency:		
5b) Survey Type:		Target Focus:	TES	
5c) Survey Type:		Survey Purpose:	Other	
		Project Type:	Oil and Gas	

6) Survey Focus:	Terrestrial	Riparian	Aquatic	Features
	Yes			

7) Estimate of Survey Area Size (Acres):			
Spatial Feature	Polygon		
If Point, Buffer distance from pt center:		Unit of Meas	
If Line, Buffer distance from line center:		Unit of Meas	

10) Survey Parameters:

Environmental Survey Corridor - proposed Demicks Lake Pipeline project.

11) Survey Comments:

Survey Visits

12) Visit Date:	13) Examiner			
June 5-9, 2018	Last Name 1	Milburn	First Name 1	Scott
June 5-9, 2018	Last Name 2	Gockman	First Name 2	Otto
June 5-19, 2018	Last Name 3	Walden	First Name 3	Jake
6/5/18-7/19/18	Last Name 4	Cress	First Name 4	Robert
	Last Name 5		First Name 5	

Target Species

List all targeted species (R1 Sensitive List)

14) NRCS Code	15) Scientific Name	16) Suitable Hab	17) Plant Found	FS Site ID's for EO's
CHSU2	*Chenopodium subglabrum*	No	No	
COPA3	*Collinsia parviflora*	No	No	
CRTO4	*Cryptantha torreyana*	No	No	
ERCE2	*Eriogonum cernuum*	No	No	
ERVI14	*Eriogonum visheri*	Yes	No	
ESMI3	*Escobaria missouriensis*	Yes	Yes	
LEMO4	*Leucocrinum montanum*	Yes	No	
MEPU3	*Mentzelia pumila*	No	No	
PHAL3	*Phlox alyssifolia*	No	No	
PIFL2	*Pinus flexillis*	No	No	
POAC5	*Populus x acuminata*	No	No	
SPAI	*Sporobolus airoides*	No	No	
TOEX2	*Townsendia exscapa*	Yes	Yes	
TOHO	*Townsendia hookeri*	Yes	Yes	

List all targeted species (R1 Watch List)

Target Species Continued

NRCS Code	15) Scientific Name	16) Suit Hab	17) Plant Found	FS Site ID's for EO's
AGEX	*Agrostis exarata*			
ASAU4	*Astragalus australis (Astragalus aboriginum)*			
ASDR3	*Astragalus drummondii*			
ASVE5	*Astragalus vexilliflexus*			
BRCA5	*Bromus carinatus*			
CASCS8	*Carex scirpoidea (Carex scirpiformi)*			
CASI12	*Carex siccata (Carex feonea)*			
CLCOT	*Clematis columbiana var. tenuiloba (Clematis tenuiloba)*			
EPPY4	*Epilobium pygmaeum (Boisduvalia glabella)*			
ERDI4	*Erigeron divergens*			
ERRA2	*Erigeron radicatus*			
FRPU2	*Fritillaria pudica*			
MYAPM	*Myosurus apetalus var. montanus*			
OELA	*Oenothera laciniata*			
ORLUM	*Orobanche. ludoviciana, ssp. multiflora*			
OXSE	*Oxytropis sericea*			
PHPA29	*Phemeranthus parviflorus (Talinum parviflorum)*			
PODI	*Potamogeton diversifolius*			
PODI2	*Potentilla diversifolia*			
POJA2	*Populus x jackii*			
RACA4	*Ranunculus cardiophyllus*			
ROCA	*Rorippa calycina*			
SITR3	*Sibbaldiopsis tridentata (Potentilla tridentata)*			
SMEC	*Smilax ecirrhata*			

Existing Dominant Vegetation: (Enter NRCS plant code)

Upper Level		Middle Level		Lower Level		Est %
Dom	CoDom	Dom	CoDom	Dom	CoDom	Of Area
					Total	0

Ecological Site Name:	Est %
Total	0

List all other species found during survey

18) Species list completeness: Selected

19) Cover Method: CVRPCT

20) General Comments:

Species list compiled from prairie habitat data collected during surveys.

Species List of Surveyed Area

21) NRCS Code:	22) Scientific Name	23) Life Form	24) EcoSiteName	25) % Cov	non native (*Est extent only for non-native & nox)	*Est Acres Extent
PUPAM	*Anemone ludoviciana Nutt., nom. illeg.*					
ARFR4	*Artemisia frigida Willd.*					
ASLAR	*Astragalus adsurgens Pall.*					
ASCR2	*Astragalus crassicarpus Nutt.*					
BOCU	*Bouteloua curtipendula (Michx.) Torr.*					
CASE12	*Calylophus australis Towner & P.H. Raven*					
CARO2	*Campanula alaskana (A. Gray) W. Wight ex J.P. Anderson*					
DACA7	*Dalea candida Michx. ex Willd.*					
DAPU5	*Dalea purpurea Vent.*					
ECAN2	*Echinacea angustifolia DC.*					
ERIGE2	*Erigeron L.*					
GETR	*Geum triflorum Pursh*					
HECO26	*Hesperostipa comata (Trin. & Rupr.) Barkworth*					
HECU9	*Stipa curtiseta (Hitchc.) Barkworth*					
LIPU	*Liatris punctata Hook.*					
LIPH	*Lilium philadelphicum L.*					
PAPL12	*Senecio plattensis Nutt.*					
PASM	*Agropyron molle (Scribn. & J.G. Sm.) Rydb.*					
RACO3	*Lepachys columnifera (Nutt.) J.F. Macbr.*					
SCSC	*Schizachyrium scoparium (Michx.) Nash*					
SYSE2	*Aster sericeus Vent.*					
JUHO2	*Juniperus horizontalis Moench var. argentea hort.*					
LICO3	*Cathartolinum compactum (A. Nelson) Small*					
ARFR4	*Artemisia frigida Willd.*					
PLAR3	*Plantago aristata Michx. var. nuttallii (Rapin) Morris*					
AGCR	*Agropyron cristatum (L.) Gaertn.*					
OPFR	*Cactus fragilis Nutt.*					
ANOC2	*Androsace arizonica (A. Gray) Derganc*					
PASM	*Agropyron molle (Scribn. & J.G. Sm.) Rydb.*					
TAOF	*Taraxacum officinale F.H. Wigg.*					
TRRE3	*Trifolium repens L. var. atropurpureum hort.*					
LEDE	*Lepidium densiflorum Schrad. var. densiflorum*					
CAFI	*Carex elyniformis A.E. Porsild*					
KOMA	*Koeleria albescens auct.*					
PHHO	*Phlox hoodii Richardson*					
TEAC	*Tetraneuris acaulis (Pursh) Greene*					
ARCA13	*Artemisia cana Pursh*					
SYOC	*Symphoricarpos occidentalis Hook.*					

Species List of Surveyed Area Continued						
					*Est extent only for non-native & nox	
21) NRCS Code:	22) Scientific Name	23) Life Form	24) EcoSiteName	25) % Cov	non native	*Est Acres Extent

Species List of Surveyed Area Continued						
					*Est extent only for non-native & nox	
21) NRCS Code:	22) Scientific Name	23) Life Form	24) EcoSiteName	25) % Cov	non native	*Est Acres Extent

Species List of Surveyed Area Continued						
					*Est extent only for non-native & nox	
21) NRCS Code:	22) Scientific Name	23) Life Form	24) EcoSiteName	25) % Cov	non native	*Est Acres Extent

Species List of Surveyed Area Continued						
					*Est extent only for non-native & nox	
21) NRCS Code:	22) Scientific Name	23) Life Form	24) EcoSiteName	25) % Cov	non native	*Est Acres Extent

Location Information

26) State:	27) County:	28) Region:	29) Forest:	30) District:
ND	McKenzie			

35) Legal Description: Principle Meridian:

Township	Range	Section	Qsec	QQSec	QQQSec	QQQQSec

GPS Info

37) GPS Model Used:	GeoXT 6000
Survey Datum:	WGS84
GPS Filename:	
Differentially Corrected?	Yes

- Lat/Longs in item 36 are not necessary if provide GPS file or GIS feature (incorporate survey id on spatial feature)

36) Lat / Long for point feature:

Buffer Distance: Report on first page

	Degree	Minutes	Seconds	Decimal Degree
Latitude				0.000000000
Longitude				0.000000000

36a) Lat / Long for two point line transect:

Buffer Distance: Report on first page

Begin	Degree	Minutes	Seconds	Decimal Degree
Latitude				0.000000000
Longitude				0.000000000
End				
Latitude				0.000000000
Longitude				0.000000000

Preferred minimum average number of positions for each GPS point: (1 position/sec) 30-60

Preferred distance between positions/vertices for gps line or polygon: 5-10 feet

Preference is to transfer GPS information directly from GPS unit to computer to reduce data entry errors

38) General Directions to Survey Area:

Sketch of Survey Area

DPG Sensitive Plant Field Form - 2018 Version

- Data/comments entered in gray outlined cells, lookup formulas in white outlined cells **Revised 3/15/2018**

General Information				
1) SiteID	BSA-NDMK101a		2) Date	6/7/2018
LocalID				
3) Site Name				
4-5) Plant NRCS Code	Common Name	Scientific		Status & Ranking
TOEX2	Easter daisy	*Townsendia exscapa*		*Sensitive - R1 2011 - G5/SNR*
Spatial Feature Type		Point		
If Point, buffer distance from pt center (meters):				
If Line, Buffer distance from line center (meters):				
6) Record Source		Field Survey	7) Survey ID	
8) Survey Name				
Purpose of Visit		Project Survey	Project Type	Oil and Gas
9) Examiner	Last Name 1	Walden	First Name 1	Jake
	Last Name 2		First Name 2	
Survey Agency	Midwest Natural Resources		10) Ownership	
11) Loc Uncert		12) Uncert Dist (m)		
13) EO#		14) State	ND	
15) County	McKenzie	16) Region		
17) Forest		18) District		
19) Est Area		20 Est Area UOM		

Element Occurrence Data				
21) Canopy Cover Method				
22) EO Canopy Cover (%Cover)			DAUBEN Code	
			NRMCOV Code	
23) EO Life Form			24) # of Subpopulations	
25) Plant Found (Revisit): Yes or No			26) Plant Count	1
26a) Plant Abundance			27) Count Type	
28) Count Method (Actual or Est)	Actual		29) Revisit needed	
30) Desired Revisit Date				
31) Revisit Justification				
32) Phenology by % (must add up to 100%)				
Vegetative	Flower/Bud	Fruit/Dispersed	Seedlings	Juvenile
		100		
33) Population Comments				
34) Evidence of disease, competition, predation, collection, trampling or herbivory?				
35) Evidence Comments				
36) Pollinator observed			37) Pollinator type	
38) Pollinator Comments				

Site Morphometry				
39) Slope%	40) Slope Position	41) Aspect	42) Elevation Avg	43) Elev UOM

Soil Characteristics and Light Conditions			
46) Soil Moist	47) Soil Texture	48) Soil Type (musm)	49) Light Exposure
Dry		E3013F	Partial Shade

Site Classification			
Classification Type	Upper Level	Mid Level	Lower Level
50) Existing Veg (Dom)			SCSC
51) Potential Veg/Habitat Type			
52) Ecotype (Ecological Site Name)			

Habitat Quality and Management Comments

53) Habitat Description

Hillside with patchy Schizachyrium scoparium and abundant forbs. Near population of Escobaria missouriensis. General land use is rangeland.

54) Dominant Process

55) Process Comment

56) Community Quality	Medium	57) Landscape Integrity	
58) Dominant Disturb/Threats (present or imminent)			
58a) Codominant Disturb/Threats (present or imminent)			

59) Disturbance/Threats Comments

Non-Natives (Invasives) Present (yes or no)

NRCS Code	Common Name	Status	Scientific

60) Non-Native Comment

61) Current Land Use Comment

Rangeland.

Canopy Cover

Record % canopy cover by actual %

Lifeform Canopy Cover	62) % Cov	Ground Cover	63) % Cov
Tree		Bare Ground	
Shrub		Gravel	
Forb		Rock	
Graminoid		Moss	
Non-vascular		Litter/Duff	
Lichen		Basal Veg	
Algae		Water	
		Road surface	
		Lichen	
Total	0		0

Associated Species

List of species directly associated with the EO species on this site

64) Completeness of Species List: Selected

65) Species list Comment:

66) NRCS Plant Code	67) Scientific Name	68) Life Form	70) % Cov	71) Non-native
PUPAM	*Anemone ludoviciana Nutt., nom. illeg.*			
ARFR4	*Artemisia frigida Willd.*			
ASLAR	*Astragalus adsurgens Pall.*			
BOCU	*Bouteloua curtipendula (Michx.) Torr.*			
CASE12	*Calylophus australis Towner & P.H. Raven*			
DAPU5	*Dalea purpurea Vent.*			
ECAN2	*Echinacea angustifolia DC.*			
ERIGE2	*Erigeron L.*			
HECU9	*Stipa curtiseta (Hitchc.) Barkworth*			
PASM	*Agropyron molle (Scribn. & J.G. Sm.) Rydb.*			
RACO3	*Lepachys columnifera (Nutt.) J.F. Macbr.*			
SCSC	*Schizachyrium scoparium (Michx.) Nash*			
JUHO2	*Juniperus horizontalis Moench var. argentea hort.*			

Location Information				
84) Legal Description			Principle Meridian	
Township	Range	Section	Q Sec	QQ Sec

85) GPS info

Preferred minimum average number of positions for each GPS point: (1 position/second)	30-60
Preferred distance between positions/vertices for gps line or polygon:	5-10 feet

Preference is to transfer GPS information directly from GPS unit to computer to reduce data entry errors

GPS Filename:			Differentially Corrected:	
Survey Datum	WGS84	87) GPS Model Used	GeoXT 6000	
	Degree	Minutes	Seconds	Decimal Degree
Latitude	47	37	7.83	47.618841667
Longitude	103	46	1.16	-103.766988889

88) General directions/location information

EO Speciman Documentation			
72) Reference for ID			
73) Collector Last Name 1		First Name 1	
73a) Collector Last Name 2		First Name 2	
74) Collection #		75) Confirmed	
76) Verification			
77) Specimen Repository			

Image Information	
78) Image ID	79) Image Description

90) Sketch of Site or Area

91) General EO Comments:

DPG Sensitive Plant Field Form - 2018 Version

- Data/comments entered in gray outlined cells, lookup formulas in white outlined cells **Revised 3/15/2018**

General Information				
1) SiteID	BSA-NDMK101b-BSA-NDMK101s		2) Date	6/8/2018
LocalID				
3) Site Name				
4-5) Plant NRCS Code	Common Name	Scientific		Status & Ranking
ESMI3	Missouri foxtail cactus	*Escobaria missouriensis*		*Sensitive - R1 2011 - G5/SNR*
Spatial Feature Type		Polygon		
If Point, buffer distance from pt center (meters):				
If Line, Buffer distance from line center (meters):				
6) Record Source		Field Survey	7) Survey ID	
8) Survey Name				
Purpose of Visit		Project Survey	Project Type	Oil and Gas
9) Examiner	Last Name 1	Walden	First Name 1	Jake
	Last Name 2		First Name 2	
Survey Agency	Midwest Natural Resources		10) Ownership	
11) Loc Uncert		12) Uncert Dist (m)		
13) EO#		14) State	ND	
15) County	McKenzie	16) Region		
17) Forest		18) District		
19) Est Area		20 Est Area UOM		

Element Occurrence Data				
21) Canopy Cover Method				
22) EO Canopy Cover (%Cover)			DAUBEN Code	
			NRMCOV Code	
23) EO Life Form			24) # of Subpopulations	
25) Plant Found (Revisit): Yes or No			26) Plant Count	1654
26a) Plant Abundance			27) Count Type	
28) Count Method (Actual or Est)	Estimate		29) Revisit needed	
30) Desired Revisit Date				
31) Revisit Justification				
32) Phenology by % (must add up to 100%)				
Vegetative	Flower/Bud	Fruit/Dispersed	Seedlings	Juvenile
95	5			
33) Population Comments				
Population mapped as series of polygons over approx. 1.9 miles.				
34) Evidence of disease, competition, predation, collection, trampling or herbivory?				
35) Evidence Comments				
36) Pollinator observed			37) Pollinator type	
38) Pollinator Comments				

Site Morphometry				
39) Slope%	40) Slope Position	41) Aspect	42) Elevation Avg	43) Elev UOM

Soil Characteristics and Light Conditions			
46) Soil Moist	47) Soil Texture	48) Soil Type (musm)	49) Light Exposure
Dry		E3013F	Partial Shade

Site Classification			
Classification Type	Upper Level	Mid Level	Lower Level
50) Existing Veg (Dom)			SCSC
51) Potential Veg/Habitat Type			
52) Ecotype (Ecological Site Name)			

Habitat Quality and Management Comments			
53) Habitat Description			
Hills dominated by little bluestem, native forbs			
54) Dominant Process			
55) Process Comment			
56) Community Quality	Medium	57) Landscape Integrity	
58) Dominant Disturb/Threats (present or imminent)			
58a) Codominant Disturb/Threats (present or imminent)			
59) Disturbance/Threats Comments			
Non-Natives (Invasives) Present (yes or no)			
NRCS Code	Common Name	Status	Scientific
60) Non-Native Comment			
61) Current Land Use Comment			

Canopy Cover

Record % canopy cover by actual %

Lifeform Canopy Cover	62) % Cov	Ground Cover	63) % Cov
Tree		Bare Ground	
Shrub		Gravel	
Forb		Rock	
Graminoid		Moss	
Non-vascular		Litter/Duff	
Lichen		Basal Veg	
Algae		Water	
		Road surface	
		Lichen	
Total	0		0

Associated Species

List of species directly associated with the EO species on this site

64) Completeness of Species List: Selected

65) Species list Comment:

66) NRCS Plant Code	67) Scientific Name	68) Life Form	70) % Cov	71) Non-native
PUPAM	*Anemone ludoviciana Nutt., nom. illeg.*			
ARFR4	*Artemisia frigida Willd.*			
ASLAR	*Astragalus adsurgens Pall.*			
BOCU	*Bouteloua curtipendula (Michx.) Torr.*			
DAPU5	*Dalea purpurea Vent.*			
ECAN2	*Echinacea angustifolia DC.*			
ERIGE2	*Erigeron L.*			
GETR	*Geum triflorum Pursh*			
HECU9	*Stipa curtiseta (Hitchc.) Barkworth*			
LIPU	*Liatris punctata Hook.*			
LIPH	*Lilium philadelphicum L.*			
PAPL12	*Senecio plattensis Nutt.*			
PASM	*Agropyron molle (Scribn. & J.G. Sm.) Rydb.*			
RACO3	*Lepachys columnifera (Nutt.) J.F. Macbr.*			
SCSC	*Schizachyrium scoparium (Michx.) Nash*			
JUHO2	*Juniperus horizontalis Moench var. argentea hort.*			

Location Information				
84) Legal Description			Principle Meridian	
Township	Range	Section	Q Sec	QQ Sec

85) GPS info

Preferred minimum average number of positions for each GPS point: (1 position/second)	30-60
Preferred distance between positions/vertices for gps line or polygon:	5-10 feet

Preference is to transfer GPS information directly from GPS unit to computer to reduce data entry errors

GPS Filename:			Differentially Corrected:	
Survey Datum	WGS84	87) GPS Model Used	GeoXT 6000	
	Degree	Minutes	Seconds	Decimal Degree
Latitude	47	37	25.72	47.623811111
Longitude	103	45	34.51	-103.759586111

88) General directions/location information

EO Speciman Documentation			
72) Reference for ID			
73) Collector Last Name 1		First Name 1	
73a) Collector Last Name 2		First Name 2	
74) Collection #		75) Confirmed	
76) Verification			
77) Specimen Repository			

Image Information	
78) Image ID	79) Image Description

90) Sketch of Site or Area

91) General EO Comments:

DPG Sensitive Plant Field Form - 2018 Version

- Data/comments entered in gray outlined cells, lookup formulas in white outlined cells **Revised 3/15/2018**

General Information				
1) SiteID	BSA-NDMK103a, BSA-NDMK103b		2) Date	6/10/2018
LocalID				
3) Site Name				
4-5) Plant NRCS Code	Common Name	Scientific		Status & Ranking
ESMI3	Missouri foxtail cactus	*Escobaria missouriensis*		*Sensitive - R1 2011 - G5/SNR*
Spatial Feature Type		Polygon		
If Point, buffer distance from pt center (meters):				
If Line, Buffer distance from line center (meters):				
6) Record Source		Field Survey	7) Survey ID	
8) Survey Name				
Purpose of Visit		Project Survey	Project Type	Oil and Gas
9) Examiner	Last Name 1	Gockman	First Name 1	Otto
	Last Name 2		First Name 2	
Survey Agency	Midwest Natural Resources		10) Ownership	
11) Loc Uncert		12) Uncert Dist (m)		
13) EO#		14) State	ND	
15) County	McKenzie	16) Region		
17) Forest		18) District		
19) Est Area		20 Est Area UOM		

Element Occurrence Data				
21) Canopy Cover Method				
22) EO Canopy Cover (%Cover)			DAUBEN Code	
			NRMCOV Code	
23) EO Life Form			24) # of Subpopulations	
25) Plant Found (Revisit): Yes or No			26) Plant Count	149
26a) Plant Abundance			27) Count Type	
28) Count Method (Actual or Est)	Estimate		29) Revisit needed	
30) Desired Revisit Date				
31) Revisit Justification				
32) Phenology by % (must add up to 100%)				
Vegetative	Flower/Bud	Fruit/Dispersed	Seedlings	Juvenile
50	25	25		
33) Population Comments				
Population includes point occurrence approx. 0.3 mile southwest of polygon.				
34) Evidence of disease, competition, predation, collection, trampling or herbivory?				
35) Evidence Comments				
36) Pollinator observed			37) Pollinator type	
38) Pollinator Comments				

Site Morphometry				
39) Slope%	40) Slope Position	41) Aspect	42) Elevation Avg	43) Elev UOM

Soil Characteristics and Light Conditions			
46) Soil Moist	47) Soil Texture	48) Soil Type (musm)	49) Light Exposure
Dry		E0701F	Full Sun

Site Classification			
Classification Type	Upper Level	Mid Level	Lower Level
50) Existing Veg (Dom)			AGCR
51) Potential Veg/Habitat Type			
52) Ecotype (Ecological Site Name)			

Habitat Quality and Management Comments			
53) Habitat Description			
Occurring in rangeland dominated by Agropyron cristatum and Pascopyrum smithii.			
54) Dominant Process			
55) Process Comment			
56) Community Quality	Low	57) Landscape Integrity	
58) Dominant Disturb/Threats (present or imminent)			
58a) Codominant Disturb/Threats (present or imminent)			
59) Disturbance/Threats Comments			
Non-Natives (Invasives) Present (yes or no)			

NRCS Code	Common Name	Status	Scientific

60) Non-Native Comment
61) Current Land Use Comment
Rangeland.

Canopy Cover

Record % canopy cover by actual %

Lifeform Canopy Cover	62) % Cov	Ground Cover	63) % Cov
Tree		Bare Ground	
Shrub		Gravel	
Forb		Rock	
Graminoid		Moss	
Non-vascular		Litter/Duff	
Lichen		Basal Veg	
Algae		Water	
		Road surface	
		Lichen	
Total	0		0

Associated Species

List of species directly associated with the EO species on this site

64) Completeness of Species List: Selected

65) Species list Comment:

66) NRCS Plant Code	67) Scientific Name	68) Life Form	70) % Cov	71) Non-native
LEDE	*Lepidium densiflorum Schrad. var. densiflorum*			
OPFR	*Cactus fragilis Nutt.*			
PASM	*Agropyron molle (Scribn. & J.G. Sm.) Rydb.*			
AGCR	*Agropyron cristatum (L.) Gaertn.*			
PUPAM	*Anemone ludoviciana Nutt., nom. illeg.*			
ARFR4	*Artemisia frigida Willd.*			
CASE12	*Calylophus australis Towner & P.H. Raven*			
DAPU5	*Dalea purpurea Vent.*			
ECAN2	*Echinacea angustifolia DC.*			
ERIGE2	*Erigeron L.*			
GETR	*Geum triflorum Pursh*			
HECO26	*Hesperostipa comata (Trin. & Rupr.) Barkworth*			
LIPU	*Liatris punctata Hook.*			
PAPL12	*Senecio plattensis Nutt.*			
RACO3	*Lepachys columnifera (Nutt.) J.F. Macbr.*			
SCSC	*Schizachyrium scoparium (Michx.) Nash*			
JUHO2	*Juniperus horizontalis Moench var. argentea hort.*			

Location Information				
84) Legal Description			Principle Meridian	
Township	Range	Section	Q Sec	QQ Sec

85) GPS info

Preferred minimum average number of positions for each GPS point: (1 position/second)	30-60
Preferred distance between positions/vertices for gps line or polygon:	5-10 feet

Preference is to transfer GPS information directly from GPS unit to computer to reduce data entry errors

GPS Filename:			Differentially Corrected:	
Survey Datum	WGS84	87) GPS Model Used	GeoXT 6000	
	Degree	Minutes	Seconds	Decimal Degree
Latitude	47	36	27.7	47.607694444
Longitude	103	47	14.04	-103.787233333

88) General directions/location information

EO Speciman Documentation			
72) Reference for ID			
73) Collector Last Name 1		First Name 1	
73a) Collector Last Name 2		First Name 2	
74) Collection #		75) Confirmed	
76) Verification			
77) Specimen Repository			

Image Information	
78) Image ID	79) Image Description

90) Sketch of Site or Area

91) General EO Comments:

DPG Sensitive Plant Field Form - 2018 Version

- Data/comments entered in gray outlined cells, lookup formulas in white outlined cells **Revised 3/15/2018**

General Information				
1) SiteID	BSA-NDMK103c, BSA-NDMK103d		2) Date	6/10/2018
LocalID				
3) Site Name				
4-5) Plant NRCS Code	Common Name	Scientific		Status & Ranking
ESMI3	Missouri foxtail cactus	*Escobaria missouriensis*		*Sensitive - R1 2011 - G5/SNR*
Spatial Feature Type		Polygon		
If Point, buffer distance from pt center (meters):				
If Line, Buffer distance from line center (meters):				
6) Record Source		Field Survey	7) Survey ID	
8) Survey Name				
Purpose of Visit		Project Survey	Project Type	Oil and Gas
9) Examiner	Last Name 1	Gockman	First Name 1	Otto
	Last Name 2		First Name 2	
Survey Agency	Midwest Natural Resources		10) Ownership	
11) Loc Uncert		12) Uncert Dist (m)		
13) EO#		14) State	ND	
15) County	McKenzie	16) Region		
17) Forest		18) District		
19) Est Area		20 Est Area UOM		

Element Occurrence Data				
21) Canopy Cover Method				
22) EO Canopy Cover (%Cover)			DAUBEN Code	
			NRMCOV Code	
23) EO Life Form			24) # of Subpopulations	
25) Plant Found (Revisit): Yes or No			26) Plant Count	12
26a) Plant Abundance			27) Count Type	
28) Count Method (Actual or Est)	Actual		29) Revisit needed	
30) Desired Revisit Date				
31) Revisit Justification				
32) Phenology by % (must add up to 100%)				
Vegetative	Flower/Bud	Fruit/Dispersed	Seedlings	Juvenile
95	5			
33) Population Comments				
Population documented at 4 point locations up to 0.25 mile apart.				
34) Evidence of disease, competition, predation, collection, trampling or herbivory?				
35) Evidence Comments				
36) Pollinator observed			37) Pollinator type	
38) Pollinator Comments				

Site Morphometry				
39) Slope%	40) Slope Position	41) Aspect	42) Elevation Avg	43) Elev UOM
		Flat (No Aspect)		

Soil Characteristics and Light Conditions			
46) Soil Moist	47) Soil Texture	48) Soil Type (musm)	49) Light Exposure
Dry		E1355D	Full Sun

Site Classification			
Classification Type	Upper Level	Mid Level	Lower Level
50) Existing Veg (Dom)			PASM
51) Potential Veg/Habitat Type			
52) Ecotype (Ecological Site Name)			

Habitat Quality and Management Comments			
53) Habitat Description			
Rangeland dominated by wheatgrasses.			
54) Dominant Process			
55) Process Comment			
56) Community Quality	Low	57) Landscape Integrity	
58) Dominant Disturb/Threats (present or imminent)			
58a) Codominant Disturb/Threats (present or imminent)			
59) Disturbance/Threats Comments			
Non-Natives (Invasives) Present (yes or no)			
NRCS Code	Common Name	Status	Scientific
60) Non-Native Comment			
61) Current Land Use Comment			

Canopy Cover

Record % canopy cover by actual %

Lifeform Canopy Cover	62) % Cov	Ground Cover	63) % Cov
Tree		Bare Ground	
Shrub		Gravel	
Forb		Rock	
Graminoid		Moss	
Non-vascular		Litter/Duff	
Lichen		Basal Veg	
Algae		Water	
		Road surface	
		Lichen	
Total	0		0

Associated Species

List of species directly associated with the EO species on this site

64) Completeness of Species List: Selected

65) Species list Comment:

66) NRCS Plant Code	67) Scientific Name	68) Life Form	70) % Cov	71) Non-native
PUPAM	*Anemone ludoviciana Nutt., nom. illeg.*			
ARFR4	*Artemisia frigida Willd.*			
ASLAR	*Astragalus adsurgens Pall.*			
ASCR2	*Astragalus crassicarpus Nutt.*			
BOCU	*Bouteloua curtipendula (Michx.) Torr.*			
CASE12	*Calylophus australis Towner & P.H. Raven*			
CARO2	*Campanula alaskana (A. Gray) W. Wight ex J.P. Anderson*			
DAPU5	*Dalea purpurea Vent.*			
ECAN2	*Echinacea angustifolia DC.*			
LIPU	*Liatris punctata Hook.*			
PAPL12	*Senecio plattensis Nutt.*			
PASM	*Agropyron molle (Scribn. & J.G. Sm.) Rydb.*			
SCSC	*Schizachyrium scoparium (Michx.) Nash*			
JUHO2	*Juniperus horizontalis Moench var. argentea hort.*			

Location Information				
84) Legal Description			Principle Meridian	
Township	Range	Section	Q Sec	QQ Sec

85) GPS info

Preferred minimum average number of positions for each GPS point: (1 position/second)	30-60
Preferred distance between positions/vertices for gps line or polygon:	5-10 feet

Preference is to transfer GPS information directly from GPS unit to computer to reduce data entry errors

GPS Filename:			Differentially Corrected:	
Survey Datum	WGS84	87) GPS Model Used	GeoXT 6000	
	Degree	Minutes	Seconds	Decimal Degree
Latitude	47	36	48.84	47.613566667
Longitude	103	46	57.58	-103.782661111

88) General directions/location information

EO Speciman Documentation			
72) Reference for ID			
73) Collector Last Name 1		First Name 1	
73a) Collector Last Name 2		First Name 2	
74) Collection #		75) Confirmed	
76) Verification			
77) Specimen Repository			

Image Information	
78) Image ID	79) Image Description

90) Sketch of Site or Area

91) General EO Comments:

DPG Sensitive Plant Field Form - 2018 Version

- Data/comments entered in gray outlined cells, lookup formulas in white outlined cells **Revised 3/15/2018**

General Information				
1) SiteID	BSA-NDMK106_01a, BSA-NDMK107b		2) Date	6/9/2018
LocalID				
3) Site Name				
4-5) Plant NRCS Code	Common Name	Scientific		Status & Ranking
TOHO	Hooker's Townsendia	*Townsendia hookeri*		*Sensitive - R1 2011 - G5/S1*
Spatial Feature Type		Point		
If Point, buffer distance from pt center (meters):				
If Line, Buffer distance from line center (meters):				
6) Record Source		Field Survey	7) Survey ID	
8) Survey Name				
Purpose of Visit		Project Survey	Project Type	Oil and Gas
9) Examiner	Last Name 1	Gockman	First Name 1	Otto
	Last Name 2		First Name 2	
Survey Agency	Midwest Natural Resources		10) Ownership	
11) Loc Uncert		12) Uncert Dist (m)		
13) EO#		14) State	ND	
15) County	McKenzie	16) Region		
17) Forest		18) District		
19) Est Area		20 Est Area UOM		

Element Occurrence Data				
21) Canopy Cover Method				
22) EO Canopy Cover (%Cover)			DAUBEN Code	
			NRMCOV Code	
23) EO Life Form			24) # of Subpopulations	
25) Plant Found (Revisit): Yes or No			26) Plant Count	4
26a) Plant Abundance			27) Count Type	
28) Count Method (Actual or Est)	Actual		29) Revisit needed	
30) Desired Revisit Date				
31) Revisit Justification				
32) Phenology by % (must add up to 100%)				
Vegetative	Flower/Bud	Fruit/Dispersed	Seedlings	Juvenile
50	25	25		
33) Population Comments				
Population represented by 3 point locations up to 0.55 mile apart.				
34) Evidence of disease, competition, predation, collection, trampling or herbivory?				
35) Evidence Comments				
36) Pollinator observed			37) Pollinator type	
38) Pollinator Comments				

Site Morphometry				
39) Slope%	40) Slope Position	41) Aspect	42) Elevation Avg	43) Elev UOM
		West		

Soil Characteristics and Light Conditions			
46) Soil Moist	47) Soil Texture	48) Soil Type (musm)	49) Light Exposure
Dry		E3013F	Full Sun

Site Classification			
Classification Type	Upper Level	Mid Level	Lower Level
50) Existing Veg (Dom)			SCSC
51) Potential Veg/Habitat Type			
52) Ecotype (Ecological Site Name)			

Habitat Quality and Management Comments			
53) Habitat Description			
On a dry, west-facing slope.			
54) Dominant Process			
55) Process Comment			
56) Community Quality	Medium	57) Landscape Integrity	
58) Dominant Disturb/Threats (present or imminent)			
58a) Codominant Disturb/Threats (present or imminent)			
59) Disturbance/Threats Comments			
Non-Natives (Invasives) Present (yes or no)			

NRCS Code	Common Name	Status	Scientific

60) Non-Native Comment
61) Current Land Use Comment
Rangeland.

Canopy Cover

Record % canopy cover by actual %

Lifeform Canopy Cover	62) % Cov	Ground Cover	63) % Cov
Tree		Bare Ground	
Shrub		Gravel	
Forb		Rock	
Graminoid		Moss	
Non-vascular		Litter/Duff	
Lichen		Basal Veg	
Algae		Water	
		Road surface	
		Lichen	
Total	0		0

Associated Species

List of species directly associated with the EO species on this site

64) Completeness of Species List: Selected

65) Species list Comment:

66) NRCS Plant Code	67) Scientific Name	68) Life Form	70) % Cov	71) Non-native
ECAN2	*Echinacea angustifolia DC.*			
Antennaria	*#N/A*			
BOCU	*Bouteloua curtipendula (Michx.) Torr.*			
CAFI	*Carex elyniformis A.E. Porsild*			
PHHO	*Phlox hoodii Richardson*			
PUPAM	*Anemone ludoviciana Nutt., nom. illeg.*			
ARFR4	*Artemisia frigida Willd.*			
CASE12	*Calylophus australis Towner & P.H. Raven*			
CARO2	*Campanula alaskana (A. Gray) W. Wight ex J.P. Anderson*			
DAPU5	*Dalea purpurea Vent.*			
ERIGE2	*Erigeron L.*			
GETR	*Geum triflorum Pursh*			
PAPL12	*Senecio plattensis Nutt.*			
PASM	*Agropyron molle (Scribn. & J.G. Sm.) Rydb.*			
SCSC	*Schizachyrium scoparium (Michx.) Nash*			
JUHO2	*Juniperus horizontalis Moench var. argentea hort.*			

Location Information				
84) Legal Description			Principle Meridian	
Township	Range	Section	Q Sec	QQ Sec

85) GPS info

Preferred minimum average number of positions for each GPS point: (1 position/second)	30-60
Preferred distance between positions/vertices for gps line or polygon:	5-10 feet

Preference is to transfer GPS information directly from GPS unit to computer to reduce data entry errors

GPS Filename:			Differentially Corrected:	
Survey Datum	WGS84	87) GPS Model Used	GeoXT 6000	
	Degree	Minutes	Seconds	Decimal Degree
Latitude	47	34	50.11	47.580586111
Longitude	103	48	54.01	-103.815002778

88) General directions/location information

EO Speciman Documentation			
72) Reference for ID			
73) Collector Last Name 1		First Name 1	
73a) Collector Last Name 2		First Name 2	
74) Collection #		75) Confirmed	
76) Verification			
77) Specimen Repository			

Image Information	
78) Image ID	79) Image Description

90) Sketch of Site or Area

91) General EO Comments:

DPG Sensitive Plant Field Form - 2018 Version

- Data/comments entered in gray outlined cells, lookup formulas in white outlined cells **Revised 3/15/2018**

General Information				
1) SiteID	BSA-NDMK106_01b, BSA-NDMK107a		2) Date	6/9/2018
LocalID				
3) Site Name				
4-5) Plant NRCS Code	Common Name	Scientific		Status & Ranking
ESMI3	Missouri foxtail cactus	*Escobaria missouriensis*		*Sensitive - R1 2011 - G5/SNR*
Spatial Feature Type		Point		
If Point, buffer distance from pt center (meters):				
If Line, Buffer distance from line center (meters):				
6) Record Source		Field Survey	7) Survey ID	
8) Survey Name				
Purpose of Visit		Project Survey	Project Type	Oil and Gas
9) Examiner	Last Name 1	Gockman	First Name 1	Otto
	Last Name 2		First Name 2	
Survey Agency	Midwest Natural Resources		10) Ownership	
11) Loc Uncert		12) Uncert Dist (m)		
13) EO#		14) State	ND	
15) County	McKenzie	16) Region		
17) Forest		18) District		
19) Est Area		20 Est Area UOM		

Element Occurrence Data				
21) Canopy Cover Method				
22) EO Canopy Cover (%Cover)			DAUBEN Code	
			NRMCOV Code	
23) EO Life Form			24) # of Subpopulations	
25) Plant Found (Revisit): Yes or No			26) Plant Count	18
26a) Plant Abundance			27) Count Type	
28) Count Method (Actual or Est)	Actual		29) Revisit needed	
30) Desired Revisit Date				
31) Revisit Justification				
32) Phenology by % (must add up to 100%)				
Vegetative	Flower/Bud	Fruit/Dispersed	Seedlings	Juvenile
95	5			
33) Population Comments				
Population documented as 6 point locations up to 0.5 mile apart.				
34) Evidence of disease, competition, predation, collection, trampling or herbivory?				
35) Evidence Comments				
36) Pollinator observed			37) Pollinator type	
38) Pollinator Comments				

Site Morphometry				
39) Slope%	40) Slope Position	41) Aspect	42) Elevation Avg	43) Elev UOM

Soil Characteristics and Light Conditions			
46) Soil Moist	47) Soil Texture	48) Soil Type (musm)	49) Light Exposure
Dry		E2120B	Full Sun

Site Classification			
Classification Type	Upper Level	Mid Level	Lower Level
50) Existing Veg (Dom)			PASM
51) Potential Veg/Habitat Type			
52) Ecotype (Ecological Site Name)			

Habitat Quality and Management Comments

53) Habitat Description

Rangeland dominated by Pascopyrum smithii.

54) Dominant Process

55) Process Comment

56) Community Quality	Low	57) Landscape Integrity	
58) Dominant Disturb/Threats (present or imminent)			
58a) Codominant Disturb/Threats (present or imminent)			

59) Disturbance/Threats Comments

Non-Natives (Invasives) Present (yes or no)

NRCS Code	Common Name	Status	Scientific

60) Non-Native Comment

61) Current Land Use Comment

Rangeland.

Canopy Cover

Record % canopy cover by actual %

Lifeform Canopy Cover	62) % Cov	Ground Cover	63) % Cov
Tree		Bare Ground	
Shrub		Gravel	
Forb		Rock	
Graminoid		Moss	
Non-vascular		Litter/Duff	
Lichen		Basal Veg	
Algae		Water	
		Road surface	
		Lichen	
Total	0		0

Associated Species

List of species directly associated with the EO species on this site

64) Completeness of Species List: Selected

65) Species list Comment:

66) NRCS Plant Code	67) Scientific Name	68) Life Form	70) % Cov	71) Non-native
PASM	*Agropyron molle (Scribn. & J.G. Sm.) Rydb.*			
ARFR4	*Artemisia frigida Willd.*			
PUPAM	*Anemone ludoviciana Nutt., nom. illeg.*			
ASLAR	*Astragalus adsurgens Pall.*			
ASCR2	*Astragalus crassicarpus Nutt.*			
BOCU	*Bouteloua curtipendula (Michx.) Torr.*			
CASE12	*Calylophus australis Towner & P.H. Raven*			
CARO2	*Campanula alaskana (A. Gray) W. Wight ex J.P. Anderson*			
DAPU5	*Dalea purpurea Vent.*			
ECAN2	*Echinacea angustifolia DC.*			
ERIGE2	*Erigeron L.*			
HECO26	*Hesperostipa comata (Trin. & Rupr.) Barkworth*			
HECU9	*Stipa curtiseta (Hitchc.) Barkworth*			
LIPU	*Liatris punctata Hook.*			
PAPL12	*Senecio plattensis Nutt.*			
SCSC	*Schizachyrium scoparium (Michx.) Nash*			
JUHO2	*Juniperus horizontalis Moench var. argentea hort.*			

Location Information				
84) Legal Description			Principle Meridian	
Township	Range	Section	Q Sec	QQ Sec

85) GPS info

Preferred minimum average number of positions for each GPS point: (1 position/second)	30-60
Preferred distance between positions/vertices for gps line or polygon:	5-10 feet

Preference is to transfer GPS information directly from GPS unit to computer to reduce data entry errors

GPS Filename:			Differentially Corrected:	
Survey Datum	WGS84	87) GPS Model Used	GeoXT 6000	
	Degree	Minutes	Seconds	Decimal Degree
Latitude	47	35	11.39	47.586497222
Longitude	103	48	54.01	-103.815002778

88) General directions/location information

EO Speciman Documentation			
72) Reference for ID			
73) Collector Last Name 1		First Name 1	
73a) Collector Last Name 2		First Name 2	
74) Collection #		75) Confirmed	
76) Verification			
77) Specimen Repository			

Image Information	
78) Image ID	79) Image Description

90) Sketch of Site or Area

91) General EO Comments:

DPG Sensitive Plant Field Form - 2018 Version

- Data/comments entered in gray outlined cells, lookup formulas in white outlined cells **Revised 3/15/2018**

General Information				
1) SiteID	BSA-NDMK108a, BSA-NDMK108b		2) Date	6/8/2018
LocalID				
3) Site Name				
4-5) Plant NRCS Code	Common Name	Scientific		Status & Ranking
ESMI3	Missouri foxtail cactus	*Escobaria missouriensis*		*Sensitive - R1 2011 - G5/SNR*
Spatial Feature Type		Polygon		
If Point, buffer distance from pt center (meters):				
If Line, Buffer distance from line center (meters):				
6) Record Source		Field Survey	7) Survey ID	
8) Survey Name				
Purpose of Visit		Project Survey	Project Type	Oil and Gas
9) Examiner	Last Name 1	Gockman	First Name 1	Otto
	Last Name 2		First Name 2	
Survey Agency	Midwest Natural Resources		10) Ownership	
11) Loc Uncert		12) Uncert Dist (m)		
13) EO#		14) State	ND	
15) County	McKenzie	16) Region		
17) Forest		18) District		
19) Est Area		20 Est Area UOM		

Element Occurrence Data				
21) Canopy Cover Method				
22) EO Canopy Cover (%Cover)			DAUBEN Code	
			NRMCOV Code	
23) EO Life Form			24) # of Subpopulations	
25) Plant Found (Revisit): Yes or No			26) Plant Count	59
26a) Plant Abundance			27) Count Type	
28) Count Method (Actual or Est)	Actual		29) Revisit needed	
30) Desired Revisit Date				
31) Revisit Justification				
32) Phenology by % (must add up to 100%)				
Vegetative	Flower/Bud	Fruit/Dispersed	Seedlings	Juvenile
95	5			
33) Population Comments				
Population documented as two polygons approx. 0.17 mile apart.				
34) Evidence of disease, competition, predation, collection, trampling or herbivory?				
35) Evidence Comments				
36) Pollinator observed			37) Pollinator type	
38) Pollinator Comments				

Site Morphometry				
39) Slope%	40) Slope Position	41) Aspect	42) Elevation Avg	43) Elev UOM
		Flat (No Aspect)		

Soil Characteristics and Light Conditions			
46) Soil Moist	47) Soil Texture	48) Soil Type (musm)	49) Light Exposure
Dry		E2225B	Full Sun

Site Classification			
Classification Type	Upper Level	Mid Level	Lower Level
50) Existing Veg (Dom)			AGCR
51) Potential Veg/Habitat Type			
52) Ecotype (Ecological Site Name)			

Habitat Quality and Management Comments

53) Habitat Description

Disturbed lowland dominated by Agropyron cristatum.

54) Dominant Process

55) Process Comment

56) Community Quality	Low	57) Landscape Integrity	
58) Dominant Disturb/Threats (present or imminent)			
58a) Codominant Disturb/Threats (present or imminent)			

59) Disturbance/Threats Comments

Non-Natives (Invasives) Present (yes or no)

NRCS Code	Common Name	Status	Scientific

60) Non-Native Comment

61) Current Land Use Comment

Canopy Cover

Record % canopy cover by actual %

Lifeform Canopy Cover	62) % Cov	Ground Cover	63) % Cov
Tree		Bare Ground	
Shrub		Gravel	
Forb		Rock	
Graminoid		Moss	
Non-vascular		Litter/Duff	
Lichen		Basal Veg	
Algae		Water	
		Road surface	
		Lichen	
Total	0		0

Associated Species

List of species directly associated with the EO species on this site

64) Completeness of Species List: Selected

65) Species list Comment:

66) NRCS Plant Code	67) Scientific Name	68) Life Form	70) % Cov	71) Non-native
PLAR3	*Plantago aristata Michx. var. nuttallii (Rapin) Morris*			
AGCR	*Agropyron cristatum (L.) Gaertn.*			
TAOF	*Taraxacum officinale F.H. Wigg.*			
PUPAM	*Anemone ludoviciana Nutt., nom. illeg.*			
ARFR4	*Artemisia frigida Willd.*			
ASLAR	*Astragalus adsurgens Pall.*			
ASCR2	*Astragalus crassicarpus Nutt.*			
BOCU	*Bouteloua curtipendula (Michx.) Torr.*			
CASE12	*Calylophus australis Towner & P.H. Raven*			
CARO2	*Campanula alaskana (A. Gray) W. Wight ex J.P. Anderson*			
DAPU5	*Dalea purpurea Vent.*			
ECAN2	*Echinacea angustifolia DC.*			
ERIGE2	*Erigeron L.*			
GETR	*Geum triflorum Pursh*			
LIPU	*Liatris punctata Hook.*			
PAPL12	*Senecio plattensis Nutt.*			
PASM	*Agropyron molle (Scribn. & J.G. Sm.) Rydb.*			
RACO3	*Lepachys columnifera (Nutt.) J.F. Macbr.*			
SCSC	*Schizachyrium scoparium (Michx.) Nash*			
JUHO2	*Juniperus horizontalis Moench var. argentea hort.*			

Location Information				
84) Legal Description			Principle Meridian	
Township	Range	Section	Q Sec	QQ Sec

85) GPS info

Preferred minimum average number of positions for each GPS point: (1 position/second)	30-60
Preferred distance between positions/vertices for gps line or polygon:	5-10 feet

Preference is to transfer GPS information directly from GPS unit to computer to reduce data entry errors

GPS Filename:			Differentially Corrected:	
Survey Datum	WGS84	87) GPS Model Used	GeoXT 6000	
	Degree	Minutes	Seconds	Decimal Degree
Latitude	47	34	32.6	47.575722222
Longitude	103	51	5.84	-103.851622222

88) General directions/location information

EO Speciman Documentation			
72) Reference for ID			
73) Collector Last Name 1		First Name 1	
73a) Collector Last Name 2		First Name 2	
74) Collection #		75) Confirmed	
76) Verification			
77) Specimen Repository			

Image Information	
78) Image ID	79) Image Description

90) Sketch of Site or Area

91) General EO Comments:

DPG Sensitive Plant Field Form - 2018 Version

- Data/comments entered in gray outlined cells, lookup formulas in white outlined cells **Revised 3/15/2018**

General Information				
1) SiteID	BSA-NDMK108c, BSA-NDMK109a, BSA-NDMK109b		2) Date	6/8/2018
LocalID				
3) Site Name				
4-5) Plant NRCS Code	Common Name	Scientific		Status & Ranking
TOHO	Hooker's Townsendia	*Townsendia hookeri*		*Sensitive - R1 2011 - G5/S1*
Spatial Feature Type		Polygon		
If Point, buffer distance from pt center (meters):				
If Line, Buffer distance from line center (meters):				
6) Record Source		Field Survey	7) Survey ID	
8) Survey Name				
Purpose of Visit		Project Survey	Project Type	Oil and Gas
9) Examiner	Last Name 1	Gockman	First Name 1	Otto
	Last Name 2		First Name 2	
Survey Agency	Midwest Natural Resources		10) Ownership	
11) Loc Uncert		12) Uncert Dist (m)		
13) EO#		14) State	ND	
15) County	McKenzie	16) Region		
17) Forest		18) District		
19) Est Area		20 Est Area UOM		

Element Occurrence Data				
21) Canopy Cover Method				
22) EO Canopy Cover (%Cover)			DAUBEN Code	
			NRMCOV Code	
23) EO Life Form			24) # of Subpopulations	
25) Plant Found (Revisit): Yes or No			26) Plant Count	147
26a) Plant Abundance			27) Count Type	
28) Count Method (Actual or Est)	Actual		29) Revisit needed	
30) Desired Revisit Date				
31) Revisit Justification				
32) Phenology by % (must add up to 100%)				
Vegetative	Flower/Bud	Fruit/Dispersed	Seedlings	Juvenile
50	25	25		
33) Population Comments				
Population documented as two polygon and two point locations up to 0.13 mile apart.				
34) Evidence of disease, competition, predation, collection, trampling or herbivory?				
35) Evidence Comments				
36) Pollinator observed			37) Pollinator type	
38) Pollinator Comments				

Site Morphometry				
39) Slope%	40) Slope Position	41) Aspect	42) Elevation Avg	43) Elev UOM
		West southwest		

Soil Characteristics and Light Conditions			
46) Soil Moist	47) Soil Texture	48) Soil Type (musm)	49) Light Exposure
Dry		E3107F	Full Sun

Site Classification			
Classification Type	Upper Level	Mid Level	Lower Level
50) Existing Veg (Dom)			SCSC
51) Potential Veg/Habitat Type			
52) Ecotype (Ecological Site Name)			

Habitat Quality and Management Comments			
53) Habitat Description			
Dry exposed southwest-facing hill in shards of rock.			
54) Dominant Process			
55) Process Comment			
56) Community Quality	Medium	57) Landscape Integrity	
58) Dominant Disturb/Threats (present or imminent)			
58a) Codominant Disturb/Threats (present or imminent)			
59) Disturbance/Threats Comments			
Non-Natives (Invasives) Present (yes or no)			

NRCS Code	Common Name	Status	Scientific

60) Non-Native Comment
61) Current Land Use Comment
Rangeland.

Canopy Cover			
Record % canopy cover by actual %			
Lifeform Canopy Cover	62) % Cov	Ground Cover	63) % Cov
Tree		Bare Ground	
Shrub		Gravel	
Forb		Rock	
Graminoid		Moss	
Non-vascular		Litter/Duff	
Lichen		Basal Veg	
Algae		Water	
		Road surface	
		Lichen	
Total	0		0

Associated Species				
List of species directly associated with the EO species on this site				
64) Completeness of Species List	Selected			
65) Species list Comment:				
66) NRCS Plant Code	67) Scientific Name	68) Life Form	70) % Cov	71) Non-native
CAFI	*Carex elyniformis A.E. Porsild*			
KOMA	*Koeleria albescens auct.*			
ECAN2	*Echinacea angustifolia DC.*			
SCSC	*Schizachyrium scoparium (Michx.) Nash*			
DAPU5	*Dalea purpurea Vent.*			
PHLOX	*Phlox L.*			
Erigonum sp.	*#N/A*			
TEAC	*Tetraneuris acaulis (Pursh) Greene*			
ARCA13	*Artemisia cana Pursh*			

Location Information				
84) Legal Description			Principle Meridian	
Township	Range	Section	Q Sec	QQ Sec

85) GPS info

Preferred minimum average number of positions for each GPS point: (1 position/second)	30-60
Preferred distance between positions/vertices for gps line or polygon:	5-10 feet

Preference is to transfer GPS information directly from GPS unit to computer to reduce data entry errors

GPS Filename:			Differentially Corrected:	
Survey Datum	WGS84	87) GPS Model Used	GeoXT 6000	
	Degree	Minutes	Seconds	Decimal Degree
Latitude	47	34	43.25	47.578680556
Longitude	103	50	51.66	-103.847683333

88) General directions/location information

EO Speciman Documentation			
72) Reference for ID			
73) Collector Last Name 1		First Name 1	
73a) Collector Last Name 2		First Name 2	
74) Collection #		75) Confirmed	
76) Verification			
77) Specimen Repository			

Image Information	
78) Image ID	79) Image Description

90) Sketch of Site or Area

91) General EO Comments:

DPG Sensitive Plant Field Form - 2018 Version

- Data/comments entered in gray outlined cells, lookup formulas in white outlined cells **Revised 3/15/2018**

General Information				
1) SiteID	BSA-NDMK0122a		2) Date	6/6/2018
LocalID				
3) Site Name				
4-5) Plant NRCS Code	Common Name	Scientific		Status & Ranking
ESMI3	Missouri foxtail cactus	*Escobaria missouriensis*		*Sensitive - R1 2011 - G5/SNR*
Spatial Feature Type		Polygon		
If Point, buffer distance from pt center (meters):				
If Line, Buffer distance from line center (meters):				
6) Record Source		Field Survey	7) Survey ID	
8) Survey Name				
Purpose of Visit		Project Survey	Project Type	Oil and Gas
9) Examiner	Last Name 1	Milburn	First Name 1	Scott
	Last Name 2		First Name 2	
Survey Agency	Midwest Natural Resources		10) Ownership	
11) Loc Uncert		12) Uncert Dist (m)		
13) EO#		14) State	ND	
15) County	McKenzie	16) Region		
17) Forest		18) District		
19) Est Area		20 Est Area UOM		

Element Occurrence Data				
21) Canopy Cover Method				
22) EO Canopy Cover (%Cover)			DAUBEN Code	
			NRMCOV Code	
23) EO Life Form			24) # of Subpopulations	
25) Plant Found (Revisit): Yes or No			26) Plant Count	166
26a) Plant Abundance			27) Count Type	
28) Count Method (Actual or Est)	Estimate		29) Revisit needed	
30) Desired Revisit Date				
31) Revisit Justification				
32) Phenology by % (must add up to 100%)				
Vegetative	Flower/Bud	Fruit/Dispersed	Seedlings	Juvenile
95	5			
33) Population Comments				
34) Evidence of disease, competition, predation, collection, trampling or herbivory?				
35) Evidence Comments				
36) Pollinator observed			37) Pollinator type	
38) Pollinator Comments				

Site Morphometry				
39) Slope%	40) Slope Position	41) Aspect	42) Elevation Avg	43) Elev UOM
		Flat (No Aspect)		

Soil Characteristics and Light Conditions			
46) Soil Moist	47) Soil Texture	48) Soil Type (musm)	49) Light Exposure
Dry		E2225B	Full Sun

Site Classification			
Classification Type	Upper Level	Mid Level	Lower Level
50) Existing Veg (Dom)			AGCR
51) Potential Veg/Habitat Type			
52) Ecotype (Ecological Site Name)			

Habitat Quality and Management Comments			
53) Habitat Description			
Occurring in rangeland dominated by Agropyron cristatum. Relatively flat.			
54) Dominant Process			
55) Process Comment			
56) Community Quality	Low	57) Landscape Integrity	
58) Dominant Disturb/Threats (present or imminent)			
58a) Codominant Disturb/Threats (present or imminent)			
59) Disturbance/Threats Comments			
Non-Natives (Invasives) Present (yes or no)			
NRCS Code	Common Name	Status	Scientific
60) Non-Native Comment			
61) Current Land Use Comment			

Canopy Cover			
Record % canopy cover by actual %			
Lifeform Canopy Cover	62) % Cov	Ground Cover	63) % Cov
Tree		Bare Ground	
Shrub		Gravel	
Forb		Rock	
Graminoid		Moss	
Non-vascular		Litter/Duff	
Lichen		Basal Veg	
Algae		Water	
		Road surface	
		Lichen	
Total	0		0

Associated Species				
List of species directly associated with the EO species on this site				
64) Completeness of Species List	Selected			
65) Species list Comment:				
66) NRCS Plant Code	67) Scientific Name	68) Life Form	70) % Cov	71) Non-native
LICO3	*Cathartolinum compactum (A. Nelson) Small*			
ARFR4	*Artemisia frigida Willd.*			
PLAR3	*Plantago aristata Michx. var. nuttallii (Rapin) Morris*			
AGCR	*Agropyron cristatum (L.) Gaertn.*			
OPFR	*Cactus fragilis Nutt.*			
ANOC2	*Androsace arizonica (A. Gray) Derganc*			
PASM	*Agropyron molle (Scribn. & J.G. Sm.) Rydb.*			
TAOF	*Taraxacum officinale F.H. Wigg.*			
TRRE3	*Trifolium repens L. var. atropurpureum hort.*			

Location Information				
84) Legal Description			Principle Meridian	
Township	Range	Section	Q Sec	QQ Sec

85) GPS info

Preferred minimum average number of positions for each GPS point: (1 position/second)	30-60
Preferred distance between positions/vertices for gps line or polygon:	5-10 feet

Preference is to transfer GPS information directly from GPS unit to computer to reduce data entry errors

GPS Filename:			Differentially Corrected:	
Survey Datum	WGS84	87) GPS Model Used	GeoXT 6000	
	Degree	Minutes	Seconds	Decimal Degree
Latitude	47	30	18.46	47.505127778
Longitude	103	53	32.57	-103.892380556

88) General directions/location information

EO Speciman Documentation			
72) Reference for ID			
73) Collector Last Name 1		First Name 1	
73a) Collector Last Name 2		First Name 2	
74) Collection #		75) Confirmed	
76) Verification			
77) Specimen Repository			

Image Information	
78) Image ID	79) Image Description

90) Sketch of Site or Area

91) General EO Comments:

DPG Sensitive Plant Field Form - 2018 Version

- Data/comments entered in gray outlined cells, lookup formulas in white outlined cells **Revised 3/15/2018**

General Information				
1) SiteID	BSA-NDMK0123a	2) Date	6/12/2018	
LocalID				
3) Site Name				
4-5) Plant NRCS Code	Common Name	Scientific		Status & Ranking
TOHO	Hooker's Townsendia	*Townsendia hookeri*		*Sensitive - R1 2011 - G5/S1*
Spatial Feature Type		Point		
If Point, buffer distance from pt center (meters):				
If Line, Buffer distance from line center (meters):				
6) Record Source		Field Survey	7) Survey ID	
8) Survey Name				
Purpose of Visit		Project Survey	Project Type	Oil and Gas
9) Examiner	Last Name 1	Gockman	First Name 1	Otto
	Last Name 2		First Name 2	
Survey Agency	Midwest Natural Resources		10) Ownership	
11) Loc Uncert		12) Uncert Dist (m)		
13) EO#		14) State	ND	
15) County	McKenzie	16) Region		
17) Forest		18) District		
19) Est Area		20 Est Area UOM		

Element Occurrence Data				
21) Canopy Cover Method				
22) EO Canopy Cover (%Cover)			DAUBEN Code	
			NRMCOV Code	
23) EO Life Form			24) # of Subpopulations	
25) Plant Found (Revisit): Yes or No			26) Plant Count	4
26a) Plant Abundance			27) Count Type	
28) Count Method (Actual or Est)	Actual		29) Revisit needed	
30) Desired Revisit Date				
31) Revisit Justification				
32) Phenology by % (must add up to 100%)				
Vegetative	Flower/Bud	Fruit/Dispersed	Seedlings	Juvenile
50	25	25		
33) Population Comments				
34) Evidence of disease, competition, predation, collection, trampling or herbivory?				
35) Evidence Comments				
36) Pollinator observed			37) Pollinator type	
38) Pollinator Comments				

Site Morphometry				
39) Slope%	40) Slope Position	41) Aspect	42) Elevation Avg	43) Elev UOM

Soil Characteristics and Light Conditions			
46) Soil Moist	47) Soil Texture	48) Soil Type (musm)	49) Light Exposure
Dry		E4143A	Full Sun

Site Classification			
Classification Type	Upper Level	Mid Level	Lower Level
50) Existing Veg (Dom)			AGCR
51) Potential Veg/Habitat Type			
52) Ecotype (Ecological Site Name)			

Habitat Quality and Management Comments			
53) Habitat Description			
Disturbed rangeland dominated by non-native graminoids.			
54) Dominant Process			
55) Process Comment			
56) Community Quality	Low	57) Landscape Integrity	
58) Dominant Disturb/Threats (present or imminent)			
58a) Codominant Disturb/Threats (present or imminent)			
59) Disturbance/Threats Comments			
Non-Natives (Invasives) Present (yes or no)			

NRCS Code	Common Name	Status	Scientific

60) Non-Native Comment
61) Current Land Use Comment
Rangeland.

Canopy Cover			
Record % canopy cover by actual %			
Lifeform Canopy Cover	62) % Cov	Ground Cover	63) % Cov
Tree		Bare Ground	
Shrub		Gravel	
Forb		Rock	
Graminoid		Moss	
Non-vascular		Litter/Duff	
Lichen		Basal Veg	
Algae		Water	
		Road surface	
		Lichen	
Total	0		0

Associated Species				
List of species directly associated with the EO species on this site				
64) Completeness of Species List	Selected			
65) Species list Comment:				
66) NRCS Plant Code	67) Scientific Name	68) Life Form	70) % Cov	71) Non-native
ARFR4	*Artemisia frigida Willd.*			
ASLAR	*Astragalus adsurgens Pall.*			
BOCU	*Bouteloua curtipendula (Michx.) Torr.*			
DACA7	*Dalea candida Michx. ex Willd.*			
DAPU5	*Dalea purpurea Vent.*			
ECAN2	*Echinacea angustifolia DC.*			
ERIGE2	*Erigeron L.*			
LIPU	*Liatris punctata Hook.*			
PAPL12	*Senecio plattensis Nutt.*			
SCSC	*Schizachyrium scoparium (Michx.) Nash*			
JUHO2	*Juniperus horizontalis Moench var. argentea hort.*			

Location Information				
84) Legal Description			Principle Meridian	
Township	Range	Section	Q Sec	QQ Sec

85) GPS info

Preferred minimum average number of positions for each GPS point: (1 position/second)	30-60
Preferred distance between positions/vertices for gps line or polygon:	5-10 feet

Preference is to transfer GPS information directly from GPS unit to computer to reduce data entry errors

GPS Filename:			Differentially Corrected:	
Survey Datum	WGS84	87) GPS Model Used	GeoXT 6000	
	Degree	Minutes	Seconds	Decimal Degree
Latitude	47	34	43.25	47.578680556
Longitude	103	53	33.98	-103.892772222

88) General directions/location information

EO Speciman Documentation			
72) Reference for ID			
73) Collector Last Name 1		First Name 1	
73a) Collector Last Name 2		First Name 2	
74) Collection #		75) Confirmed	
76) Verification			
77) Specimen Repository			

Image Information	
78) Image ID	79) Image Description

90) Sketch of Site or Area

91) General EO Comments:

Appendix F

Table of Documented RFSS Plants

Feature ID	Species	Common Name	Pop. Size	Location Type	Figure Number
BSA-NDMK0122a	*Escobaria missouriensis*	Missouri foxtail cactus	150	Polygon	A-3
BSA-NDMK0122a	*Escobaria missouriensis*	Missouri foxtail cactus	3	Point	A-3
BSA-NDMK0122a	*Escobaria missouriensis*	Missouri foxtail cactus	1	Point	A-3
BSA-NDMK0122a	*Escobaria missouriensis*	Missouri foxtail cactus	1	Point	A-3
BSA-NDMK0122a	*Escobaria missouriensis*	Missouri foxtail cactus	1	Point	A-3
BSA-NDMK0123a	*Townsendia hookeri*	Hooker's Townsendia	4	Point	A-3
BSA-NDMK0122a	*Escobaria missouriensis*	Missouri foxtail cactus	1	Point	A-4
BSA-NDMK0122a	*Escobaria missouriensis*	Missouri foxtail cactus	1	Point	A-4
BSA-NDMK0122a	*Escobaria missouriensis*	Missouri foxtail cactus	1	Point	A-4
BSA-NDMK0122a	*Escobaria missouriensis*	Missouri foxtail cactus	1	Point	A-4
BSA-NDMK0122a	*Escobaria missouriensis*	Missouri foxtail cactus	1	Point	A-4
BSA-NDMK0122a	*Escobaria missouriensis*	Missouri foxtail cactus	1	Point	A-4
BSA-NDMK108a	*Escobaria missouriensis*	Missouri foxtail cactus	33	Polygon	A-5
BSA-NDMK108b	*Escobaria missouriensis*	Missouri foxtail cactus	26	Polygon	A-5
BSA-NDMK108c	*Hooker's Townsendia*	Hooker's Townsendia	45	Polygon	A-5, A-6
BSA-NDMK109a	*Hooker's Townsendia*	Hooker's Townsendia	100	Polygon	A-5
BSA-NDMK109b	*Townsendia hookeri*	Hooker's Townsendia	1	Point	A-5
BSA-NDMK109b	*Townsendia hookeri*	Hooker's Townsendia	1	Point	A-5
BSA-NDMK106_01a	*Townsendia hookeri*	Hooker's Townsendia	1	Point	A-7
BSA-NDMK106_01a	*Townsendia hookeri*	Hooker's Townsendia	2	Point	A-7
BSA-NDMK106_01b	*Escobaria missouriensis*	Missouri foxtail cactus	13	Point	A-7
BSA-NDMK106_01b	*Escobaria missouriensis*	Missouri foxtail cactus	1	Point	A-7
BSA-NDMK106_01b	*Escobaria missouriensis*	Missouri foxtail cactus	1	Point	A-7
BSA-NDMK106_01b	*Escobaria missouriensis*	Missouri foxtail cactus	1	Point	A-7
BSA-NDMK107a	*Escobaria missouriensis*	Missouri foxtail cactus	1	Point	A-7
BSA-NDMK107a	*Escobaria missouriensis*	Missouri foxtail cactus	1	Point	A-7
BSA-NDMK107b	*Townsendia hookeri*	Hooker's Townsendia	1	Point	A-7
BSA-NDMK103b	*Escobaria missouriensis*	Missouri foxtail cactus	1	Point	A-9
BSA-NDMK103a	*Escobaria missouriensis*	Missouri foxtail cactus	148	Polygon	A-10
BSA-NDMK103c	*Escobaria missouriensis*	Missouri foxtail cactus	4	Point	A-10
BSA-NDMK103c	*Escobaria missouriensis*	Missouri foxtail cactus	6	Point	A-10
BSA-NDMK103c	*Escobaria missouriensis*	Missouri foxtail cactus	1	Point	A-10
BSA-NDMK103d	*Escobaria missouriensis*	Missouri foxtail cactus	1	Point	A-10, A-11
BSA-NDMK101a	*Townsendia exscapa*	Easter daisy	1	Point	A-11, A-12
BSA-NDMK101b	*Escobaria missouriensis*	Missouri foxtail cactus	20	Polygon	A-11
BSA-NDMK101c	*Escobaria missouriensis*	Missouri foxtail cactus	13	Polygon	A-11
BSA-NDMK101d	*Escobaria missouriensis*	Missouri foxtail cactus	5	Polygon	A-11
BSA-NDMK101e	*Escobaria missouriensis*	Missouri foxtail cactus	100	Polygon	A-11
BSA-NDMK101f	*Escobaria missouriensis*	Missouri foxtail cactus	100	Polygon	A-11
BSA-NDMK101g	*Escobaria missouriensis*	Missouri foxtail cactus	750	Polygon	A-12
BSA-NDMK101i	*Escobaria missouriensis*	Missouri foxtail cactus	25	Polygon	A-12
BSA-NDMK101j	*Escobaria missouriensis*	Missouri foxtail cactus	17	Polygon	A-12
BSA-NDMK101s	*Escobaria missouriensis*	Missouri foxtail cactus	1	Point	A-12
BSA-NDMK101h	*Escobaria missouriensis*	Missouri foxtail cactus	400	Polygon	A-12, A-13
BSA-NDMK101k	*Escobaria missouriensis*	Missouri foxtail cactus	5	Polygon	A-13
BSA-NDMK101l	*Escobaria missouriensis*	Missouri foxtail cactus	10	Polygon	A-13

Feature ID	Species	Common Name	Pop. Size	Location Type	Figure Number
BSA-NDMK101m	*Escobaria missouriensis*	Missouri foxtail cactus	13	Polygon	A-13
BSA-NDMK101n	*Escobaria missouriensis*	Missouri foxtail cactus	9	Polygon	A-13
BSA-NDMK101o	*Escobaria missouriensis*	Missouri foxtail cactus	12	Polygon	A-13
BSA-NDMK101p	*Escobaria missouriensis*	Missouri foxtail cactus	125	Polygon	A-13
BSA-NDMK101q	*Escobaria missouriensis*	Missouri foxtail cactus	14	Polygon	A-13
BSA-NDMK101r	*Escobaria missouriensis*	Missouri foxtail cactus	35	Polygon	A-13

Appendix G

U.S. Forest Service Data Forms (Animals)

DPG Wildlife Survey Field Form - 2018 Version

- Data/comments entered in gray outlined cells, formulas in white outlined cells **Revised 6/4/2018**

General Information

Survey ID:		Survey Name:	
Local ID:		Survey Purpose:	
Survey Type:		Project Type:	Oil and Gas

Date/Time:	Start					End					
	Year	Mon	Day	Date	24hr Time (hh:mm)	Year	Mon	Day	Date	24hr Time (hh:mm)	Length Min
	2018	6	5	6/5/2018		2018	7	19	7/19/2018		

Survey Agency:					
Surveyor Last Name 1:	Gockman	First Name 1:	Otto	Quals:	
Surveyor Last Name 2:	Cress	First Name 2:	Robert	Quals:	

Survey Method:??		Survey Protocol:		Survey Status:	
Spatial Feature:	Polygon				
If Point, Buffer distance from pt center:		Unit of Measure:			
If Line, Buffer distance from line center:		Unit of Measure:			

Target Species

Common Name	Class	TE Status	Srank	R1 Status	Suitable Habitat	Present	Site ID's
Great Plains Toad	Amphibian		SU				
Northern Leopard Frog	Amphibian		SU				
Plains Spadefoot	Amphibian		SU				
American Bittern	Bird		SU				
Baird's sparrow	Bird		SU	Sensitive - R1 2011	Yes		
Bald eagle	Bird		S1	Sensitive - R1 2011	Yes		
Black-billed Cuckoo	Bird		SU				
Brewer's Sparrow	Bird		S3				
Burrowing owl	Bird		SU	Sensitive - R1 2011	No		
Chestnut-collared Longspur	Bird		SU				
Dickcissel	Bird		SU				
Grasshopper Sparrow	Bird		SU				
Greater sage-grouse	Bird		SU	Sensitive - R1 2011	No		
Interior least tern	Bird	Endangered (Mck)	SU				
Lark Bunting	Bird		SU				
Loggerhead shrike	Bird		SU	Sensitive - R1 2011	Yes		
Long-billed curlew	Bird		S2	Sensitive - R1 2011	No		
McCown's Longspur	Bird		S2				
Piping plover	Bird	Threatened (Mck)	S1				
Red-headed Woodpecker	Bird		SU				
Rufa Red knot	Bird	Threatened (Mck)					
Sage Thrasher	Bird						
Sprague's pipit	Bird		S3	Sensitive - R1 2011	Yes		
Whooping Crane	Bird	Endangered	SX				
Pallid sturgeon	Fish	Endangered (Mck)	S1				
Red-bellied dace	Fish		S2	Sensitive - R1 2011	No		

Target Species - continued

Common Name	Class	TE Status	Srank	R1 Status	Suitable Habitat	Present	Site ID's
Dakota skipper Critical Habitat	Habitat	Designated (Mck)					
Piping plover Critical Habitat	Habitat	Designated (Mck)					
Dakota skipper	Insect	Threatened (Mck)	S2		Yes		
Monarch Butterfly	Insect		S5				
Ottoe skipper	Insect		SU	Sensitive - R1 2011	Yes	Yes	01, dsp-m-218, dsp-r
Regal fritillary	Insect		S2	Sensitive - R1 2011	Yes	Yes	, dsp-m-207, dsp-m-
Tawny crescent	Insect		S3	Sensitive - R1 2011	Yes		
Bighorn sheep	Mammal		S2	Sensitive - R1 2011	Yes		
Black-footed ferret	Mammal	Endangered	S1				
Black-tailed prairie dog	Mammal		SU	Sensitive - R1 2011	No		
Gray Wolf	Mammal	Endangered	SX				
Hispid Pocket Mouse	Mammal		S4				
Merriam's Shrew	Mammal		SU				
Northern long-eared bat	Mammal	Threatened	SU		Yes		
Sagebrush Vole	Mammal		S4				
Swift Fox	Mammal		S1				
Plains Hog-nosed Snake	Reptile		SU				
Sagebrush Lizard	Reptile		S4				
Short-horned Lizard	Reptile		SU				
Smooth Green Snake	Reptile		SU				
End of List	NA						

Survey Comments: 24 *- characters (try to limit to 255)*

Incidental observations.

Survey Protocol

Survey Protocol:		*from first page* Protocol Date:	
Protocol Name:			
Protocol Author:			
Protocol Description:			
Protocol Reference:			

- if Basic Protocol is used the author is "NRIS Wildlife" and description is "A search for animal species or animal group within a defined area, where the data elements are standardized, but the information collected cannot be tied to a defined survey protocol or survey methodology."

Location Information

State	County	Region	Natl Forest/Grassland	District
ND	McKenzie	1	Dakota Prairie Grasslands	

Legal Description:

Township	Range	Section	Qsec	QQSec	QQQSec	QQQQSec	Principle Meridian

GPS Info

GPS Model Used: | GPS filename:

Survey Datum: | Differentially Corrected?

Lat/Long for point feature:

Buffer Distance - report on first page

	Degree	Minutes	Seconds	Decimal Degree
Latitude				0.000000000
Longitude				0.000000000

Lat/Long for two point line transect:

Buffer Distance - report on first page

Begin	Degree	Minutes	Seconds	Decimal Degree
Latitude				0.000000000
Longitude				0.000000000
End	Degree	Minutes	Seconds	Decimal Degree
Latitude				0.000000000
Longitude				0.000000000

Preferred minimum average number of positions for each GPS point (1 position/sec) 30-60

Preferred distance between positions/vertices for gps line or polygon: 5-10 feet

Preference is to transfer GPS information directly from GPS unit to computer to reduce data entry errors

Location Comments: 0 *- characters (try to limit to 255)*

- Keyboard shortcut to activate drop down lists is Alt - Arrow down key

DPG Wildlife Site or Observation Field Form - 2018 Version

Revised 6/4/2018

General Information

Site, Observation or Visit	Observation	Date	6/7-6/19/18
		Time - 24hr (hh:mm)	
Examiner Last Name	Selby	First Name	Jerry
	Gockman		Otto
Examiner Qualifications		Examiner Organization	
Survey ID		Survey Name	
Survey Type		Survey Method	
Spatial Feature		Project Type	Oil and Gas

Site/Visit Information

Start Date		Start Time		End Date		End Time	
Site ID	205, dsp-m-207, dsp-m-214	Site Category	Biological	Site Status			
Local ID		Admin Type		Site Condition			
SiteName		Biol Type		Biol Site Use			
		Use Area Type		Substrate			
Site Origin		Origin Method		Site History			
Veg Type		Topography		Environ Cond			
Site/Visit Comments		Observation information provided?					

Observation Information

Common Name	Group Type	Observation Method	Reprod Status	Gender Count Unk	Gender Count Unk	Age	Activity
Regal fritillary		Visual		19			

Observation Comments

Incidental observations during Dakota Skipper surveys.

Location Information

Legal Description

Prin Meridian	Township	Range	Section	Q Sec	QQ Sec

GPS Info

GPS filename		Differentially Corrected	
Survey Datum		GPS Model Used	

	Degree	Minutes	Seconds	Decimal Degree
Latitude				0.000000000
Longitude				0.000000000

Preferred minimum average number of positions for each GPS point: (1 position/second) 30-60

Preferred distance between positions/vertices for gps polygon: 5-10 feet

Preference is to transfer GPS information directly from GPS unit to computer to reduce data entry errors

DPG Wildlife Site or Observation Field Form - 2018 Version

Revised 6/4/2018

General Information

Site, Observation or Visit	Observation	Date	6/8-6/13/18
		Time - 24hr (hh:mm)	
Examiner Last Name	Selby	First Name	Jerry
	Gockman		Otto
Examiner Qualifications		Examiner Organization	
Survey ID		Survey Name	
Survey Type		Survey Method	
Spatial Feature		Project Type	Oil and Gas

Site/Visit Information

Start Date		Start Time		End Date		End Time	
Site ID	n-201, dsp-m-218, dsp-m1-	Site Category		Site Status			
Local ID		Admin Type		Site Condition			
SiteName		Biol Type		Biol Site Use			
		Use Area Type		Substrate			
Site Origin		Origin Method		Site History			
Veg Type		Topography		Environ Cond			
Site/Visit Comments		Observation information provided?					

Observation Information

Common Name	Group Type	Observation Method	Reprod Status	Gender Count Unk	Gender Count Unk	Age	Activity
Ottoe skipper		Visual		6			

Observation Comments

Incidental observations during Dakota Skipper surveys.

Location Information

Legal Description

Prin Meridian	Township	Range	Section	Q Sec	QQ Sec

GPS Info

GPS filename		Differentially Corrected	
Survey Datum		GPS Model Used	

	Degree	Minutes	Seconds	Decimal Degree
Latitude				0.000000000
Longitude				0.000000000

Preferred minimum average number of positions for each GPS point: (1 position/second) 30-60

Preferred distance between positions/vertices for gps polygon: 5-10 feet

Preference is to transfer GPS information directly from GPS unit to computer to reduce data entry errors

Ecozone Reclamation Plans

Demicks Lake Pipeline

Prepared for:
ONEOK, Inc.

Prepared by:
Duraroot, LLC

Date:
December 20, 2018

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Reclamation Guidelines for the Demicks Lake Pipeline

The Demicks Lake Pipeline (DLP) is a pipeline project in McKenzie County, North Dakota and Richland County, Montana. Land use along the DLP right-of-way (ROW) includes cultivated cropland, hay/tame pasture, and native range/grassland. Vegetation consists predominantly of cereal grain crops, alfalfa/grass hay, and native/introduced grasses. Soils vary in chemical and physical composition, depth, drainage capability, and reclamation potential. Ecozone delineations along the DLP ROW considered dominant soil types, soil chemical characteristics, dominant vegetation, land use, and topography.

The ecozones present along the DLP are: Cultivated Crop Ecozone, Saline Ecozone, Badlands Ecozone, Loamy Ecozone, and Sandy Ecozone. Characteristics of each ecozone, along with associated reclamation techniques and recommendations, are detailed in each ecozone report. Fertility recommendations and seed mixes were developed based on soil sample analytical data and vegetation field surveys performed during the fall of 2018 and from data collected as part of the Garden Creek Loop project for ONEOK. Soil sample analytical data were used to make amendment recommendations based on the soil chemistry for most of the ROW. Recommendations are based on sample data analysis and Duraroot's interpretation of the soils along the alignment. All soil samples were collected by or under the supervision of a Certified Professional Soil Scientist (CPSS). A summary of all soil fertility data for DLP can be found in Attachment A.

Due to the nature and scale of the project, these reclamation guidelines have been developed using a broad-based approach to address reclamation across the project disturbance and to facilitate construction activities. Site-specific plans are recommended in areas with soil characteristics that could negatively impact revegetation, such as shallow soil resources or high/low pH and elevated salt concentrations (Attachment A). Soil sample data indicate that potentially challenging sites, in terms of reclamation success, are present along the pipeline route. It is likely that additional areas are present, but further sampling would be needed to more accurately delineate boundaries. Duraroot can provide site-specific reclamation plans for these locations at a small additional cost of $500 per plan.

RECLAMATION PLAN
CULTIVATED CROP ECOZONE SITES

SITE DESCRIPTION

The Cultivated Crop Ecozone is comprised of managed row crops, hayfields, and tame pastures. The Cultivated Crop Ecozone makes up approximately forty-four (43.5) percent of the land use on Demicks Lake Pipeline. Following construction, the land will be returned to productive cropland. The Cultivated Crop Ecozone contains primarily medium textured loam soils, with grades less than 10 percent. Soil pH is predominately slightly alkaline (pH 7.4 to 7.8) to moderately alkaline (pH 7.9 to 8.4). One key factor in reclaiming the Cultivated Crop Ecozone sites will be the preservation of topsoil, which has the soil properties necessary for agricultural production. This ecozone should present minimal challenges for reclamation due to desirable ecozone characteristics.

Due to reclamation timing, a cover crop seed mix for the Cultivated Crop Ecozone is provided in Table 1. A cover crop should be seeded on all cultivated cropland when establishment of the crop will not occur within 45 days or less of reclamation activities. A cover crop will protect the soil from wind and water erosion, increase soil stabilization, improve soil structure, suppress weed establishment, and improve overall reclamation success. The cover crop seed mix below was developed to provide quick cover due to a rapid germination rate and to aid in accelerated soil stabilization by helping to prevent the migration of topsoil during periods of freeze/thaw and rain events. A cover crop seed mix recommendation for immediate vegetation cover is provided in Table 1. Landowner preferences should be identified prior to seeding to develop appropriate seed mixes for hayfields and tame pastures. The reclamation plan is provided on Page 2.

Table 1. Demicks Lake Pipeline Cultivated Crop Ecozone Site Cover Crop Seed Mix Recommendation.

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Quickguard-Sterile Triticale	*Triticum aestivum x Secale cereal*	60	18	90%
Nitro Radish	*Raphanus sativus*	3.5	2.0	10%
Total	**--**	**64**	**20**	**100%**

RECLAMATION PLAN
CULTIVATED CROP ECOZONE SITES

(1) SOIL AMENDMENTS

Soil and nutrient amendments within cultivated areas should be based on surface owner requests. If the surface owner does not have any tract specific requests, it is recommended that approximately 20 pounds of nitrogen and 50 pounds of phosphorus per acre be applied.

(2) SEEDBED PREPARATION

These recommended seedbed preparation steps will aid in successful reclamation. Steps may be omitted, conducted in different order, or changed to optimize success and efficiency depending on field conditions, sub-soil properties, and local terrain.

- Rip subsurface soil, prior to topsoil spreading, to a minimum depth of 16 inches to reduce soil compaction and improve drainage. Ripping should be conducted using a double pass with a straight-shank agricultural ripper or parabolic ripper. The shanks on the back of a grader or dozer should NOT be used to alleviate soil compaction. Do not smooth the ROW with a dozer once ripped. It is beneficial to have an irregular surface to help tie the topsoil and subsoil horizons together. Tillage can be used to break soil clods apart prior to topsoil application.
- Apply topsoil and requested soil amendments, discussed above, to improve the soil's physical and chemical characteristics and to supplement soil nutrients.
- Finally, till the site to a depth of 4.0 to 6.0 inches to incorporate applied soil amendments and to create a seedbed conducive to seedling establishment (disk and harrow, field cultivator, vibra-shank, or other alternative suitable to site conditions).

(3) OPTIONAL COVER CROP SEEDING

Cover crop seeding should be conducted using a drill seeder suitable for the location's soils and capable of direct seed placement. Drill seeding should occur on the contour using a drill equipped with a double disc opener, wheel press, and depth bands to ensure proper seeding depth. Seed should be planted to the depth specified by the vendor to ensure proper germination and emergence. It is recommended that grain seed be placed 0.5 to 1.0 inches deep. The Cultivated Crop Ecozone recommended cover crop seed mix and rate is provided in Table 1.

(4) STRAW MULCHING

Application of straw mulch is recommended to reduce potential water and wind erosion when establishment of the crop will not occur within 45 days of reclamation activities and a cover crop will not be planted. Recommended straw mulch application rates are between 1.5 to 2.0 tons per acre. This will provide ground coverage of approximately 80 to 90 percent of the ground surface prior to crimping. Once applied the straw mulch should be crimped into the soil using a straight disc crimper with approximate 8.0-inch spaced tines. Upon successful crimping the straw mulch should be standing vertically with approximately 40 to 60 percent of the ground surface covered. Straw mulch should be at least 6.0 inches in length. Straw mulch should be crimped sufficiently to cause vertical cover that will not be dislodged by light breezes. Straw mulch should be applied based on surface owner preference in crop areas.

(5) WEED MANAGEMENT

A site-specific Integrated Weed Management Plan (IWMP) should be developed once weedy species can be identified and regular crop rotation has begun. Sites could be mowed prior to flowering and seed head production of weedy species. Mowing will reduce competition with desirable species and allow greater opportunity for reclamation success. In addition to mowing, herbicides appropriate for the identified weedy species could be implemented into the weed management plan to eradicate any problematic species. If herbicides are intended to be used, they should be applied in consultation with the surface owner to ensure that the application of herbicides is appropriate for the subsequent agricultural crop. Application timing and rates should follow the manufacturer's recommendations.

RECLAMATION PLAN
BADLANDS ECOZONE SITES

SITE DESCRIPTION

The Badlands Ecozone occurs in uplands on barren shoulders and backslopes of ridges and bluffs, as well as topographically low areas including alluvial fans and stream terraces. This ecozone covers approximately four (3.9) percent of the Demicks Lake Pipeline. The Badlands Ecozone typically consists of moderately steep to steep slopes greater than 25 percent and can contain a restrictive layer in soil depths less than 10 inches. Soil formation is minimal with variable soil texture and high erosion potential. The Badlands Ecozone includes rocky outcrops with three percent or more of the ground surface covered by rock and contains little to no vegetative cover. Additionally, this ecozone can include fine textured soils (clay loams and clays) with characteristically elevated soil electrical conductivity (EC) and soil sodium adsorption ratio (SAR). These sites will be returned to similar pre-disturbance land use following construction.

A recommended seed mix is provided for the Badlands Ecozone in Table 1. The Badlands seed mix was developed using 80 pure live seeds (PLS) per square foot. This seed mix considers seed availability, original site composition, and desirable species for quick stabilization in erosive, shallow soils.

Key obstacles for reclamation in the Badlands Ecozone are steep slopes with high potential for erosion and shallow soils with potentially elevated soil salinity and soil attributes associated with sodic soils (soil dispersion, poor soil structure, hard surface crust formation, and reduced infiltration) and low water holding potential. Ecozone appropriate erosion control measures, seedbed preparation methods, suitable seed mixes, seeding practices, and a site specific Integrated Weed Management Plan (IWMP) should help expedite reclamation success. The Badlands Ecozone reclamation plan is provided on Page 2.

Table 1. Demicks Lake Pipeline Badlands Ecozone Sites Seed Mix Recommendation.

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Blue Grama	*Bouteloua gracilis*	0.42	8.0	10%
Green Needlegrass	*Nassella viridula*	2.9	12	15%
Little Bluestem	*Schizachyrium scoparium*	2.0	12	15%
Western Wheatgrass	*Pascopyrum smithii*	6.3	16	20%
Bluebunch Wheatgrass	*Pseudoroegneria spicata*	3.7	12	15%
Inland Saltgrass	*Distichlis spicata*	1.0	12	15%
Slender Wheatgrass	*Elymus trachycaulus*	2.2	8.0	10%
Total	**--**	**19**	**80**	**100%**

Notes:
1. Seed mix was developed for badlands soil conditions based on vegetation data. Seed mix may be adjusted based on landowner preferences.

(1) SOIL AMENDMENTS

Soil amendment recommendations are based on recent soil chemical analysis. It is recommended that the following fertilizer amounts be applied to areas within the Badlands Ecozone:

- Nitrogen – 20 pounds per acre
- P_2O_5 – 50 pounds per acre
- K_2O – 0 pounds per acre

(2) SEEDBED PREPARATION

These recommended seedbed preparation steps will aid in successful reclamation. Steps may be omitted, conducted in different order, or changed to optimize success and efficiency depending on field conditions, sub-soil properties, and local terrain.

- When topographical slope allows, shallow rip subsurface soil prior to topsoil application to the maximum depth allowed to reduce soil compaction and improve drainage.
- Apply topsoil and soil amendments, discussed above, to supplement soil nutrients.
- Finally, till the site to a depth of 4.0 to 6.0 inches to create a seedbed conducive to seedling establishment (disk and harrow, field cultivator, vibra-shank, or other alternative suitable to site conditions). Tillage is dependent on topographical slope. If slopes are too sleep, implement minimal till practices.

(3) SEEDING

Seeding should be conducted on the contour using either an imprint seeder or a drill seeder, depending on slope limitations for safe equipment operation. Drill seeders should be equipped with an agitator, double disc opener, wheel press, and depth bands to mix seed and ensure proper seeding depths. Seeds should be planted to the depth specified by the vendor to ensure proper germination and emergence. It is recommended that the seed be placed no deeper than ½ inch. The Badlands Ecozone seed mix and rate are provided in Table 1.

(4) EROSION CONTROL

Because of steep slope gradients and high erosion potential, all disturbances in the Badlands Ecozone should be hydro-mulched using a bonded fiber matrix (BFM) or flexible growth medium (FGM). Hydro-mulch application will stabilize slopes during reclamation and protect seed until vegetation can successfully establish. A synthetic polymer product, such as polyacrylamide (PAM), could be added to the hydro-mulch solution to encourage soil aggregation and further reduce erosion potential. In areas with limited available soil material a Biotic Soil Media (BSM) can be used to improve grass establishment.

Additional erosion control devices (ECDs) appropriate for specific site conditions should be installed and maintained during all construction and reclamation activities through final site stabilization. Implementing ECDs will minimize erosion of disturbed soils and prevent the transportation of sediment outside the construction ROW and into environmentally sensitive areas such as wetlands, waterbodies, and agricultural lands. Erosion control devices should be employed as needed.

(5) WEED MANAGEMENT

A site specific IWMP should be developed once weedy species can be identified. Locations could be mowed, slope permitting, prior to flowering and seed head production of weedy species. Mowing will reduce competition with desirable species and allow greater opportunity for reclamation success. In addition to mowing, herbicides appropriate for the identified weedy species could be applied to eradicate any problematic species. Application timing and rates should follow the manufacturer's recommendations. Herbicide applications should be selective and avoid desirable native grass, forb, and shrub species.

RECLAMATION PLAN
LOAMY ECOZONE SITES

SITE DESCRIPTION

The Loamy Ecozone consists primarily of grassland used for livestock grazing, forage production, and wildlife. This ecozone covers approximately thirty-two (32.4) percent of the Demicks Lake Pipeline. The Loamy Ecozone is composed of tall and short/mid grasslands. Fine to medium soil textures characterize the Loamy Ecozone, which consists predominantly of clay loams, loams, silt loams, and silty clay loams over varying topography. Vegetation within this ecozone consists of diverse herbaceous plant communities where the dominant vegetation is grass. Pastures consist primarily of an alfalfa/grass mix and native range is primarily native and introduced grasses and forbs. These sites will be returned to a similar pre-disturbance land use following construction.

A recommended seed mix is provided for the Loamy Ecozone sites in Table 1. The native grass seed mix was developed using 60 pure live seed (PLS) per square foot, respectively. The Loamy Ecozone seed mix considers seed availability, original site composition, and the ability of species to thrive in this specific ecozone.

The Loamy Ecozone should present minimal challenges for reclamation due to desirable ecozone characteristics. Appropriate seedbed preparation methods, seeding practices, a suitable seed mix, and a site specific Integrated Weed Management Plan (IWMP) should help expedite reclamation success. The reclamation plan is provided on Page 2.

Table 1. Demicks Lake Pipeline Loamy Ecozone Site Seed Mix Recommendation.

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Western Wheatgrass	*Pascopyrum smithii*	4.8	12	20%
Needle-and-Thread	*Hesperostipa comata*	3.4	9.0	15%
Blue Grama	*Bouteloua gracilis*	0.48	9.0	15%
Green Needlegrass	*Nassella viridula*	2.2	9.0	15%
Sideoats Grama	*Bouteloua curtipendula*	2.1	9.0	15%
Little Bluestem	*Schizachyrium scoparium*	1.0	6.0	10%
Slender Wheatgrass	*Elymus trachycaulus*	1.6	6.0	10%
Total	**--**	**16**	**60**	**100%**

Notes:
1. Seed mix was developed for loamy soil conditions and fine to medium soil textures based on vegetation data. Seed mix may be adjusted based landowner preferences.

RECLAMATION PLAN
LOAMY ECOZONE SITES

(1) SOIL AMENDMENTS

Soil amendment recommendations are based on recent soil chemical analysis. It is recommended that the following fertilizer amounts be applied to areas within the Loamy Ecozone:

- Nitrogen – 20 pounds per acre
- P_2O_5 – 50 pounds per acre
- K_2O – 0 pounds per acre

(2) SEEDBED PREPARATION

These recommended seedbed preparation steps will aid in successful reclamation. Steps may be omitted, conducted in different order, or changed to optimize success and efficiency depending on field conditions, sub-soil properties, and local terrain.

- Rip subsurface soil, prior to topsoil application, to a minimum of 16 inches to reduce soil compaction and improve drainage. Ripping should be conducted using a double pass with a straight-shank agricultural ripper or parabolic ripper. The shanks on the back of a grader or dozer should NOT be used to alleviate soil compaction. Do not smooth the ROW with a dozer once ripped it is beneficial to have an irregular surface to help tie the topsoil and subsoil horizons together. Tillage can be used to break soil clods apart prior to topsoil application.
- Apply topsoil and soil amendments, discussed above, to improve the soil chemical characteristics and to supplement soil nutrients.
- Finally, till the site to a depth of 4.0 to 6.0 inches to incorporate soil amendments and to create a seedbed conducive to seedling establishment (disk and harrow, field cultivator, vibra-shank, or other alternative suitable to site conditions).

(3) SEEDING

Seeding should be conducted using a drill seeder suitable for the location's soils and capable of direct seed placement. Drill seeding should occur on the contour using a drill equipped with an agitator, double disc opener, wheel press, and depth bands to mix seed and ensure proper seeding depths. Seeds should be planted to the depth specified by the vendor to ensure proper germination and emergence. It is recommended that the seed be placed ⅛ to ½ inch deep. The Loamy Ecozone seed mix and rate are provided in Table 1.

(4) STRAW MULCHING

Application of straw mulch is recommended to reduce potential water and wind erosion. Recommended straw mulch application rates are between 1.5 to 2.0 tons per acre. This will provide ground coverage of approximately 80 to 90 percent of the ground surface prior to crimping. Once applied the straw mulch should be crimped into the soil using a straight disc crimper with approximate 8.0-inch spaced tines. Upon successful crimping the straw mulch should be standing vertically with approximately 40 to 60 percent of the ground surface covered. Straw mulch should be at least 6.0 inches in length. Straw mulch should be crimped sufficiently to cause vertical cover that will not be dislodged by light breezes.

(5) WEED MANAGEMENT

A site-specific IWMP should be developed once weedy species can be identified. Sites could be mowed prior to flowering and seed head production of weedy species. Mowing will reduce competition with desirable species and allow greater opportunity for reclamation success. In addition to mowing, herbicides appropriate for the identified weedy species should be implemented into the weed management plan to eradicate any problematic species. Application timing and rates should follow the manufacturer's recommendations. Herbicide applications should be selective and avoid desirable native grass, forb, and shrub species. It is recommended to avoid overgrazing during the establishment period to minimize competitive weedy species establishment.

RECLAMATION PLAN
SALINE ECOZONE SITES

SITE DESCRIPTION

The Saline Ecozone consists of land used primarily for forage production and grazing. The Saline Ecozone makes up approximately fourteen (13.8) percent of the Demicks Lake Pipeline. This ecozone occurs in topographically low areas, including alluvial fans and stream terraces, as well as on hillsides. This ecozone consists of fine textured soils (clay loams and clays) with characteristically elevated soil electrical conductivity (EC) and soil sodium adsorption ratio (SAR). Soils are moderately deep to deep (> 20 inches) and slope typically ranges from 0 to 8 percent. Vegetation of the Saline Ecozone is predominantly native/introduced rangeland grasses. These sites will be returned to a similar pre-disturbance land use following construction.

A recommended seed mix is provided for the Saline Ecozone in Table 1. The seed mix was developed using 80 pure live seeds (PLS) per square foot. This seed mix considers inherent soil properties and includes saline tolerant grass species to improve reclamation success.

One key obstacle in reclaiming the Saline Ecozone sites will be the elevated soil salinity and potential soil attributes associated with sodic soils (soil dispersion, poor soil structure, hard surface crust formation, and reduced infiltration). Additionally, fine textured soils with elevated soil clay contents can contribute to greater potential soil erosion and deteriorated soil structure. Deteriorated soil structure may result in hard, compacted soils that will limit infiltration and root growth. Ecozone appropriate soil amendments, seedbed preparation methods, seeding practices, a suitable seed mix, and a site specific Integrated Weed Management Plan (IWMP) should help expedite reclamation success. The reclamation plan is provided on Page 2.

Table 1. Demicks Lake Pipeline Saline Ecozone Sites Seed Mix Recommendation.

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Beardless Wildrye	*Leymus triticoides*	3.4	12	15%
Inland Saltgrass	*Distichlis spicata*	1.3	16	20%
Western Wheatgrass	*Pascopyrum smithii*	6.3	16	20%
Nuttall's Alkaligrass	*Puccinellia nuttalliana*	0.33	16	20%
Green Needlegrass	*Nassella viridula*	2.0	8.0	10%
Slender Wheatgrass	*Elymus trachycaulus*	3.3	12	15%
Total	**--**	**17**	**80**	**100%**

Notes:
1. Seed mix was developed for saline and fine textured soil conditions based on vegetation data. Seed mix may be adjusted based on landowner preferences.

RECLAMATION PLAN
SALINE ECOZONE SITES

(1) SOIL AMENDMENTS

Soil amendments are recommended to expedite reclamation success and create conditions that can better support seed germination and plant growth. Gypsum ($CaSO_4 \cdot 2H_2O$) is recommended to improve potential saline/sodic soil conditions within the Saline Ecozone and to reduce potential soil dispersion. It is recommended that 1.5 tons per acre gypsum be applied to soils within the Saline Ecozone. In addition, 5.0 tons per acre of cornstalks should be applied to the Saline Ecozone sites to improve soil structure and reduce potential soil dispersion of saline/sodic soils. To offset nitrogen immobilization due to the organic carbon additions, it is recommended that 75 pounds per acre of nitrogen be applied. Soil amendments should be incorporated post topsoil application to a depth of 4.0 to 6.0 inches.

- Gypsum – 1.5 tons per acre
- Cornstalks – 5.0 tons per acre
- Nitrogen – 75 pounds per acre
- P_2O_5 – 50 pounds per acre

(2) SEEDBED PREPARATION

These recommended seedbed preparation steps will aid in successful reclamation. Steps may be omitted, conducted in different order, or changed to optimize success and efficiency depending on field conditions, sub-soil properties, and local terrain.

- Rip subsurface soil, prior to topsoil application, to a minimum of 16 inches to reduce soil compaction and improve drainage. Ripping should be conducted using a double pass with a straight-shank agricultural ripper or parabolic ripper. The shanks on the back of a grader or dozer should NOT be used to alleviate soil compaction. Do not smooth the ROW with a dozer once ripped. It is beneficial to have an irregular surface to help tie the topsoil and subsoil horizons together. Tillage can be used to break soil clods apart prior to topsoil application.
- Apply topsoil and soil amendments, discussed above, to improve the soil physical and chemical characteristics and to supplement soil nutrients.
- Finally, till the site to a depth of 4.0 to 6.0 inches to incorporate soil amendments and to create a seedbed conducive to seedling establishment (disk and harrow, field cultivator, vibra-shank, or other alternative suitable to site conditions).

(3) SEEDING

Seeding should be conducted using a drill seeder suitable for the location's soils and capable of direct seed placement into fine textured soils. Drill seeding should occur on the contour using a drill equipped with an agitator, double disc opener, wheel press, and depth bands to mix seed and ensure proper seeding depths. Seeds should be planted to the depth specified by the vendor to ensure proper germination and emergence. It is recommended that the seed be placed ⅛ to ½ inch deep. The Saline Ecozone seed mix and rate are provided in Table 1.

(4) STRAW MULCHING

Application of straw mulch is recommended to reduce potential water and wind erosion. Recommended straw mulch application rates are between 1.5 to 2.0 tons per acre. This will provide ground coverage of approximately 80 to 90 percent of the ground surface prior to crimping. Once applied the straw mulch should be crimped into the soil using a straight disc crimper with approximate 8.0-inch spaced tines. Upon successful crimping, the straw mulch should be standing vertically with approximately 40 to 60 percent of the ground surface covered. Straw mulch should be at least 6.0 inches in length. Straw mulch should be crimped sufficiently to cause vertical cover that will not be dislodged by light breezes.

(5) WEED MANAGEMENT

A site-specific IWMP should be developed once weedy species can be identified. Sites could be mowed prior to flowering and seed head production of weedy species. Mowing will reduce competition with desirable species and allow greater opportunity for reclamation success. In addition to mowing, herbicides appropriate for the identified weedy species should be implemented into the weed management plan to eradicate any problematic species. Application timing and rates should follow the manufacturer's recommendations. Herbicide applications should be selective and avoid desirable native grass, forb, and shrub species. It is recommended to avoid overgrazing during the establishment period to minimize competitive weedy species establishment.

RECLAMATION PLAN
SANDY ECOZONE SITES

SITE DESCRIPTION

The dominant characteristic of the Sandy Ecozone is coarse soil textures consisting primarily of sandy loams. The Sandy Ecozone covers approximately six (6.3) percent of Demicks Lake Pipeline. These soils can be found on slopes ranging from 0 to 30 percent and tend to be well- to excessively drained. Vegetation and land use within the Sandy Ecozone includes pasture and native range consisting of both native and introduced grasses and forbs. These sites will be returned to a similar pre-disturbance land use following construction.

A recommended seed mix is provided for the Sandy Ecozone in Table 1. The seed mix was developed using 60 pure live seeds (PLS) per square foot and considers seed availability, original site composition, and the ability of species to thrive in this specific ecozone.

One key obstacle in reclaiming the Sandy Ecozone sites will be elevated sand contents and coarse soil textures, which will contribute to lower soil water holding capacity and moisture availability for seed germination and seedling establishment. Ecozone appropriate soil amendments, seedbed preparation methods, suitable seed mixes, seeding practices, and a site specific Integrated Weed Management Plan (IWMP) should help expedite reclamation success. The reclamation plan is provided on Page 2.

Table 1. Demicks Lake Pipeline Sandy Ecozone Sites Seed Mix Recommendation.

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Western Wheatgrass	*Pascopyrum smithii*	4.8	12	20%
Sideoats Grama	*Bouteloua curtipendula*	2.1	9.0	15%
Canada Wildrye	*Elymus canadensis*	2.3	6.0	10%
Needle-and-Thread	*Hesperostipa comata*	3.4	9.0	15%
Sand Dropseed	*Sporobolus cryptandrus*	0.10	12	20%
Little Bluestem	*Schizachyrium scoparium*	1.0	6.0	10%
Slender Wheatgrass	*Elymus trachycaulus*	1.6	6.0	10%
Total	**--**	**15**	**60**	**100%**

Notes:
1. Seed mix was developed for sandy soil conditions and coarse soil textures based on vegetation data. Seed mix may be adjusted based on landowner preferences.

RECLAMATION PLAN
SANDY ECOZONE SITES

(1) SOIL AMENDMENTS

Soil amendments are recommended to expedite reclamation success and create conditions that can better support seed germination and plant growth. To improve soil structure and organic matter content it is recommended that 5.0 tons per acre of cornstalks be applied to sandy sites. Improved soil structure and organic matter content in coarse textured soils will increase the soil's water holding capacity and nutrient retention. The use of corn stalk mulch can be omitted in some areas of the Sandy Ecozone if it is determined that sand content does not warrant the use. To offset nitrogen immobilization due to the organic carbon additions, it is recommended that 75 pounds per acre of nitrogen be applied. The cornstalks and nitrogen should be applied and incorporated post topsoil application to a depth of 4.0 to 6.0 inches.

- Nitrogen – 75 pounds per acre or 20 pounds per acre without cornstalks
- P_2O_5 – 50 pounds per acre
- K_2O – 0 pounds per acre

(2) SEEDBED PREPARATION

These recommended seedbed preparation steps will aid in successful reclamation. Steps may be omitted, conducted in different order, or changed to optimize success and efficiency depending on field conditions, sub-soil properties, and local terrain.

- Rip subsurface soil, prior to topsoil application, to a minimum depth of 16 inches to reduce soil compaction and improve drainage. Ripping should be conducted using a double pass with a straight-shank agricultural ripper or parabolic ripper. The shanks on the back of a grader or dozer should NOT be used to reduce soil compaction. Do not smooth the ROW with a dozer once ripped it is beneficial to have an irregular surface to help tie the topsoil and subsoil horizons together. Tillage can be used to break soil clods apart prior to topsoil application.
- Apply topsoil and soil amendments, discussed above, to improve soil structure and to supplement soil nutrients.
- Finally, till the site to a depth of 4.0 to 6.0 inches to incorporate soil amendments and to create a seedbed conducive to seedling establishment (disk and harrow, field cultivator, vibra-shank, or other alternative suitable to site conditions).

(3) SEEDING

Seeding should be conducted using equipment appropriate for soil conditions. On coarse textured soils of moderate slope an imprint seeder could be used to establish microclimates for seed placement and water retention. Any method that would encourage water retention will benefit seedling establishment in coarse textured soils. Imprint seeding will also help protect young newly emerged plants from wind damage and moving sand particles. If imprint seeding is not an option, seeding should be conducted using a drill seeder capable of direct seed placement in coarse soil textures. Drill seeding should occur on the contour using a drill equipped with an agitator, double disc opener, wheel press, and depth bands to mix seed and ensure proper seeding depths. Seeds should be planted to the depth specified by the vendor to ensure proper germination and emergence. It is recommended that the seed be placed no deeper than ½ inch. The Sandy Ecozone seed mix and rate are provided in Table 1.

(4) STRAW MULCHING

Application of straw mulch is recommended to reduce potential water and wind erosion and to stabilize soils. Recommended straw mulch application rates are between 1.5 to 2.0 tons per acre. This will provide ground coverage of approximately 80 to 90 percent of the ground surface prior to crimping. Once applied the straw mulch should be crimped into the soil using a straight disc crimper with approximate 8.0-inch spaced tines. Upon successful crimping the straw mulch should be standing vertically with approximately 40 to 60 percent of the ground surface covered. Straw mulch should be at least 6.0 inches in length. Straw mulch should be crimped sufficiently to cause vertical cover that will not be dislodged by light breezes. Straw mulch should not be used in areas where seed is imprinted.

(5) WEED MANAGEMENT

A site specific IWMP should be developed once weedy species can be identified. Problematic locations could be mowed prior to flowering and seed head production of weedy species. Mowing will reduce competition with desirable species and allow greater opportunity for reclamation success. In addition to mowing, herbicides appropriate for the identified weedy species could be applied to eradicate any problematic species. Application timing and rates should follow the manufacturer's recommendations. Herbicide applications should be selective and avoid desirable native grass, forb, and shrub species.

ATTACHMENT A

Soil Data Demicks Lake Pipeline

Sample ID	pH	Ec_e	SAR	N	P	K	OM
		dS/m		lb/acre	ppm		%
0001	8.0	0.71	0.03	5	2	174	3.7
0007	8.1	0.58	0.52	8	2	181	3.9
0014	7.3	0.61	0.03	10	3	452	4.9
0021	8.0	0.64	0	4	2	221	3.9
0029	7.6	0.52	0	6	4	229	3.8
0035	8.0	1.0	0	16	13	361	4.8
0042	7.9	0.86	0	10	2	257	3.9
0049	8.9	1.2	8.3	3	2	159	1.5
0056	7.2	0.64	0	12	11	335	5.3
0063	7.7	1.01	0	17	6	403	7.9
0070	7.9	0.95	0	17	5	286	3.1
0077	7.1	0.61	0.03	16	6	266	7.6
0084	7.8	0.74	0	12	4	280	5.3
0091	7.9	0.77	0	8	4	175	3.8
0098	7.7	0.58	0	4	4	141	4.7
0099	8.0	0.83	0	8	3	240	4
0104	8.2	0.89	0	6	3	187	3.3
0113	8.5	0.61	4.0	13	4	186	2.3
0121	9.0	5.5	22	9	4	157	2.2
0126	6.9	0.64	0.03	11	5	281	4.3
0133	7.6	0.77	0	8	4	228	4.7
0140	7.2	0.58	0.03	3	3	219	3.8
0147	7.8	1.0	0.65	5	3	223	3.1
0161	7.8	0.8	0	7	4	222	4.5
0168	7.8	0.89	1.6	10	3	277	3.9
0175	8.6	1.1	9.1	7	2	162	1.8
0298	5.9	0.15	0	9	16	309	2.8
0364	7.5	0.80	0	13	3	217	3.2
0371	7.4	0.31	0.03	8	4	193	2.4
0378	7.3	0.22	0.03	4	3	152	1.5
0392	8.4	0.89	5.0	6	3	212	2.2
0399	7.9	0.64	0	11	3	131	2.2
0406	7.7	0.12	0.65	3	4	49	0.5
0413	7.6	0.64	3.6	18	43	326	3.9
0420	7.0	0.09	0.28	3	2	207	1.7
0427	7.9	0.52	0	14	3	56	1.4
0434	6.9	0.64	0.65	31	6	206	2.6
0438	6.4	0.58	1.5	30	9	218	2.5
0448	6.3	0.37	0	10	5	192	2

Sample ID	pH	Ec_e	SAR	N	P	K	OM
		dS/m		lb/acre	ppm		%
0455	5.7	0.64	0.03	56	8	476	4.3
0469	7.8	1.3	0	40	4	306	3.5
0470	8.0	1.0	0.15	22	5	291	3.9
0483	8.0	1.2	0.40	63	31	899	3.1
0490	6.7	0.71	0	34	3	316	3.2
0512	8.0	0.61	0	4	22	173	2.1
0518	7.7	1.4	0	83	14	331	3.1
0525	7.7	1.3	0	52	19	292	3.1
0532	8.0	0.77	0	14	5	180	2.7
0539	5.6	0.58	0.15	32	30	293	5
0541	7.7	11	25	4	16	227	4.3

Notes:
1. Soil sample analytical results from soil samples collected during the fall of 2018.
2. Red highlighted cells could potentially impair reclamation success.

Soil Data Demicks Lake Pipeline

Sample ID	pH	Ec_e	SAR	N	P	K
		dS/m		lb/acre	ppm	
BEISIGL-FLASHER-TELFER	7.8	0.63	0.60	16	13	185
BELFIELD-SAVAGE -DAGLUM	7.8	0.66	0.60	29	15	331
BRANDENBURG-CABBA-DOGTOOTH	7.4	0.74	0.50	26	9	329
CABBA-BADLAND	8.3	6.2	19	4	3	101
CABBA-CHAMA-SEN	7.7	0.83	0.70	44	10	279
CABBA-CHAMA-SHAMBO	7.8	1.1	0.90	35	7	211
CHAMA-SEN-CABBA	7.7	0.85	0.80	43	7	229
DAGLUM-BELFIED	7.8	1.2	1.6	8	7	229
DOGTOOTH-JANESBURG	7.8	1.4	3.8	10	7	255
DOGTOOTH-JANESBURG-CABBA	7.8	1.1	2.1	22	9	254
FARNUF	7.7	0.56	0.40	15	15	340
KORCHEA	7.7	0.90	0.60	30	14	477
LAWTHER	7.8	0.68	1.4	19	18	433
REEDER-FARNUF	7.8	0.63	1.0	13	11	239
REGENT-JANESBURG	7.8	1.3	1.7	12	6	174
RHOADES-DAGLUM	7.5	0.91	1.5	8	9	290
SAVAGE	7.7	0.90	0.60	32	15	348
VEBAR-COHAGEN	7.4	1.4	0.80	91	15	506
ZAHL-CABBA-WILLIAMS	7.2	0.94	0.30	17	6	310

Notes:

1. Soil sample analytical results from soil samples collected during the fall of 2015. Soil samples were collected as part of the Garden Creek Loop project for ONEOK.
2. Red highlighted cells could potentially impair reclamation success.

EMERGENCY OFFICIAL AGENCY RESPONSE

INFORMATION BOOK

Operated by:

ONEOK Bakken Pipeline, L.L.C.



For emergencies, please call:
1-855-348-7258

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Prepared by:



November 2018

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Introduction

ONEOK Bakken Pipeline, L.L.C. (ONEOK) is proposing the Demicks Lake Pipeline Project (Project). ONEOK's proposed Project is a new, 20-inch diameter steel Y-grade natural gas liquids (NGL) pipeline that would originate at the ONEOK Demicks Lake Natural Gas Processing Plant in McKenzie County, North Dakota, and extend to the southwest to terminate in Richland County, Montana, at a planned interconnection with a ONEOK-affiliate pipeline. ONEOK's top priority is the safety of emergency responders, the public, and the safety of the environment. ONEOK's vision is to be the operator and partner of choice for customers, business owners, public officials, employees, and communities.

In order to achieve this vision, ONEOK manages operations in a manner that protects the environment and the safety of employees, customers, contractors, and the public, and complies with laws and regulations. The primary regulation that provides regulation for the construction, operations, and maintenance of the pipeline systems is CFR 49 Part 195, which is established and regulated by the U.S. Department of Transportation (DOT) and the Pipeline and Hazardous Material Safety Administration (PHMSA). ONEOK's principles and beliefs dictate that safety and environmental performance are mandatory for success. ONEOK employees have the personal right, responsibility, and ability to prevent accidents and adhere to ONEOK's culture that accidents and unauthorized releases are unacceptable.

Additionally, ONEOK's policy commits the company to continually improve its environmental, safety, and health (ES&H) performance by proactively evaluating its operations and implementing programs and practices to reduce the number and severity of ES&H incidents toward an ultimate goal of zero.

Accordingly, ONEOK is committed to providing pipeline safety and operational information to emergency response agencies that might be called upon in the unlikely event of a pipeline emergency to assist ONEOK in protecting the public and the environment and in mitigating the consequences of the event. This Emergency Official Agency Information Book represents the initial step in this partnership by sharing certain information about the ONEOK pipelines in your community.

If you have additional questions or comments on public safety or ONEOK Pipeline systems, please call our Spearfish, SD, office at 620-642-2197, extension 5.

ONEOK Demicks Lake Pipeline Overview

The Project will be approximately 77 miles in length, of which approximately 2 miles are located in Montana. Approximately 9 miles of the proposed route will cross the Little Missouri National Grassland (LMNG), which is administered through the U.S. Forest Service (USFS).

The purpose of the Project is to provide take-away capacity for Y-grade NGLs (a mixture of ethane, propane, butanes, iso-butane mix, pentanes, and natural gasoline) produced at Demicks Lake Natural Gas Processing Plant in McKenzie County, North Dakota. Construction of the proposed Project will provide the critical link between the Demicks Lake Natural Gas Processing Plant and ONEOK's pipeline system for delivery to facilities in the Mid-Continent and Gulf Coast for additional processing prior to distribution to various markets.

ONEOK Damage Prevention Measures

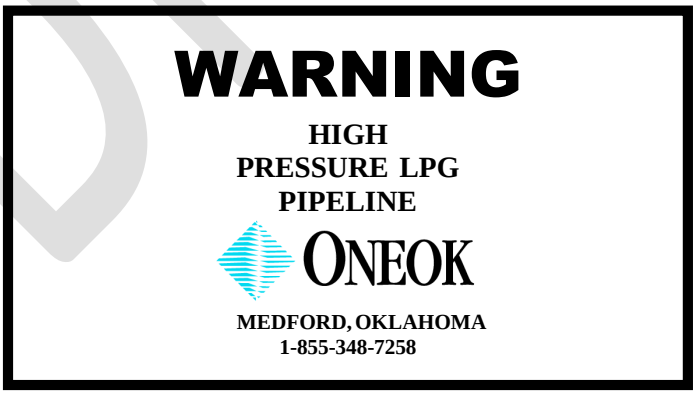
ONEOK is committed to protecting the safety of the communities and the environment in which it operates. Consistent with this commitment, ONEOK is continually improving its ES&H performance by proactively evaluating its operations and implementing processes to reduce ES&H incidents toward an ultimate goal of zero. The company's damage prevention measures are key components of this commitment.

There are several damage prevention measures ONEOK employs to help ensure pipeline integrity including, but not limited to: electronic methods of corrosion prevention, internal inspection with metal loss and deformation sensing devices, pipeline repair or replacement, maintaining automated pressure and flow control monitoring systems, and on-ground surveys to evaluate right-of-way conditions, pipeline markers, and depth of cover. Another aspect of these measures is ONEOK's public pipeline safety education program that is designed to introduce to the affected public, excavation contractors, local public officials, and emergency response officials, the basics of pipeline recognition and to encourage these groups to utilize state-sponsored one-call underground damage prevention programs.

ONEOK regularly inspects and surveys the pipelines it operates, searching for circumstances that may affect the pipelines' integrity. This surveillance is conducted in three ways:

1. The first surveillance method utilizes aerial patrol. ONEOK and contract aircraft are flown over the pipeline rights-of-way on a scheduled and frequent basis. The pilots are trained to observe the rights-of-way for conditions that may pose a threat to the safety and integrity of the pipeline system. Should the pilots notice a discoloration on the ground, the presence of heavy machinery on or around the right-of-way, or a number of other conditions, they report these items to ONEOK field personnel who are dispatched to the site to further investigate. ONEOK utilizes GPS coordinates as one of the methods of communication between patrol and response personnel.
2. The second surveillance method utilizes visual inspection performed by ONEOK and contract field personnel on a scheduled basis. There are numerous inspections and tests done on each pipeline every year. Such tests include the checking of the Corrosion Prevention System on the pipeline, equipment, and pumps, and emergency shutdown equipment and procedures. All of these activities are performed regularly to assure system integrity and to help prevent pipeline emergency conditions.

   The pipeline ground marker signs, similar to the one below, show the approximate location of ONEOK operated pipelines and identify the owner and/or operators of the pipelines. They also show a general description of the materials moved through the line and the pipeline emergency telephone number. However, these signs do not indicate the exact location of the pipeline, nor do the signs indicate the depth of the pipeline. The pipeline may not follow a straight line between the signs.



   It is likely that you may notice ONEOK employees and/or contractors inspecting or conducting normal maintenance activities on the pipeline(s) in your community. Individuals performing these duties or activities along ONEOK's right-of-way should identify themselves if requested to do so. Additionally, they should have material with them that identifies them as pipeline personnel. They

should be able to communicate clearly with you regarding the work they are performing or the tests they are conducting on the pipeline. If you have any questions or concerns about the activities or personnel you observe on a ONEOK operated pipeline right-of-way, ONEOK respectfully requests that you contact ONEOK and other appropriate authorities immediately at the number provided on the cover of this document. ONEOK will attempt to verify the presence of the ONEOK personnel and the nature and extent of their work.

It is possible that persons may conduct unauthorized construction and excavation activities near a ONEOK operated pipeline. Third-party damage to ONEOK's pipelines from such activities is a concern. ONEOK wants to know when someone is going to perform work close to a ONEOK pipeline right-of-way. If people enter and dig in a right-of-way without notice, injuries, environmental and property damage may occur.

3. The third method of pipeline surveillance utilizes satellite and other remote communication technology to monitor pipeline operating conditions. Pressure, flow, and temperature monitors and other sensors are placed on the ONEOK pipelines and related equipment, even in remote areas. These devices transmit, via satellite communications, the operating characteristics of the pipeline to the ONEOK Pipeline Control Center. Operating personnel at the Pipeline Control Center have the capability to analyze the operational status of the pipeline and control its transportation activity using sophisticated computer software designed to optimize the pipeline and notify the operator of indications of leaks or other abnormal conditions.

   As an additional tool within the satellite monitoring capability, ONEOK Pipelines contain a Leak Detection System that is housed within the Pipeline Control Center and is staffed 24 hours a day, seven days a week. Deviations from normal flow conditions are detected by monitoring the pressure in the lines, as well as the temperature of the product transported in them, from origination to destination. Should there be an unusual change noted in the pressure, temperature, or flow, that change could be indicative of a leak, and ONEOK personnel will be dispatched to conduct a more thorough inspection.

   In the unlikely event of a pipeline emergency condition, operators in the pipeline control center have the ability to remotely operate pumps, valves, and emergency shutdown equipment to minimize the impact of the emergency condition and to protect the safety of the surrounding community and environment. Both the Leak Detection System and its attendant satellite communications system have proven to be effective in detecting significant leaks on pipeline systems and are often the quickest way to minimize an emergency condition's impact. In addition to remote operations capability, the Leak Detection System enables operators in the Pipeline Control Center to quickly dispatch trained ONEOK field employees to the scene of an emergency condition for on-location Incident Command and response. However, you should know that most often, operators in the Pipeline Control Center are already taking mitigative action even before ONEOK personnel arrive on scene.

Preventing third-party damage to pipelines is a ONEOK priority. ONEOK has a continuing educational program to communicate pipeline safety information to the affected public, local public officials, emergency response agencies, and excavators. ONEOK is a member of one-call notification systems in states where it operates pipelines. One-call centers take detailed information from anyone doing excavation work and notify member underground facility operators. Underground facility operators determine whether they have a conflict with the excavation and, when necessary, mark the approximate horizontal location of underground facilities. In some cases, in order to protect the public and the environment, ONEOK employees remain on-site during excavation work near the pipeline.

Underground facility locations are provided as a free service to anyone performing excavation work.

State law requires that the public and excavators contact their local one-call system 48 hours prior to commencing any excavation work. In both Montana and North Dakota, we encourage all parties that excavate to call 811 the "call before you dig" number.

Integrity Management Plan Overview

Ensuring the mechanical integrity of our pipelines helps us to successfully meet our goal of protecting the public, employees, contractors, and the environment. The ONEOK Pipeline Integrity Management Program defines how we work to achieve this goal and comply with applicable laws and regulations.

The ONEOK Pipeline Integrity Management Program ensures that pipelines that could affect High Consequence Areas (HCAs) are identified, threats to pipeline integrity are evaluated, and that preventive and mitigative actions are implemented to manage the integrity of the pipelines to reduce the probability of releases and to limit the consequences of releases if they do occur.

Leak Prevention Program

Our leak prevention program includes specific practices and procedures to continually assess and monitor, regularly test and inspect, and prevent corrosion and excavation damage on the pipelines we operate. ONEOK regularly tests and inspects the condition of the pipelines and the effectiveness of our day-to-day leak prevention activities using timely data evaluation, investigation, and corrective action procedures. Employees and contractors who perform work must attend training and meet qualification requirements.

The following practices and procedures are among many that ONEOK has developed to ensure safe and reliable pipeline operations:

- Routine pipeline operations and maintenance.
- Excavation damage prevention education and communication.
- SCADA – ONEOK applies **Supervisory Control and Data Acquisition** systems for safe and efficient pipeline operation. The Operations Control Center electronically monitors our pipelines. Information is communicated between the Control Center and remote monitoring sites 24 hours a day, seven days a week, using satellite and other remote communication technology.
- ROW patrols and surveys – Right-of-Way conditions are evaluated by routine aerial and walking patrols. Surveys are conducted to evaluate changing conditions on the pipeline right-of-way, to consider waterways, erosion, and soil subsidence, and unauthorized excavation or construction activity.
- External corrosion prevention – Prior to pipeline burial, an external coating is applied to the outer pipe surface to prevent corrosion. This coating, combined with the application of **cathodic protection**, minimizes the potential for corrosion.
- Integrity testing – ONEOK regularly performs in-line inspections and pressure testing of its pipelines to evaluate their condition and effectiveness of leak prevention activities. High resolution in-line inspection equipment, capable of detecting metal loss and deformations, is used to inspect our pipelines. Inspection data is evaluated, and investigations are performed if necessary. To confirm safe operation at normal pressures, ONEOK may also perform pressure testing that utilizes water at pressures exceeding normal operating pressures to ensure the integrity of the pipelines.

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Spill Mitigation Program

Through our spill mitigation program, we endeavor to **educate and communicate**. This is accomplished by way of public awareness activities, carefully monitored leak detection systems, and emergency response plans.

High Consequence Areas Consideration

High Consequence Areas (HCAs) are defined in federal regulations as populated areas, commercially navigable waterways, and areas that are unusually sensitive to environmental damage. ONEOK has identified pipeline sections that could affect an HCA and has made special considerations in these areas when developing its integrity management program.

Program Evaluation and Improvement

At ONEOK we regularly evaluate and audit the implementation of our practices and procedures to ensure consistent application and identify improvement opportunities. ONEOK enlists its own auditors and subject matter experts, along with independent auditors and state and federal inspectors to perform evaluations and inspections.

If you want additional information on Integrity Management or wish to comment to ONEOK about public safety, protection of HCAs under your jurisdiction, emergency preparedness, or other concerns, please contact the ONEOK office in Spearfish, SD, at 605-642-2197, extension 5.

In Case of an Emergency

Responding to a pipeline emergency requires teamwork and coordination between public safety officials, environmental agencies, and ONEOK. ONEOK needs and welcomes your assistance and the following information can help ONEOK's preparation for response if incidents occur.

ONEOK defines an emergency condition as a fire, explosion, natural disaster, accidental release, or operational failure that disrupts normal pipeline operating conditions.

ONEOK Emergency Condition Course of Action

In the unlikely event that an emergency does occur, ONEOK personnel are dispatched to the location and certain pipeline operations may be conducted remotely by operators in ONEOK's Pipeline Control Center. ONEOK operations personnel are trained to recognize and to respond appropriately to minimize hazards. They use Lower Explosive Limit meters and other monitoring devices to determine the extent of a vapor cloud release. Please familiarize yourself with the Safety Data Sheet (SDS) information contained at the conclusion of this informational packet. Familiarization with this information now may assist with the decision-making process if an emergency should arise.

ONEOK's Emergency Response Telephone Number

ONEOK emergency response telephone number is 1-855-348-7258 and should be called in the event of a ONEOK emergency. Technicians are available 24 hours a day, seven days a week.

Emergency Official Agency Response Resources and Capabilities

Please help ONEOK confirm your agency's response capabilities by sharing information regarding your agency's equipment, personnel, communications capabilities, coverage territory, and availability to assist in the event of a ONEOK emergency.

Pipeline Product Information

The product transported through this pipeline is a Raw Natural Gas Liquid. Raw Natural Gas Liquid

product is a mixture consisting of ethane, propane, butane, and natural gasoline. Please refer to the SDS information contained at the conclusion of this informational packet for complete safety and hazard information.

ONEOK NGL Mapping System

To view pipeline systems in your area, refer to the National Pipeline Mapping System (NPMS) Web site. This Web site can be accessed at www.npms.phmsa.dot.gov.

ONEOK Area (Local) Representative(s)

For information how to receive local contact numbers for ONEOK Area Representative(s), please call our ONEOK operations office at 1-605-642-2197, extension 5.

Location of ONEOK Emergency Plans

The Emergency Response Plans for your jurisdiction are located in Spearfish, South Dakota, and with our local Area Representative. If you would like access to these plans, please call the ONEOK operations office at 605-642-2197, extension 5.

ONEOK Pipeline Safety Tips for Emergency Official Agencies

ONEOK offers the following pipeline safety tips to emergency response agencies in dealing with a ONEOK emergency condition whether such a condition is caused by fire, explosion, natural disaster, accidental release, or operational failure:

Validate the request for help

Calls that come in where members of the public are seeking help because of and/or are reporting a pipeline incident should be verified. The purpose of this validation is to eliminate prank calls. If, in your judgment, the request is valid, and an emergency exists, advise the caller what to do to evacuate the area. Be sure to determine the exact location of the emergency.

Call the ONEOK Pipeline Control Center at 1-855-348-7258

Please call the ONEOK Pipeline Control Center immediately at the telephone number above. This number is attended 24 hours a day, 365 days a year. ONEOK's operator will appropriately operate remote equipment to assist in minimizing the impact of a condition and will contact other ONEOK personnel for response to the situation.

Determine Wind Direction

When you arrive at an emergency site, make sure you know the wind direction. Approach all leaks and ruptures from an upwind direction.

Upon Arrival at the Scene

Do not walk or drive into a vapor cloud or any puddle of liquid on the ground. Upon arrival at the emergency, park vehicles a safe distance from any vapor cloud or fire. Turn off the vehicle's engine. Failure to do so could result in immediate explosion and burning of the product resulting in injury or death.

Evacuate the Area

Evacuate everyone from the danger area to an upwind location immediately. Do not attempt to start any vehicles in the vicinity of the leak or spill and eliminate all ignition sources.

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Medical Help

Provide medical assistance as necessary.

Barricade the Area

Barricade the emergency area so that unauthorized people cannot enter. Block any highway or roadways that pass through or near the area.

Eliminate Ignition Sources

Eliminate all sources of ignition. Sources include, but are not limited to, such items as: engines, electric motors, pilot lights, burn barrels and smoking materials. Ignition can result in immediate explosion and burning of the product, resulting in injury or death. If the engine in your vehicle stops unexpectedly, do not attempt to restart the engine. It may have stopped due to lack of oxygen and attempts to restart could ignite the leaked or spilled product.

If you arrive and a fire is already burning from the pipeline rupture site, ONEOK recommends you do not attempt to put out the fire. Putting out the fire from the primary source of fuel may allow vapors to migrate to other areas, awaiting alternative sources of ignition. Perimeter fires, or secondary fires, may be extinguished at your discretion.

Maintain contact with the ONEOK control center technician until ONEOK operations personnel arrive and identify themselves to you.

ONEOK Representative in Charge

When ONEOK personnel arrive on location, they will identify themselves to you as soon as possible. The ONEOK representative is trained to operate within the Incident Command System. The ONEOK representative will establish contact with the incident commander upon arrival at the site. ONEOK may ask for assistance with evacuation, traffic control, and area security. ONEOK response personnel are trained and will perform their activities in compliance with applicable laws and regulations and ONEOK Emergency Action Plans.

Railroad Safety

If a railroad passes through the emergency area, we may ask you to contact the railroad and request that they stop movement of trains through the area until notified that the area is safe.

Vapor Cloud Movement

Determine if a vapor cloud is moving or expanding in size. A vapor cloud will often tend to flow to low areas. Keep people away from nearby low spots. ***Do not attempt to ignite the vapor cloud.*** This can be a dangerous procedure and will be done by ONEOK personnel only if the situation requires such action.

Termination of Emergency

When on-site ONEOK personnel determine the pipeline emergency condition is over, you will be informed.

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Summary

The following is a checklist of recommended safety tips for public emergency response agencies in case of a pipeline emergency:

1. Validate the emergency phone call by returning the call promptly.
2. Call the ONEOK Pipeline Control Center at 1-855-348-7258 if the call comes from the public. This phone is attended 24 hours a day, 365 days a year.
3. Determine the wind direction at the site.
4. Upon arrival at the emergency site, do not walk or drive into a vapor cloud or any puddle of liquids on the ground. Park vehicles a safe distance upwind from the vapor cloud or fire and turn off engines. If the engine or your vehicle stops unexpectedly, do not attempt to restart it. Ignition can result in immediate explosion and burning of the product, resulting in injury or death.
5. Evacuate everyone from the spill area to an upwind location. Stay away from the vapor cloud.
6. Provide medical help to those who need it.
7. Barricade the emergency area so that people will not enter. Blockade any highway or roadway that passes through or near the area.
8. Eliminate all sources of ignition. Sources such as: engines, electric motors, pilot lights, burn barrels and smoking materials. Ignition can result in immediate explosion and burning of the product, resulting in injury or death.
9. Maintain contact with ONEOK's control center operator until ONEOK personnel arrive on scene. ONEOK representatives will identify themselves.
10. Do not attempt to extinguish any primary fire source until ONEOK employees arrive and direct such action. Perimeter fires (grass or adjoining property) may be extinguished, if necessary. Only ONEOK representatives will shut off the fuel source and allow the fire to extinguish itself.
11. If a railroad passes through the emergency areas, you may be asked to contact the railroad and request that they stop movement of trains through the area until notified that the area is safe.
12. Determine if the vapor cloud is moving or expanding in size. Vapors will tend to collect in low areas; keep people away from nearby low spots if the vapor cloud is at a nearby high elevation.
13. Do not attempt to ignite the vapor cloud. This is a dangerous procedure and will be performed by ONEOK personnel only if the situation requires such action.
14. ONEOK employees will tell you when the pipeline emergency condition is over.

Your ONEOK representative will document specific agency resources, communications capabilities, and ways to minimize hazards to life, the environment and property during a pipeline emergency condition.

Conclusion

The best course of action in an emergency is avoiding one initially. ONEOK Pipeline representatives are continually taking appropriate measures to do this. In the unlikely event of an emergency, the safety of our neighbors and our personnel, and the health of our environment, are our key concerns.

This Emergency Official Agency Response Information Book is intended to share certain information about the ONEOK pipelines in your community. Should you need further information or have questions regarding the ONEOK facilities in your area, feel free to call upon your ONEOK representative by calling 1-605-642-2197, extension 5.

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ONEOK Bakken Pipeline, L.L.C

Demicks Lake Pipeline Project

PU-18-399

Response to Item 15b - 10- Year Spill History

ONEOK provides the following table in response to the request for additional records of pipeline releases dating back 10 years. ONEOK's North Dakota operations were merged into the company through a transaction that was completed in 2006. From 2006 through 2011, ONEOK's North Dakota operations were substantially less than what it presently owns and operates and were limited to two (2) natural gas processing plants and associated gathering systems, and one (1) natural gas liquids pipeline. Accordingly, the enclosed table includes a list of all pipeline releases of over one (1) barrel of liquids in the state of North Dakota that ONEOK has confirmed back to 2009.

ONEOK - 10 Year Spill History (North Dakota)					
Event Date	**Event Title**	**Report**	**Agency(ies) Notified**	**Estimated Quantity (bbl unless otherwise noted)**	**Materials**
10/3/2009	Release	Pipeline release of approximately 120 bbls	North Dakota Industrial Commission (NDIC), North Dakota Department of Health (NDDH)	120	Brine
7/28/2010	Release	Pipeline release of approximately 12 bbls	NDDH, NDIC, National Response Center (NRC)	12	Condensate
5/16/2013	Release	Pipeline release of approximately 3 bbls	NDDH, NDIC	3	Condensate
11/2/2013	Release	Pipeline release of approximately 2 bbls	NDDH, NDIC	2	Condensate
5/21/2014	Release	Pipeline release of approximately 1 bbls	NDDH, NDIC	1	Condensate
9/8/2014	Release	Pipeline release of approximately 8 bbls	NDDH, NDIC	8	Condensate
9/19/2014	Release	While contractor was working on ONEOK owned pipeline, approximately 1 barrel of condensate was released from temporary secondary containment and traveled into pipeline trench.	NDDH, NDIC	1	Condensate
11/15/2014	Release	Pipeline release of approximately 5 bbls	NDDH, NDIC	5	Condensate
12/14/2014	Release	Pipeline release of approximately 10 bbls	NDDH, NDIC	10	Condensate
12/16/2014	Release	Pipeline release of approximately 3 bbls	NDDH, NDIC, North Dakota Game and Fish Department (NDGFD), U.S. Army Corps of Engineers (USACE)	3	Condensate
11/23/2015	Release	Pipeline release of approximately 5 bbls	NDIC, NDDH	5	Condensate
4/5/2016	Release	During a well reclamation project a total of 30 barrels of natural gas condensate was released	NDDH, NDIC	30	Condensate
4/7/2016	Line Hit	Active pipeline was hit by contractor during a pipeline abandonment project, resulting in approximately 15 barrels of condensate released	NDDH, NDIC	15	Condensate
4/24/2016	Release	Pipeline release of approximately 1 barrel	NDDH, NDIC, NRC	1	Condensate
6/27/2016	Line Hit	Third-party construction contractor hit active ONEOK pipeline resulting in an approximate 1.7 barrel release. No line locate was requested by third party.	NDDH, NDIC	1.7	Condensate

ONEOK - 10 Year Spill History (North Dakota)					
Event Date	**Event Title**	**Report**	**Agency(ies) Notified**	**Estimated Quantity (bbl unless otherwise noted)**	**Materials**
7/27/2017	Line Hit	A contractor hired by a third-party county rural water district impacted the Bear Creek NGL pipeline during a water line installation resulting in a pipeline release of natural gas liquids to the surrounding soil and atmosphere. A release of approximately 3,000 barrels was reported to the applicable agencies.	Environmental Protection Agency (EPA), North Dakota Public Service Commission (NDPSC), NDDH, NDGFD, NDIC, NRC, U.S. Fish and Wildlife Service (USFWS)	3000	Condensate
10/19/2017	Release	While decommissioning a pipeline an estimated 5 barrels of freshwater/condensate mix was released.	NDDH, NDIC	5	Freshwater / Condensate Mix
10/25/2017	Release	Pipeline release of approximately 10 barrels.	NDDH, NDIC	10	Condensate
11/21/2017	Line Hit	Producer strike on ONEOK pipeline resulted in a release of 2 barrels during pipeline decommissioning.	NDDH, NDIC, U.S. Forest Service (USFS)	2	Condensate
12/9/2017	Release	During a well connection, approximately 2 barrels of condensate was released.	NDDH, NDIC	2	Condensate
1/29/2018	Release	Release of approximately 1 bbl through a 2" drain valve while thawing out a frozen drain	NDDH, NDIC	1	Condensate
1/31/2018	Release	Release of approximately 1 bbl of condensate due to overfilling of truck at a ONEOK Compressor Station.	NDDH	1	Condensate
5/24/2018	Release	Release of approximately 2 bbls of produced water/condensate from a tank.	NDDH, NDIC, USFS	2	Condensate, Water (Produced)
6/6/2018	Release	Release of approximately 1 bbl of cleaning solution occurred from a leaking valve on a contractor's frac tank being used for maintenance and cleaning.	NDDH	1	Other (cleaning solution)
7/8/2018	Release	Release of approximately 2 bbls of lube oil at ONEOK facility due to building fire.	NDDH	2	Lube Oil
8/14/2018	Release	Pipeline release of approximately 2 bbls	NDDH, NDIC, USFWS	2	Condensate
11/20/2018	Release	Release of approximately 15 bbls of condensate due to a third-party overfilling truck on ONEOK property.	NDDH	15	Condensate
12/3/2018	Release	Release of approximately 2.5 bbls of methanol during filling operations.	NDDH	2.5	Methanol

ONEOK

Demicks Lake Pipeline Project

CONSTRUCTION MITIGATION AND RESTORATION PLAN

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Prepared by:

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December 2018

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ONEOK DEMICKS LAKE PIPELINE PROJECT

CONSTRUCTION MITIGATION AND RESTORATION PLAN

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[1] Site-specific plans supersede any design presented in the typical details.

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LIST OF ACRONYMS

ATWS	Additional Temporary Workspace
BMPs	Best Management Practices
CFR	Code of Federal Regulations
CMRP	Construction Mitigation and Restoration Plan
ECD	Temporary Erosion and Sediment Control Device
ETWS	Extra Temporary Workspace
HDD	Horizontal Directional Drill
LIDAR	Light Detection and Ranging
NPDES	National Pollutant Discharge Elimination System
ONEOK	ONEOK Bakken Pipeline, L.L.C.
Project	ONEOK Demicks Lake Pipeline Project
ROW	Right-of-Way
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan or Spill Plan
TWS	Temporary Workspace

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INTRODUCTION

ONEOK Bakken Pipeline, L.L.C. (ONEOK) is committed to meeting or exceeding all applicable federal, state, and local environmental requirements during the planning, construction, and operation of the ONEOK Demicks Lake Pipeline Project (hereby referred to as the Project). ONEOK has developed this Construction Mitigation and Restoration Plan (CMRP) to ensure that appropriate systems are in place to achieve compliance with the various permits and plans that have been developed for the project. ONEOK's CMRP outlines construction-related environmental policies, procedures, and mitigation measures developed by ONEOK based on ONEOK's experience implementing Best Management Practices (BMPs) during pipeline construction. The CMRP is designed to address typical circumstances that may be encountered along the Project. Project-specific permit conditions and/or landowner agreements may supersede the general practices described in this document.

This document includes the following sections:

- Section 1.0 of the CMRP describes general mitigation measures, including soil erosion and sedimentation control procedures, to be implemented during upland construction and upland restoration;
- Section 2.0 discusses stream and river construction and restoration;
- Section 3.0 describes practices for wetland construction and restoration;
- Section 4.0 discusses highway, road, and rail crossings;
- Section 5.0 discusses construction dewatering;
- Section 6.0 outlines hydrostatic testing practices;
- Section 7.0 addresses water appropriation sources and discharge locations;
- Section 8.0 addresses revegetation.

Alternative construction procedures implemented in lieu of this CMRP must provide an equal or greater level of protection to the environment and must be approved in writing by ONEOK.

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1.0 GENERAL MITIGATION MEASURES

1.1 RIGHT-OF-WAY ACCESS

Access to the right-of-way (ROW) will be from public roadways and ONEOK-approved private access roads only. The Contractor is responsible for creating signs or other methods to identify approved access roads in the field and to ensure that access is confined to the approved roads.

Road crossings and access points will be maintained in a safe and accessible condition throughout construction. ONEOK will require its construction contractor(s) to post caution signs on roads, where appropriate, to alert motorists of pipeline construction and warn them of slow traffic. In addition, trucks transporting pipe and heavy equipment will comply with all applicable state, county, and federal laws, rules, and permits for these loads.

Private/non-public roads will be negotiated with the landowner and approved by ONEOK prior to use. Use of these roads may be restricted based on the condition of the existing road (i.e., like-use traffic) and may not be upgraded without approval from ONEOK, the landowner, and/or applicable regulatory agencies.

Vehicle tracking of soil from the construction site onto roads will be minimized by implementation of BMPs such as installing stone pads, timber mats, or equivalent, and reducing equipment/vehicle access to the ROW where practicable (through the use of off-ROW parking). Temporary accesses will be installed in accordance with applicable permit conditions. The Contractor is responsible to promptly clean and remove all soil from tracked out of the ROW on to public roads and highways.

The Contractor will repair private roads, lanes, and public roads damaged when moving equipment or obtaining access to the ROW.

1.2 RIGHT-OF-WAY REQUIREMENTS

Construction equipment and vehicles will be confined to the approved construction ROW, access roads, and extra workspace (approved construction workspace) shown on the “Issued for Construction” construction alignment sheets. Construction activities for the Project will generally use a 75-foot-wide construction ROW as shown in Figure 1 that consists of the permanent ROW and temporary workspace (TWS). In addition, certain site-specific extra workspaces as defined below will be utilized. The construction ROW configuration may be modified to avoid and/or minimize disturbance to sensitive resource areas such as wetlands and waterways or difficult construction areas such as steep side slopes and/or in accordance with applicable permit conditions.

Permanent ROW

ONEOK will establish a new 50-foot-wide permanent easement, centered on the new pipeline. The new permanent ROW will be maintained in an herbaceous or shrub vegetative cover following construction to facilitate access and inspection and operation of the pipeline system.

Temporary Workspace

In addition to the new permanent ROW, construction will require temporary workspace (TWS). The TWS will be located adjacent to and contiguous with the proposed ROW/permanent corridor and will typically be 25 feet wide. Approved TWS will be identified on the construction alignment sheets and by distinctive staking of construction limits prior to clearing.

Extra/Additional Workspace

Site-specific extra temporary workspace (ETWS) and/or additional temporary workspace (ATWS) locations are construction work areas beyond the permanent ROW and TWS described above and will be required at select locations such as steep slopes as shown in Figure 2, road, waterbody, railroad, some wetland crossings, and where it is necessary to cross under existing pipelines or foreign utilities. ATWS will typically be located in uplands adjacent to the construction ROW and set 50 feet back from sensitive resource boundaries where site-specific field conditions allow. However, to complete work safely, ONEOK may need to locate ATWS within a wetland or within the 50-foot setback from a wetland or waterbody based on site-specific conditions. ATWS adjacent to waterbodies and/or wetlands is addressed further in Sections 2.6 and 3.4, respectively. In all cases, the size of extra workspace will be kept to the minimum necessary to safely conduct work.

ONEOK has conducted a preconstruction review of the entire Project area to determine specific ATWS locations. ONEOK will acquire extra workspace from the landowner where necessary. All approved ATWS locations are depicted on the construction alignment sheets; use of unauthorized workspace is prohibited without ONEOK's written approval.

Pipe Storage and Contractor Yards

ONEOK and its contractors will establish pipe and contractor yards at various locations near the Project ROW. The best practices and procedures that ONEOK has approved in the CMRP, as well as all applicable permits, will be implemented as necessary at these locations.

1.3 FLAGGING AND SIGNAGE

Prior to the commencement of clearing operations, ONEOK will mark the boundaries of the approved construction workspace with distinctive stakes and flagging. ONEOK will install stakes to identify the boundaries of ATWS, staging areas, sensitive environmental areas, and along the construction ROW every 200 feet, or as appropriate, to maintain line-of-sight from one stake to the next. Other areas (pipe storage and contractor yards, borrow and disposal areas, access roads, etc.) will have signs posted for use by the Contractor during construction activities. See Table 1.3-1 for examples of the signs that will be installed on the Project.

ONEOK will preserve all existing recognizable civil survey monuments, cadastral corner markers, witness points, triangulation stations, military control monuments, or other recognizable physical markers (public and private) to the extent practicable. In the event that any such monument is at risk of damage or destruction during construction, ONEOK will ensure that the precise location of the monument is determined and properly referenced by a Professional Land Surveyor. If the monument is actually damaged or destroyed during construction, it will be rehabilitated or replaced by the Professional Land Surveyor. The monument will be replaced in accordance with the requirements of the State Board which oversees Professional Land Surveying.

Signs will be posted along the construction ROW to identify sensitive areas and to alert construction personnel of restrictions that apply. The limits of these areas will be delineated at the edge of the ROW. Fencing may also be required in some areas to further protect site-specific resources.

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TABLE 1.3-1 ONEOK Demicks Lake Pipeline Project Signs	
Sign	**Description**
Approved Access Road	Project-related right-of-way access roads will be identified by road number or name and posted speed limit.
No Access	Signs identifying areas that are off limits, such as a fork in the road, which may be confused with Approved Access Areas.
Environmentally Sensitive Areas	Signs identifying environmentally sensitive areas that are off limits to disturbance or may require a special resource monitor during construction.
Waterbody	Entry and exits at delineated waterbodies.
Wetland	Entry and exits at delineated wetlands.

ONEOK has identified landowner-specific issues of concern that may be affected by construction activities. In coordination with these landowners, ONEOK will implement the following mitigation measures:

- Locate and mark above and below ground water lines;
- Locate and mark above and below ground utilities;
- Coordinate with landowners that utilize pivot irrigation systems; and
- Develop grazing deferment plans with landowners, tenants, or other grazing permit holders that address construction timing, fence cutting and bracing, temporary fencing, cattle guard locations, and water requirements for livestock.

Components of irrigation systems, waterlines, utilities, or other physical impediments impacted by construction will be repaired to at least pre-construction condition.

1.4 LINE LIST AND PERMITS

ONEOK will provide the Contractor with a Construction Line List (Line List). The Line List reflects special landowner requirements (e.g., topsoil segregation, seeding, fencing requirements, rock disposal, etc.); however, the Line List is not a comprehensive list of construction requirements. The Line List must be considered in conjunction with other Project documents and permits. The Contractor must comply with these special landowner requirements provided they conform to the Project permits. Any third-party agreements between the Contractor and the landowner must be pre-approved by ONEOK and in writing.

Permits obtained by ONEOK for this Project may have more stringent requirements than the requirements of this CMRP and/or the Line List. **In all cases, the more restrictive requirements will apply**.

1.5 NON-HAZARDOUS WASTE DISPOSAL

Non-hazardous pipeline construction wastes include human waste, trash, pipe banding and spacers, paper waste from coating products, welding rods, timber skids, cleared vegetation, stumps, drilling mud and rock. The contractor will be responsible for removing waste from the Project area and identifying and locating proper licensed waste disposal facilities. The Contractor will not permit paper from wrapping or coating products or lightweight items to be scattered by the wind.

Waste which contains (or at any time contained) oil, grease, solvents, or other petroleum products falls within the scope of the oil and hazardous substances control, cleanup, and disposal procedures. This material will be segregated for handling and disposal as hazardous wastes.

The Contractor will provide portable, self-contained toilets during construction operations. Wastes from these units will be collected for disposal at licensed and approved facilities.

Drill cuttings and drilling mud will be disposed of as described in Section 2.8.4 of this document.

1.5.1 Hazardous Wastes

Hazardous and potentially hazardous materials will be stored, handled, and transported in accordance with applicable laws, regulations, rules or permits. Hazardous waste materials will be stored in properly labeled containers. Each label will identify the contents in the container, indicate if the material is hazardous, and include a waste code and date of accumulation.

Personnel who will have a role in handling, storing, or otherwise managing hazardous waste will have training in accordance with applicable regulatory requirements and the manufacturer's recommendations. Personnel will be familiar with the hazards associated with particular wastes and appropriate safety procedures. Appropriate emergency response and spill equipment will be kept in an accessible area in accordance with ONEOK's Spill Prevention, Control, and Countermeasure Plan (SPCC Plan).

Transporters of oil, hazardous substances, and hazardous wastes will be licensed and certified according to the applicable state vehicle code. Hazardous wastes being transported off-site will be manifested. The manifest will conform to requirements of the appropriate state agency. The transporter will be licensed and certified to handle hazardous wastes on the public highways. The vehicles as well as the drivers must conform to all applicable vehicle codes for transporting hazardous wastes. The manifest will conform to applicable state and federal regulations.

Hazardous materials will be disposed of at licensed waste disposal facilities.

1.6 TEMPORARY EROSION AND SEDIMENT CONTROLS

Temporary sediment and erosion control devices (ECDs) include, but are not limited to slope breakers, sediment barriers, stormwater diversions, trench breakers, mulch, and revegetation. The goal of ECDs is to minimize wind and water erosion on-site and prevent construction-related sediment from migrating off-site into sensitive resource areas such as streams (dry or flowing), wetlands, lakes, or cultural resource sites. The Contractor will, at all times, maintain erosion and sediment control structures as required in the project construction documents and as required by applicable permits.

ECDs will be installed as necessary and in accordance with applicable permit conditions after initial clearing but before disturbance of the soil and will be replaced by permanent ECDs as restoration is completed (see Figures 3 and 4). Additional information on ECDs is provided in the waterbody and wetland sections (Sections 2.0 and 3.0 of this Plan) and permanent restoration is addressed in ONEOK's *Revegetation Plan*.

1.7 UPLAND CLEARING

The initial stage of construction involves the clearing of tall herbaceous vegetation, brush, and trees from the ROW. Clearing may be accomplished with mowers, chain saws, and/or other hydraulic tree and brush cutting equipment. When clearing, trees will be felled onto the ROW to minimize damage to off-ROW vegetation and resources.

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1.7.1 Disposal of Woody Debris

Unless otherwise directed by ONEOK, slash and woody debris will be disposed of by mowing, chipping, grinding, and/or hauling off-site to an approved disposal facility, or the material will be stockpiled at the edge of the ROW and used to stabilize erodible slopes during restoration. Disposal of trees or merchantable timber will be conducted in accordance with landowner agreements. Where landowner approval has been granted, chips may be uniformly broadcast (less than 2-inch thickness) across the ROW in non-agricultural, non-wetland areas, where they will ultimately be incorporated into the topsoil layer during grading activities. Burning of woody debris may be allowed only where the Contractor has acquired all applicable permits and approvals (e.g., agency and landowner) and in accordance with all state and local regulations. The Contractor will provide ONEOK with copies of these permits and/or approvals prior to initiating burning.

Burning will not be allowed within 100 feet of a wetland or waterbody without site-specific approval from ONEOK. No burning will be allowed in wetlands. No chips, mulch, or mechanically cut woody debris will be stockpiled in a wetland and no upland woody debris will be disposed of in a wetland or within agricultural areas (see Section 3.3 for further information on clearing in a wetland).

1.7.2 Upland Grading and Stump Removal

Grading generally follows clearing and involves leveling and smoothing the construction ROW and extra workspace areas (as necessary) to create a safe, even working surface for equipment and vehicles. Topsoil and subsoil disturbed during grading operations will not be mixed with foreign material (e.g., stumps and brush).

The objective of grading is to develop a ROW that allows the safe passage of equipment and meets the bending limitations of the pipe. The following measures will be implemented during grading unless otherwise approved or directed by ONEOK based on site-specific conditions or circumstances.

- Original contours and drainage patterns will be re-established to the extent practicable.
- Agricultural areas that have terraces will be surveyed to establish pre-construction contours to be utilized for restoration of the terraces after construction.
- Gravel access pads or timber mats will be used where necessary to prevent damage to the road shoulder and bar ditch at roadways to be crossed during construction.
- Where the construction surface remains inadequate to support equipment travel, timber mats, timber riprap, or other methods may be used to stabilize surface conditions.

1.7.3 Irrigation Systems

If pipeline construction activities interfere with the operation of existing spray irrigation systems (flood, ditch, or spray), ONEOK will establish with the landowner or tenant, an acceptable amount of time the irrigation system may be out of service with the landowner or tenant. If feasible, temporary measures will be implemented to allow an irrigation system to continue to operate across the ROW during pipeline construction. Damage to irrigation systems caused by construction-related activities will be repaired following backfilling. Irrigation ditches that are active at the time of construction will not be stopped or obstructed except for the length of time necessary to install the pipeline beneath the ditch unless otherwise approved by the landowner or applicable ditch authority.

1.7.4 Upland Topsoil Segregation

The objective of topsoil handling is to maintain topsoil capability by conserving topsoil for future replacement and reclamation and to minimize the degradation of topsoil from compaction, rutting, loss of organic matter, or soil mixing so that successful reclamation of the ROW can occur. Topsoil generally has physical and chemical properties that are conducive to good plant growth. To prevent the mixing of topsoil with less productive subsoil during construction, topsoil will be segregated to avoid the co-mingling of soils, using the full right-of-way topsoiling method (see Figure 5). Separation should be maintained between the topsoil and subsoil piles throughout construction to prevent mixing. Upland areas where topsoil will be stripped include cropland, hay fields, pasture, residential areas, and other areas as agreed to by the landowner or as specified in the Project permits. Topsoil will not be used to construct trench breakers (see Section 1.11) or to pad the pipe or construct ramps. Gaps must be left and ECDs installed where stockpiled topsoil and spoil piles intersect with water conveyances (i.e., ditches, swales, and waterways) to maintain natural drainage and to allow wildlife access across the construction work area. Wildlife gaps (including the water conveyance gaps) will be installed at a minimum of every quarter-mile.

The following mitigation measures will be implemented during topsoil removal and storage. All work will be conducted in accordance with applicable permits.

- Stockpile stripped topsoil in a windrow along the edge of the ROW. The Contractor will perform work in a manner to minimize the potential for subsoil and topsoil to be mixed.
- Topsoil will not be used to fill a low area or to construct ramps at road or waterbody crossings.
- If required due to excessively windy conditions, topsoil piles can be tackified using either water or a suitable approved tackifier (liquid mulch binder). Further details are included in the ONEOK *Dust Control Plan*.

Topsoil Segregation Methods

The Full ROW topsoil segregation method (see Figure 5) will be employed during construction, as indicated on the “Issued for Construction” (IFC) alignment sheets.

Soil characteristics and land use are key considerations for topsoil management during pipeline construction. ONEOK will primarily use the full ROW topsoil stripping method, unless otherwise requested by the landowner. In arid areas with a limited topsoil resource, and/or in areas where significant side-slope excavation (e.g., two-toned, side-cut, etc.) will be required to create a safe, level area. In these areas, topsoil will typically be segregated using an excavator, dozer, or similar equipment.

Depth of Upland Topsoil Stripping

The depth of topsoil to be segregated will depend on the soil conditions. In areas of deep topsoil, stripping to a maximum depth of 12 inches will generally be considered adequate to minimize impacts on agricultural soils. Additional workspace may be needed for spoil storage if more than 12 inches of topsoil are segregated. If less than 12 inches of topsoil are present, the Contractor will attempt to segregate to the depth that is present. The Environmental Inspectors and ONEOK will work with the Contractor to determine topsoil depth to be stripped.

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1.7.5 Temporary Erosion and Sediment Controls

Erosion Control Devices

ECDs are intended to minimize erosion by slowing the velocity of stormwater runoff and diverting runoff from the construction ROW, preventing the movement of sediments off the construction ROW, and prohibiting the deposition of sediments into sensitive resources that may be on or adjacent to the ROW. Typical ECDs include silt fence and/or trenched-in and staked straw bales (see Figures 3 and 4) or biologs (i.e., compost socks, wattles, or excelsior logs), as well as other barriers such as compacted earth (e.g., drivable berms across travel ways), sand bags, or other appropriate materials (see Section 1.7.6).

Temporary ECDs will be installed after clearing and prior to grubbing and grading activities at the base of sloped approaches to streams, wetlands, and roads. Temporary ECDs will also be installed at the edge of the ROW as needed, and/or in other areas determined by ONEOK to slow water leaving the site and prevent siltation of waterbodies and wetlands downslope or outside of the construction ROW (e.g., swales and side slopes). Temporary ECDs will be placed across the entire construction ROW at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from drainage ways, wetlands, and/or waterbodies until the area is revegetated in accordance with the National Pollutant Discharge Elimination System (NPDES) stormwater permit (where applicable) and there is no potential scouring or sediment transport to surface waters.

If silt fence is in use, when the depth of sediment reaches about one-half of the height, the sediment will be removed. Non-functional ECDs will be repaired, replaced, or supplemented with functional structures, as required by the NPDES storm water permit.

Temporary ECDs installed across the travel lane may be removed during active daytime construction; however, the ECDs will be properly reinstalled after equipment passage, or activities in the area are completed for the day. These ECDs will also be repaired and/or replaced prior to forecasted inclement weather. The Contractor is responsible for monitoring weather conditions and adjusting resources as needed to address pending and/or existing weather conditions.

Temporary Stabilization

Temporary stabilization is intended to minimize erosion of soil from wind and water. Installation of temporary seeding, mulch, and erosion control mats/blankets may be required by ONEOK in site-specific locations if there are construction delays within a spread and/or there is a high potential for erosion to occur. The Contractor may be required by ONEOK to install temporary stabilization materials based on site conditions, or as required in ONEOK's Project specific NPDES permit(s). Temporary stabilization measures as outlined in ONEOK's *Revegetation Plan* will be implemented to minimize erosion and for sediment control.

ONEOK will attempt to stabilize exposed slopes prior to snowfall; however, construction progress and/or seasonal weather variations may prevent installation prior to the first snowfall in some locations. Installation of stabilization measures and additional BMPs, as applicable based on site conditions, will continue after the first snowfall to protect slopes prior to spring melt and runoff.

Mulch

Mulch is an effective tool to minimize erosion and will be applied to disturbed areas (except for actively cultivated land and wetlands) if agreed to with the landowner or land managing agency, if specified by the applicable permits or licenses, or as requested by ONEOK.

Mulch will be free of noxious weeds as listed in applicable state laws. Certified weed-free mulch may also be required at site-specific locations. The contractor(s) will be responsible for identifying and acquiring sources of certified weed-free mulch. Sources must be approved by ONEOK prior to purchase and copies of the applicable documentation must be provided to ONEOK.

Mulch will be applied at 1-2 tons per acre unless otherwise stipulated by permit conditions. Mulch will be uniformly distributed by a mechanical mulch blower, or by hand in areas not accessible to the mulch blower, to cover approximately 75 percent of the ground surface. Strands of mulch will be a minimum of 8 inches in length to allow proper anchoring. Mulch will be anchored/crimped to a depth of 2-3 inches using a mulch-anchoring tool or disc set in the straight position to minimize loss by wind and water. In areas not accessible to a mulch-anchoring tool, the mulch may be anchored by liquid tackifiers, with advance written approval from ONEOK. The manufacturer's recommended method and rate of application will be followed. Mulch will not be applied in wetlands or actively cultivated farmland.

Hydro-mulch and liquid tackifier may be used in place of straw or weed-free hay mulch with prior approval from ONEOK. Application rates will be at the manufacturer's recommended rate, equal to or greater than 2 tons per acre of straw mulch. The use of tackifiers for anchoring straw and the use of hydro-mulch and tackifier will be limited to areas that are too steep or rocky to safely or effectively operate mechanical mulch-anchoring tools. Asphalt-based tackifiers will not be used on the Project.

1.7.6 Temporary Slope Breakers

Temporary slope breakers will be installed to minimize concentrated or sheet flow runoff in disturbed areas in accordance with the following maximum allowable spacing unless otherwise specified in permit conditions. Temporary slope breakers will also be installed on slopes greater than 5 percent where the base of the slope is less than 50 feet from waterbodies, wetlands, and road crossings. The spacing between temporary slope breakers may be reduced based on site-specific conditions, as requested by ONEOK.

Slope (%)	Approximate Spacing (ft.)
5-15	300
15-30	200
>30	≤100

If the length of the slope is less than the distance of the required spacing, slope breakers will not be required unless a sensitive resource area (e.g., wetland) is located immediately down slope, or as requested by ONEOK. Temporary slope breakers may be constructed using earthen subsoil material, silt fence, straw bales, or biologs; rocked trenches may only be used in non-agricultural land. On highly erodible slopes, temporary slope breakers in the form of either earthen berms or rocked trenches will be used whenever possible.

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Temporary slope breakers will be constructed according to the following specifications:

- Earthen berms will be installed with a 2 to 4 percent outslope, with a minimum 4-foot base and a minimum height of 1.5 feet (see Figures 6 and 7);
- Straw bales used as slope breakers will be trenched in and staked tightly against one another as to not allow flow underneath or between the bales;
- The outfall of temporary slope breakers will be directed off the construction ROW into a stable well-vegetated upland area or into an appropriate energy-dissipating sediment control device (e.g., silt fence, straw bales, rock aprons) to prevent the discharge of sediments (see Figure 6);
- Proper slope breaker outfalls will be established where topsoil segregation and/or grading has created a barrier at the edge of the construction workspace;
- Gaps will be created through spoil piles where necessary to allow temporary berms to direct flow off-ROW;
- The outfall of each temporary slope breaker will be positioned to prevent sediment discharge into wetlands, waterbodies, or other sensitive resources; and
- Temporary slope breakers will be inspected and repaired as necessary to maintain operational integrity and prevent erosion in active construction areas.

1.7.7 Noise and Dust Control

The Contractor will take reasonable steps to control construction-related noise near residential areas and other noise sensitive areas as directed by ONEOK. Noise control practices may include limiting working hours and vehicle traffic in residential areas and/or additional measures as appropriate based on site-specific conditions. Dust control practices are detailed in ONEOK's *Dust Control Plan*.

1.8 PIPE DELIVERY, BENDING, & WELDING

Individual joints of pipe will be strung along the construction ROW. This operation involves specially designed equipment to deliver pipe from pipe storage yards to the ROW. Where practical, the Contractor will drive stringing trucks along an alignment which corresponds closely to the pipeline centerline to minimize the potential for soil compaction in actively cultivated areas.

After pipe stringing is complete, the pipe will be bent, as necessary, to conform to changes in ground contours and pipeline alignment. Individual pipe joints will be welded together, and the welds will be inspected using a non-destructive testing procedure to verify weld integrity, in accordance with federal regulations. The welds will then be coated to protect them from corrosion.

1.9 UPLAND TRENCHING

Trenching in uplands consists of excavating the trench for the pipeline and is typically accomplished with a backhoe excavator or a rotary wheel ditching machine. Excavated material will be sidecast (stockpiled) within the approved construction ROW separate from topsoil (see Section 1.7.4) and stored such that erosion is minimized to the extent practicable. During construction ONEOK will coordinate with landowners to minimize disruption of access caused by the trench. Where agreed to, the Contractor will leave plugs of soil in the ditch or will construct temporary access bridges across the trench for the landowner to move livestock or equipment. Trenches will also be sloped where started and ended to allow ramps for wildlife to escape.

1.9.1 Timing

The length of time a trench is left open will be minimized to ensure that installation of the pipe and restoration of the ROW occurs in a timely fashion.

1.9.2 Pipeline Depth

At a minimum, the pipeline will be buried in accordance with U.S. Department of Transportation (USDOT) regulations (49 Code of Federal Regulations (CFR) Part 195) to prevent damage to the pipeline from normal use of the land.

1.10 PIPE INSTALLATION

Once the trench has been inspected for proper depth, rocks, and/or other obstructions, the welded pipe will be lowered into the trench. In rocky soils, the pipe may be wrapped with a protective shielding to prevent damage to the pipe coating during backfilling.

1.11 TRENCH BREAKERS

Trench breakers are installed in sloped areas after the pipeline has been lowered into the trench to protect against subsurface water flow along the pipe after the trench is backfilled. Trench breakers will be constructed with bags filled with rock-free subsoil or sand. Topsoil **may not** be used for trench breakers. Trench breakers will be placed from the bottom of the trench to near the top of the trench, completely surrounding the pipe, **and must be properly keyed into the undisturbed trench walls** (see Figures 8 and 9). The location for trench breakers will be based on field conditions including the degree and length of slope, presence of down slope sensitive resource areas such as wetland and waterbodies, and proximity to other features such as roads and/or railroads. The following conditions apply to the placement and installation of trench breakers unless otherwise directed by ONEOK:

- Trench breakers will be spaced as described for permanent berms (see Section 1.17) or as otherwise specified by ONEOK.
- Trench breakers will be installed on slopes greater than 5 percent adjacent to streams, wetlands, or other waterbodies.
- At a minimum, trench breakers will be installed at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody or wetland and where needed to avoid draining a waterbody or wetland.
- Topsoil will not be used to construct trench breakers.
- Where the pipeline exits a wetland towards areas of lower relief, trench breakers will be installed where there is a potential for underground drainage along the pipe in order to prevent wetland or waterbody drainage.

ONEOK will identify preliminary trench breaker locations on the Project alignment sheets. These locations will be based on a review of mapped resources and topographical maps. The actual location of each trench breaker will be selected through coordination between ONEOK's Craft Inspectors, and the Contractor's Foreman during backfilling activities.

1.12 UPLAND BACKFILLING

Backfilling follows pipe installation and consists of replacing the material excavated from the trench. In many cases fine material will be needed to pad the pipe. Topsoil cannot be used as padding material

under any circumstance. In areas where topsoil has been segregated, the subsoil will be replaced first, and then the topsoil will be spread uniformly over the area from which it was removed. Prior to backfilling, the trench will be dewatered in accordance with the methods discussed in Section 5.0 of this Plan. Rock excavated from the trench may be used to backfill the trench only to the top of the existing bedrock profile. Rock that is not returned to the trench should be considered construction debris and be removed to an approved disposal site, unless approved for use as mulch, for another acceptable construction-related purpose, or as designated by the landowner or land managing agency.

1.13 WET WEATHER SHUTDOWN

During construction, certain activities may be suspended at the direction of the Project Construction Coordinator in wet soil conditions, based on consideration of the following factors:

- Plasticity of the surface soil to a depth of approximately 4 to 8 inches;
- Extent of surface ponding;
- Extent and depth of rutting and mixing of soil horizons;
- Areal extent and location of potential rutting and compaction (i.e., can traffic be rerouted around wet area, using low ground weight, wide-track equipment, or other low impact construction techniques, using construction mats in problem areas); and
- Type of equipment and nature of the construction operations proposed for that day.

If, in consideration of the above factors, ONEOK determines that construction activities will result in significant rutting and/or the mixing of soil horizons, the Contractor will cease work in the applicable area until ONEOK determines that site conditions are such that work may continue.

The Contractor is responsible for appropriately planning for work, considering the potential for wet conditions, and being prepared to implement mitigation measures in the event of wet weather conditions. This is particularly important when conducting work in unsaturated wetlands or areas where topsoil was not segregated. The Contractor is responsible for implementing any and all such corrective measures should conditions subsequently worsen where the above-described criteria cannot be met.

1.14 CONTROLLING SPREAD OF UNDESIRABLE SPECIES

It is ONEOK's intent to minimize the potential introduction and/or spread of undesirable species (i.e., invasive species and noxious weeds) along its ROW due to pipeline construction activities. However, it is not practicable for ONEOK to eradicate undesirable species that are adjacent to its ROW. ONEOK will minimize the potential for the establishment of undesirable species by minimizing the time between final grading and permanent seeding. Greater than six days is only acceptable if final grading had to take place outside of the seeding window, as described in the *Revegetation Plan* or in the Contractor's ONEOK-approved revegetation plan.

ONEOK will implement weed control measures, pending landowner approval, at identified infestation areas based on weed district input, or by the EIs. Weed control measures may include the application of herbicide or mechanical, and/or alternative methods. The weed control measure chosen will be the best method available for the time, place, and species of weed as identified through consultation with the appropriate regulatory agencies. Should landowners not allow the use of herbicides, alternatives methods, approved by the landowners, will be implemented.

ONEOK will also require that construction equipment and timber mats be free of soil and plant material before arriving on the construction spread, as well as be cleaned at state and county lines, to prevent the introduction of undesirable species to the project area, as described in the project's *Weed Management Plan*.

1.15 CLEANUP AND ROUGH/FINAL GRADING

Initial cleanup and rough grading activities may take place simultaneously. Cleanup involves removing construction debris (e.g., litter generated by construction crews, timber skids and similar woody debris, and excess rock).

Rough and final grading includes restoring disturbed areas as near as practicable to preconstruction conditions, returning the topsoil where topsoil has been stripped, preparing a seedbed (where applicable) for permanent seeding, installing or repairing temporary erosion and sediment control measures, repairing/replacing fences, and installing permanent erosion and sediment controls. Pre-existing landowner soil conservation improvements and structures disturbed by pipeline construction will be restored to the approximate pre-construction line and grade. Soil conservation improvements and structures include, but are not limited to, grassed waterways, toe walls, drop inlets, grade control works, terraces, levees, and farm ponds.

1.16 TIMING

The Contractor will begin cleanup and rough grading (including installation of temporary erosion and sediment control measures) typically within 72 hours after backfilling and will attempt to complete this cleanup within fourteen (14) days after backfilling, weather and soil conditions permitting. If seasonal or other weather conditions prevent compliance with the time frames, the contractor will maintain the erosion and sediment control measures until cleanup can be conducted.

1.17 PERMANENT EROSION AND SEDIMENT CONTROLS

During final grading, slopes in areas other than cropland will be stabilized with erosion control structures (see Figure 11). Erosion control treatments of specific physical land features are described below.

Slopes

Permanent berms (diversion dikes or slope breakers) will be installed on slopes, according to the following maximum spacing requirements unless otherwise specified in permit conditions or determined in the field by ONEOK:

Slope (%)	Approximate Spacing (ft.)
5-15	300
15-30	200
>30	≤100

Permanent berms will be constructed according to the following specifications:

- Permanent berms will be installed with a 2 to 4 percent outslope and will not cause pooling of water behind the berm.
- Permanent berms will be constructed of compacted earth.

- The outfall of berms will be directed toward appropriate energy-dissipating devices, and off the construction ROW if possible.
- Permanent berms will be inspected and repaired as deemed necessary by ONEOK to maintain function and prevent erosion.
- Erosion control blankets will be placed on slopes over 30 percent (see Figure 11) or that are a continuous slope to a sensitive resource area (e.g., wetland or waterway).
- There should be no unbroken slope length greater than 75 feet for slopes with a grade of 3:1 or steeper in order to maintain sheet flow and minimize rills and/or gullies.

1.18 SOIL COMPACTION TREATMENT

Cultivated fields and compacted or rutted cultivated areas will be tilled with a deep tillage device or chisel plowed to loosen compacted soils. Severely compacted agricultural areas will be plowed with a paraplow or other deep tillage implement. In areas where topsoil has been segregated, the subsoil will be plowed before replacing the segregated topsoil. If subsequent construction and cleanup activities result in further compaction, additional measures will be undertaken to alleviate the soil compaction.

Topsoil and subsoil will be tested at regular intervals in agricultural and residential areas. The Environmental Inspectors will conduct tests on the same soil type under similar moisture conditions in undisturbed areas to approximate preconstruction conditions. Penetrometers or other appropriate devices to conduct tests.

1.19 ROCK REMOVAL

Excess rock will be removed from at least the top 12 inches of disturbed soil in all actively cultivated or rotated cropland and pastures, hayfields, and residential areas or as specified in permit conditions or landowner agreements. Rock removal efforts will cease when the size and density of rocks on the ROW are similar to undisturbed areas adjacent to the ROW. Excess rock will be piled in upland areas where landowner permission has been obtained or will be hauled off-site to a ONEOK-approved disposal site.

1.20 OFF-ROAD VEHICLE CONTROL MEASURES

Off-road vehicle control measures will be installed as agreed to with landowners or as directed by land management agencies at points of entry. Such measures may include installing signs, fences and gates, or placement of other barriers such as boulders or timbers. All fences and gates removed or damaged will be repaired or replaced. The contractor may be held responsible for damage caused by trespassers if proper determent structures were not in place in a timely fashion.

1.21 REPAIR OF DAMAGED CONSERVATION PRACTICES

Soil conservation practices (such as terraces, grassed waterways, etc.) that are damaged by the pipeline construction will be restored to preconstruction conditions to the extent practicable.

1.22 LAND LEVELING FOLLOWING CONSTRUCTION

Following the completion of the pipeline, the ROW will be restored as near as practicable to its pre-construction conditions. Should uneven settling or documented surface drainage problems occur following the completion of pipeline construction, ONEOK will take appropriate steps to remedy the issue.

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Permanent revegetation activities will begin as soon as soil conditions permit seedbed preparation and seed germination. Actively cultivated lands will be restored but will not be reseeded unless requested by the landowner. See Section 8.0 for more information regarding reseeding.

2.0 STREAM AND RIVER CROSSING GENERAL REQUIREMENTS

Pre-construction planning is an essential part of stream crossings. Stream crossing requirements, including construction methods, timing, erosion control, and restoration are described in this section and in the stream crossing permits issued by state and federal agencies. Prior to construction, the Contractor may identify alternative provisions to certain site-specific plans that would provide an equal or greater level of protection to stream and river ecosystems. Any proposed alternative provisions must be submitted to ONEOK far enough in advance of construction to allow ONEOK an opportunity to review the alternatives and consult with the appropriate regulatory agencies as necessary without causing construction delays. The Contractor must receive written approval from ONEOK prior to implementing the alternative crossing techniques.

The procedures in this section apply to natural or artificial streams, rivers, and other waterbodies such as jurisdictional ditches, ponds, and lakes. These procedures require that judgment be applied in the field and will be implemented under the supervision of ONEOK. The intent of the mitigation procedures is to minimize construction-related disturbance to waterbodies by limiting the duration of construction in these areas and by minimizing erosion and sedimentation, as well as implementing appropriate procedures to restore the stream to pre-construction conditions.

ONEOK is proposing to avoid all streams and wetlands that would trigger a Preconstruction Notification (PCN) with the Army Corps of Engineers (USACE/Corps). ONEOK will accomplish this by either routing around PCNs or by using a Horizontal Directional Drill (HDD) or conventional bore methods. Locations that would otherwise require a PCN will be identified in the field and on the alignment sheets as Environmentally Sensitive Areas (ESAs). Mitigation and avoidance measures at ESAs are described throughout Sections 2.0 and 3.0.

2.1 DRAINAGE DITCHES AND EPHEMERAL/ INTERMITTENT STREAMS

Ephemeral/Intermittent streams and agricultural ditches that are not identified as ESAs will typically be crossed using the wet trench method (see Section 2.8.1), as specified in the applicable permits. For ephemeral streams; small, dry intermittent streams; and agricultural drainage ditches, standard upland construction procedures may be used, which involve stringing, welding, excavating the trench with backhoes, installing the pipe in the trench, and backfilling the trench with native material unless stipulated otherwise in the Project's applicable permits. Extra workspace setbacks will be implemented in accordance with Section 2.6. The banks of each crossing will be reshaped to pre-construction contours, mulched, and, if required, seeded in accordance with ONEOK's *Revegetation Plan* to stabilize the crossing until permanent erosion control is implemented. No refueling, fuel storage, or equipment maintenance is allowed within 100 feet of a drainage ditch or intermittent stream without approval from ONEOK with additional special provisions for containment. Where dry swales cross the ROW, silt fence or straw bales will be installed at the edge of the ROW to prevent the flow of sediment off the approved construction workspace.

2.2 TIME WINDOW FOR CONSTRUCTION

In-stream trenching will be conducted during periods permitted by the appropriate regulatory agencies and applicable permits. In-stream trenching is not permitted at ESAs.

2.3 AGENCY NOTIFICATION

ONEOK will notify applicable regulatory agencies as well as authorities responsible for potable surface water supply intakes located within three (3) miles downstream of the crossing prior to beginning in-stream work (e.g., excavation or blasting), in accordance with applicable permit conditions or as otherwise specified by that authority. Installation or removal of bridges is not considered in-stream work for the purpose of notifying agencies of nearby public surface water intakes.

2.4 PRE-CONSTRUCTION CONSIDERATIONS

2.4.1 Hazardous Materials

Hazardous materials, chemicals, fuels, and lubricating oils will not be stored, and concrete coating activities will not be performed within 100 feet of waterbodies and in accordance with ONEOK's *SPCC Plan*. Refer to the *SPCC Plan* for additional requirements pertaining to hazardous materials.

2.4.2 Refueling/Equipment Care

Construction equipment will be refueled at least 100 feet from streams and waterbodies. Where the Contractor and ONEOK determine that conditions require construction equipment to be refueled within 100 feet of streams, the Contractor must follow the procedures described in ONEOK's *SPCC Plan* and implement additional provisions based on site-specific conditions. No equipment will be washed within 100 feet of waterbodies. Overnight parking of equipment is not allowed within 100 feet of a waterbody unless special provisions have been implemented in accordance with ONEOK's *SPCC Plan* and prior approval from ONEOK is obtained. Repair and maintenance (e.g., lubricating) of construction equipment will not be allowed within the 100-foot buffer zone without approval from ONEOK with additional special provisions for containment. The Contractor will ensure that all equipment is free of leaks prior to use on the Project and prior to entering or working in or near waterbodies.

2.4.3 Aquatic Invasive Species Considerations

The states of Montana and North Dakota have no specific regulations in relation to Aquatic Invasive Species; therefore, there are no unique considerations regarding aquatic invasive species for this project at this time.

2.5 CLEARING AND GRADING

The Contractor will leave a 20-foot buffer of undisturbed herbaceous vegetation on all stream banks during initial clearing, except where grading is needed for bridge installation, or where restricted by applicable regulations and/or permit conditions (such as impaired waterways), or where the buffer would prevent safe equipment operation. Woody vegetation within this buffer may be cut and removed during clearing, leaving the stumps and root structure intact. Non-woody vegetation and the soil profile will be left intact until the Contractor is ready to begin trenching the crossing. This buffer should not be confused with the 50-foot setback required for extra workspace (see Section 2.6).

Sediment barriers will be promptly installed and properly maintained at waterbody crossings and waterbodies adjacent to the construction ROW in accordance with the Project's state-specific *Stormwater Pollution Prevention Plan (SWPPP)* until replaced by permanent erosion controls or restoration of adjacent upland areas is complete.

2.6 WORKSPACE AND EXTRA WORKSPACE

The permanent easement, temporary workspace, ATWS, and any special restrictions are depicted on the construction drawings.

Extra workspaces, as defined in Section 1.2, include work areas outside the boundary of the typical construction ROW. These spaces are typically used to assemble pipe segments, stage additional equipment or materials for the crossing, and for temporary spoil storage. Clearing of forested and brushy areas for extra workspace will be avoided as much as possible. Woody vegetation in wetlands and riparian areas will typically not be cleared for the purpose of extra workspace unless approved by appropriate regulatory agencies as stipulated in permits issued for the Project. Clearing of woody vegetation is never permitted at an ESA. Extra workspaces will be constructed as follows:

- Extra workspaces will be located 50 feet away from the water's edge where topographic or other physical conditions such as stream channel meanders allow (see Figures 14-16).
- If safe work practices or site conditions do not allow for a 50-foot setback, extra workspaces should be located as far from the water's edge as site-specific conditions allow.
- Extra workspaces will be limited to the minimum size needed to safely and efficiently construct the stream crossing.

2.7 BRIDGES AND EQUIPMENT CROSSING

Temporary bridges may be installed in certain locations to allow construction equipment to cross perennial waterbodies. Bridges may also be installed at intermittent waterbodies flowing at the time of construction, or those which have a high probability of flowing during construction. Intermittent waterbodies may cause saturated conditions, which would increase the probability of rutting. Bridges may include clean rock fill over culverts, timber mats supported by flumes, railcar flatbeds, and flexi-float apparatus, as described below and will be removed as soon as practical during final restoration. Construction equipment will be required to use the bridges, except the clearing crew and equipment necessary for installation of equipment bridges, which will be allowed a single pass across waterbodies prior to bridge installation, unless restricted by applicable permits.

An equipment bridge is only permitted at ESAs if the site-specific ESA plan calls for one, if it is clear-span (no in-stream supports), and it is above the ordinary high water mark (OHWM).

2.7.1 Types of Bridges

Equipment bridges will be constructed using one of the following techniques:

- Timber mats (clear-span and in-stream support - see Figure 16);
- Rock flume (see Figure 17);
- Railroad flat cars; and
- Other methods as approved by ONEOK and appropriate agencies.

Soil will not be used to construct temporary equipment bridges.

2.7.2 Bridge Design and Maintenance

Bridges will be built and maintained in accordance with applicable permits. At a minimum, equipment bridges will be designed and installed to withstand the maximum foreseeable stream flow that may occur while the bridge is in place. Bridges at ESAs must be above the ordinary high water mark. Bridges will not restrict flow or cause water to pool and will be constructed with clean materials. Bridges will be designed and maintained to prevent soil from entering the waterbody. Erosion and sediment control barriers will be installed and maintained around vehicle access points as necessary to prevent sediment from reaching the waterway. Soil that accumulates on the bridge decking will be removed as needed, or as deemed necessary by ONEOK.

2.8 STREAM AND RIVER CROSSING CONSTRUCTION METHODS

The following stream and river crossing methods are typically used and are subject to further restrictions by ONEOK and applicable permits and subject to modifications as approved by appropriate regulatory agencies during construction.

2.8.1 Wet Trench Method

Installation

The wet trench method (see Figure 12) will be used to cross streams and rivers that are not required by permit to be crossed using a dry crossing technique (i.e., flume, dam and pump, or directional drill (see Figure 15). The wet trench method is not permitted at ESA locations. The following procedures will be used during wet trench crossings:

- Sediment control measures will be in place before grading from the 20-foot vegetative buffer left on each stream bank. Spoil containment structures will be installed back from the stream bank so that spoil does not migrate into the stream. Grading will be directed away from the waterbody to minimize the potential for sediment to enter the stream. The grading of stream banks will be restricted to the trench line and areas necessary for safe bridge installation.
- After grading, backhoes, or draglines will be used to excavate the trench. Excavating equipment will operate from one or both banks, without entering the stream. If equipment must encroach into the stream, it will operate on clean construction mats. Streambed material will be segregated and placed within a spoil containment structure in approved construction work area limits.
- In-stream trenching and backfilling on flowing waterbodies will typically be completed within 24 hours or less on minor waterbodies (<10 feet wide) and 48 hours or less on intermediate (>10 feet to 100 feet wide) and 72 hours at major (>100 feet wide) waterbodies, or as directed by applicable permits.
- Earthen trench plugs (hard plugs) between the stream and the upland or wetland trench will be left undisturbed during excavation of the in-stream trench to prevent diversion of the stream flow into the open trench and to prevent water that may have accumulated in the adjacent upland trench from entering the waterbody. Trench plugs will be removed immediately prior to pipe placement, and then replaced when the pipe is in place. Trench water accumulated upslope of trench plugs must be dewatered appropriately prior to trench plug removal.

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- If trench dewatering is necessary, the pump intake will be suspended off the trench bottom and dewatering will take place into a sediment filter bag and/or a straw bale and geotextile dewatering structure (see Figures 20, 21A, 21B, and 21C) where directed by ONEOK. The trench will be dewatered in such a manner that no heavily silt-laden water flows into streams or wetlands, typically in a well-vegetated upland area (see Section 5.0). Only non-woven fabric will be used for filter bags. Landowner approval is required in advance of placement of dewatering structures outside of the approved construction workspace.
- Backfilling will begin after the pipe is positioned in the trench at the desired depth. Backfill material will consist of the spoil material excavated from the trench and parent streambed unless otherwise specified in state or federal permits. The in-stream trench will be backfilled so that the stream bottom is as near as practicable to its pre-construction condition, with no impediments to normal water flow.

Temporary Stabilization

ONEOK will restore the stream banks as near as practicable to pre-construction conditions unless that slope is determined to be unstable (see Section 2.9). Once the banks have been reshaped, ECDs will be installed within 24 hours of backfilling the crossing. Temporary slope breakers will be installed on all sloped approaches to streams in accordance with the spacing requirements outlined in Section 1.7.6.

A temporary seed mix, as indicated in the *Revegetation Plan*, and mulch and/or erosion control blankets will be installed within a 50-foot buffer on either side of the stream. A sediment barrier will be installed upslope of the temporary seeding area.

2.8.2 Dam and Pump Method

Installation

The dam and pump method is a dry-crossing method that is suitable for low flow streams and is a preferred alternative to fluming for crossing meandering channels. The dam and pump method involves damming of the stream with sandbags, inflatable dams, and/or steel plates upstream and downstream of the proposed trench before excavation (see Figure 15) and pumping water around the construction area. The dam and pump method is not permitted at ESA locations. The following procedures will be implemented for dam and pump crossings:

- Pumping of the stream flow across the ROW will commence simultaneously with dam construction to prevent interruption of downstream flow. Stream flow will be pumped across the construction area through a hose(s) and will be discharged to an energy-dissipation device, such as plywood boards, to prevent scouring of the streambed.
- The pumps will be located on the upstream side of the crossing and will be placed in impermeable, sided structures which will act as containment units for the pumps and fuel containers. The pumps used for the dam and pump crossing method will not be placed directly in the stream or on the streambed. Pumps will have a pumping capacity greater than the anticipated stream flow. The pumping operation will be monitored and adjusted as necessary to maintain an even flow of water across the work area and near-normal water levels upstream and downstream from the crossing. Backup pumps of equal or greater capacity will be on-site at all times in the event that the primary pumps fail.

- The pump intake must be suspended to prevent the uptake of sediment from the stream bottom and must be equipped with a screen with less than one-inch-diameter openings, or equivalent device, to prevent fish uptake.
- Spill kits, as described in the SPCC Plan, will be stored adjacent to pumps and fuel.
- Dams will be constructed of sandbags, inflatable dams, aqua-dams, and/or steel plates. The dams will prevent the stream from flowing into the construction area. The dams will be continuously monitored for a proper seal. Additional sandbags, plastic sheeting, steel plating, or similar materials will be used where necessary to minimize the amount of water seeping around the dams and into the construction work area.
- Backhoes located on one or both stream banks will excavate a trench across the streambed. Existing streambed materials will be segregated and placed within a spoil containment structure in approved construction work area limits.
- Earthen trench plugs between the stream and the upland trench will be used during excavation of the in-stream trench to prevent the diversion of any groundwater that seeps into the open trench. Trench plugs will be removed immediately before pipe placement and then replaced when the pipe is in place.
- Standing water that is isolated in the construction area by the dams will be pumped into a sediment filter bag and/or a straw bale and geotextile dewatering structure, generally located in a well-vegetated upland area, and discharged in such a manner that no heavily silt-laden water flows into streams or wetlands (see Section 5.0). Only non-woven fabric will be used for filter bags.
- Backfilling will begin after the pipe is positioned in the trench to the desired depth. Backfill material will consist of the spoil material and parent streambed excavated from the trench unless otherwise specified in state or federal permits. The in-stream trench will be backfilled so that the stream bottom is contoured to its pre-construction condition, with no impediments to normal water flow.

Bank Stabilization

For dry-ditch crossings, complete streambed and bank stabilization before returning flow to the waterbody channel. Once the stream banks have been stabilized, the dams and pump will be removed in a manner to minimize streambed disturbance. Restoration of the banks will be completed as described in Section 2.9.

2.8.3 Flume Method

Installation

The flume method is a dry-crossing method that is suitable for crossing sensitive, relatively narrow streams that have straight channels and are relatively free of large rocks and bedrock at the point of crossing. This method involves placement of flume pipe(s) in the streambed to convey stream flow across the construction area without introducing sediment to the water (see Figure 14). The dam and flume method is not permitted at ESA locations. The procedures for using the flume method are described below.

- The flume(s) will be of sufficient diameter to transport the maximum flows anticipated to be generated from the watershed. The flume(s) typically 40 to 60 feet in length, will be installed before trenching and will be aligned so as not to impound water upstream of the flume(s) or cause downstream bank erosion. The flumes will not be removed until after the pipeline has been installed, the trench has been backfilled, and the stream banks have been stabilized.
- The upstream and downstream ends of the flume(s) will be incorporated into dams made of sand bags and plastic sheeting (or equivalent). The upstream dam will be constructed first and will funnel stream flow into the flume(s). The downstream dam will prevent backwash of water into the trench and construction work area. The dams will be continuously monitored for a proper seal. Adjustments to the dams will be made where necessary to prevent large volumes of water from seeping around the dams and into the trench and construction work area.
- After the streambed is dewatered, backhoes located on one or both stream banks will excavate a trench across the streambed. Spoil generated during trenching will be stored in a straw bale/silt fence containment area located away from the stream banks within approved construction work areas.
- Earthen trench plugs between the stream and the upland trench will be used, during excavation of the in-stream trench to prevent diversion of the stream flow into the open trench or upland sediment flowing into the stream via the trench. Trench plugs will be removed immediately before pipe placement, and then replaced when the pipe is in place.
- If trench dewatering is necessary to complete the installation of the pipe, the discharge will be pumped into a sediment filter bag or a straw bale geotextile dewatering structure, into a well-vegetated upland area, and discharged in such a manner that no heavily silt-laden water flows into streams or wetlands (see Section 5.0). Non-woven fabric must be used for filter bags.
- Backfilling will begin after the pipe is positioned in the trench to the desired depth. Backfill material will consist of the spoil material excavated from the trench and parent streambed unless otherwise specified in state or federal permits. The in-stream trench will be backfilled so that the stream bottom is similar to its pre-construction condition, with no impediments to normal water flow in a manner to minimize streambed disturbance.

Bank Stabilization

For dry-ditch crossings, complete streambed and bank stabilization before returning flow to the waterbody channel. After the stream banks have been stabilized, the dams and flume will be removed from the streambed allowing water to resume its flow in the channel. Restoration of the banks will be completed as described in Section 2.9.

2.8.4 Horizontal Directional Drill (HDD) Method

Installation

Installing the pipe underneath a stream will involve placing a drill unit on one side of the stream (see Figure 15). Minor hand clearing is typically required, unless otherwise specified by a Project Permit, between the entry and exit points to facilitate the installation of the tracking wires, when wires are

needed, and for visual inspection of the drill path. A small diameter pilot hole will be drilled under the stream along a prescribed profile. After the pilot hole has been completed, barrel reams will be used to enlarge the pilot hole to accommodate the desired pipeline diameter. Drilling mud will be necessary to remove cuttings and maintain the integrity of the hole. Water from a ONEOK-approved source will be used to prepare the slurry of drilling mud and will be appropriated according to applicable permits (see Section 7.0). The pipe section will be pulled through the hole by the drilling rig and then welded to the adjoining sections of pipe on each side of the river.

The HDD or conventional bore method will be used at all ESA locations.

Drilling Mud

During drilling operations, drilling mud and slurry will be stored back from the river bank in an earthen berm sediment control structure, in tanks, or by other methods so that it does not flow into the stream, adjacent wetlands, or off the approved construction workspace.

ONEOK has developed a contingency plan to address measures to be performed in the event of a release of drilling mud onto the ground surface or waterbody. The plan stipulates monitoring for an inadvertent release of drilling mud during the HDD operation. The plan also outlines procedures for an inadvertent release in an ESA. See the ONEOK *Horizontal Directional Drilling Inadvertent Release Control Plan* for additional details.

After the pipe is in place, excess drilling mud and slurry will be disposed of properly, in accordance with applicable local, state, or federal regulations.

Bank Stabilization

The directional drilling method normally does not result in the disturbance of the stream banks or riparian vegetation, which reduces the potential for erosion and sedimentation at the stream crossing. Consequently, the ECDs that are installed at open-cut crossings typically are not necessary for drilled/bored crossings. However, ECDs may be utilized to assist in containing drilling mud, or adjacent disturbed ROW, on the approved construction workspace.

2.9 PERMANENT RESTORATION

Stream Banks

Stream banks disturbed during installation of the pipelines will be stabilized with erosion control materials such as jute or equivalent and seeded in accordance with ONEOK's *Revegetation Plan*. Permanent stabilization must occur prior to returning stream flow for dam and pump/flume crossings unless site and permit conditions delay permanent installation. Bank stabilization activity should not be more than 500 feet in length along the bank, and no material placed in excess of the minimum needed for erosion protection. The stabilization activity should not exceed an average of one cubic yard per running foot below the OHWM. All activity should be properly maintained, including repairing after storms or erosion events.

Where the banks have been disturbed, ONEOK will restore the slopes as near as practicable to pre-construction conditions unless that slope is determined to be unstable. Where the slope of a bank is determined to be unstable or has the potential to erode or fail, the bank will be reshaped to transition the disturbed areas into the natural stream bank with the intent to stabilize the bank and create a blended, natural appearance. If the original stream bank is excessively steep and unstable and/or flow conditions are severe, a more stable final contour may be specified, and alternate stabilization

measures may be installed. Alternate stabilization measures must conform to existing permit conditions. The contractor and Environmental Inspection team will inform ONEOK when restoring preconstruction contours is not feasible.

Berms or other sediment filter devices will be installed at the base of sloped approaches to streams greater than 5 percent and the outlet of the berm will be directed away from the stream into a well-vegetated area (see Figures 9, and 12). Temporary ECDs will remain in place until the area has been stabilized and adequate revegetation has been established.

2.9.1 Vegetative Bank Restoration

Typically, waterbody banks will be restored as near as practicable to preconstruction conditions after backfilling is complete and will be seeded with an appropriate seed mix as specified in the *Revegetation Plan*. ECDs (e.g. erosion control blankets, silt fences, etc.) will be installed as necessary based on site-specific conditions. If installation of the pipeline creates unstable soil conditions due to either stream meanders or stream crossing angle, ONEOK will consult with the appropriate agencies to identify additional site stabilization techniques.

2.9.2 Rock Riprap Restoration

Unstable soils and/or site-specific factors such as stream velocity and flow direction may require additional restoration efforts, such as installation of rock rip-rap, to stabilize disturbed stream banks. Rock rip-rap will be used only where site-specific conditions require and where applicable state permits or approvals have been acquired. Geotextile fabric and rock riprap will be placed according to site and permit conditions (see Figure 22). Disturbed soils upslope and on either side of the riprap will be prepared for seeding according to the *Revegetation Plan* and other stream bank protection requirements.

Rock riprap will not be installed below the OHWM, which will be marked upon request, or within wetlands. Rock riprap is not to be used as a support for a bridge within a wetland or a waterbody.

2.9.3 Bridge Removal

Equipment bridges will be removed during final cleanup or, if access is needed, after final cleanup and permanent seeding. Restoration of the bridge area will be completed upon bridge removal. Bridges installed for winter construction (if applicable) will be removed before spring break up unless access is needed for final cleanup and restoration other portions of the ROW.

2.9.4 Swales

Swales will be restored as near as practicable to original conditions. Swales will be seeded and either mulched with straw or erosion control blankets will be installed to the perceivable top of bank for the width of the approved construction workspace.

2.9.5 Drainage Ditches and Intermittent Streams

Drainage ditches and intermittent streams will be permanently restored and stabilized with erosion control blanket, permanent seeding, or other appropriate measures.

3.0 WETLAND CROSSING GENERAL REQUIREMENTS

Typical pipeline construction in wetlands will consist of clearing, stringing, trenching, dewatering, installation, backfilling, final grading, cleanup, and revegetation. However, due to the unstable nature of some wetland soils, construction activities may differ somewhat from those described for upland

areas. Construction activities will be minimized in wetlands to the extent practicable. ONEOK will also use special construction techniques to minimize the disturbance to plants and soils and to protect wetland hydrology.

Pre-construction planning is an essential part of wetland crossings. Wetland crossing requirements, including construction methods, timing, erosion control, and restoration, are described in this section and in the wetland crossing permits issued by state and federal agencies. Prior to construction, the Contractor may identify alternative provisions that would provide an equal or greater level of protection to wetland ecosystems if the Contractor considers certain parts of these procedures to be technically impractical due to site-specific engineering constraints. Any proposed alternative provisions must be submitted to ONEOK far enough in advance of construction to allow ONEOK an opportunity to review the alternatives and consult with the appropriate regulatory agencies without causing construction delays. The Contractor must receive written approval from ONEOK prior to implementing the alternative construction techniques.

The procedures in this section apply to all wetlands that will be affected by the project. These procedures require that judgment be applied in the field and will be implemented under the supervision of ONEOK. The intent of these procedures is to minimize construction-related disturbance and sedimentation of wetlands and to restore wetlands to pre-construction conditions to the extent possible. In the event a waterbody crossing is located within or adjacent to a wetland crossing, the measures in both Sections 2 and 3 will be implemented to the extent practicable.

3.1 WETLAND ACCESS

The Contractor must use the construction ROW, existing public roads, approved access roads, such as private roads under landowner agreement, to access wetland areas.

3.2 SPILL PREVENTION

3.2.1 Storage of Fuels and Other Materials

No storage of hazardous materials, chemicals, fuels, and lubricating oils, and no concrete coating activities will be permitted in, or within 100 feet of, any wetland boundary unless special provisions have been implemented in accordance with ONEOK's *SPCC Plan*.

3.2.2 Refueling, Fuel Handling, and Equipment Maintenance

Construction equipment will be refueled in upland areas at least 100 feet from a wetland. Where the Contractor and ONEOK determine that conditions require construction equipment (e.g., swamp hoe, trench dewatering pumps, or portable generators) to be refueled within 100 feet of a wetland, the Contractor must follow the procedures described in ONEOK's *SPCC Plan* and implement additional provisions based on site-specific conditions. No equipment will be washed within 100 feet of streams or waterbodies. Vehicles and equipment left on the ROW overnight must be parked at least 100 feet from a delineated wetland boundary unless special provisions have been implemented in accordance with ONEOK's *SPCC Plan*, secondary containment structures are functional and properly placed, and prior approval is obtained from ONEOK.

3.3 CLEARING

Clearing the construction ROW in wetlands will be similar to clearing in uplands. For construction to proceed, obstructions (e.g., trees, brush, and logs) need to be removed. Typically, low ground

pressure equipment will be used, limiting disturbance to the wetland. When clearing in wetlands, the following restrictions apply:

- The construction ROW width in wetlands will typically be limited to 75 feet as depicted in Figure 23 unless non-cohesive soil conditions require utilization of a greater width.
- Vegetation and trees within wetlands will be cut off at ground level, leaving existing root systems intact. Trees within ESAs will not be removed.
- Cuttings and debris will be removed from the wetland and disposed of properly.
- Between extra work areas and the edge of the wetland, limit the clearing of vegetation to the construction right-of-way.
- Mechanized tree clearing will not be allowed in forested wetlands or ESAs as identified by ONEOK.

3.4 EXTRA WORKSPACE IN WETLANDS

ONEOK attempted to locate extra workspace outside of wetlands wherever practicable; however, extra workspaces have been sited in select wetlands where the wetland is adjacent to a waterbody, road, railroads, foreign utility crossings, and/or pipeline cross-over. Clearing of forested wetlands for extra workspace will be avoided as much as possible and never allowed at ESA locations. Woody vegetation in wetlands will not be cleared for the purpose of extra workspace unless approved by the appropriate regulatory agency.

Staging areas, additional spoil storage areas, and other additional work areas (extra workspace) will be located in upland areas at least 50 feet away from wetland boundaries (see figure 23), where safe work practices or site conditions permit. These extra workspaces may be located closer if the area is disturbed agricultural land, such as a row crop. If site conditions do not permit a 50-foot setback, then these areas will be located as far away from the wetland as is practicable. Vegetation will not be cleared between these areas and the wetland in any event. No construction activities including vegetation clearing or earthwork will occur between the extra workspace and sensitive resource areas (wetlands or waterways). The size of the additional workspace areas will be limited to the minimum needed to construct the wetland crossing.

3.5 GRADING IN A WETLAND

Grading in a wetland, if required, will be conducted in a manner consistent with applicable federal, state, and local permits. Grading activities will be confined to directly over the trench line. Grading outside the trench will only be allowed where required to ensure safety and restore the ROW after backfilling the trench. No grading is permitted within ESAs.

3.6 CONSTRUCTION MATTING

Supplemental equipment supports, such as timber mats (see Figure 23), will be used where necessary to provide temporary portable support for construction equipment and minimize soil compaction and/or soil mixing. No equipment supports are permitted within ESAs. To prevent the spread of noxious and invasive plant species, timber mats must be free of soil and plant material prior to being transported onto the ROW. The Contractor is responsible for having a sufficient number of construction mats to perform the work. Tree stumps, brush riprap, imported soil, and rock fill will not be brought in to stabilize the ROW, or excavations in wetlands. Timber riprap (also known as corduroy

road) cannot be used without prior written approval from ONEOK. Pre-existing corduroy roads in wetlands may be used but may not be improved, maintained, restored, or replaced without site-specific authorization from applicable agencies. Subsoil excavated from the pipeline trench in the wetland may be placed on top of equipment mats for additional stabilization.

All timber mats, construction debris, and larger woody vegetative debris will be removed during the cleanup of wetlands to pre-construction condition or equivalent to surrounding area.

3.7 TRENCHING

Excavation of the pipeline trench in wetlands typically will be accomplished using backhoe excavators. The duration of open trench will be minimized to the extent possible.

3.8 TOPSOIL SEGREGATION

Typically, when constructing in wetland areas without standing water, up to one foot of topsoil (organic layer) will be stripped from the trench line and stockpiled separate from trench spoil. In standing water wetlands, topsoil segregation is not typically practical; however, ONEOK will attempt to segregate as much of the organic layer as possible based on site/saturation conditions. If normally unsaturated wetlands are saturated at the time of construction, topsoil segregation will be attempted according to Figure 23 and based on recommendations from ONEOK and appropriate regulatory agencies. Topsoil will be restored to its approximate original stratum, after backfilling is complete.

3.9 TRENCH BREAKERS

Trench breakers will be installed as necessary, near the wetland boundary, to maintain the original wetland hydrology.

3.10 PIPELINE INSTALLATION

The following procedures are intended to minimize siltation and disturbance to wetlands during installation.

3.10.1 Push/Pull Method

Large wetlands with standing water can generally not be crossed with typical crossing methods. In these areas, the pipeline will be assembled in an upland area and positioned in the trench

using the “push-pull" and/or "float" techniques. Typically, this fabrication requires use of extra workspace adjacent to the construction ROW. The trench will be dug by a backhoe (or equivalent) supported on timber mats. The prefabricated section of pipeline will then be pushed-pulled into position or floated across the wetland. When the pipeline is in position, the floats, if used, will be removed and the pipeline will sink into position. Barrels, floats, and banding will be recovered and removed prior to backfilling. The trench will then be backfilled, and the wetland will be restored by a backhoe or similar equipment working from construction mats or by low ground pressure equipment. The Push/Pull method is not permitted in ESAs.

3.11 TEMPORARY EROSION AND SEDIMENT CONTROLS

ECDs at approaches to wetlands will be installed as described in this section and Section 1.7.5, according to the specifications presented on Figures 3 and 4. ECDs (e.g., silt fence) will be installed across the entire construction ROW upslope of the wetland boundary, where necessary, to prevent sediment flow into the wetland. Where wetlands are adjacent to the construction ROW and the ROW slopes toward the wetlands, ECDs will be installed along the edge of the construction ROW as

necessary to prevent sediment flow into the wetlands. ECDs will be installed along the edge of the construction ROW, as necessary, to contain spoil and sediment within the construction ROW through wetlands. In the travel lane, these may incorporate removable sediment barriers or drivable berms. Removable sediment barriers can be removed during the construction day and re-installed after construction has stopped for the day or when heavy precipitation is imminent.

ECDs will be maintained in proper working order to prevent the flow of sediment into wetlands from spoil piles or sloped approaches that are adjacent to the wetlands. When the depth of sediment reaches one-half of the height of a sediment barrier, the barrier will be replaced, and/or the sediment removed. Non-functional sediment-control measures will be repaired, replaced, or supplemented.

3.12 BACKFILLING

The Contractor will restore wetlands as near as practicable to pre-construction conditions and must make a reasonable attempt to return the subsoil its pre-construction density. During the backfilling of wetland areas, subsoil material removed from the trench during construction will be replaced so that the material is not mounded above the adjacent ground surface (undisturbed trench wall). Subsoil that exceeds the elevation of the ground adjacent to the trench will be removed from the wetland and disposed of in an upland area or a ONEOK-approved disposal site. After the trench has been backfilled with subsoil, previously segregated topsoil will be spread over the trench area and mounded no more than 12 inches above the adjacent, undisturbed soil.

3.13 ROUGH GRADING, CLEANUP, AND TEMPORARY RESTORATION

Cleanup and rough grading activities may take place simultaneously. Cleanup activities typically will involve removing construction debris and replacing fences removed during construction. Rough grading will include restoring original conditions within the disturbed areas (i.e., ditch line, spoil storage areas, and equipment travel lane) and installing or repairing temporary ECDs. Temporary slope breakers will be installed near the boundary between the wetland and adjacent sloped approaches, to prevent sediment flow into the wetland.

3.13.1 Timing

Cleanup and rough grading (including installation of ECDs) will begin as soon as practical after the trench is backfilled, weather permitting.

3.13.2 Temporary Stabilization

Where necessary to prevent erosion and in accordance with *ONEOK's Revegetation Plan*, disturbed wetland areas will be stabilized by seeding with a temporary cover at a rate adequate for germination and ground cover unless standing water is present. For farmed wetlands, seeding requirements will be applied for agricultural lands or as required by the landowner.

The Contractor will not use fertilizer, lime, or mulch in wetlands unless required in writing by the appropriate land management agency. ONEOK does not propose permanent planting or seeding in wetlands.

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4.0 HIGHWAY, ROAD, AND RAIL CROSSINGS

4.1 EXTRA WORKSPACE

Extra workspaces for bored road and railroad crossings and open-cut road crossings will be determined on a site-specific basis and must be approved by ONEOK prior to use. These workspaces will be adjacent to the road or railroad (see Figure 24).

4.2 MAINTENANCE

Roadway crossings will be maintained in a condition that will prevent the tracking of mud onto the roadway. If mud is tracked onto a roadway, the Contractor will remove accumulated material from the road and place within a sediment barrier as soon as practical.

4.3 TEMPORARY EROSION AND SEDIMENT CONTROLS

Temporary ECDs (e.g., silt fence and/or double-staked straw bales) will be installed on sloped approaches to road crossings where vegetation has been disturbed as discussed in Section 1.7.5 and installed according to the specifications presented on Figures 3 and 4.

5.0 CONSTRUCTION DEWATERING

5.1 TRENCH DEWATERING

The following additional guidance is provided regarding trench dewatering activities to employ the maximum amount of reasonable protective measures to sensitive resource areas.

At each location where dewatering is to be conducted, the contractor must consider the following conditions in planning the dewatering event. Prior to initiating dewatering activities, the contractor must check the water discharge situation to ensure that the BMPs are applied in such a way as to minimize the potential for water containing sediment from reaching a sensitive resource area. Landowner approval must be acquired in advance of placement of dewatering structures outside of the approved construction ROW, if required. If dewatering off the-ROWROW, a well-vegetated upland area will be selected.

- **Water Discharge Setting** – The contractor will assess each water discharge situation to include:
    - Soil Type - The soil types the discharged water would flow over. The management of discharged water traveling over sandy soil is more likely to soak into the ground as compared to clay soils.
    - Ground Surface - The topography and vegetation in the area that would influence the surface flow of the discharged water.
    - Adjustable Discharge rate - The flow rate of the discharged water (which may need to vary) should be managed based on the site conditions and applicable permits to minimize instances of water from reaching a sensitive resource area. (Example - water discharged at 500 gallons per minute may soak into the ground while if discharged at a higher flow rate would cause water to flow via overland runoff into a waterbody).
    - Discharge Outfall - The amount of hose needed to attempt to discharge water at a location which drains away from waterbodies or wetlands.

- **Pump Intake** - Install a float near the suction end of the intake hose to prevent the uptake of sediment from the trench bottom (see Figures 20, 21A, 21b, and 21C). Alternative methods may be used where the performance of the alternative method is equal to or greater than the use of a float.

- **Overwhelming Existing Drainage** - If clean discharged water will reach a waterbody, control the discharge rate to prevent downstream flooding and/or erosion.

- **Filtering Mechanism** – All dewatering discharges will be directed through a filtering device as indicated below.

    - Well-Vegetated Upland Area – Water can be directed to a well-vegetated upland area through a geotextile filter bag. The ground at the discharge location will be protected as necessary to prevent scouring/erosion of the ground surface at the end of the discharge hose. Geotextile bags will be sized appropriately for the discharge flow rate and suspended sediment particle size.

    - Straw Bale Dewatering Structure – Where the dewatering discharge point cannot be located in an upland area due to site conditions and/or distance, the discharge will be directed into a straw bale dewatering structure. The size of the straw bale dewatering structure is dependent on the maximum water discharge rate. A straw bale dewatering structure should be used in conjunction with a geotextile filter bag to provide additional filtration near sensitive resource areas.

    - Alternative dewatering methods (e.g., use of water cannons) may be approved by ONEOK on a site-specific basis.

- **Monitoring** – Trench dewatering activities will be monitored at all times by the contractor.

5.1.1 Regulatory Notification and Reporting

ONEOK will notify appropriate agencies as required by all permits/authorizations. Reports regarding the volume and quality of the water withdrawn and discharged will be submitted by ONEOK, if required by the applicable permits. The Contractor will assist ONEOK in collecting appropriate data and any water samples required or in determining volumes of water appropriated.

5.1.2 Flow Measurement

The volume of water discharged from the trench will be recorded if required by the applicable permits. The volume may be determined using a flow meter, or equivalent method as dictated by permit stipulations.

5.1.3 Water Sampling

Water discharged from trench dewatering locations may need to be sampled as required by NPDES discharge permits. If required, the Contractor will assist ONEOK in obtaining these samples and will be responsible for complying with the permit limitations.

6.0 HYDROSTATIC TESTING

Hydrostatic testing involves filling the new pipeline segments with water acquired in accordance with applicable permits, raising the internal pressure level, and holding that pressure for a specific period of time per federal Department of Transportation regulation (49 CFR 195) to verify that there are no

flaws in the pipe or welds. Pre-built sections (e.g., HDD sections) may be hydrostatically tested prior to installation. After the hydrostatic test is completed, the line will be depressurized, and the test water will be discharged. Contractor will refer to the NPDES permit issued for water discharge and plan accordingly to meet the conditions of the permit. Depending on the water source and applicable permits, the hydrostatic test water may be discharged to the ground, hauled off to a ONEOK-approved disposal location, or reused for dust control.

6.1 SITING OF TEST MANIFOLDS

Hydrostatic test manifolds will be installed where necessary to ensure proper test pressures. To prevent the spread of noxious and invasive species, hydrostatic test equipment must be dry and free of soil and plant material prior to being transported onto the ROW. The selected location of test manifolds is based on engineering requirements to meet proper test pressures and incorporates changes due to topography. Where feasible, ONEOK will incorporate minor adjustments to the test manifold locations to avoid placement in wetlands and riparian areas. However, completely avoiding the placement of a test manifold in a wetland may not always be possible. The Contractor will install appropriate erosion and spill control measures where ONEOK determines that topographic conditions, primarily elevation changes, require test sections to be located in a wetland or riparian area.

The operation and refueling of hydrostatic test equipment will be in accordance with the conditions outlined in ONEOK's *Spill Plan*.

7.0 WATER APPROPRIATION SOURCES AND DISCHARGE LOCATIONS

During construction, water required for hydrostatic testing of the mainline pipe and HDD pipe sections, directional drilling, and dust control operations may be obtained from local sources, such as lakes, streams, and private or municipal wells. Water will only be withdrawn from sources approved by ONEOK and in accordance with applicable permits, which will be specific for each state the Demicks Lake Pipeline crosses. Where water is appropriated from lakes or streams, the intake hose will be suspended off the stream or lake bottom and will be screened to prevent entrainment of fish. If appropriation is scheduled to occur during possible periods of low flow, including frozen conditions, a backup source will be identified. Water appropriation permits in Montana cannot account for backup water sources. Water used for dust control activities will be applied to roads, disturbed areas, and soil piles as described in ONEOK's *Dust Control Plan*.

7.1 APPROPRIATION FLOW MEASUREMENT

During withdrawal, adequate waterbody flow rates and volumes will be maintained to protect aquatic life and allow for downstream uses. At no time will the withdrawal rate for the water source exceed the rate specified in the applicable permits.

The volume and rate of withdrawal will be monitored to comply with applicable permit conditions. The withdrawal rate and total volume of water appropriated will be measured with a flow meter (or equivalent) and recorded. In Montana a project completion form is required after water use ends.

7.2 TEST WATER DISCHARGE

Hydrostatic test water discharges, sampling, testing and recordkeeping will be conducted in compliance with state-issued NPDES permits. Water used for hydrostatic testing of the mainline and HDD pipe sections will typically be discharged back to the waterbody from which it was appropriated (via direct discharge or through a dewatering structure built in an adjacent upland area) unless an

alternate discharge location has been approved by the applicable agencies. Hydrostatic test waters will not be transferred from one waterbody to another, across watershed, or major drainage divides unless specifically allowed by applicable permits. No additives to the water are permitted unless written approval is received from ONEOK and applicable permits authorize such additives.

Prior to hydrostatic testing the pipeline, ONEOK will prepare the pipe by removing accumulated construction debris, mill scale, dirt, and dust using a cleaning pig. The debris will be collected in a temporary receiver and will be properly disposed of by the Contractor. Upon completion of the cleaning operation, the pipeline will be sealed with the test headers.

Test headers and pigs will be arranged to allow for rinse water to be installed ahead of the fill pigs. Rinse water must be treated and disposed of in accordance with applicable permit conditions.

Following testing, the test section will be depressurized, and the water will be discharged to a well-vegetated, upland area and/or an appropriate dewatering structure, as described in the applicable permit. Dewatering structures include geotextile filter bags and/or a straw bale structure that may or may not be lined with geotextile fabric depending on the flow rate and overall volume of the discharge. Direct discharges to surface waters will be directed through an energy dissipation device such as a splash pup. Additional best management practices, such as the use of plastic sheeting or other material to prevent scour, will be used as necessary to prevent excessive sedimentation during dewatering. For example, in areas where highly erodible soils exist, the contractor may use layers of visqueen (or similarly effective fabric) anchored in place during the discharge.

To minimize the potential for introduction and/or spread of invasive species due to hydrostatic testing activities, ONEOK proposes to discharge water to the same source watershed from which it was appropriated, unless otherwise specified in a Project Permit. If water is used to test multiple test sections, it will be relayed back to the source water through the pipeline for final discharge. Test water will not be discharged to a waterbody other than the appropriation source or a location within the same watershed, unless coordinated and permitted through the applicable agencies.

7.2.1 Discharge Flow Measurement

The volume and rate of discharge will be monitored to comply with applicable permit conditions. The discharge rate and total volume of water discharged will be measured with a flow meter (or equivalent) and recorded. At no time will the discharge rate exceed the rate specified in the applicable permits. In the event no maximum discharge rate is identified, discharges will be monitored and adjusted as necessary to avoid overwhelming the discharge structure and scouring or sediment transport from the discharge location.

7.2.2 Discharge Water Sampling

Where required by permit conditions, ONEOK will sample the water during discharge. The Contractor will assist ONEOK in obtaining these samples. Chlorinated source water will be sampled at appropriation. If chlorine levels are at or above aquatic toxicity standards, the water will not be discharged directly to surface water.

7.3 REGULATORY NOTIFICATION AND REPORTING

ONEOK will notify appropriate agencies of the time of appropriations and/or discharges in accordance with applicable permit conditions. Reports regarding the volume and quality of the water withdrawn will be submitted by ONEOK if required by the applicable permits.

8.0 REVEGETATION

Permanent revegetation will involve preparing the seedbed and seeding disturbed, non-agricultural areas. The approved construction workspaces will be seeded as soon as possible after backfilling, weather and soil conditions permitting. With the exception of wetland areas, fertilizer and pH modifying agents (e.g., lime) will be applied as specified by ONEOK, in consultation with appropriate state and federal agencies and landowners. Refer to ONEOK's *Revegetation Plan* for specific information.

Revegetation will occur in accordance with stormwater permits and will be considered to have reached final stabilization when all soil disturbing activities are complete, and a uniform perennial vegetative cover with a density of 70 percent of the typical or existing background vegetative cover for the area has been established on disturbed unpaved areas and areas not covered by permanent structures.

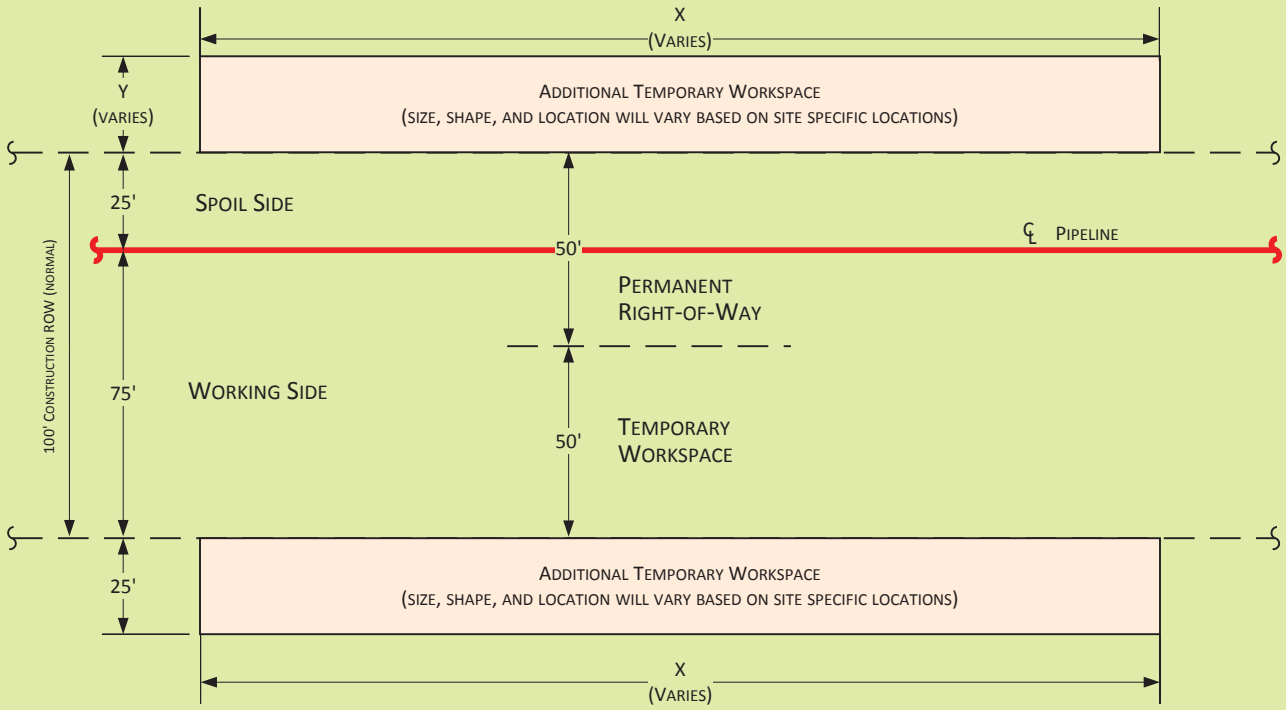
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Construction Mitigation and Restoration Plan

Figures

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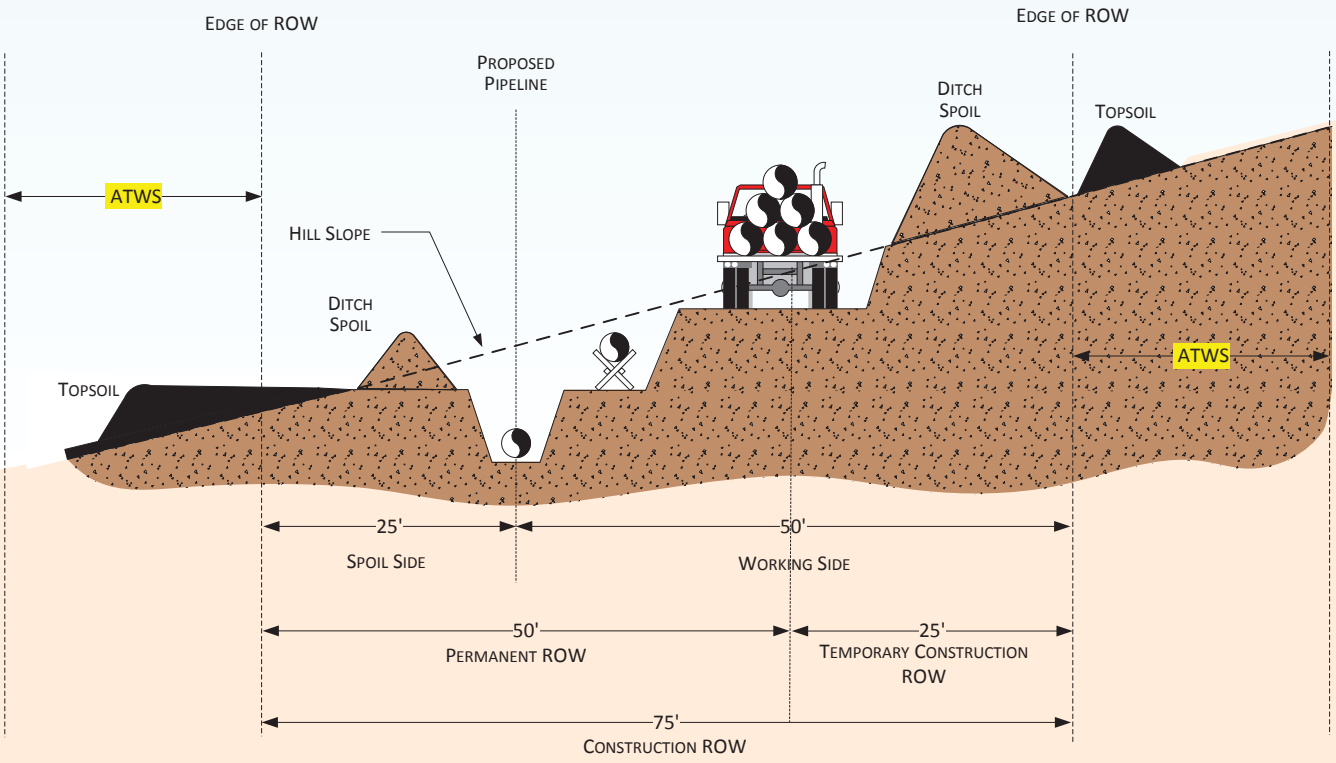
For environmental review purposes only.

ONEOK

Figure 1
Typical Construction Layout

ERM

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NOTES:

1. GRADE TO BE RESTORED AS NEAR AS PRACTICABLE TO PRECONSTRUCTION CONDITIONS DURING RESTORATION.

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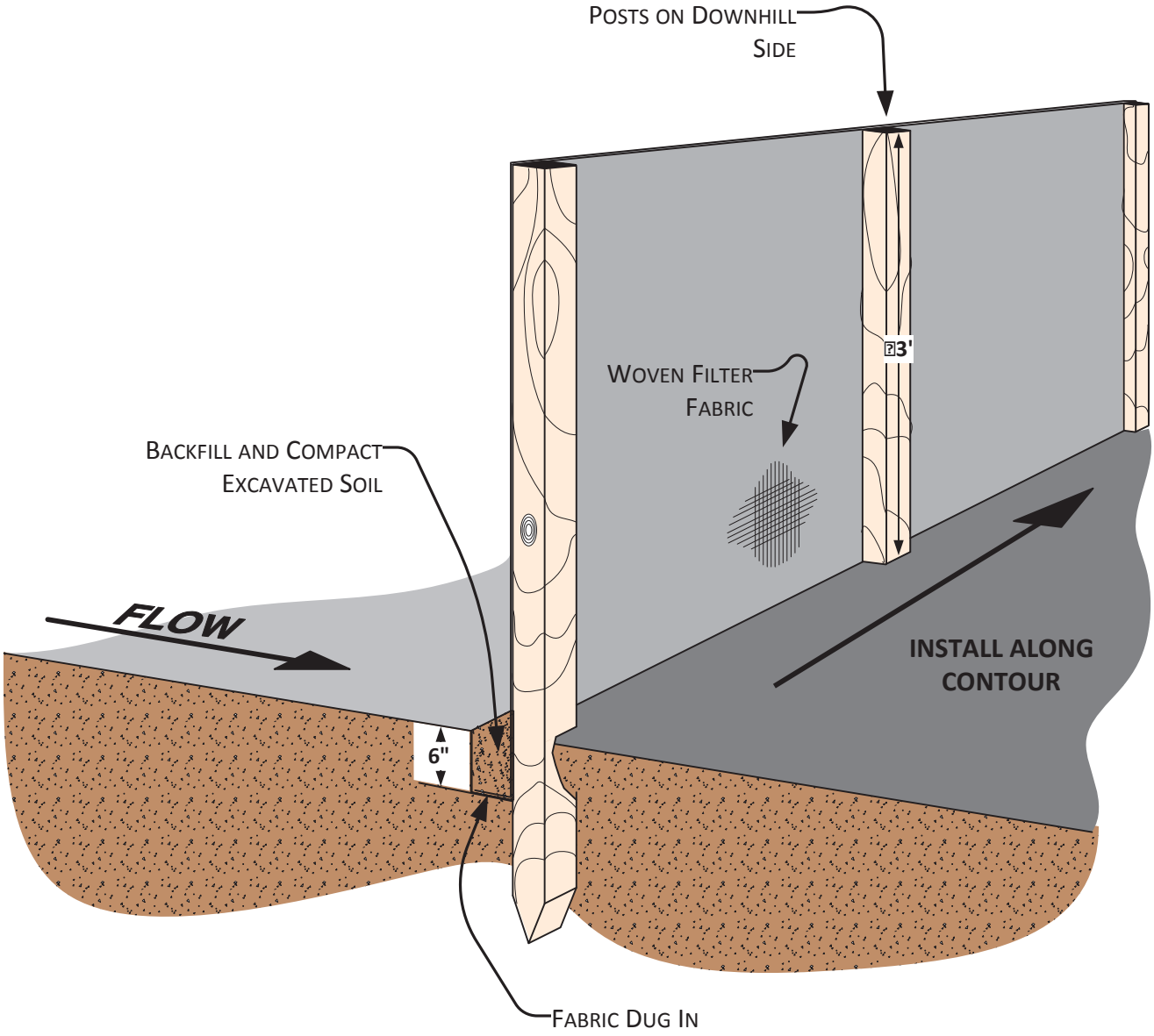
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Figure 2

Typical Construction ROW
on Sloping Terrain

ERM

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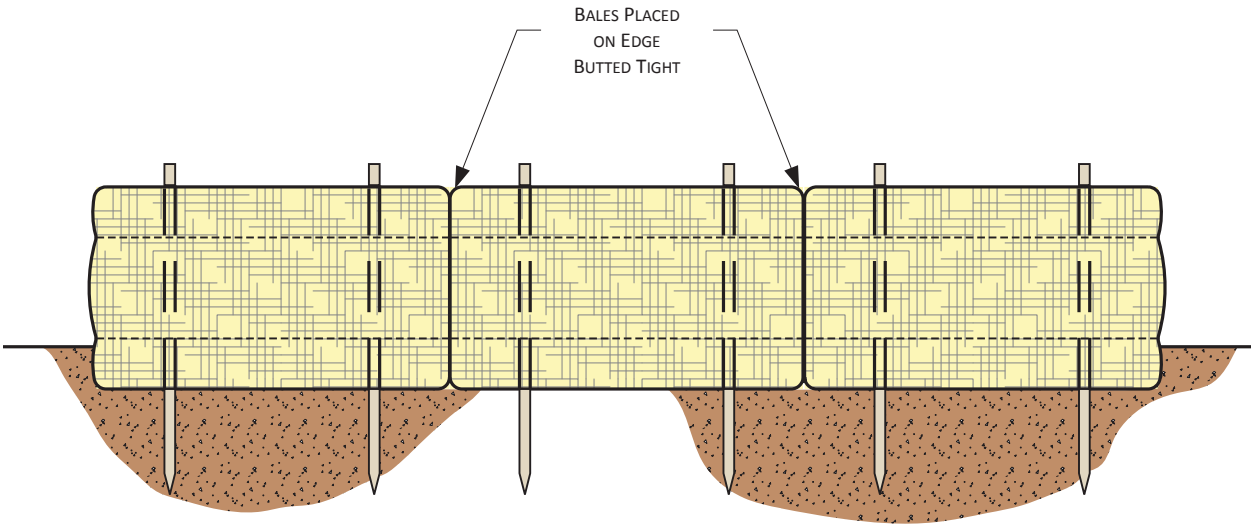
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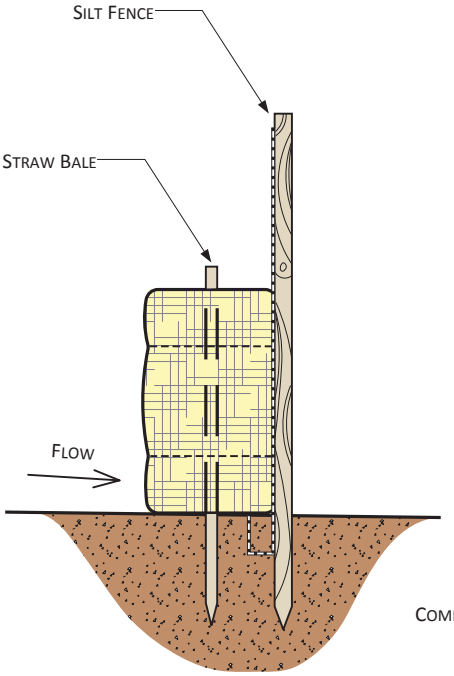
Figure 3

Typical Silt Fence Installation
(OKS-7901-ENV-01)

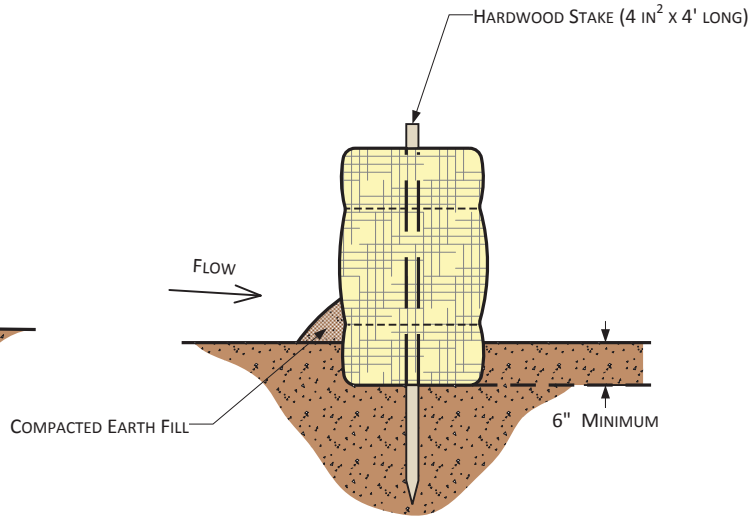
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Straw Bales & Silt Fence



Straw Bales Only

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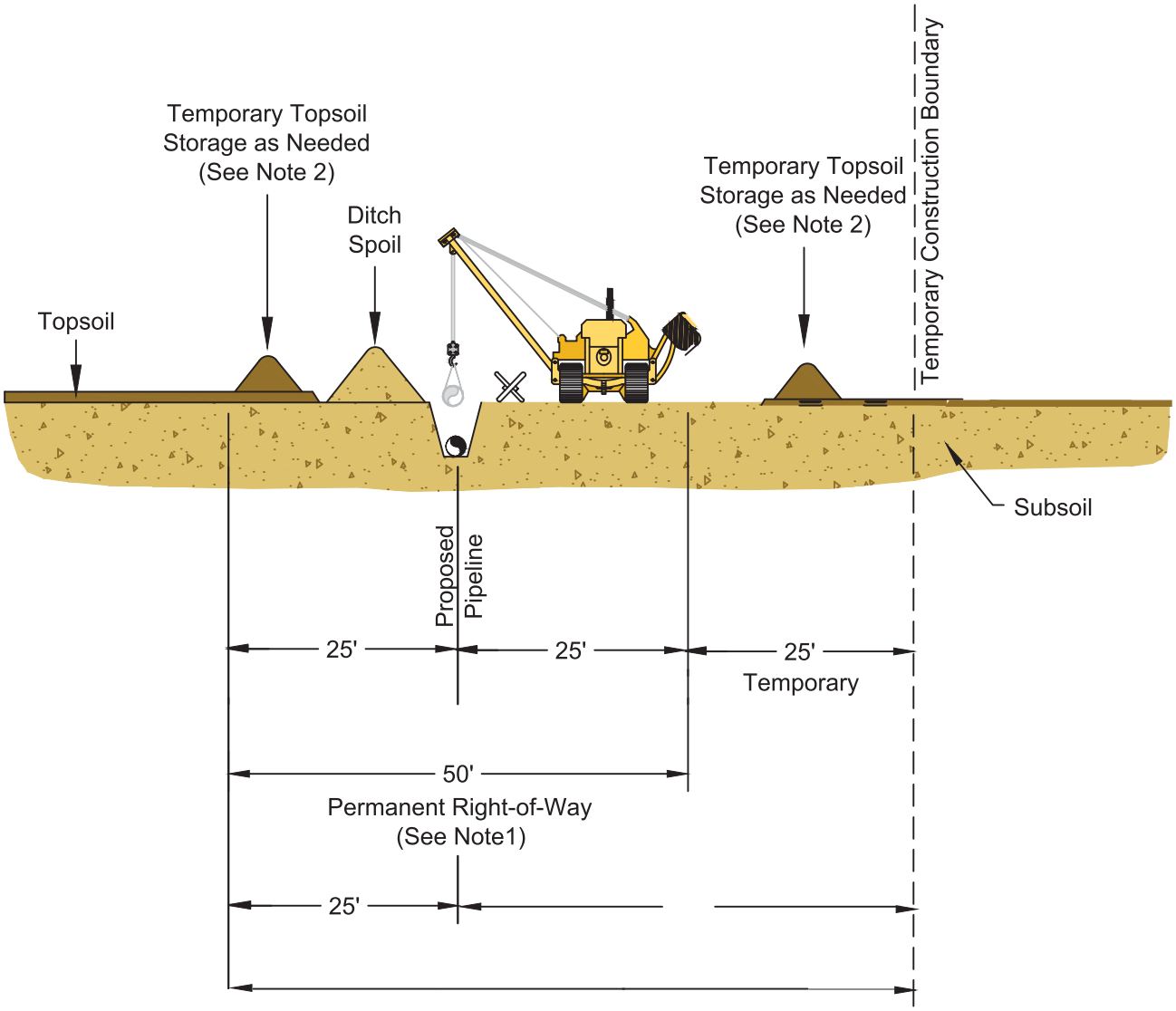
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Figure 4

Typical Straw Bale Installation
(OKS-7901-ENV-02)

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Notes:

1. Construction right-of-way will typically be 75 feet wide. The spoil side will be approximately 25 feet wide. The working side will be 50 feet wide.

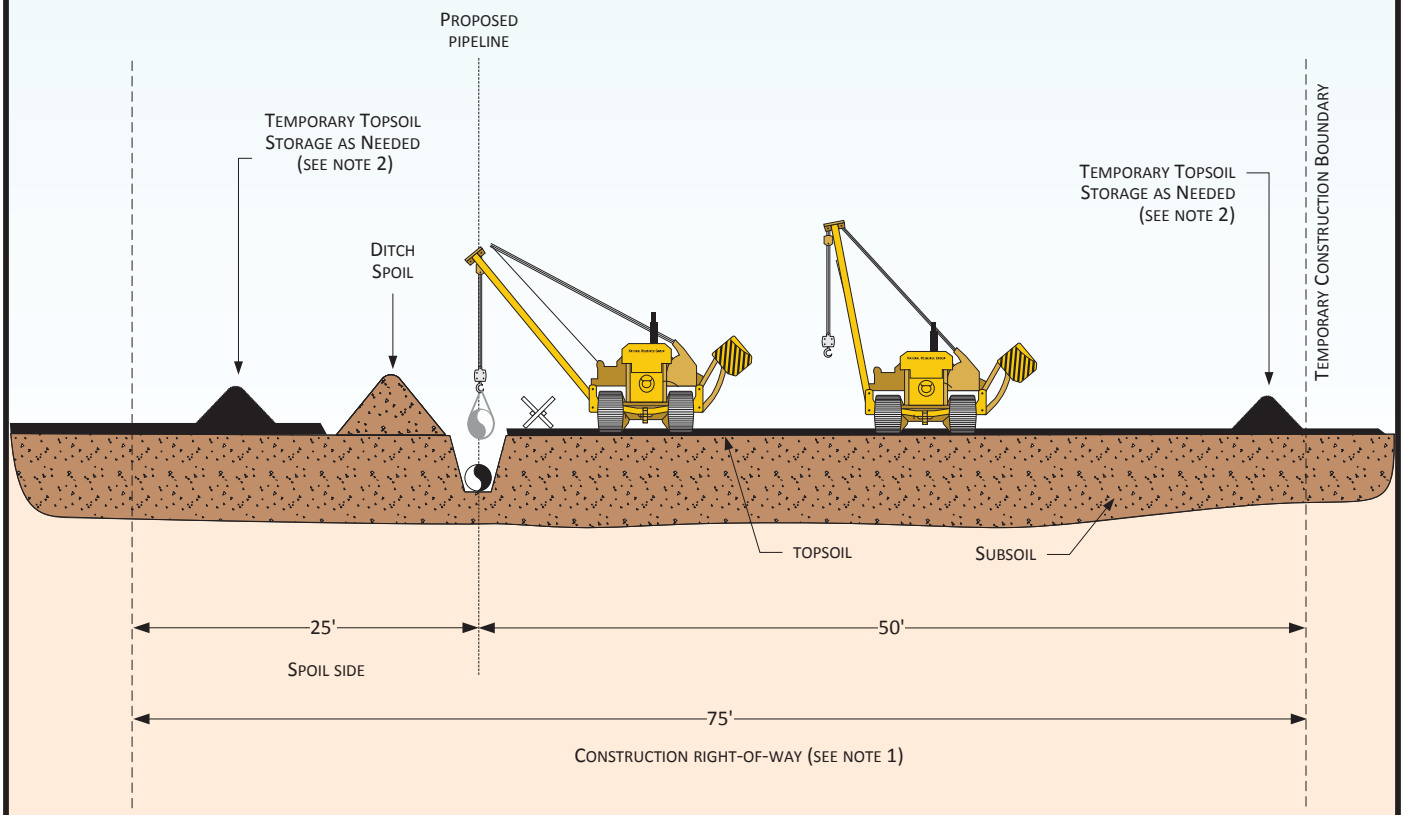
2. This drawing reflects "Full Right of Way " topsoil stripping procedure. Stockpile topsoil separately from ditch spoil as shown or in other configurations approved by the company.

ONEOK

Figure 5
Typical Topsoil Segregation Trench
Right-of-Way
(OKS-7901-CONST-01c)

ERM

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PROFILE

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 75' WIDE. THE SPOIL SIDE WILL BE APPROXIMATELY 25' WIDE. THE WORKING SIDE WILL BE 50' WIDE.
2. THIS DRAWING REFLECTS "DITCH PLUS SPOIL" TOPSOIL STRIPPING PROCEDURE. STOCKPILE TOPSOIL SEPARATELY FROM DITCH SPOIL AS SHOWN OR IN OTHER CONFIGURATIONS APPROVED BY THE COMPANY.

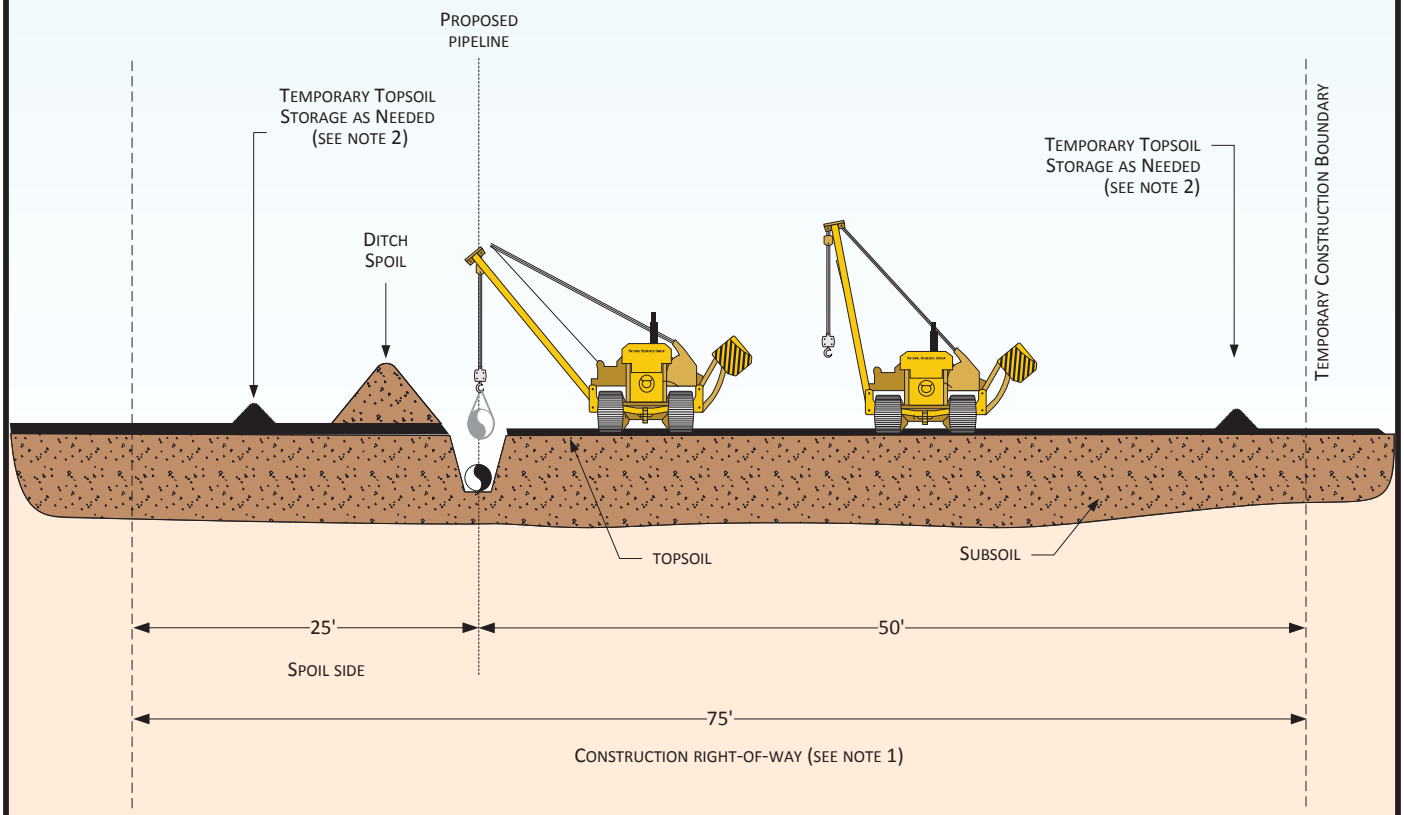
Figure 6

Typical Topsoil Segregation
Ditch Plus Spoil

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_6_Typical_Topsoil_Segregation.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



PROFILE

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 75' WIDE. THE SPOIL SIDE WILL BE APPROXIMATELY 25' WIDE. THE WORKING SIDE WILL BE 50' WIDE.
2. THIS DRAWING REFLECTS "TRENCH LINE ONLY" TOPSOIL STRIPPING PROCEDURE. STOCKPILE TOPSOIL SEPARATELY FROM DITCH SPOIL AS SHOWN OR IN OTHER CONFIGURATIONS APPROVED BY THE COMPANY.

ONEOK

Figure 7

Typical Topsoil Segregation
Trench Line Only

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_7_Typical_Topsoil_Segregation.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

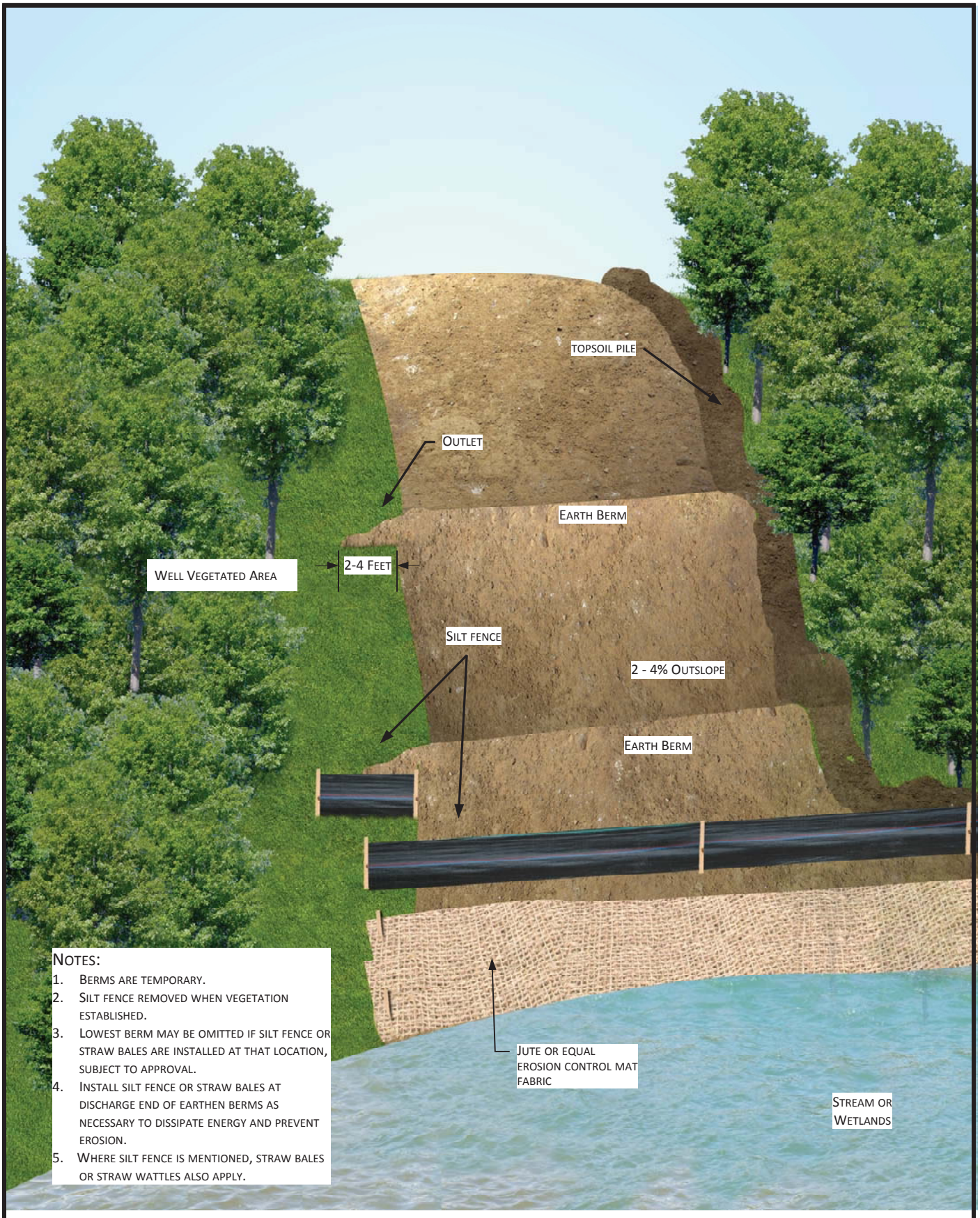


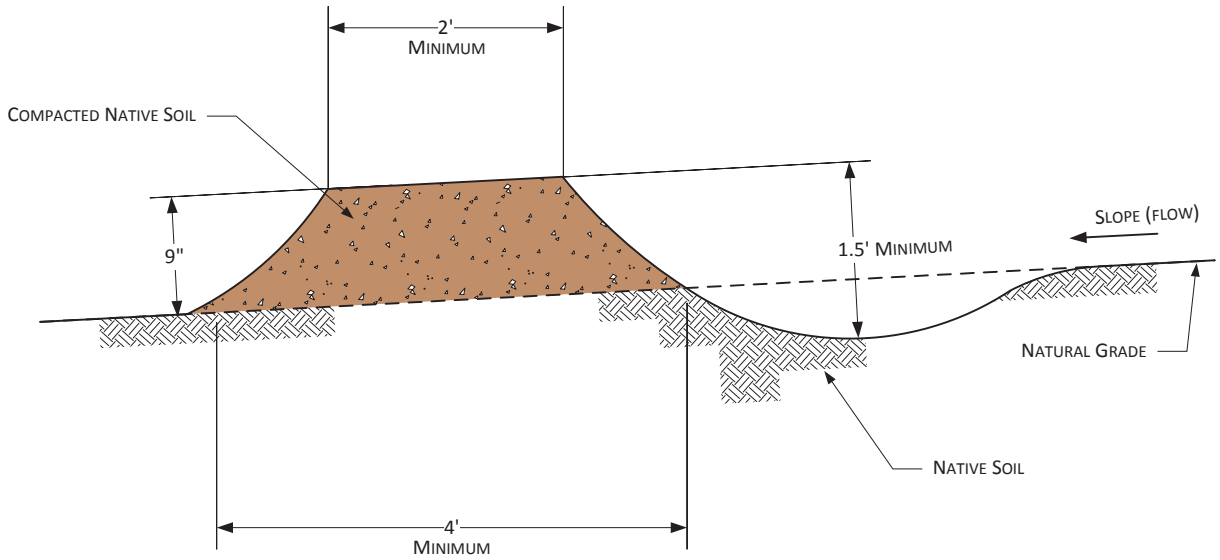
Figure 8

Typical Temporary Berms
Perspective View

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_8_Berms_Perspective_View.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



NOTES

1. BERMS SHALL BE CONSTRUCTED WITH 2 TO 4 PERCENT OUTSLOPE.
2. BERMS SHALL BE OUTLETED TO WELL VEGETATED STABLE AREAS, SILT FENCES, STRAW BALES OR ROCK APRONS.
3. BERMS SHALL BE SPACED AS DESCRIBED IN CONSTRUCTION SPECIFICATIONS.
4. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.

For environmental review purposes only.

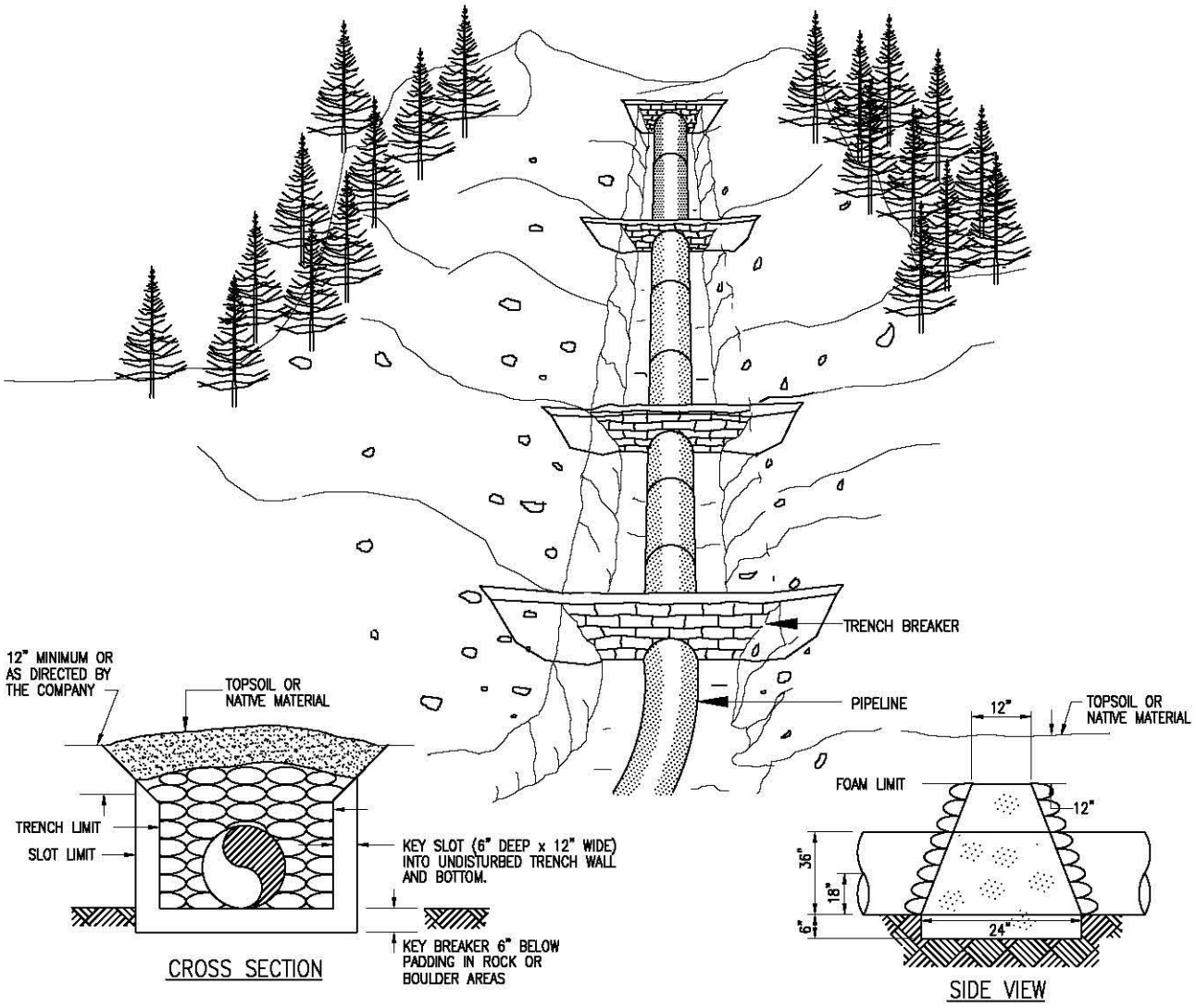
Figure 9

Typical Temporary or Permanent Berms
Elevation View

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_9_Berms_Elevation_View.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



NOTES:

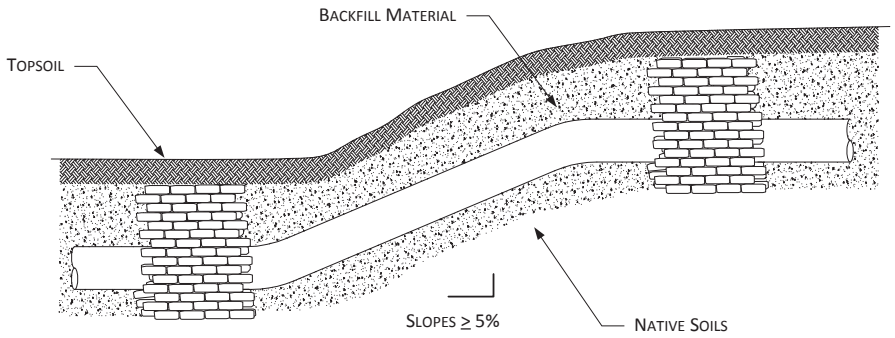
1. TRENCH BREAKERS SHALL BE INSTALLED:
   - ON SLOPES ALONG THE TRENCH LINE WHERE THE NATURAL DRAINAGE PATTERN, PROFILE, AND TYPE OF BACKFILL MATERIAL MAY RESULT IN LOSS OF BACKFILL MATERIAL OR ALTERATION OF THE NATURAL PATTERN;
   - AT THE BASE OF SLOPES ADJACENT TO WATERBODIES AND WETLANDS;
   - WHERE NEEDED TO AVOID DRAINING A WETLAND;
   - ON UPLAND SLOPES, AT THE SAME SPACING AS SLOPE BREAKERS AND UP SLOPE OF SLOPE BREAKERS;
   - IN CULTIVATED LAND AND RESIDENTIAL AREAS WHERE PERMANENT SLOPE BREAKERS ARE NOT TYP. INSTALLED, AT THE SAME SPACING AS IF PERMANENT SLOPE BREAKERS WERE REQUIRED.
2. EACH SAND BAG SHALL BE OF DIMENSION 14"X26" AND SHALL BE WOVEN POLY SPECIFICATION. EACH BAG SHALL BE FILLED TO 20" HIGH WITH 3/8" CLEAN, WASHED, AND SCREENED SAND AND FILLED TO A MINIMUM OF 55LBS.
3. BREAKER SPACING AND CONFIGURATION MAY CHANGE AS DETERMINED BY COMPANY OR SIMILARLY QUALIFIED PROFESSIONAL.
4. ALL MATERIALS SHALL BE SUPPLIED BY CONTRACTOR.
5. INSTALL ONE TRENCH BREAKER UNDER EVERY SLOPE BREAKER.

Figure 10

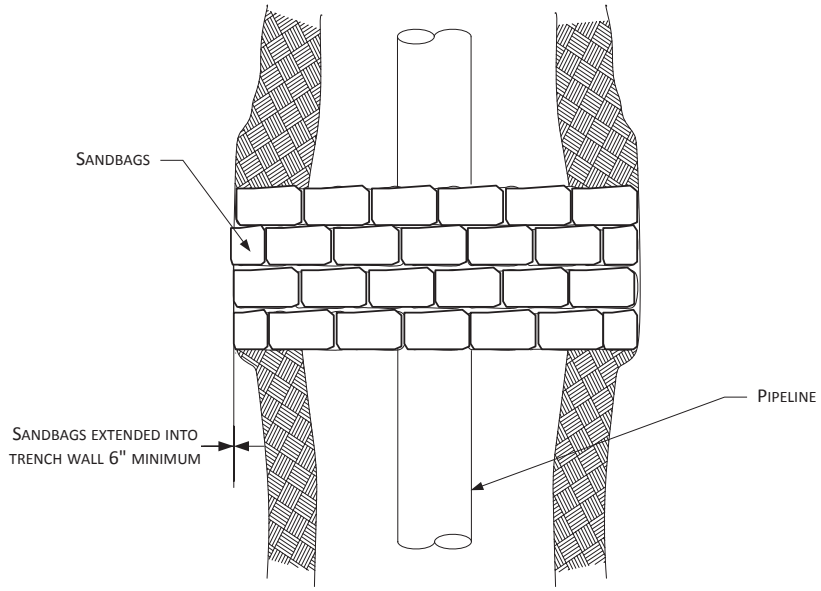
Typical Trench Breaker Perspective View

(OKS-7901-CONST-07)

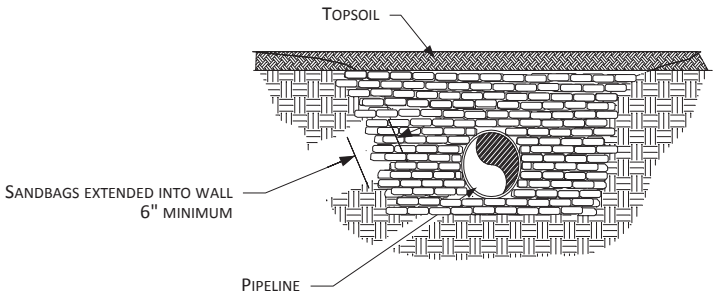
M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_5_Typical_Topsoil_Segregation.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



PROFILE VIEW
(NOT TO SCALE)



PLAN VIEW
(NOT TO SCALE)



FACE VIEW
(NOT TO SCALE)

NOTES

1. BAGS WILL NOT BE FILLED WITH TOPSOIL
2. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS
3. STAGGER COURSES OF BAGS

For environmental review purposes only.

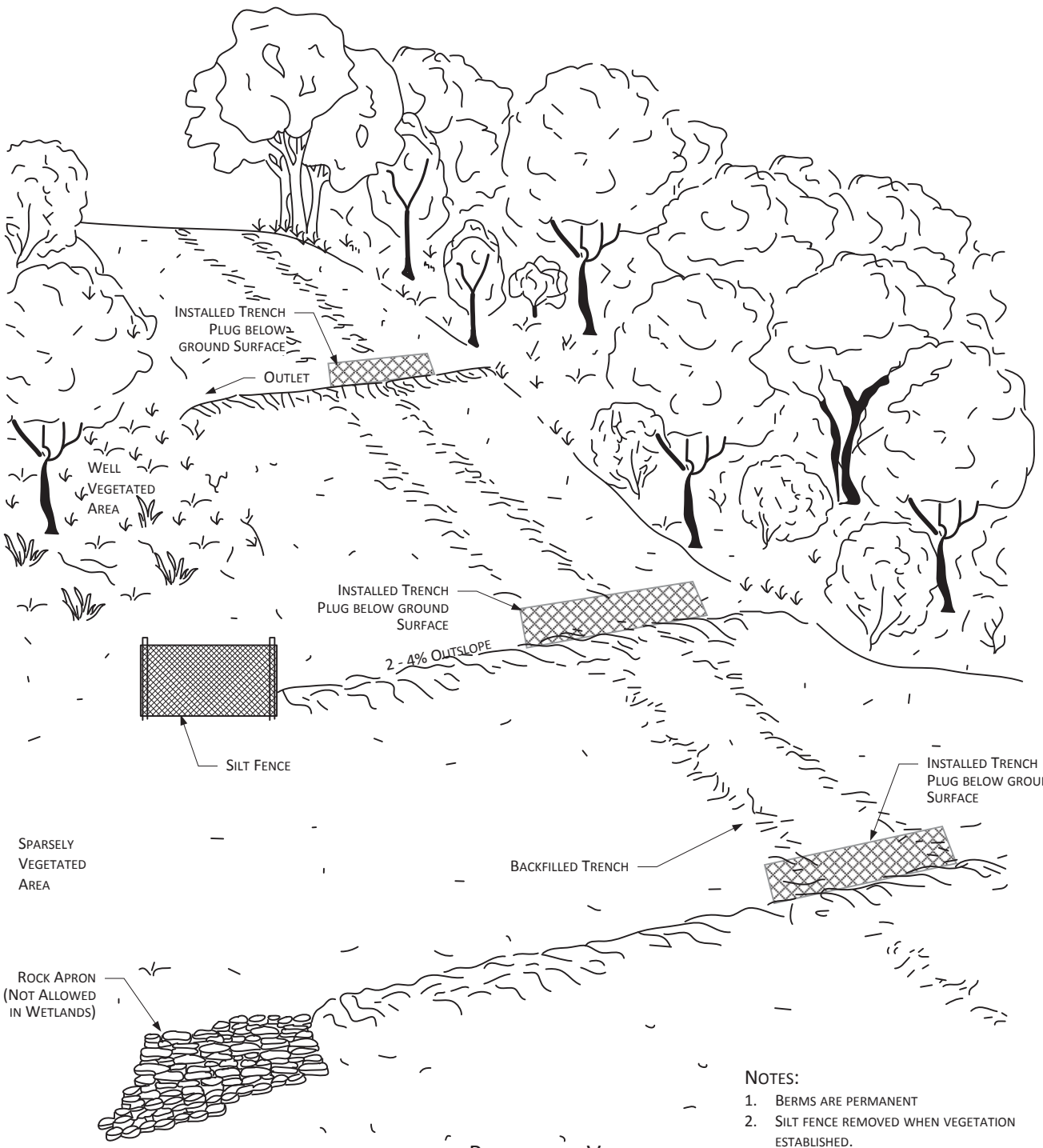
Figure 11

Typical Trench Breakers
Plan & Profile Views

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMPLLC_CMRP\Fig_11_Trench_Breaker_Plan_Profile_View.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting



Perspective View
(not to scale)

Slope %	Approximate Spacing (ft)
5-15	300
15-30	200
>30	<100

Notes:

1. Berms are permanent
2. Silt fence removed when vegetation established.
3. Lowest berm may be omitted if silt fence or straw bales are installed at that location, subject to approval.
4. Install silt fence or straw bales at discharge end of earthen berms as necessary to dissipate energy and prevent erosion.

For environmental review purposes only.

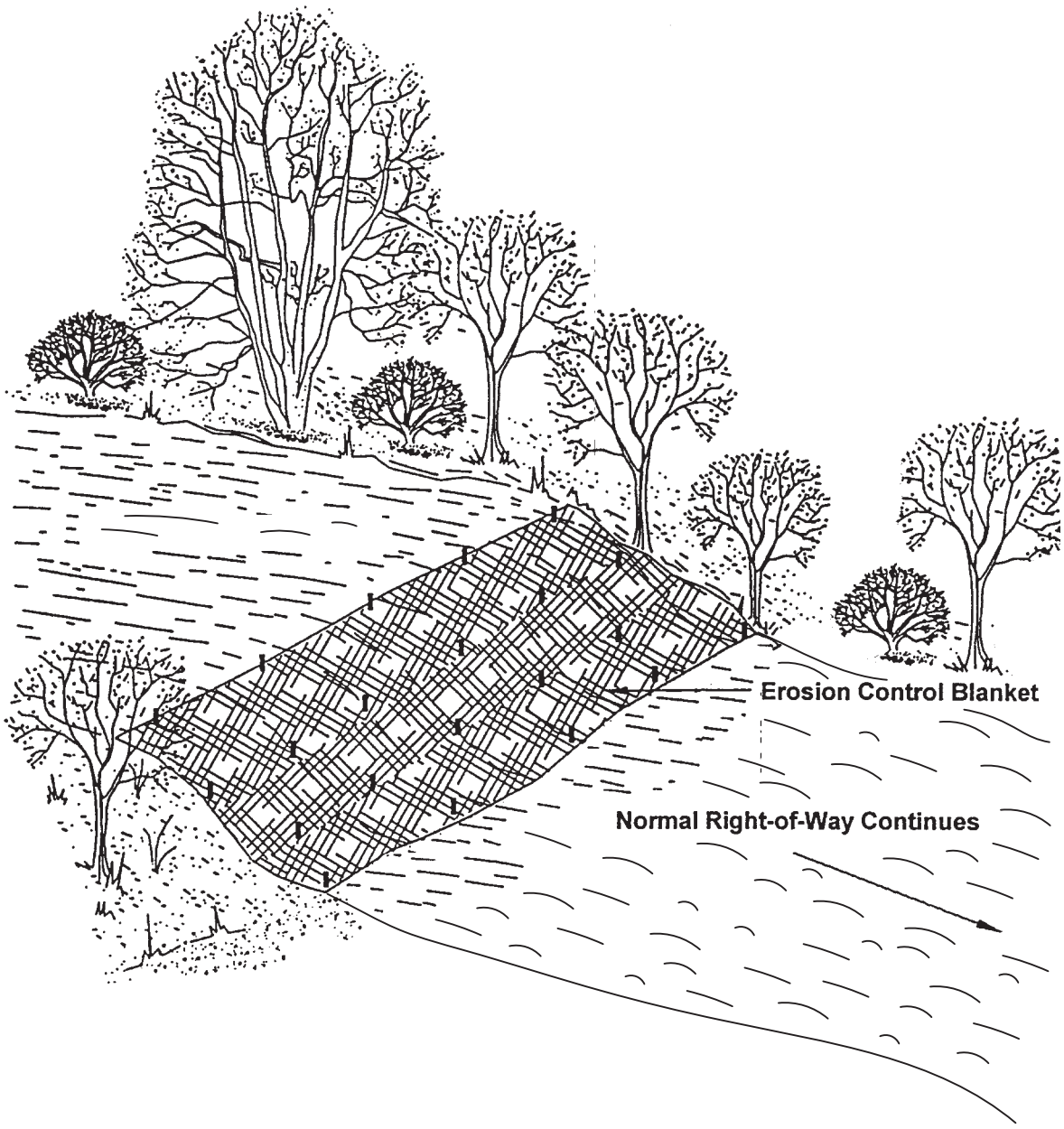
Figure 12

Permanent Slope Breakers
Perspective View

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_12_Slope_Breakers_Perspective_View.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



NOTES

1. INSTALL EROSION CONTROL BLANKET AS PER MANUFACTURER'S SPECIFICATIONS.
2. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.

For environmental review purposes only.

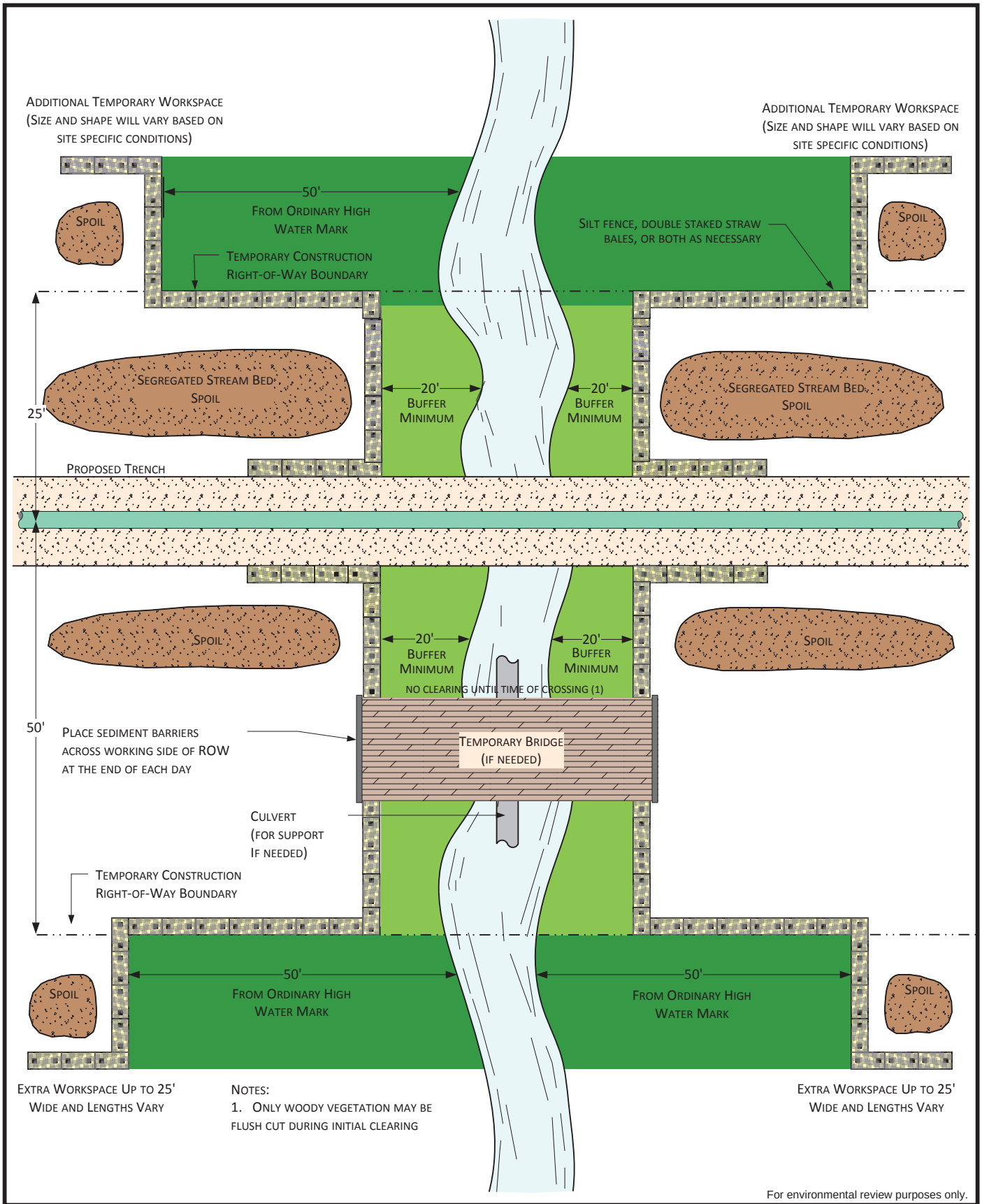
ONEOK

Figure 13

Erosion Control Blanket - Steep Slopes (≥30%)

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_13_Erosion_Control_Blanket.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



For environmental review purposes only.

Figure 14

Typical Waterbody Crossing
Open Cut - Wet Trench Method

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_14_Waterbody_Wet_Trench.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

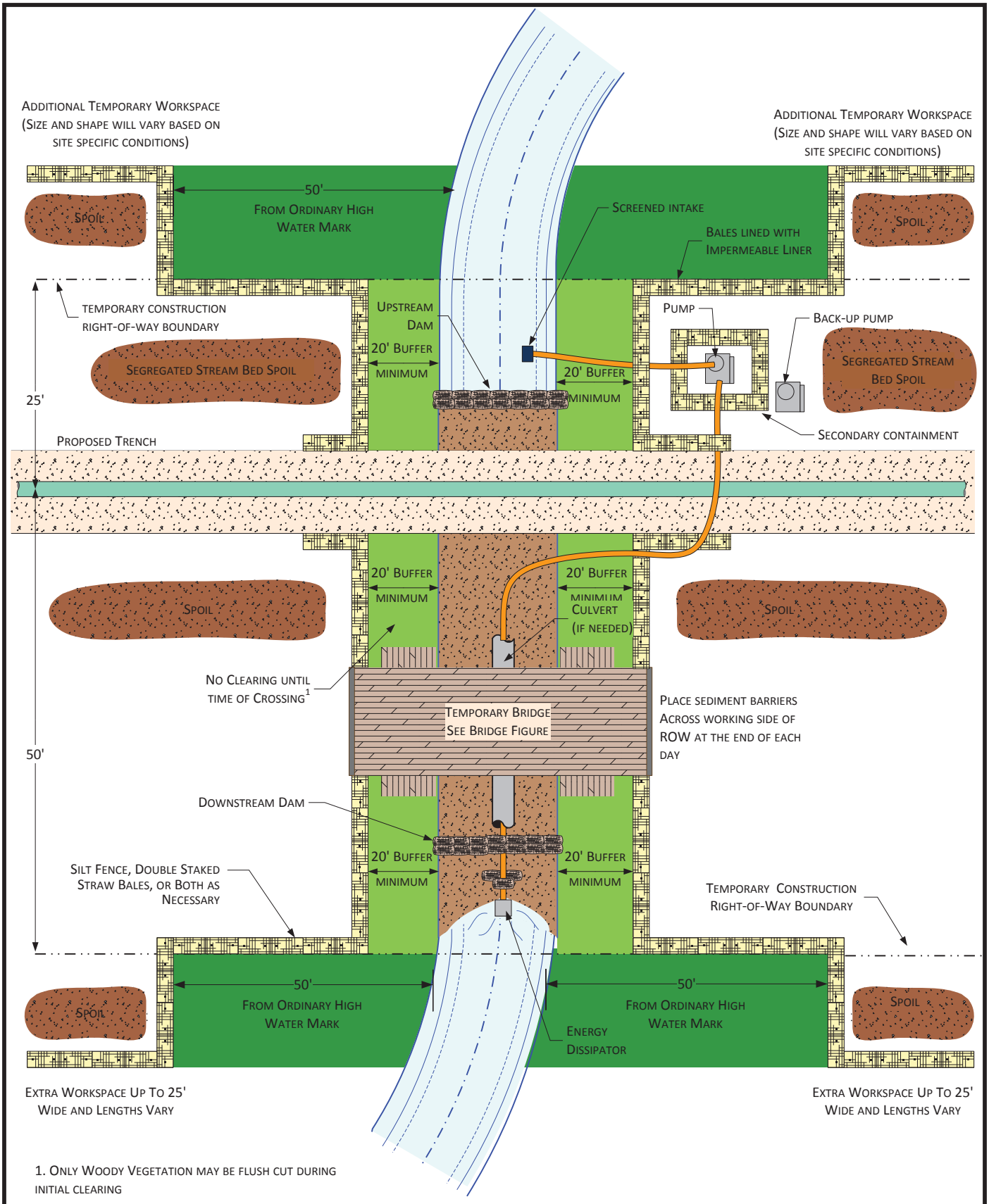
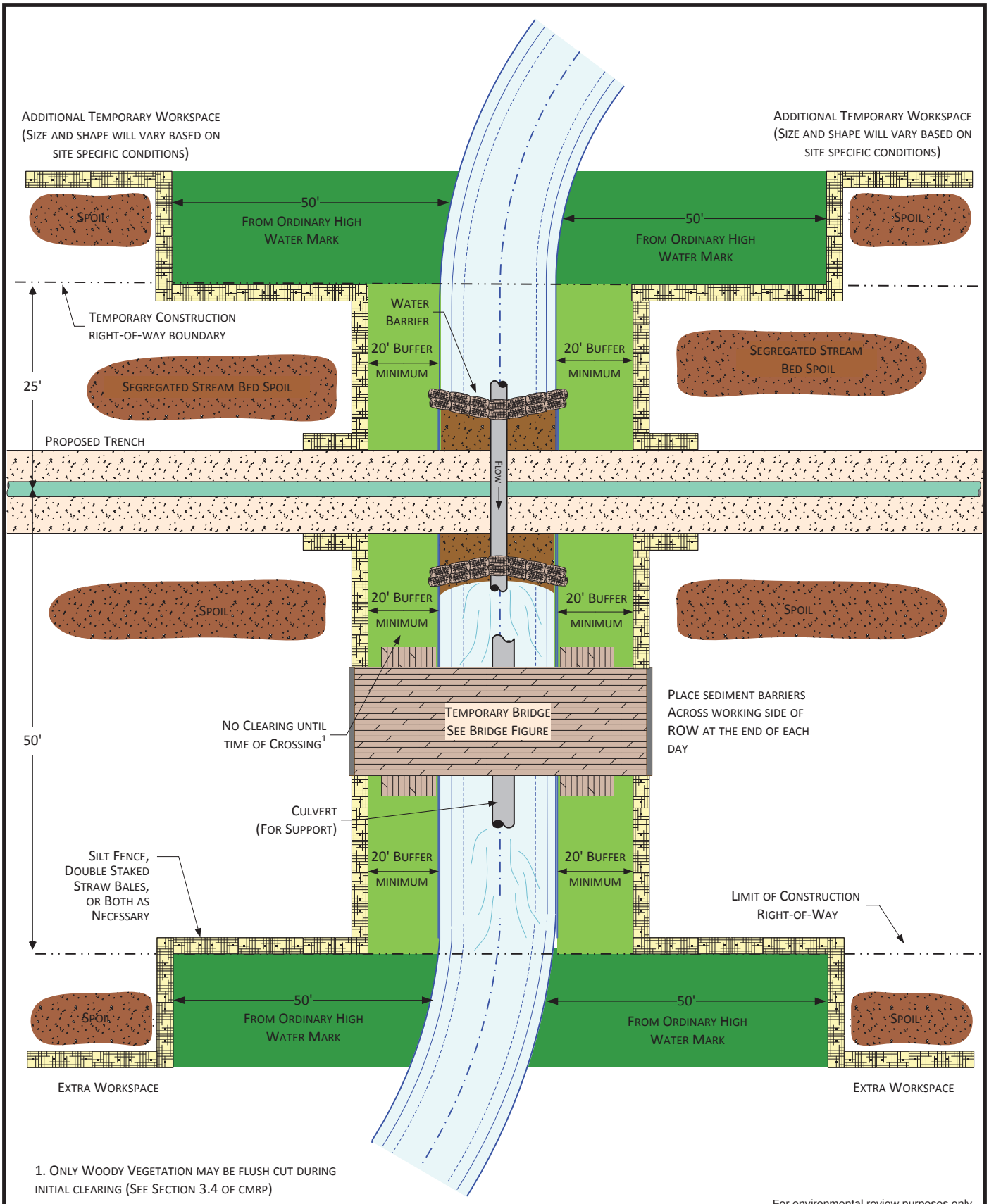


Figure 15
Typical Waterbody Crossing
Dam and Pump Method

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_15_Waterbody_Dam_Pump.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



1. ONLY WOODY VEGETATION MAY BE FLUSH CUT DURING INITIAL CLEARING (SEE SECTION 3.4 OF CMRP)

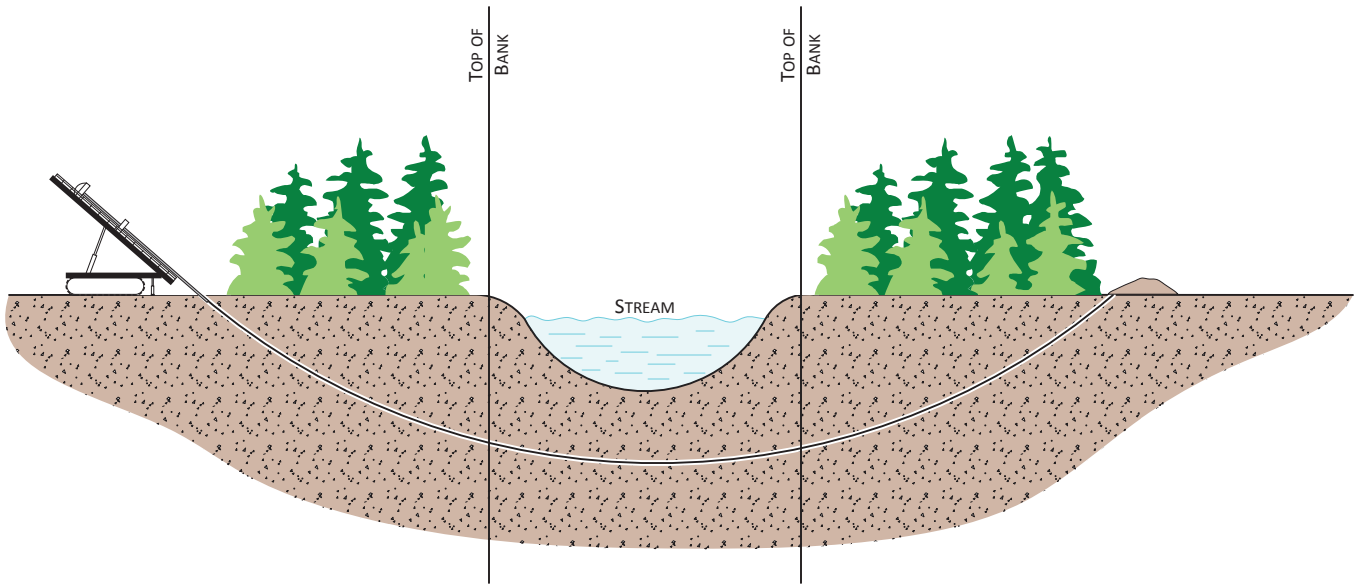
For environmental review purposes only.

Figure 16
Typical Waterbody Crossing
Flume Method

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMPR\Fig_16_Waterbody_Flume.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



For environmental review purposes only.

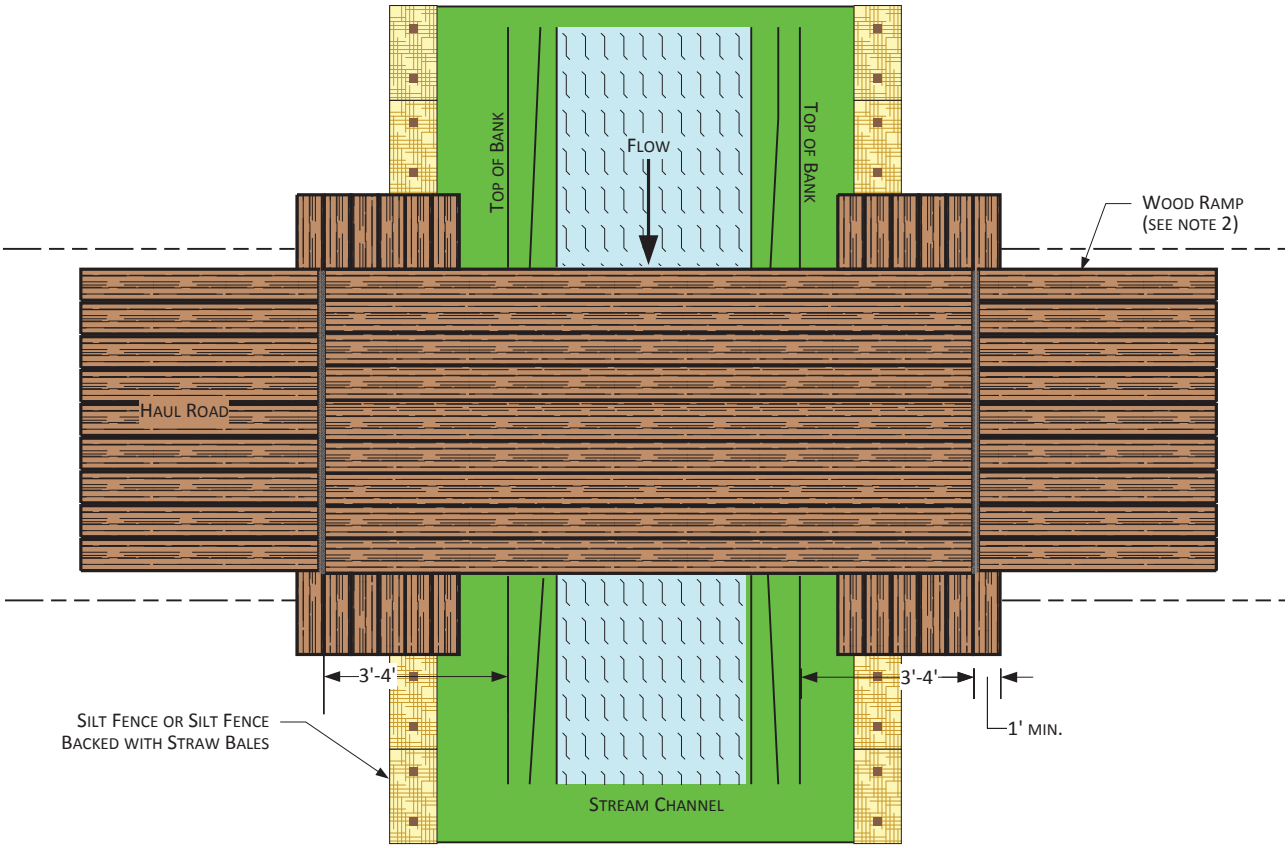
Figure 17
Typical Waterbody Crossing
Directional Drill Method

ONEOK

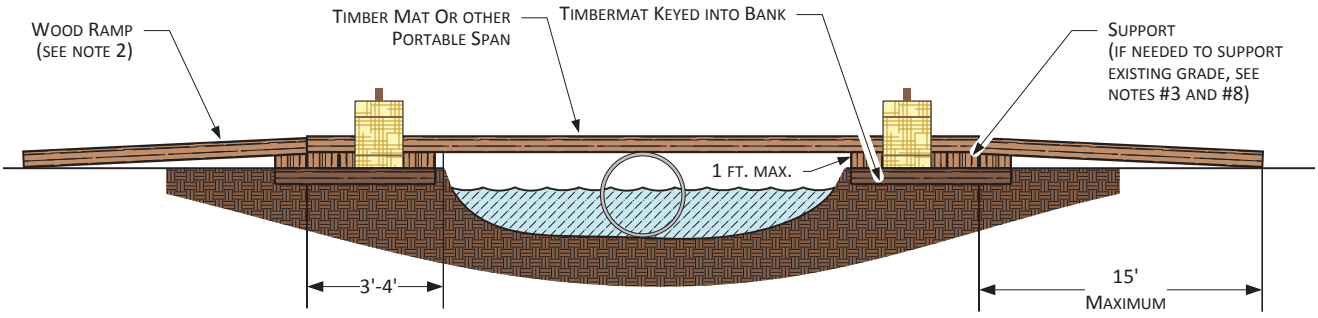
ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_17_Waterbody_Directional_Drill.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

Plan View



Profile View



Notes:

1. Inspect bridge opening periodically and following rainfalls of over ½". Remove any debris restricting flow and deposit it at an upland site outside of floodplain.
2. If physical circumstances prohibit wood or metal ramps, earthen ramps may be used as approved.
3. Inspect bridge elevation so bridge remains supported above high bank and does not sink into bank.
4. The culvert support must be anchored to the stream bottom and may not be supported with fill.
5. The bridge must span from top of bank to top of bank.
6. Additional support must be added on top of bank and under span if initial support starts to settle.
7. Erosion and sedimentation control measures shall be inspected and maintained in accordance with the company's Environmental Mitigation Plan

For environmental review purposes only.

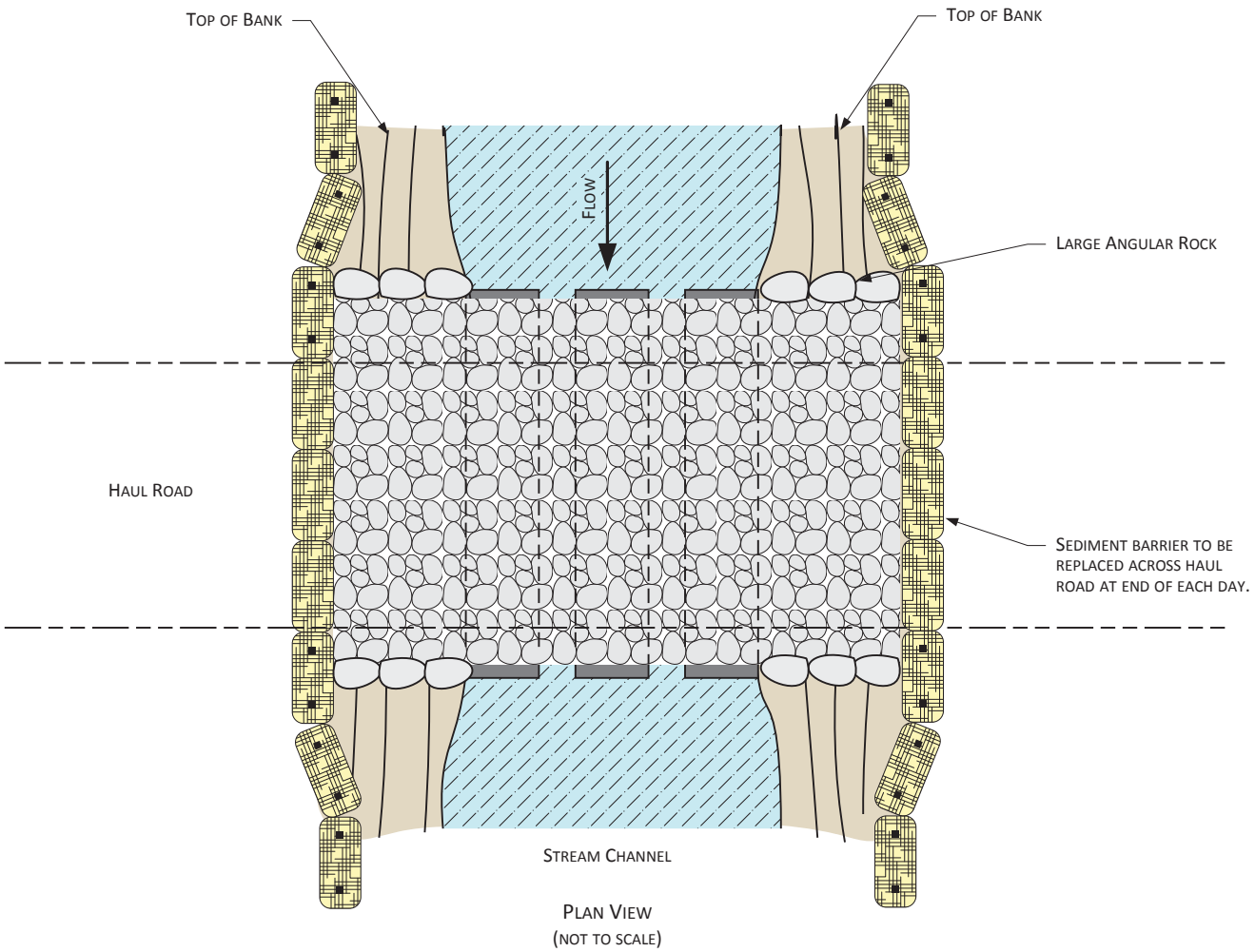
Figure 18

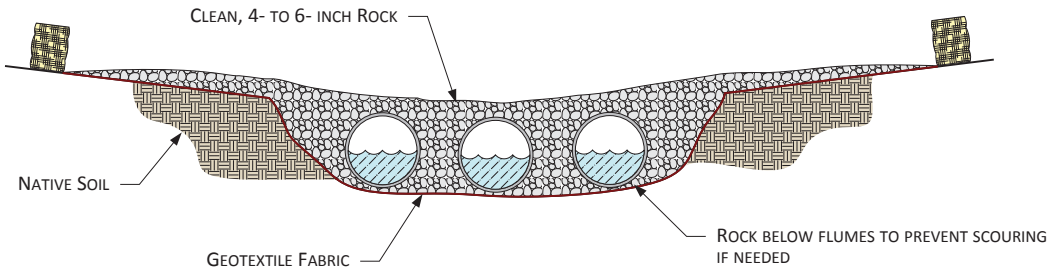
Typical Span Type Bridge
With or Without Instream Support
(OKS-7901-ENV-04)

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_18_Span_Type_Bridge.vsd	Scale: NTS	Date: 5/20/2007	Revised: 08/17/2018	Drawn By: AGPeterson





NOTES:

1. STEEL FLUME PIPE(S) SIZED TO ALLOW FOR STREAM FLOW AND EQUIPMENT LOAD.
2. STRAW BALES (OR EQUIVALENT) SHALL BE PLACED ACROSS BRIDGE ENTRANCE EVERY NIGHT.
3. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.

For environmental review purposes only.

Figure 19

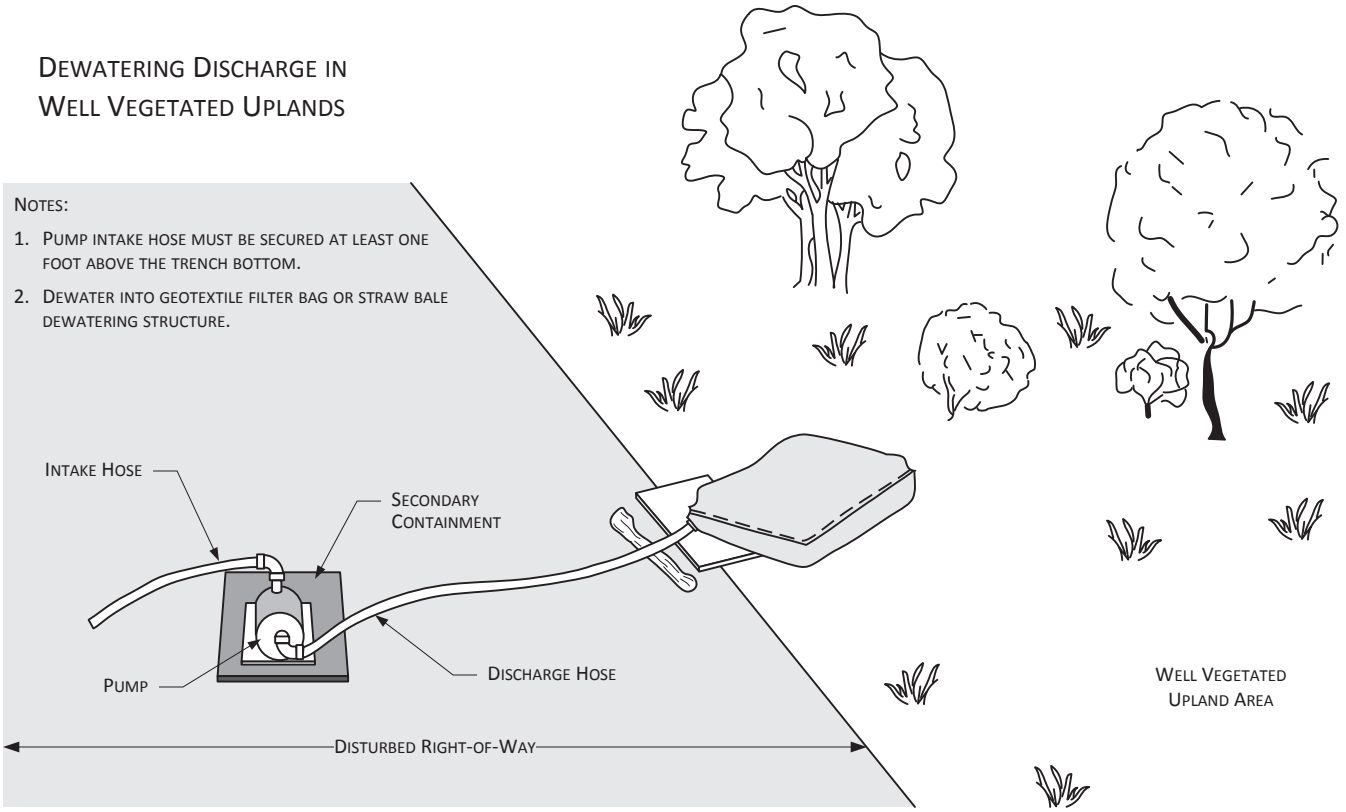
Typical Rock Flume Bridge
Method 4
(OKS-7901-ENV-03d)

ONEOK

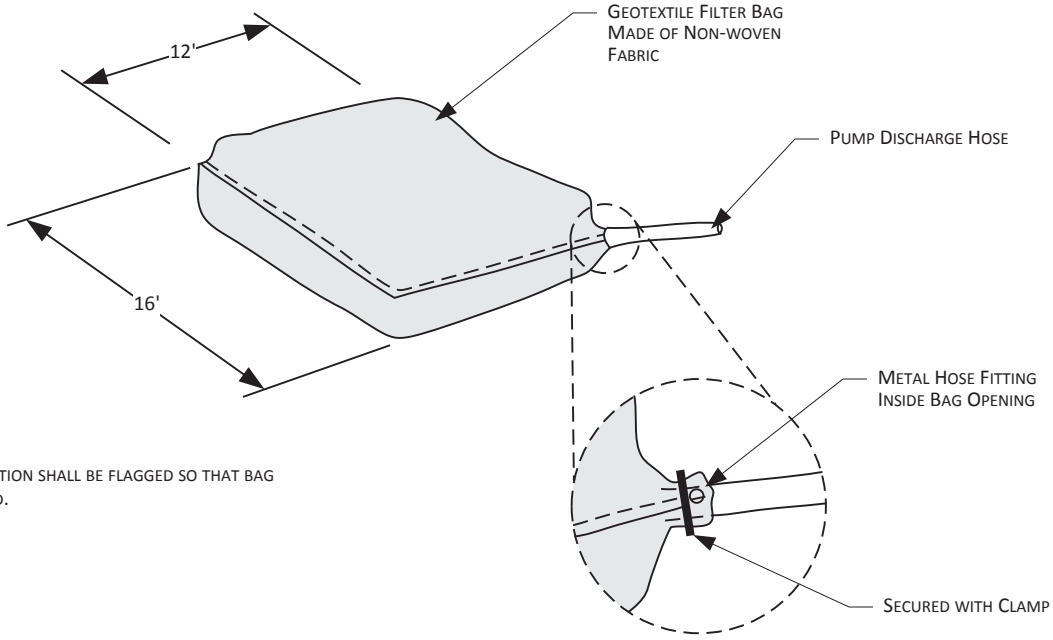
ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_19_Rock_Flume_Bridge.vsd	Scale: NTS	Date: 5/20/2007	Revised: 08/17/2018	Drawn By: AGPeterson

Dewatering Discharge in Well Vegetated Uplands



Geotextile Filter Bag



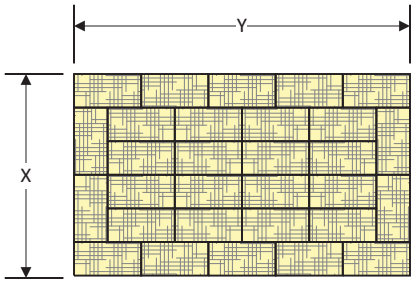
Note:

1. Filter bag location shall be flagged so that bag can be removed.

For environmental review purposes only.

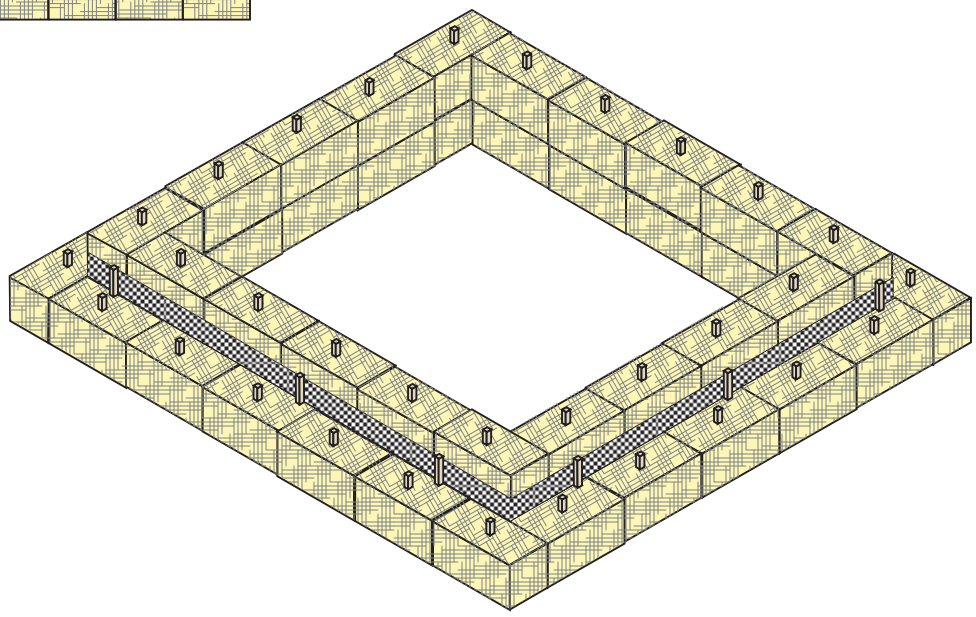
Figure 20
Typical Dewatering Measures

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_20_Dewatering_Measures.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

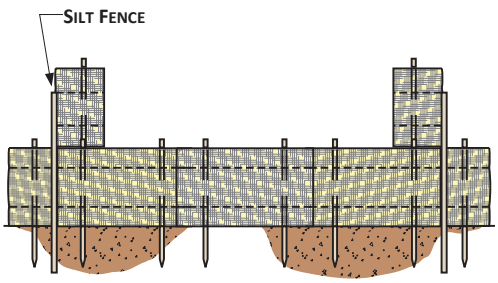


NOTES

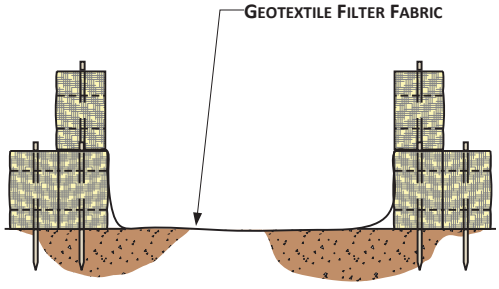
1. ARRANGE THE STRAW BALES TO THE X AND Y DIMENSIONS AS SPECIFICIED BELOW.
2. IF BOTTOM OF STRUCTURE IS NOT LINED WITH STRAW BALES (OPTION 1), LINE ENTIRE STRUCTURE WITH GEOTEXTILE FILTER FABRIC.



PERSPECTIVE VIEW



OPTION 1



OPTION 2

MINIMUM SUMP DIMENSIONS (FEET)		MAXIMUM PUMPING RATE
X	Y	GALLONS PER MINUTE
10	20	300
15	20	350
20	20	400
20	25	450
25	25	500
25	30	550
30	30	660

For environmental review purposes only.

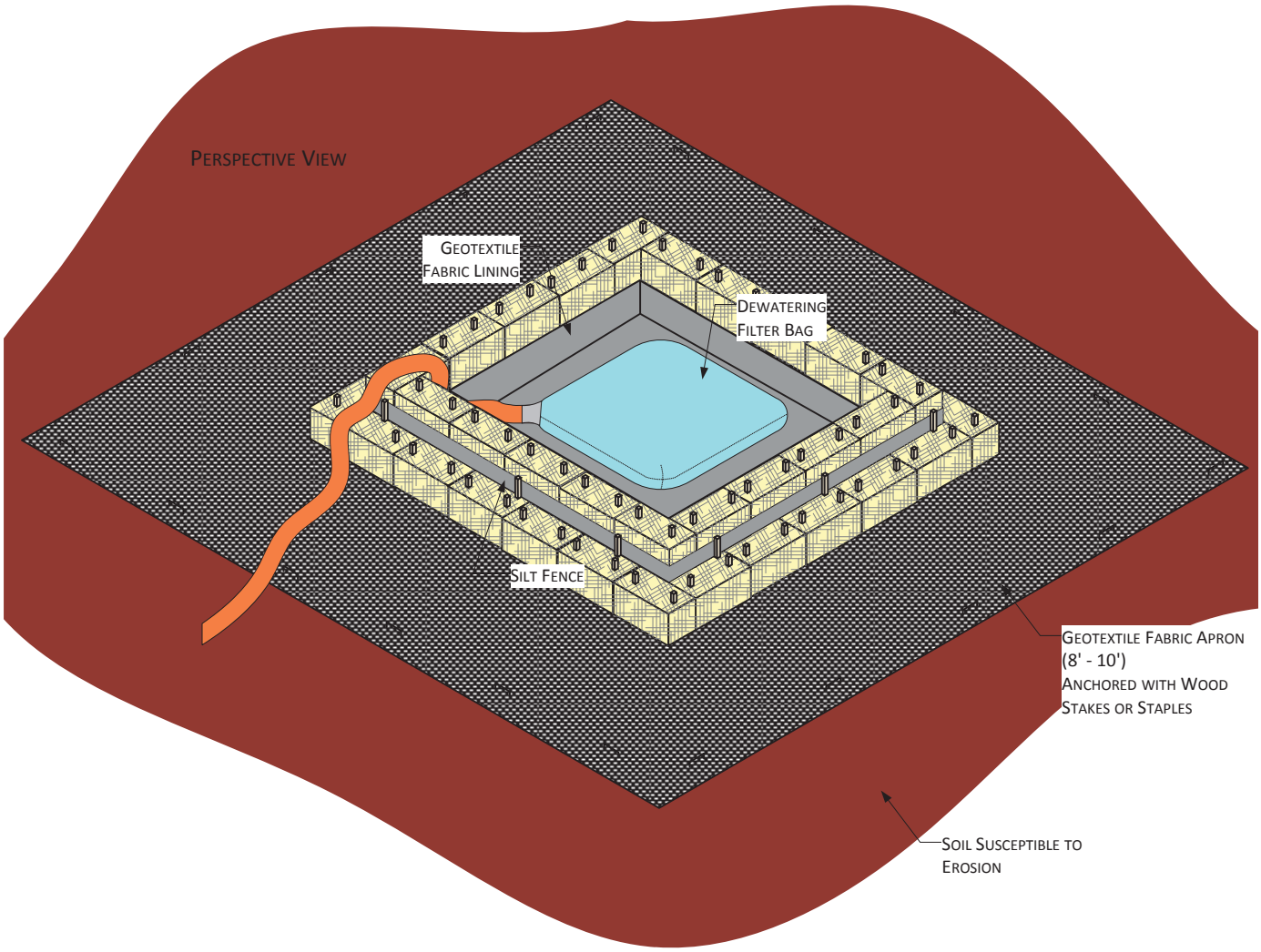
Figure 21

Straw Bale Dewatering Structure
(OKS-7901-ENV-05)

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_21_Straw_Bale_Dewatering.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting



Construct Dewatering Structure to accommodate anticipated pumping rates. See example below.

Example Pumping rate = 200 g.p.m.
Storage volume (c.f.) = 16 x 200 g.p.m. = 3200 c.f.
Height of straw bale structure = 3 feet (2 bales stacked) (based on height of bales, not silt fence)
Inside dimensions of structure = 33 x 33 feet square

Notes:

1. Silt fence ends must be wrapped to join two sections.
2. Install silt fence 2 inches above top of straw bales, and anchor a minimum of 8 inches straight down.
3. Spacing between silt fence post stakes must be 4 feet or less.
4. Dewatering intake hose supported at least 1 foot from bottom of trench being dewatered.
5. Erosion and sedimentation control measures shall be inspected and maintained in accordance with the company's upland erosion control, revegetation, and maintenance plan.

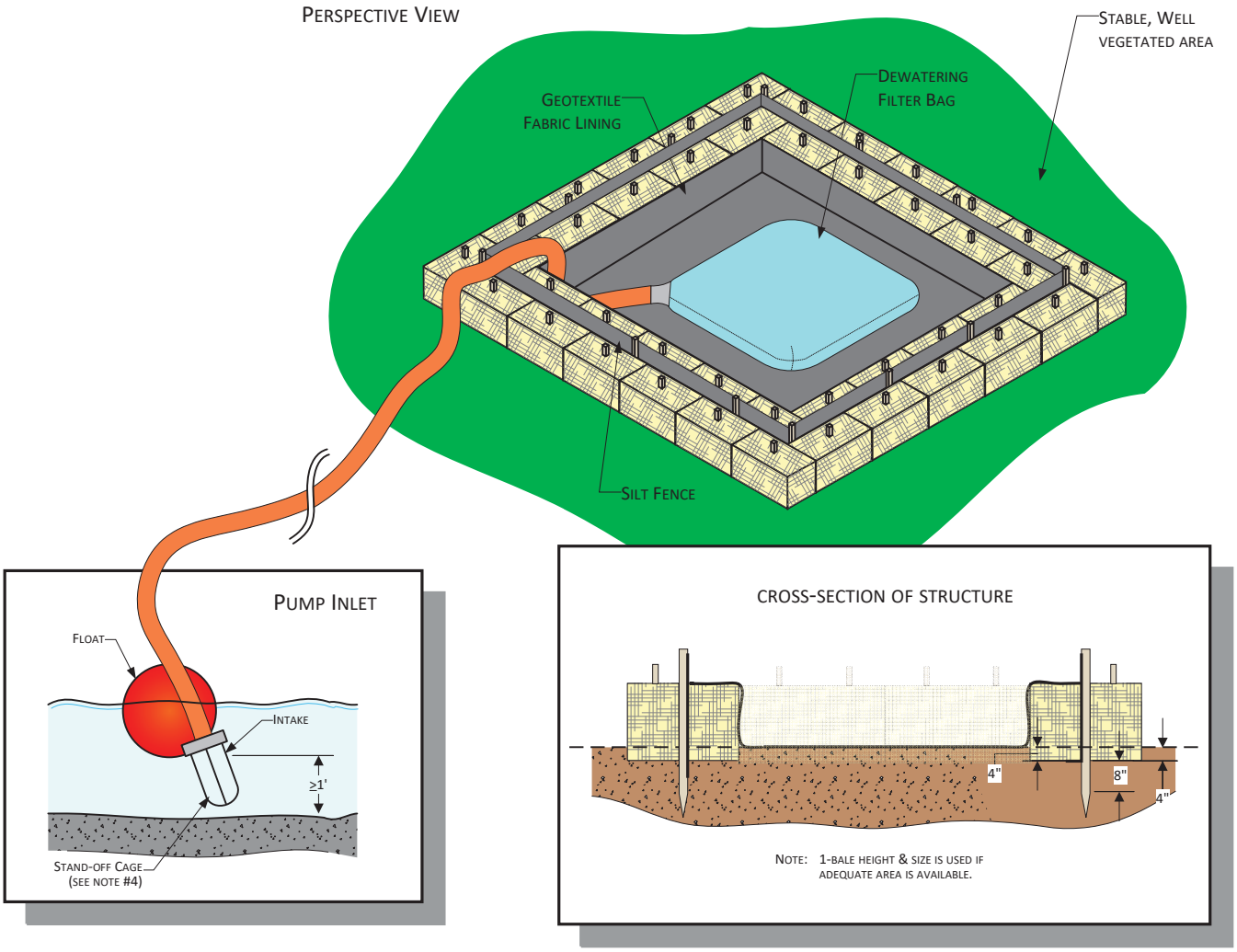
For environmental review purposes only.

Figure 22
Straw Bale Dewatering Structure
(OKS-7901-ENV-06a)

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_22_Straw_Bale_Dewatering.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting



CONSTRUCT DEWATERING STRUCTURE TO ACCOMMODATE ANTICIPATED PUMPING RATES. SEE EXAMPLE BELOW.

EXAMPLE PUMPING RATE = 200 G.P.M.
STORAGE VOLUME (C.F.) = 16 X 200 G.P.M. = 3200 C.F.
HEIGHT OF STRAW BALE STRUCTURE = 1.5 FEET (1 BALE) (BASED ON HEIGHT OF BALES, NOT SILT FENCE)
INSIDE DIMENSIONS OF STRUCTURE = 46 X 46 FEET SQUARE

NOTES:

1. SILT FENCE ENDS MUST BE WRAPPED TO JOIN TWO SECTIONS.
2. INSTALL SILT FENCE 2 INCHES ABOVE TOP OF STRAW BALE, AND ANCHOR A MINIMUM OF 8 INCHES STRAIGHT DOWN.
3. SILT FENCE POST STAKING MUST BE 4 FEET OR LESS.
4. DEWATERING INTAKE HOSE SUPPORTED AT LEAST 1 FOOT FROM BOTTOM OF TRENCH BEING DEWATERED.
5. USE A FILTER BAG AT THE DISCHARGE HOSE END.
6. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE COMPANY'S CMRP.

For environmental review purposes only.

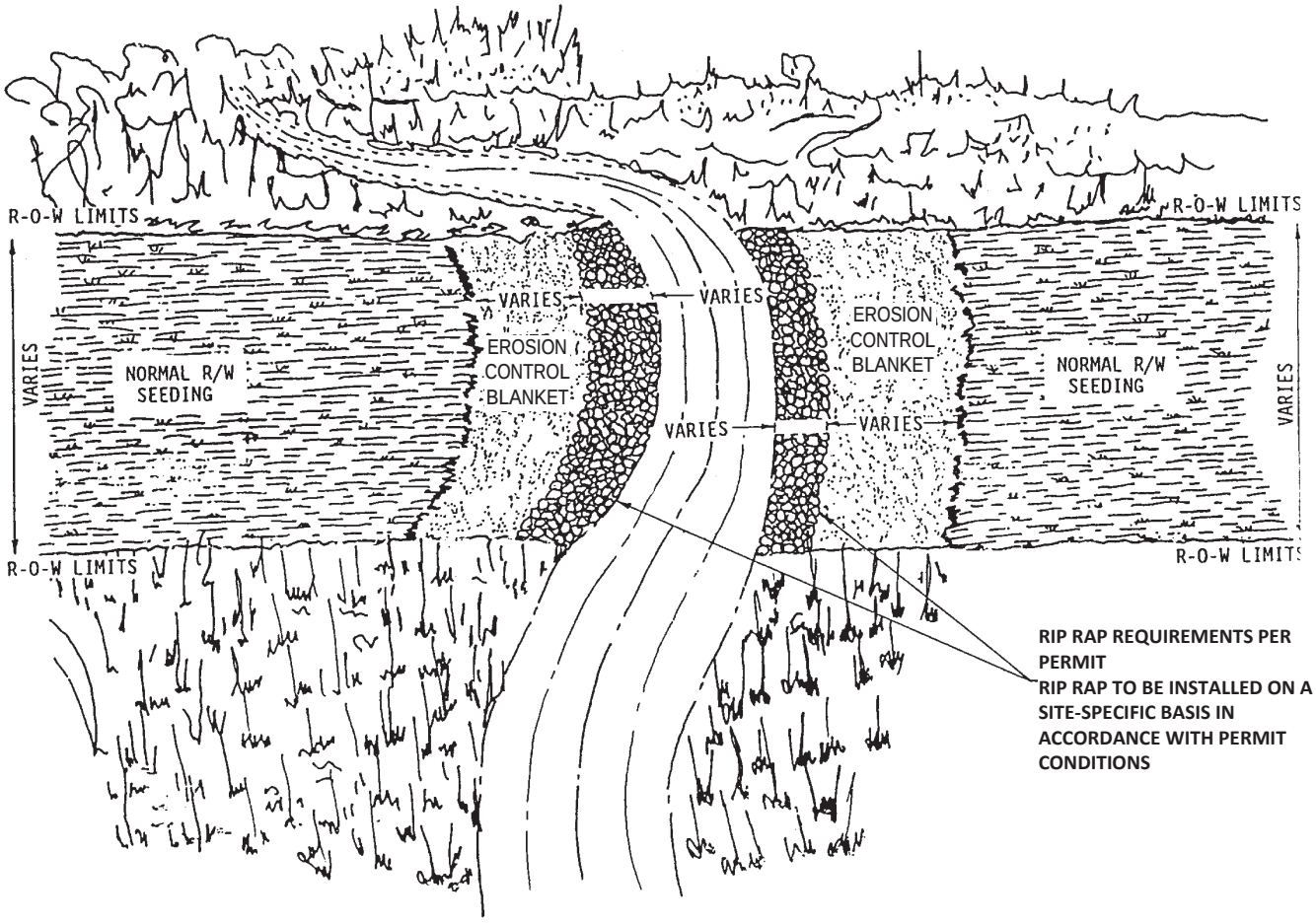
ONEOK

Figure 23
Straw Bale Dewatering Structure
(OKS-7901-ENV-06b)

ERM

K:_Client_Projects\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_23_Straw_Bale_Dewatering.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting

NOTE: PLACE EROSION CONTROL BLANKET A MINIMUM OF ONE (1) FOOT UNDER RIP RAP. EXTEND JUTE BLANKET FROM MEAN HIGH WATER LEVEL TO SEVERAL FEET BEHIND HIGH BANK.



For environmental review purposes only.

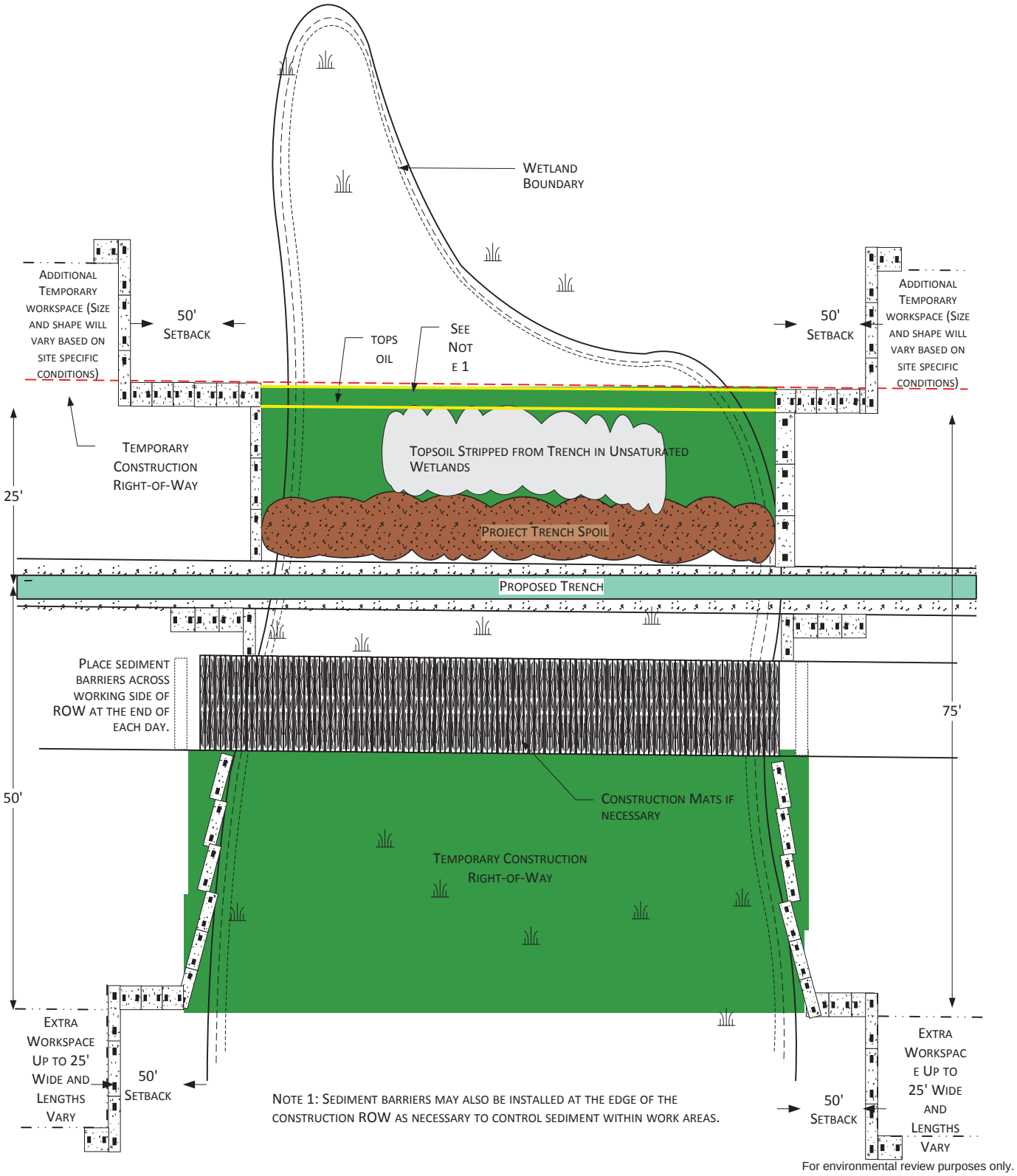
Figure 24

Typical Final Stream Bank Stabilization
Rip Rap & Erosion Control
(OKS-7901-ENV-07)

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_24_Stream_Bank_Stabilization.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting



For environmental review purposes only.

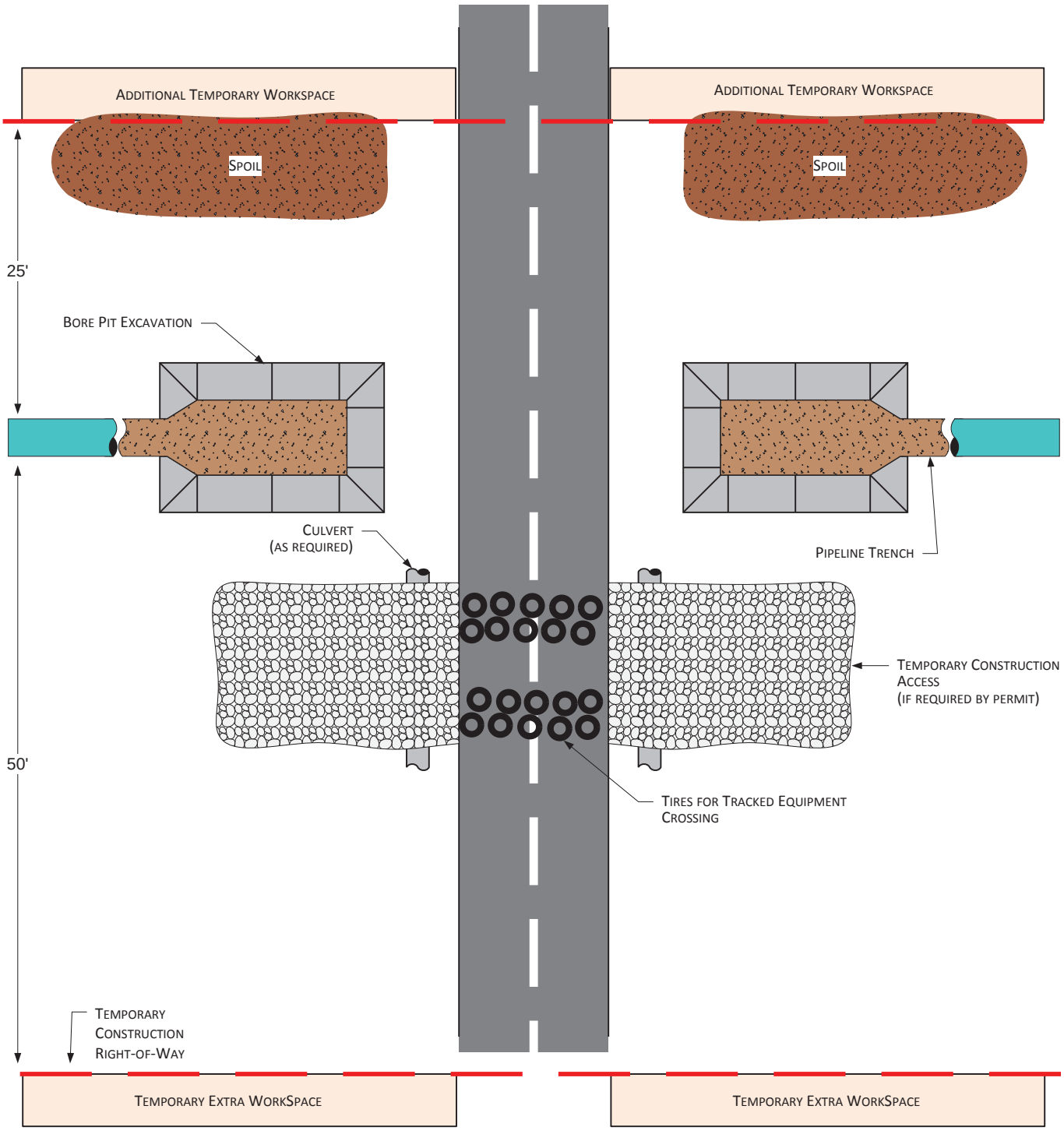
Figure 25

Typical Wetland Crossing Method
Method 5
(OKS-7901-ENV-03e)

ONEOK

ERM

K:_Client_Projects\M-O\ONE\Niobrara\EMP\Fig_24_Wetland_Crossing.vsd	Scale: NTS	Revised: 0820/2018	Drawn By: RGCutting



PLAN VIEW

NOTES

1. PROCEDURES SHOWN IN THIS DRAWING APPLY TO IMPROVED ROADS.
2. ROADS MUST BE CLEANED AFTER EQUIPMENT CROSSES AND DIRT PLACED IN SPOIL CONTAINMENT AREAS.
3. TEMPORARY ACCESS MATERIALS MUST BE REMOVED UPON PROJECT COMPLETION.
4. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS OR PERMITS.
5. CONSTRUCTION AREAS LOCATED OUTSIDE ROAD ROW.
6. INSTALL EROSION AND SEDIMENT CONTROLS AS NEEDED BASED ON SITE SPECIFIC CONDITIONS

For environmental review purposes only.

ONEOK

Figure 26
Typical Improved Road Crossing
Directional Bore Method

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_26_Improved_Road_Crossing.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

Demicks Lake Pipeline Project

UNANTICIPATED DISCOVERIES PLAN

DRAFT

Prepared by:

December 2018

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1.0 INTRODUCTION

ONEOK Bakken Pipeline, L.L.C. (ONEOK) has established procedures to be followed by ONEOK personnel and their contractors in the event previously unreported and unanticipated cultural resources or human remains are found during construction of the Demicks Lake Pipeline Project (Project).

The identification of possibly significant cultural materials is addressed in Sections 2.0 and 3.0 of this *Unanticipated Discoveries Plan (IDP or Plan)*. The discovery of possible human remains is addressed in Section 4.0.

Prior to the commencement of construction, Environmental Inspectors (EIs) and Contractor personnel will receive environmental training, which will include guidance on identifying potential cultural materials and human remains. The orientation will consist of two parts. The first part will provide training in the recognition of both prehistoric and historic cultural resources and human remains as briefly described below. The second part will provide the chain of communication and protocols that must be followed if unanticipated cultural resources or human remains are discovered during construction.

A cultural resource discovery could consist of, but is not limited to:

- Prehistoric features such as stone circles or cairns, storage pit features, postmolds, hearths, occupational surfaces, middens, and anthropogenic soil horizons;
- Prehistoric artifact concentrations such as projectile points, waste flakes/debitage, and clay pottery;
- Historic features such as trails, roads, canals, wells, cisterns, foundations, and trash pits at least 50 years in age; and,
- Historic artifact concentrations such as glass bottles, tin cans (e.g., hole-in-top cans) tableware, dishware, architectural debris (e.g., bricks, mortar, window glass), hardware (e.g., square nails), and farm implements at least 50 years in age.

Evidence of a burial site could consist of, but is not limited to:

- Any human remains including articulated or disarticulated bones, teeth, hair, preserved soft tissue, etc.;
- Burial pit or grave shaft outlines in the soil;
- Headstones or footstones; and,
- Coffin wood fragments and coffin hardware.

Archaeological discoveries may be classified as simple or complex. Simple archaeological discoveries consist of isolated artifacts or isolated features with minimal artifacts or diagnostic characteristics. Complex discoveries are those that entail a significant number of artifacts or features, or sensitive or unique finds such as housepits, bone beds, or human remains.

2.0 UNANTICIPATED DISCOVERY OF CULTURAL MATERIALS

If a contractor believes that he or she has uncovered any cultural resources during construction the following steps will be taken.

1. The Contractor will cease work immediately within the area of the find to avoid disturbing the find and will immediately notify the on-site EI. No cultural material will be transported from its original location.

   Environmental Inspector: TBD
   Cell Phone Number: TBD
   Email: TBD

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2. The EI will immediately notify ONEOK's Environmental Manager of the find. The call will be followed up by an email notification summary to ONEOK's Environmental Manager.

ONEOK Environmental Mgr:	Edwin Zedaker
Phone:	(918) 595-1783
Cell Phone:	(256) 872-5818
Email:	Edwin.Zedaker@oneok.com
Address:	ONEOK, Inc. 100 W. Fifth Street Tulsa, OK 74103

If applicable, ONEOK's Environmental Manager will promptly notify the lead federal agency of the find. If the find is within the U.S. Forest Service (USFS) area of jurisdiction (i.e., within the Dakota Prairie Grasslands) ONEOK's Environmental Manager will notify the USFS:

Dakota Prairie Grasslands, Medora Ranger District

Contact:	Adam Russell, Archaeologist
Phone:	(701) 842-8505
Email:	adamrussell@fs.fed.us

If the find is within the U.S. Army Corps of Engineers (USACE) area of jurisdiction (i.e., within a delineated wetland or waterbody) ONEOK's Environmental Manager will notify the appropriate USACE's Omaha District Office:

North Dakota Regulatory Office

Contact:	Patricia McQuery
Phone:	(701) 255-0015
Email:	Patricia.L.Mcquery@usace.army.mil

Montana Regulatory Office

Contact:	Todd N. Tillinger
Phone:	(406) 657-5910
Email:	Todd.N.Tillinger@usace.army.mil

3. Cessation of ground-disturbing activity will encompass a sufficient area to protect the discovery itself and provide a buffer zone for adequate and safe investigation of the discovery and any other features or artifacts that may be associated with the discovery. The buffer zone will be fenced or delineated with signage by the on-site EI to prevent further disturbance by vehicle and foot traffic. A general guideline is to create a buffer of at least 100 feet around the discovery. The fenced or signed area can be larger or smaller depending on the width of the ROW in order to protect the discovery adequately without unnecessary hindrance to construction and to allow for a passing lane, if appropriate. No fencing or signage will be installed outside of the construction workspace without prior approval from the landowner.

4. The on-site EI will take photographs of the find, including photographs of artifacts, features, and general landscape in the vicinity of the find. NOTE: DO NOT TAKE PHOTOGRAPHS OF HUMAN REMAINS. Additionally, the EI will provide a description of the discovery and note the location by tract, milepost, and/or stationing. This information will be provided by email to ONEOK's Environmental Manager and the Cultural Resources Manager at Merjent, Inc. (Merjent). The consulting archaeologist will meet the Secretary of Interior's Professional Qualification Standards as described in 36 CFR 61. Following notification, construction may resume outside of the 100-foot (or greater as necessary) buffer surrounding the find.

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Archaeological Consultant:	Merjent, Inc.
Cultural Resources Manager:	Kari Krause
Phone:	(612) 643-5248
Cell Phone:	(612) 961-7479
Email:	kkrause@merjent.com
Address:	Merjent, Inc. 800 Washington Ave. N, Suite 315 Minneapolis, MN

5. The Archaeological Consultant will determine whether the find was recorded during a previous survey. If the find is determined to be within a previously identified site area that has been determined as not eligible for listing in the National Register of Historic Places (NRHP), the EI will notify the construction contractor that construction activities may resume after the fencing or signage is removed.
6. If the find is discovered in an area where a site was not previously recorded, the Consulting Archaeologist/Cultural Resource Manager, will review the location and type of discovered material. If the discovery is determined to be non-cultural, the EI will notify the Contractor that construction may resume. The Archaeological Consultant/Cultural Resource Manager will submit a letter report regarding the discovery and findings to ONEOK's Environmental Manager within 5 business days. ONEOK's Environmental Manager will submit the letter report to the lead federal agency, if appropriate.
7. If on-site assessment is necessary to determine the find's significance, the Cultural Resource Manager will arrange for an Archaeologist to travel from their home office to the discovery. Mobilization will occur within one (1) day of notification.
8. If the find is determined to lack integrity or not be significant, the Archaeologist will document the find and notify the Cultural Resource Manager and ONEOK's Environment Manager who will consult with the State Historic Preservation Office of North Dakota (SHSND), the Montana State Historic Preservation Office (MTSHPO), USFS, or USACE, as appropriate, and will request approval to resume construction. ONEOK's Environmental Manager will inform the EI that construction can proceed. The Archaeologist will submit a letter report regarding the discovery and findings to the Cultural Resources Manager within 5 business days for submittal to ONEOK's Environmental Manager. Additionally, the Archaeologist will submit a site form for the non-significant cultural site to the SHSND or the MTSHPO, as appropriate, for their records. ONEOK's Environmental Manager will provide the summary to the USACE and/or USFS, as appropriate.

North Dakota Contact:	Paul Picha, Lead Archaeologist State Historical Society of North Dakota Historic Preservation Office
Telephone:	(701) 328-3574
Email:	ppicha@nd.gov
Montana Contact:	Stan Wilmoth, State Archaeologist Montana State Historic Preservation Office
Telephone:	(406) 444-7719
Email:	swilmoth@mt.gov

9. If the Archaeologist determines that the discovery represents a significant find, the Archaeologist will notify the Cultural Resources Manager the same day and the procedures in Section 3.0 of this Plan will be followed. Merjent's Cultural Resources Manager will notify ONEOK's Environmental Manager of any significant discoveries by telephone and follow up email.

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10. ONEOK or its representative will notify the landowner of the significant find as appropriate.
11. If the Archaeologist determines the discovery constitutes human remains, the procedures described in Section 4.0 of this Plan will be followed.

3.0 DISCOVERY OF POTENTIALLY SIGNIFICANT CULTURAL MATERIALS

As discussed in Section 2.0, the on-site EI will ensure appropriate measures have been taken to protect the discovery from further disturbance. The Cultural Resources Manager will promptly notify the ONEOK Environmental Project Manager of significant finds by telephone and will follow up with an email.

1. If upon evaluation, and in consultation with the SHSND or MTSHPO, the find is recommended to be significant and continuing construction may damage more of the site, ONEOK may authorize the Archaeological Consultant to develop a Treatment Plan for finds outside federal jurisdiction to avoid, minimize, or mitigate the adverse effect within the construction right-of-way.

   For all finds on federal lands or within federal jurisdiction, ONEOK's Environmental Manager will consult with the appropriate federal agency (i.e., USFS or USACE) and will request approval to resume construction, subject to any mitigation or avoidance measures required by the federal agency. These measures may include:

   - Preparation of a treatment plan;
   - Visits to the site by the USACE or other parties;
   - Implementation of the treatment plan through avoidance, monitoring, or data recovery; and
   - Approval to resume construction following completion of the fieldwork component of the treatment plan.

   The lead federal agency will initiate federal, state, and tribal consultation required to determine if the find is potentially eligible for listing on the NRHP, and if mitigation is required.
2. The Archaeological Consultant will carry out the fieldwork component of the Treatment Plan prior to construction activities resuming.
3. Construction will resume following the completion of the fieldwork component of the Treatment Plan. ONEOK will notify the EI who will grant clearance for the Contractor to resume construction.
4. The Archaeological Consultant will prepare a report within six (6) weeks of resuming construction describing the results of the treatment. The report will be provided to the SHSND or MTSHPO and, if appropriate, a copy of the report will be provided to the landowner and to the lead federal agency.

4.0 DISCOVERY OF HUMAN REMAINS

ONEOK will treat all human remains in accordance with federal and state law as it applies to all lands in North Dakota and Montana crossed by the Demicks Lake Pipeline Project, taking into account North Dakota NDAC 40-02-03 and Montana MCA 22-3-805., which provide for the protection of human burial sites, human remains, and burial goods. As discussed above in Section 2.0, the on-site EI will ensure that appropriate measures have been taken to protect the discovery from further disturbance. All human remains regardless of ancestry will be treated with dignity and respect. No photographs will be taken, nothing will be moved, and the find will be covered. The EI will make notifications of the discovery to the ONEOK Environmental Manager and the Cultural Resources Manager.

If it is immediately obvious that the skeletal remains found are non-human and are in association with cultural material, the procedures described in Sections 2.0 and 3.0 of this Plan will be followed.

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If the remains might be human, the following steps will be taken:

1. The appropriate county sheriff's office will be contacted immediately. As stipulated by NDAC 40-02-03-03 and MT MCA 22-3-805, upon receiving notification of the discovery of human remains, a human burial, or burial goods, the local law enforcement agency will, as soon as practicable, report the receipt of such notification to the SHSND and North Dakota State Department of Health and Consolidated Laboratories or the MTSHPO.

   McKenzie County, North Dakota, Contacts:

   Contact: Gary Schwartzenberger, McKenzie County Sheriff
   Telephone: (701) 444-3654
   Email: gschwartzernberger@co.mckenzie.nd.us

   Contact: Calvin Parrish, McKenzie County Coroner
   Telephone: (701) 770-4522

   Richland County, Montana, Contacts:

   Contact: John Dynneson, Richland County Sheriff
   Telephone: (406) 433-2919

   Contact: John Dynneson, Richland County Coroner
   Telephone: (406) 482-2805

2. If local authorities determine the remains are not modern or do not reflect a crime scene and/or if they otherwise relinquish their jurisdiction over the remains, the SHSND or MTSHPO will be contacted to assist in identifying the appropriate parties to notify and to determine additional steps to be followed. The Archaeological Consultant will assist as needed with identification efforts of the human remains. A forensic expert may be required to determine whether the remains are Native American. If in North Dakota, and the SHSND and the consulting experts determine the unanticipated discovery consists of Native American human remains, the SHSND, as stipulated by NDCC 23-06-27 will contact the North Dakota Intertribal Reinterment Committee. In Montana, if the Coroner determines that the unanticipated discovery consists of Native American human remains, the Coroner will contact the MTSHPO, as stipulated by MCA 22-3-805 and the MTSHPO will contact the Burial Preservation Board.

   North Dakota Contact: Paul Picha, Lead Archaeologist
   State Historical Society of North Dakota Historic Preservation Office
   Telephone: (701) 328-3574
   Email: ppicha@nd.gov

   Montana Contact: Stan Wilmoth, State Archaeologist
   Montana State Historic Preservation Office
   Telephone: (406) 444-7719
   Email: swilmoth@mt.gov

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3. ONEOK's Environmental Manager and Merjent's Cultural Resources Manager will work with the SHSND, MTSHPO, USACE, or USFS, as applicable, and American Indian tribes to determine the appropriate treatment or other measures to resolve the discovery of human remains or burial goods.

ONEOK Environmental Mgr:	Edwin Zedaker
Phone:	(918) 595-1783
Cell Phone:	(256) 872-5818
Email:	Edwin.Zedaker@oneok.com
Address:	ONEOK, Inc. 100 W. Fifth Street Tulsa, OK 74103

Archaeological Consultant:	Merjent, Inc.
Cultural Resources Manager:	Kari Krause
Phone:	(612) 643-5248
Cell Phone:	(612) 961-7479
Email:	kkrause@merjent.com
Address:	Merjent, Inc. 800 Washington Ave. N, Suite 315 Minneapolis, MN

4 If the unanticipated discovery of human remains is located within a wetland or waterbody, ONEOK will consult immediately with the USACE regarding the appropriate measures to handle such a discovery.

Omaha District
North Dakota Regulatory Office

Contact:	Patricia McQuery
Phone:	(701) 255-0015
Email:	Patricia.L.McQuery@usace.army.mil

Montana Regulatory Office

Contact:	Todd N. Tillinger
Phone:	(406) 657-5910
Email:	Todd.N.Tillinger@usace.army.mil

4. ONEOK or its representative will contact the landowner to keep them apprised of parties that will inspect the find in order to determine the disposition of the remains.
5. The measures to protect the remains and any associated artifacts will remain in effect until they have been fully evaluated and the appropriate treatment of the discovery (if applicable) has been completed.
6. ONEOK will notify the EI who will grant clearance for the Contractor to start work upon completion of the treatment of the discovery, and resolution of all issues.

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Demicks Lake Pipeline Project

STORMWATER POLLUTION PREVENTION PLAN

DRAFT

Prepared by

December 2018

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REVISION INDEX

Revision	Date	Affected Pages	Description
Initial	September 2018	Global	Development of new SWPPP
1	December 2018	Global	General revisions/edits post ONEOK review

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Appendix B Montana General Permit for Stormwater Discharges Associated with Construction Activities (MTR100000)

Appendix C Construction Mitigation and Restoration and Construction Typicals

Appendix D Project Maps

Appendix E Receiving Waters

Appendix F Stormwater Inspection Form and Reports

Appendix G Best Management Practice Tracking Table

Appendix H Training Log

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LIST OF ACRONYMS AND ABBREVIATIONS

ATWS	Additional Temporary Workspace
BMP	Best Management Practices
CMRP	Construction Mitigation and Restoration Plan
EI	Environmental Inspectors
General Permit	North Dakota or Montana National Pollutant Discharge Elimination System Stormwater Discharge from Construction Activities General Permit
MTDEQ	Montana Department of Environmental Quality
NDDH	North Dakota Department of Health
NGL	Natural Gas Liquids
ONEOK	ONEOK Bakken Pipeline, L.L.C.
NOI	Notice of Intent
Project	Demicks Lake Pipeline Project
SDS	Safety Data Sheets
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan
SWPPP/Plan	Stormwater Pollution Prevention Plan

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PLANS INCORPORATED BY REFERENCE

The following plans are incorporated by reference. Refer to most recent version of the plan for implementation.	
Construction Mitigation and Restoration Plan (CMRP)	This plan describes construction practices and Best Management Practices (BMPs) to be implemented to contain sediment, minimize runoff and erosion, and restore areas disturbed by construction activities. The Environmental Inspector (EI) will verify that the appropriate *CMRP* is implemented.
Spill Prevention, Control, and Countermeasure Plan (SPCC)	This plan identifies specific preventive measures and practices that will be employed during construction of the project to reduce the likelihood of an accidental release of a hazardous or regulated material. This includes the details for the project's protocols and procedures related to training, release response equipment, equipment storage and inspection, regulated materials storage and handling, refueling area restrictions, equipment maintenance restrictions, spill response, chain of communication, as well as notification and reporting requirements.
Dust Control Plan	This plan identifies requirements associated with the application of dust suppressants along the right-of-way (ROW) and access roads, limitations associated with dust-generating activities during high winds, implementation of speed limits and vehicle access limitations on access roads and along the ROW and use of best management practices along the ROW to control fugitive dust emissions.
Revegetation Plan	This plan describes procedures to be followed during the revegetation of areas disturbed as a result of constructing the project and specifically applies to all areas of perennial vegetation disturbed by construction.
Horizontal Directional Drill Release Plan	This plan describes procedures to be followed during an inadvertent release of drilling material. This includes the details for the project's protocols and procedures related to training and appropriate response and notifications to an inadvertent release.
Weed Management Plan	This plan describes procedures and requirements associated with known noxious weed locations. Environmental Inspectors and ONEOK will work with the contractor to determine when appropriate measures will be implemented at known and newly discovered locations.

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1 INTRODUCTION

ONEOK Bakken Pipeline, L.L.C. (ONEOK) is committed to meeting or exceeding applicable federal, state, and local environmental requirements during the planning, construction, and operation of the Demicks Lake Pipeline (Project).

ONEOK has prepared this *Stormwater Pollution Prevention Plan (SWPPP)* based on the requirements of the North Dakota Department of Health and Environment (NDDH) and Montana Department of Environmental Quality's (MTDEQ) National Pollutant Discharge Elimination System (NPDES) Authorization to Discharge Stormwater Associated with Construction Activities General Permit (General Permit), located in Appendices A and B, respectively. At this time, ONEOK has not submitted a Notice of Intent (NOI) to obtain coverage from the NDDH or MTDEQ to obtain coverage under the NPDES program for construction stormwater.

North Dakota and Montana acknowledge the exemption for uncontaminated stormwater runoff from oil and gas exploration, production, and transmission construction projects. Oil and gas construction activities are exempt from the requirement to obtain NPDES permit coverage unless the facility meets one of the conditions in 40 Code of Federal Regulations (CFR) 122.26 (c)(1)(iii) noted below.

In the EPA's regulations at 40 CFR 122.26(c)(1)(iii), the operator of an existing or new discharge composed entirely of stormwater from an oil or gas exploration, production, processing, or treatment operation, or transmission facility is not required to submit a permit application in accordance with paragraph (c)(1)(i) of this section, unless the facility:

(A) Has had a discharge of stormwater resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 117.21 or 40 CFR 302.6 at any time since November 16, 1987; or

(B) Has had a discharge of stormwater resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 110.6 at any time since November 16, 1987; or

(C) Contributes to a violation of a water quality standard.

By implementing the industry best management practices (BMP) described in this *SWPPP* to control erosion and prevent sediment from violating surface water quality standards, construction stormwater discharges from the construction site are not anticipated to be contaminated with substances that could result in discharge of a reportable quantity (e.g., oil sheen) and are not anticipated to violate a water quality standard (e.g., sediment discharges violating a water quality criteria or causing loss of fishing resources). Procedures for reportable quantities are detailed in the Project *Spill Prevention, Control, and Countermeasure (SPCC) Plan*.

The Project is an approximately 77-mile, 20-inch diameter natural gas liquids pipeline. The Project will originate in McKenzie County, North Dakota, and terminate at a planned ONEOK-affiliated pipeline in Richland County, Montana. Approximately 75 miles of pipeline will be constructed within North Dakota and approximately 2 miles will be constructed with Montana. Construction is currently scheduled to begin in February 2019 with restoration activities expected to continue through 2022, if needed.

DRAFT

This *SWPPP* details relevant site information and the implementation sequence for construction activities that require BMPs for the purpose of minimizing erosion and sediment loss from the area of ground disturbance as a result of construction activities. In addition, the *SWPPP* describes general construction practices and BMPs to be implemented by ONEOK or its contractor(s) during construction of the pipeline to minimize impacts on the environment. Thereby providing an extensive description of the various BMPs to be implemented during installation of the pipeline to contain sediment and minimize runoff and erosion during installation of the pipeline and restoration of areas disturbed by construction activities. This *SWPPP* will be implemented during the entire construction phase of the Project, beginning with initial ground disturbance through restoration and final stabilization of disturbed areas in North Dakota. This document will be kept onsite during active construction activities

Construction of the pipeline facilities will generally use 75-foot-wide construction right-of-way (ROW) of both permanent and temporary ROW easements. On portions of the Project on lands managed by the U.S. Forest Service, the construction ROW will generally be restricted to 50 feet wide. During construction, temporary work areas alongside the permanent easement will be necessary to accommodate temporary storage of trench spoil; areas needed to string, weld, and install the pipeline; and movement and operation of construction equipment. Additional workspaces may be required in areas of rocky soils, steep slopes, and rugged terrain and for staging areas, truck turnarounds, utility crossovers, and utility, road, railroad, waterbody, and wetland crossings. Only the permanent easement will be required for the operation of the pipeline.

ONEOK has also developed a comprehensive and Project-specific *Construction, Mitigation, and Restoration Plan (CMRP)* to be implemented during construction of the Project. The Environmental Inspector (EI) will verify that the appropriate *CMRP* is implemented. This plan describes general construction practices and BMPs to be implemented by ONEOK or its contractor(s) during construction of the pipeline to minimize impacts on the environment. This plan will be included as part of Project specifications and contracts to ensure implementation during construction activities. The *CMRP* includes an extensive description of the various BMPs to be implemented during installation of the pipeline to contain sediment and minimize runoff and erosion during installation of the pipeline and restoration of areas disturbed by construction activities. Typical drawings from the *CMRP* relevant to this *SWPPP* are included as Appendix C.

1.1 SWPPP ADMINISTRATION

Copies of ONEOK's *SWPPP* will be available at ONEOK's construction management field offices located along the pipeline route. The official *SWPPP* and inspection records will be maintained at ONEOK's corporate office located in Tulsa, Oklahoma. ONEOK and its contractors will be responsible for implementation of the *SWPPP* including installation, inspection, maintenance, and repair of BMPs. ONEOK will provide copies of the *SWPPP* upon request from the federal, state, or local government officials.

ONEOK will employ one or more full-time EIs to ensure that the appropriate BMPs are employed throughout construction where necessary to minimize erosion. The EI(s) will be on- site during construction activities to document compliance with the *SWPPP*. These individuals will be on-site during construction activities to document compliance with the *SWPPP*. All inspections will be documented and recorded to demonstrate compliance with the Project *SWPPP*. Inspection related documents may be stored in an electronic database or similar method due to the scope of the Project and the number of anticipated inspectors. ONEOK and its contractor are responsible for developing, implementing, maintaining, and revising the *SWPPP*. ONEOK will be responsible for ensuring the

SWPPP and related plans and drawings are available at the Project field offices throughout construction; providing EIs to monitor performance and ensure compliance with this *SWPPP* and related plans; and providing training to construction personnel about Project sediment and pollution control measures. The *SWPPP* Administrator is identified in Table 2.0-1.

TABLE 2.0-1
Demicks Lake Pipeline Project
Administrator Contact Information

Title	Company	Contact Information
Project Manager	ONEOK, LLC	Name: Blake Holland Phone: 918-732-4888 E-mail: Blake.Holland@onoeok.com
Environmental Project Manager	ONEOK, L.L.C.	Name: Eddie Zedaker Phone: 918-595-1873 E-mail: Edwin.Zedaker@oneok.com
Environmental Consultant	Merjent, Inc.	Name: Maddy Krumwiede Phone: 612-924-3973 E-mail: mkrumwiede@merjent.com
Environmental Inspector	To Be Determined	To Be Determined

The contractor will be responsible for committing all necessary labor and equipment to implement and maintain the BMPs identified in this *SWPPP* and related plans; conducting additional workforce training as necessary; and performing regular inspection, maintenance, and repair of BMPs. ONEOK's EI(s) will be responsible for training staff on sediment and pollution control measures, conducting regular inspections of BMPs, and ensuring that the contractor is aware of BMP's necessitating repair or maintenance.

DRAFT

2 SITE DESCRIPTION

2.1 SITE LOCATION

TABLE 2.1-1 Legal Description of the Project[1]		
McKenzie County, North Dakota		
146 North	104 West	1-3, 7-11, 15-18
146 North	105 West	11-15, 22-24
147 North	103 West	3-8, 18-19, 30
147 North	104 West	1, 12-13, 24-26, 34-36
148 North	102 West	1-10
148 North	103 West	1, 11-14, 22-28, 31-35
149 North	99 West	3-7
149 North	100 West	1-2, 7-12, 14-20
149 North	101 West	13-14, 22-29, 31-35
149 North	102 West	36
150 North	98 West	1-6
150 North	99 West	1-2, 11-14, 21-28, 31-34
150 North	100 West	36
151 North	96 West	7-8, 16-21
151 North	97 West	11-14, 19-31
151 North	98 West	25-26, 31-36
151 North	99 West	35-36
Richland County, Montana		
20 North	60 East	34
19 North	60 East	3

2.2 AREA OF DISTURBANCE

Workspace associated with the construction and installation of pipelines requires careful planning to provide sufficient space and proper configuration to allow a safe work environment while satisfying regulatory obligations. ONEOK plans to use a 75-foot-wide construction ROW for the majority of the pipeline route, with 50 feet to be retained as permanent ROW for operation of the new pipeline. Workspace on USFS-managed lands will be restricted to 50 feet wide. The actual breakdown of workspace within the construction ROW (e.g., spoil storage areas, equipment travel lanes) will vary depending on site-specific conditions. The workspace configuration is generally comprised of three major elements: spoil storage, trenchline, and work area. A diagram portraying the typical ROW configuration is included in Appendix C.

Spoil Storage – Construction of pipelines requires management of spoils. Several factors ranging from soil type, depth of cover requirements, and land use must be accounted for when evaluating how much workspace will be reserved for spoil management. Topsoil will generally be stored along the outer boundary of the construction workspace. Subsoil originating from trenchline excavation will generally be stored between the topsoil and the excavated trench. A minimum of 25 feet of construction ROW is typically allocated for spoil storage.

Trenchline – A portion of the workspace will be dedicated to the trenchline. Several factors including depth of cover requirements and soil types will influence the amount of space required for

[1] Legal Description of the Project will be finalized prior to commencing construction

the trenchline. Buried pipelines that are 20 inches in diameter typically require a minimum of 15 feet of construction workspace to facilitate excavation. In order to meet standard industry safety requirements and construction BMPs, the trench for this pipe diameter may be 3 feet wide at the base and over 20 feet wide at the top of the trench. The balance of the remaining space remains available to heavy equipment to excavate the trench while minimizing trench wall failure.

Work Area – The work area is the largest portion of the construction workspace. This space must accommodate equipment and various construction activities. A portion of this space is dedicated to pipeline fabrication activities associated with field layout, welding, bending, coating, and testing. In addition to the space allocated to pipeline fabrication, this space is sized to allow for equipment operation and a travel lane for construction equipment and personnel to pass safely and unimpeded.

In addition to the construction ROW, ONEOK will use additional temporary workspaces (ATWS) for staging areas; truck turnarounds; and utility, road, railroad, waterbody, and wetland crossings; and in areas of rocky soils, steep slopes, and rugged terrain. These temporary workspaces will be located adjacent and contiguous to the construction ROW. These areas are shown on the Project maps included in Appendix D.

ONEOK will primarily use public roadways and private access roads to access the construction ROW. Use of private access roads may require improvements or maintenance to provide access for construction personnel and/or delivery of construction materials and equipment. Previously unimproved access roads likely to be used during construction activities are shown on the maps included in Appendix D. These access roads include new roads to be developed during construction of the Project and previously unimproved access roads (i.e., existing two-track roads) which will likely require improvements prior to use or extensive restoration following installation of the pipeline. Prior to the commencement of Project activities, ONEOK will clearly mark the boundaries of approved work areas. Construction activities are not planned outside these areas.

The total estimated areas to be disturbed in North Dakota and Montana, as well as the location and approximate size of new impervious areas as a result of the Project, are summarized in Table 3.2-2. The locations of these facilities are identified on the maps provided in Appendix D.

TABLE 3.2-1
Demicks Lake Pipeline Project
Estimated Area of Disturbance[2]

	Land Disturbed by Construction (acres)	
	Temporary Workspace	**Permanent Land Disturbance**
Pipeline Right-of-Way	NA	432.30
Additional Temporary Workspaces	348.25	NA
Access Roads	NA	105.10
Valve Sites	0.8	0.8
Total	**349.05**	**538.20**

[2] Area of Disturbance will be finalized prior to commencing construction

ONEOK will site these facilities in such a manner to minimize potential impacts on nearby wetlands and waterbodies. In general, the planned impervious areas associated with these facilities are small and not located near surface waters of the state. ONEOK does not anticipate discharge of construction stormwater from these facilities will result in a new point source to surface waters of the state. ONEOK does not plan to install permanent stormwater management systems (i.e., permanent sediment basins) within the facilities to treat stormwater which may be discharged from the sites.

Minor modifications to the pipeline route, location or size of temporary workspaces, or additional access roads may occur. These changes may result from negotiations with the landowner or the need for additional or modified workspace necessary due to site-specific factors encountered during installation of the pipeline. ONEOK will periodically update the maps located in Appendix D of the *SWPPP* to reflect the current footprint of the Project.

2.3 NATURE OF CONSTRUCTION ACTIVITIES

Conventional pipeline construction is composed of specific activities that make up a linear construction sequence (see Figure 2.3-1). These operations collectively include survey and staking of the ROW; clearing and grading; trenching; pipe stringing, bending, and welding; lowering the pipeline into the trench; backfilling the trench; hydrostatic testing; final tie-ins; commissioning; and ROW cleanup and restoration.

Pipeline construction activities such as clearing, grading, trench excavation, and backfilling, as well as the movement of construction equipment along the ROW will result in soil disturbance. Clearing removes protective cover and exposes soil to the effects of wind and precipitation, which may increase the potential for soil erosion and movement of sediments into sensitive environmental areas (such as waterbodies and wetlands). Grading and equipment traffic may compact soil, reducing porosity and percolation rates, which could result in increased runoff potential.

Grading of the construction workspace and ATWS may be required in areas where the planned pipeline route crosses steep slopes. Steep slopes often need to be graded down to a gentler slope to accommodate pipe bending limitations and provide level working areas to safely operate construction equipment. In such areas, the slopes will be cut away, and, after the pipeline is installed, reconstructed as near as practicable to their original contours during restoration.

ONEOK has sized its construction workspace and ATWS to accommodate safe installation of the pipeline while minimizing the area resulting soil disturbance and ultimately requiring restoration. ONEOK assumes that the majority of the areas identified within the construction area and depicted on the maps in Appendix D will be disturbed by construction activities.

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2.1 SEQUENCE OF ACTIVITIES

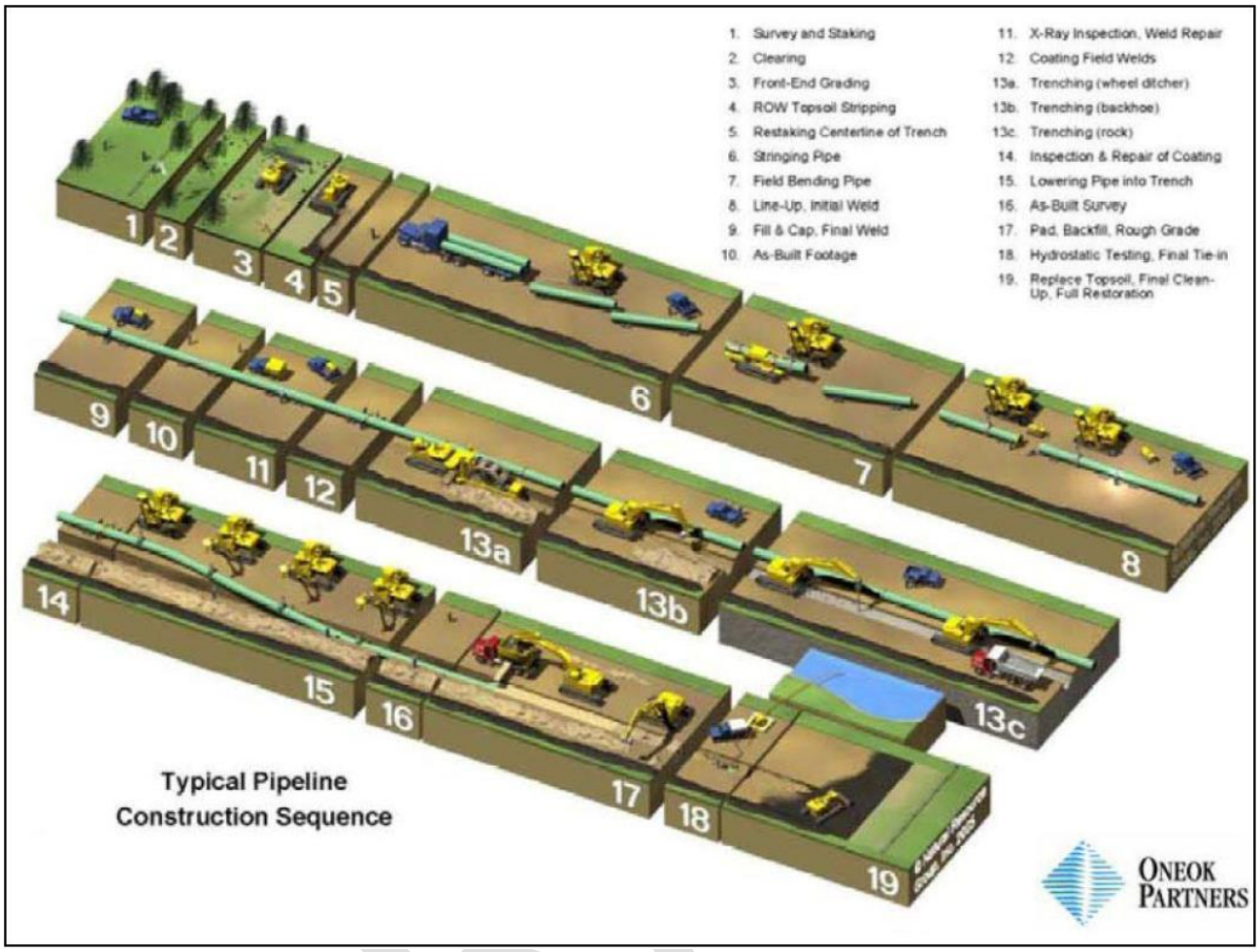
Construction of the new pipeline will occur in the following sequence:

- Stake the workspace boundaries and utilities;
- Clearing of construction area;
- Install temporary erosion and sediment controls;
- Grade and stump removal, if necessary;
- Segregation of topsoil, where necessary;
- Pipe delivery, bending, and welding;
- Trenching;
- Pipe installation;
- Backfilling excavations;
- Cleanup and final grading;
- Soil compaction treatment, where necessary;
- Stone removal, where necessary;
- Final restoration; and
- Final stabilization.

The general sequence of construction activities is shown on Figure 2.3-1. The *CMRP* provides a detailed description of the above referenced construction activities. Installation of soil erosion and sedimentation control devices will occur after clearing and before grading activities commence.

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Figure 2.3-1 – Typical Pipeline Construction Sequence



2.2 SCHEDULE

Construction of the pipeline is scheduled to begin in February 2019. Construction of the pipeline may commence simultaneously at several locations. Construction of the segments of pipeline (referred to as a construction spreads) will proceed in a linear fashion as described in Sections 3.3 and 3.4. Installation of the pipeline at select locations (e.g., valve sites) may occur separately from mainline construction spreads. In general, ONEOK anticipates that all initial grading of the construction ROW will be completed in Spring 2019 and that the entire pipeline will be installed by December 2019. Restoration of the construction ROW will commence immediately following the installation of the pipeline. ONEOK estimates that areas disturbed by the Project will reach final stabilization by the end of 2022.

2.3 EXISTING VEGETATION AND GROUND COVER

The predominant vegetation communities crossed by the pipeline route consists of cultivated lands and rangeland. Cultivated land includes areas that are actively involved in farming operations resulting in tilling of the soils. Such land along the pipeline route is likely to include corn, beans, sugar beets, alfalfa, and wheat. Rangeland consists of lands involved in the production of hay, those that are actively being grazed by livestock, and shortgrass and tallgrass prairies. Following completion of construction activities, actively cultivated areas and rangeland will be restored to pre-construction land use, unless otherwise requested by the landowner.

STORMWATER DISCHARGE

2.4 RECEIVING WATERS

The pipeline crosses numerous drainage basins. The pipeline route crosses 17 waterbodies (4 intermittent, 13 ephemeral), and 26 wetlands (all Palustrine Emergent). Appendix E contains the complete table of waterbodies and wetlands that will be crossed by the Project and are expected to receive stormwater discharges. Construction activities and grading of the right- of-way are generally considered temporary. Areas graded as a result of construction activities will be returned to their previous contours to the extent practicable following installation of the pipeline. Construction of the pipeline will not result in distinguishable point source discharges or new outfalls to state surface waters.

2.5 MUNICIPAL SEPARATE STORM SEWER SYSTEMS

No areas serviced by Municipal Separate Storm Sewer Systems (MS4s) are crossed by the pipeline route.

2.6 IMPARIED WATERS

There are no waterbodies in the Project area listed as impaired under 303(d) of the federal Clean Water Act.

3 EROSION PREVENTION AND SEDIMENT CONTROL PRACTICES

3.1 BEST MANAGEMENT PRACTICES

ONEOK requires that erosion and sediment transport is minimized. ONEOK will implement BMPs for erosion and sediment control as described in the *CMRP* and the *SWPPP* to minimize run-off of sediments from the pipeline construction ROW. BMPs are intended to reduce or eliminate any possible water quality impacts from stormwater flowing through the construction site. BMPs will be used to minimize erosion and sediment transport during construction and restoration of the Project. BMPs will be selected and properly installed and maintained in accordance with specifications provided in the *CMRP*. BMPs are to be installed in accordance with manufacturer specifications.

Specific BMPs to be implemented are discussed in the following sections. ONEOK's *CMRP* contains additional detail regarding the installation and maintenance of BMPs to be implemented during construction of the pipeline. BMPs will be designed to divert flows from exposed soils, filter runoff, or otherwise reduce sediment-laden runoff from entering surface water or stormwater conveyance systems (e.g., road ditches, grassed waterways). As stated, ONEOK plans to use a combination of BMPs during the course of the Project to provide the best prevention and control of sediment erosion during construction related activities.

ONEOK will install and maintain all structural and non-structural BMPs as outlined in the *CMRP*. ONEOK and the EIs will track the location of all structural and non-structural BMPs on the inspection reports (Appendix F) and the BMP tracking table (Appendix G).

Deficient BMPs noted during required site inspections will be addressed as soon as possible. It is the responsibility of the contractor to select best management practices appropriate to the location of the installation.

3.2 EROSION PREVENTION PRACTICES

3.3 VEGETATIVE BUFFERS

The most effective erosion control BMP is the minimization of soil disturbance. Therefore, removal of existing vegetation within the Project footprint will be avoided to the extent practicable. ONEOK will also minimize soil disturbance immediately adjacent to waterbodies until the pipeline is installed under the feature. In general, ONEOK will leave a 20-foot buffer of undisturbed herbaceous vegetation at waterbody crossings except where grading is necessary for bridge installation. The use of vegetated buffers is further described in the *CMRP*.

3.4 EROSION CONTROL BLANKETS AND MATS

ONEOK will install erosion control blankets or mats on slopes greater than 30 percent or where necessary to minimize erosion upslope of sensitive areas (e.g., surface waters of the state). Erosion control blankets, matting, and/or rip rap appropriately designed for the expected flows will also be installed on stream banks disturbed during construction and within defined stormwater conveyances (e.g., road ditches). The contractor will select erosion control blanket products suitable to the location of installation and the duration which the product is intended to perform. Installation of erosion control mats will be in accordance with the manufacture's specifications. Figure 13 of Appendix C identifies the intended use of erosion control blankets. Installation of rip rap must be above the ordinary high water mark (OHWM) and approved by ONEOK in advance.

3.5 DUST SUPPRESSION

ONEOK's contractors will implement dust suppression BMP's as necessary to prevent nuisance conditions and to prevent significant particle or dust generation resulting from construction activities, as described in ONEOK's *Dust Control Plan.*

ONEOK's planned dust suppression methods include stabilization of temporary stockpiles, spraying of water on the construction ROW in areas of active construction, use of chemical suppressants (e.g., calcium chloride) on public or private roads, and enforcing a 25-mile-per-hour speed limit on unimproved roads. When opacity along dirt roads and the right-of-way exceeds 20 percent (objects partially obscured), construction activity will cease until dust control measures are employed. Earthwork activities will cease when sustained wind speed exceeds 30 miles per hour.

3.6 SEDIMENT CONTROL PRACTICES

Sediment Barriers

ONEOK and/or its contractors will install temporary sediment barriers during clearing and before grading where necessary and as defined by the *CMRP* and *SWPPP*. In general, temporary sediment barriers will be installed at the edge of the ROW as needed, and/or in other areas determined by ONEOK to prevent sediments from entering waterbodies and wetlands crossed by the pipeline route or located downslope of the construction ROW. Figures 8 and 14-18 of Appendix C identify the general configuration of temporary sediment barriers to be installed at waterbodies and wetlands crossed by the pipeline route. The actual layout of the silt fence to be installed in the field by the contractor will vary in accordance with the site-specific conditions present at each waterbody location. Installation of BMPs will be overseen by ONEOK's environmental inspection staff to ensure that wetlands and waterbodies crossed by the route are adequately protected from runoff based upon the conditions present on either side of the crossing (e.g., slope, soil types).

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Use of silt fence is preferred as the primary sediment barrier unless site-specific conditions (e.g., rock or stony soil, sustained winds) prevent proper installation or reasonable maintenance. Temporary sediment barriers will typically be installed and maintained at side slope and downslope boundaries of the construction area adjacent to wetlands and waterbodies and at other locations as directed by ONEOK's inspection staff. These locations may include the base of slopes adjacent to road ditches, stormwater conveyance systems (e.g., road ditches, grass waterways, inlets), along the edge of the approved work area, or other stormwater conveyances that are directly adjacent to the approved work area. Heavy duty silt fence is available for locations which are subject to high stormwater flows. Velocity dissipation devices (e.g., riprap, straw bales) must be installed at discharge locations as necessary to provide a non-erosive flow velocity between the structure and receiving waterbody.

The contractor will choose and install sediment barriers in areas with high potential for sediment transport. Installation of other devices such as straw bales, fiber roles, or wattles may be approved by ONEOK where the potential for erosion is minimal.

Sediment barriers will be cleaned, repaired, and/or replaced when functionality begins to decrease (e.g., sediment reaches intolerable levels, fabric begins to tear, and/or the silt fence begins to become undermined). Repairs and/or maintenance of sediment control devices within active construction areas will be completed as soon as possible after identification. Additional sediment barriers will be considered for locations prone to failure.

Temporary sediment barriers will be maintained until final stabilization is reached or the site has been returned to its previous function (i.e., cultivated agriculture). Final stabilization is defined as all soil disturbing activities at the site have been completed and a uniform perennial vegetative cover with a density of 70% of the cover which is typical for undisturbed areas, unpaved areas, or areas not covered by permanent structures, in the geographic location of the construction site, has been established, or equivalent permanent stabilization measures (such as the use of riprap, gabions, or geotextiles) have been employed (as defined by the General Permit). Once the site has reached final stabilization, the barriers will be removed and disposed of properly.

Temporary and Permanent Slope Breakers

ONEOK will install temporary and permanent earthen slope breakers within the construction ROW to direct stormwater runoff to adjacent stabilized areas. Slope breakers will be constructed with appropriate energy-dissipation devices (e.g., temporary sediment barriers, rip-rap) to prevent erosion at their outfall. During construction, ONEOK will install temporary slope breakers on slopes greater than 5 percent in accordance with the spacing provided in the *CMRP*. In order to maintain sheet flow and minimize rills and/or gullies, there will be no unbroken slope length of greater than 75 feet for slopes with a grade of 3:1 or greater.

Temporary slope breakers will be maintained throughout construction and will be replaced at the end of each day if disturbed by construction activities. Permanent slope breakers will be constructed in accordance with the *CMRP*. In general, permanent slope breakers will be constructed in all non-cultivated areas except where agreements with landowners prevent installation.

Vehicle Tracking

Sediment control BMPs will be installed to minimize soil disturbance and any sediment leaving the construction site. If necessary, a combination of crushed stone access pads, matting, and culverts will also be installed at ingresses and egresses to the construction site to minimize the tracking of

sediments onto paved roads. If sediment is tracked onto a paved road, street sweeping, or scraping will be performed immediately to minimize sediment leaving the construction site. Sediment must be returned to the ROW.

4 STABILIZATION PRACTICES

Stabilization practices include temporary and permanent measures designed to prevent erosion and sediment from leaving the construction site. This includes revegetation, installation of mulch and/or erosion control blankets, and preserving natural vegetation within the construction ROW to the extent possible.

ONEOK's contractors will permanently stabilize, by revegetating non-cultivated areas disturbed by construction activities to prevent and minimize erosion with the exception of sites where impervious areas will be installed, such as pump station and valve sites. ONEOK's contractor will initiate revegetation of disturbed areas as soon as soil conditions permit seedbed preparation and seed germination following installation of the pipeline, per the requirements in the *CMRP* and *Revegetation Plan,* or according to the Contractor's ONEOK-approved revegetation plan.

ONEOK will also initiate temporary stabilization measures where necessary to minimize erosion. Temporary stabilization measures consist of temporary seeding and/or mulching or surface roughening. Temporary stabilization measures will be employed where erosion is likely to occur, including locations such as stream banks, road ditches, steep slopes, and areas subject to stormwater flow. Temporary stabilization measures will also be employed where completion of construction activities or where final stabilization may be delayed. ONEOK's specification for installation of mulch and temporary stabilization measures are discussed in the *CMRP* and *Revegetation Plan*.

5 CONSTRUCTION SITE DEWATERING

The NDDH and MTDEQ General Permits authorize the discharge of stormwater and groundwater from trenches or the construction ROW provided that the discharge does not adversely affect the receiving water.

In the event that dewatering activities are necessary, the water will be discharged to a well-vegetated upland area or suitable BMP (e.g., geotextile filter bag or straw bale dewatering structure) in a manner that does not cause erosion and does not result in heavily silt laden water flowing into any waterbody, wetland or stormwater sewer system (including drain tile inlets or irrigation systems). The discharged water cannot (1) be in violation of the water quality standards as defined by the NDDH and MTDEQ; (2) adversely affect downstream landowners; and (3) cause erosion or scouring at the outlet or in the receiving waterbody.

6 POLLUTION PREVENTION MANAGEMENT MEASURES

6.1 SOLID WASTE DISPOSAL AND GOOD HOUSEKEEPING

Non-hazardous wastes generated during construction will be containerized and properly disposed of off-site in compliance with state and federal requirements. Non-hazardous pipeline construction wastes include human waste, trash, pipe banding and spacers, waste from coating products, welding rods, timber skids, cleared vegetation, stumps, and rock. All wastes not native to the construction site will be disposed off-site at a licensed waste disposal facility.

Site inspections will include surveying the site for refuse, which will be disposed of as soon as possible. The contractor will not permit paper from wrapping or coating products or lightweight items

to be scattered by the wind. Upon final stabilization, all existing erosion and sediment control structures will be removed from the Project area.

The contractor will provide portable, self-contained toilets during construction operations. Wastes from these units will be collected for disposal at licensed and approved facilities. Portable toilets must be properly secured to prevent tipping by vandals or blowing over in wind events.

6.2 HAZARDOUS MATERIALS HANDLING

Secondary containment will be provided for any hazardous materials, including oil, fuels, coolants, and paint temporarily stored on the construction ROW. Safety Data Sheets (SDS) for all hazardous materials will be maintained on site. All employees dealing with hazardous materials will be informed of proper handling procedures.

In the event that hazardous wastes are generated during construction activities, such wastes will be stored and disposed of in compliance with state and federal regulations. ONEOK will follow the procedures in its *Spill Prevention, Control, and Countermeasure (SPCC) Plan* for handling of hazardous materials such as fuels and lubricants. ONEOK does not anticipate that significant volumes of hazardous materials (e.g., fuels, lubricants, fertilizer) will be stored overnight within the construction ROW.

6.3 CONCRETE WASHOUT AND RELATED WASTE

Concrete wash water has a high pH and contains high-levels of chromium which could pollute surface waters and/or groundwater. Concrete wash waters, grindings, slurry, or other related wastes may be produced as a result of construction activities. ONEOK anticipates that use of uncured concrete during construction activities will be limited to the installation of piers and footings, etc. associated with installation of pump stations and valves located along the pipeline route. ONEOK does not anticipate that concrete coating of pipeline joints or the manufacturing of concrete set-on weights will be conducted within the construction ROW.

The discharge of concrete washout or uncured concrete wastes to surface waters of the State (i.e., wetlands, waterbodies, or storm drains) is prohibited. ONEOK's contractor will designate concrete washout facilities where pouring of concrete is planned. The contractor must post signs to identify the washout facilities. Washout facilities may include prefabricated watertight containers or facilities constructed on site such as bermed earthen structures or sumps lined with plastic sheeting. Concrete washout facilities will be sized to accommodate the amount of concrete wastes both liquid and solid to be generated at the site. The structure will also be sized with adequate freeboard to prevent overflow during discharge or following precipitation events.

Concrete washout facilities will be designed and sized to promote evaporation of liquids and curing of the concrete wastes prior to disposal. Facilities constructed on site will be constructed of multiple layers of thick plastic sheeting to prevent leaks and puncturing of the barrier. Washout facilities will be covered when precipitation is imminent to prevent precipitation collecting and intermingling with wastes or prolonging the curing of solids. Concrete washout and associated wastes are to be treated as a hazardous waste until all solids have cured. Once cured, concrete solids may be disposed of as solid waste. Concrete washout facilities must be located at least 100 feet away from wetlands and waterbodies unless approved by ONEOK.

6.4 VEHICLE AND EQUIPMENT MAINTENANCE AND WASHING

Maintenance of vehicles and equipment will be conducted at contractor yards to the extent

practicable. ONEOK does not anticipate that vehicle or equipment maintenance will be conducted along the construction ROW, except in situations where the equipment is immobile and cannot be transported to a yard for maintenance or repairs. All repairs or maintenance will be conducted in accordance with ONEOK's *SPCC plan* which requires maintenance or repairs to be conducted at least 100 feet from waters of the state unless an exception is approved by ONEOK. ONEOK's approval of each exception would be after consideration of the site conditions and additional measures or precautions that could be taken to contain potential pollutants. No wastes from vehicle or equipment repair or maintenance will be stored on the construction ROW.

No vehicle or equipment washing using detergents or degreasers will be performed on the construction ROW. Cleaning of equipment and vehicles may be required on the construction ROW to prevent the spread of undesirable or invasive species, as described in ONEOK's *Weed Management Plan*. These areas will be marked by ONEOK's EIs. ONEOK will construct equipment cleaning stations away from waters of the State. In no event will runoff from vehicle and equipment washing be allowed to enter waters of the State. ONEOK will dispose of wastes resulting from equipment washing stations in accordance with its *CMRP*.

7 CONSTRUCTION SPILL PREVENTION AND REPORTING

In the event of a spill, ONEOK will follow procedures outlined in its *SPCC Plan*. ONEOK will perform any necessary notifications to federal and state agencies following construction related spills as required by permits or applicable regulations. Soils contaminated by construction related spills will be removed from the construction site in accordance with federal and state regulations. If temporary storage of contaminated soils is required onsite, stockpiled soil will be covered with plastic sheeting to prevent potential contact with stormwater.

Bulk storage of fuels and lubricants and other hazardous liquids are not expected to occur on the construction ROW. Small volumes of fuel or extra fuel tanks may occur on the ROW to support stationary pumps such as those used for dewatering and hydrostatic testing. All fuel stored on the ROW will be placed in secondary containment or be housed in dual-wall storage tanks. Stormwater that collects in secondary containment suitable for waste will be visually inspected for signs of contamination or visible sheen prior to drainage. If contamination is suspected, the stormwater will be disposed of in compliance with state and federal regulations.

The following practices will be followed during the course of the Project for spill prevention. To protect against accidental release of a lubricant, coolant, or fuel, equipment will have catch pans and absorbing pads. The contractor will have equipment and materials on site needed to prevent and/or contain an accidental spill. Equipment will be inspected each morning before work starts and during the workday to check for leaks and to repair or replace hoses or connections that are in danger of failure. ONEOK will follow the procedures in its *SPCC Plan* when refueling equipment and storing hazardous liquids on the ROW

<u>Fuels and Hazardous Materials Handling</u>

- Refueling of equipment or hazardous material transfer will occur in designated areas only.
- No refueling or hazardous material transfer will occur within 100 feet of a water of the state, spring, or well.

- Hazardous materials, including oils, fuels, and lubricants, will be stored 100 feet away from Waters of the State. Construction equipment will also be staged 100 feet away from waters of the State when parked/stored overnight.
- ONEOK's approval of each exception would be after consideration of site conditions and additional measures or precautions that could be taken to contain potential pollutants. For example, where conditions require that construction equipment (e.g., pumps used in trench dewatering) be refueled within 100 feet of waters of the state, sufficient oil and fuel containment booms and absorbent materials will be on-hand to allow for rapid containment and recovery of a spill.

8 INSPECTIONS AND MAINTENANCE

An inspection report will be prepared after each inspection (Appendix F). Records of each inspection and maintenance activities will include:

- Date of inspection;
- Name and title of person(s) conducting inspections;
- Construction phase and type of inspection being conducted;
- Scope and findings of inspections, including:
    - Locations of sediment or other pollutant discharges from the site;
    - Locations of BMPs that need to be maintained;
    - Locations of BMPs that failed to operate as designed or proved inadequate at controlling pollutants;
    - Locations where additional BMPs are needed or that were not in place at the time of the inspection; and
    - Locations where BMP's are no longer necessary and have been removed;
    - Description of corrective actions taken; and
    - Documentation of any changes made to the *SWPPP* as a result of the inspection, including any deviation from the minimum inspection schedule as in this *SWPPP*.

Where an inspection does not identify any incidents of non-compliance, the report will contain a signed statement indicating that the site is in compliance with the *SWPPP* to the best of the signer's knowledge and belief.

8.1 INSPECTION SCHEDULES

Inspections will be conducted at least once every 7 days within areas of active construction and at least once every month for areas of the construction ROW where activities are no longer active and the ROW is temporarily stabilized. Inspections must also be completed in active construction areas within 24 hours after the end of any precipitation event of 0.5 inches or greater. Post-storm event construction inspections may be postponed up to 72 hours if construction activities are idle (e.g., wet weather shut down or non-working weekends/federal holidays). However, inspections must be completed before construction activities recommence. Regular inspection of inactive construction areas is not required where snow cover or frozen ground conditions exist over the ROW for an extended period and melting conditions posing a risk of erosion do not exist. Winter conditions inspections exclusions will be documented in the inspection records (Appendix F); documentation will include dates when snow cover occurred, date when construction activities ceased, and date melting conditions began.

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8.2 MAINTENANCE

ONEOK or its contractors are responsible for maintaining all erosion control measures including replacement or modification of BMPs as necessary to prevent or minimize sediments from entering waterbodies or wetlands or from leaving the construction site. All sediment control devices (e.g., silt fences, fiber rolls) must be repaired, replaced, or supplemented when they become nonfunctional or have retained sediment in amounts exceeding the manufacturer's specifications.

If a sediment control device has failed or is determined to be no longer effective the contractor will perform maintenance or replace the device as soon as possible, or immediately in most cases, to minimize the discharge of pollutants from the construction ROW.

8.3 EROSION AND RETRIEVAL OF SEDIMENTS

Visible or measurable erosion associated with the construction of the Project, which leaves the construction ROW as a result of ineffective BMPs, is prohibited by ONEOK. If inspections identify sediment that has escaped the construction site, the off-site accumulations of sediment will be removed in a manner and at a frequency sufficient to minimize off-site impacts. Under no condition will the sediment be washed into surface waters of the State. Where a determination is made that sediment must be removed to prevent deposition within surface waters or stormwater conveyances, the sediment must be removed as soon as practicable. Recovery of sediment from sensitive resources must be approved by ONEOK prior to entry.

8.4 NON-COMPLIANCE REPORTING

ONEOK will complete inspections to ensure and document compliance with this *SWPPP*. Inspections documenting implementation and effectiveness of erosion and sediment control measures will be conducted in accordance with the requirements outlined in Section 7.1. If inspections identify any non-compliance that may endanger human health or the environment or exceed North Dakota or Montana water quality rules and regulations, ONEOK is responsible for verbally notifying the NDDH or MTDEQ within 24 hours of becoming aware of the noncompliance. Within 5 days after becoming aware of a noncompliance, the NDDH/MTDEQ must receive the following information in writing:

- A description of the noncompliance and its cause;
- The period of noncompliance, including exact dates and times; or if not identified, the anticipated time the noncompliance is expected to continue; and
- Additional measures being taken to reduce, eliminate, and prevent recurrences of the non-complying discharge or other cause of noncompliance.

8.5 UPDATING THE SWPPP

ONEOK will maintain and update the *SWPPP* to reflect current conditions whenever there is a change in site design or construction methods, which require the implementation of new or revised BMPs, or may have a significant effect on the potential for the discharge of pollutants. The Plan will also be amended to improve observed deficiencies associated with treatment of stormwater discharges.

Changes to the *SWPPP* will be made prior to changes in site conditions or for responsive *SWPPP* changes (e.g., changes to BMP's made in the field) within 72 hours after the change in BMP installation and/or implementation occur at the site. Access to an electronic copy of the *SWPPP* and General Permit will be readily available to applicable personnel at the Project site. Updates to the *SWPPP* will be provided to construction personnel as needed.

9 EMPLOYEE TRAINING

All ONEOK and construction personnel working on the Project will receive an environmental orientation session prior to accessing the construction ROW. The environmental orientation will provide an overview of the erosion and sediment control measures to be implemented during construction activities, construction related spill prevention, clean-up, and reporting and good housekeeping practices to implement on the construction ROW. Supervisory personnel (e.g., construction foremen, craft inspectors) will attend a more thorough environmental training session which will provide a detailed overview of the regulatory permits required for the Project and specific erosion and sediment control measures to be implemented during construction. A training log will be maintained as Appendix H.

ONEOK's EIs will oversee compliance with ONEOK's *CMRP* and environmental permits and regulations specific to the Project. The EIs will be experienced in the application of erosion and sediment control BMPs and knowledgeable of the contents and requirements of the *SWPPP* and other environmental procedures applicable to the Project. The EIs will conduct additional training sessions with specific construction crew as necessary to properly implement the *SWPPP.* These additional training sessions will focus on maintaining compliance with permits and regulations and will be conducted prior to construction activities in sensitive areas or changing of seasons, etc. when use of erosion and sediment control measures may be modified.

10 CONSTRUCTION STORMWATER NOTICE OF TERMINATION

This section is not applicable unless ONEOK submits an NOI for permit coverage.

11 RETENTION OF RECORDS

ONEOK will retain copies of all inspection forms, all records and information resulting from the monitoring activities required by the *SWPPP*. In addition to inspection and maintenance reports, ONEOK will keep records of the construction activities conducted at the site, including the dates when major grading activities occurred. Additionally, the dates when the site was temporarily or permanently seeded and when temporary or permanent stabilization was reached will be recorded and maintained as part of the *SWPPP*.

DRAFT

APPENDIX A

North Dakota NPDES Storm Water Authorization to Discharge Stormwater Associated with Construction Activities General Permit (NDR10-0000)

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Permit No: NDR10-0000
Effective Date: April 01, 2015
Expiration Date: March 31, 2020

AUTHORIZATION TO DISCHARGE UNDER THE

NORTH DAKOTA POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with Chapter 33-16-01 of the North Dakota Department of Health rules as promulgated under Chapter 61-28 (North Dakota Water Pollution Control Act) of the North Dakota Century Code,

Facilities both qualifying for and satisfying the requirements identified in Part I of the permit

are authorized to discharge stormwater associated with **construction activity**

to waters of the state

in accordance with conditions set forth in this permit.

This permit and the authorization to discharge shall expire at midnight,

March 31, 2020.

Signed this 31 day of March, 2015.

Karl H. Rockeman, P.E.
Director
Division of Water Quality

BP 2014.06.12

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I. PERMIT COVERAGE AND LIMITATIONS

A. Discharges Covered

1. This permit applies to all areas within the state of North Dakota, except for those areas defined as Indian Country. Construction activity located within Indian Country within the state of North Dakota must obtain a permit through the United States Environmental Protection Agency. If the construction activity is located with the jurisdiction of the state of North Dakota, and the United States Environmental Protection Agency, a permit must be obtained from both regulatory entities.

2. This permit applies to stormwater discharges associated with construction activity and small construction activity as defined in Title 40 of the Code of Federal Regulations (CFR), Parts 122.26(b)(14)(x) and (b)(15), respectively. The reference to construction activity in this permit includes both large construction activity and small construction activity as described below.

    a. Large construction activity includes clearing, grading and excavation, that disturbs land of equal to or greater than five (5) acres and includes the disturbance of less than five (5) acres of total land area that is a part of a larger common plan of development or sale if the larger common plan will ultimately disturb five (5) acres or more.

    b. Small construction activity includes clearing, grading and excavation, that disturbs land of equal to or greater than one (1) acre, and includes the disturbance of less than one (1) acre of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb equal to or greater that one (1) and less than five (5) acres.

    c. Discharges of stormwater from oil and gas exploration, production, processing or treatment operations, or transmission facilities composed of contaminated runoff by contact with or that has come into contact with, any overburden, raw material, intermediate products, finished product, byproduct, or waste products located on the site of such operations.

3. Stormwater discharges from support activities (e.g., equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) may be covered by this permit as part of a related construction site. The support activities may only be in association with one project. If the support activity is associated with more than one project, a separate stormwater permit (Industrial or mining, extraction or paving material preparation) is required.

4. Certain non-stormwater discharges from facilities covered by this permit and meeting the requirements specified in Part II(A).

5. Stormwater discharges from construction activity covered by the previous permit, issued October 12, 2009, where a notice has been submitted to obtain coverage under this permit.

6. Projects which have obtained coverage under this permit shall amend and implement a Stormwater Pollution Prevention Plan (SWPPP) that meets the requirements of this permit within ninety (90) days of the effective date of this permit.

7. Discharges from dewatering activities related to construction activities (discharges of uncontaminated stormwater).

8. Local Authority. This permit does not preempt or supersede the authority of local agencies or operators of municipal separate storm sewer systems to prohibit, restrict, or control discharges of stormwater to storm sewer systems or other water courses within their jurisdiction.

B. Discharges Not Covered

1. Stormwater discharges associated with industrial activity from any source other than construction activities described in Part I(A).

2. Post-construction discharges from industrial activity that originate from the site after construction activities have been completed at the site. Industrial and post-construction stormwater discharges may need to be covered by a separate stormwater permit.

3. The placement of fill into waters of the state requiring local, state, or federal authorizations (such as U.S. Army Corps of Engineers Section 404 permits).

4. This permit does not substitute for obligations under the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), Wild and Scenic Rivers Act, or National Historic Preservation Act (NHPA), it is your responsibility to ensure the project and resulting discharges comply with the respective requirements.

5. Discharges to waters for which there is a total maximum daily load (TMDL) allocation for sediment and/or parameters associated with sediment transport are not covered unless you develop a Stormwater Pollution Prevention plan (SWPPP) that is consistent with the assumptions and requirements in the approved TMDL. To be eligible for coverage under this general permit, the SWPPP must incorporate the conditions applicable to the discharge necessary for consistency with the assumptions, allocations and requirements of the TMDL. If a specific numeric wasteload allocation has been established that would apply to discharges from construction activity, the permittee must incorporate that allocation into the SWPPP and implement necessary steps to meet that allocation. Information about TMDL allocations may be found at the following website: www.ndhealth.gov/WQ/SW/Z2_TMDL/default.htm.

6. Stormwater discharges that the department determines will cause, or have the reasonable potential to cause or contribute to a violation of the standards for quality for waters of the state (North Dakota Administrative Code (N.D.A.C.) 33-16-02.1).

7. Discharges from hydrostatic testing, well points, water line disinfection and treatment of gasoline or diesel contaminated groundwater.

8. Discharges of wash water using detergents, wastewater, or sanitary waste.

C. Obtaining Coverage and Authorization Effective Date

1. To obtain authorization under this general permit for stormwater discharges you must submit a complete application and develop a SWPPP in accordance with Part II(C) of this permit. A SWPPP must be in place as a condition of the permit and a copy of the SWPPP must be retained by the permittee.

2. Permit coverage will become effective seven (7) days after you submit a complete application unless otherwise notified by the department (based on the department receipt date).

3. Upon the effective date of permit coverage you, as the permit applicant, are authorized to discharge stormwater from eligible activities under the terms and conditions of this permit.

D. Application (Notice of Intent) Process

1. You must use a Notice of Intent (NOI) to complete your application. An NOI form (or a replacement application form) is available at the following website: www.ndhealth.gov/WQ/Storm/Construction/ConstructionHome.htm.

2. Application Content and Conditions.

   a. The owner, or owner jointly with the operator (usually the general contractor), shall submit a completed application for this permit. The owner is responsible for compliance with all terms and conditions of this permit. The operator has day to day supervision of construction activities and is jointly responsible with the owner for compliance with the permit conditions as they pertain to the construction activities delegated to the operator.

   b. The application (Notice of Intent) shall contain, at a minimum, the following information:

      (1) Owner name, mailing address and phone number;
      (2) Project contact name and phone number;
      (3) Project/site name;
      (4) Project/site location (street address; section, township, range; or latitude and longitude) and county;
      (5) A brief description of the construction activity;
      (6) The anticipated start date and the anticipated completion date for the project (if known);
      (7) The estimated total area of the site and the total area of disturbance in acres;
      (8) The name of receiving water(s), or the name of the municipal storm sewer system and receiving water(s);
      (9) The signature of the applicant(s), owner (and operator if co-applicants) signed in accordance with the signatory requirements in Part IV(A)(6) of this permit.

   c. A SWPPP (Part II(C)) for the project must be prepared and available for review, upon request, by the department at the time of application. A partially complete plan is acceptable when it clearly identifies the item(s) to be completed, the person(s) responsible for completing the item(s) and the deadline for completing the item(s). The SWPPP must be completed prior to the start of construction (or the applicable construction phase). You are not required to submit the SWPPP with the application unless otherwise notified by the department.

3. For residential construction activity occurring within a common plan of development (such as a subdivision) subject to the permit requirements, coverage may be obtained by the following:

   a. The owner of the lot(s) shall submit one (1) NOI for all of the owner's construction activity within the common plan of development, or

   b. The operator, such as a homebuilder who may represent one (1) or more lot owners, shall submit one (1) NOI for all of the operator's construction activity within each addition of the common plan of development.

      In addition, a SWPPP must be developed and implemented for the permittee's activities within the common plan of development. Additional phases of the common plan of development may be included under the initial application and permit coverage provided the SWPPP is amended to include the additional area or phases.

4. For oil and gas exploration, production, processing, treatment operations, or transmission facilities, which discharge contaminated stormwater, permit applications may be submitted for individual project sites or for an area of operations such as well field or by county.

5. Completed applications and any reports required by this permit shall be submitted to:

North Dakota Department of Health
Division of Water Quality
918 East Divide Avenue
Bismarck, ND 58501-1947

E. Notice of Termination (NOT)

1. Permittees wishing to terminate coverage under this permit must submit a Notice of Termination (NOT) or other written request identifying the facility, reason why the permit is no longer needed and signed in accordance with Part IV(A)(6) of this permit. Compliance with the conditions of this permit is required until a NOT is submitted to the department.

2. Permittees may only submit a NOT after one of the following conditions have been met:

   a. Final stabilization (Part II(E)) has been achieved on all portions of the site for which the permittee is responsible.

   b. Another owner/operator/permittee has assumed control, in accordance with the transfer provisions (Part I(F)), over all areas of the site that have not achieved final stabilization.

   c. For residential construction only, a NOT is not required for each lot that is sold, transferred, or has achieved final stabilization. The permittee must modify their SWPPP to indicate that permit coverage is no longer required for that lot. The SWPPP shall indicate the reason why coverage is no longer needed and the date the lot was sold, transferred, or achieved final stabilization. In order to terminate coverage, all lots under the control of the owner or operator must be sold, transferred, or achieved final stabilization (Part II(E)).

F. Transfer of Ownership or Control

1. When the owner or operator of a construction project changes, the new owner or operator must submit a written request for permit transfer/modification within fourteen (14) days of assuming control of the site or commencing work on-site, or of the legal transfer, sale or closing on the property; except as provided in Part I(F)(2). Late submittals will not be rejected; however the department reserves the right to take enforcement for any unpermitted discharges or permit noncompliance. For stormwater discharges from construction activities where the owner or operator changes, the new owner or operator can implement the original SWPPP created for the project or develop and implement their own SWPPP. Permittee(s) shall ensure either directly or through coordination with other operators that their SWPPP meets all terms and conditions of this permit and that their activities do not interfere with another party's erosion and sediment control practices.

2. A permit transfer/modification request is not required for the legal transfer, sale or closing on a property between permittees covered by this permit. Examples include the sale of a property parcel from a developer to a builder, or the transfer of an easement from a developer to a local government authority. If the new party is not covered by this permit at the time of transfer or sale, then the new owner/operator must submit a completed application/NOI within 14 days of assuming control of the site.

II. STORMWATER DISCHARGE REQUIREMENTS

A. Prohibition of Non-Stormwater Discharges

The discharge of wastewater is not authorized by this permit. The following sources of non-stormwater discharges are allowed if they are not a significant source of pollution and are identified in the SWPPP: fire-fighting, fire hydrant flushing, potable water line flushing, equipment wash down without detergents or hazardous cleaning products, uncontaminated foundation drains, springs, surface water, lawn watering, chemical treatment of stormwater and air conditioning condensate. Impervious surface wash water may not be directed into any surface water or storm drain inlet unless appropriate pollution prevention measures have been implemented. Discharges may not come into contact with oil and grease deposits or any other toxic or hazardous materials (unless cleaned up using dry clean-up methods). The SWPPP must include a description of the pollution prevention measures to be implemented while non-stormwater discharges are occurring.

If chemical treatment for sediment removal is intended to be used on-site, the permittee shall provide the department with the information outlined in Appendix 1(A)(14) of this permit for approval prior to use. This information shall be provided to the department no later than sixty (60) days prior to use.

B. Releases in Excess of Reportable Quantities

This permit does not relieve the permittee of the reporting requirements of 40 CFR 110, 40 CFR 117, and 40 CFR 302, nor the reporting requirements found in Chapter 33-16-02.1 of the North Dakota Administrative Code. Any releases which meet any reporting requirement, must be reported to the agencies identified in Part IV(A)(7).

C. Stormwater Pollution Prevention Plans

All permittees shall implement a SWPPP for any construction activity requiring this permit until final stabilization is achieved. The SWPPP and revisions are subject to review by the department. The objectives of the SWPPP is to identify potential sources of sediment and other sources of pollution associated with construction activity, and to ensure practices are implemented and maintained to reduce the contribution of pollutants in stormwater discharges from the construction site to waters of the state and storm sewer systems. Stormwater management documents developed under other regulatory programs may be included or incorporated by reference in the SWPPP, or used in whole as a SWPPP if it meets the requirements of this part.

The SWPPP may identify more than one permittee and may specify the responsibilities of each permittee by task, area, and/or timing. Permittees may coordinate and prepare more than one SWPPP to accomplish this. However, in the event there is a requirement under the SWPPP for which responsibility is ambiguous or is not included in the SWPPP, each permittee shall be responsible for implementation of that requirement. Each permittee is responsible for assuring that their activities do not render another permittee's controls ineffective.

The SWPPP must incorporate the requirements provided in Appendix 1 and shall include the following information.

1. **Site Description**. Each plan shall provide a description of the construction activity and potential sources of pollution as indicated below:

    a. A description of the overall project and the type of construction activity;

b. Estimates of the total area of the site and the total area that is expected to be disturbed by excavation, grading, grubbing, or other activities during the life of the project;

c. A proposed timetable/schedule, or chart, of activities that includes major phases/stages, BMP implementation, BMP removal, disturbances, and stabilization for major portions of the site;

d. A description of the soil within the disturbed area(s);

e. The name of the surface water(s) and municipal storm sewer system at or near the disturbed area that will receive stormwater runoff from the project site; and

f. A site map which indicates the following items as applicable (more than one (1) map may be needed). If an item is not applicable, provide rationale describing why the item is not applicable to the construction activity:

1) Project boundaries;
2) Areas of ground disturbance during each phase/stage of the project;
3) Areas where disturbance will not occur, such as avoidance areas (e.g. wetlands, critical habitat, Threatened and Endangered Species, etc);
4) Drainage patterns including: flow direction (run-on and runoff);
5) Dividing lines, discharge points, and storm sewer system inlets which the site drains to or may be affected by the activity;
6) Pre-existing and final grades;
7) Location of all temporary and permanent sediment and erosion controls during each particular phase;
8) Location of any stormwater conveyances such as: retention ponds, detention ponds, ditches, pipes, swales, stormwater diversions, culverts, and ditch blocks;
9) Location of potential sources of pollution (e.g. portable toilets, trash receptacles, etc.);
10) Location of soil stockpiles;
11) Identify steep slopes;
12) Surface waters, including an aerial extent of wetland acreage;
13) Location of surface water crossings;
14) Locations where stormwater is discharged to surface waters;
15) Location of dewatering discharge points;
16) Locations of where chemical treatment of stormwater will be performed, including discharge points;
17) Fueling locations, vehicle and equipment maintenance areas, designated wash water collection site, lubricant and chemical storage, paint storage, material storage, staging areas, and debris collection area;
18) Location of any impervious surfaces upon completion of construction; and
19) Where included as part of the project, the site maps for off-site concrete/asphalt batch plants, equipment staging areas, borrow sites or excavated fill material disposal sites. Site maps must show items 1 through 18 of this section.

g. Projects that discharge stormwater which flows to a water body listed as impaired under section 303(d) of the Federal Clean Water Act due to sediment, suspended solids or turbidity must identify the water body and impairment in the SWPPP. The Department's 303(d) list may be found at the following website under Integrated Reports: www.ndhealth.gov/WQ/SW/Z2_TMDL/Integrated_Reports/B_Integrated_Reports.htm.

h. For water bodies which have a TMDL, the SWPPP must describe and conform to the Waste Load Allocations (WLA) of the water body as per Part II(C)(4)(g) of this permit. Information about TMDL allocations may be found at the following website: www.ndhealth.gov/WQ/SW/Z2_TMDL/default.htm.

2. **Narrative.** The SWPPP must include a narrative description of the selected operational controls and sediment and erosion controls as outlined in Part II(C)(3), Part II(C)(4), and Appendix 1 of this permit. When applicable, a description of the requirements for any additional environmental regulations (federal) and local requirements related to the project, as it relates to waters of the state, must also be included or incorporated by reference (e.g. The Wild and Scenic Rivers Act, The National Historic Preservation Act, The Endangered Species Act, Fish and Wildlife Coordination Act, National Environmental Policy Act, Section 404 of the Clean Water Act, etc.).

   The narrative shall describe at a minimum:

   a. The installation, removal (if applicable), and maintenance requirements of selected Best Management Practices (BMPs) for each phase/stage of construction activity;
   b. The rationale for the selection of all BMPs (calculations should be included if appropriate);
   c. Whether selected BMPs are temporary or permanent;
   d. Any descriptions of infeasibility or explanations as required in Part II, Part III(A), and Appendix 1 of this permit.

3. **Operational Controls**. The SWPPP shall describe the BMPs used in day to day operations on the project site that reduce the contribution of pollutants in stormwater runoff.

   a. The SWPPP must identify a person knowledgeable and experienced in the application of erosion and sediment control BMPs who will oversee the implementation of the SWPPP, and the installation, inspection and maintenance of the erosion and sediment control BMPs before and during construction, until a NOT is filed or the permit is transferred. A knowledgeable and experienced person is someone who meets the requirements of Part II(C)(3)(e) of this permit.

      The owner shall develop a chain of responsibility with all operators on the site to ensure that the SWPPP will be implemented and stay in effect until the construction project is complete, the entire site has undergone final stabilization, and a NOT has been submitted to the department.

   b. The SWPPP must include a description of good housekeeping practices used to maintain a clean and orderly site. The SWPPP shall describe how litter, debris, chemicals and parts will be handled to minimize exposure to stormwater. The SWPPP also shall describe what measures will be used to reduce and remove sediment tracked off-site by vehicles or equipment. In addition, the SWPPP shall describe methods which will be used to reduce the generation of dust.

   c. The SWPPP shall describe preventative maintenance practices used to ensure the proper operation of erosion and sediment control devices (e.g., fiber rolls, erosion control blankets and silt fences) and equipment used or stored on site. The SWPPP shall describe proper inspection procedures for ensuring proper operation of erosion and sediment control devices.

   d. The SWPPP shall describe spill prevention and response procedures where potential spills can occur. Specific handling procedures, storage requirements, spill containment, cleanup procedures, and disposal must be identified. Storage structures for petroleum products and other chemicals shall have adequate leak and spill protection to prevent any spilled materials from entering waters of the state or storm sewer systems.

      The potential discharge of hazardous substances in stormwater discharges shall be minimized by including measures onsite, detailed in the SWPPP to prevent and respond to releases of hazardous substances. If a reportable quantity release occurs, the SWPPP shall be revised to prevent the reoccurrence of such a release.

e. The SWPP shall outline how employees and responsible parties shall be trained on the implementation of the SWPPP. Training must be provided at least annually, as new employees or responsible parties are hired or as necessary to ensure compliance with the SWPPP and the general permit. Employees and responsible parties include individuals who are responsible for design, installation, maintenance and repair of stormwater controls and conducting inspections.

    1) On-site personnel must understand the requirements of this permit as it pertains to their role in implementing the SWPPP. On-site personnel must know:

        a. The purpose of the SWPPP, requirements of the SWPPP, and how the SWPPP will be implemented;

        b. The location of all BMPs identified in the SWPPP; and

        c. Correct installation, function, maintenance and removal (if applicable) of BMPs identified in the SWPPP.

    2) Personnel responsible for performing site inspections must understand when inspections must be conducted (Part III(A)), what must be inspected (Part II(C)(7), how to record findings, when to initiate corrective actions, and properly document corrective actions.

    3) Maintenance personnel must understand when maintenance must be performed on BMPs in order to maintain properly functioning BMPs and what needs to be recorded for corrective actions/maintenance records in accordance with Part III(A)(5) of this permit.

f. The SWPPP must describe how concrete grindings and slurry will be managed. Wastewater from concrete washout, cleanout or washout from: stucco, paint, joint compound, and other building materials shall not be discharged to waters of the state, storm sewer systems or curb and gutter systems.

    1) Wash water must be collected in leak-proof containers or leak-proof pits. Containers or pits must be designed and maintained so that overflows cannot occur due to inadequate sizing, precipitation events, or snowmelt.

g. The SWPPP shall describe any dewatering activities planned at the site. Dewatering or basin draining (e.g., pumped discharges, trench/ditch cuts for drainage) related to the permitted activity must be managed with appropriate BMPs, such that the discharge does not adversely affect the receiving water. The following conditions apply to dewatering activities:

    1) Dewatering is limited to un-contaminated stormwater, surface water, and groundwater that may collect on-site and those sources identified in Part II(A), if they are not a significant source of pollution. A separate permit must be obtained to discharge water from other sources such as hydrostatic testing of pipes, tanks, or other similar vessels; disinfection of potable water lines; pump testing of water wells; and the treatment of gasoline or diesel contaminated groundwater or surface water.

    2) The permittee(s) must operate the discharge to minimize the release of sediment and provide adequate BMPs where necessary to minimize erosion due to the discharge. Discharges must not lead to the deposition of sediment within stormwater conveyance systems or surface waters. Discharges must not cause or potentially cause a visible plume within a surface water body.

3) When dewatering, utilize structures or BMPs which allow for draw down to occur from the surface of the water, unless infeasible. If infeasible, documentation must be provided in the SWPPP. In addition, you must describe what BMP(s) will be used in its place.

4) In addition to the inspection requirements in Part III, dewatering activities shall be inspected daily. The inspection must include the dewatering site, areas where BMPs are being implemented and the discharge location. A record shall be maintained to document the inspections of the dewatering operation and actions taken to correct any problems that may be identified.

   a. Records shall contain at a minimum:

      i. Date and time of the inspection,
      ii. Inspector name,
      iii. Approximate volume of water discharged,
      iv. Findings of the inspection, including recommendations and schedule for corrective actions;
      v. Corrective actions taken (including dates, times, and party completing maintenance activities); and
      vi. Documentation that the SWPPP has been amended when changes are made to the dewatering activity in response to inspections.

5) Local authorities may require specific BMPs for discharges affecting their storm sewer system.

4. **Erosion and Sediment Controls**. Erosion and sediment controls and stabilization requirements must be implemented for each major phase of site activity (e.g., clearing, grading, building, and landscaping phases). A description of the erosion and sediment controls and site stabilization methods must be provided in accordance with Part II(C)(2) of this permit. Erosion and sediment controls, and site stabilization must conform to the requirements provided in Appendix 1. The description and implementation of controls shall address the following minimum components:

   a. The selection of erosion and sediment controls, and site stabilization shall consider the following:

      1. The expected amount, frequency, intensity, and duration of precipitation events;

      2. The nature of stormwater run-on and runoff from the site as well as changes during, and as a result of, construction activity. This includes changes to impervious surfaces, slopes, seasonal changes, and drainage features on-site;

      3. Channelized flow, must be handled in order to minimize erosion at outlets and to minimize impacts to downstream receiving waters;

      4. Soil types (wind and water erodibility, and settling time); and

      5. Seasonal conditions.

   b. Sediment basins, or an appropriate combination of equivalent sediment controls such as smaller sediment basins and/or sediment traps, silt fences, fiber logs, vegetative buffer strips, berms, etc., are required for all down slope boundaries of the disturbance area and for those side slope boundaries as may be appropriate for site conditions.

c. Temporary or permanent erosion protection and stabilization (such as cover crop planting or mulching) must be initiated immediately, as described in Appendix 1(A), for all exposed soil areas where activities have been completed or temporarily ceased.

d. All control measures must be properly selected, installed and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections or other information indicates a control has been used inappropriately or incorrectly, the permittee must replace or modify the control for site situations. Corrective actions must be made prior to the next anticipated rainfall event of within 24 hours of discovery (whichever comes first) or as soon as field conditions allow. Documentation must be provided in the maintenance records if field conditions do not allow access along with a plan of action for performing maintenance activities.

   The permittee may deviate from the manufacturer's specifications and erosion and sediment control requirements in Appendix 1 if they provide justification for the deviation and document the rationale for the deviation in the SWPPP. Any deviation must provide equivalent erosion and sediment control.

e. If sediment escapes from the site, off-site accumulations of sediment must be removed in a manner and frequency sufficient to minimize off-site impacts as outlined in Appendix 1(B). The SWPPP must be modified to prevent further sediment deposition off-site.

f. Stormwater controls are expected to withstand and function properly during precipitation events of up to the 2-year, 24-hour storm event. Visible erosion and/or off-site sediment deposition from such storm events should be minimal. The 2-year, 24-hour rainfall event in North Dakota ranges from about 1.9 inches in the west to 2.3 inches in the east.

g. For projects that discharge stormwater which flows to a water body for which there is a TMDL allocation for sediment and/or parameters associated with sediment transport, the SWPPP must be consistent with the assumptions, allocations, and requirements in the approved TMDL. If a TMDL specifies certain BMPs or controls to meet a WLA applicable to the project's discharges, the BMPs or controls must be incorporated into the SWPPP. Information about TMDL allocations may be found at the following website: www.ndhealth.gov/WQ/SW/Z2_TMDL/default.htm.

5. **Stormwater Management**. The SWPPP must identify permanent practices incorporated into the project to control pollutants in stormwater discharges occurring after construction operations have been completed.

   a. Identify stormwater ponds; flow reduction methods; infiltration of runoff on-site; sequential systems which combine several practices or other post-construction stormwater management features.

   b. Identify velocity / energy dissipation devices placed at discharge locations and appropriate erosion protection for outfall channels and ditches.

   c. Maintenance for on-site stormwater management features is the responsibility of the permittee until the NOT is submitted or the feature is accepted by the party responsible for long term maintenance.

   d. The design, installation and use of stormwater management features must comply with applicable local, state or federal requirements.

6. **Maintenance**. All erosion and sediment control measures and other protective measures identified in the SWPPP must be maintained in effective operating condition. The SWPPP must indicate, as appropriate, the maintenance or clean out interval for sediment controls. If site inspections, required in Part III of this permit, identify BMPs that are not operating effectively, maintenance shall be arranged and accomplished in accordance to Appendix 1 or as soon as practicable.

7. **Inspections**. The SWPPP must provide for site inspections as outlined in Part III. The permittee shall ensure that personnel conducting site inspections are familiar with permit conditions and the proper installation and operation of control measures. Inspectors must be knowledgeable in their role of the SWPPP, as outlined in Part II(C)(3)(e) of this permit. The erosion and sediment control measures and stabilized areas identified in the SWPPP shall be observed to ensure they are operating correctly and in serviceable condition. Inspections shall include areas used for storage of materials, permanent stormwater control measures and vehicle maintenance areas. These areas shall be inspected for evidence of, or the potential for, pollutants entering a drainage system. If necessary, the plan shall be revised based on the observations and deficiencies noted during the inspection.

8. **SWPPP Review and Revisions**.

    a. The SWPPP shall be signed in accordance with the Signatory Requirements, Part IV(A)(6), and retained on-site for the duration of activity as outlined in Part III(B).

    b. The permittee shall make the SWPPP available upon request to the department, EPA, or, in the case of discharges to a municipal storm sewer system, the operator of the municipal system.

    c. The permittee shall amend the SWPPP whenever there is a change in design, construction, operation, maintenance, or BMPs. The SWPPP shall be amended if the plan is found to be ineffective in controlling pollutants present in stormwater. The SWPPP shall be amended as soon as practicable.

D. Local Requirements

All stormwater discharges must comply with the requirements, policies, or guidelines of municipalities and other local agencies as applicable to the construction site. Any discharges to a storm sewer, ditch or other water course under the jurisdiction of a municipality must comply with any specific conditions or BMPs required by the municipality or agency.

E. Final Stabilization

The permittee(s) must ensure final stabilization of the site. The permittee(s) should submit a NOT within 30 days after final stabilization has been achieved, or another owner/operator (permittee) has assumed control according to Part I(F) for all areas of the site that have not undergone final stabilization. Final stabilization can be achieved in one of the following ways.

1. All soil disturbing activities at the site have been completed and all soils must be stabilized by a uniform perennial vegetative cover with a density of 70 percent of the pre-existing cover over the entire pervious surface area, or other equivalent means necessary to prevent soil failure under erosive conditions and;

    a. All drainage ditches, constructed to drain water from the site after construction is complete, must be stabilized to preclude erosion;

b. All temporary erosion prevention and sediment control BMPs (such as silt fence) must be removed as part of the site final stabilization; and

c. The permittee(s) must remove all sediment from conveyances and temporary sedimentation basins that will be used as permanent water quality management basins. Sediment must be stabilized to prevent it from being washed into basins, conveyances or drainage ways discharging off-site or to surface waters. The cleanout of permanent basins must be sufficient to return the basin to design capacity.

2. For areas of the state where the average annual rainfall is less than 20 inches, all soil disturbing activities at the site have been completed and erosion control measures (e.g., degradable rolled erosion control product) and stabilization methods are selected, designed, and installed along with an appropriate seed base to provide erosion control for at least three years and achieve 70 percent of the pre-existing vegetative cover within three (3) years without active maintenance. Sites must meet the criteria outlined in items 1(a), (b), and (c) above.

3. Disturbed areas on land used for agricultural purposes that are restored to their pre-construction agricultural use are not subject to these final stabilization criteria. If the construction activity removed standing crop, the area must be restored in accordance with the landowner.

   Areas disturbed that were not previously used for agricultural activities, such as buffer strips immediately adjacent to waters of the state, and areas which are not being returned to their pre-disturbance use must meet the final stabilization criteria in (1) or (2) above.

4. For residential construction only, final stabilization may be achieved when soil is stabilized (see Appendix 1(A)(3)) and down gradient perimeter control for individual lots has been implemented and the residence has been transferred to the homeowner. Additionally, the permittee must distribute a “homeowner fact sheet” to the homeowner to inform the homeowner of the need for, and benefits of, final stabilization. The permittee also must demonstrate that the homeowner received the fact sheet.

III. SELF MONITORING AND REPORTING

A. Inspection and Maintenance Requirements

1. Inspections shall be performed by or under the direction of the permittee at least once every 14 calendar days and within 24 hours after any storm event of greater than 0.25 inches of rain per 24-hour period. Inspections are only required during normal working hours. The permittee shall use a rain gauge on-site or utilize the nearest National Weather Service precipitation gauge station. Rain gauge locations or stations must be representative of the site.

   a. “Within 24 hours after any storm event greater than 0.25 inches rain per 24-hour period” means that you are required to conduct an inspection within 24 hours once a storm event has produced 0.25 inches, even if the storm event is still continuing. If there is a storm event at your site that continues for multiple days, and each day of the storm produces 0.25 inches or more rain, you are required to conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the end of the storm.

2. There may be times when a site inspection may not be practical at the specified time. Adverse climatic conditions, such as flooding, high winds, tornadoes, electrical storms, site access constraints, etc., may prohibit inspections. The permittee must include a description of why the inspection(s) could not be performed at the designated time in the next inspection record. If an inspection is delayed due to adverse weather conditions or rain events outside normal working hours, an inspection must be conducted during the next working day, or as conditions allow.

3. Some erosion and sediment control measures may require more frequent inspection based on location (e.g., sensitive areas or waters of the state) or as a result of recurring maintenance issues. Erosion or sediment control measures found in need of maintenance between inspections must be repaired or supplemented with appropriate measures as soon as practicable. Erosion and sediment control measures which require more frequent inspection based on location or as a result of recurring maintenance issues must be identified in the SWPPP.

4. All inspections conducted during construction must be recorded in writing and these records must be retained in accordance with Part III(B). Records of each inspection activity shall include:

    a. Date and time of inspections;

    b. Name of person(s) conducting inspections;

    c. Findings of inspections, including recommendations and schedule for corrective actions;

    d. Date and amount of all rainfall events greater than 1/4 inch (0.25 inches) in 24 hours; and

    e. Documentation that the SWPPP has been amended when changes are made to BMPs in response to inspections.

    f. All inspection reports shall be signed in accordance with Part IV(A)(6) of this permit.

5. Corrective actions (maintenance activities) performed during construction must be recorded in writing and these records must be retained in accordance with Part III(B). Records for maintenance activity shall include:

    a. Best Management Practice corrected;

    b. Date and time of corrective action;

    c. Name of person(s) performing corrective actions;

    d. Corrective actions taken; and

    e. Corrective actions/maintenance records shall be signed in accordance with Part IV(A)(6) of this permit.

6. Completed areas that have been stabilized but do not meet the 70 percent perennial vegetative cover criteria for final stabilization may be inspected once per month. Inspections may be suspended for parts of the construction site that meet final stabilization requirements of Part II(E) of this permit. The SWPPP must update to identify any areas which meet this condition.

7. Inspections may be suspended where earthwork has been suspended due to frozen ground conditions. The required inspections and maintenance must resume as soon as runoff occurs or the ground begins to thaw at the site. The permittee must record freeze/thaw and runoff dates as part of the inspection records.

B. Records Location

A copy of the completed and signed NOI, coverage letter from the department, SWPPP, site inspection records, and this general permit shall be kept at the site of the construction activity in a field office, trailer, shed, or in a vehicle that is on-site during normal working hours. If the site does not have a reasonable on-site location, then the documents must be retained at a readily available alternative location; preferably with the individual responsible for overseeing the implementation of the SWPPP. Electronic copies of records are acceptable if the records can be accessed on-site. If the site is inactive, then the documents may be stored at a local office. Permittees should avoid using personal electronic devices for storing electronic records.

IV. STANDARD CONDITIONS

A. COMPLIANCE RESPONSIBILITIES BP 2014.12.08

1. Duty to Comply
The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Proper Operation and Maintenance
The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. If necessary to achieve compliance with the conditions of this permit, this shall include the operation and maintenance of backup or auxiliary systems.

3. Planned Changes
The department shall be given advance notice of any planned changes at the permitted facility or of an activity which may result in permit noncompliance. Any anticipated facility expansions, production increase, or process modifications which might result in new, different, or increased discharges of pollutants shall be reported to the department as soon as possible. Changes which may result in a facility being designated a "new source" as determined in 40 CFR 122.29(b) shall also be reported.

4. Duty to Provide Information
The permittee shall furnish to the department, within a reasonable time, any information which the department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the department, upon request, copies of records required to be kept by this permit. When a permittee becomes aware that it failed to submit any relevant facts or submitted incorrect information in a permit application or any report, it shall promptly submit such facts or information.

5. Records Retention
All records and information (including calibration and maintenance) required by this permit shall be kept for at least three years or longer if requested by the department or EPA.

6. Signatory Requirements
All applications, reports, or information submitted to the department shall be signed and certified.

All permit applications shall be signed by a responsible corporate officer, a general partner, or a principal executive officer or ranking elected official.

All reports required by the permit and other information requested by the department shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described above and submitted to the department; and

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters.

If an authorization under 6. Signatory Requirements is no longer accurate for any reason, a new authorization satisfying the above requirements must be submitted to the department prior to or together with any reports, information, or applications to be signed by an authorized representative.

Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

7. Twenty-four Hour Notice of Noncompliance Reporting

1. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of the circumstances. The following occurrences of noncompliance shall be included in the oral report to the department at 701.328.5210:

    a. Any lagoon cell overflow or any unanticipated bypass which exceeds any effluent limitation in the permit under 8. Bypass of Treatment Facilities;

    b. Any upset which exceeds any effluent limitation in the permit under 9. Upset Conditions; or

    c. Violation of any daily maximum effluent or instantaneous discharge limitation for any of the pollutants listed in the permit.

2. A written submission shall also be provided within five days of the time that the permittee became aware of the circumstances. The written submission shall contain:

    a. A description of the noncompliance and its cause;

    b. The period of noncompliance, including exact dates and times;

    c. The estimated time noncompliance is expected to continue if it has not been corrected; and

    d. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

    Reports shall be submitted to the address in **Part I(D) Application (Notice of Intent) Process**. The department may waive the written report on a case by case basis if the oral report has been received within 24 hours by the department at 701.328.5210 as identified above.

    All other instances of noncompliance shall be reported no later than at the time of the next Discharge Monitoring Report submittal. The report shall include the four items listed in this subsection.

8. Bypass of Treatment Facilities

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to any of the following provisions in this section.

Bypass exceeding limitations-notification requirements.

a. Anticipated Bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of bypass.

b. Unanticipated Bypass. The permittee shall submit notice of an unanticipated bypass as required under 7. Twenty-four Hour Notice of Noncompliance Reporting.

2. Prohibition of Bypass. Bypass is prohibited, and the department may take enforcement action against a permittee for bypass, unless:

a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

c. The permittee submitted notices as required under the 8(a). Anticipated Bypass subsection of this section.

The department may approve an anticipated bypass, after considering its adverse effects, if the department determines that it will meet the three (3) conditions listed above.

9. Upset Conditions

An upset constitutes an affirmative defense to an action brought for noncompliance with erosion and sediment or site stabilization methods if the requirements of the following paragraph are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

1. An upset occurred and the permittee can identify its cause(s);

2. The permitted facility was, at the time being, properly operated;

3. The permittee submitted notice of the upset as required under 7. Twenty-four Hour Notice of Noncompliance Reporting and

4. The permittee complied with any remedial measures required under 10. Duty to Mitigate.

In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

10. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. The permittee, at the department's request, shall provide accelerated or additional monitoring as necessary to determine the nature and impact of any discharge.

11. Removed Materials

Collected screenings, grit, solids, sludges, or other pollutants removed in the course of treatment shall be buried or disposed of in such a manner to prevent any pollutant from entering any waters of the state or creating a health hazard.

12. Duty to Reapply

Any request to have this permit renewed should be made 15 days prior to its expiration date.

B. GENERAL REQUIREMENTS

1. Inspection and Entry

The permittee shall allow department and EPA representatives, at reasonable times and upon the presentation of credentials if requested, to enter the permittee's premises to inspect the construction activity and monitoring equipment, to sample any discharges, and to have access to and copy any records required to be kept by this permit.

2. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the department and EPA. As required by the Act, permit applications, permits, and effluent data shall not be considered confidential.

3. Transfers

This permit is not transferable except upon the filing of a Transfer/Modification request (Part I(F)) by the new party. The current permit holder should inform the new controller, operator, or owner of the existence of this permit and also notify the Department of the possible change.

4. New Limitations or Prohibitions

The permittee shall comply with any effluent standards or prohibitions established under Section 306(a), Section 307(a), or Section 405 of the Act for any pollutant (toxic or conventional) present in the discharge or removed substances within the time identified in the regulations even if the permit has not yet been modified to incorporate the requirements.

5. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. This includes the establishment of limitations or prohibitions based on changes to Water Quality Standards, the development and approval of waste load allocation plans, the development or revision to water quality management plans, or the establishment of prohibitions or more stringent limitations for toxic or conventional pollutants and/or sewage sludges. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

6. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

7. State Laws

Nothing in this permit shall be construed to preclude the institution of legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation preserved under Section 510 of the Act.

8. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

9. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

10. Severability

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

V. DEFINITIONS Permit Specific BP 2009.02.05

"303(d) List" or "Section 303(d) List" means a list of North Dakota's water quality-limited waters needing total maximum daily loads or TMDLs developed to comply with section 303(d) of the Clean Water Act. A copy of the latest integrated report is available on the state's web site at: www.ndhealth.gov/WQ/SW/Z2_TMDL/Integrated_Reports/B_Integrated_Reports.htm.

"Act" means the Clean Water Act.

"Bankfull" means the channel is filled to the top of one or both of its banks.

"BMP" or "Best Management Practices" means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the state. BMPs also include treatment requirements, operating procedures and practices to control construction site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

"Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

"Common Plan of Development or Sale" means a contiguous area where multiple separate and distinct land disturbing activities may be taking place at different times, on different schedules, but under one proposed plan. One plan is broadly defined to include design, permit application, advertisement or physical demarcation indicating that land-disturbing activities may occur.

"Construction Activity" means construction activity as defined in 40 CFR part 122.26(b)(14)(x) and small construction activity as defined in 40 CFR part 122.26(b)(15). This includes a disturbance to the land that results in a change in topography, existing soil cover (both vegetative and non-vegetative), or the existing soil topography that may result in accelerated stormwater runoff, leading to soil erosion and movement of sediment into surface waters or drainage systems. Examples of construction activity may include clearing, grading, filling and excavating. Construction activity includes the disturbance of less than one acre of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb one (1) acre or more. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the facility.

"Department" means the North Dakota Department of Health, Division of Water Quality.

"Energy Dissipation" means methods employed at pipe outlets to prevent erosion. Examples include, but are not limited to: concrete aprons, riprap, splash pads, and gabions that are designed to prevent erosion.

"Indian Country" means (1) All land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and including rights-of-way running through the reservations; (2) All dependent Indian communities within the borders of the United States whether within the originally or subsequently acquired territory thereof, and whether within or without the limits of a state; and (3) All Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same.

"Infeasible" means not technologically possible or not economically practicable and achievable in light of best industry practices.

"Immediately" means as soon as practicable, but no later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased.

“Large Construction Activity” means land disturbance of equal to or greater than five (5) acres. Large construction activity also includes the disturbance of less than one acre of total land area that is part of a larger common plan of development or sale, if the larger common plan will ultimately disturb equal to or greater that five acres.

“Normal Wetted Perimeter” means the area of a conveyance, such as a ditch, channel, or pipe that is in contact with water during flow events that are expected to occur once every year.

“Non-Stormwater Discharges” means discharges other than stormwater. The term includes both process and non-process sources. Process wastewater sources that require a separate NDPDES permit include, but are not limited to industrial processes, domestic facilities and cooling water. Non-stormwater sources that may be addressed in this permit include, but are not limited to: fire-fighting, fire hydrant flushing, potable water line flushing, equipment wash down without detergents or hazardous cleaning products, uncontaminated foundation drains, springs, surface water, lawn watering, chemical treatment of stormwater and air conditioning condensate.

“Operator” means the person (usually the general contractor) designated by the owner who has day to day operational control and/or the ability to modify project plans and specifications related to the SWPPP. The person must be knowledgeable in those areas of the permit for which the operator is responsible and must perform those responsibilities in a workmanlike manner.

“Owner” means the person or party possessing the title of the land on which the construction activities will occur; or if the construction activity is for a lease holder, the party or individual identified as the lease holder; or the contracting government agency responsible for the construction activity.

“Permanently Ceased” means clearing and excavation within any area of your construction site that will not include permanent structures has been completed.

“Permanent Cover” means final stabilization. Examples include grass, gravel, asphalt, and concrete.

"Severe Property Damage" means substantial physical damage to property, damage to best management practices which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in construction.

"Significant Materials" includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; hazardous substances designated under Section 101(14) of CERCLA; any chemical the facility is required to report pursuant to Section 313 of Title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with stormwater discharges.

"Significant Spills" includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (see 40 CFR 110.10 and CFR 117.21) or Section 102 of CERCLA (see 40 CFR 302.4).

“Small Construction Activity” means land disturbance of equal to or greater than one acre and less than five acres. Small construction activity also includes the disturbance of less than one acre of total land area that is part of a larger common plan of development or sale, if the larger common plan will ultimately disturb equal to or greater than one and less than five acres

"Stabilized" means the exposed ground surface has been covered by appropriate materials such as mulch, staked sod, riprap, erosion control blanket, or other material that prevents erosion from occurring. Grass seeding alone is not stabilization. Snow cover and frozen ground conditions are not considered stabilized.

“Steep Slopes” means slopes which are fifteen (15) percent or greater in grade.

"Stormwater" means stormwater runoff, snow melt runoff, and surface runoff and drainage.

“Stormwater Associated with Industrial Activity” means stormwater runoff, snow melt runoff, or surface runoff and drainage from industrial activities as defined in 40 CFR 122.26(b)(14).

“Stormwater Associated with Small Construction Activity” means the discharge of stormwater from:

(i) Construction activities including clearing, grading, and excavating that result in land disturbance of equal to or greater than once acre and less than five acres. Small construction activity also includes the disturbance of less than one acre of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb equal to or greater than one and less than five acres. Small construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the facility.

(ii) Any other construction activity designated by EPA or the department, based on the potential for contribution to a violation of a water quality standard or for significant contribution of pollutants to waters of the state.

“Temporarily Ceased” means clearing, grading, and excavation within any area of the site that will not include permanent structures, will not resume (i.e., the land will be idle) for a period of 14 or more calendar days, but such activities will resume in the future.

"Temporary Erosion Protection" means methods employed to prevent erosion. Examples of temporary cover include; mulch, straw, erosion control blanket, wood chips, tackifiers, and erosion netting.

"Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with permit requirements because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed erosion and sediment controls or site stabilization methods, inadequate erosion and sediment controls or site stabilization methods, lack of preventive maintenance, or careless or improper operation.

“Waters of the State” means any and all surface waters that are contained in or flow in or through the state of North Dakota as defined in NDCC 61-28-02. This definition includes all water courses, even if they are usually dry.

“You” means the owner, operator or permittee as appropriate.

Appendix 1 – Erosion and Sediment Control Requirements

Requirements for designing, implementing and maintaining erosion and sediment controls.

A. Erosion and Sediment Control Practices

1. Sites using temporary (or permanent) sediment basins must meet the following requirements:

    a. Sediment basins shall be designed for a calculated volume of runoff from a 2-year, 24-hour storm per acre drained to the basin and provides not less than 1,800 cubic feet of sediment storage below the invert of the outlet pipe from each acre drained to the basin; or

    b. Basins shall be sized to provide 3,600 cubic feet of sediment storage below the invert of the outlet pipe per acre drained to the basin if calculations are not performed.

    c. Basin outlets must be designed to avoid short-circuiting and the discharge of floating debris. Basins must be designed with the ability to allow complete basin drawdown for maintenance activities. Basins must release the storage volume in at least 24 hours. Outlet structures must be designed to withdraw water from the surface, unless not practicable. If not practicable, rationale must be provided in the SWPPP. The basin must have a stabilized emergency overflow to prevent failure of pond integrity. Energy dissipation must be provided for the basin outlet.

2. Erosion, sediment, and stabilization practices shall be provided. Erosion, sediment and stabilization practices include such things as: silt fences, fiber logs, vegetative buffer strips, erosion control blankets, mulch, hydro-seeding combined with mulch or tackifiers, etc.

3. All exposed soil areas must be stabilized (see definitions). Stabilization must be initiated immediately where activities have been permanently or temporarily ceased on any portion of the site and will not resume for a period exceeding fourteen (14) calendar days. Stabilization must be completed as soon as practicable, but no later than fourteen (14) calendar days after the initiation of soil stabilization. Temporary stockpiles without significant silt, clay or organic components (e.g., clean aggregate stockpiles, demolition concrete stockpiles, sand stockpiles) are exempt from this requirement.

    a. For slopes with a grade of 3:1 or greater, stabilization must be initiated immediately once activities have been completed or temporarily ceased. Stabilization must be completed as soon as practicable, but no later than seven (7) calendar days after the initiation of soil stabilization.

4. Temporary soil stockpiles must have effective sediment controls, and cannot be placed in surface waters, including stormwater conveyances such as curb and gutter systems, or conduits and ditches.

5. The normal wetted perimeter of any temporary or permanent drainage ditch that drains water from a construction site, or diverts water around a site, must be stabilized at least 200 linear feet from the property edge, or from the point of discharge to any surface water. Stabilization shall be completed prior to connection with a surface water. Any remaining portion of the temporary or permanent drainage ditch must be stabilized within fourteen (14) calendar days for portions which construction activities have temporarily or permanently ceased.

6. If stabilization requirements cannot be met due to circumstances beyond the control of the permittee, the permittee may comply with following:

    a. If vegetative stabilization is to be used, immediately initiate, and within 14 calendars days complete, the installation of temporary non-vegetated stabilization; or

    b. Complete all methods of initiating stabilization as soon as conditions or circumstances allow.

If any conditions in parts a or b above are encountered, the permittee must document the circumstances which prevented you from meeting the stabilization requirements in the SWPPP of this paragraph and provide a schedule in the SWPPP which will be followed in order to meet the stabilization requirements.

Permittees are responsible for implementing winter stabilization methods during frozen ground conditions if the site was not stabilized prior to the ground freezing.

7. Stream diversions or any temporary or permanent drainage ditch or trench, which will have continuous flow, shall be stabilized with appropriate controls prior to connection with any surface water. The entire area (channel and bank) of the stream diversion or temporary or permanent drainage ditch, or trench, must be appropriately stabilized to bankfull height.

8. While working in or around surface waters, sediment and erosion controls must be used above the anticipated level of the surface water. Floating silt curtain does not satisfy the down slope and side slope boundary requirements in Part II(C)(4)(b) of this permit, unless the construction activity is on or below the elevation of the surface water. The floating silt curtain must be placed as close to shore as possible. Sediment control must be installed where exposed soils drain to the surface water immediately after construction activity along the waterline has been completed.

9. Pipe and culvert outlets must be provided with energy dissipation within 24 hours of connection to a surface water.

10. Splash pads and/or downspout extensions must be provided for roof drains to prevent erosion from roof runoff.

11. All storm drain inlets in the immediate vicinity of the construction site must be protected by appropriate BMPs during construction until all disturbed areas and stockpiles with the potential to discharge to the inlet have been stabilized. This includes storm drain inlets which may be affected by sediment tracked onto paved surfaces by vehicles or equipment.

12. Inlet protection devices are a last line of control – erosion and sediment control practices must be used on-site. Inlet protection devices must conform to local ordinances or regulations. In general, inlet protection devices need to provide for adequate drainage to prevent excessive roadway flooding. Inlet protection may be removed for a particular inlet if a specific concern (i.e., street flooding/freezing, snow removal) has been identified and documented in the SWPPP. In this situation, additional erosion and sediment control practices, or stabilization methods must be used to supplement the loss of the inlet protection device to prevent sediment from entering the storm sewer system.

13. Vegetated buffers must have a minimum width of 1 foot for every 5 feet of disturbed area that drains to the buffer. The width of the buffer shall have a slope of 5 percent or less and the area draining to the buffer shall have a slope of 6 percent or less. Concentrated flows should be minimized throughout the buffer.

    Buffers shall consist of dense grassy vegetation, 3 to 12 inches tall with uniform coverage over 90 percent of the buffer. Woody vegetation shall not be counted for the 90 percent coverage. No more than 10 percent of the overall buffer may be comprised of woody vegetation.

14. A 50 foot natural buffer or equivalent erosion and sediment controls must be provided when a project is within 50 feet of a surface water and stormwater flows to the surface water. If equivalent erosion and sediment controls are used, rationale for using equivalent controls must be provided in the SWPPP.

If working within 100 feet of a surface water listed as impaired for sediment, suspended solids or turbidity, a 100 foot natural buffer or equivalent sediment and erosion controls must be provided. If equivalent erosion and sediment controls are to be used, rationale for using equivalent controls must be provided in the SWPPP.

15. If the permittee(s) intend to use chemical treatment for sediment removal, they must be used in accordance with the manufacturer's specifications. Treatment chemicals must be selected appropriately for the anticipated soil particle size and characteristics of the stormwater (pH, turbidity, flow rate of stormwater flowing into the chemical treatment system, etc.). A description of the chemical treatment process must be included in the SWPPP.

    a. To ensure selection and management of chemicals minimize the potential for harmful effects in the discharge, the permittee shall provide a written request to the department for review and approval. Additional monitoring and reporting may be required as a condition for the approval to discharge.

       A request to discharge chemically treated water shall include all of the following information and be provided sixty (60) days prior to use:

       i. Material Safety Data Sheet/Safety Data Sheet (MSDS/SDS);
       ii. Proposed water additive discharge concentration;
       iii. Discharge frequency (i.e., number of hours per day and number of days per year);
       iv. Monitoring point for product discharge;
       v. Type of removal treatment, if any, that the water additive receives prior to discharge;
       vi. Product function (e.g., coagulant, flocculant, etc.);
       vii. A 48-hour LC_{50} or EC_{50} for a North American freshwater planktonic crustacean (*Ceriodaphnia* sp., *Daphnia* sp., or *Simocephalus* sp.); and
       viii. Results for a toxicity test for one other North American freshwater aquatic species (other than a planktonic crustacean).

    b. Discharges from the chemical treatment of stormwater must not cause a violation of the standards of quality for waters of the state (N.D.A.C. § 33-16-02.1). The discharge must meet the dewatering or basin draining requirements provided in Part II(C)(3)(g) of this permit.

16. Minimize the duration of exposed soils on steep slopes.

B. Maintenance Requirements for Erosion and Sediment Controls

1. All erosion prevention and sediment control BMPs must be inspected to ensure integrity and effectiveness. All nonfunctional BMPs must be repaired, replaced, maintained or supplemented with functional BMPs. If a nonfunctioning BMP is supplemented, the nonfunctional BMP shall be removed. Corrective actions must be made prior to the next anticipated rainfall event or within 24 hours of discovery (whichever comes first), or as soon as field conditions allow access. Documentation must be provided in the maintenance records if field conditions do not allow access along with a plan of action for performing maintenance activities.

   Permittee(s) must investigate and comply with the following inspection and maintenance requirements:

   a. All control devices similar to, and including, silt fence or fiber rolls must be repaired, replaced, maintained or supplemented when they become nonfunctional (torn from posts, visible tears, etc.). Collected sediment must be removed as it approaches 1/2 of the above ground capacity of the control device.

   b. Fiber rolls must be replaced when 1/2 of the original above ground height of the device when it was installed has been lost as a result of flattening or other damage.

c. Sedimentation basins must be drained and the sediment removed when the depth of sediment collected in the basin reaches 1/2 the storage volume. Drainage and removal must be completed within 72 hours of discovery, or as soon as field conditions allow access. Documentation must be provided in the maintenance records if field conditions do not allow access along with a plan of action for performing maintenance activities.

d. Maintenance and cleaning of inlet protection devices must be performed when sediment accumulates, the filter becomes clogged, and/or performance is compromised.

2. Surface waters, including drainage ditches and conveyance systems, must be inspected for evidence of sediment deposited by erosion. Permittees must remove all deltas and sediment deposits in surface waters, drainage ways, catch basins, and other drainage systems. Areas where sediment removal results in exposed soil must be stabilized. Removal and stabilization must take place immediately, but no more than, seven (7) calendar days after the discovery unless precluded by legal, regulatory or physical access constraints. Permittees shall use all reasonable efforts to obtain access. If precluded, removal and stabilization shall take place immediately, but no more than, seven (7) calendar days after obtaining access. Permittees are responsible for contacting all local, regional, state, and federal authorities, and receiving any applicable permits prior to conducting any work.

3. Vehicle tracking of sediment from the site must be minimized by BMPs. This may include having a designated egress with aggregate surfacing from the site or by designating off-site parking. Permittees are responsible for (or making the arrangements for) street sweeping and/or scraping if BMPs are not adequate to prevent sediment from being tracked onto the street from the site.

   Construction site egress locations must be inspected for evidence of sediment being tracked offsite by vehicles or equipment onto paved surfaces. Accumulations of tracked and deposited sediment must be removed from all off-site paved surfaces by the end of the work day, shift or if applicable, within a shorter time specified by local authorities or the department.

4. If sediment escapes the construction site, off-site accumulations of sediment must be removed in a manner and at a frequency sufficient to minimize off-site impacts (e.g., fugitive sediment in streets could be washed into storm sewers by the next rain event and/or pose a safety hazard to users of public streets).

5. Vegetative buffers must be inspected for proper distribution of flows, sediment accumulation and signs of rill formation. If a buffer becomes silt covered, contains rills, or is otherwise rendered ineffective, other control measures shall be implemented. Eroded areas shall be repaired and stabilized within 24 hours of discovery, or as soon as conditions allow access. Documentation must be provided in the maintenance records if field conditions do not allow access along with a plan of action for performing maintenance activities.

C. **Operational Controls**

1. Properly handle construction debris and waste materials.

   a. Debris and waste must be handled appropriately until disposal. Litter and debris shall be collected and stored to reduce the potential for wind and water to carry the materials off-site or leachate discharging from a site. Collected material shall be taken to the appropriate facility for disposal or recycling.

   b. Liquid or soluble materials including oil, fuel, paint and any other hazardous substances must be properly stored, to prevent spills, leaks or other discharges. Restricted access to storage areas must be provided to prevent vandalism. Storage and disposal of liquid or soluble material must be in compliance with applicable regulations.

2. Wash water containments must be cleaned out (solids and liquid) before 80 percent of storage capacity is attained.

3. Best management practices used in surface waters must be cleaned immediately upon removal from surface waters to prevent the transfer of aquatic nuisance species.

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APPENDIX B

Montana General Permit for Stormwater Discharges Associated with Construction Activities (MTR100000)

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GENERAL PERMIT
FOR
STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY

PERMIT NUMBER MTR100000

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

AUTHORIZATION TO DISCHARGE UNDER
THE MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM (MPDES)

In compliance with Section 75-5-101 *et seq.,* Montana Code Annotated (MCA); Administrative Rules of Montana (ARM) 17.30.1101; 17.30.1301 *et seq.; and ARM* 17.30.601 *et seq.,* owners and operators (permittees) with authorization under this *General Permit for Storm Water Discharges Associated with Construction Activity* are permitted to discharge storm water resulting from construction activities as described in Section 1.1 of this Permit and subject to effluent limitations, monitoring requirements, and other conditions set forth herein.

This Permit shall become effective January 1, 2018.

This Permit and the authorization to discharge shall expire at midnight, December 31, 2022.

FOR THE MONTANA DEPARTMENT
OF ENVIRONMENTAL QUALITY

Jon Kenning, Chief
Water Protection Bureau

Issuance Date: July 18, 2017

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1. Coverage Under This Permit

1.1. Eligibility

1.1.1. Construction Activities Covered

This Permit applies to all areas of the State of Montana, except for lands within the external boundaries of Indian Reservations. This permit applies to "storm water discharge associated with construction activity," as defined in Part 5 of this permit.

A "storm water discharge associated with construction activity" regulated under this permit occurs when both of the following two criteria are met:

- There are areas of ground disturbance or other potential pollutant sources due to the construction activity where a storm water discharge to state surface waters can occur; and
- The construction activity disturbs through clearing, excavating, grading, or placement/removal of earth material a total area equal to or greater than one acre. The "total area" must include all areas which are part of a "larger common plan of development or sale", as defined in Part 5 of this permit.

Determination of the acreage of disturbance does not typically include disturbance for routine maintenance activities on existing roads where the line and grade or hydrologic capacity of the road is not being altered, nor does it include the paving of existing roads.

In determining the occurrence or potential occurrence of a "storm water discharge associated with construction activity" based on the acreage of ground disturbance and discharge potential to state surface waters, the permittee must consider the following additional factors:

- All potential drainage/discharge conditions and flow patterns, and their variation during the different phases of the construction activity;
- All potential rainfall or snowmelt events and their unpredictability over time (such as experiencing a relatively higher rainfall or snowmelt amount in a relatively shorter time period);
- Support activities for the construction project which may be on or off the conventional construction project "site" (as defined in Part 5 of this permit);
- Storm water discharges must typically be regulated beyond the conventional construction earthwork and building phases, lasting from the initiation of construction-related ground disturbance to "final stabilization" (as defined in Part 5 of this permit) of that disturbance, which can sometimes take significant extra time to achieve; and
- Storm water which discharges into a drain inlet and/or storm sewer system from the site is regulated as a discharge to state surface waters if the inlet or system ultimately discharges into a state surface water.

Support activities can include, but are not limited to, areas used for access-related work, earth material borrow areas, equipment staging areas, materials storage areas, temporary concrete or asphalt batch plants, and any areas used for fill placement. For storm water discharges from support activities to be covered under this permit for a particular construction activity permit authorization, such support activities must:

- Not be part of a larger commercial operation serving multiple unrelated construction activities, and not continue operation beyond the completion of the permittees construction activity; and
- Have appropriate controls and measures identified for the particular support activity, including required documentation, in the Storm Water Pollution Prevention Plan (SWPPP) required in Part 3 of this permit.

1.1.2. Allowable Storm Water Discharges

Unless otherwise made ineligible through the provisions in Part 1.1.4. below, the following discharges are eligible for coverage under this permit:

- Storm water discharges associated with construction activity as defined in Part 5 of this permit; and
- Storm water discharges to impaired waterbodies that are consistent with approved TMDLs and assigned WLAs, and the additional requirements within this permit.

1.1.3. Allowable Non-Storm Water Discharges

The following are non-storm water discharges allowed under this permit:

- Uncontaminated condensate from air conditioners, coolers, and other compressors and from the outside storage of refrigerated gases or liquids;
- Irrigation drainage;
- Landscape watering provided all pesticides, herbicides, and fertilizer have been applied in accordance with the approved labeling;
- Pavement wash waters where no detergents are used and no spills or leaks of toxic or hazardous materials have occurred (unless all spilled material has been removed);
- Routine external building wash down that does not use detergents;
- Uncontaminated ground water or spring water;
- Water used to control dust;
- Discharges from emergency fire-fighting activities;
- Foundation or footing drains where flows are not contaminated with process materials; and
- Incidental windblown mist from cooling towers that collects on rooftops or adjacent portions of the facility, but not intentional discharges from the cooling tower (e.g., "piped" cooling tower blowdown or drains).

1.1.4. Limitations on Coverage

The following discharges are not eligible for coverage under this permit:

- Storm water discharges that are mixed with non-storm water, other than those non-storm water discharges listed in Part 1.1.3.;
- Prohibited discharges as listed in Part 2.1.6.;
- Discharges of construction dewatering effluent to state surface waters requiring authorization under the MPDES "General Permit for Construction Dewatering";
- Storm water discharges to impaired waterbodies that are inconsistent with approved TMDLs and assigned WLAs, and the additional requirements with this permit;
- Storm water discharges to waterbodies that are inconsistent with additional Department requirements, on a case-by-case basis; or
- Discharges which the Department determines have a reasonable potential to cause, or contribute to, an exceedance of any applicable water quality standard, and/or the Department has determined coverage under a MPDES Individual Permit is required.

Coverage does not relieve the permittee from any other statute, regulation, permits, or other regulatory requirements for activities occurring within the project area.

The Department may deny coverage for storm water discharges citing that the permittee appears unable to comply with the one or more of the following requirements:

- Effluent standards, effluent limitations, standards of performance for new sources of pollutants, toxic effluent standards and prohibitions, and pretreatment standards;
- Water quality standards established pursuant to 75-5-301, MCA;

- Prohibition of discharge of any radiological, chemical, or biological warfare agent or high-level radioactive waste;
- Prohibition of any discharges to which the regional administrator has objected in writing;
- Prohibition of any discharge which is in conflict with a plan or amendment thereto approved pursuant to section 208(b) of the Act;
- Any additional requirements that the Department determines are necessary to carry out the provisions of 75-5-101, et seq., MCA; and
- A point source is a new source or a new discharge and the discharge from its construction or operation will cause or contribute to a violation of water quality standards (ARM 17.30.1311(7)).

In addition, the Department may deny coverage for the following reasons:

- The storm water discharge is different in degree or nature from discharges reasonably expected from sources or activities within the category described in this MPDES General Permit (including pollutants from process wastewater streams).
- The MPDES permit authorization for the same operation has previously been denied or revoked.
- The discharge sought to be authorized under the 2017 General Permit is also included within an application or is subject to review under the Major Facility Siting Act, 75-20-101, et seq., MCA.
- The point source is, or will be, located in an area of unique ecological or recreational significance. Such determination must be based upon considerations of Montana stream classifications adopted under 75-5-301, MCA, impacts on fishery resources, local conditions at proposed discharge sites, and designations of wilderness areas under 16 USC 1132 or of wild and scenic rivers under 16 USC 1274.

1.2. Authorization under this Permit

An "owner or operator" of a "storm water discharge associated with construction activity" is required to obtain authorization under an MPDES permit. "Owner or operator" means a person who owns, leases, operates, controls, or supervises a point source. All construction activities that disturb and are part of a larger common plan of development or sale are subject to permit coverage.

In this permit, the "owner or operator" is also identified as the "permittee".

A Notice of Intent (NOI) process is used for an owner or operator to obtain authorization to discharge under this permit. Through the submittal of a NOI, the owner or operator acknowledges eligibility for coverage under this permit and agrees to comply with the effluent limits and conditions of this permit. Authorization is effective upon the date of receipt of the complete NOI Package by the Department. A copy of the completed NOI Package must be maintained for the permittee's records. The NOI Package, as outlined below, shall be completed and submitted to:

Montana Department of Environmental Quality
Water Protection Bureau
P.O. Box 200901
Helena, MT 59620-0901

1.2.1. New Authorizations (Not Previously Authorized)

Owners or operators can obtain first-time coverage under this permit by submitting a complete Notice of Intent (NOI-SWC) Package to the Department.

The NOI-SWC Package must consist of:

- A completed NOI-SWC form using the standard NOI form provided by the Department;
- A separate SWPPP, including all associated maps, diagrams, details, and plans, which has been completed in accordance with the requirements identified in Part 3 of this permit;
- A copy of the consultation letter from the Montana Sage Grouse Habitat Conservation Program (if applicable); and
- The appropriate "application fee" for the NOI-SWC.

1.2.2. Continuing Authorizations Under the 2013 General Permit

Permittees requiring continued authorization beyond the December 31, 2017, expiration date, must submit a complete NOI-SWC package to the Department for coverage under the reissued 2018-2022 General Permit.

The NOI-SWC Package must consist of:

- A completed renewal NOI-SWC form using the standard NOI-SWC form provided by the Department;
- A separate SWPPP, including all associated maps, diagrams, details, and plans, which has been completed in accordance with the requirements identified in Part 3 of this permit;
- A copy of the consultation letter from the Montana Sage Grouse Habitat Conservation Program (if applicable); and
- The appropriate "application fee" for the NOI-SWC.

1.2.3. Public Sign or Other Notice Requirement (Effective January 1, 2021)

This requirement is effective January 1, 2021, in order to provide additional time for the regulated community to comply. The permittee must post a sign or other form of notice to publically display confirmation of coverage under this General Permit. The sign or other notice must be positioned in a safe, accessible location in close proximity to the regulated construction activities and visible from the nearest road. At a minimum the sign or other notice must include:

- Large, readable font;
- The MPDES authorization number or a copy of the confirmation letter;
- The statement "Request project information from Montana DEQ Water Protection Bureau at (406) 444-3080"; and
- The statement "File a report at: http://deq.mt.gov/DEQAdmin/ENF/Spill".

1.2.4. Modification to NOI-SWCs

Modification requests to current authorizations (including decreased or increased disturbance area) submitted within six months of the date of the coverage under this Permit are processed with the corresponding fee. If the request is submitted six months after the date of coverage under this Permit, the modification will be processed with the corresponding new "application fee" for the NOI-SWC.

A permittee may not request to add additional construction-related disturbance area(s) unless the new additional construction-related disturbance is directly contiguous to and directly associated with the original site, except for support activities.

The NOI-SWC Package must consist of:

- A completed NOI-SWC form using the standard NOI-SWC form provided by the Department with Modification checked in Section A;
- A separate SWPPP, including all associated maps, diagrams, details, plans, and records, updated in accordance with the requirements identified in Part 3 of this permit;
- A copy of the consultation letter from the Montana Sage Grouse Habitat Conservation Program (see below for applicability); and
- The appropriate "application fee".

Sage Grouse Consultation Requirements for Modifications to NOIs- If the project is within designated sage grouse habitat, any modification due to a change in disturbed acreage requires verification from the Montana Sage Grouse Habitat Conservation Program that may require a consultation letter and/or updates to a consultation letter. If the modification request is outside of sage grouse habitat, no consultation is required. See NOI-SWC form and attached instructions.

1.2.5. Resubmittal and Administrative Processing

The Department may request a resubmittal of a NOI-SWC, SWPPP, any required records, and any associated fees. Administrative processing fees may be assessed for Department reviews.

1.3. Transfer of Coverage under this Permit

The Department has a Permit Transfer Notification form (PTN-SWC). Permittees must use the PTN-SWC to transfer ownership or change the name of the entity that holds an authorization under this permit with the corresponding fee. The PTN-SWC must be submitted at least 30 days before the effective date of the proposed transfer and constitutes written notice to the Department under the Montana Water Quality Act that the new "owner or operator" assumes responsibility and liability for all the terms and conditions, including permit fees. This PTN-SWC form may not be used to transfer coverage to a new or different construction site, activity or location. Until the Department determines the submitted PTN-SWC form and the transfer to the new "owner or operator" is complete, the "owner or operator" of record remains responsible for compliance with the terms of the authorization under this Permit, including fees and/or violations.

1.4. Termination of Coverage under This Permit

Permittees may terminate coverage under this Permit after achieving of "final stabilization" for a construction site as defined in Part 5. of this Permit. In addition to achieving final stabilization, the permittee must also:

- Remove temporary storm water conveyances/channels and other temporary storm water control measures and/or BMPs
- Remove construction equipment and vehicles, and
- Cease all potential pollutant-generating activities due to the construction activity.

The permittee must submit the standard Department Notice of Termination (NOT-SWC) form to terminate coverage under this Permit. The NOT-SWC form must be signed by an authorized signatory and submitted to the Department.

Coverage under the permit remains in effect until the Department processes a NOT-SWC form. The permittee is responsible for payment of annual fees for each calendar year covered under the permit. Failure to submit a NOT-SWC will result in accrual of annual permit fees. The permittee is responsible for complying with the terms of this permit until notified by the Department that the authorization is terminated.

If an individual MPDES permit is issued to an owner or operator for discharges which would otherwise be subject to this permit, coverage under this Permit is terminated on the effective date of the individual MPDES permit.

1.5. Storm Water Rainfall Erosivity Waiver Form

Owners or operators of construction activities with less than five total acres of ground disturbance may use a "Storm Water Rainfall Erosivity Waiver Form" instead of obtaining coverage under this General Permit.

Submittal of a waiver certification is an optional alternative to obtaining permit coverage for discharges of storm water associated with small construction activity. If you submit a waiver request and the associated fee, your project is not waived until approval by the Department and the Department issues an approval letter.

Any discharge of storm water associated with small construction activity not covered by either this General Permit or a waiver may be considered an unpermitted discharge under the Montana Water Quality Act. The Department reserves the right to take enforcement for any unpermitted discharges that occur between the time construction commenced and either General Permit authorization is granted or a complete and accurate waiver certification is submitted and approved. The Department may notify any operator covered by a waiver that they must obtain General Permit coverage. Any member of the public may petition the Department to take action under this provision by submitting written notice along with supporting justification.

2. Effluent Limitations, Monitoring, and Reporting Requirements

2.1. Technology-Based Effluent Limitations

Technology based effluent limits must be achieved through the good engineering selection and design, implementation, installation, and maintenance of Best Management Practices (BMPs) for all authorized storm water discharges associated with construction activities. To meet this requirement, the permittee must comply with all conditions in Part 2.1. of this Permit, and any other state or local requirements, regardless of stringency. All BMPs must be documented in the SWPPP, site map(s), and/or inspection records. If alternative controls are utilized, documentation must be included to confirm impracticability and that the chosen measure achieves comparable criteria.

At a minimum, the permittee must achieve the following in all BMPs:

2.1.1. Erosion and Sediment Controls

a. Control Storm Water Volume and Velocity to minimize soil erosion, to include:
   i. Select and design BMPs that address the amount, frequency, intensity, and total duration of precipitation; quantity and quality of storm water runoff including peak flow rates and total storm water volume; soil characteristics for the construction project area(s) including the range of the soil particle sizes expected to be present on the site; and timeframes the construction project will be completed;
   ii. Implement and install all BMPs in accordance with good engineering practices and design specifications;
   iii. Complete implementation and installation of BMPs before or at the start of each major construction activity;
   iv. Minimize erosion within the construction project area;
   v. Divert storm water runoff from disturbed areas to sediment removal BMPs;
   vi. Minimize sediment discharges from the construction project area; and
   vii. Maintain BMPs in effective operating condition.

b. Control Storm Water Discharges, to include:
   i. Minimize erosion at outlets and conveyance channels; and therefore, protecting downstream properties and waterways by controlling volume and velocity within the construction project area;
   ii. Protect all storm drain inlets (to include offsite inlets which receive and carry storm water flow from your site to a state surface water, provided you have the authority to access the storm drain inlet);
   iii. Manage and minimize vehicle / equipment entrances and exits to the construction project area;
   iv. Stabilize ditches, swales, channels, and outlets;
   v. Construct storm water retention and detention facilities during initial site grading activities;
   vi. Provide surface outlets for retention and detention facilities for active construction, and discharge the highest quality water from the facility; and
   vii. Protect infiltration facilities from sedimentation during active construction.

c. Minimize Soil Disturbance, to include:
   i. Limit areas of disturbance and soil exposure; and
   ii. Provide a natural buffer within the construction project area.

d. Minimize the Disturbance of Steep Slopes of 15% or greater, to include:
   i. Design and construct cut-and-fill slopes to minimize erosion;
   ii. Divert off site storm water or ground water away from slopes and disturbed areas; and
   iii. Prevent storm water run on from impacting sediment removal BMPs.

e. Maintain Natural Buffers around State Surface Waters, to include:
   i. Maintain natural buffers around state waters; and
   ii. Direct storm water runoff to vegetated areas.

f. Minimize Soil Compaction and Preservation of Topsoil, to include:
   i. Mark and maintain clearing limits before disturbing soils and during construction activities; and
   ii. Preserve topsoil.

2.1.2. Soil Stabilization

a. Temporary Soil Stabilization, to include:
   i. Stabilize disturbed areas immediately for any portion of the construction project that will remain inactive for 14 or more calendar days with erosion control BMPs.
b. Final Stabilization, to include:
   ii. Stabilize disturbed areas within any portion of the project that have completed clearing, grading, excavation, or other earth disturbing activities with erosion control BMPs.

2.1.3. Dewatering

a. Control ground water, surface water, and/or accumulated storm water dewatering activities to prevent discharges to state waters; and
b. Obtain authorization under the Construction Dewatering General Permit or an individual permit prior to discharge of dewatering effluent to state surface waters.

2.1.4. Pollution Prevention Measures

a. Implement pollution prevention measures that effectively manage and dispose of all pollutants in a way that does not cause contamination of storm water, to include:
   i. Provide cover, containment, and protection for all chemicals, liquids, petroleum products, and construction materials, products, and wastes;
   ii. Use spill prevention and control measures for vehicle maintenance and fueling;
   iii. Maintain appropriate spill kits; clean up spills and leaks immediately; and report appropriate quantities in accordance with Part 4. of the permit;
   iv. Prevent discharge of equipment wash water and clean-out wastes, and designate these activities away from and state waters and their conveyances;
   v. Apply fertilizers and herbicides per manufacturers' requirements; and
   vi. Prevent discharges of concrete products.

2.1.5. Surface Outlets

When discharging from basins and impoundments, outlet structures must be utilized that withdraw water from the surface, unless infeasible, to discharge the highest quality water from the facility.

2.1.6. Prohibited Discharges

The following discharges are prohibited:

   i. Wastewater from washout of concrete;
   ii. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;
   iii. Fuels, oils, or other potential pollutants used in vehicle and equipment operation and maintenance;
   iv. Soaps or solvents used in vehicle and equipment washing or external building wash down;
   v. Storm water discharges of disturbed, contaminated soils; and
   vi. Toxic or hazardous substances from a spill or other release including the disturbance and/or removal of contaminated soils.

2.2. Water Quality-Based Effluent Limitations

2.2.1. Water Quality Standards

Storm water discharges regulated under this permit must be controlled as necessary to meet applicable numeric and narrative water quality standards. A storm water discharge associated with construction activity may not cause or contribute to an exceedance of applicable water quality standards.

If at any time the permittee becomes aware, or the Department determines, that a storm water discharge causes or contributes to an exceedance of applicable water quality standards, the permittee must take corrective action as required in Part 2.4 of this permit. Additionally, the Department may require the permittee to obtain coverage under an individual permit, if information indicates the discharges are not controlled as necessary to meet applicable water quality standards.

2.2.2. Storm Water Discharges to Impaired Waterbodies

The permittee must identify if storm water discharges from their construction activity will discharge to impaired waterbodies. Information on impaired waterbodies may be obtained from the Department or from the Montana DEQ Clean Water Act Information Center website. The permittee must consider all impairments and the presence of the corresponding pollutants of concern in their proposed discharges. Storm water-related pollutants contributing to impairments generally include sediment, suspended solids and turbidity, and any secondary sources of pollutants based on construction materials and support activities. Discharges of the pollutants of concern to impaired waterbodies are eligible for coverage under this General Permit if consistent with approved TMDLs and assigned WLAs, and the requirements outlined below.

a. Discharges to an Impaired Waterbodies with No Approved TMDL

   For regulated storm water discharges associated with construction activity under this permit, the SWPPP must include a section that describes BMPs that target and reduce any discharges of the identified pollutants of concern to the corresponding impaired waterbodies. Under this subsection of the General Permit, the permittee need only to include the identified pollutants of concern in its SWPPP if the waterbodies are listed as impaired for such pollutants.

b. Discharges to an Impaired Waterbodies with an Approved TMDL

   For regulated storm water discharges associated with construction activity, the SWPPP must include a section that describes BMPs that target and reduce any discharges of the identified pollutants of concern to the corresponding impaired waterbodies. Under this subsection of the General Permit, the permittee need only include the identified pollutants of concern in its SWPPP if the waterbodies are listed as impaired for such pollutants. The section submitted by the permittee must ensure that all discharges are consistent with the assumptions of any applicable TMDL wasteload allocation. All EPA approved TMDL wasteload allocations applicable to MPDES-regulated storm water construction activities are incorporated by reference into this permit.

Permittees will be informed if any additional controls are necessary for discharges to protect beneficial uses or to be consistent that the assumptions of any available TMDL wasteload allocation. Such additional controls must be identified within the permittees SWPPP. In certain cases the Department may find coverage under an MPDES individual permit necessary.

2.3. Inspections

2.3.1. Person(s) Responsible for Conducting and Documenting Inspections

Inspections must be performed by a SWPPP Administrator as defined in Part 3.2. of this permit.

2.3.2. Frequency of Inspections

Inspections must be performed in accordance with one of the two schedules listed in Parts 2.3.3. or 2.3.4. unless the construction site or areas of the construction site meet the conditions of the inspection schedule defined in Part 2.3.5. Inspections must be conducted during the construction project's normal business hours. The inspection schedule must be documented in the SWPPP. Any changes to the inspection schedule must be documented in the SWPPP or corresponding inspection report.

2.3.3. Weekly Routine Inspections

A SWPPP Administrator must, at a minimum, conduct a routine inspection at least once every 7 calendar days. Any changes to the inspection schedule, even during periods of noncompliance, must be documented in the SWPPP or corresponding inspection report.

2.3.4. Biweekly Routine and Post-Storm Event Inspections

A SWPPP Administrator must, at a minimum, conduct a routine inspection at least once every 14 calendar days, and a post-storm event inspection within 24-hours of the end of a rainfall event of 0.25 inches or greater, and/or within 24-hours of runoff from snowmelt (ie any measurable snowmelt resulting in a discharge). To determine if a rainfall storm event of 0.25 inches or greater, has occurred on site, either properly maintain a rain gage on site or obtain the storm event information from a weather service representative of your location. For any day of rainfall 0.25 inches or greater, record the method of rainfall determination and the total rainfall measured that day. If an inspection is conducted for a post-storm event, this inspection can be used as a biweekly routine inspection, but the biweekly routine inspections must commence again no later than 14 calendar days after the last post-storm event inspection. Any changes to the inspection schedule, even during periods of noncompliance, must be documented in the SWPPP or corresponding inspection report.

2.3.5. Reductions in Inspection Frequency

The inspection schedules in Parts 2.3.3. and 2.3.4. may be temporarily reduced to a routine inspection once every 30 calendar days if one of the following conditions is met:

a. All construction activities at the site are temporarily inactive or shutdown and all areas of disturbance have achieved "temporary stabilization" as defined in Part 5 of this permit;
b. Earthwork and construction activities are completed at the site, and erosion and sediment controls are implemented or installed to establish final stabilization;
c. Reduction applicable to any portion of the project is temporarily inactive or shutdown and these portions have achieved "temporary stabilization" as defined in Part 5 of this permit; and
d. Reduction applicable to any portion of the project that is completed and erosion and sediment controls are implemented or installed to establish final stabilization.

Any reduction in the inspection schedule must be documented in the SWPPP or corresponding inspection report. Specific requirements for conditions "c "and "d" above: these portions of the construction project must be identified on the site map(s). Specific requirements for conditions "a" thru "d" above: all BMPs must be in place as identified in the SWPPP and/or inspection report, and site map(s).

2.3.6. Severe Winter Conditions Delay

If an inspection is not possible due to (1) remote site access and (2) severe winter conditions, a delayed inspection may occur. Documentation of the cause of the delayed inspection must be included in the corresponding inspection report and SWPPP, accordingly. A substitute inspection will be performed to compensate for the delayed inspection and follow requirements in accordance with Part 2.3.7. Inspections must resume as soon as the site is accessible. Delays are self-determined on a case-by-case basis with appropriate documentation, and determination is subject to review during a Department compliance evaluation inspection.

2.3.7. Inspection Requirements

Inspections conducted under Parts 2.3.3., 2.3.4., and 2.3.5. of this permit must comply with the inspection requirements in Part 2.3.7.

The following areas must be inspected at a minimum:

a. All areas disturbed by the construction activity;
b. All pollutant sources generated by the construction activity;
c. Material and waste storage areas exposed to rainfall or snowmelt;
d. Support activities exposed to rainfall or snowmelt;
e. Entrance and exit locations to the construction activity;
f. Site perimeter;
g. All areas where storm water flows onto and within the construction project area; and
h. Discharge locations and if impaired waterbodies were impacted.

At a minimum, the inspection report must include:

- The MPDES Permit Authorization Number;
- The inspection date and time;
- Name(s) of the SWPPP Administrator(s) completing the inspection;
- Weather conditions at the time of the inspection;
- The type of inspection based on Parts 2.3.3., 2.3.4., 2.3.5., and 2.3.6.;
- Changes in the inspection schedule;
- Major construction activities at the time of the inspection;
- Pollutant sources present at the time of the inspection;
- BMPs implemented or installed at the time of the inspection;
- BMPs Maintenance and Corrective Actions including:
    - BMPs requiring maintenance;
    - Corrective actions per Part 2.4.
- Description of corrective actions taken for the items identified above, including the dates for the corrective action(s) were completed;
- Discharges of sediment or other pollutants;
- Instances of noncompliance; and
- Certification and signature.

Inspection reports must be signed and certified by a SWPPP Administrator based on the requirements in Part 4.15. of this permit. Inspection records must be maintained as required by Part 2.5. of this permit. Maintenance, repair, replacement, or installation of new BMPs determined necessary during site inspections to address ineffective or inadequate BMPs must be conducted in accordance with Part 2.3.8. of this permit.

2.3.8. BMP Maintenance, Replacement, and Failures

All BMPs must be maintained in effective operating condition. If inspections identify BMPs that are not in effective operating condition, maintenance must be documented and performed by the close of the next business day. If this timeframe is infeasible, document rationale and provide a schedule of events with a maintenance timeframe making BMPs operational within seven (7) calendar days.

If new or replacement BMPs are required to be implemented or installed or if additional BMPs are necessary, these additional measures must be implemented or installed by no later than seven (7) calendar days from the time of discovery. If this timeframe is infeasible, document rationale and provide a schedule of events with a timeframe making BMPs operational as soon as feasible after the 7-day timeframe.

All changes in the design, implementation, or installation of erosion and sediment controls or other BMPs must be documented in the inspection report and site map(s). In addition, these changes can be updated to the SWPPP for the permittee to maintain consistency with their internal records.

2.4. Corrective Actions

Corrective actions are actions a SWPPP Administrator takes to:

- Repair, modify, or replace any BMP used at the site;
- Install new or additional BMPs;
- Immediately clean up, dispose of, and, under Part 4, report spills, releases, and other deposits; and
- Remedy a permit violation or noncompliance.

If any of the following conditions occur, a SWPPP Administrator must review and revise the selection, design, installation, implementation, and maintenance of BMPs to ensure the condition is eliminated and will not be repeated in the future:

- An unauthorized release or discharge (e.g., spill, leak, or discharge of non-storm water not authorized by this or another MPDES permit) occurs at the site;
- A SWPPP Administrator or the Department determines that the BMPs are not adequate enough for the discharge as it causes or contributes to an exceedance of applicable water quality standards;
- A SWPPP Administrator or the Department determines that modifications to the BMPs are necessary to meet the requirements in Part 2. of this permit;
- A SWPPP Administrator or the Department determines that the BMPs are not properly selected, designed, installed, operated, and/or maintained; or
- A failure of erosion or sediment controls resulting in sediment, solids, or other wastes being discharged from the site. Upon identification of sediment, solids, or other wastes lost or discharged from the site, the material must be cleaned up and placed back on site, or otherwise disposed of in an acceptable manner.

A SWPPP Administrator must document the completed corrective actions in the corresponding inspection report, and complete any updates to the site map(s). In addition, these changes can be updated in the SWPPP for the permittee to maintain consistency with their internal records.

2.5. Recordkeeping

At the identified site, the primary SWPPP Administrator must retain:

- a copy of this permit;
- a copy of the completed and signed NOI form including modification submittals;
- a copy of the Department's confirmation letter;
- a copy of the signed SWPPP, including revisions and updates, and attachments;
- BMP installation, design, and maintenance specifications/standards for all BMPs installed and detailed in the SWPPP and/or inspection records;
- Site map(s) reflecting up-to-date site conditions
- SWPPP Administrator and Preparer documentation under Part 3.2. of this permit;
- all inspection records required under Part 2.3., 2.4., 3.11., and 3.12. of this permit;
- all reports of noncompliance under Part 4 of this permit; and
- the Sage Grouse consultation letter, as applicable.

These documents are to be made available at the site immediately upon request from a Department representative, EPA official, or local official. These records are to be maintained by the permittee for a period of three years.

2.6. Reporting

2.6.1. Notification of Primary SWPPP Administrator Changes

The permittee must notify the Department in writing of any change of the SWPPP Administrator person/position, mailing address, and/or telephone number within 15 calendar days of change. Notification can be submitted through Attachment A or written authorization.

2.6.2. Noncompliance Reporting

Any instance of noncompliance must be reported to the Department as required by Part 4.23. of the permit.

3. Storm Water Pollution Prevention Plan (SWPPP)

3.1. SWPPP – General Requirements

3.1.1. The SWPPP is a document that must be developed and implemented in accordance with good engineering selection and design, hydrologic principles, and pollution control practices to minimize and control potential pollutants in storm water associated with construction activity.

3.1.2. The SWPPP must meet the following minimum objectives:

- Provide a site description of the nature of the construction activity that includes identification and details of the major construction activities and project area characteristics;
- Identify and describe all potential pollutant sources which may affect the quality of storm water discharges associated with the construction activity;
- Identify and describe the BMPs to be used to reduce potential pollutants in storm water discharges associated with the construction activity and to ensure compliance with the effluent limitations in this permit;
- Identify and describe the measures which will be used to achieve final stabilization; and
- Identify and clearly describe the inspection and maintenance procedures implemented at the site to maintain all erosion and sediment control and other BMPs identified in the SWPPP, in good and effective operating condition.

3.1.3. At a minimum, the SWPPP must include the information specified in Part 3. and as specified in other parts of this permit.

3.1.4. The SWPPP must be implemented as stated in the Primary SWPPP Administrator's up-to-date field copy. SWPPP implementation must initiate at the start of ground disturbance associated with the construction activity, and continue until final stabilization of all construction activity-related ground disturbance is achieved and permit coverage has been terminated. The SWPPP must be maintained to reflect up-to-date site conditions through documented revisions and updates. Inspection reports, logs, and the site map may supplement the SWPPP to reflect the most up-to-date site conditions. Refer to Part 3.12.2. for Revision and Update Options.

3.1.5. If a SWPPP was prepared under a previous version of this General Permit, it must be reviewed and updated in accordance with Part 1.2.2.

3.2. SWPPP Preparer and Administrator

Any SWPPP Preparer and Administrator are required to maintain a valid certification meeting the minimum requirements below.

3.2.1. SWPPP Preparer (Effective January 1, 2019)

The permittee must specify a SWPPP Preparer in the NOI form and the SWPPP. A SWPPP Preparer is an individual or position title who is responsible for planning and development of the SWPPP prior to submission of the NOI-SWC. The SWPPP Preparer must develop and document all aspects of the SWPPP, initiating with the start of construction activities, and lasting until final stabilization is achieved and the permit authorization is terminated. The Department has identified the minimum requirements for this role (below), so that the quality of storm water discharges is controlled and the effluent limitations in Part 2. of this permit are achieved.

The SWPPP Preparer minimum requirements and valid certification must be completed before the submittal of the NOI-SWC Package to the Department. Validation of certification will be determined at the time a NOI-SWC package is submitted and/or during a regulatory inspection. Valid certification demonstrating the minimum requirements for the SWPPP Preparer must be maintained with the SWPPP, and must include the following:

- Name(s), title(s), phone number, and emails of SWPPP Preparers; and
- Date and name of provider of course(s).

SWPPP Preparer minimum requirements as stated in Part 3.2.3. are effective January 1, 2019, in order to provide additional time for the regulated community to comply with the minimum requirements. The Department encourages SWPPP Preparers to obtain valid certification as soon as possible during this first year period of the permit in order to better ensure compliance with the other conditions in this permit. This one year extension of SWPPP Preparer minimum requirements does not apply to the compliance expectations for all other requirements in the permit, which remain fully enforceable for the entire effective permit cycle.

3.2.2. SWPPP Administrator

The permittee must specify a SWPPP Administrator and any other designated SWPPP Administrators in the NOI-SWC form and the SWPPP. Additional SWPPP Administrators can be identified in Attachment A. A SWPPP Administrator(s) is an individual or position title who is responsible for developing, implementing, maintaining, revising, and updating the SWPPP. The SWPPP Administrator(s) must address all aspects of the SWPPP, initiating with the start of construction activities, and lasting until final stabilization is achieved and the permit authorization is terminated.

The SWPPP Administrator(s) must have knowledge of the principles and practices of erosion and sediment controls and pollution prevention practices and possess the skills necessary to assess site conditions and determine the effectiveness of selected BMPs. The Department has identified the requirements for this role (below), so that the quality of storm water discharges is controlled and the effluent limitations in Part 2. of this permit are complied with.

The SWPPP Administrator(s) must meet the duly authorized representative requirements as defined in Part 4.18. of this permit to sign inspection reports and other reports.

The SWPPP Administrator(s) person(s)/position(s) provided on the NOI form is used by the Department as a permittee contact.

This SWPPP Administrator(s) minimum requirements and valid certification must be completed before the start of earth-disturbing activities or potential pollutant-generating activities, whichever occurs first. For new employees hired after this time, the minimum requirements and valid certification must be completed before assuming SWPPP Administrator responsibilities. Validation of certification will be determined during an inspection. Valid certification demonstrating the minimum requirements for the SWPPP Administrator(s) must be maintained with the SWPPP, and must include the following:

- Name(s), title(s), phone number, and emails of SWPPP Administrator(s); and
- Date and name of provider of course(s).

3.2.3. SWPPP Preparer and Administrator – Minimum Requirements

The SWPPP Preparer and Administrator(s) must be knowledgeable and skilled within the following concepts to serve their role and maintain a valid certification demonstrating these concepts:

- MPDES permitting requirements to include, but not limited to, applicability, application procedures, SWPPP elements, standard conditions, and termination conditions;
- Local permitting requirements;
- Sage Grouse requirements based on location of the project;
- Knowledge of the principles and practices of erosion and sediment controls and pollution prevention practices, including the minimum criteria for BMPs defined in Part 2.1. of this permit;

- Construction site assessment and planning skills to include knowledge and identification of major construction activities and the phases of construction activities and all support activities, and the potential pollutants generated based on the scope of the project;
- Development, selection, and implementation skills for all storm water controls and BMPs on the site, including final stabilization measures, required by this permit based on appropriate design, installation, function, and location; and how they are to be maintained and/or repaired according to developed and/or manufacturers plans and specifications;
- Development, selection, and implementation skills for pollution prevention controls and BMPs required by this permit;
- Development and implementation skills for procedures and associated documentation for all inspections, maintenance, and required recordkeeping to include when and how to conduct inspections, record applicable findings, take corrective actions, and, when appropriate, report violations and/or noncompliance; and
- Ability to develop and update the site map(s) required by this permit.

3.3. Site Description

The SWPPP must contain a narrative description of the following:

3.3.1. The nature of the construction activity and what is being constructed;

3.3.2. A description of all support activities and associated storm water discharges dedicated to the construction activity including but not limited to: material borrow areas, material fill areas, concrete or asphalt batch plants, equipment staging areas, access roads/corridors, material storage areas, and material crushing/recycling/processing areas;

3.3.3. The total area of the site (in acres), and the area of the site (in acres) expected to undergo construction-related disturbance (including all construction-related support activities);

3.3.4. A description of the character and erodibility of soil(s) and other earth material to be disturbed at the site, including cut/fill material to be used;

3.3.5. For a storm water discharge associated with construction activity with construction-related disturbance of five acres or more of total land area:

- an estimate of the runoff coefficient of the site, both before and after construction, including a description of what this is based on; and
- an estimate of the increase in impervious area after the construction activity is completed;

3.3.6. The names of receiving state surface waters and a description of the size (drainage area), type, and location of each point source discharge or outfall with connectivity. Identify if the receiving state surface water is listed as impaired. If there is no distinguishable point source discharge or outfall to the receiving state surface waters, a description of storm water runoff flow and drainage patterns into the receiving state surface waters must be provided. This must specify if discharges are to unnamed drainages and provide the name of the first named drainage that will receive that discharge downgradient of the site. If the discharge is to a municipal separate storm sewer, the location of the MS4 outlet where the storm sewer discharges into receiving state surface waters; and

3.3.7. Provide a brief description of the existing natural cover and vegetation at the site and an estimate of the percent density of vegetative ground cover.

3.4. Identification of Potential Pollutant Sources

All potential pollutant sources, including soils, materials, and activities, within the scope of the entire construction project must be evaluated for the potential to contribute pollutants to storm water discharges. The SWPPP must identify those sources determined to have the potential to contribute pollutants to storm water discharges, and these sources must be controlled through BMP selection and implementation, as required in Part 3.5. below.

The permittee must identify all potential pollutant sources within lists provided for soils, materials, and activities within the SWPPP. In addition, the permittee must identify and list the following:

- Other potential pollutant sources from soils, activities, and materials not already identified the SWPPP;
- Other non-storm water discharges if present; and
- Any additional potential pollutant sources.

3.5. Selection of Best Management Practices (BMPs)

The SWPPP must document the selection of BMPs based on the potential pollutant sources identified in Part 3.4. above that have been installed and implemented at the site to achieve the effluent limits in Parts 2.1. and 2.2. of this permit. BMP design, installation, implementation, and maintenance specifications for the BMPs identified in the SWPPP must be maintained on-site. These sources must be kept up to date and accessible upon request. Any departures from the specifications must reflect good engineering practices and must be documented in the SWPPP or corresponding inspection reports.

The permittee must identify all selected BMPs within the SWPPP including:

- Erosion Control BMPs;
- Sediment Control BMPs;
- Run On/Runoff Control BMPs;
- Administrative Controls; and
- Post Construction Controls.

In addition, the permittee must select and list the following:

- Other additional BMPs not already identified in the SWPPP and likely to be used at the construction project;
- Local Sediment and Erosion Controls including a description of requirements;
- BMPs that target and reduce discharges of the identified pollutants of impairment to impaired waterbodies as required under Part 2.2. of this permit; and
- Sage Grouse controls (The consultation letter attached to the SWPPP will meet the requirements for this section in Part 2.5.).

3.6. Dewatering

Discharges of ground water, surface water, and/or accumulated storm water due to dewatering practices which will not discharge to state surface waters must be managed by appropriate BMPs, and these must be identified in the SWPPP. These dewatering practices and BMPs must be identified on the site map required under Part 3.10. of this permit. Discharges of ground water, surface water, and/or accumulated storm water due to dewatering practices which will discharge to state surface waters are not authorized under this permit and must obtain authorization under the MPDES "General Permit for Construction Dewatering"(CDGP), Permit Number MTG070000, as applicable, or an individual permit. The CDGP applies to discharges to include in-stream dewatering, surface area dewatering, and ground water dewatering (See Construction Dewatering definition in Part 5). These dewatering practices and BMPs must be identified in the SWPPP, and identified on the site map required under Part 3.10. of this permit.

3.7. Major Construction Activity and BMP Phasing

The SWPPP must identify the major construction activities, provide a list of all the construction related tasks to complete each major construction activity, and identify an estimated timeframe of initiation and completion of each major construction activity. A distinct major construction activity is defined as any distinct construction related disturbance or distinct pollutant generating activity that occurs within the schedule of activities associated with the construction project. The construction related tasks of each major construction activity are the series of steps necessary to the complete the major construction activity.

The SWPPP must clearly document the selected BMPs throughout the succession of major construction activities until the site reaches final stabilization. The SWPPP may include a table for the permittee to document their project's major construction activities and BMP Phasing. Inspection reports will supplement the SWPPP to reflect the most up-to-date site conditions.

3.8. Final Stabilization

The SWPPP must clearly describe all procedures and BMPs used to ensure that "final stabilization," as defined in Part 5. of this permit and ARM 17.30.1102(5), is achieved.

For all areas with construction-related ground disturbance, final stabilization must be achieved uniformly over the entire disturbed area, without relatively bare areas based on the pre-disturbance conditions. If using seed or planted vegetation to achieve final stabilization, the plants must be perennial. Before submitting the NOT form to terminate coverage under this permit and in addition to achieving final stabilization, the following must have also occurred:

- removal of temporary storm water conveyances/channels and other temporary storm water control measures and/or BMPs
- removal of construction equipment and vehicles, and
- cessation of any potential pollutant-generating activities due to the construction activity.

3.9. Post-Construction Storm Water Management

The SWPPP must clearly describe any BMPs which are to be used to control storm water and potential pollutants in storm water discharges that will occur after construction operations have been completed at the site, including any applicable local requirements. If a temporary BMP transitions into a post-construction BMP, the SWPPP must clearly describe this transition and any associated maintenance. In addition, for post-construction storm water management at constructed/developed sites, the Department supports the use of "Low Impact Development" (LID) and "Green Infrastructure" BMPs, where such practices are practicable, that infiltrate, evapotranspire, or capture for reuse the storm water runoff generated from the majority of expected storm events.

3.10. Site Map

The SWPPP must include one or a series of legible site maps/plans of sufficient scale and size which clearly display site conditions. Multiple site maps/plans are encouraged for clarity as necessary.

At a minimum, the SWPPP site maps/plans must include the following:

3.10.1. Site boundaries to include the perimeter of common plans of development;

3.10.2. Locations and types of all dedicated construction activity support areas (including off-site) such as access-related work, earth material borrow areas, equipment staging areas, materials storage areas, temporary concrete or asphalt batch plants, and any areas used for fill placement;

3.10.3. Locations where ground-disturbing activities will occur, noting any BMP phasing of major construction activities;

3.10.4. Preconstruction topography of the site including showing state surface waters which will receive storm water runoff from the site. Identify if the receiving state surface water is listed as impaired;

3.10.5. Drainage pattern(s) and flow directions (use arrows) of storm water and authorized non-storm water flow onto, over, and from the site property before and after major grading activities, including lines showing boundaries between different drainage areas;

3.10.6. Storm water, and allowable non-storm water discharge locations and types, including the locations of any storm drain inlets and where storm water or allowable non-storm water will be discharged to state surface waters;

3.10.7. Municipal separate storm sewer systems to include the identification of applicable outlets, where the construction activity's storm water discharges are into them;

3.10.8. Locations and sources of run-on to the site from adjacent property that may contain potential pollutants (including sediment);

3.10.9. Locations of areas of cut and fill;

3.10.10. Locations of areas which are to remain undisturbed including vegetative buffer areas;

3.10.11. Locations of existing natural cover and vegetation or other pre-existing ground stabilization measures before construction (such as forest, pasture, lawn, pavement, structures);

3.10.12. Approximate slopes before and after major grading activities. Note areas of steep slopes both before and after grading;

3.10.13. Locations where sediment, soil, or other construction and building materials will be stockpiled;

3.10.14. Locations of fueling, vehicle and equipment maintenance, and/or vehicle cleaning and washing areas;

3.10.15. Locations of concrete washout and other waste management areas;

3.10.16. Locations of ground water or other construction dewatering activities and discharges (see Part 3.7.9. of this permit);

3.10.17. Designated points on the site where vehicles will exit onto paved roads;

3.10.18. Locations of other potential pollutant-generating activities not specified elsewhere;

3.10.19. Locations of all structural and non-structural BMPs for potential pollutants other than sediment;

3.10.20. Locations and specific types of all temporary or permanent erosion and sediment control BMPs;

3.10.21. Locations and specific types of all storm water control BMPs, including impoundments or conveyances such as retention and detention ponds, ditches, pipes, and swales;

3.10.22. Locations of structures and other impervious surfaces upon completion of construction;

3.10.23. Public Sign (Effective January 1, 2021);

3.10.24. Map scale;

3.10.25. North arrow; and

3.10.26. Map legend.

3.11. Inspection and BMP Maintenance Procedures

The permittee must identify the selected inspection schedule (Part 2.3.2.) within the SWPPP. The SWPPP must identify and clearly describe the inspection and maintenance procedures implemented at the site to maintain all erosion and sediment controls and other BMPs identified in the SWPPP, in good and effective operating condition. These documented procedures must comply with the inspection requirements in Part 2.3. of this permit and correspond with BMP maintenance specifications (also refer to Parts 2.3.8., 2.4., 3.5., and 3.9. of the permit for related BMP maintenance requirements).

3.12. SWPPP Revisions and Updates

The permittee must maintain the SWPPP and site map. Also, see Parts 2.3. and 2.4. of this permit.

3.12.1. Conditions that trigger revisions and updates are outlined below:

a. When there is a change in design, construction, operation, or maintenance of the site, which would require the implementation of new, additional, or revised BMPs; or
b. If the SWPPP proves to be ineffective in achieving the general objectives of controlling potential pollutants in storm water discharges associated with construction activity; or
c. The Department determines that the BMPs are not properly selected, designed, installed, operated, and/or maintained; or
d. When BMPs are no longer necessary and are removed.

3.12.2. Revision and Update Options

The permittee must select one of three options below to document how revisions and updates to the SWPPP will be maintained to reflect the most up-to date site conditions. Inspection reports may be used to supplement the SWPPP to reflect revisions and updates. Subsequently, the site map must reflect any revisions or updates to the SWPPP or from corresponding inspection reports. Revisions and updates must be made before changes in the site conditions except for BMP changes addressing installation/implementation and these specific revisions and updates will be made as soon as practicable, but in no case more than 72 hours after the changes occur at the site.

a. Revisions and updates directly to the SWPPP and corresponding sections (i.e. additional SWPPP pages attached to include the time, date, and SWPPP Administrator authorizing the change), and the site map; or
b. Revisions and updates reflected through inspection records, and the site map; or
c. Revisions and updates reflected through a log, and the site map. Log entries must include the time and date of the change(s) in the field; an identification of the BMP(s) removed or added; the location(s) of those BMP(s); and the name of the SWPPP Administrator authorizing the change.

4. Standard Conditions

4.1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Montana Water Quality Act and is grounds for enforcement action; for termination under the General Permit; for revocation and reissuance of a confirmation letter; for a modification requirement; or for denial of coverage under the General Permit (new or renewed). The permittee shall give the Department advance notice of any planned changes at the permitted facility or of an activity which may result in permit noncompliance.

4.2. Penalties for Violations of Permit Conditions

The Montana Water Quality Act at MCA 75-5-631 provides that in an action initiated by the Department to collect civil penalties against a person who is found to have violated a permit condition of this Act is subject to a civil penalty not to exceed $25,000. Each day of violation constitutes a separate violation.

The Montana Water Quality Act at MCA 75-5-632 provides that any person who willingly or negligently violates a prohibition or permit condition of the Act is guilty of an offense, and upon conviction, is subject to a fine not to exceed $25,000 per day of violation or imprisonment for not more than one year, or both, for the first conviction. Following an initial conviction, any subsequent convictions subject a person to a fine of up to $50,000 per day of violation or by imprisonment for not more than two years, or both.

The Montana Water Quality Act at MCA 75-5-611 provides for administrative penalties not to exceed $10,000 for each day of violation and up to a maximum not to exceed $100,000 for any related series of violations. Except as provided in permit conditions "Bypass of Treatment Facilities" and "Upset Conditions", nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

4.3. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The reapplication must be submitted at least 30 days before the expiration date of this permit.

4.4. Need to Halt or Reduce Activity not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

4.5 Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4.6. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

4.7. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

4.8. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege.

4.9. Duty to Provide Information

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

4.10. Inspection and Entry

The permittee shall allow the head of the Department, or an authorized representative upon the presentation of credentials and other documents as may be required by law, to:

- Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and as otherwise authorized by the Montana Water Quality Act, any substances or parameters at any location; and
- Sample, or monitor at reasonable times for the purpose of assuring permit compliance, any substances or parameters at any location.

4.11. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department. As required by the Clean Water Act, applications, permits and effluent data shall not be considered confidential.

4.12. Reporting Requirements- Monitoring and Monitoring Reports

The Department may require a permittee to monitor in addition to any conditions in this permit, on a case-by-case basis. If monitoring is required, the Department will specify monitoring requirements to include, and not limited to, storm water sampling, analytical testing, and an evaluation of monitoring results, recording, and reporting. Monitoring results must be reported on a discharge monitoring report (DMR) or as required by the Department. Monitoring results must be reported at the intervals specified.

If the permittee monitors any pollutant more frequently than required, using approved test procedures, the results of this monitoring must be included in the calculation and reporting of data submitted in the DMR. Calculations for all limitations which require averaging of measurements must utilize an arithmetic mean unless otherwise specified by the Department.

4.13. Monitoring and Records- Representative Sampling

Samples and measurements taken for the purpose of monitoring must be representative of the monitored activity.

4.14. Monitoring and Records- Retention of Records

The permittee shall retain records of all monitoring information including all calibrations and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report, or application. This period may be extended by request of the Department at any time.

4.15. Monitoring and Records- Records Content

Records of monitoring information must include:

- The date, exact place, and time of sampling or measurements;
- The individual(s) who performed the sampling or measurements;
- The date(s) analyses were performed;
- The individual(s) who performed the analyses;
- The analytical techniques or methods used; and
- The results of such analyses.

4.16. Monitoring and Records- Test Procedures

Monitoring must be conducted according to test procedures approved under Title 40 of the Code of Federal regulations (40 CFR) Part 136, unless other test procedures have been specified in this permit, confirmation letter, or by the Department.

4.17. Monitoring and Records-Penalties for Falsification of Reports and Tampering

The Montana Water Quality Act at MCA 75-5-633 provides that any person who knowingly falsifies, tampers with, or renders inaccurate any monitoring device or method, or makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than $25,000 per violation, or by imprisonment for not more than six months per violation, or by both.

4.18. Signatory Requirements

Authorized representatives: All applications, reports or information submitted to the Department or the EPA shall be signed and certified in accordance with ARM 17.30.1323.

All permit notices of intent shall be signed as follows:

- For a corporation: by a principal executive officer or ranking elected official;
- For a partnership or sole proprietorship: by a general partner or the proprietor, respectively;
- For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

All reports required by the permit and other information requested by the Department shall be signed by a person described above or by a duly authorized representative of that person. A person is considered a duly authorized representative only if:

- The authorization is made in writing by a person described above and submitted to the Department; and
- The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. A duly authorized representative may thus be either a named individual or an individual occupying a named position.

Changes to authorization: If an authorization described above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the above requirements must be submitted to the Department prior to or together with any reports, information, or applications to be signed by an authorized representative.

Certification: Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of

my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

4.19. Reporting Requirements - Planned Changes

The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility, activity, or operation.

Notice is required only when:

- The alteration or addition to the permitted facility, activity, or operation may meet one of the criteria for determining whether a facility is a new source; or
- The alteration or addition could significantly change the nature or increase the quantity of pollutant discharged. This notification applies to pollutants which are not subject to effluent limitations in the permit.

4.20. Reporting Requirements- Anticipated Noncompliance

The permittee shall give advance notice to the Department of any planned changes in the permitted facility/activity/operation which may result in noncompliance with permit requirements. The permittee shall notify as soon as possible by phone and provide with the following information, in writing, within five (5) days of becoming aware of such condition:

- A description of the discharge and cause of noncompliance; and
- The period of noncompliance including exact dates and times, or if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the non-complying discharge.

4.21. Reporting Requirements- Transfers

Permit coverage is not transferable to any person except after notice is given to the Department and a transfer fee is paid. The Permit Transfer Notification (PTN-SWC) form provided by the Department must be completed and must be received by the Department at least 30 days prior to the anticipated date of transfer. The form must be signed by both the existing owner/operator and the new owner/operator following the signatory requirements of Part 4.18 of the General Permit.

4.22. Reporting Requirements- Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim, and final requirements contained in any compliance schedule of this permit or required by the Department shall be submitted no later than 14 days following each schedule date.

4.23. Reporting Requirements- Twenty-four Hour Reporting

The permittee shall report any serious incident of noncompliance affecting the environment. Any information must be provided orally within 24 hours from the time the permittee first becomes aware of the following circumstances:

- Any noncompliance which may seriously endanger health or the environment;
- Any unanticipated bypass which exceeds any effluent limitation in the permit;
- Any upset which exceeds any effluent limitation in the permit; or
- As applicable, violation of a maximum daily discharge limit of any pollutant listed by the Department in the General Permit or confirmation letter.

A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:

- A description of the noncompliance and its cause;
- The period of noncompliance, including exact dates and times;
- The estimated time noncompliance is expected to continue if it has not been corrected; and
- Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

Oral Notification: The report shall be made orally to the Water Protection Bureau at (406) 444-3080 or the Office of Disaster and Emergency Services at (406) 324-4777.

Waiver of written notification requirement: The Department may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Water Protection Bureau, by phone, (406) 444-3080. Written reports shall be submitted to the following address:

Montana Department of Environmental Quality
Water Protection Bureau
PO Box 200901
Helena, Montana 59620-0901

4.24. Reporting Requirements- Other Noncompliance

Instances of noncompliance not required to be reported within 24 hours shall be reported as soon as possible. The reports shall contain the information listed above for written submissions under Part 4.23.

4.25. Reporting Requirements- Other Information

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application package, or submitted incorrect information in a permit application package or any report to the Department, it shall promptly submit such facts or information.

4.26. Bypass

Intentional diversions of untreated waste streams from any portion of a treatment facility are prohibited unless

- the bypass does not cause effluent to exceed effluent limitations and is necessary for essential maintenance to ensure efficient operation; or
- the bypass is unavoidable to prevent loss of life, personal injury, or severe property damage; or
- there are no feasible alternatives;
- and the proper notification is submitted.

Bypass is prohibited and the Department may take enforcement action against a permittee for a bypass. If the permittee knows in advance of the need for anticipated bypass, it shall submit prior notice, if possible, at least ten days before the date of the bypass. The Department may approve an anticipated bypass, after considering its adverse effects. The permittee shall submit notice of an unanticipated bypass as required under Part 4.23.

4.27. Upset Conditions

An upset may be used as an affirmative defense in actions brought to the permittee for noncompliance with a technology-based effluent limitation. The permittee (who has the burden of proof) must have operational logs or other evidence showing:

- when the upset occurred and its causes;
- that the facility was being operated properly;
- proper notification was made; and
- remedial measures were taken as required by the duty to mitigate standard condition.

4.28. Fees

The permittee is required to submit payment of an annual fee as set forth in ARM 17.30.201. If the permittee fails to pay the annual fee within 90 days after the due date for the payment, the Department may:

- Impose an additional assessment computed at the rate established under ARM 17.30.201: and,
- Suspend the processing of the application for a permit or authorization or, if the nonpayment involves an annual permit fee, suspend the permit, certificate or authorization for which the fee is required. The Department may lift suspension at any time up to one year after the suspension occurs if the holder has paid all outstanding fees, including all penalties, assessments and interest imposed under this sub-section. Suspensions are limited to one year, after which the permit will be terminated.

4.29. Removed Substances

Collected screenings, grit, solids, sludges, or other pollutants removed in the course of treatment shall be disposed of in such a manner so as to prevent any pollutant from entering any waters of the state or creating a health hazard.

4.30. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Clean Water Act.

4.31. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

4.32. Reopener Provisions

This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations (and compliance schedule, if necessary), or other appropriate requirements if one or more of the following events occurs:

- Water Quality Standards: The water quality standards of the receiving water(s) to which the permittee discharges are modified in such a manner as to require different permit conditions than contained in this permit.

- Water Quality Standards are Exceeded: If it is found that water quality standards or trigger values in the receiving stream are exceeded either for parameters included in the permit or others, the Department may modify the permit conditions or water management plan.

- TMDL or Wasteload Allocation: TMDL requirements or a wasteload allocation is developed and approved by the Department and/or EPA for incorporation in this permit.

- Water Quality Management Plan: A revision to the current water quality management plan is approved and adopted which calls for different effluent limitations than contained in this permit.

4.33. Toxic Pollutants

The permittee shall comply with effluent standards or prohibitions established for toxic pollutants which are present in the discharge, within any specified timeframe within rule or thereof, and even if the General Permit or confirmation letter has not yet been modified to incorporate such standard or prohibition for the toxic pollutant.

5. General Definitions and Abbreviations

The following definitions and abbreviations apply to terms used in this permit.

"Act" means the Montana Water Quality Act, Title 75, chapter 5, MCA.

"Best Management Practices" ("BMPs") means schedule of activities, prohibition of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of state surface waters. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

"Board" means the Montana Board of Environmental Review established by 2-15-3502, MCA.

"CFR" means the Code of Federal Regulations.

"Clean Water Act" means the federal legislation at 33 USC 1251, et seq.

"Construction Dewatering" means the action of pumping or actively removing ground water, surface water, and/or accumulated storm water from a construction site or other related activities. MPDES "General Permit for Construction Dewatering" applies to the discharge of construction dewatering effluent to state surface water, with increased sediment and turbidity as the primary pollutants of concern, to include:

- *In-stream dewatering*: cofferdams, drill hole or pylon development;
- *Surface area dewatering*: water pumped from disturbed surface areas (foundations, trenches, excavation pits, vaults, sumps, or other similar points of accumulation associated with a construction site or related activities where sediment-laden ground water, surface water, and/or storm water inflow must be removed); and
- *Ground water dewatering*: water discharged from well development, well pump tests, or pumping of ground water from a construction site or other related activities.

"Department" means the Montana Department of Environmental Quality. Established by 2-15- 3501, MCA.

"Disturbance" related to construction activity means areas that are subject to clearing, excavating, grading, stockpiling earth materials, and placement/removal of earth material performed during construction projects.

"Ephemeral stream" means a stream or part of a stream that flows only in direct response to precipitation in the immediate watershed or in response to the melting of a cover of snow and ice and whose channel bottom is always above the local water table.

"EPA" or "USEPA" means the United States Environmental Protection Agency.

"Facility or activity" means any MPDES point source or any other facility or activity (including land or appurtenances thereto) that is subject to regulation under the MPDES program.

"Final stabilization" means the time at which all soil-disturbing activities at the site have been completed, and a vegetative cover has been established with a density of at least 70% of the pre-disturbance levels, or equivalent permanent, physical erosion reduction methods have been employed. Final stabilization using vegetation must be accomplished using seeding mixtures or forbs, grasses, and shrubs that are adapted to the conditions of the site. Establishment of a vegetative cover capable of providing erosion control equivalent to pre-existing conditions at the site will be considered final stabilization.

"General Permit" means an MPDES permit issued under ARM 17.30.1341 authorizing a category of discharges under the Act within a geographical area.

"Larger common plan of development or sale" means a contiguous area where multiple separate and distinct construction activities are planned to occur at different times on different schedules under one plan. These separate and distinct construction activities which form a larger common plan of development or sale may have areas of disturbance which are not physically connected.

"Montana pollutant discharge elimination system (MPDES)" means the system developed by the Board and Department for issuing permits for the discharge of pollutants from point sources into state surface waters. The MPDES is specifically designed to be compatible with the federal NPDES program established and administered by the EPA.

"Owner or operator" is defined at 75-5-103, MCA.
"Point source" means a discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

"Pollutant" means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural wastes discharged into water. The terms "sewage," "industrial waste," and "other wastes" as defined in 75-5-103, MCA, are interpreted as having the same meaning as pollutant.

"Process Wastewater" means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

"Receiving state surface waters" is the river, stream, lake, etc., which receives the discharge from the site.

"Regional Administrator" is the administrator of the EPA Region with jurisdiction over federal water pollution control activities in the State of Montana.

"Runoff coefficient" means the fraction of total rainfall that will appear at the conveyance as runoff.

"Severe property damage" means substantial physical damage to property, damage to treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

"Site" means the land or water area where any facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity.

"State waters" is defined at 75-5-103, MCA.

"Storm water" means storm water runoff from precipitation, snowmelt runoff, and surface runoff and drainage.

"Storm water discharge associated with construction activity" means a discharge of storm water from construction activities including clearing, grading, and excavation that result in the disturbance of equal to or greater than one acre of total land area. For purposes of these rules, construction activities include clearing, grading, excavation, stockpiling earth materials, and other placement or removal of earth material performed during construction projects. Construction activity includes the disturbance of less than one acre

of total land area that is a part of a larger common plan of development or sale if the larger common plan will ultimately disturb one acre or more.

- Regardless of the acreage of disturbance resulting from a construction activity, this definition includes any other discharges from construction activity designated by the department pursuant to ARM 17.30.1105(1)(f).
- For construction activities that result in disturbance of less than five acres of total land area, the acreage of disturbance does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the facility.
- For construction activities that result in disturbance of five acres or more of total land area, this definition includes those requirements and clarifications stated in ARM 17.30.1102(29)(a), (b), (d) and (e).

"Storm Water Pollution Prevention Plan (SWPPP)" means a document developed to help identify sources of pollution potentially affecting the quality of storm water discharges associated with a facility or activity, and to ensure implementation of measures to minimize and control pollutants in storm water discharges associated with a facility or activity. The Department determines specific requirements and information to be included in a SWPPP based on the type and characteristics of a facility or activity, and on the respective MPDES permit requirements.

"Surface waters" means any waters on the earth's surface, including but not limited to streams, lakes, ponds, and reservoirs; and irrigation and drainage systems. Water bodies used solely for treating, transporting, or impounding pollutants shall not be considered surface water.

"Temporary Stabilization" means a condition where exposed soils or disturbed areas are provided a temporary vegetative and/or non-vegetative protective cover to prevent erosion and sediment loss. Temporary stabilization may include temporary seeding, geotextiles, mulches, and other techniques to reduce or eliminate erosion until either final stabilization can be achieved or until further construction activities take place to re-disturb this area.

"Total maximum daily load" or "TMDL" is defined at 75-5-103, MCA.

"Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

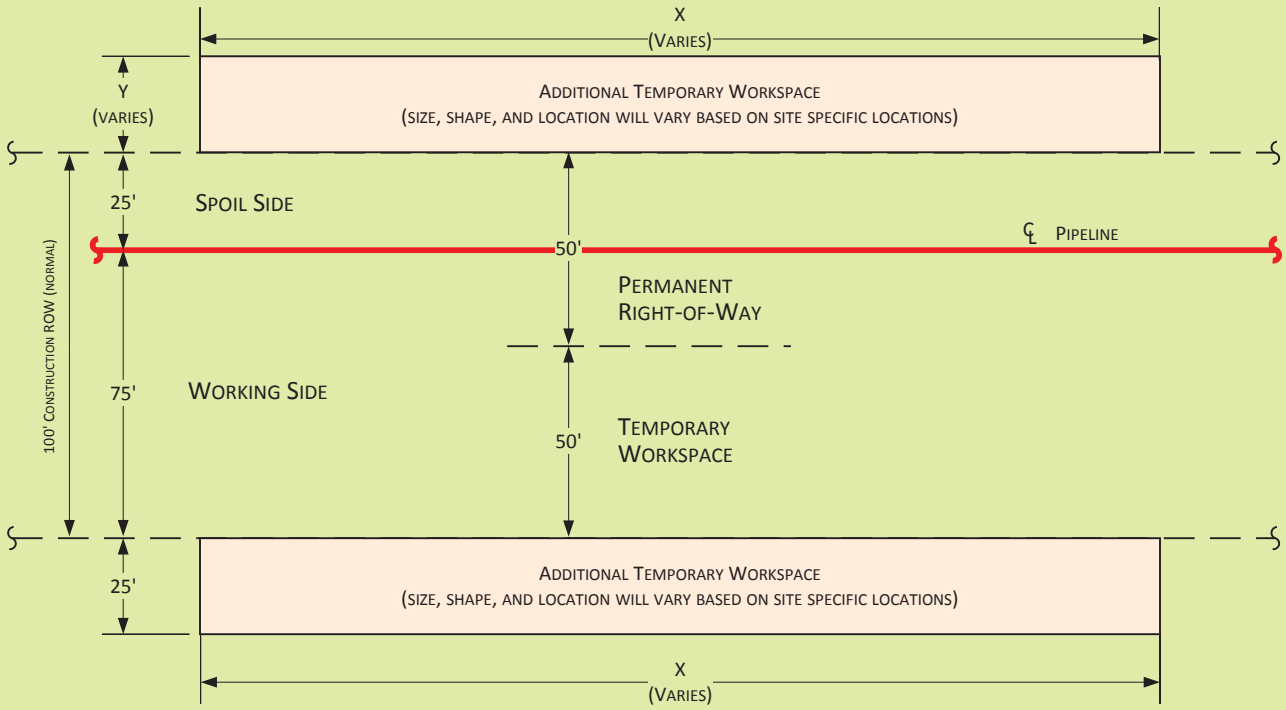
"Waste load allocation" means the portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources.

"Waste pile" means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

APPENDIX C

Construction Mitigation and Restoration Plan and Construction Typicals

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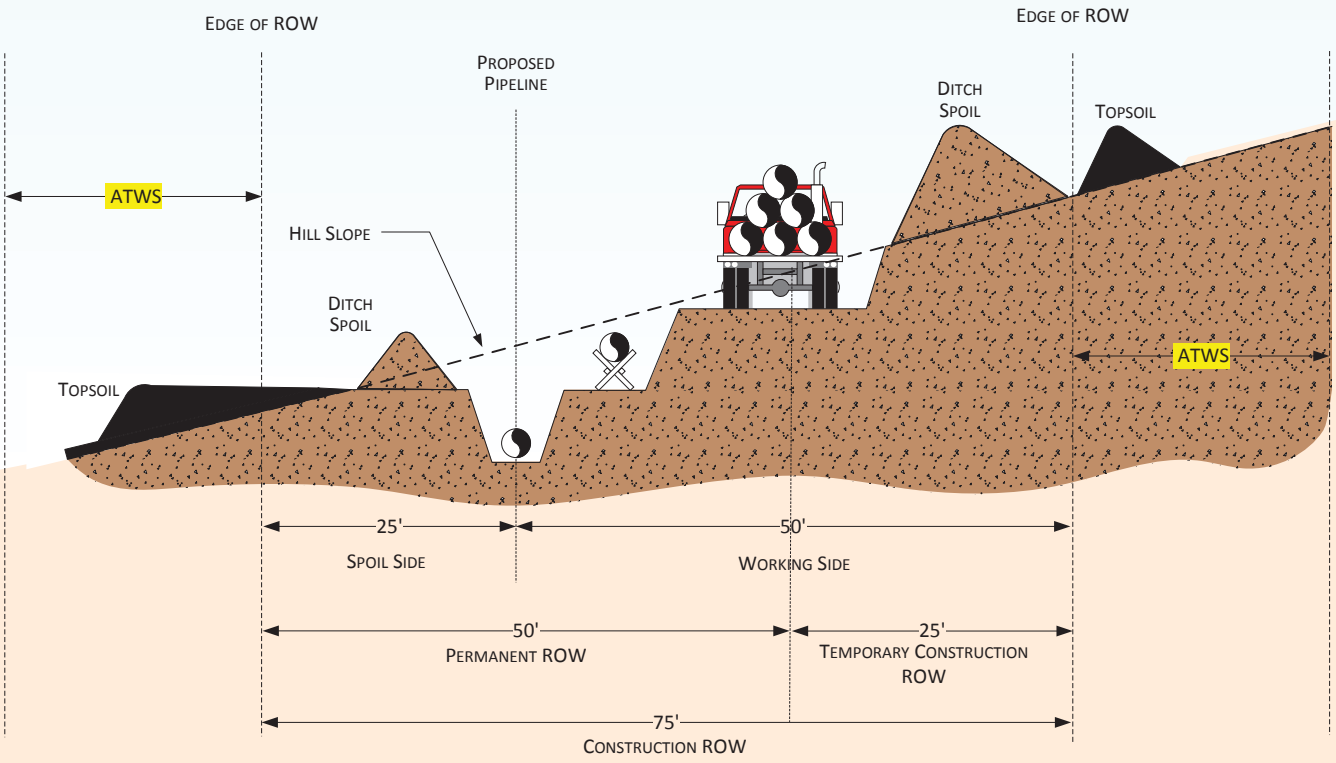
For environmental review purposes only.

ONEOK

Figure 1
Typical Construction Layout

ERM

MPLS: M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\	Fig_1_Construction_ROW.vsd	Scale: NTS	Revised: 8/20/2018	Drawn By: GIS



NOTES:

1. GRADE TO BE RESTORED AS NEAR AS PRACTICABLE TO PRECONSTRUCTION CONDITIONS DURING RESTORATION.

For environmental review purposes only.

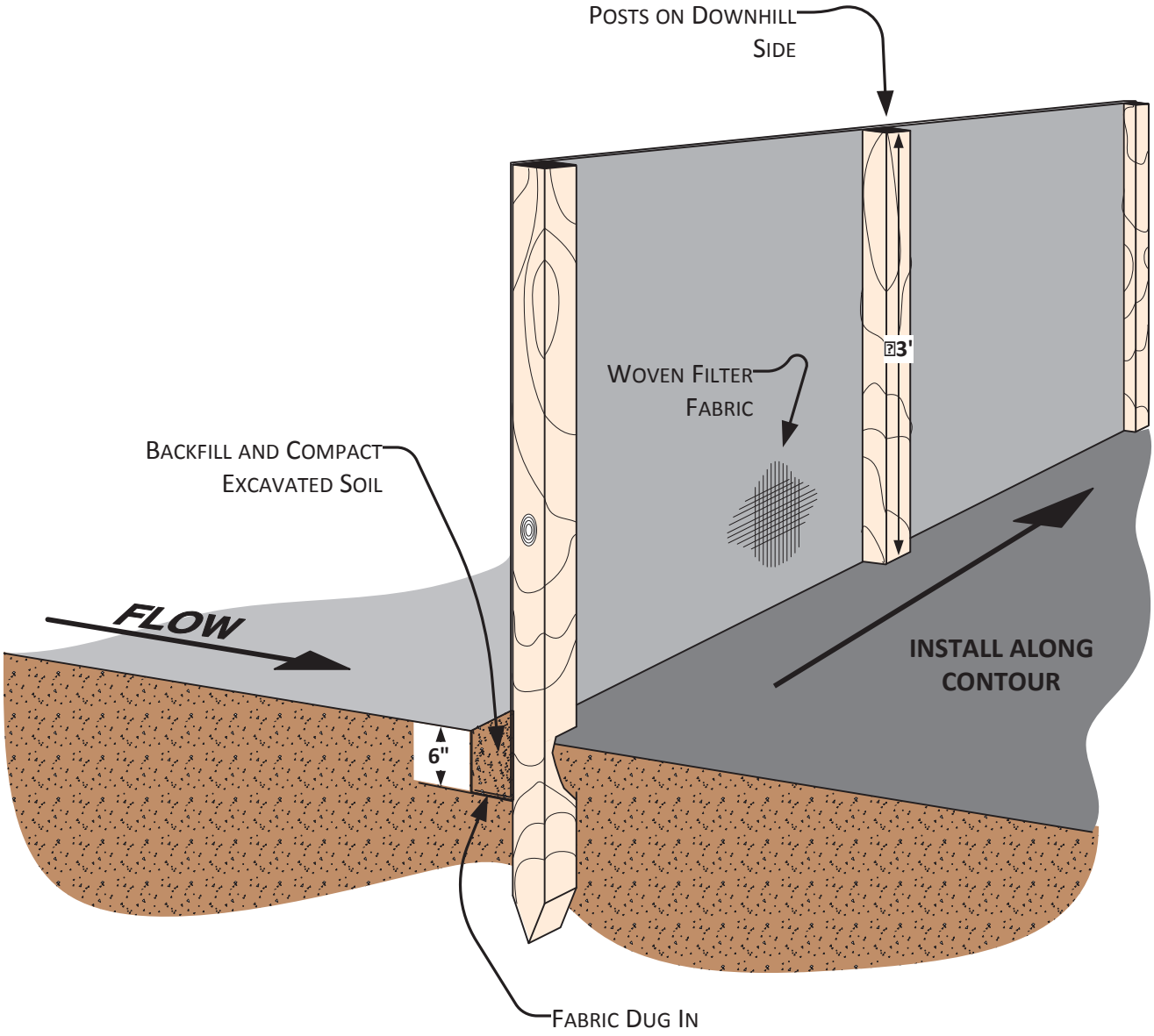
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Figure 2

Typical Construction ROW
on Sloping Terrain

ERM

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For environmental review purposes only.

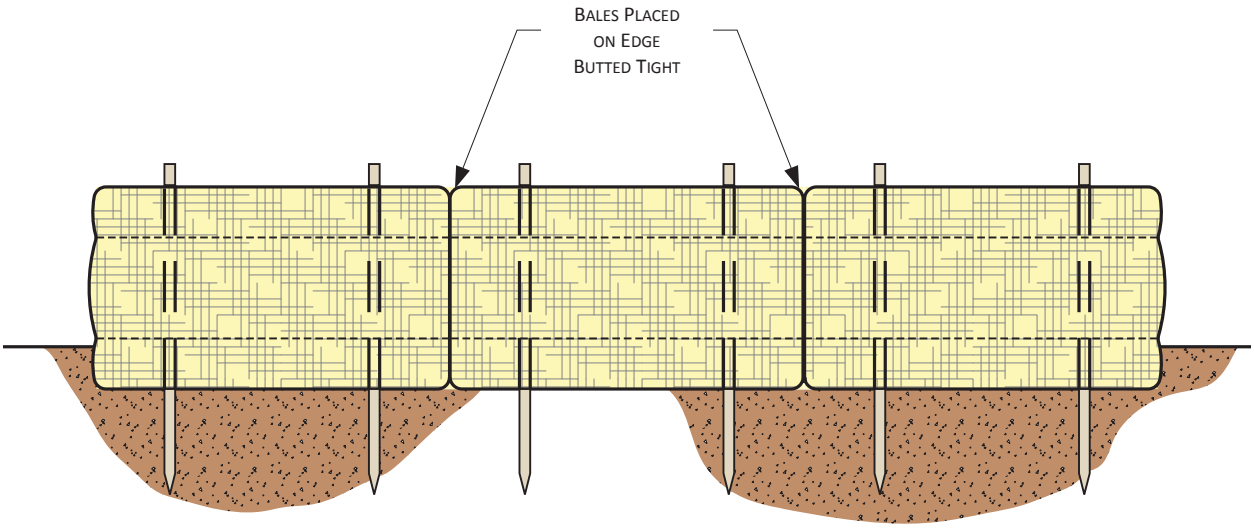
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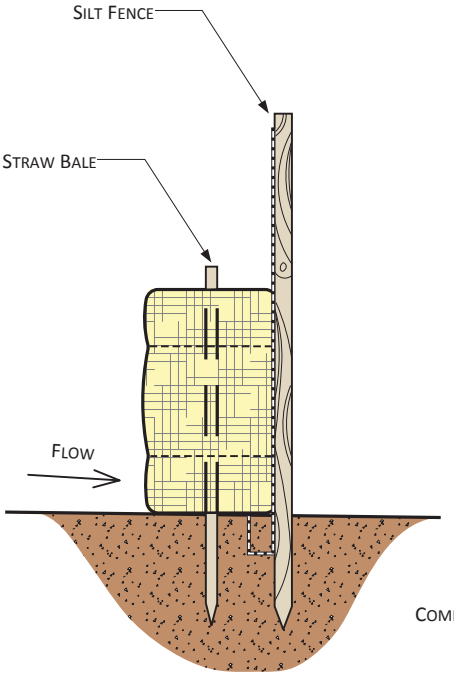
Figure 3

Typical Silt Fence Installation
(OKS-7901-ENV-01)

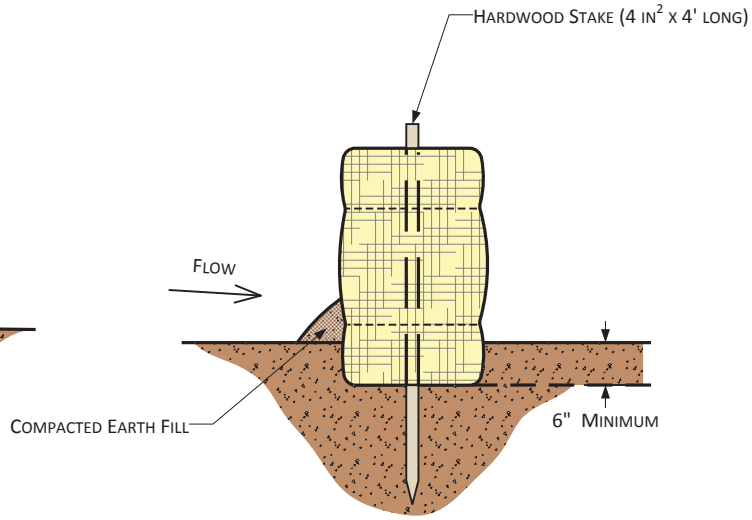
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Straw Bales & Silt Fence



Straw Bales Only

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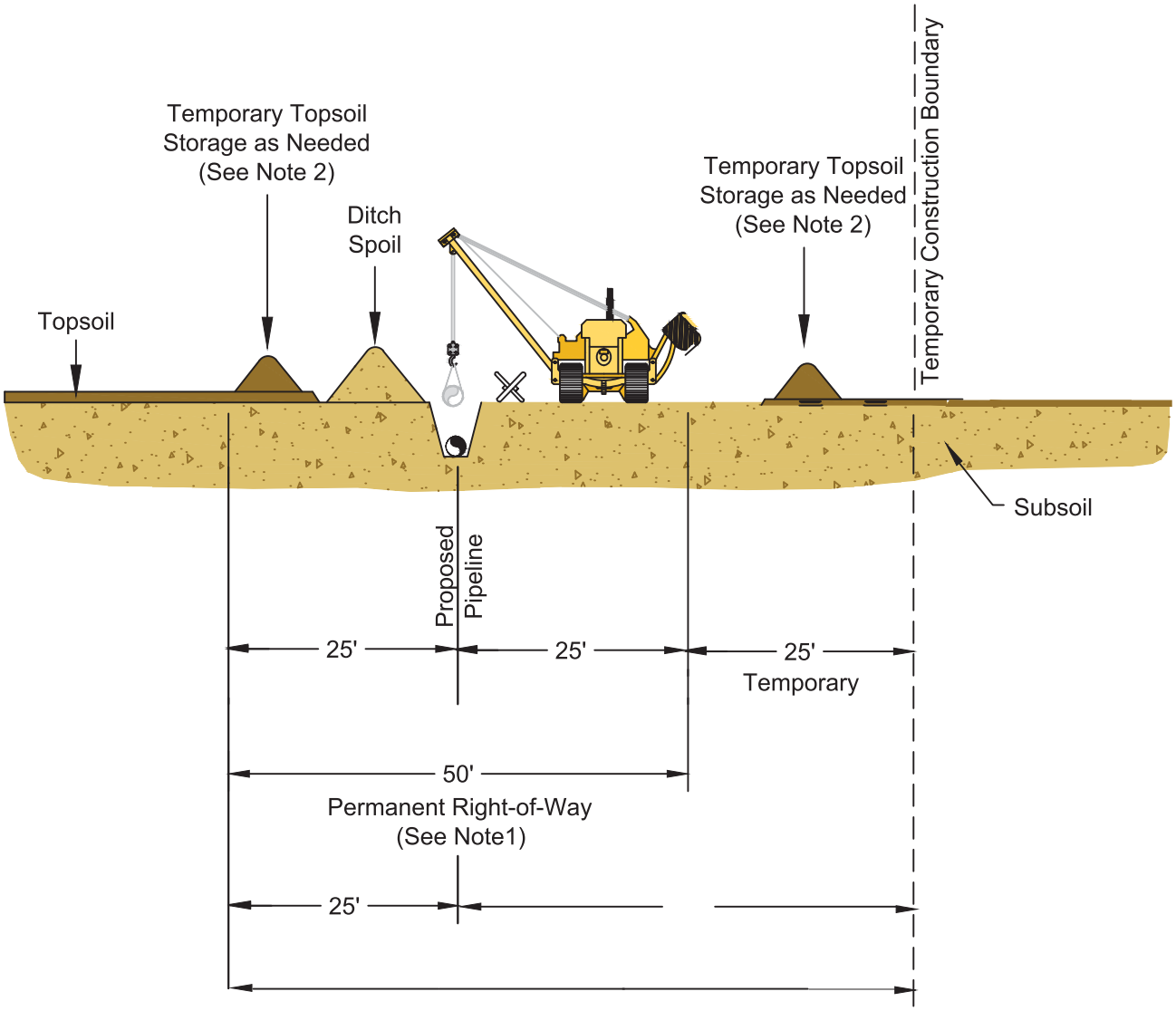
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Figure 4

Typical Straw Bale Installation
(OKS-7901-ENV-02)

ERM

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Notes:

1. Construction right-of-way will typically be 75 feet wide. The spoil side will be approximately 25 feet wide. The working side will be 50 feet wide.

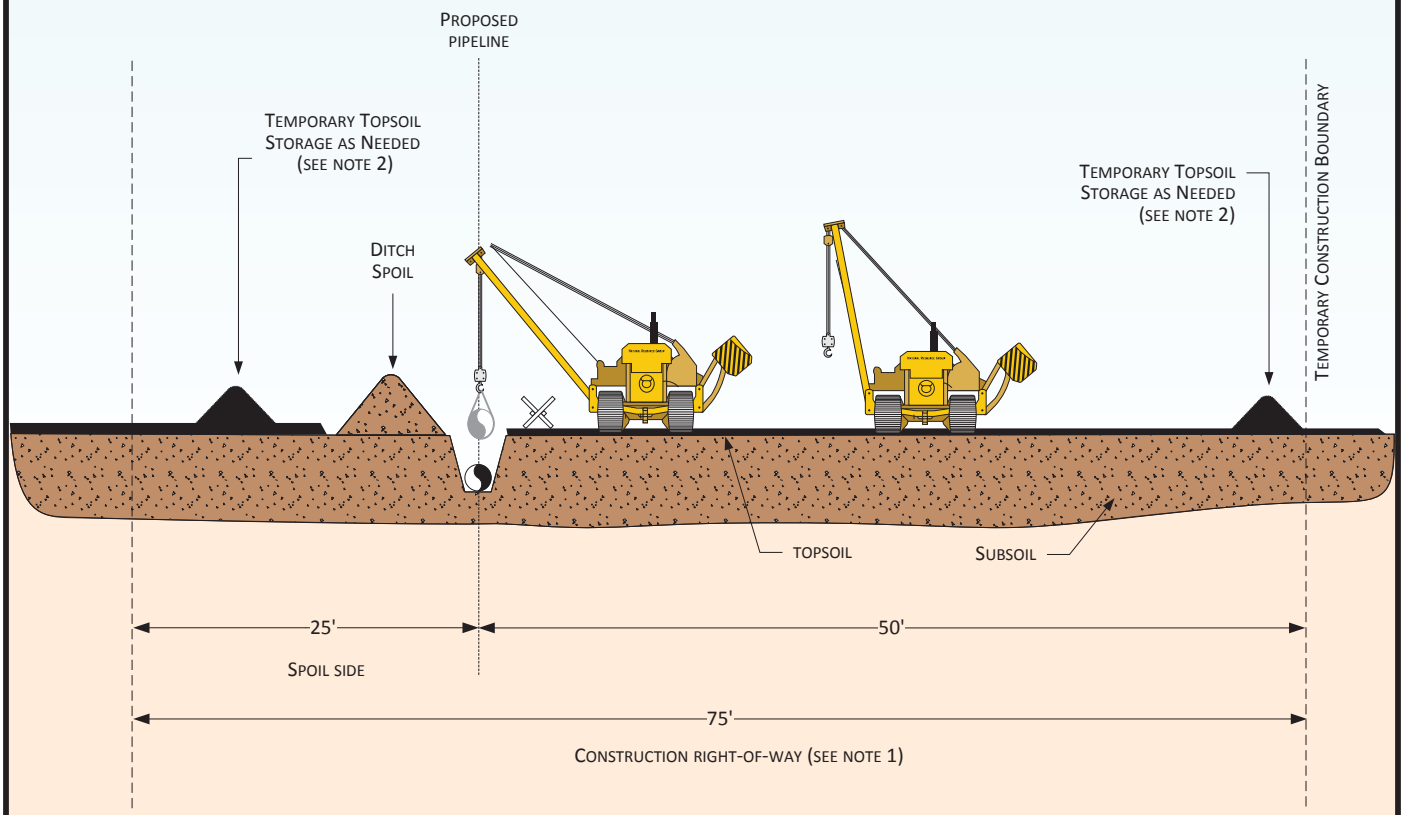
2. This drawing reflects "Full Right of Way " topsoil stripping procedure. Stockpile topsoil separately from ditch spoil as shown or in other configurations approved by the company.

ONEOK

Figure 5
Typical Topsoil Segregation Trench
Right-of-Way
(OKS-7901-CONST-01c)

ERM

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PROFILE

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 75' WIDE. THE SPOIL SIDE WILL BE APPROXIMATELY 25' WIDE. THE WORKING SIDE WILL BE 50' WIDE.
2. THIS DRAWING REFLECTS "DITCH PLUS SPOIL" TOPSOIL STRIPPING PROCEDURE. STOCKPILE TOPSOIL SEPARATELY FROM DITCH SPOIL AS SHOWN OR IN OTHER CONFIGURATIONS APPROVED BY THE COMPANY.

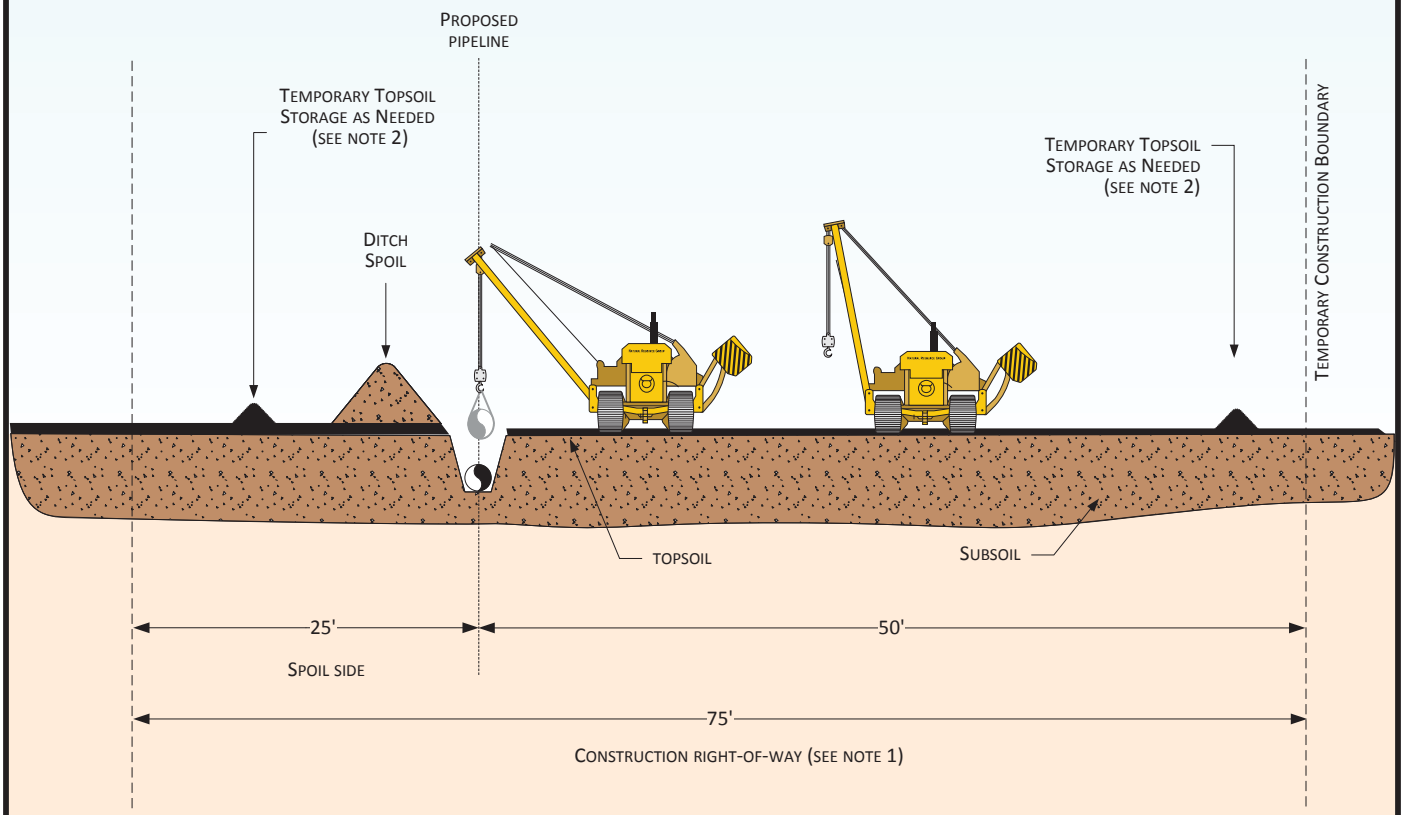
Figure 6

Typical Topsoil Segregation
Ditch Plus Spoil

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_6_Typical_Topsoil_Segregation.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



PROFILE

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 75' WIDE. THE SPOIL SIDE WILL BE APPROXIMATELY 25' WIDE. THE WORKING SIDE WILL BE 50' WIDE.
2. THIS DRAWING REFLECTS "TRENCH LINE ONLY" TOPSOIL STRIPPING PROCEDURE. STOCKPILE TOPSOIL SEPARATELY FROM DITCH SPOIL AS SHOWN OR IN OTHER CONFIGURATIONS APPROVED BY THE COMPANY.

ONEOK

Figure 7

Typical Topsoil Segregation
Trench Line Only

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_7_Typical_Topsoil_Segregation.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

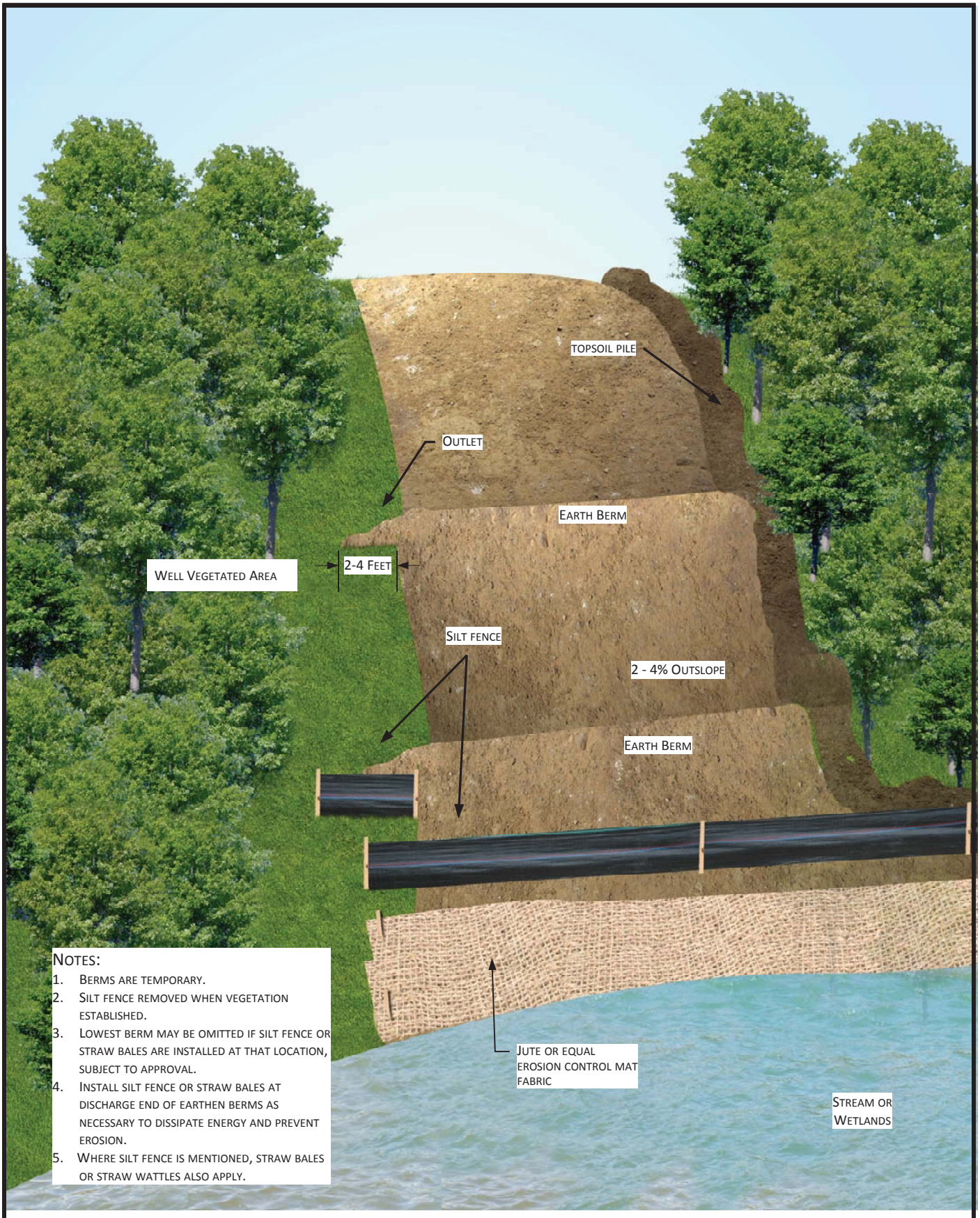


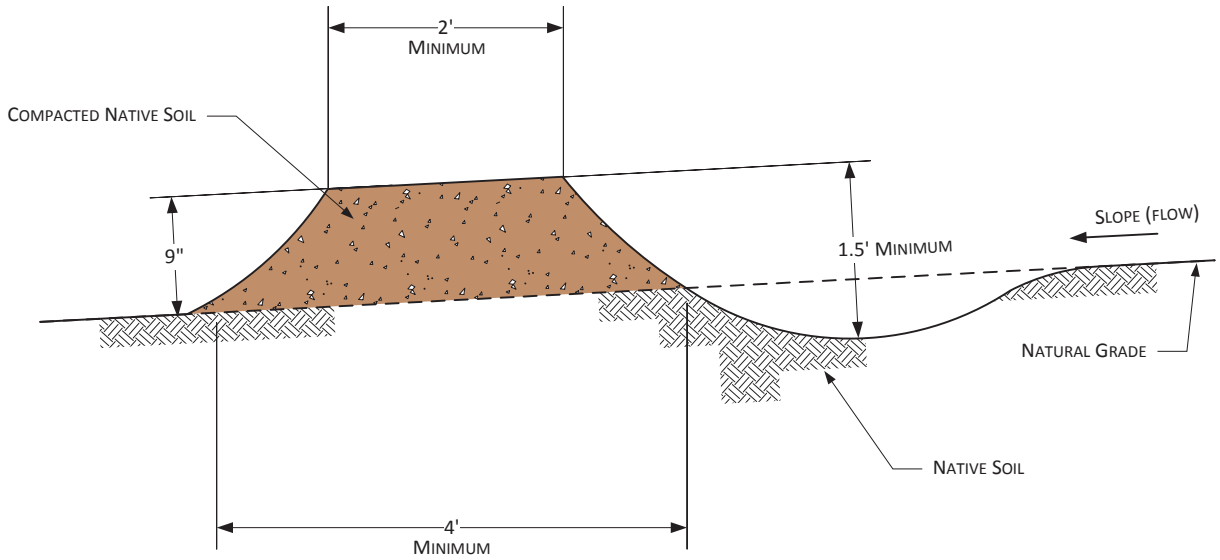
Figure 8

Typical Temporary Berms
Perspective View

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_8_Berms_Perspective_View.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



NOTES

1. BERMS SHALL BE CONSTRUCTED WITH 2 TO 4 PERCENT OUTSLOPE.
2. BERMS SHALL BE OUTLETED TO WELL VEGETATED STABLE AREAS, SILT FENCES, STRAW BALES OR ROCK APRONS.
3. BERMS SHALL BE SPACED AS DESCRIBED IN CONSTRUCTION SPECIFICATIONS.
4. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.

For environmental review purposes only.

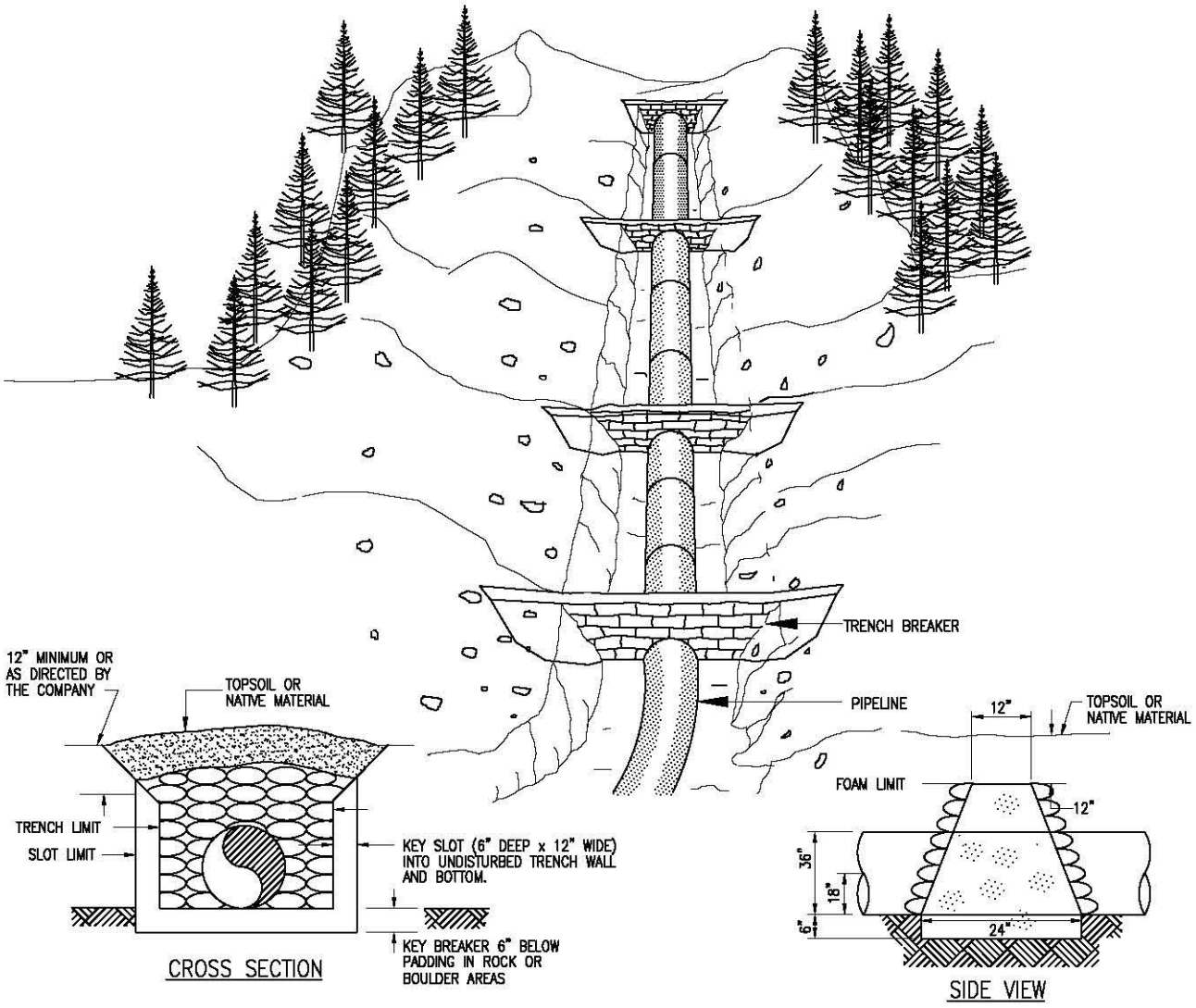
Figure 9

Typical Temporary or Permanent Berms
Elevation View

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_9_Berms_Elevation_View.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



NOTES:

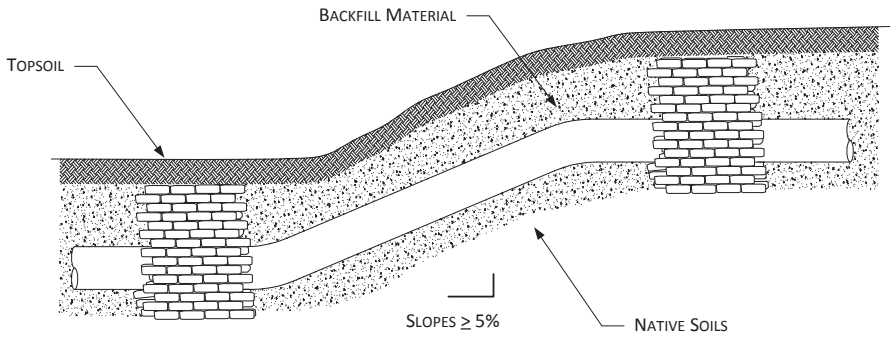
1. TRENCH BREAKERS SHALL BE INSTALLED:
   - ON SLOPES ALONG THE TRENCH LINE WHERE THE NATURAL DRAINAGE PATTERN, PROFILE, AND TYPE OF BACKFILL MATERIAL MAY RESULT IN LOSS OF BACKFILL MATERIAL OR ALTERATION OF THE NATURAL PATTERN;
   - AT THE BASE OF SLOPES ADJACENT TO WATERBODIES AND WETLANDS;
   - WHERE NEEDED TO AVOID DRAINING A WETLAND;
   - ON UPLAND SLOPES, AT THE SAME SPACING AS SLOPE BREAKERS AND UP SLOPE OF SLOPE BREAKERS;
   - IN CULTIVATED LAND AND RESIDENTIAL AREAS WHERE PERMANENT SLOPE BREAKERS ARE NOT TYP. INSTALLED, AT THE SAME SPACING AS IF PERMANENT SLOPE BREAKERS WERE REQUIRED.
2. EACH SAND BAG SHALL BE OF DIMENSION 14"X26" AND SHALL BE WOVEN POLY SPECIFICATION. EACH BAG SHALL BE FILLED TO 20" HIGH WITH 3/8" CLEAN, WASHED, AND SCREENED SAND AND FILLED TO A MINIMUM OF 55LBS.
3. BREAKER SPACING AND CONFIGURATION MAY CHANGE AS DETERMINED BY COMPANY OR SIMILARLY QUALIFIED PROFESSIONAL.
4. ALL MATERIALS SHALL BE SUPPLIED BY CONTRACTOR.
5. INSTALL ONE TRENCH BREAKER UNDER EVERY SLOPE BREAKER.

Figure 10

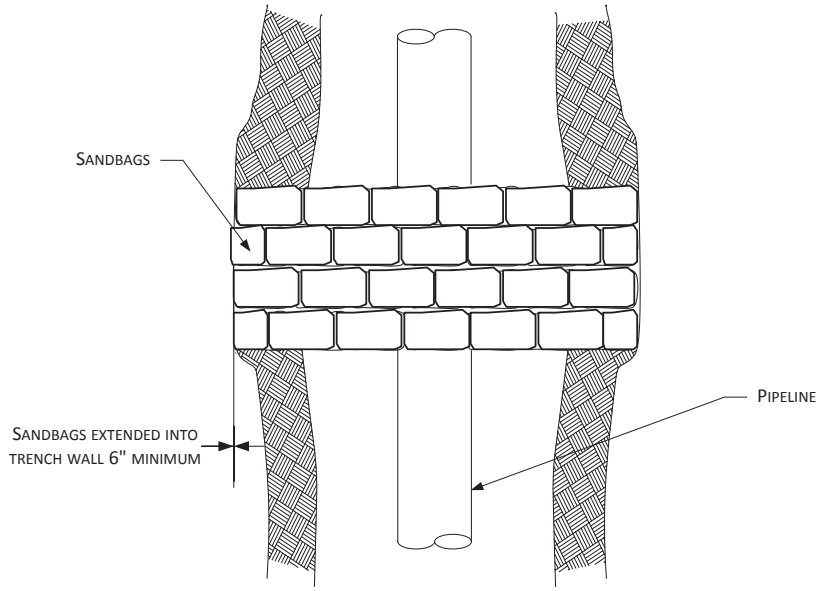
Typical Trench Breaker Perspective View

(OKS-7901-CONST-07)

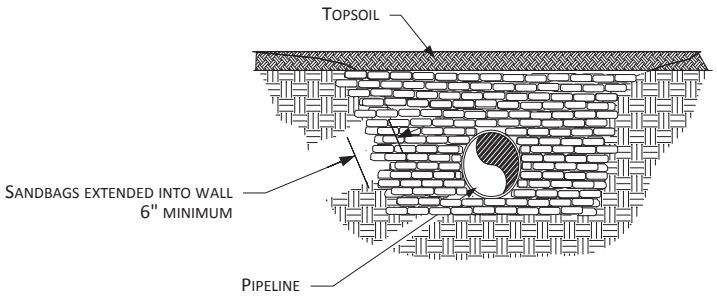
M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_5_Typical_Topsoil_Segregation.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



PROFILE VIEW
(NOT TO SCALE)



PLAN VIEW
(NOT TO SCALE)



FACE VIEW
(NOT TO SCALE)

NOTES

1. BAGS WILL NOT BE FILLED WITH TOPSOIL
2. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS
3. STAGGER COURSES OF BAGS

For environmental review purposes only.

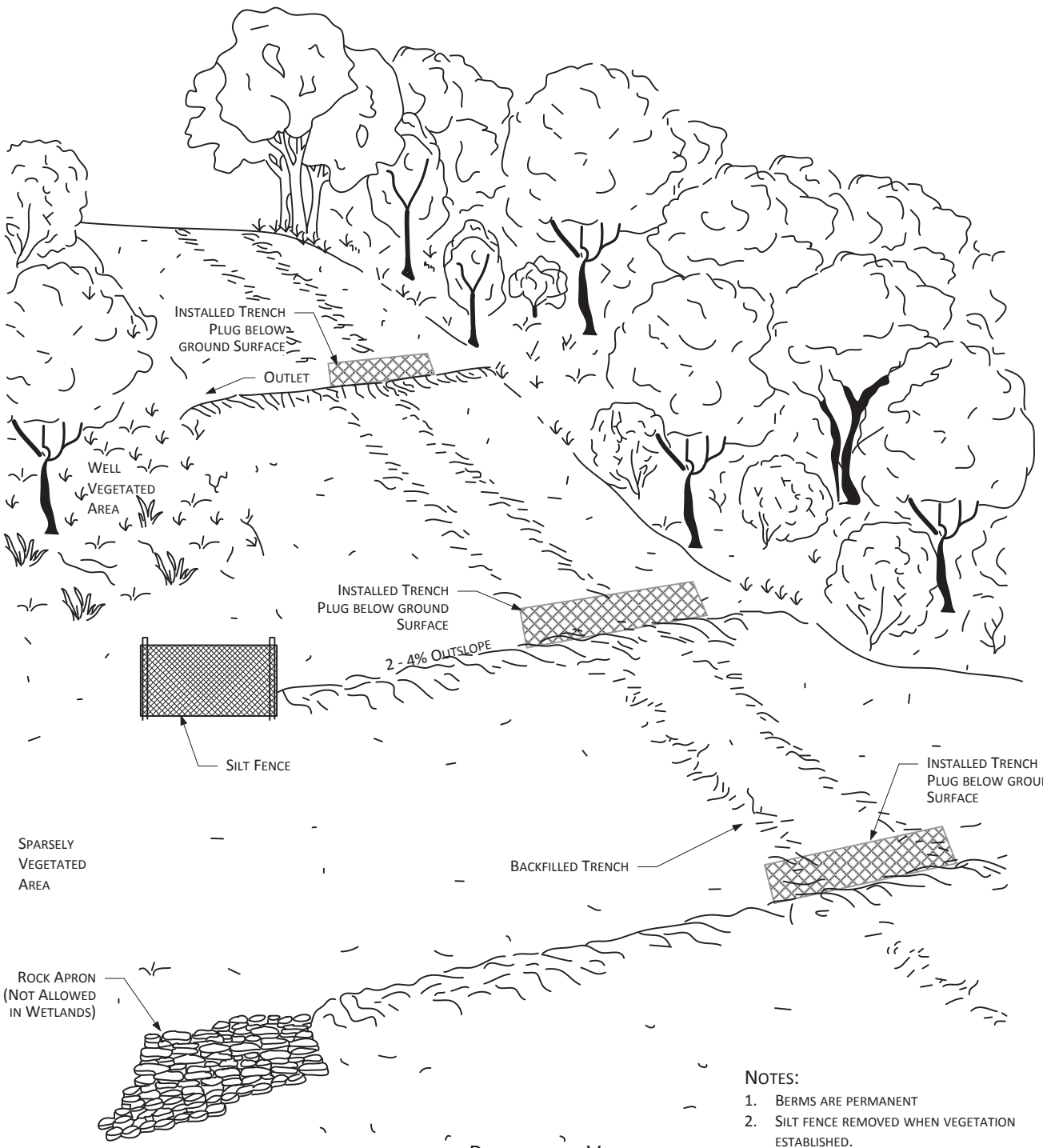
Figure 11

Typical Trench Breakers
Plan & Profile Views

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMPLLC_CMRP\Fig_11_Trench_Breaker_Plan_Profile_View.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting



Perspective View
(not to scale)

Slope %	Approximate Spacing (ft)
5-15	300
15-30	200
>30	<100

Notes:

1. Berms are permanent
2. Silt fence removed when vegetation established.
3. Lowest berm may be omitted if silt fence or straw bales are installed at that location, subject to approval.
4. Install silt fence or straw bales at discharge end of earthen berms as necessary to dissipate energy and prevent erosion.

For environmental review purposes only.

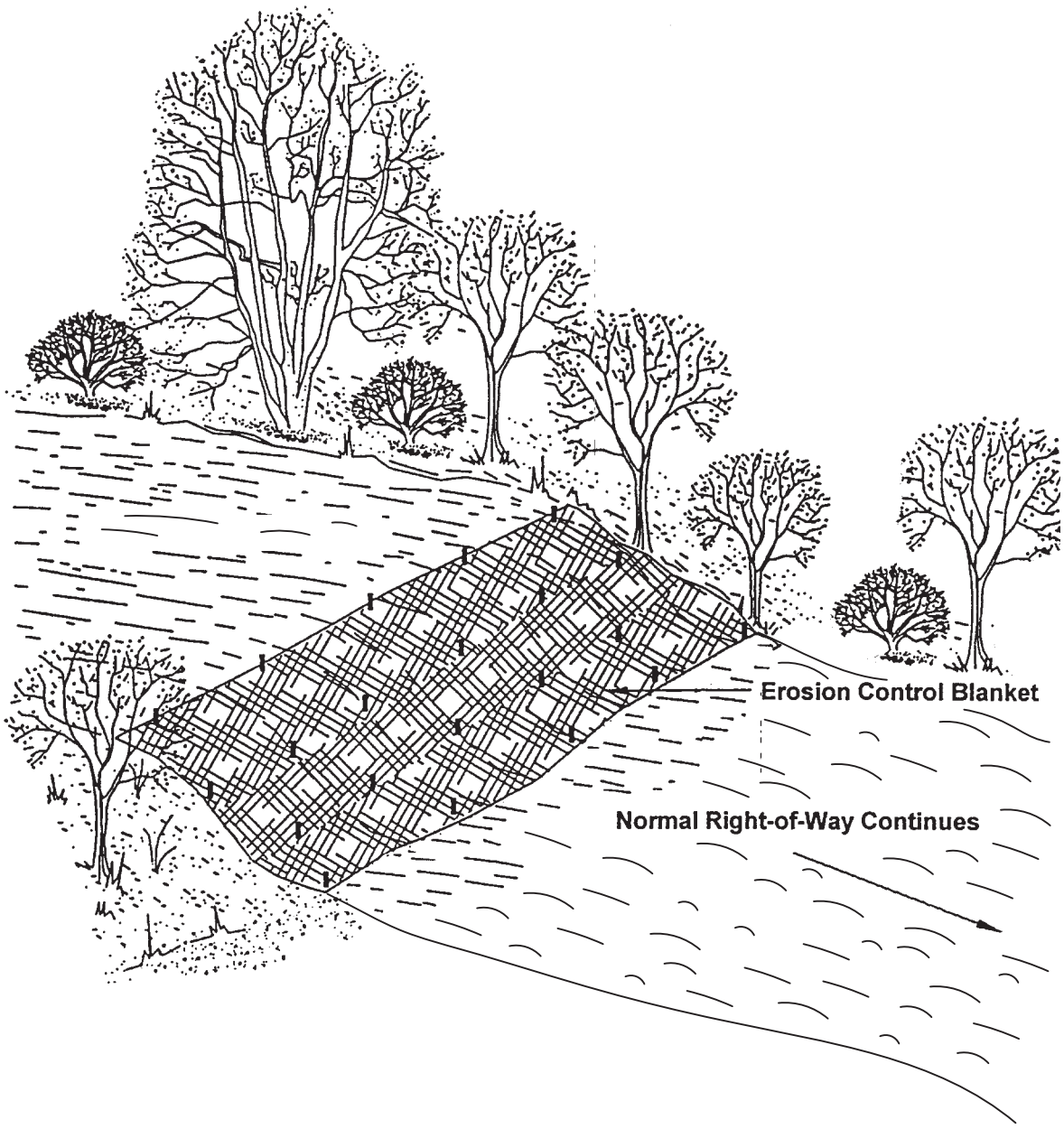
Figure 12

Permanent Slope Breakers
Perspective View

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_12_Slope_Breakers_Perspective_View.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



NOTES

1. INSTALL EROSION CONTROL BLANKET AS PER MANUFACTURER'S SPECIFICATIONS.
2. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.

For environmental review purposes only.

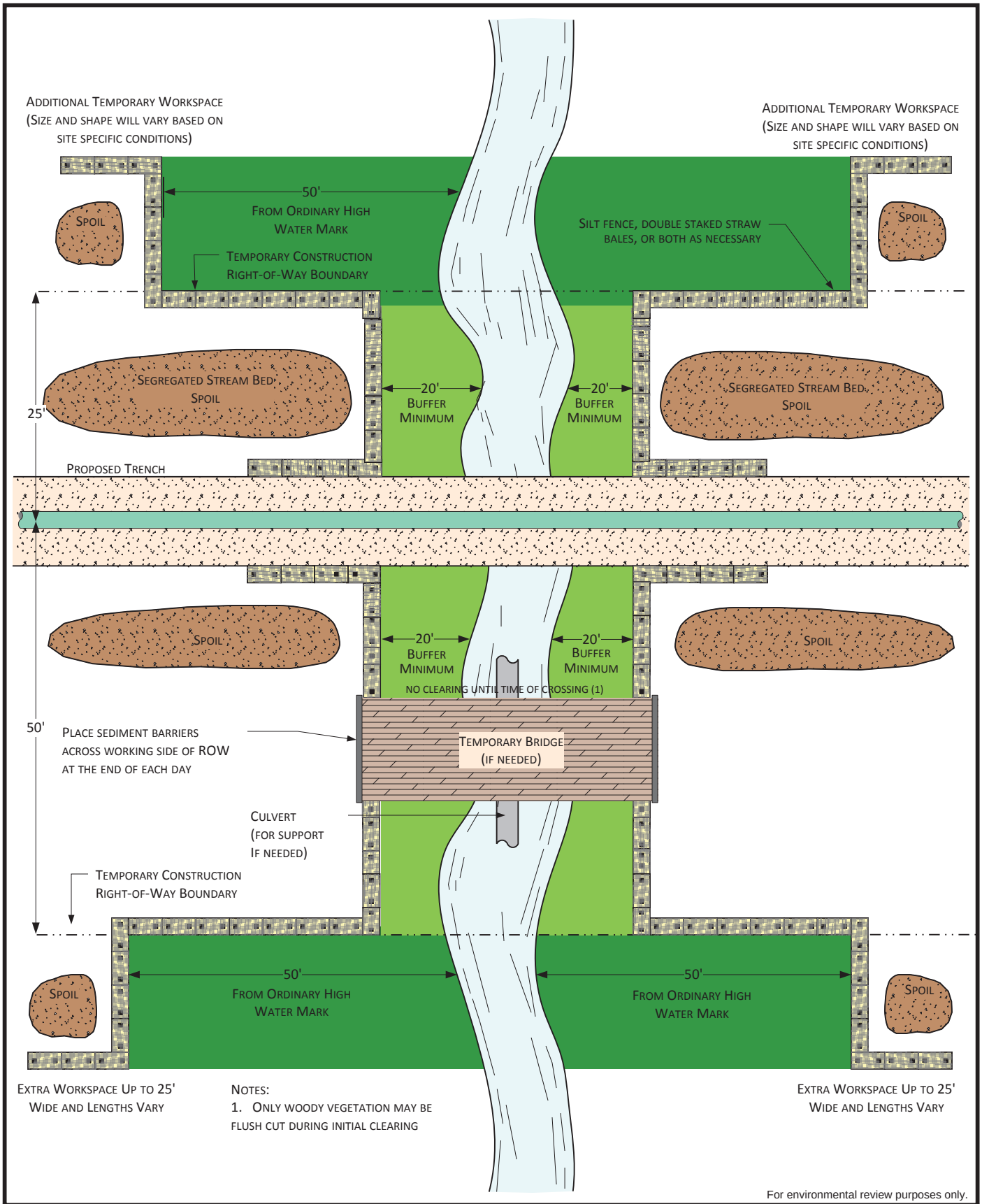
ONEOK

Figure 13

Erosion Control Blanket - Steep Slopes (≥30%)

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_13_Erosion_Control_Blanket.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



For environmental review purposes only.

Figure 14

Typical Waterbody Crossing
Open Cut - Wet Trench Method

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_14_Waterbody_Wet_Trench.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

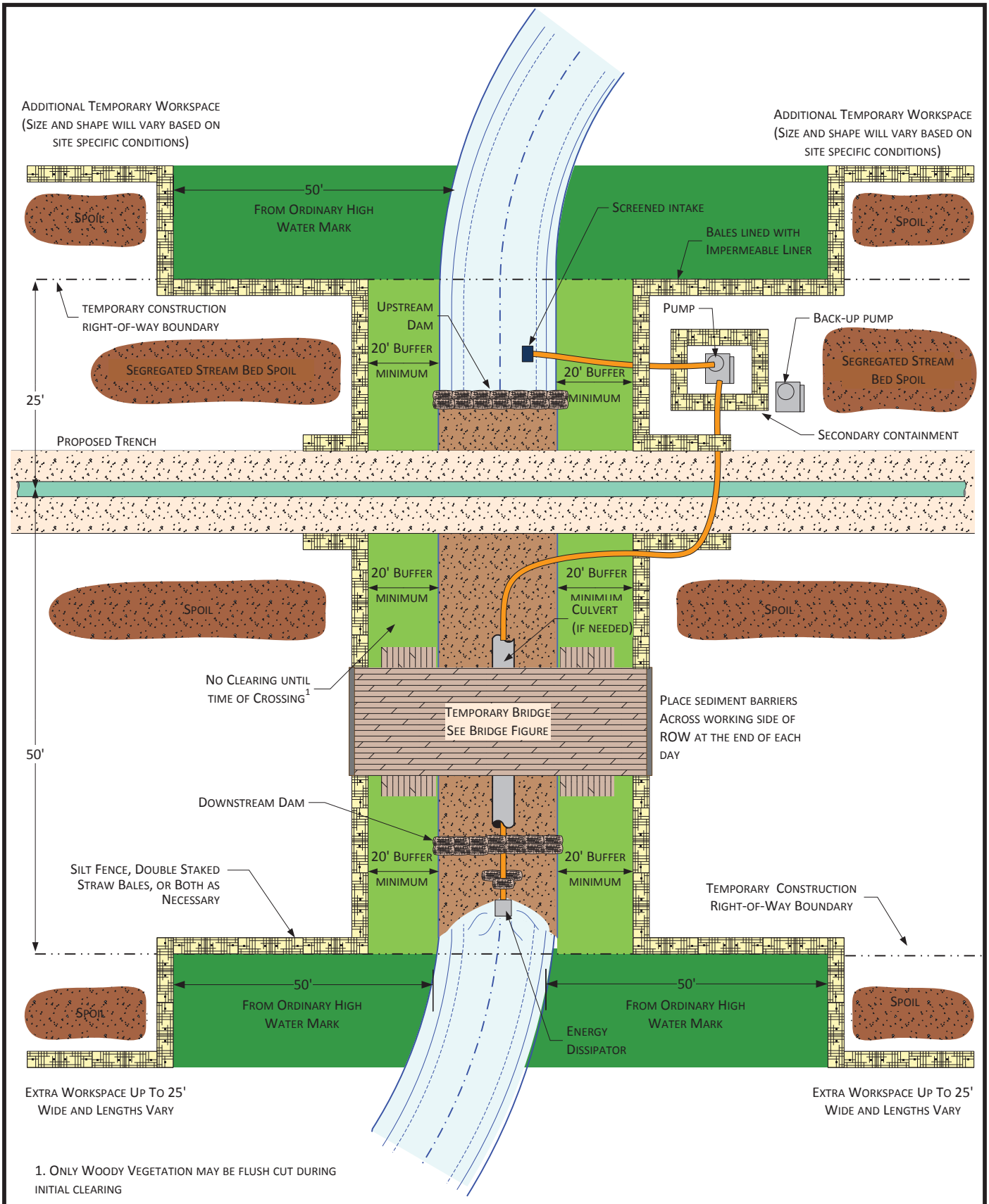
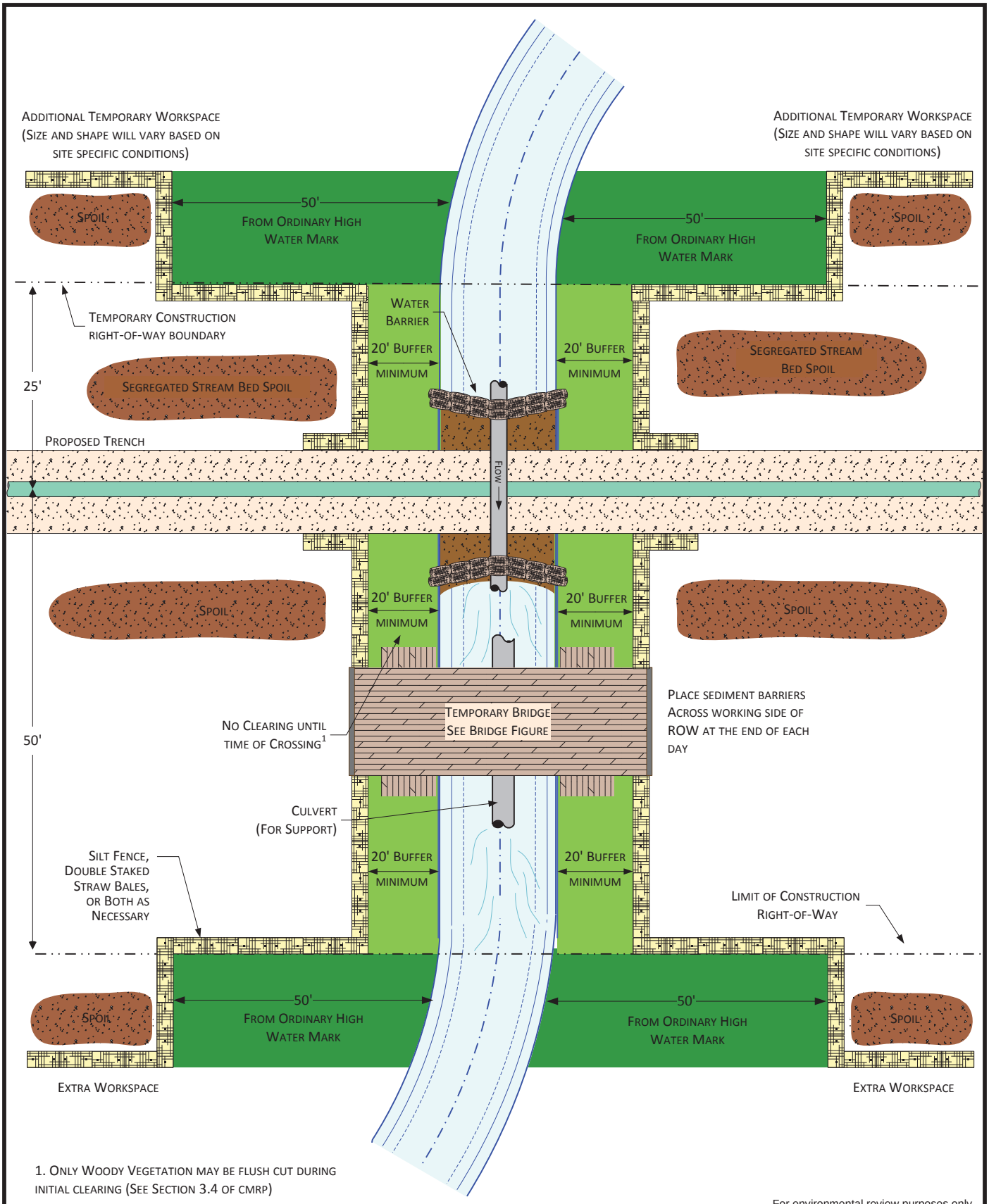


Figure 15
Typical Waterbody Crossing
Dam and Pump Method

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_15_Waterbody_Dam_Pump.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



1. ONLY WOODY VEGETATION MAY BE FLUSH CUT DURING INITIAL CLEARING (SEE SECTION 3.4 OF CMRP)

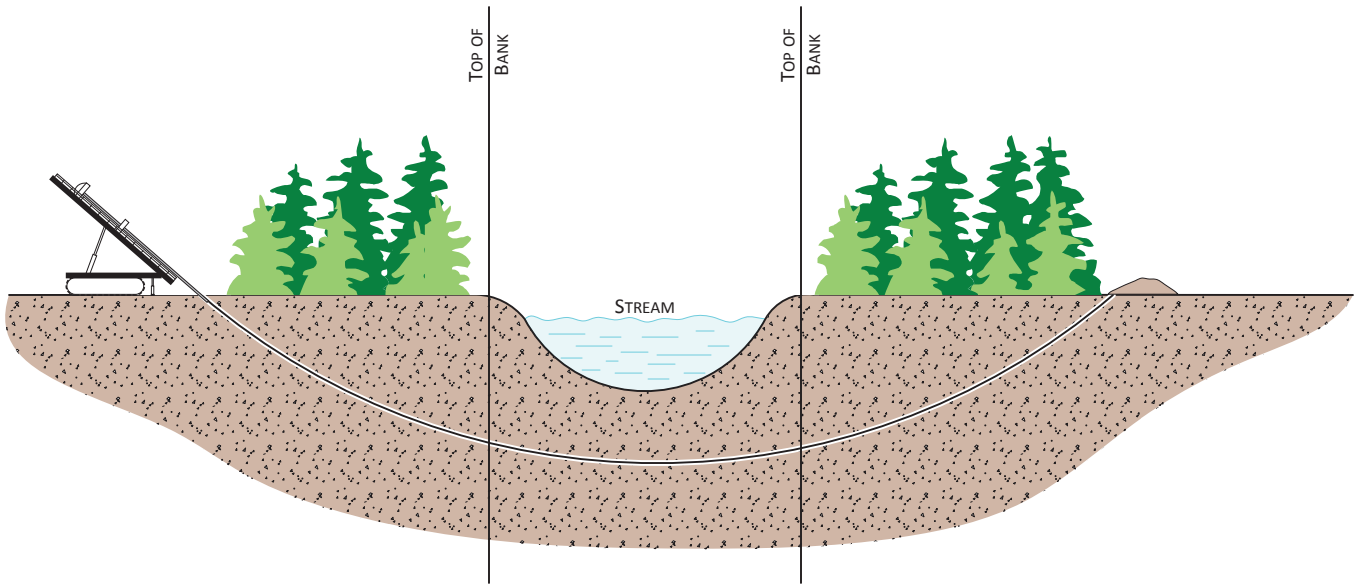
For environmental review purposes only.

Figure 16
Typical Waterbody Crossing
Flume Method

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMPR\Fig_16_Waterbody_Flume.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting



For environmental review purposes only.

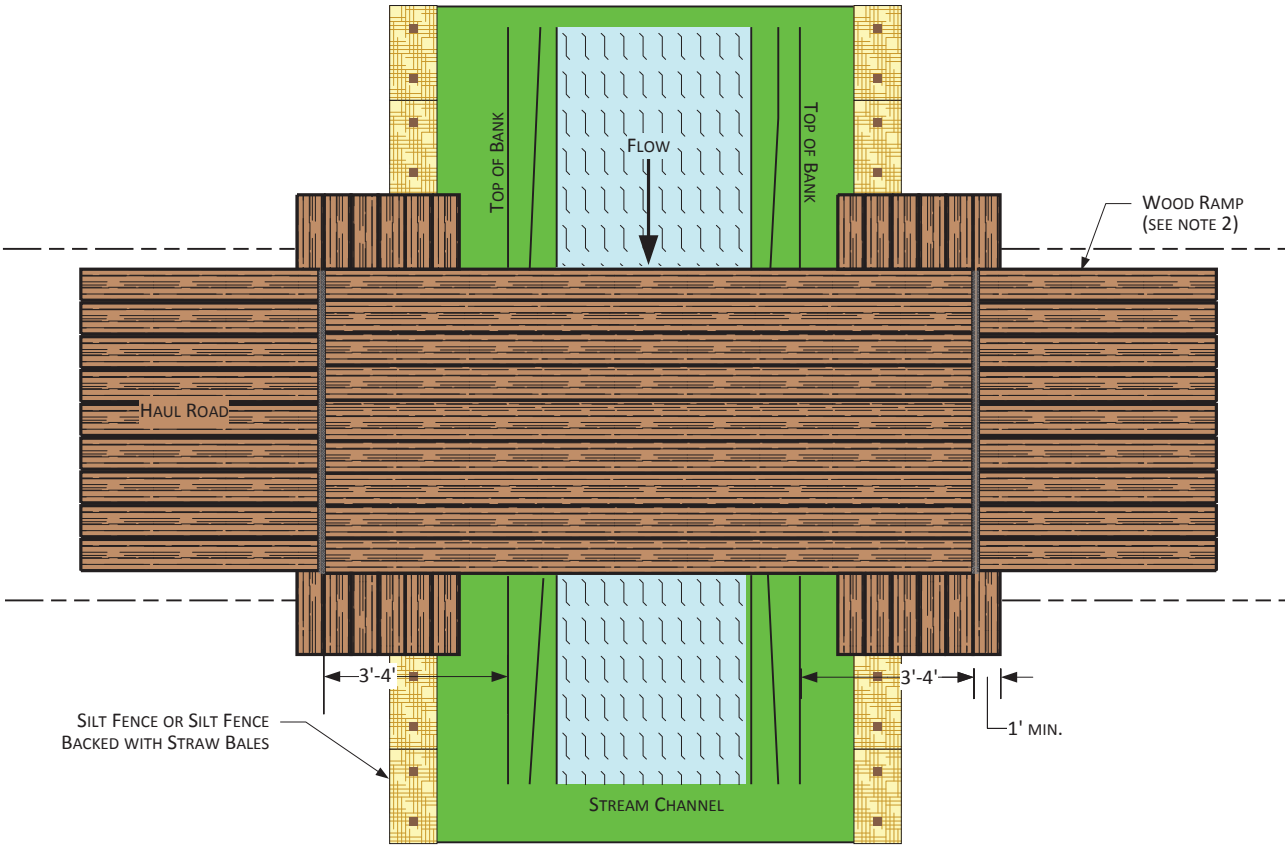
Figure 17
Typical Waterbody Crossing
Directional Drill Method

ONEOK

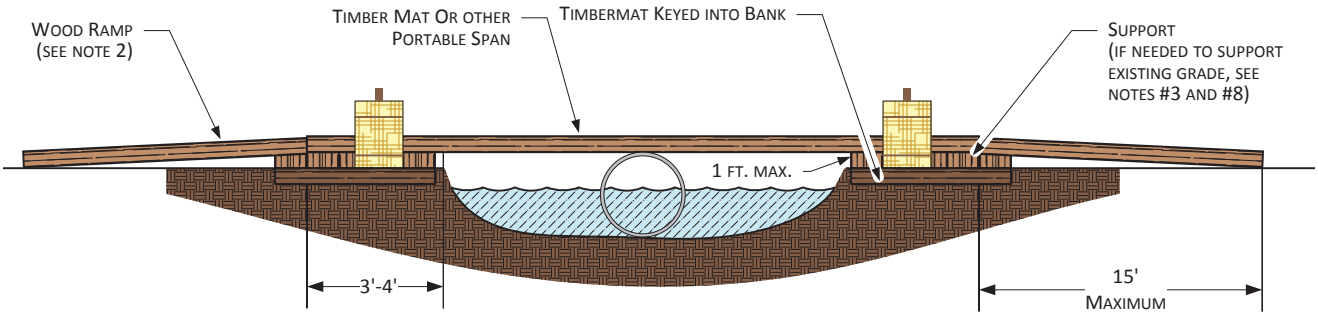
ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_17_Waterbody_Directional_Drill.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

Plan View



Profile View



Notes:

1. Inspect bridge opening periodically and following rainfalls of over ½". Remove any debris restricting flow and deposit it at an upland site outside of floodplain.
2. If physical circumstances prohibit wood or metal ramps, earthen ramps may be used as approved.
3. Inspect bridge elevation so bridge remains supported above high bank and does not sink into bank.
4. The culvert support must be anchored to the stream bottom and may not be supported with fill.
5. The bridge must span from top of bank to top of bank.
6. Additional support must be added on top of bank and under span if initial support starts to settle.
7. Erosion and sedimentation control measures shall be inspected and maintained in accordance with the company's Environmental Mitigation Plan

For environmental review purposes only.

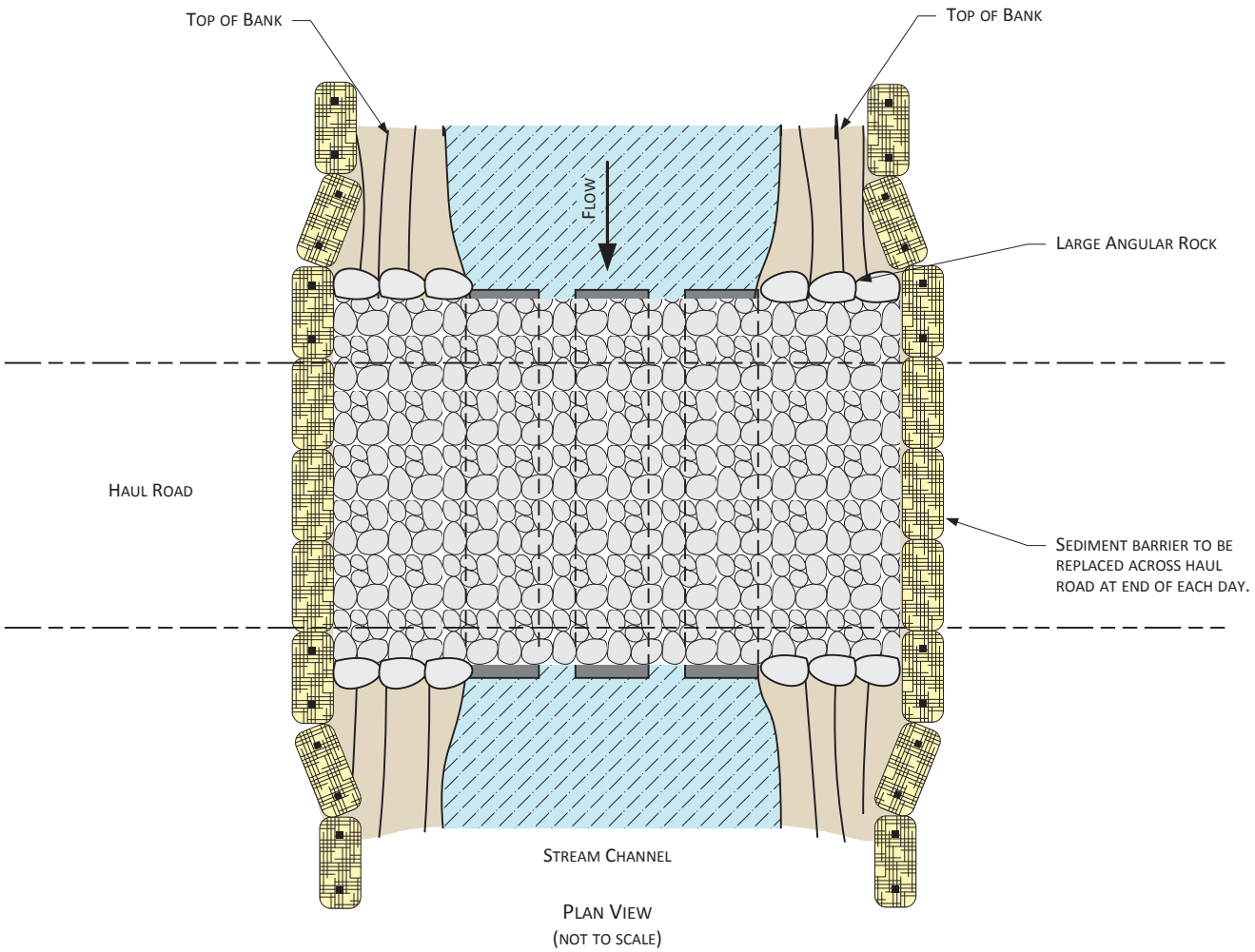
Figure 18

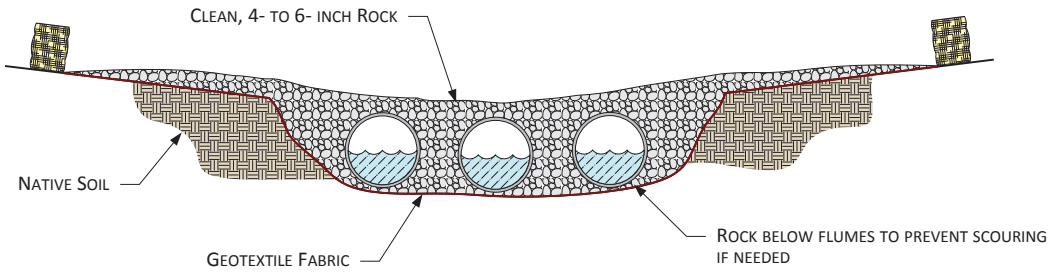
Typical Span Type Bridge
With or Without Instream Support
(OKS-7901-ENV-04)

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_18_Span_Type_Bridge.vsd	Scale: NTS	Date: 5/20/2007	Revised: 08/17/2018	Drawn By: AGPeterson





NOTES:

1. STEEL FLUME PIPE(S) SIZED TO ALLOW FOR STREAM FLOW AND EQUIPMENT LOAD.
2. STRAW BALES (OR EQUIVALENT) SHALL BE PLACED ACROSS BRIDGE ENTRANCE EVERY NIGHT.
3. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS.

For environmental review purposes only.

Figure 19

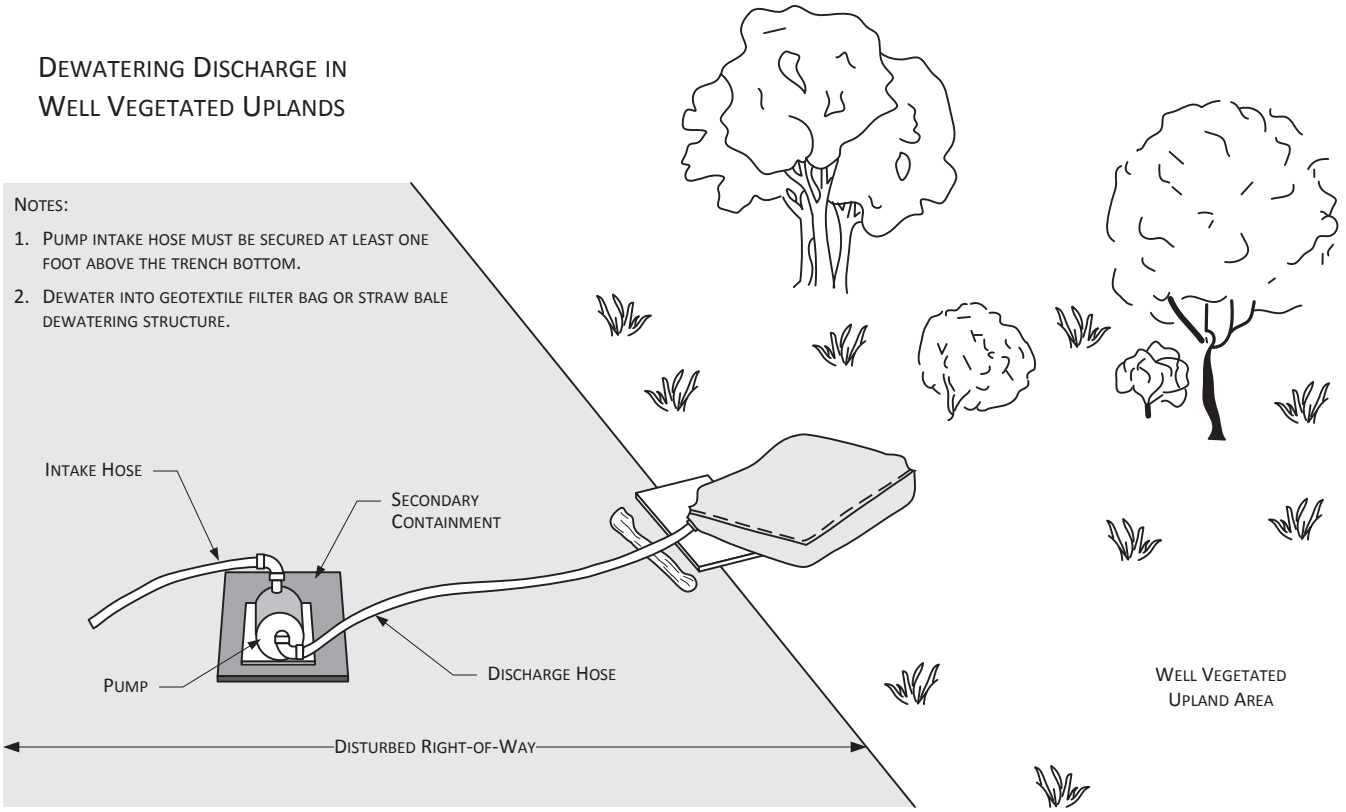
Typical Rock Flume Bridge
Method 4
(OKS-7901-ENV-03d)

ONEOK

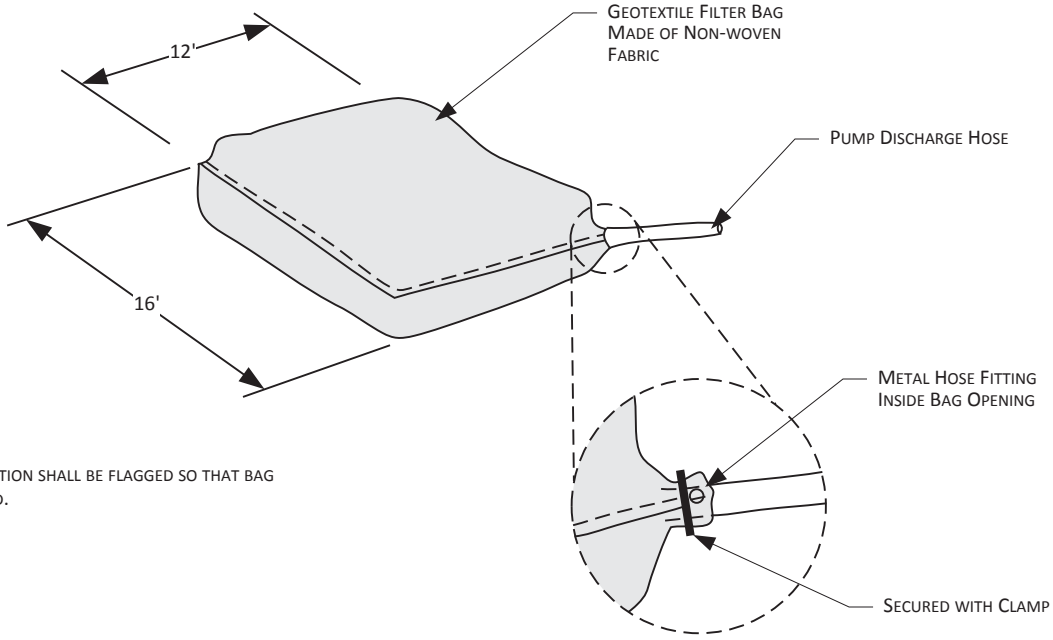
ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_19_Rock_Flume_Bridge.vsd	Scale: NTS	Date: 5/20/2007	Revised: 08/17/2018	Drawn By: AGPeterson

Dewatering Discharge in Well Vegetated Uplands



Geotextile Filter Bag



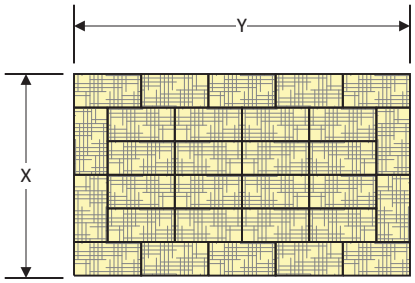
Note:

1. Filter bag location shall be flagged so that bag can be removed.

For environmental review purposes only.

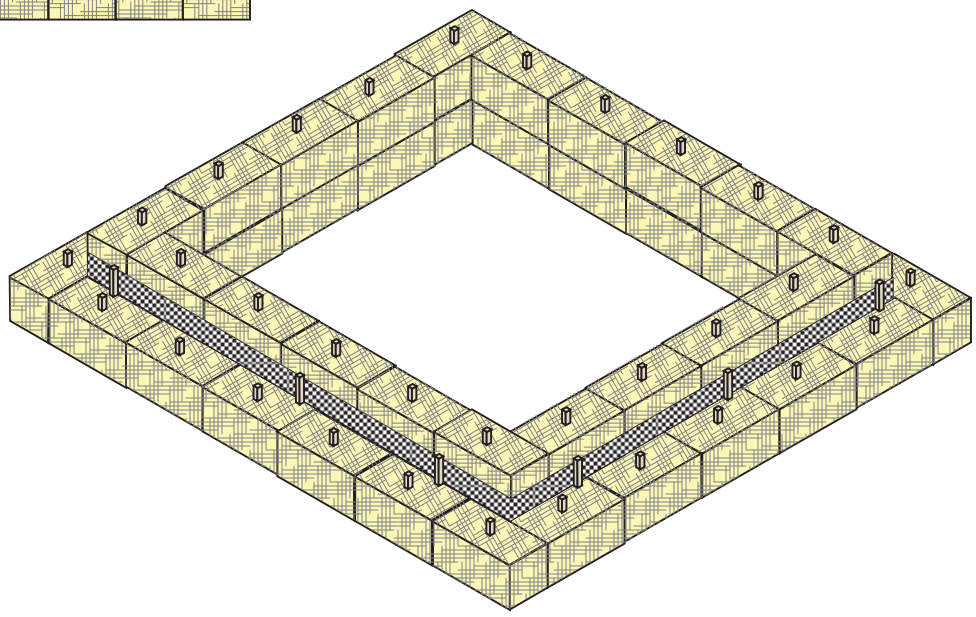
Figure 20
Typical Dewatering Measures

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_20_Dewatering_Measures.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

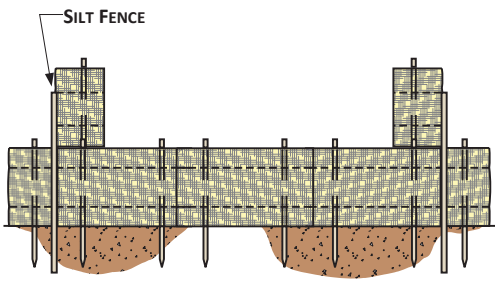


NOTES

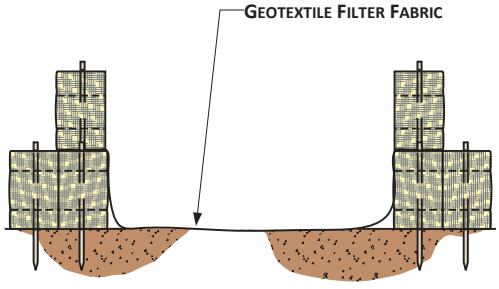
1. ARRANGE THE STRAW BALES TO THE X AND Y DIMENSIONS AS SPECIFICIED BELOW.
2. IF BOTTOM OF STRUCTURE IS NOT LINED WITH STRAW BALES (OPTION 1), LINE ENTIRE STRUCTURE WITH GEOTEXTILE FILTER FABRIC.



PERSPECTIVE VIEW



OPTION 1



OPTION 2

MINIMUM SUMP DIMENSIONS (FEET)		MAXIMUM PUMPING RATE
X	Y	GALLONS PER MINUTE
10	20	300
15	20	350
20	20	400
20	25	450
25	25	500
25	30	550
30	30	660

For environmental review purposes only.

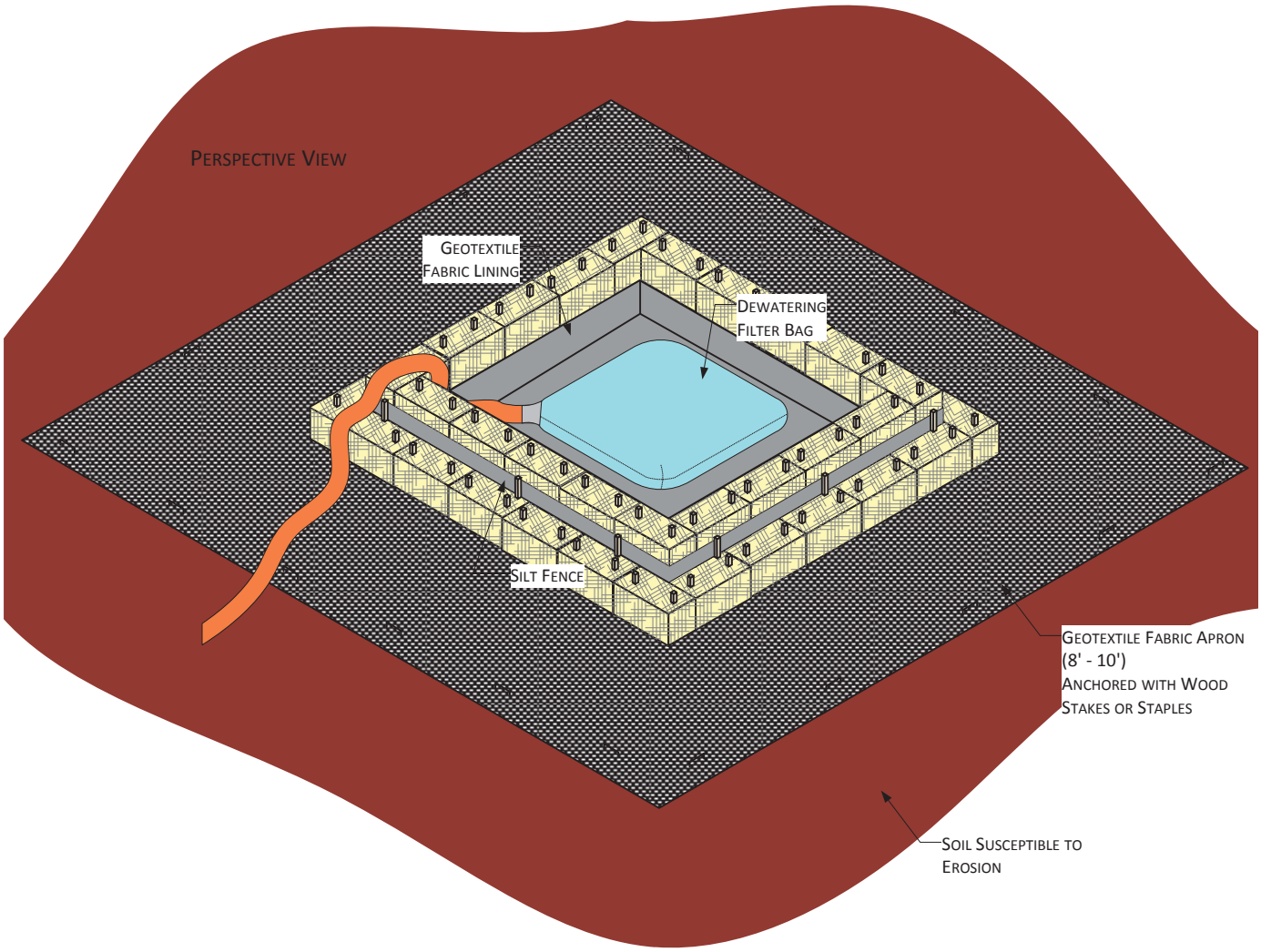
Figure 21

Straw Bale Dewatering Structure
(OKS-7901-ENV-05)

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_21_Straw_Bale_Dewatering.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting



Construct Dewatering Structure to accommodate anticipated pumping rates. See example below.

Example Pumping rate = 200 g.p.m.
Storage volume (c.f.) = 16 x 200 g.p.m. = 3200 c.f.
Height of straw bale structure = 3 feet (2 bales stacked) (based on height of bales, not silt fence)
Inside dimensions of structure = 33 x 33 feet square

Notes:

1. Silt fence ends must be wrapped to join two sections.
2. Install silt fence 2 inches above top of straw bales, and anchor a minimum of 8 inches straight down.
3. Spacing between silt fence post stakes must be 4 feet or less.
4. Dewatering intake hose supported at least 1 foot from bottom of trench being dewatered.
5. Erosion and sedimentation control measures shall be inspected and maintained in accordance with the company's upland erosion control, revegetation, and maintenance plan.

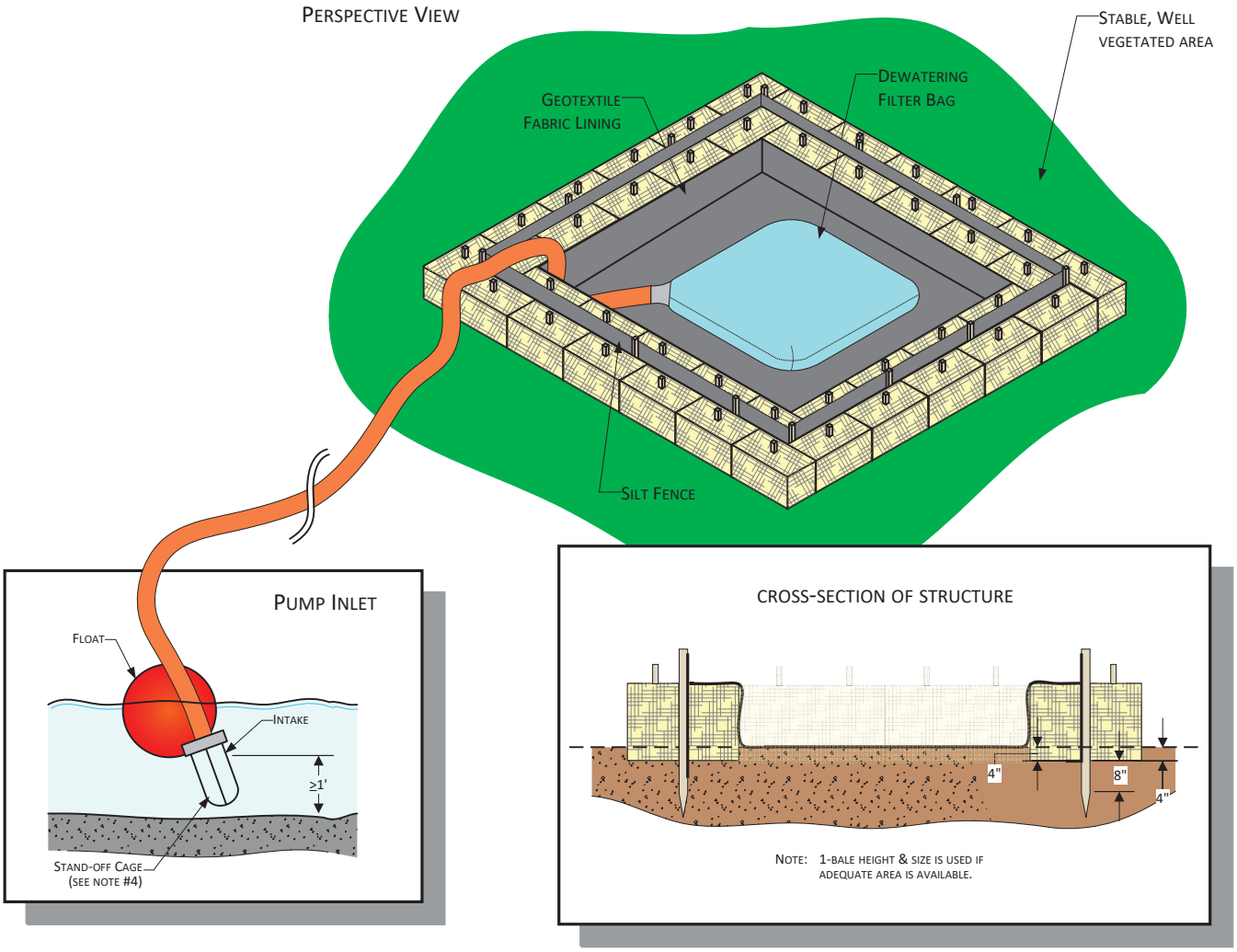
For environmental review purposes only.

Figure 22
Straw Bale Dewatering Structure
(OKS-7901-ENV-06a)

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_22_Straw_Bale_Dewatering.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting



CONSTRUCT DEWATERING STRUCTURE TO ACCOMMODATE ANTICIPATED PUMPING RATES. SEE EXAMPLE BELOW.

EXAMPLE PUMPING RATE = 200 G.P.M.
STORAGE VOLUME (C.F.) = 16 X 200 G.P.M. = 3200 C.F.
HEIGHT OF STRAW BALE STRUCTURE = 1.5 FEET (1 BALE) (BASED ON HEIGHT OF BALES, NOT SILT FENCE)
INSIDE DIMENSIONS OF STRUCTURE = 46 X 46 FEET SQUARE

NOTES:

1. SILT FENCE ENDS MUST BE WRAPPED TO JOIN TWO SECTIONS.
2. INSTALL SILT FENCE 2 INCHES ABOVE TOP OF STRAW BALE, AND ANCHOR A MINIMUM OF 8 INCHES STRAIGHT DOWN.
3. SILT FENCE POST STAKING MUST BE 4 FEET OR LESS.
4. DEWATERING INTAKE HOSE SUPPORTED AT LEAST 1 FOOT FROM BOTTOM OF TRENCH BEING DEWATERED.
5. USE A FILTER BAG AT THE DISCHARGE HOSE END.
6. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE COMPANY'S CMRP.

For environmental review purposes only.

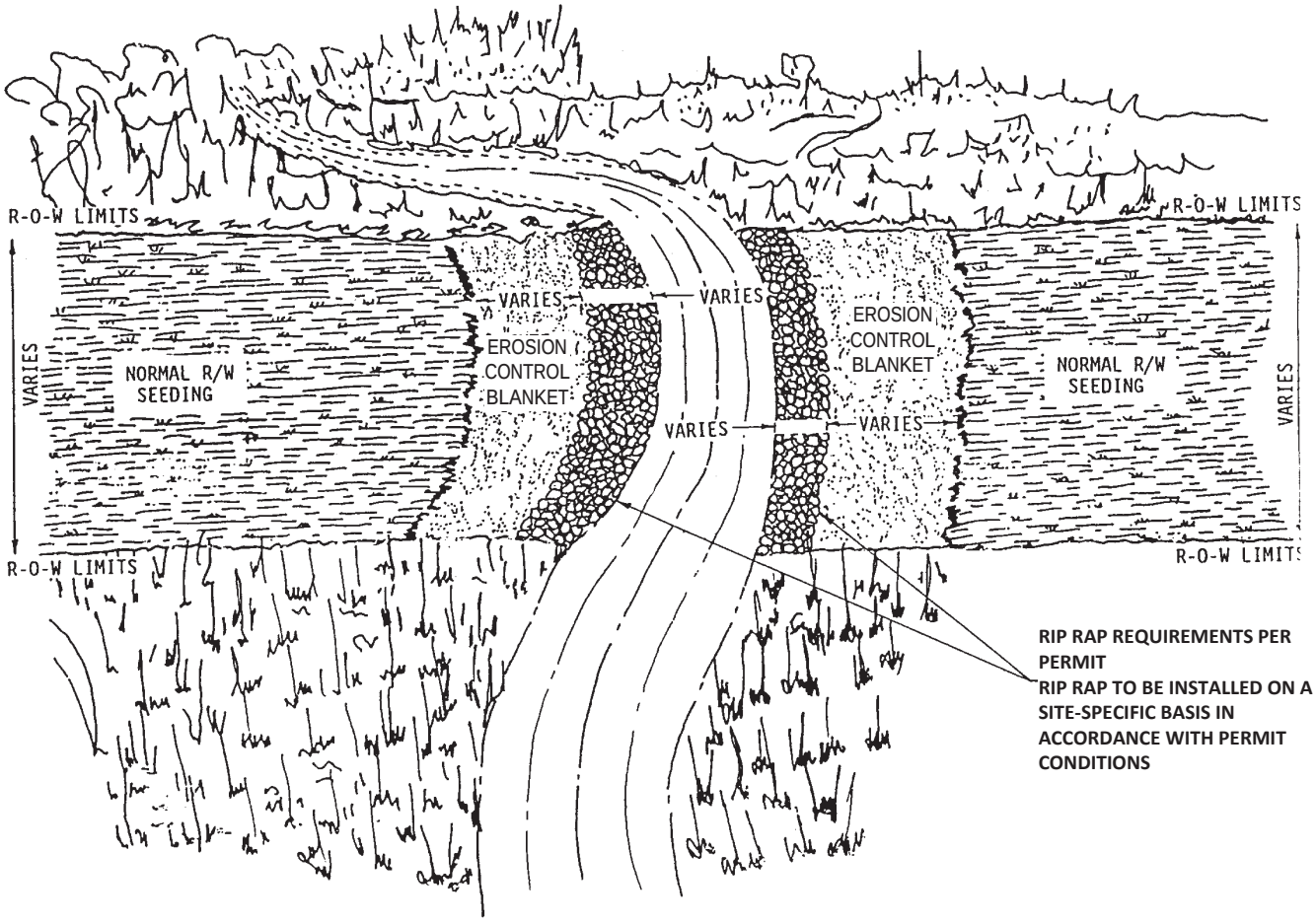
ONEOK

Figure 23
Straw Bale Dewatering Structure
(OKS-7901-ENV-06b)

ERM

K:_Client_Projects\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_23_Straw_Bale_Dewatering.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting

NOTE: PLACE EROSION CONTROL BLANKET A MINIMUM OF ONE (1) FOOT UNDER RIP RAP. EXTEND JUTE BLANKET FROM MEAN HIGH WATER LEVEL TO SEVERAL FEET BEHIND HIGH BANK.



For environmental review purposes only.

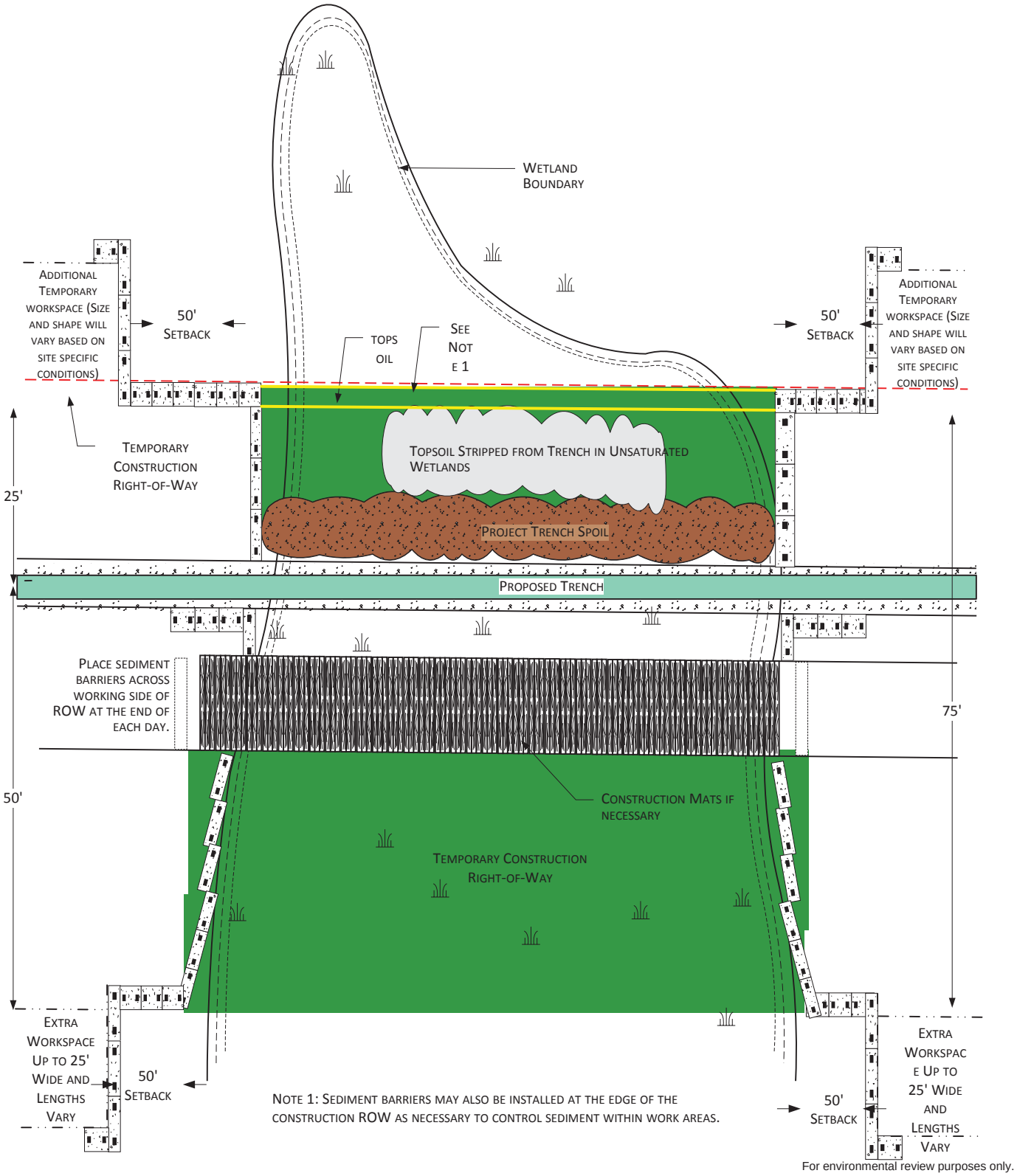
Figure 24

Typical Final Stream Bank Stabilization
Rip Rap & Erosion Control
(OKS-7901-ENV-07)

ONEOK

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_24_Stream_Bank_Stabilization.vsd	Scale: NTS	Revised: 08/17/2018	Drawn By: RGCutting



For environmental review purposes only.

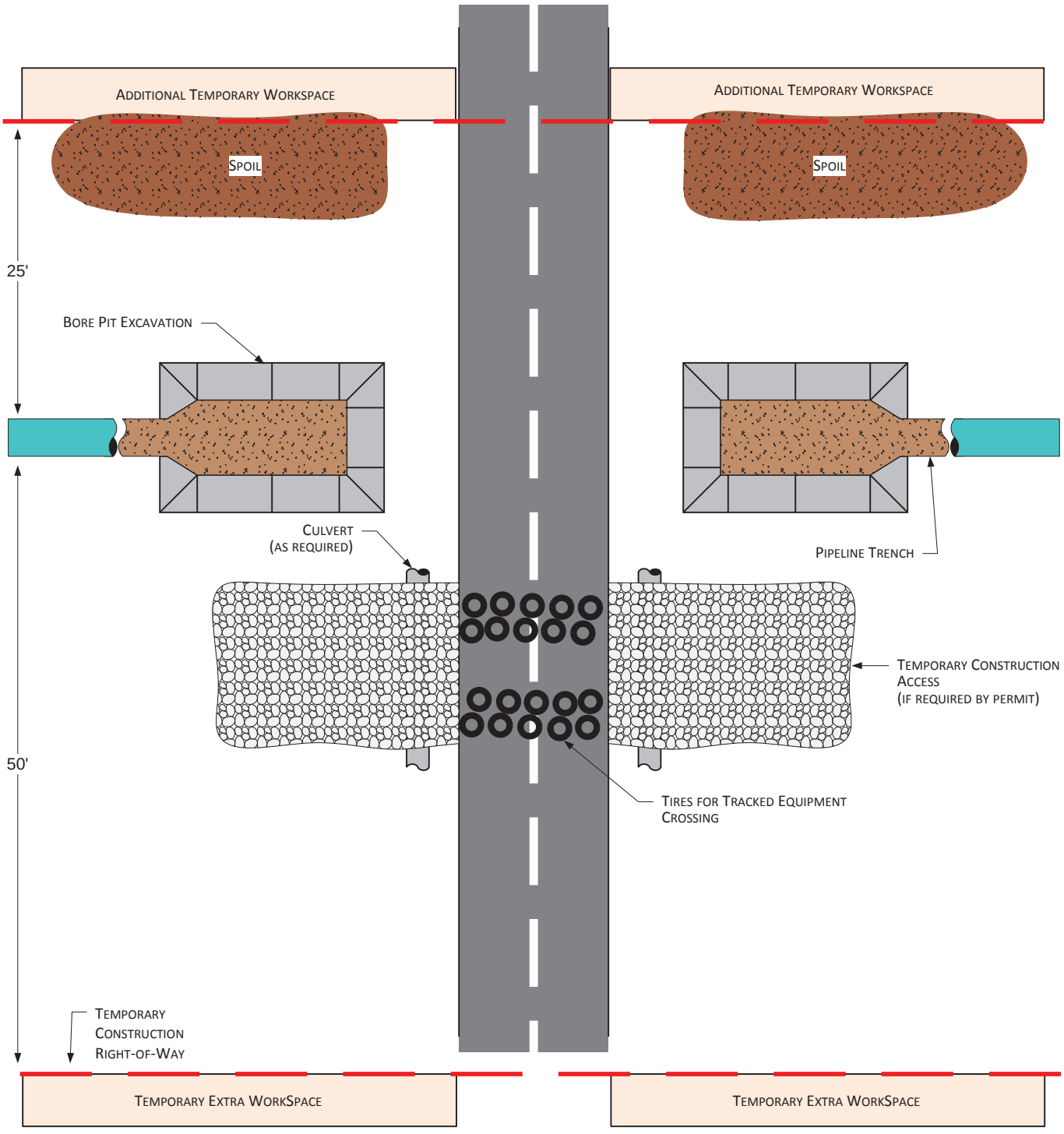
Figure 25

Typical Wetland Crossing Method
Method 5
(OKS-7901-ENV-03e)

ONEOK

ERM

K:_Client_Projects\M-O\ONE\Niobrara\EMP\Fig_24_Wetland_Crossing.vsd	Scale: NTS	Revised: 0820/2018	Drawn By: RGCutting



PLAN VIEW

NOTES

1. PROCEDURES SHOWN IN THIS DRAWING APPLY TO IMPROVED ROADS.
2. ROADS MUST BE CLEANED AFTER EQUIPMENT CROSSES AND DIRT PLACED IN SPOIL CONTAINMENT AREAS.
3. TEMPORARY ACCESS MATERIALS MUST BE REMOVED UPON PROJECT COMPLETION.
4. ADDITIONAL INFORMATION INCLUDED ON OTHER DRAWINGS OR PERMITS.
5. CONSTRUCTION AREAS LOCATED OUTSIDE ROAD ROW.
6. INSTALL EROSION AND SEDIMENT CONTROLS AS NEEDED BASED ON SITE SPECIFIC CONDITIONS

For environmental review purposes only.

ONEOK

Figure 26
Typical Improved Road Crossing
Directional Bore Method

ERM

M:\Typicals\Clients\M-O\ONE\Elk_Creek\EMP\LLC_CMRP\Fig_26_Improved_Road_Crossing.vsd	Scale: NTS	Revised: 08/20/2018	Drawn By: RGCutting

APPENDIX D

Project Maps

<<<UPDATED MAPS WILL BE ATTACHED PRIOR TO COMMENCING CONSTRUCTION>>>

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APPENDIX E

Receiving Waters

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<<<TABLES E.1 AND E.2 TO BE UPDATED PRIOR TO COMMENCING CONSTRUCTION>>>

TABLE E.1
Waterbodies Crossed by the Demicks Lake Pipeline Project

Survey Date	Milepost	Cowardin Classification	Regime	OHWM width (ft)
7/24/2018	9.1	R6	Ephemeral	3
7/13/2018	27.5	R6	Ephemeral	4
7/10/2018	38.2	R6	Ephemeral	3
7/9/2018	41.4	R6	Ephemeral	3
7/7/2018	44.6	R4SB	Intermittent	5
7/6/2018	49.6	R4SB	Intermittent	8
7/12/2018	55.7	R6	Ephemeral	3
7/12/2018	56.6	R4SB	Intermittent	8
6/29/2018	59.9	R6	Ephemeral	4
6/29/2018	60.5	R6	Ephemeral	3
8/24/2018	63.8	R6	Ephemeral	4
6/28/2018	65.7	R6	Ephemeral	3
6/28/2018	66.2	R6	Ephemeral	4
7/19/2018	66.6	R6	Ephemeral	6
6/21/2018	68.1	R4SB	Intermittent	4
6/21/2018	74.1	R6	Ephemeral	3
7/30/2018	74.8	R6	Ephemeral	4
5/25/2018	76.4	R6	Ephemeral	2
5/25/2018	76.5	R6	Ephemeral	2

TABLE E.2 Wetlands Crossed by the Demicks Lake Pipeline Project		
Survey Date	**Milepost**	**Wetland Type**
7/21/2018	1.8	PEM[1]
7/21/2018	3.2	PEM
7/21/2018	3.4	PEM
7/23/2018	15.1	PEM
7/23/2018	16	PEM
7/23/2018	16.5	PEM
7/20/2018	22.4	PEM
7/20/2018	22.7	PUB
7/20/2018	23.6	PEM
7/19/2018	24.5	PEM
7/19/2018	24.9	PEM
7/13/2018	29.7	PEM
7/11/2018	30	PEM
7/11/2018	30.1	PEM
7/11/2018	30.7	PEM
7/11/2018	33	PEM
7/10/2018	35.7	PEM
7/10/2018	37.8	PEM
7/10/2018	38.4	PEM
7/9/2018	40.6	PEM
7/9/2018	44.3	PEM
7/7/2018	44.6	PEM
7/7/2018	47.4	PEM
7/6/2018	53.6	PEM
7/19/2018	67.3	PEM
7/19/2018	67.4	PEM
[1] PEM = Palustrine Emergent		

APPENDIX F

Stormwater Inspection Form and Reports

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Site Inspection Record Template
Construction
(07-2010)

Project Name: _____

Coverage Number: _____

Inspector: _____ Date: _____ Time: _____

Precipitation Amount: _____ Date: _____

Areas Inspected (Choose Applicable): ☐ Active areas

☐ Stabilized areas with less than 70% cover

☐ Areas that have achieved final stabilization

Is there evidence of, or the potential for, pollutants entering drainage systems or waters of the state from:

- Material Storage Areas ☐ Y ☐ N
- Vehicle Maintenance Areas ☐ Y ☐ N

Observations / Corrective Actions:

_____

_____

_____

☐ Y ☐ N	Have all erosion and sediment controls and best management practices identified in the plan been installed or implemented?
☐ Y ☐ N	Are erosion and sediment controls operating correctly and in serviceable condition?
☐ Y ☐ N	Are erosion and sediment controls operating consistently and effectively?
☐ Y ☐ N	Are there any devices similar to silt fence or fiber rolls where sediment has reached more than 1/3 the height of the device? (Removal and repairs must be made within 24 hours.)
☐ Y ☐ N	Are there any sediment basins where collected sediment has reduced the storage capacity by 1/2? (Drainage and removal must be completed within 72 hours.)
☐ Y ☐ N	Is there evidence of sediment deposits in surface waters, drainage ditches or other stormwater conveyance systems? (Removal and stabilization must be completed within 7 days unless prohibited by legal, regulatory or physical access constrains. All reasonable efforts must be made to obtain access. Once permission is granted, removal must take place within 7 days.)
☐ Y ☐ N ☐ NA	Is there evidence of sediment being tracked off-site by vehicles or equipment? (Sediment tracked or deposited on paved surfaces must be removed within 24 hours.)
☐ Y ☐ N	Is there evidence of sediment depositing off-site other than in surface waters, drainage ditches and stormwater conveyance systems? (Sediment must be recovered in a manner and frequency sufficient to minimize off-site impacts – for example, sediment could wash away during the next precipitation event.)
☐ Y ☐ N ☐ NA	Is stormwater flow distributed evenly over vegetative buffers?
☐ Y ☐ N ☐ NA	Is sediment accumulating in vegetative buffers?
☐ Y ☐ N ☐ NA	Are rills forming within vegetative buffers? (If vegetative buffers are silted covered, contain rills or are otherwise rendered ineffective, other erosion and sediment controls must be implemented. Eroded areas must be repaired and stabilized.)
☐ Y ☐ N	Are litter, debris, chemicals and parts being managed properly to minimize stormwater pollution?
☐ Y ☐ N	Are liquid or soluble materials like oil, fuel, paint, etc., properly stored to prevent spills, leaks or other discharges?

☐ Y ☐ N	Is there evidence of concrete wash water discharging to waters of the state, storm sewer systems or onto adjacent properties?
☐ Y ☐ N	Is there evidence of wastewater from processing operations or sanitary facilities (i.e., portable toilets) discharging from the site? (These types of discharges are not covered by the construction general permit, NDR10-0000. They must be stopped immediately if they are not covered by another type of permit. The following non-stormwater discharges are allowable if the appropriate prevention measures are in place: fire-fighting, fire hydrant flushing, potable water line flushing, infrequent building and equipment wash down without detergents, uncontaminated foundation drains, springs, lawn watering and air conditioning condensate. Please note that discharges from temporary dewatering activities, such as hydrostatic testing or disinfection of new pipelines may require coverage under the temporary dewatering general permit, NDG07-0000.)
☐ Y ☐ N	Is there evidence of wash water from tools or equipment draining to waters of the state, drainage ditches or storm sewer systems?
☐ Y ☐ N ☐ NA	Are permanent stormwater management measures (e.g., oil-water separators, rain gardens) functioning properly?

Corrective Actions and Schedule:

_____

_____

_____

- Are best management practices effective to minimize the discharge of sediment from the site? ☐ Y ☐ N
- Do best management practices need to be adjusted? ☐ Y ☐ N
- Are additional best management practices needed? ☐ Y ☐ N

Comments:

_____

_____

_____

List all spills, leaks or hose-breaks that have occurred since the last inspection:

-Size	-Location	-Was it reportable?	-Was it reported?
_____	_____	☐ Y ☐ N	☐ Y ☐ N
_____	_____	☐ Y ☐ N	☐ Y ☐ N
_____	_____	☐ Y ☐ N	☐ Y ☐ N

- Were Spill Prevention Procedures adequate? ☐ Y ☐ N
- What Spill Response Procedures were used?

Comments

_____

_____

_____

- Has the SWPP Plan been updated as a result of this inspection? ☐ Y ☐ N
- Has the Site Map been updated as a result of this inspection? ☐ Y ☐ N

APPENDIX G

Best Management Practice Tracking Table

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Appendix G – Erosion and Sediment Controls Checklist

Prior to commencing and throughout construction activities, please review and ensure the following are completed in accordance with the SWPPP and with the General Permit. On the following page is a table in which all ECDs installed onsite will be recorded.

1. Access Drives and Tracking. Provide access drive(s) for construction vehicles that minimize tracking of soil off site using BMPs such as stone tracking pads, tire washing or grates. Minimize runoff and sediment from adjacent areas from flowing down or eroding access drive.
2. Diversion of Upslope Runoff. Divert excess runoff from upslope land, rooftops, or other surfaces, if practicable, using BMPs such as earthen diversion berms, silt fence and downspout extenders. Prevent erosion of the flow path and the outlet.
3. Inlet Protection. Protect inlets to storm drains, culverts and other stormwater conveyance systems from siltation until the site is stabilized.
4. Soil Stockpiles. Locate soil stockpiles away from channelized flow and no closer than 50 feet from roads, ditches, lakes, streams, ponds, wetlands, or environmental corridors. Control sediment from soil stockpiles. Any soil stockpile that remains for more than 7 days must be stabilized.
5. Cut and Fill Slopes. Minimize the length and steepness of proposed cut and fill slopes and stabilize them as soon as practicable.
6. Channel Flow. During construction, trap sediment in channelized flow before discharge from the site using BMPS such as sediment traps and sediment basins. Complete final grading and stabilize open channels in accordance with Permit standards.
7. Outlet Protection. Protect outlets from erosion during site dewatering and stormwater conveyance, including velocity dissipation at pipe outfalls or open channels entering or leaving a stormwater management facility.
8. Overland Flow. Trap sediment in overland flow before discharge from the site using BMPs such as silt fence and vegetative filter strips.
9. Site Dewatering. Treat pumped water to remove sediment prior to discharge from the site, using BMPs such as sediment basins and portable sediment tanks. Discharge to well-vegetated upland sites only.
10. Dust Control. Prevent excessive dust from leaving the construction site though construction phasing and timely stabilization or the use of BMPs such as site watering and mulch – especially with very dry or fine sandy soils.
11. Topsoil Application. Save existing topsoil and reapply a minimum of 4 inches to all disturbed areas for final stabilization, such as for temporary seeding or stormwater infiltration BMPs.
12. Waste Material. Recycle or properly dispose all waste and unused building materials in a timely manner. Control runoff from waste materials until they are removed or reused.
13. Sediment Cleanup. By the end of each workday, clean up all off-site sediment deposits or tracked soil that originated from the permitted site.
14. Final Site Stabilization. Stabilize all other disturbed areas within 7 days of final grading and topsoil application. Any soil erosion that occurs after final grading or the application of stabilization measures must be repaired, and the stabilization work redone.
15. Temporary Site Stabilization. Any disturbed site that remains inactive for greater than 7 days shall be stabilized with temporary stabilization measures such as soil treatment, temporary seeding, or mulching. For purposes of this subsection, “inactive” means that no site grading, landscaping, or utility work is occurring on the site and that precipitation events are not limiting these activities. Frozen soils do not exclude the site from this requirement.
16. Removal of Practices. Remove all temporary BMPs such as silt fences, ditch checks and sediment traps as soon as all disturbed areas have been stabilized.

Erosion and Sediment Controls Installed Onsite

ECD Type[1]	Location Installed[2]	Date Installed

[1] e.g., silt fence, fiber log, inlet protection (include type).

[2] Use one line for each location an ECD is installed.

APPENDIX H

Training Log

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Appendix H: Training Log

Training Date	Name	Title	Signature

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Demicks Lake Pipeline Project

MIGRATORY BIRD PLAN

DRAFT

Prepared by:

December 2018

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1. INTRODUCTION

ONEOK Bakken Pipeline, L.L.C. (ONEOK), developed this Migratory Bird Conservation and Compliance Plan (Plan) to outline measures it will implement to avoid, minimize, and reduce possible impacts on migratory birds. Conservation measures were developed in consideration of statutory authority, regulatory guidance, and through experience with state and federal agencies on past projects in the region. The Plan demonstrates a good-faith effort by ONEOK to protect species of concern and achieve compliance with regulations as they relate to the Demicks Lake Pipeline Project (Project) as described below.

2. REGULATORY FRAMEWORK

This Plan was developed in consideration of federal and state laws including the Migratory Bird Treaty Act (MBTA), Federal Executive Order 13186 (EO 13186), the Bald and Golden Eagle Protection Act (BGEPA) as well as agency guidance. This regulatory framework is defined and described in this section as it applies to the Project.

2.1 Migratory Bird Treaty Act and Federal Executive Order 13186

The MBTA prohibits the "take" of individual birds, their eggs and chicks, and active nests. For purposes of the MBTA, "take" is defined as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, wound, kill, trap, capture, or collect" (50 Code of Federal Regulations [CFR] 10.12). Unlike the federal Endangered Species Act (ESA), the MBTA does not include harassment or destruction of habitat in its list of prohibitions or within its definition of take. The MBTA applies to migratory birds that are identified in 50 CFR 10.13 (defined hereafter as "migratory birds"). Removal of any active migratory bird nest or any structure that contains an active nest (e.g., tree) where such removal results in take is prohibited. Activities, intentional or unintentional, resulting in take of migratory birds are prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (FWS) (e.g., authorization for incidental take of a federally listed migratory bird).

While the MBTA has no provisions for allowing unauthorized take, the FWS realizes that some birds may be killed even if all reasonable and practicable conservation measures to protect them are used. The FWS carries out its mission to protect migratory birds through investigations and enforcement; by fostering relationships with individuals, companies, and industries that have taken effective steps to minimize their impacts on migratory birds; and by encouraging others to enact such programs. It is not possible to absolve individuals, companies, or agencies from liability even if they implement avian mortality avoidance or similar conservation measures. However, the FWS focuses its resources on investigating and prosecuting individuals and companies that take migratory birds without identifying and implementing all reasonable, prudent, and effective measures to avoid that take.

Federal EO 13186 was issued in 2001 to provide further direction to federal agencies regarding implementation of the MBTA. Federal EO 13186 states that when evaluating impacts on migratory birds under the MBTA, federal agencies should place particular importance on species of concern, priority habitat, and key risk factors.

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2.2 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) provides protection to bald and golden eagles in addition to the MBTA. The BGEPA prohibits the take; possession; sale; purchase; barter; offer to sell, purchase, or barter; transport; export; or import of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit (16 USC 668(a)). "Take" under this statute is defined as to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, or molest or disturb (50 CFR 22.3). "Disturb," in turn, is defined as to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle; (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

3. MIGRATORY BIRD SPECIES POTENTIALLY UTILIZING THE PROJECT AREA

Although the MBTA provides protection for all migratory birds, the FWS developed lists of Birds of Conservation Concern (BCC) to foster proactive conservation actions by federal and state agencies and private parties by focusing first on species of concern (FWS, 2008). In addition, the United States is divided into Bird Conservation Regions (BCRs); each BCR has a list of birds present or possibly present within the region that are considered BCC. The Project is located within BCR 17 (Badlands and Prairies) (U.S. NABCI Committee, 2000). ONEOK used this list as a starting point for prioritizing bird conservation measures.

4. POTENTIAL CONSTRUCTION IMPACTS ON MIGRATORY BIRDS

The Project is most likely to impact migratory birds if construction and operation activities occur during the nesting season. Within the project areas, birds generally nest from April through July. Vegetative clearing during the nesting season would increase the potential for the Project to result in the take of a migratory bird. Typically, take from pipeline construction is not of adult birds or juveniles that have fledged from the nest because they are mobile and avoid project-related activities; instead, take is typically of eggs and nestlings due to nest destruction and loss of young.

5. PLAN IMPLEMENTATION AND PROPOSED CONSERVATION MEASURES

This section describes conservation measures ONEOK will implement during construction of the Project, all of which focus on efforts to minimize potential impacts on migratory birds.

5.1 Points of Contact for Plan Implementation

The Plan identifies actions and conservation measures that will facilitate compliance with the MBTA during Project construction. While it is the responsibility of each member of the Project team to comply with the Plan, ONEOK also expects that all Project staff will notify the Manager - Environmental when an active migratory bird nest is identified so that appropriate protection measures can be implemented, as described in more detail below.

Points of contact for plan implementation can be found in Appendix B.

5.2 Environmental Training

Prior to initiating pre-clearing activities and construction, ONEOK will conduct environmental training for company and contractor supervisory personnel. The training program will include

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conservation measures described within this Plan. In addition, ONEOK will provide large-group training sessions before each crew commences construction with periodic follow-up training for groups of newly assigned personnel. Contractors will be obligated to comply with the conservation measures and protect active nests or face disciplinary actions, including dismissal from the Project.

In addition, Project staff will be informed that they should assume that any active bird nest they encounter should be protected unless a qualified avian biologist determines the nest need not be protected. If additional active nests are identified after pre-clearing surveys, the additional nests must be brought to the attention of the Points of Contact identified in Section 6.1, so that appropriate conservation measures can be implemented.

5.3 Surveys

This section provides descriptions of the surveys and a summary of the methods for both aerial and ground-based surveys that could be completed in support of this Plan depending on construction schedules and scope.

5.3.1 Pre-Clearing Surveys

Where constructing the Project outside of the peak nesting season for migratory birds is not feasible, ONEOK will conduct ground surveys to identify migratory bird nests that could be impacted by construction activities. The peak nesting season for migratory birds in the Project area begins April 15 and ends July 30 at which time surveys will cease. The survey program will be implemented with support of trained biologists with experience in bird identification (hereinafter referred to as Avian Biologist).

The boundaries of the Project workspace and any additional or extra workspace areas will be demarcated prior to clearing and grading. Through frequent communication and coordination between the nest surveyor/Avian Biologist, civil survey, and the construction crews, avian pre-clearing surveys will typically be completed 2 to 5 days ahead of clearing/construction but no more than 14 days ahead of clearing/construction, where feasible.

Surveys will occur within the planned construction workspace and along access roads where Project traffic could impact nesting birds such as vegetated two-tracks or newly established roads. Based on the expertise of the Avian Biologist, and with authorization from ONEOK, previously disturbed areas such as active farmland, developed land, and other intensively used areas may be excluded from surveys since use of these areas for nesting by migratory birds is unlikely.

Along private access roads that occur outside of the aerial survey area for raptor nests described in Section 6.3.1, visual surveys will be conducted for raptor nests within line of site of the road. Landscape barriers between any nests and the access road will sufficiently buffer noise or visual disturbance on nesting raptors that could occur as a result of Project-related traffic.

Conservation measures to be implemented around nests identified during these surveys are described below. Upon completion of surveys and marking of active nests and associated

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buffers as discussed below, the surveyed area found free of active nests will be available for construction.

5.4 Activity Restriction Buffers

Varying activity restriction buffers around active nests will be utilized as conservation measures for the Plan. The buffers that will be implemented based on the species of bird or class of bird are described within the following sections.

5.4.1 Birds of Conservation Concern

For nests of BCC, a buffer will be placed 25 feet around active nests. Construction activities within the buffer will be avoided where feasible. If necessary to meet key Project objectives, ONEOK may authorize limited activity within the buffer to move equipment within the construction area and through a nest buffer in order to facilitate construction in adjacent areas. See Section 6.5, Nest Monitoring, for more information.

5.4.2 Raptor Species

For raptor nests, spatial buffers and seasonal timing restrictions will be placed around active nests in accordance with Table 1 on the following page. No eagle nest may be destroyed by Project activities without a permit from the FWS, regardless of whether the nest is inactive or active, per the BGEPA.

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Table 1

DEMICKS LAKE PIPELINE PROJECT

Raptor Species Active-Nest Buffer Distances and Dates [a]

Species Common Name	Species Latin Name	Spatial Buffer (miles)	Seasonal Timing Restrictions
American Kestrel	*Falco sparverius*	0.125	April 1 - August 31
Bald Eagle [b]	*Haliaeetus leucocephalus*	0.5	January 1 - August 15
Boreal Owl	*Aegolius funereus*	0.25	February 1 - July 31
Burrowing Owl	*Athene cunicularia*	0.25	April 1 - September 15
Common Barn Owl	*Tyto alba*	0.125	February 1 - September 15
Cooper's Hawk	*Accipiter cooperii*	0.25	March 15 - August 31
Eastern Screech -owl	*Megascops asio*	0.125	March 1 - August 15
Ferruginous Hawk	*Buteo regalis*	1.0	March 15 - July 31
Golden Eagle	*Aquila chrysaetos*	0.5	January 15 - July 31
Great Gray Owl	*Strix nebulosa*	0.25	March 15 - August 31
Great Horned Owl	*Bubo virginianus*	0.125	December 1 - September 31
Long-eared Owl	*Asio otus*	0.25	February 1 - August 15
Merlin	*Falco columbarius*	0.5	April 1 - August 31
Northern Goshawk	*Accipiter gentilis*	0.5	March 1- August 15
Northern Harrier	*Circus cyaneus*	0.25	April 1 - August 15
Northern Pygmy-Owl	*Glaucidium gnoma*	0.25	April 1 - August 1
Northern Saw-whet Owl	*Aegolius acadicus*	0.25	March 1 - August 31
Osprey	*Pandion haliaetus*	0.25	April 1 - August 31
Peregrine Falcon	*Falco peregrinus*	0.5	March 1 - August 15
Prairie Falcon	*Falco mexicanus*	0.5	April 1 - August 31
Red-tailed Hawk	*Buteo jamaicensis*	0.25	March 15 - August 15
Sharp-shinned Hawk	*Accipiter striatus*	0.25	March 15 - August 31
Short-eared Owl	*Asio flammeus*	0.25	March15 - August 1
Swainson's Hawk	*Buteo swainsoni*	0.25	May 1 - August 31
Western Screech-owl	*Megascops kennicottii*	0.125	March 1 - August 15

[a] Adopted Stewart, R. E. 1975. Breeding Birds of North Dakota. Tri-College Center for Environmental Studies, Fargo, North Dakota.

[b] The National Bald Eagle Management Guidelines (FWS 2007) call for a 660-foot-radius buffer around bald eagle nests. However, the Guidelines stipulate that in open areas without forest or topographic buffers, as is the case in many western states, the buffer may be increased to protect eagle nests. The 0.5-mile buffer distance in the table is adopted from the FWS' North Dakota Ecological Services Field Office which would also apply to winter roosts for construction activity outside the nesting season.

5.4.3 Other Migratory Bird Buffer Restrictions

For nests of other bird species not described in the preceding sections, a buffer will be placed 5 feet around active nests. In instances where this buffer cannot be implemented, ONEOK will attempt to reconfigure the workspace to leave the vegetation containing the nest undisturbed.

5.5 Nest Monitoring

Active nests will be monitored by Avian Biologists and buffers will be maintained until the young fledge. Nests will generally be visited every 7 to 10 days once identified. Once a nest has been determined to be inactive by the Avian Biologist, the nest buffer will be removed, and construction activities may continue without restriction.

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If a nest buffer and its associated restrictions pose a substantial risk to key Project objectives, ONEOK may determine that construction activities can proceed through a buffer (i.e., pass-through), avoiding direct

impact to the nest. Where ONEOK authorizes a pass-through of a non-eagle raptor buffer or BCC buffer, the Avian Biologist will first attempt to determine the stage of development of the young in the nest. If young are near fledging, ONEOK may choose to maintain the buffer until the young fledge upon evaluation of alternatives. If the nest is at an earlier stage of development (e.g., eggs just laid, young just hatched), construction equipment will be allowed through the buffer in an escalating frequency and duration. As the disturbance in the buffer is escalated, the nest will be monitored by the Avian Biologist to determine if the adults or young are being disturbed by construction activities. If the Avian Biologist notes that bird activities appear to be such that the success of the nest is at risk, construction actions will be reduced to a point where nest success is not at risk from construction.

Nest monitoring may also include determining that construction activities are not visible from a non-eagle raptor nest location. On a case-by-case basis ONEOK, with input from the Avian Biologists, may determine that construction can proceed through the non-eagle raptor buffer without disturbing the nest. If this similar exception is to be applied to an eagle nest, vigilant monitoring of the nest must occur in order to ensure the eagles are not disturbed.

If non-raptor nests are identified adjacent to the construction workspace after ground clearing activities have commenced in an area, ONEOK will attempt to limit extensive disturbance in the area, but will assume that because the birds initiated nesting after construction began in an area that the nesting individuals are acclimated to construction-related noise and disturbance and, therefore, additional protections will not be implemented.

6. CONCLUSION

ONEOK is committed to implementing the pre-construction survey program, environmental training for key construction personnel, appropriate spatial buffers, seasonal timing restrictions, and nest monitoring. ONEOK expects its Project team to take reasonable, prudent, and effective measures towards protection of migratory birds. While the MBTA is the responsibility of all members of the Project team, ONEOK has designated key staff (identified in Appendix B) to oversee and help implement this Plan. Please contact these individuals if you have questions regarding implementation of the Plan.

7. LITERATURE CITED

U.S. Fish and Wildlife Service (FWS). 2008. Birds of Conservation Concern 2008. U.S. Fish and Wildlife Service, Division of Migratory Bird Management. 87 pp.

U.S. Fish and Wildlife Service (FWS). 2007. National Bald Eagle Management Guidelines.

U.S. NABCI Committee. 2000. North American Bird Conservation Initiative Bird Conservation Regions map. U.S. Fish and Wildlife Service, Arlington, Virginia. http://nabci-us.org/resources/bird-conservation-regions-map/

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APPENDIX A

Project Description

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PROJECT DESCRIPTION

ONEOK Bakken Pipeline, L.L.C. (ONEOK) a wholly owned subsidiary of ONEOK Partners, L.P., owns and operates natural gas liquids (NGL) assets in North Dakota. ONEOK is proposing the Demicks Lake NGL Pipeline Project (Project). The Project includes the construction and installation of a new, steel, 20-inch diameter Y-grade NGL pipeline from the Demicks Lake Gas Plant, which is currently under construction in McKenzie County, to a planned interconnection with a ONEOK affiliate planned pipeline in Richland County, Montana. The proposed Project is approximately 77 miles in length of which approximately 53.6 miles (approximately 70%) will be co-located with existing pipeline corridors.

Construction activities are planned to begin as early as February 2019 with a completion date of late 2019.

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APPENDIX B

Key Points of Contact

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KEY POINTS OF CONTACT

Position	Name	Phone #	Responsibility
ONEOK Project Manager	Blake Holland	(918) 732-4888 (office) (918) 557-8442 (cell)	Responsible party for implementing the Plan
ONEOK Environmental Manager	Eddie Zedaker	(918) 595-1783 (office) (256) 872-5818 (cell)	Primary Point of Contact
ONEOK Construction Manager	TBD	(office) (cell)	Key point of contact in the field during construction
Environmental Inspector	TBD	(office) (cell)	Key point of contact in the field during construction

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Demicks Lake Pipeline Project

SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

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Prepared by



December 2018

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1.0 INTRODUCTION

ONEOK Bakken Pipeline, L.L.C. (ONEOK) is committed to meeting or exceeding applicable federal, state, and local environmental requirements during the planning, construction, and operation of ONEOK Demicks Lake Pipeline Project (hereby collectively referred to as the Project). This *Spill Prevention, Control, and Countermeasure (SPCC) Plan* was developed to establish basic procedures to prevent the discharge of hazardous or regulated materials during construction of the Project. The *SPCC Plan* is a guideline that sets forth minimum standards for the prevention of spills (handling and storing regulated substances) and for the minimization of impacts resulting from spills of fuels, petroleum products, or other regulated substances as a result of pipeline construction should a spill occur. This document is not a complete summary of all requirements.

The provisions of this *SPCC Plan* will be implemented by Project personnel during the construction of Project. The Contractor (i.e. pipeline construction general contractor) is responsible for understanding and complying with all applicable federal, state, and local requirements related to all aspects of work on the Project, including the transportation, storage, and disposal of polluting and hazardous materials. Other contractors (i.e. the reclamation contractor) are responsible for understanding and complying with applicable federal, state, and local requirements relating to their work on the Project, including the transportation, storage, and disposal of polluting and hazardous materials.

2.0 PLANNING AND PREVENTION

ONEOK's goal is to prevent spills and/or exposure to hazardous or dangerous substances during construction of the Project. The *SPCC Plan* is designed to reduce the likelihood of a spill, provide for prompt containment, and clean up if a spill does occur, comply with applicable state and federal laws as well, as other Project permit conditions throughout construction and restoration of the Project, and protect human health and the environment.

ONEOK requires its Contractors to implement proper planning and preventive measures to minimize the potential of spilling regulated substances such as fuels and petroleum products and to quickly and successfully clean up a spill should one occur. Potential sources of construction-related spills include (but are not limited to) storage tank leaks, machinery and equipment failure, and fuel handling and transfer accidents. The Contractor will be responsible for implementing, at a minimum, the planning and prevention measures contained in this document.

2.1 ROLES AND RESPONSIBILITIES

The following roles and responsibilities have been developed by ONEOK for the Project.

2.1.1 Environmental Manager

The Environmental Manager will be a designated ONEOK Employee or a third-party Designee.

Eddie Zedaker
Telephone: (918) 595-1783
Email: Edwin.Zedaker@oneok.com

- The Environmental Manager will have a Lead Environmental Inspector (EI) located on each construction spread. The Lead EI may act on the behalf of the Environmental Manager on certain issues that will be defined before construction is started.
- The Environmental Manager will promptly report spills to appropriate federal, state, and local agencies when required.

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- The Environmental Manager will coordinate with these agencies regarding contacting additional parties or agencies. The Environmental Manager may request that the Contractor's Spill Coordinator assist with these additional notifications.
- The Environmental Manager will help direct further response actions in accordance with the U.S. Environmental Policy Agency (EPA) guidelines and assist throughout the cleanup and disposal of wastes.
- All spills defined as "Reportable Spills" (Appendix B and C) must be reported immediately to the Field Construction Manager, Environmental Manager, and Lead EI.

2.1.2 Lead Environmental Inspector

- The Lead EI will monitor the Contractor's compliance with the provisions of this *SPCC Plan*.
- The Lead EI may act on the behalf of the Environmental Manager on certain issues that will be defined before construction is started.
- The Lead EI is an initial point of contact of the Spill Coordinator (in addition to the Field Construction Manager) when a spill occurs and will verify information is correctly reported on the spill form and conduct a follow up inspection, if required, to ensure that the spill was properly cleaned up.

2.1.3 Field Construction Manager

- The Field Construction Manager referred to in this plan will be a designated ONEOK employee or a third-party designee who is responsible for the management of construction activities on this Project (representing the Construction Manager for ONEOK).
- The Field Construction Manager is the initial point of contact of the Spill Coordinator (in addition to the Lead EI) when a spill occurs and determines the containment measures that may be required.
- The Field Construction Manager is responsible for documenting the general information regarding any spills such as work stoppages, injuries, fires, and the extent of exposure to workers on the site.
- The Field Construction Manager is responsible for overseeing the Contractor's response to a spill to ensure that appropriate notifications are completed, spill response resources are allocated, and cleanup is accomplished in accordance with the *SPCC Plan* and applicable agency requirements.
- The Field Construction Manager is responsible for coordinating any emergency response services that may be required such as the Fire Department, the Sheriff Department, or for contacting Emergency Response Contractors.

2.1.4 Contractor Construction Superintendent

- The Contractor's Construction Superintendent is responsible for designating the Spill Coordinator and communicating who that person is to the Environmental Manager, Lead EI, and Field Construction manager.

2.1.5 Contractor Spill Coordinator

- A Spill Coordinator will be designated by Contractor's Construction Superintendent and employed by the Contractor.

- The Spill Coordinator is responsible for completing a Spill Report Form (Appendix A) for every spill event, regardless of the size/volume of material spilled. The completed Spill Report Form must be submitted to the Lead EI within 24 hours of the occurrence of the spill. The Spill Coordinator must then upload the spill information to ONEOK's various data management systems (e.g., STOMP).
- The Spill Coordinator will notify the Field Construction Manager and Lead EI immediately of any spill. All spills defined as "Reportable Spills" must be reported immediately to the Field Construction Manager, Environmental Manager, and Lead EI. Reportable spills will be defined by federal- and state-specific guidelines. (See Appendices B and C).
- The Spill Coordinator will mobilize on-site personnel, equipment, and materials for containment and/or cleanup commensurate with the extent of the spill.
- Prior to the start of construction, the Spill Coordinator must identify Emergency Response Contractors located in the area of the Project. The list of identified Emergency Response Contractors must be submitted to ONEOK for review and approval.
- The Spill Coordinator is responsible for coordinating the proper transport and disposal of contaminated media associated with the cleanup of a spill. Media will be disposed of at a state- and ONEOK-approved facility.
- The Spill Coordinator will assist the appropriate Emergency Response Contractor (Appendix H) and monitor containment activities to ensure that the actions are consistent with the requirements of this *SPCC Plan*.
- The Spill Coordinator will coordinate with the Environmental Manager regarding the need to contact additional parties or agencies. The Spill Coordinator should not contact an agency regarding a spill without authorization from the Environmental Manager and/or Lead EI.
- The Spill Coordinator and/or Lead EI or the Field Construction Manager, in consultation with appropriate agencies, will determine when it is necessary to evacuate spill sites to safeguard human health.

2.1.6 Authorized Personnel

- Authorized Personnel are representatives of the Contractor who are designated and properly trained to handle fuel, lubricants, or other regulated substances.
- Authorized Personnel will be familiar with the requirements of the *SPCC Plan* and the consequences of non-compliance.

2.1.7 Construction Personnel

- Construction Personnel are representatives of the Contractor involved with the pipeline Project.
- Construction Personnel will notify the crew foreman or Spill Coordinator immediately of any spill of a petroleum product or hazardous liquid, regardless of volume.

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2.2 TRAINING

- The Contractor will instruct construction personnel in the operation and maintenance of
- equipment to prevent an accidental discharge or spill of fuel, oil, and lubricants. Personnel will also be made aware of the pollution control laws, rules, and regulations applicable to their work.
- The Contractor will train construction personnel who handle fuels and other regulated substances on the proper methods to quickly and effectively contain and clean up spills that may occur, in accordance with applicable regulations.
- A spill prevention briefing will be scheduled and conducted by Contractor prior to the initiation of construction to assure adequate understanding of this *SPCC Plan*. The topics to be addressed at the briefing will include the following:
    - *SPCC Plan* contents;
    - Possible equipment failure and malfunction;
    - Precautionary measures;
    - Standard operating procedures in case of a spill;
    - Location of emergency response materials;
    - Refueling and maintenance restriction areas; and
    - Equipment, materials, and supplies to be maintained by Contractor and available for cleanup of a spill.

3.0 GENERAL BEST MANAGEMENT PRACTICES

The following general preventive actions and procedures will be implemented prior to and throughout construction.

3.1 TYPICAL FUELS, LUBRICANTS, AND HAZARDOUS MATERIALS MANAGEMENT

The table in Appendix G identifies fuels, lubricants, coolants, and other hazardous materials generally present on pipeline construction spreads and identifies typical total volumes, storage and transportation methods. The Contractor must provide ONEOK with a list of fuels, lubricants, and hazardous materials and the expected quantities that will be stored and/or maintained on each construction spread. Contractors must also have appropriate Safety Data Sheets (SDS) on-site for each product, as required by the Occupational Safety and Health Administration (OSHA).

3.1.1 Fuel, Lubricants, and Hazardous Material Storage Areas

- All petroleum products used by Contractor necessary for fueling and maintenance of construction equipment will be stored at a designated, well maintained, and secured/supervised location to minimize the environmental and safety impacts associated with releases of fuel, lubricants, or hazardous substances.
- Fuel, lubricant, or hazardous materials will be stored only in the designated staging areas and equipment storage yards, and will be at least 100 feet from all waterbodies, wetlands, environmentally sensitive areas, or municipal watersheds.
- Storage of potentially hazardous materials will not occur within a 150-foot radius of a private well or within a 400-foot radius of a municipal or community water supply well.

- Fuels, lubricants, waste oil, and any other regulated substances will be stored in aboveground tanks only. Storage tanks and containers must conform to all applicable industry codes (National Fire Protection Association (NFPA), Unified Facilities Criteria [UFC], etc.).
- A suitable secondary containment structure must be utilized at each fuel, lubricant, and waste oil storage site. These structures must be lined with suitable plastic sheeting (seamless); provide a minimum containment volume equal to 150 percent of the volume of the largest storage vessel; and provide at least 1 foot of freeboard.
- Secondary containment areas must not have drains. Precipitation may be drawn off as necessary. If visual inspection indicates that no spillage has occurred in the secondary containment structure, accumulated water may be drawn off and sprayed on the surrounding upland areas. If spillage has occurred in the structure, accumulated waste will be drawn off and pumped into drum storage for proper disposal.
- If earthen containment dikes are used, they will be constructed with slopes no steeper than 3:1 (horizontal to vertical) to limit erosion and provide structural stability.
- Tools and materials to stop the flow of leaking tanks and pipes will be kept on-site. Such equipment may include, but not be limited to, plugs of various sizes, tank patches, hammer, screwdriver, plastic tape, and assorted sizes of metal screws with rubber washers. Fully furbished spill kits must be located at all fuel storage areas.
- Proper signage must be installed at and adjacent to fuel storage areas to include “Fuel Storage Area – No smoking within 50 feet.”
- No hazardous or potentially hazardous materials, other than essential materials (coating, sandblasting media, etc.), essential equipment fuel (gasoline, diesel, etc.), or standard lubricants (engine oils, grease, etc.) will be transported onto the right-of-way (ROW) or construction area without Environmental Manager coordination and approval.
- Construction equipment will be removed from wetlands and parked a minimum of 100 feet away from streams, wetlands, ditches, and other waterbodies at the end of each work day. Stationary equipment (e.g., pumps) or mainline construction equipment located within the 100-foot restriction zone must be placed within proper secondary containment upon approval from the Lead EI, if there are no practical upland areas available.

3.1.2 Equipment Maintenance and Lubrication Areas

- The Contractor will ensure that all equipment is free of leaks prior to use on the Project, and prior to entering or working in or near waterbodies or wetlands. The Contractor will perform and provide documentation to ONEOK of a pre-construction inspection and test of all equipment to ensure that it is in good repair prior to the equipment reaching the ROW.
- During construction, the Contractor will regularly (minimum of once daily) inspect hoses, pipes, valves, and tanks to ensure equipment is free of leaks. Any equipment that is leaking or in need of repair will be immediately removed from service and repaired, prior to resuming use of the equipment. Buckets/containment materials and absorbent materials (as necessary) will be placed under the equipment until the leak can be repaired.

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- Equipment that requires extensive repairs will be removed from the ROW until the repairs are completed or a protection plan will be developed by the Spill Coordinator and the Lead EI if the equipment cannot be moved.
- Precautionary measures will be implemented when performing equipment maintenance or repair activities including placing absorbent pads (or equivalent materials) on the ground beneath the equipment when changing crankcase oil, repairing hydraulic lines, or adding coolant to construction equipment and when appropriate for other repair activities.
- Maintenance, refueling, and lubrication of construction equipment is not allowed within 100 feet of a waterbody, wetland boundary, environmentally sensitive area, or within a municipal watershed, except as specified in Section 3.2.
- Equipment maintenance wastes, including used oils and other fluids, will be handled and managed by properly trained personnel. All equipment maintenance waste (e.g., oils and lubricants) will be collected in proper containers within the designated storage, refueling and lubrication areas and disposed of in accordance with Section 7.0 of this *SPCC Plan*. All equipment maintenance wastes will be properly disposed of at facilities permitted to receive hydrocarbon waste.

3.2 REFUELING

- Fuels will be dispensed by Authorized Personnel during daylight hours only unless otherwise approved by the Lead EI.
- Fuel dispensing operations will be attended by Authorized Personnel at all times. Personnel must be stationed at both ends of the hose during fueling unless both ends are visible and are readily accessible by one person.
- During refueling, the Contractor will take appropriate measures to reduce the risk of a spill, including not overfilling fuel tanks and placing an absorbent pad under the fuel nozzle while fueling equipment. Contractor personnel will observe and control refueling at all times to prevent overfilling.
- Fuel dispensing equipment (i.e., portable gas cans, nozzles, hoses, etc.) will be of the appropriate type.
- Refueling within 100 feet of waterbodies, wetland boundaries, environmentally sensitive areas, or within a municipal watershed is not allowed without approval from the Lead EI.
- In large wetlands where no upland site is available for refueling, auxiliary fuel tanks on construction equipment are recommended.
- Refueling will not occur within a 150-foot radius of all private wells and a 400-foot radius of all municipal or community water supply wells.
- When unique conditions require refueling within the restricted zones listed above the Contractor will consult with the Lead EI to determine necessary emergency equipment that will be in place and emergency response actions that will be conducted prior to refueling activities. At a minimum, the determination will consider the environmental and/or safety risks of relocating equipment to a refuel/lubrication area verses risks involved with refuel/lubrication in place. If requested by the Contractor, the Lead EI will evaluate site-specific conditions within the restricted zone and may require implementation of additional precautionary measures prior to approval of refueling within the restricted zones. In addition,

absorbent materials or other spill containment materials will be available for immediate deployment prior to commencing refueling activities.

3.3 SPILL RESPONSE EQUIPMENT

- The Contractor must maintain spill kits containing a sufficient quantity of absorbent and barrier materials to adequately contain and recover foreseeable spills. These kits may include, but are not limited to absorbent pads, commercial absorbent materials, spill containment barriers, plastic bags and/or sheeting, skimmer pumps, holding tanks, and shovels. This equipment will be located near fuel storage areas and other locations as necessary to be readily available to control foreseeable spills.
- Each construction crew will have on hand sufficient supplies of absorbent materials, barrier material, and the U.S. Department of Transportation (DOT) approved containers to allow for rapid containment and recovery of any spill which may occur.
- All fuel, and where necessary, service vehicles, will carry spill containment materials adequate to control foreseeable spills.
- The Spill Coordinator will identify the locations of spill control equipment and materials and have them readily accessible during construction activity.
- All fuel nozzles will be equipped with functional automatic shut-offs and over-flow alarms.
- Fuel trucks transporting fuel to on-site construction equipment will travel only on approved access roads.
- Suitable plastic lining materials will be available for placement below and on top of temporarily-stored contaminated soils and materials.

4.0 GENERAL SPILL RESPONSE

The following guidelines specify the procedures used to control a release, notify appropriate Project personnel, complete site cleanup activities, and document corrective actions. In the event of a spill, the Contractor will abide by all applicable federal, state, and local regulations for cleaning up the spill. Refer to the following appendices for federal and state reporting requirements:

Appendix B - Federal spill reporting requirements

Appendix C - State of Montana spill reporting requirements

- State of North Dakota spill reporting requirements

All spills, regardless of size, must be reported to the Spill Coordinator and Lead Environmental Inspector. All spills will also be recorded in ONEOK's data management system.

4.1 IMMEDIATE CONTAINMENT AND CLEANUP RESPONSE

Controlling spills and releases will be accomplished by stopping or segregating the source of the release, using the required stockpiled materials to contain the spill and, if warranted, stopping operations within the affected areas.

Immediately upon learning of any fuel, oil, hazardous material, or other regulated substance spill, the person discovering the situation will:

- Identify the source of the spill.
- Deploy absorbent materials and initiate actions to contain the fluid that has spilled.

- Initiate action to eliminate the source of the spill (e.g., shut off valves, upright containers, stop pumps, etc.) to the maximum extent that is safely possible.
- Notify the crew foreman and/or the Spill Coordinator and provide them with the following information:
    - Location and cause of the spill;
    - The type of material that has spilled; and,
    - Whether the spill has reached or is likely to reach any surface water

Personnel should only respond to a spill if they have adequate training to do so safely.

Upon learning of a spill or a potential spill the Spill Coordinator will:

- Accumulate as much information as possible as to the nature and size of the spill. This information will be recorded using the Construction Spill Report Form (see Appendix A) for documentation of the spill.
- Assess the situation and determine the need for further action which may include mobilizing additional personnel, equipment, and materials for containment and/or cleanup commensurate with the extent of the spill.
- Direct subsequent activities and/or further assign responsibilities to other personnel.
- Notify Project individuals as outlined in Section 2.1.5.
- If the Spill Coordinator determines that a spill is beyond the scope of on-site equipment and personnel, the Spill Coordinator will immediately notify the Environmental Manager and the Field Construction Manager that an Emergency Response Contractor is needed to contain and/or clean up the spill. Available Emergency Response Contractors are identified in Appendix H.
- The Spill Coordinator will assist the Emergency Response Contractor and monitor containment procedures to ensure that the actions are consistent with the requirements of this *SPCC Plan*.

4.1.1 Spills Occurring in Uplands

- In addition to the above measures, the following procedures will be followed for any spill occurring in an upland area.
- The source of the spill must be identified and contained immediately to the maximum extent that is safely possible.
- If a spill should occur during refueling operations, STOP the refueling operation until the spill can be controlled and the situation corrected.
- Absorbent material(s) will be placed over spills to minimize spreading and to reduce its penetration into the soil.
- If free-standing fluid is present, actions can be taken to skim fluids and place into DOT-approved containers.
- It is the responsibility of the contractor to ensure that spilled material, contaminated soil, and other materials associated with these releases is treated, collected, and/or disposed of in

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accordance with all applicable federal, state, and local agency requirements (see Sections 6.0 and 7.0 of this *SPCC Plan*).

- Flowing spills must be contained and/or absorbed before reaching sensitive resource areas such as surface waters or wetlands.
    - Plug all storm drains the spill may gain access to; and
    - Construct terrace dam or ditch to stop the spill's flow.

4.2 SPILLS OCCURRING IN WETLANDS OR WATERBODIES

In addition to the above measures, the following conditions will apply if a spill occurs near or into a stream, wetland, or other waterbody, regardless of the size of the spill:

- For spills into streams, lakes, or other waterbodies containing standing or flowing water, regardless of size, the Spill Coordinator must apprise the Field Construction Manager, Environmental Manager, and Lead EI of the incident immediately.
- For spills in standing water, sorbent booms, and pads will be on hand and used by the Contractor to contain and recover released materials. In addition, other spill response materials and equipment will be on hand as appropriate for each waterbody and used to contain and recover foreseeable spills. This may include containment booms, skimmer pumps, holding tanks, boats, and other equipment.
- If contaminated soils are present in wetlands contain as much of the spill as possible and contact the appropriate agencies before excavating the soil. Unless the agency deems otherwise, the contaminated soil must be excavated and temporarily placed on plastic sheeting in a bermed area, a minimum of 100 feet away from the wetland. Contaminated soils will be covered with plastic sheeting while being stored temporarily (5 days unless otherwise approved by ONEOK) and properly disposed of as soon as possible, in accordance with this *SPCC Plan* (see Sections 6.0 and 7.0).

4.3 NOTIFICATIONS

- Notify the Field Construction Manager and Lead EI of any spill and provide the necessary information by using the Construction Spill Report Form (Appendix A).
- All agency notifications will be accomplished at the direction of the Environmental Manager.
- If the situation warrants, the Field Construction Manager will notify appropriate local police, fire department, and/or area residents.
- Make other Contractor and ONEOK and agency notifications per the *SPCC Plan*, or as instructed by the Environmental Manager.
- The Contractor will have designated employees on-call 24 hours per day for notification of the emergency response companies referenced in Appendix H.

4.4 RECORDS

The Contractor will maintain written records of all actions taken during the course of a spill event.

5.0 REPORTABLE QUANTITY SPILL RESPONSE

The reporting, disposal, and pre-cleanup sampling requirements in this section apply to all spills of reportable quantities (Appendices B and C).

5.1 IMMEDIATE SPILL RESPONSE ACTIONS

In addition to the responses listed above, the Contractor will implement the following steps in response to any spill of fuel, oil, hazardous materials, or other regulated substance of a reportable quantity:

- Stop operation of affected equipment/area, if warranted.
- Turn off utilities to the area, if necessary.
- Cordon the area to prevent entry of unnecessary personnel or equipment. Establish a single point of ingress and egress to control access to the spill area.
- Accumulate as much information as possible as to the nature and size of the spill. Use the Construction Spill Report Form (see Appendix A) for the type of information required.
- The Spill Coordinator and/or Field Construction Manager, in consultation with appropriate agencies, will determine when spill sites should be evacuated as necessary to safeguard human health. Evacuation parameters will include consideration for the potential of fire, explosion, and hazardous gases.

5.2 SPILL EVENT LOG ESTABLISHMENT

In addition to the Construction Spill Report Form, the Spill Coordinator will complete a Spill Event Log for reportable spills that documents all spill-related events and clean-up activities. The Spill Event Log will include the following information in the log:

- Time and date of initial notification of spill and approximate time the spill occurred.
- Start and completion time of all key activities.
- A detailed description of all activities undertaken and identification of personnel accomplishing these activities.
- Note time of all correspondence, personnel involved with the correspondence, and nature of the correspondence.

The log will be maintained by the Spill Coordinator until actions to clean up the spill are complete (within approximately 24 hours unless conditions extend the response to the emergency).

5.3 NOTIFICATIONS

The Spill Coordinator will:

- Notify the Environmental Manager, Lead EI, and the Field Construction Manager immediately of any reportable quantity spill and provide the necessary information by using the Construction Spill Report Form (Appendix A).
- Make other Contractor, ONEOK, and agency notifications per the *SPCC Plan*, or as instructed by the Environmental Manager. The Spill Coordinator should not contact an agency regarding a spill without authorization from the Environmental Manager and/or Lead EI.
- Notify local police or fire department if assistance is necessary.

5.4 REPORTABLE SPILL CONTAINMENT

In addition to the requirements listed in Section 4.0, the following procedures will also be implemented.

- Ensure that all possible efforts are made to limit the migration of the surface spill until properly equipped cleanup teams can arrive.
    - Construct terrace dam or ditch to stop the spill's flow, as needed.
    - Scatter hay, straw, sand, or other similar materials to absorb the spill.
- Flowing spills must be contained and/or absorbed before reaching sensitive resource areas such as surface waters or wetlands.
- If free-standing fluid is present, actions can be taken to skim fluids and place into DOT-approved containers or pump into tank trucks.
- Use skimmers, pumps, or available absorbent materials to remove spill from water.
- If possible, create a back current to limit out-flow of material into open or flowing water.

6.0 CLEANUP REQUIREMENTS

6.1 GENERAL REQUIREMENTS

- Wipe down equipment with absorbent pads (or equivalent) where fuel, lubricants, or other materials have spilled.
- All soil within the spill area (e.g., visible traces of soil and a lateral and vertical buffer around the visible traces) must be excavated.
- All excavated material will be stored and disposed of in accordance with local, state, and federal regulations.
    - All cleanup soil and wastes will be collected in DOT-approved containers. See Appendix D for a listing of approved containers.
    - Appendix E contains guidance on how to manage the area used to temporarily store waste containers.
    - Appendix F contains guidance on inspection procedures for stored waste containers required by EPA Regulations.
- The ground will be restored to its original configuration by back-filling with clean soil.
- Cleanup requirements of a spill area will be completed within 48 hours after notification or knowledge of the spill.

6.1.1 Determination of Spill Boundaries in the Absence of Visible Traces

For spills where there are insufficient visible traces, yet there is evidence of a leak or spill, the boundaries of the spill will be determined using a statistically based sampling scheme. The Environmental Manager will provide sampling assistance.

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6.1.2 Effect of Emergency or Adverse Weather:

Completion of cleanup may be delayed beyond 48 hours in case of circumstances including, but not limited to:

- Civil emergency;
- Adverse weather conditions;
- Lack of access to the site; and/or,
- Emergency operating conditions.

The occurrence of a spill on a weekend, after hours overtime costs, or that the spill would require the shutdown of construction activities are not acceptable reasons to delay response.

Completion of cleanup may be delayed only for the duration of the adverse conditions. If the adverse weather conditions or time lapse due to other emergencies has left insufficient visible traces, a statistically based sampling scheme to determine the spill boundaries will be developed and implemented.

6.2 REPORTABLE SPILL RECORDS

All records that document reportable spill events and corrective actions taken will be maintained in the Project files for three (3) years from the date the corrective actions were completed. Documentation and certification of area decontamination will be conducted upon completion of and during all cleanup operations. The records and certifications will be completed, as follows:

- Identification of the source of the spill (e.g., type of equipment or container).
- Location and estimated area of spill.
- Estimated quantity of material spilled.
- Estimated or actual date and time of the spill occurrence.
- The date and time cleanup was completed or terminated (if cleanup was delayed by emergency or adverse weather, the nature, and duration of the delay).
- A brief description of the spill location.
- Pre-cleanup sampling data used to establish the spill boundaries if required due to insufficient visible traces, and a brief description of the sampling methodology used to establish the spill boundaries.
- A brief description of the solid surfaces cleaned and of the wash/rinse method used.
- Approximate depth of soil excavation and the amount of soil removed.
- A certification statement signed by the Construction Director, Spill Coordinator, and the Environmental Manager stating the cleanup requirements have been met and the information contained in the record is true to the best of his/her knowledge.
- The estimated cost of pre- or post-cleanup and sampling by man-hours, dollars, or both.

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7.0 WASTE STORAGE AND DISPOSAL

7.1 STORAGE OF CONTAMINATED MATERIALS

- All contaminated soils, solvents, rags, and other materials generated during construction will be stored in DOT-approved containers in accordance with the applicable state and federal regulations. See Appendix D for a list of approved containers.
- Containers will be labeled with required waste label(s), dated, and inventoried.
- Spent oils, lubricants, filters, etc. will be collected and disposed of, or recycled, at an approved location in accordance with state and federal regulations.
- Containers will be placed in a designated accumulation point for disposal.
- Containers may be stored at the construction site in the identified staging areas for up to 90 days from the date waste accumulation begins.
    - Appendix E contains guidance on how to manage the area used to temporarily store waste containers.
    - Appendix F contains guidance on inspection procedures for stored waste containers required by EPA Regulations.
- If it is necessary to temporarily store excavated soils on site, these materials will be placed on, and covered by, plastic sheeting, or placed in properly labeled ring-top 55-gallon drums and the storage area bermed to prevent and contain runoff.
- Any hazardous or contaminated material stored on ONEOK property or the ROW will be properly labeled in accordance with state and federal labeling requirements.

7.2 DISPOSAL OF CONTAMINATED MATERIALS

- All contaminated soils, solvents, rags, and other materials resulting from the cleanup actions will also be properly disposed of in accordance with the applicable state and federal regulations using permitted transporters and permitted disposal facilities.
- Only licensed carriers may be used to transport contaminated material from the site to a disposal facility.
- The Contractor will recycle those wastes, such as motor oil, where there is an established recycling program available.
- All hazardous waste containers will be properly manifested prior to departure from the construction area. The Contractor will be listed as the waste generator on the waste manifest. The Contractor and ONEOK will maintain all manifest records with the Project file for at least three years after the containers were shipped for disposal.
- Appendix H of this *SPCC Plan* lists potential treatment and disposal facilities for contaminated materials, petroleum products, and other construction-related wastes.

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APPENDIX A

CONSTRUCTION SPILL REPORT FORM

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APPENDIX A
CONSTRUCTION SPILL REPORT FORM

If a spill is below the reportable quantity complete only Section 1.

If the spill exceeds the reportable quantity complete both Sections 1 and 2.

Section 1 (All Spills)

Facility Name:_____ District/Region:_____

Facility Phone Number:_____

Facility Address:_____

Date of Spill:_____ Date of Spill Discovery:_____

Time of Spill:_____ Time of Spill Discovery:_____

Location of release: _____ County/State_____

Type of material spilled and manufacturer's name:_____

Substance released to (Check all that apply): Land__ Air__ Water__ Secondary Containment__

Estimated volume of spill: _____ Estimated volume recovered:_____

Brief description of the incident including cause and corrective action:_____

_____

_____

Person Completing Form (Contact):_____ Date:_____

Contact's Phone Number:_____

Section 2 (Reportable Spills)

Facility Type (well, tank, flow line, pit):_____

Spill Location: Address:_____

County:_____ Coordinates: Latitude_____ Longitude_____

PLSS: Township_____Range_____ Section_____

Additional Location Details:_____

_____

Spill medium (pavement, sandy soil, water, etc.):_____

Topography and surface conditions of spill site:_____

Soil/Geology Description:_____

Weather Conditions: Wind Direction ___ Wind Speed___ Temperature___ Precipitation_____

Proximity of spill to surface waters: _____

Did the spill reach Ground Water? _____ Yes _____ No

Did the spill reach Surface Water? _____ Yes _____ No

If so, was a sheen present? _____ Yes _____ No

Current Land Use:_____

Distance to nearest…

Spill Coordinator must complete this for any spill, regardless of size, and submit the form to the Company Environmental Manager and Chief Environmental Inspector within 24 hours of the occurrence.

APPENDIX A
CONSTRUCTION SPILL REPORT FORM

Surface Water _____Wetland _____Building _____Livestock_____Water Wells_____

Depth to shallowest groundwater _____

Was there a fire associated with the release? ___Yes _____ No

Did the incident result in death or injury? ___Yes _____ No

Was there any immediate damage observed to plants or animals? ___Yes _____ No

Describe the extent of observed contamination, both horizontal and vertical (i.e., spill-stained soil in a 5-foot radius to a depth of 1 inch):

_____

_____

How was the extent of the spill determined?_____

Current status of cleanup actions:_____

Proposed Remediation Activities:_____

Describe measures to prevent reoccurrence:_____

Did the spill occur while in transit?_____

Duration of spill occurrence?_____

Directions from nearest community:_____

Name and Title of Discoverer:_____

Name of Operator:_____

Address of Operator:_____

Operator Contact Person:_____

Is the Operator the responsible party? _____Yes _____No

If no, what is the responsible party's name and contact information? _____

_____

List all parties and agencies notified (Counties, BLM, EPA, DOT, Local, etc.)

Date	Agency	Contact	Phone Number	Response

Spill Coordinator must complete this for any spill, regardless of size, and submit the form to the Company Environmental Manager and Chief Environmental Inspector within 24 hours of the occurrence.

APPENDIX A
CONSTRUCTION SPILL REPORT FORM

Any additional information:_____

Name/Company/Address/Phone Number for the following:

Construction Superintendent:_____

Spill Coordinator:_____

Environmental Manager:_____

Person Who Reported the Spill:_____

Environmental Inspector:_____

Spill Coordinator must complete this for any spill, regardless of size, and submit the form to the Company Environmental Manager and Chief Environmental Inspector within 24 hours of the occurrence.

APPENDIX B

FEDERAL SPILL REPORTING REQUIREMENTS

APPENDIX B
FEDERAL SPILL REPORTING REQUIREMENTS

PURPOSE:

This procedure identifies reportable quantities for releases of oil or hazardous substances in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, Emergency Planning and Community Right-to-Know Act (EPCRA) Section 304, the Clean Water Act (CWA), the Oil Pollution Act of 1990 (OPA 90), and the Toxic Substances Control Act (TSCA).

RESPONSIBILITY FOR ADMINISTRATION:

Contractor's Spill Coordinator is responsible for administration of this procedure.

GENERAL:

I. Reportable quantity is the quantity of a release which requires agency notification.

II. A list of Reportable Quantities (RQs) for chemicals subject to spill reporting specified by the EPA can accessed at: http://www2.epa.gov/epcra/consolidated-list-lists.

III. RQs for materials are based on the chemical's constituents and concentrations. Please refer to a Data Safety Sheet (SDS) to determine the constituents and concentrations of the material that has been spilled. If the concentration of all of the constituents of a material are known, notification is required where an RQ of any constituent is exceeded. If the concentration of the constituents of a mixture is unknown, notification is required where the total amount of mixture released exceeds the RQ for the constituent with the lowest RQ.

IV. Any amount of oil spill into navigable waters is reportable. Oil spills onto land may be required to be reported, depending upon quantity spilled and state regulations. State spill requirements are detailed in Appendix C.

V. Typical materials stored on a construction spread are detailed in Appendix G.

REPORTING REQUIREMENTS:

I. If any quantity of oil or a hazardous substance is discharged into or upon the navigable waters of the United States, or adjoining shorelines; or the spill causes a sheen on a waterway (pond, lake, river, wetland, etc.) report the spill to the National Response Center (NRC) (800-424-8802). The NRC may determine that a spill report, as described in Section II below, be completed and submitted.

II. If oil is discharged in an amount greater than 1,000 gallons in one spill or if there are two discharges of 42 gallons or more of oil within a 12-month period.

A. Report the spill to the NRC (800) 424-8802.

B. Submit a written report within 60 days to the U.S. Environmental Policy Agency (EPA) Regional Administrator (Region 8) and the state agency.

C. The report to the EPA Regional Administrator and the state agency will include:

1. Name of facility;

Spill Coordinator must complete this for any spill, regardless of size, and submit the form to the Company Environmental Manager and Chief Environmental Inspector within 24 hours of the occurrence.

2. Name(s) of the owner or operator of the facility;
3. Location of the facility;
4. Date and year of initial facility operation;
5. Maximum storage or handling capacity of the facility and normal daily throughput;
6. Description of facility, including maps, flow diagrams, and topographical maps;
7. A complete copy of the *Spill Prevention, Control, and Countermeasure (SPCC) Plan* with amendments;
8. The cause of the spill, including a failure analysis of the system or subsystem in which the failure occurred;
9. The corrective actions and/or countermeasures taken, including description of equipment repairs and replacements;
10. Additional preventive measures taken or contemplated to minimize the possibility of recurrence; and,
11. Any additional information the EPA Regional Administrator may require pertinent to the *SPCC Plan* or spill event.

III. If a release of hazardous substance or extremely hazardous substance in excess of RQs listed in 40 Code of Federal Regulations 302 or a hazardous waste spill has been released into the environment the National Response Center (NRC) ((800) 424-8802), State Emergency Planning Commission (SERC) and Local Emergency Planning Commission (LEPC) must be notified.

A. Contact the required agencies with the pertinent spill information.

B. Provide verbal notification of the following information:

1. Name and telephone number of reporter;
2. Name and address of facility;
3. Type of substance discharged;
4. Quantity of substance discharged;
5. Location of discharge;
6. Actions the person reporting the discharge proposes to take to contain, cleanup and remove the substances, if any; and,
7. Any other information concerning the discharge which may be requested by the Agency at the time of notification.

Spill Coordinator must complete this for any spill, regardless of size, and submit the form to the Company Environmental Manager and Chief Environmental Inspector within 24 hours of the occurrence.

C. Submit a written report on the incident to the appropriate state and local agency. The report will include the following:

1. Name, address, and telephone number of the owner or operator;
2. Name, address, and telephone number of the facility and a detailed location of the spill;
3. Date, time, and type of incident;
4. Name and quantity of material(s) involved;
5. The extent of injuries, if any;
6. An assessment of actual or potential hazards to human health or the environment, where this is applicable;
7. Assessment of the scope and magnitude of the spill;
8. Description of the immediate actions that have been taken and the estimated quantity and disposition of recovered material that resulted from the incident; and,
9. Provide an implementation schedule for undertaking suggested measures to eliminate the spill.

Spill incident reports will be maintained in the Project files for a minimum period of three (3) years.

RESPONSIBILITY FOR PROCEDURE:

Address any questions to the Environmental Manager:

Eddie Zedaker
Telephone: (918) 595-1783
Email: Edwin.Zedaker@oneok.com

Spill Coordinator must complete this for any spill, regardless of size, and submit the form to the Company Environmental Manager and Chief Environmental Inspector within 24 hours of the occurrence.

APPENDIX C

STATE SPILL REPORTING REQUIREMENTS

These guidelines are intended to help the Environmental Manager determine reportable spills in each state through which the Project passes. In addition to the guidelines listed below, any substantial natural gas release which could cause an agency to initiate an unneeded emergency response should be considered reportable. The Environmental Manager and Spill Coordinator will maintain a copy of the latest edition of the TITLE III List of Lists.

MONTANA

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY (MTDEQ) EMERGENCY RESPONSE (800) 457-0568

All releases or spills of hazardous or deleterious substances or other wastes, regardless of size, must be properly and expeditiously managed, contained, and removed to protect public health and the environment.

MTDEQ must be notified of releases of greater than 25 gallons of petroleum from an aboveground storage tank (AST), underground storage tanks (UST), or petroleum storage tanks (PST). Petroleum releases less than 25 gallons in volume must be contained and cleaned up within 24 hours. If cleanup cannot be completed within 24 hours, owners and operators must report the release to DEQ. **Releases must be reported to a live person - voice mails are not adequate notification.**

All other releases and spills should be reported immediately to the State's Disaster and Emergency Services (DES) 24-hour phone number: (406) 324-4777.

The following types of spills must be reported:

- Releases or spills of hazardous substances in amounts that meet or exceed the reportable quantities in 40 Code of Federal Regulations (CFR) Part 302.
- Spills, overfills, and suspected releases from underground storage tanks and petroleum storage tanks. ARM 17.56.501, et seq.
- Releases or spills of any materials that would lower the quality of groundwater below water quality standards. ARM 17.30.1045.

The following types of spills should be reported:

- Spills that enter or may enter state water or a drainage that leads directly to surface water;
- Spills that cause sludge or emulsion beneath the surface of the water, stream banks or shorelines;
- Spills that cause a film, "sheen," or change the color of the water, stream banks or shorelines; or
- Spills of twenty-five (25) gallons or more of any petroleum product such as: crude oil, gasoline, diesel fuel, aviation fuel, asphalt, road oil, kerosene, fuel oil; produced water, injection water, salt water or combination thereof; and derivatives of mineral, animal, or vegetable oils.

NORTH DAKOTA

NORTH DAKOTA DEPARTMENT OF HEALTH (NDDH) EMERGENCY RESPONSE at (701) 328-8100 or (800) 472-2121 (State Radio 24-Hour Hotline - valid only in North Dakota).

All releases or spills of hazardous or deleterious substances or other wastes, regardless of size, must be properly and expeditiously managed, contained, and removed to protect public health and the environment.

NDDH must be notified of a spill of any size that could enter a waterway (stream, river, pond, lake, shoreline, wetland, ditch) must be reported. You should consider reporting any spill that cannot be cleaned up immediately or that has entered or is likely to enter a storm drain at your facility.

All releases and spills should be reported immediately to NDDH-Environmental Incident Reporting at:

- (800) 472-2121 or (701) 328-9921 (emergency, 24 hours)
- (800) 773-3259 or (701) 328-8100 (non-emergency, M-F 9-5:00)

The following types of spills must be reported:

- Releases or spills of hazardous substances in amounts that meet or exceed the reportable quantities in 40 Code of Federal Regulations (CFR) Part 302.
- Spills, overfills, and suspected releases from underground storage tanks and petroleum storage tanks. ARM 17.56.501, et seq.
- Releases or spills of any materials that would lower the quality of groundwater below water quality standards. ARM 17.30.1045.
- Any spill or discharge of liquid or solid (not gaseous) waste which may cause pollution of waters of the state **must be reported immediately**.

Online Incident Report Form: http://www.ndhealth.gov/ehs/eir/eirform.htm

APPENDIX D

DOT-APPROVED CONTAINERS

APPENDIX D
DOT-APPROVED CONTAINERS

PURPOSE:

This procedure provides a listing of containers which have been approved by the U.S. Environmental Policy Agency for storage of contaminated materials or wastes. These drums may be ordered from drum suppliers by specification number:

I. Specification 5 - steel barrel or drum with removable head:

   A. Body seams welded;

   B. Chime (reinforced rim) reinforced;

   C. Heads closed by 12 gauge bolted ring with drop forged lugs;

   D. Marked “DOT-5.”

II. Specification 5B - steel barrel or drum with removable head:

   A. Body seams welded;

   B. Chime (reinforced rim) reinforced;

   C. Heads closed by 12 gauge bolted ring with drop forged lugs;

   D. Marked “DOT-5B.”

III. Specification 6D Overpack; cylindrical steel overpack, straight sided, for inside plastic container. Specification 6D Overpack must be used with the specification 2S of 2SL plastic container.

IV. Specification 2S - polyethylene container:

   A. No removable heads;

   B. Constructed with new polyethylene resin;

   C. Marked “DOT-2S;”

   D. Must fit snugly in overpack container (Spec. 6D).

APPENDIX D
DOT-APPROVED CONTAINERS

V. Specification 2SL - molded or thermoformed polyethylene container:

A. No removable heads;

B. Constructed with new polyethylene resin;

C. Marked “DOT-2SL;”

D. Must fit snugly in overpack container (Spec. 6D).

VI. Specification 17C - single trip container, steel drum:

A. Removable heads are authorized;

B. Crowned head;

C. Heads closed by 12 gauge bolted ring with drop forged lugs;

D. Marked “DOT-17C.”

APPENDIX E

HANDLING CONTAINERS AND DRUMS

APPENDIX E
HANDLING CONTAINERS AND DRUMS

PURPOSE:

This procedure provides general requirements for the design of areas used to store containers and drums, in accordance with U.S. Environmental Policy Agency regulations 40 Code of Federal Regulations (CFR) Part 112 and 40 CFR Part 265.170.

RESPONSIBILITY FOR ADMINISTRATION:

The Contractor's Spill Coordinator will be responsible for this procedure.

GENERAL:

I. This procedure covers container and drum storage areas storing oils and petroleum distillates and non-permitted Hazardous Waste container and drum storage areas.

II. It is not necessary to permit Hazardous Waste container and storage areas if the waste is stored for less than 90 days. Secondary containment is not required for non-permitted Hazardous Waste container and drum storage areas.

PROCEDURE:

I. All containers and drums must be stored to avoid contact with the ground and standing water and protected to prevent rupture or leakage and to facilitate inspection.

II. The areas with containers and drums in which oil and petroleum distillate are stored and have the potential to be spilled off site must be designed to contain spills and releases. Appropriate secondary containment may include dikes, berms or retaining walls sufficiently impermeable (10^{-5} centimeters per second) to contain spill oils.

III. The following applies to hazardous waste containers and drums:

   A. Containers and drums holding ignitable or reactive Hazardous Waste must be stored at least 50 feet from the property line of boundary. Follow manufacturer's instructions regarding appropriate storage of product containers and drums.

   B. Hazardous Waste containers and drums must be separated and protected from incompatible materials by means of dike, berm, retaining wall or other approved means. Incompatible materials are wastes which, when mixed, can produce effects which are harmful to human health and the environment, such as (1) heat and pressure, (2) fire or explosion, (3) violent reaction, (4) toxic fumes or, (5) flammable fumes.

   C. Hazardous Waste containers and drums must be inspected weekly. That inspection will be documented, as per requirements listed in Appendix F.

IV. The Contractor will comply with all rules for Hazardous Waste Generators for satellite accumulation under 40 CFR 262.24(c)(1)(ii):

   A. Mark each container with the words "Hazardous Waste."

   B. Containers must be in good condition and kept closed except when adding or emptying waste. In addition, containers must not contain waste that is incompatible with the containers.

APPENDIX E
HANDLING CONTAINERS AND DRUMS

V. Conditionally Exempt Small Quantity Generators and Small Quantity Generators of Hazardous Waste must comply with the following:

A. Meet all conditions outlined in Procedure Section II.

B. Mark each drum or container with the words “Hazardous Waste.”

C. Label each drum or container with the date it is first used and the date it is last used.

RECORDS:

Storage area inspection records must be kept with the Project files for a minimum period of three (3) years.

RESPONSIBILITY FOR PROCEDURES:

Address any questions to the:

Environmental Manager
Eddie Zedaker
Telephone: (918) 595-1783
Email: Edwin.Zedaker@oneok.com

APPENDIX F

INSPECTION OF WASTE DRUMS AND CONTAINERS

APPENDIX F
INSPECTION OF WASTE DRUMS AND CONTAINERS

PURPOSE:

This procedure outlines inspection requirements for waste drums and containers as required by Federal Regulations 40 Code of Federal Regulations (CFR) 262 - 265 and 40 CFR 761.

RESPONSIBILITY:

The Contractor's Spill Coordinator is responsible for implementation of this procedure.

GENERAL:

I. Drums and containers used to store hazardous substances and wastes will be inspected for leaks, malfunctions, deterioration, operator errors, and discharges which may lead to a release into the environment or a threat to human health.

II. If problems are discovered during the inspection, remedial action will be taken immediately. The action taken will be noted on the inspection report form.

PROCEDURE:

I. Each waste drum and container will be inspected, and records maintained on a Waste Container Inspection Form. Inspection records will include the date and time of the inspection, the name of the inspector, observations, and the date and nature of any problems, repairs, and remedial action.

   A. Waste drum and container storage areas will be inspected weekly for the following:

      1. Leaking containers, deterioration of containers, and deterioration of the spill containment system.

      2. Drums and containers will be properly labeled and dated.

      3. Drums and containers will be stored on pallets or drum racks.

   B. If a drum or container is leaking, the incident will be recorded on the inspection form and immediately cleaned up according to the Spill Prevention, Control, and Countermeasure Plan.

APPENDIX F
INSPECTION OF WASTE DRUMS AND CONTAINERS

RECORDS:

I. Inspection records will be maintained in the Project files for three (3) years from the date of inspection.

II. A report of the remedial action taken for leaks will be prepared and kept with either the original inspection forms, inspection log or in the records of the Project. These records will be maintained for three (3) years with the Project files.

RESPONSIBILITY FOR PROCEDURE:

Address any questions to the:

Environmental Manager
Eddie Zedaker
Telephone: (918) 595-1783
Email: Edwin.Zedaker@oneok.com

APPENDIX F
INSPECTION OF WASTE DRUMS AND CONTAINERS

WASTE CONTAINER INSPECTION FORM		
Facility: _____	**Type of Container: _____**	
Date	**Deficiencies Noted**	**Inspected By**

APPENDIX G

TYPICAL PETROLEUM STORAGE AND HANDLING VOLUMES ON A CONSTRUCTION SPREAD

APPENDIX G
TYPICAL PETROLEUM STORAGE AND HANDLING VOLUMES ON A CONSTRUCTION SPREAD

	Fluids	Typical Amounts	Storage	Typical Transport Mode
Fuels	Diesel	6,000-12,000 Gallons	1-3 Tanks or Tankers stored at Contractor locations 5-gallon cans, 100-gallon storage in pickups, etc.	1-3 Fuel Trucks, 1-3 "Fuel Skids"
	Military Aviation Kerosene [1]	6,000-12,000 Gallons		
	Kerosene [1]	6,000-12,000 Gallons		
	Gasoline	5,000 Gallons		
Lubricant	Engine Oil	< 500 Gallons	Bulk Storage or Retail Packaging at Contractor Yard Warehouse	1-3 "Grease" Trucks
	Transmission/ Drive Train Oil	< 500 Gallons		
	Hydraulic Oil	< 500 Gallons		
	Gear Oil	< 500 Gallons		
	Lubricating Grease	20-30 cases of 24 cans per case		
Coolants	Ethylene Glycol	100 Gallons		
	Propylene Glycol	100 Gallons		

[1] Used straight or as additives only in extremely cold weather.

APPENDIX H

EMERGENCY RESPONSE CONTRACTORS;
DISPOSAL AND TREATMENT FACILITIES

APPENDIX H
EMERGENCY RESPONSE CONTRACTORS; DISPOSAL AND TREATMENT FACILITIES

The Contractor must dispose of all wastes according to applicable state and local requirements and is responsible for complying with all interstate requirements for transporting hazardous materials across state lines. A listing of potential Emergency Spill Response Contractors and waste disposal facilities is provided below. This list was developed from state-wide databases. This list represents firms operating at the time the data base was produced. These firms are not necessarily endorsed by ONEOK. The Contractor is responsible for verifying if a contractor or facility is currently operating under appropriate permits or licenses. Selection of an Emergency Response Contractor or disposal facility is subject to approval by ONEOK. The Contractor is responsible for ensuring wastes are disposed of properly.

Spill Response Contractors

Name/ Company	Under Contract	Phone Number(s)	Location	Services Provided
Clean Harbors Environmental Services	☐ Yes ☐ No	(800) 645-8265	Locations Nationwide	24-hour Emergency Response
SWAT Consulting	☐ Yes ☐ No	(866) 610-7928	12 Sunrise Estates Rd, Watford City, ND 58854	24-hour Emergency Response
JMAC Resources	☐ Yes ☐ No	(701) 774-8511	121 48th Ave. SW Williston, ND 58801	Emergency Spill Response Hazardous Waste Transport

Waste Handling/Disposal Contractors

Name/ Company	Under Contract	Phone Number(s)	Location	Services Provided
Nuverra Environmental Solutions	☐ Yes ☐ No	(701) 580-0336	13195 26th St NW Arnegard, ND 58835	Petroleum Contaminated Soil disposal facility
IHD Environmental	☐ Yes ☐ No	(701) 774-8514	14070 43rd St NW, Alexander, ND 58831	Petroleum Contaminated Soil disposal facility

Demicks Lake Pipeline Project

HORIZONTAL DIRECTIONAL DRILLING INADVERTENT RELEASE CONTROL PLAN

DRAFT

Prepared by:

December 2018

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DRAFT

LIST OF ACRONYMS AND ABBREVIATIONS

EI	Environmental Inspector
ESA	Environmentally Sensitive Area
HDD	Horizontal Directional Drill
SDS	Safety Data Sheet
ONEOK	ONEOK Bakken Pipeline, L.L.C..
PCN	Preconstruction Notification
Project	Demicks Lake Pipeline Project

DRAFT

1.0 PURPOSE AND NEED

ONEOK Bakken Pipeline, L.L.C. (ONEOK) has developed this *Horizontal Directional Drilling Inadvertent Release Control Plan* for the Demicks Lake Pipeline Project (Project). The horizontal directional drill (HDD) method will be used to install the pipeline at selected waterbody crossings and certain other features that will not be open cut/trenched and are not suitable for conducting a bore. Under optimal conditions, the HDD method involves no disturbance to the bed or bank of the waterbody being crossed or allows the highway, steep slope, or environmentally sensitive area (ESA) to be crossed without excavating between the HDD entry and exit points. However, if a natural fracture or unconsolidated area in the ground is encountered, an unexpected release of drilling fluid to the environment could occur. The objective of this *HDD Inadvertent Release Control Plan* is to provide procedures that will minimize the potential for release of drilling fluid into sensitive resource areas such as wetlands, waterbodies, and ESAs, or onto the adjacent surface soils, and should a release occur, prescribe measures to control the extent of the release and cleanup and dispose of the drilling fluid.

2.0 DRILLING BASICS

The HDD method is a technically advanced process involving specialized equipment and skilled operators. The method involves placing a drill unit on one side of the feature to be avoided (e.g., a stream) and drilling a small-diameter pilot hole under the feature along a prescribed profile. After the pilot hole has been completed, specialized reaming tools are used to enlarge the pilot hole to accommodate the desired diameter for the pipeline. Once the properly-sized hole is established, the pipe section is pulled through the hole by the drilling rig and welded to the adjoining sections of pipe on each side of the feature.

3.0 DRILLING FLUID AND DRILLING FLUID SYSTEM

The directional drilling process uses drilling fluid consisting primarily of water and bentonite, a naturally occurring clay. Drilling fluid removes the cuttings from the bore hole, stabilizes the walls of the bore hole and acts as a coolant and lubricant to the drill bit during the drilling process. The drilling fluid mixture consists of a small percentage of bentonite clay and inert solids generated during the drilling process from the bore hole cuttings with the remainder being water. Under certain conditions an additive may need to be mixed with the drilling fluids/mud for viscosity or lubricating reasons. Only non-hazardous additives will be used and a Safety Data Sheet (SDS) for all additives will be maintained on-site.

The drilling fluid is prepared in the mixing tank using both new and clean recycled drilling fluid. The fluid is pumped through the center of the drill pipe to the drilling tools. Return flow is through the annulus created between the wall of the drilled hole and the drill pipe. During pilot hole drilling the cuttings are returned to a small excavation at the entry point called the entry pit. From the entry pit, the returned fluid is pumped to the fluid processing equipment. Typically, shaker screens, desanders, desilters, and centrifuges process and remove increasingly finer cuttings from the drilling fluid. The cleaned fluid is recycled to the mixing tank for reuse in the borehole. The cuttings removed by the cleaning process are disposed of at a site approved to accept this type of material.

4.0 DRILLING FLUID RELEASE

The primary environmental risk associated with the HDD crossing method comes from the potential for inadvertent release (IR) of drilling fluid into a waterbody, wetland, or ESA. A drilling fluid release is indicated when pressure in the drill hole is not maintained and/or a loss of circulation of drilling fluids occurs. Minimal, consistent losses of drilling fluid are common during the drilling process due to the fluid filling natural voids in layers of loose sand, gravel, or fractured rock encountered along the drilling path. Larger losses of circulating drilling fluid and a reduction in drilling pressure indicate that seepage is occurring outside of the hole.

4.1 PREVENTION

Drilling fluid releases can occur when the drilling path encounters naturally occurring fractures in bedrock or other voids in the strata that allow the pressurized drilling fluid a less resistant path to the surface. Drilling fluid releases may also be caused by blockage of the return flow path around the drill pipe where pressurization of the drilling fluid rises above the containment capability of the overburden soil material. The following will be implemented as preventive measures to reduce the potential for a release of drilling fluid.

4.1.1 Suitable Material and Adequate Overburden

Prevention of drilling fluid seepage is a major consideration in determining the profile of the HDD crossing. A minimum 15-foot depth of cover below the bottom of a waterbody is required to provide a margin of safety against drilling fluid seepage.

The areas that present the highest potential for drilling fluid seepage are the drill entry and exit points where the overburden depth is minimal. Appropriate containment materials will be staged near the entrance and exit locations for quick deployment should an inadvertent return occur within these areas.

4.1.2 Pipeline Geometry

The geometry of the pipeline profile can affect the potential for drilling fluid seepage. In a profile which forces the pipe to make compound or excessively tight radius turns, key-seating of the drill pipe may develop, blocking the return flow to surface, allowing down-hole pressures to build up, thereby increasing the potential for drilling fluid seepage. The profiles for ONEOK's pipeline crossings minimize this potential, with very smooth and gradual vertical curves in the crossing profile, therefore affording consistent cover under the waterbody. Therefore, the potential for pressure buildup caused by pipeline geometry has been minimized.

4.1.3 Pre-construction Planning

Prior to initiating the drill, IR response equipment required by this Plan will be staged on site. All personnel working the drill site will be trained on the requirements of this Plan and, where applicable, on-site briefings about the sensitive nature of the feature being crossed will be conducted.

4.1.4 Pre-construction Measures for Environmentally Sensitive Areas

ONEOK will avoid all streams and wetlands that would trigger a Preconstruction Notification (PCN) with the U.S. Army Corps of Engineers (USACE/Corps). ONEOK will accomplish this by either routing around PCNs or by using an HDD or conventional bore methods to avoid the features. Locations on or immediately adjacent to the right-of-way (ROW) will have specific mitigation measures on the ESA plans.

The Demicks Lake Pipeline will cross ESAs using the HDD or conventional bore method. Instructions for ESA crossings are given throughout this *HDD Inadvertent Release Control Plan*. Refer to site-specific ESA plans for further information.

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Prior to construction in an ESA, the following measures will be implemented:

- ESAs will be marked with signage, exclusion fencing, or both;
- Cultural and Biological surveys will be conducted of the drilling entry and exit areas, surrounding work areas, and the drilling route to ensure that there are no cultural materials present on the surface;
- Excavation of all entry and exit points will receive full-time monitoring where required by ONEOK;
- Barriers will be installed between the bore site and the sensitive resource(s) to prevent released mud from reaching the sensitive resources;
- Ensure that all personnel understand their responsibility for timely reporting of IRs of drilling mud by conducting on-site briefings;
- Maintain necessary response equipment at an accessible location; for each wetland or waterbody crossed equipment will be available on both sides of the feature outside of the ESA; and
- Mats will only be allowed at some ESAs. The contractor will need to review the ESA plans prior to construction for restrictions.

4.1.5 Responsibility of HDD Contractor and Operator

ONEOK's HDD contactor is responsible for execution of the HDD, including actions for detecting and controlling drilling fluid seepage as well as containment and cleanup of inadvertent returns.

4.2 DETECTION AND MONITORING PROCEDURES

To determine if an IR has occurred, HDD activities will be constantly monitored on this project. Monitoring procedures will include:

- Continuous inspection along the drill path during active drilling with mud circulation. Construction observers will be briefed on what to watch for and will be made aware of the importance of timely detection and response actions to any release of drilling mud.
- Construction observers will have appropriate operational communication equipment (e.g., radio and/or cell phone) available at all times during installation of the HDD crossing, with the ability to communicate directly with the HDD operations control center.
- Continuous examination of drilling mud pressure gauges and return flows to the surface pits. If the HDD operator realizes a sustained loss in fluid pressure or loss of circulation, the operator will immediately notify the construction observers of the assumed position of the drill head who will attempt to locate the potential release. The environmental and construction inspectors will be immediately notified of a release or potential release.
- If a release occurs in a wetland, containment of the drilling fluids and continued inspection to determine any potential for movement of released drilling mud within the wetland, and collection of drilling mud returns at the location for future analysis, as required.
- If a release occurs in a wetland or waterbody, monitoring of the release will be documented by ONEOK. Access to edge of waterbody will be necessary so that ONEOK will keep photographs of release events on record.

5.0 NOTIFICATION PROCEDURES

Corrective action will begin immediately when monitoring indicates a release is occurring or has occurred. The Construction Inspector or ONEOK will immediately notify ONEOK's construction management personnel and Lead Environmental Inspector (EI). In the case of an IR during the crossing of a designated ESA, wetland or waterbody, the contactor will notify the Spill Coordinator, the Environmental Manager, Lead EI, and the designated Cultural Resources Specialist (in the case of a release within an ESA).

ONEOK will notify the appropriate agencies upon discovery of an IR to an ESA, waterbody, or wetland, detailing the location and nature of the release, corrective actions being taken, and whether the release poses any threat to public health and safety.

6.0 CORRECTIVE ACTION

In the event an inadvertent drilling mud release is observed during an HDD crossing, the release will be assessed to determine the amount of drilling mud being released and potential for the release to reach sensitive resource areas (e.g., wetlands, waterbodies, or environmentally sensitive areas). Response measures will vary based on location of IR as discussed below.

As discussed above, the greatest potential for drilling fluid seepage is during drill entry and exit where the overburden is reduced for entry and exit of drilling tools at the low approach angle. In the contingency planning for the pipeline crossings, drilling fluid seepage containment will be incorporated into the drill plan. The entry or exit locations will generally be located in upland areas on a dry land segment where drilling fluid seepage can be readily detected and contained. Containment response and clean-up equipment is required to be available at both sides of the HDD crossing location prior to the commencement of the HDD to assure a timely response in the event of an IR of drilling fluid.

Containment and response equipment may include but is not limited to:

- Silt fence;
- Plastic sheeting;
- Shovels and other appropriate hand tools;
- Squeegees;
- Pails;
- Push brooms;
- Pumps and sufficient hose;
- Mud storage tanks;
- Vacuum truck on 24-hour call (arrange for this service before drilling begins);
- Pre-filled sandbags;
- Geotextile fabric;
- One small boat (for larger rivers and open water wetlands);
- Steel box or large-diameter pipe section (or the equivalent) that, under appropriate conditions, could be used to contain an IR of drilling mud; and
- Light plant/generator.

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ONEOK will address an IR immediately upon discovery. The following measures will be implemented to minimize or prevent further release, contain the release, and clean up the affected area:

Upland Release:

These measures apply to upland releases unless the release occurs adjacent to a wetland, waterbody, or ESA such as a stream bank or steep slope, where drilling mud releases could quickly reach a resource. If the release occurs adjacent to a wetland, waterbody, or ESA use the measures listed below that apply:

- Determine and implement any modifications to the drilling technique or composition of drilling fluid (e.g., thickening of mud by increasing bentonite content, temporary lowering of the downhole pressures) to minimize or prevent further releases of drilling mud.
- Place containment structures at the accessible affected area to prevent migration of the release.
- If the amount of the release is large enough to allow collection, the drilling mud will be collected and returned to either the drilling operations or a disposal site by hose or tanker.
- If the amount of the release is not large enough to allow collection, the released drilling fluid will be swept, shoveled, or mixed with sand and temporarily left in place to dry. If the amount of the release is not large enough to allow for the practical physical collection from the affected area, it will be diluted with clean water.
- If not in a designated ESA, reduce drilling operations if the mud release cannot be effectively contained within accessible containment areas. Within designated an ESA, drilling operations will be suspended if drilling mud cannot be effectively contained.
- If public health and safety are threatened by an IR, drilling operations will be shut down until the threat is eliminated. This measure will be taken as a last resort because of the potential for drill hole collapse resulting from loss of down-hole pressure.

Waterbody Release:

- If a release occurs within a waterbody, the Environmental Manager will contact the appropriate agency as soon as possible to inform them if there is a potential threat to public health and safety and explain whether the release can be corrected without incurring additional environmental impact. If necessary, drilling operations will be reduced to assess the extent of the release and to implement corrective actions.
- Continuously review and adjust drill pressures and pump volume rates to minimize the extent of the release.
- If the release is a single-point release, accessible with a hose and truck, attempt to ‘cap’ the release, if possible, by placing a section of pipe over the release to contain the fluid within the pipe section. With a larger release, attempt to place a water-filled bladder around the release in order to isolate it from the waterbody prior to removal. After the release is contained, the fluid will be pumped into trucks and reused or disposed of at an appropriate facility.
- If public health and safety are threatened, drilling fluid circulation pumps will be turned off. This measure will be taken as a last resort because of the potential for drill hole collapse resulting from loss of down-hole pressure.
- ONEOK will assist agencies by collecting water samples, if required.

- If monitoring indicates that the intake water quality at downstream user locations is impacted to the extent that it is no longer suitable for treatment, alternative water sources (i.e., trucked or bottled water) will be provided to impacted users.

Wetland/Riparian Area Release:

- Evaluate the release to determine if containment structures are warranted and can effectively contain the release. When making this determination, ONEOK will also consider if placement of containment structures will cause additional adverse environmental impact.
- If a release occurs within the wetland, reasonable measures, within the limitation of directional drilling technology and Contractor's capability, will be taken to re-establish drilling mud circulation.
- Determine and implement any modifications to the drilling technique or composition of drilling fluid (e.g., thickening of mud by increasing bentonite content, temporary lowering of the downhole pressures) to minimize or prevent further releases of drilling mud.
- Upon completion of the drilling operations, ONEOK will consult with applicable regulatory agencies to determine any final clean-up requirements for the IR.
- If public health and safety are threatened by the IR, drilling operations will be shut down until the threat is eliminated. This measure will be taken as a last resort because of the potential for drill hole collapse resulting from loss of down-hole pressure.
- ONEOK will assist regulatory agencies with any sampling they may require.

ESA Release:

- If a release occurs within an ESA, contact the Lead EI immediately so that they may assess the situation. The EI will contact the Environmental manager who will notify the appropriate agency as soon as possible to inform them of a release. The Environmental Manager will communicate whether the release can be corrected without incurring additional environmental impact. If necessary, drilling operations will be reduced to assess the extent of the release and to implement corrective actions. Depending on circumstances, federal, state, and/or local agencies may require further action.
- Continuously monitor the release.
- Evaluate the release to determine if containment structures are warranted and can effectively contain the release. When making this determination, ONEOK will also consider if placement of containment structures will cause additional adverse environmental impact.
- Continuously review and adjust drill pressures and pump volume rates to minimize the extent of the release.
- If public health and safety are threatened, drilling fluid circulation pumps will be turned off. This measure will be taken as a last resort because of the potential for drill hole collapse resulting from loss of down-hole pressure.
- All mitigation measures employed for releases within ESAs will be closely documented to assist with ONEOK's agency notification process.

7.0 ABANDONMENT

If corrective actions do not prevent the threat to public health and safety, or if the pipeline installation is unsuccessful, ONEOK may opt to re-drill the hole along a different alignment after receiving appropriate regulatory approvals. In this case, the following procedures will be implemented to abandon the previous drill hole.

- To seal the abandoned drill hole, thickened drilling mud and cuttings will be pumped into the hole as the drill assembly is extracted.
- Within approximately 10 vertical feet of the surface, remove drilling mud and cuttings, then fill the drill end points and any mud pits with soil, and grade the location to the original contour.
- In the case of an ESA crossing, no alternative crossing methods would be implemented without the proper notification and approvals from ONEOK.

8.0 FOLLOW-UP

After the drilling fluid seepage has been contained, the drilling contractor will try to determine the cause of the seepage. After the cause has been determined, measures will be implemented to control the factors causing the seepage and to minimize the chance of recurrence.

In some cases, the corrective measure may involve a determination that the existing hole encountered a void, which could be bypassed with a slight change in the profile. In other cases, it may be determined that the existing hole encountered a zone of unsatisfactory soil material and the hole may have to be abandoned. If the hole is abandoned, it will be filled with cuttings and drilling fluid, as described in Section 7.0.

9.0 CLEAN UP

Clean-up measures following mud releases in uplands, wetlands, and waterbodies will be implemented as determined by this Plan and in consultation with the appropriate regulatory agencies. The following measures are to be considered as appropriate:

- Drilling mud will be cleaned up by hand using hand shovels, buckets, and soft-bristled brooms as possible without causing extensive ancillary damage to existing vegetation. Clean water washes may also be employed if deemed beneficial and feasible by the Lead EI and monitor.
- Backhoes or other mechanized earth-moving equipment will not be used to clean up drilling fluid seepage within ESAs, waterbodies, or wetlands.
- Containment structures will be pumped out and the ground surface scraped to bare topsoil without causing undue loss of topsoil or ancillary damage to existing and adjacent vegetation.
- Material will be collected in containers for temporary storage prior to removal from the site.
- Potential for secondary impact from the clean-up process is to be regularly evaluated and clean-up activities terminated if physical damage to the site is deemed to exceed the benefits of removal activities in consultation with the appropriate regulatory agencies and/or field representatives.

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Demicks Lake Pipeline Project

REVEGETATION PLAN

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Prepared by:

December 2018

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1.0 INTRODUCTION

This *Revegetation Plan* (Plan) was created to provide procedures to be followed during the revegetation of areas disturbed as a result of constructing the ONEOK Bakken Pipeline, L.L.C. (ONEOK) Demicks Lake Pipeline Project (Project). This Plan incorporates comments from the Natural Resource Conservation Service (NRCS) and/or county conservation offices in McKenzie County, North Dakota, and Richland County, Montana; applicable agency permit conditions; the contractor's ONEOK-approved Revegetation Plan, and ONEOK's *Construction and Mitigation Restoration Plan (CMRP)*. Permit conditions, environmental and civil, or landowner agreements will take precedence over the requirements of this Plan.

1.1 Revegetation

This Plan applies to all areas of perennial vegetation disturbed by construction. ONEOK will not seed active or rotated croplands unless specifically requested to do so by the landowner or land management agency. Seeding which occurs on US Forest Service (USFS) lands will be conducted in accordance with the conditions of ONEOK's Special Use Permit. ONEOK will coordinate with landowners to discourage livestock grazing of the construction right-of-way (ROW) during the first growing season by utilization of temporary fencing, deferred grazing (see Section 1.4), or increased grazing rotation frequency, especially in critical areas, such as sandy sites with blow-out potential.

1.1.1 Wetlands and Stream Banks

Temporary Revegetation

ONEOK's contractor will seed wetlands, excluding those inundated or farmed, and stream banks with an appropriate cover crop where necessary to prevent erosion (see Appendix A – Contractor Revegetation Plan). No fertilizer, lime, or mulch will be applied in wetlands.

Permanent Restoration

Stream banks will be seeded with the same seed mix as the adjacent upland area, except where a specific streambank seed mix was requested by a county NRCS or conservation district (see Appendix B, NRCS Herbaceous Vegetation Establishment Guide). Seeding which occurs on USFS lands will be conducted in accordance with the conditions of ONEOK's Special Use Permit. ONEOK does not propose permanent planting or seeding in wetlands. In wetlands, the root mat/vegetative layer should be left in place during construction, except directly over the trench line. By leaving the root mat/vegetative layer intact, revegetation of the wetland to its pre-construction composition will occur naturally through native recruitment.

1.1.2 Uplands

Temporary Revegetation and Stabilization

If final grading and installation of permanent erosion control measures will not be completed in an area within 10 days after the trench is backfilled, then temporary stabilization measures will be employed. Temporary stabilization measures will also be employed where construction activity is interupted for extended periods and when seeding cannot be completed, e.g. due to seeding period restrictions.

Temporary stabilization measures consist of surface roughening (e.g. plowing or discing to achieve a rough surface), temporary seeding, or temporary mulching. Surface roughening will predominantly be used for temporary stabilization of the soils until soil conditions permit seedbed preparation and seed germination. Surface roughening may include equipment tracking, scarifying, imprinting, or tilling a

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disturbed area. These techniques are only adequate when the soils have a significant organic component. If the soils are sandy the surface roughening technique will be ineffective and will contribute to fugitive dust emissions. ONEOK's Enivironmental Inspection Team and Construction Management team must approve the use of surface roughening.

Temporary seeding and/or mulching will be employed where erosion is likely to occur, including locations such as stream banks, road ditches, steep slopes, and areas subject to storm water flow, as described in the *Storm Water Pollution Prevention Plan (SWPPP).* ONEOK's specification for installation of mulch and temporary stabilization is discussed in Section 1.7.5 of the *CMRP*. The contractor will consult with ONEOK and the Lead Environmental Inspector (EI) if there is a need for temporary stabiliation measures.

Permanent Revegetation

All upland areas disturbed by construction activities, excluding active and rotated cropland, will be seeded within 10 days of completion of final clean up. Ideally, seeding will be done before the ground freezes. Fertilizer and pH modifying agents (e.g., lime) may be used and will be based on local soil moisture conditions, germination requirements of selected species, and adaptation of seed soil temperature.

1.1.3 Seedbed Preparation

Seeding will follow cleanup and topsoil replacement as closely as practicable. The contractor will scarify, till, disk, or harrow the seedbed as needed in order to enhance seed germination. Soil compact treatment will be applicable as described in the *CMRP*. Sites where this method is not practical (e.g., steep slopes, rocky areas, etc.) will be dozer-tracked perpendicular to the slope or otherwise left with adequate roughness, following topsoil placement, to provide micro-sites for seed germination and to reduce soil movement. If mulch was applied prior to seeding for temporary erosion control, the contractor will remove and dispose of the mulch prior to seedbed preparation to ensure that seedbed preparation equipment and seed drills do not become plugged with excess mulch; to support an adequate seedbed; and to ensure that seed incorporation or soil packing equipment can operate without becoming plugged with mulch.

1.1.4 Seeding Method

Based on site-specific conditions, seeding will be accomplished by drilling or broadcasting. A range-type drill, or similar device, will be employed on level to gently sloping areas where rock fragment content allows drilling operations. The seeder will be followed with a drag packer or roller to ensure uniform coverage of the seed and adequate compaction. Drill seeding will be done along contour lines where practical, not up and down the slope. The drill seeder will apply seed mixes with mechanisms such as seed box agitators to allow even distribution of all species in each seed mix, with an adjustable metering mechanism to accurately deliver the specified seeding rate, and with a mechanism such as depth bands to accurately place the seed at the specified depth. Planting depth will not exceed local and regional agriculture practices. Seeders will be calibrated and operated at an appropriate speed so that the specified seeding rate is planted. The row spacing on drill seeders will not exceed 8 inches, unless otherwise recommended due to growth characteristics of a certain species.

Broadcast seeding will be employed on steep (> 15 % slope) and/or rocky areas where drill seeding is not practical. Seed will be broadcast using manually-operated, cyclone-type bucket spreaders, mechanical seed spreaders or blowers, or hydroseeders. Broadcast seeding will be performed at 2 times the rate for drill seeding. Seeds will be mixed frequently in spreader hoppers to discourage

settling. Broadcast seeding may be delayed during high wind conditions if even distribution of seed is impeded.

Where possible, broadcast areas will be chained or harrowed to cover seed. On small or inaccessible areas, hand raking will be used to cover seed. On steeper slopes where tilling or harrowing are not feasible, the areas will be dozer-tracked perpendicular to the slope prior to seeding, or-otherwise left in a roughened state, to provide micro-sites for seed germination.

Hydro seeding may be used, on a limited basis, where the slope is too steep, or soil conditions do not warrant conventional seeding methods. Fertilizer, where specified, may be included in the seed, virgin wood fiber, tackifier, and water mixture. When hydro-seeding, virgin wood fiber will be applied at the rate of approximately 3,000 pounds per acre on an air-dry weight basis as necessary to provide at least seventy-five (75) percent ground cover. Tackifier will consist of biodegradable, vegetable-based material and will be applied at the rate recommended by the manufacturer. The seed, mulch, and tackifier slurry will be applied so that it forms a uniform, mat-like covering of the ground.

1.1.5 Revegetation Mixtures and Rates

In cooperation with the applicable agencies and private landowners, seed mixtures have been developed for the soil types within the Project area (see Appendices A and B). Disturbed areas (with the exception of cultivated fields and wetlands) will be seeded in accordance with written recommendations for seed species, rates, techniques, and planting dates from the NRCS or county conservation districts (unless otherwise specified in landowner agreements) as outlined in the contractors revegetation plan (Appendix A) or the NRCS Herbaceous Vegetation Establishment Guide, Appendix B. Seed included in mixtures developed in collaboration with agencies assume use of local strains or cultivars to assure seeds. Seed will be acquired from local sources that can verify appropriate cultivars are used.

Conservation Reserve Program (CRP) seed mixture will be applied to CRP lands. The property owner is responsible for identifying CRP lands crossed by the Project. All disturbed areas will be re-seeded in accordance with the specifications outlined below. The ROW would be re-seeded at the end of construction.

In some instances, seed mixtures may need to be modified as a result of limited species availability, poor seed quality, or site differences. With ONEOK approval, these modifications will be made based on site-specific conditions and requirements.

1.1.6 Seed Installation Timing

Seeding of permanent native seed mixes should not occur outside of the dormant seeding windows listed in Table 1.1.7-1. to prevent premature germination of vunerable native seedlings during the hottest and driest time of the year. Temporary stablization measures should be utilized during the summer period and prior to the winter dormant seeding date for each respective state. These dates are subject to annual and local variability across the project, but should be used as a general rule of thumb and deviation of more than a week from these dates should only be considered on a case by case basis, with the EI team's recommendations and ONEOK's approval. Replanting of alfalfa fields requires two growing season and communciation with the landowner will take place during this timeframe.

1.1.7 Dormant Seeding

Dormant seeding is most effective in restoration of disturbed areas because early spring is the most reliable period for moist soil conditions. Low temperatures and dormant vegetation during the winter

months help soils retain beneficial amounts of moisture into the spring (WYRRC, 2010). Dormant seeding is conducted after soil temperatures are cool enough to prevent seed germination; generally when soil temperature at two inches below the soil surface is 40 degrees or less for a minimum of five consecutive days (NRCS, 2018). The dormant seeding timeframe in North Dakota and Montana occurs after November 1. Dormant seeding is only practicable if the soil is not frozen and snow is not present. Procedures for applying soil amendments, seedbed preparation, seeding, and mulching are the same as outlined for permanent revegetation in this Plan.

Where dormant seeding is conducted, one or more of the following temporary erosion and sediment controls will be put in place over the freshly seeded area unless the local soil conservation authority, landowner, or land managing agency specifies otherwise. The temporary measures are as follows:

- Straw mulch, at 4,000 lbs/acre, anchored;
- Hydromulch, at 1,500 to 2,000 lbs/acre;
- Erosion control blanket, 1 layer on soil surface

Additional erosion control measures will be applied as outlined in ONEOK's *CMRP*.

1.2 Weed Control

Weed control practices will be implemented to limit the growth and spread of weeds and to ensure that revegetation is successful with the proposed seed mixtures in accordance with ONEOK's project-specific *Weed Management Plan*.

1.3 Seed Inspection

Seed Tag Inspection

Restoration contractors will collect tags from the seed used to document compliance with agency and landowner seeding requirements and provide the tags and associated records to the appropriate EI. The restoration contractor will be responsible for inspecting seed and seed tags to ensure compliance with the above requirements. Seed purchased by the contractor will be on a "Pure Live Seed" (PLS) basis. The restoration contractor will inspect seed prior to use. Seed tags will identify:

- Purity;
- Germination;
- Date tested;
- Total weight and PLS weight;
- Weed seed content; and
- Suppliers name and business information.

Seed Purity

The germination and purity tests conducted by the vendor will be completed within 12 months of seed utilization. The seed tags on the seed sacks will also certify that the seed is "Noxious Weed Free". Seed rates used on the Project will be based on PLS rate, not actual weight basis.

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1.4 Grazing Deferment

Excessive livestock grazing is detrimental to the germination of permanent vegetative cover over the ROW. In order to ensure that the ROW is properly restored with sufficient vegetative cover, ONEOK will develop grazing deferment plans with landowners, tenants, or other grazing permit holders that address construction timing, fence cutting and bracing, temporary fencing, cattle guard locations, and water requirements for livestock.

The NRCS recommends all range plantings are not grazed until the stand is fully established, which is a minimum of one full growing season. If, after one full growing season, the stand has not adequately established, or seedlings do not have well-developed root systems with adventitious roots above the sown seed, grazing should be deferred for a second growing season (NRCS, 2018; Appendix B).

1.5 Revegetation Monitoring

Monitoring will be conducted in compliance with the *SWPPP* during the construction phase as well as the post construction phase of the project to verify adequate vegetation establishment to stabilize the soil and satisfy permit conditions.

2.0 REFERENCES

U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). April 2018. Herbaceous Vegetation Establishment Guide. Available online at: https://efotg.sc.egov.usda.gov/references/Public/ND/Herbaceous_Veg_Est_Guide.pdf. Accessed December 20, 2018.

Wyoming Reclamation and Restoration Center (WYRRC). 2010. Successful Restoration of Severely Disturbed Lands: Seeding Essentials for Reclaiming Disturbed Lands

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APPENDIX A

Contractor Revegetation Plan

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Ecozone Reclamation Plans

Demicks Lake Pipeline

Prepared for:
ONEOK, Inc.

Prepared by:
Duraroot, LLC

Date:
December 20, 2018

Reclamation Guidelines for the Demicks Lake Pipeline

The Demicks Lake Pipeline (DLP) is a pipeline project in McKenzie County, North Dakota and Richland County, Montana. Land use along the DLP right-of-way (ROW) includes cultivated cropland, hay/tame pasture, and native range/grassland. Vegetation consists predominantly of cereal grain crops, alfalfa/grass hay, and native/introduced grasses. Soils vary in chemical and physical composition, depth, drainage capability, and reclamation potential. Ecozone delineations along the DLP ROW considered dominant soil types, soil chemical characteristics, dominant vegetation, land use, and topography.

The ecozones present along the DLP are: Cultivated Crop Ecozone, Saline Ecozone, Badlands Ecozone, Loamy Ecozone, and Sandy Ecozone. Characteristics of each ecozone, along with associated reclamation techniques and recommendations, are detailed in each ecozone report. Fertility recommendations and seed mixes were developed based on soil sample analytical data and vegetation field surveys performed during the fall of 2018 and from data collected as part of the Garden Creek Loop project for ONEOK. Soil sample analytical data were used to make amendment recommendations based on the soil chemistry for most of the ROW. Recommendations are based on sample data analysis and Duraroot's interpretation of the soils along the alignment. All soil samples were collected by or under the supervision of a Certified Professional Soil Scientist (CPSS). A summary of all soil fertility data for DLP can be found in Attachment A.

Due to the nature and scale of the project, these reclamation guidelines have been developed using a broad-based approach to address reclamation across the project disturbance and to facilitate construction activities. Site-specific plans are recommended in areas with soil characteristics that could negatively impact revegetation, such as shallow soil resources or high/low pH and elevated salt concentrations (Attachment A). Soil sample data indicate that potentially challenging sites, in terms of reclamation success, are present along the pipeline route. It is likely that additional areas are present, but further sampling would be needed to more accurately delineate boundaries. Duraroot can provide site-specific reclamation plans for these locations at a small additional cost of $500 per plan.

RECLAMATION PLAN
CULTIVATED CROP ECOZONE SITES

SITE DESCRIPTION

The Cultivated Crop Ecozone is comprised of managed row crops, hayfields, and tame pastures. The Cultivated Crop Ecozone makes up approximately forty-four (43.5) percent of the land use on Demicks Lake Pipeline. Following construction, the land will be returned to productive cropland. The Cultivated Crop Ecozone contains primarily medium textured loam soils, with grades less than 10 percent. Soil pH is predominately slightly alkaline (pH 7.4 to 7.8) to moderately alkaline (pH 7.9 to 8.4). One key factor in reclaiming the Cultivated Crop Ecozone sites will be the preservation of topsoil, which has the soil properties necessary for agricultural production. This ecozone should present minimal challenges for reclamation due to desirable ecozone characteristics.

Due to reclamation timing, a cover crop seed mix for the Cultivated Crop Ecozone is provided in Table 1. A cover crop should be seeded on all cultivated cropland when establishment of the crop will not occur within 45 days or less of reclamation activities. A cover crop will protect the soil from wind and water erosion, increase soil stabilization, improve soil structure, suppress weed establishment, and improve overall reclamation success. The cover crop seed mix below was developed to provide quick cover due to a rapid germination rate and to aid in accelerated soil stabilization by helping to prevent the migration of topsoil during periods of freeze/thaw and rain events. A cover crop seed mix recommendation for immediate vegetation cover is provided in Table 1. Landowner preferences should be identified prior to seeding to develop appropriate seed mixes for hayfields and tame pastures. The reclamation plan is provided on Page 2.

Table 1. Demicks Lake Pipeline Cultivated Crop Ecozone Site Cover Crop Seed Mix Recommendation.

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Quickguard-Sterile Triticale	*Triticum aestivum x Secale cereal*	60	18	90%
Nitro Radish	*Raphanus sativus*	3.5	2.0	10%
Total	**--**	**64**	**20**	**100%**

RECLAMATION PLAN
CULTIVATED CROP ECOZONE SITES

(1) SOIL AMENDMENTS

Soil and nutrient amendments within cultivated areas should be based on surface owner requests. If the surface owner does not have any tract specific requests, it is recommended that approximately 20 pounds of nitrogen and 50 pounds of phosphorus per acre be applied.

(2) SEEDBED PREPARATION

These recommended seedbed preparation steps will aid in successful reclamation. Steps may be omitted, conducted in different order, or changed to optimize success and efficiency depending on field conditions, sub-soil properties, and local terrain.

- Rip subsurface soil, prior to topsoil spreading, to a minimum depth of 16 inches to reduce soil compaction and improve drainage. Ripping should be conducted using a double pass with a straight-shank agricultural ripper or parabolic ripper. The shanks on the back of a grader or dozer should NOT be used to alleviate soil compaction. Do not smooth the ROW with a dozer once ripped. It is beneficial to have an irregular surface to help tie the topsoil and subsoil horizons together. Tillage can be used to break soil clods apart prior to topsoil application.
- Apply topsoil and requested soil amendments, discussed above, to improve the soil's physical and chemical characteristics and to supplement soil nutrients.
- Finally, till the site to a depth of 4.0 to 6.0 inches to incorporate applied soil amendments and to create a seedbed conducive to seedling establishment (disk and harrow, field cultivator, vibra-shank, or other alternative suitable to site conditions).

(3) OPTIONAL COVER CROP SEEDING

Cover crop seeding should be conducted using a drill seeder suitable for the location's soils and capable of direct seed placement. Drill seeding should occur on the contour using a drill equipped with a double disc opener, wheel press, and depth bands to ensure proper seeding depth. Seed should be planted to the depth specified by the vendor to ensure proper germination and emergence. It is recommended that grain seed be placed 0.5 to 1.0 inches deep. The Cultivated Crop Ecozone recommended cover crop seed mix and rate is provided in Table 1.

(4) STRAW MULCHING

Application of straw mulch is recommended to reduce potential water and wind erosion when establishment of the crop will not occur within 45 days of reclamation activities and a cover crop will not be planted. Recommended straw mulch application rates are between 1.5 to 2.0 tons per acre. This will provide ground coverage of approximately 80 to 90 percent of the ground surface prior to crimping. Once applied the straw mulch should be crimped into the soil using a straight disc crimper with approximate 8.0-inch spaced tines. Upon successful crimping the straw mulch should be standing vertically with approximately 40 to 60 percent of the ground surface covered. Straw mulch should be at least 6.0 inches in length. Straw mulch should be crimped sufficiently to cause vertical cover that will not be dislodged by light breezes. Straw mulch should be applied based on surface owner preference in crop areas.

(5) WEED MANAGEMENT

A site-specific Integrated Weed Management Plan (IWMP) should be developed once weedy species can be identified and regular crop rotation has begun. Sites could be mowed prior to flowering and seed head production of weedy species. Mowing will reduce competition with desirable species and allow greater opportunity for reclamation success. In addition to mowing, herbicides appropriate for the identified weedy species could be implemented into the weed management plan to eradicate any problematic species. If herbicides are intended to be used, they should be applied in consultation with the surface owner to ensure that the application of herbicides is appropriate for the subsequent agricultural crop. Application timing and rates should follow the manufacturer's recommendations.

RECLAMATION PLAN
BADLANDS ECOZONE SITES

SITE DESCRIPTION

The Badlands Ecozone occurs in uplands on barren shoulders and backslopes of ridges and bluffs, as well as topographically low areas including alluvial fans and stream terraces. This ecozone covers approximately four (3.9) percent of the Demicks Lake Pipeline. The Badlands Ecozone typically consists of moderately steep to steep slopes greater than 25 percent and can contain a restrictive layer in soil depths less than 10 inches. Soil formation is minimal with variable soil texture and high erosion potential. The Badlands Ecozone includes rocky outcrops with three percent or more of the ground surface covered by rock and contains little to no vegetative cover. Additionally, this ecozone can include fine textured soils (clay loams and clays) with characteristically elevated soil electrical conductivity (EC) and soil sodium adsorption ratio (SAR). These sites will be returned to similar pre-disturbance land use following construction.

A recommended seed mix is provided for the Badlands Ecozone in Table 1. The Badlands seed mix was developed using 80 pure live seeds (PLS) per square foot. This seed mix considers seed availability, original site composition, and desirable species for quick stabilization in erosive, shallow soils.

Key obstacles for reclamation in the Badlands Ecozone are steep slopes with high potential for erosion and shallow soils with potentially elevated soil salinity and soil attributes associated with sodic soils (soil dispersion, poor soil structure, hard surface crust formation, and reduced infiltration) and low water holding potential. Ecozone appropriate erosion control measures, seedbed preparation methods, suitable seed mixes, seeding practices, and a site specific Integrated Weed Management Plan (IWMP) should help expedite reclamation success. The Badlands Ecozone reclamation plan is provided on Page 2.

Table 1. Demicks Lake Pipeline Badlands Ecozone Sites Seed Mix Recommendation.

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Blue Grama	*Bouteloua gracilis*	0.42	8.0	10%
Green Needlegrass	*Nassella viridula*	2.9	12	15%
Little Bluestem	*Schizachyrium scoparium*	2.0	12	15%
Western Wheatgrass	*Pascopyrum smithii*	6.3	16	20%
Bluebunch Wheatgrass	*Pseudoroegneria spicata*	3.7	12	15%
Inland Saltgrass	*Distichlis spicata*	1.0	12	15%
Slender Wheatgrass	*Elymus trachycaulus*	2.2	8.0	10%
Total	**--**	**19**	**80**	**100%**

Notes:
1. Seed mix was developed for badlands soil conditions based on vegetation data. Seed mix may be adjusted based on landowner preferences.

(1) SOIL AMENDMENTS

Soil amendment recommendations are based on recent soil chemical analysis. It is recommended that the following fertilizer amounts be applied to areas within the Badlands Ecozone:

- Nitrogen – 20 pounds per acre
- P_2O_5 – 50 pounds per acre
- K_2O – 0 pounds per acre

(2) SEEDBED PREPARATION

These recommended seedbed preparation steps will aid in successful reclamation. Steps may be omitted, conducted in different order, or changed to optimize success and efficiency depending on field conditions, sub-soil properties, and local terrain.

- When topographical slope allows, shallow rip subsurface soil prior to topsoil application to the maximum depth allowed to reduce soil compaction and improve drainage.
- Apply topsoil and soil amendments, discussed above, to supplement soil nutrients.
- Finally, till the site to a depth of 4.0 to 6.0 inches to create a seedbed conducive to seedling establishment (disk and harrow, field cultivator, vibra-shank, or other alternative suitable to site conditions). Tillage is dependent on topographical slope. If slopes are too sleep, implement minimal till practices.

(3) SEEDING

Seeding should be conducted on the contour using either an imprint seeder or a drill seeder, depending on slope limitations for safe equipment operation. Drill seeders should be equipped with an agitator, double disc opener, wheel press, and depth bands to mix seed and ensure proper seeding depths. Seeds should be planted to the depth specified by the vendor to ensure proper germination and emergence. It is recommended that the seed be placed no deeper than ½ inch. The Badlands Ecozone seed mix and rate are provided in Table 1.

(4) EROSION CONTROL

Because of steep slope gradients and high erosion potential, all disturbances in the Badlands Ecozone should be hydro-mulched using a bonded fiber matrix (BFM) or flexible growth medium (FGM). Hydro-mulch application will stabilize slopes during reclamation and protect seed until vegetation can successfully establish. A synthetic polymer product, such as polyacrylamide (PAM), could be added to the hydro-mulch solution to encourage soil aggregation and further reduce erosion potential. In areas with limited available soil material a Biotic Soil Media (BSM) can be used to improve grass establishment.

Additional erosion control devices (ECDs) appropriate for specific site conditions should be installed and maintained during all construction and reclamation activities through final site stabilization. Implementing ECDs will minimize erosion of disturbed soils and prevent the transportation of sediment outside the construction ROW and into environmentally sensitive areas such as wetlands, waterbodies, and agricultural lands. Erosion control devices should be employed as needed.

(5) WEED MANAGEMENT

A site specific IWMP should be developed once weedy species can be identified. Locations could be mowed, slope permitting, prior to flowering and seed head production of weedy species. Mowing will reduce competition with desirable species and allow greater opportunity for reclamation success. In addition to mowing, herbicides appropriate for the identified weedy species could be applied to eradicate any problematic species. Application timing and rates should follow the manufacturer's recommendations. Herbicide applications should be selective and avoid desirable native grass, forb, and shrub species.

RECLAMATION PLAN
LOAMY ECOZONE SITES

SITE DESCRIPTION

The Loamy Ecozone consists primarily of grassland used for livestock grazing, forage production, and wildlife. This ecozone covers approximately thirty-two (32.4) percent of the Demicks Lake Pipeline. The Loamy Ecozone is composed of tall and short/mid grasslands. Fine to medium soil textures characterize the Loamy Ecozone, which consists predominantly of clay loams, loams, silt loams, and silty clay loams over varying topography. Vegetation within this ecozone consists of diverse herbaceous plant communities where the dominant vegetation is grass. Pastures consist primarily of an alfalfa/grass mix and native range is primarily native and introduced grasses and forbs. These sites will be returned to a similar pre-disturbance land use following construction.

A recommended seed mix is provided for the Loamy Ecozone sites in Table 1. The native grass seed mix was developed using 60 pure live seed (PLS) per square foot, respectively. The Loamy Ecozone seed mix considers seed availability, original site composition, and the ability of species to thrive in this specific ecozone.

The Loamy Ecozone should present minimal challenges for reclamation due to desirable ecozone characteristics. Appropriate seedbed preparation methods, seeding practices, a suitable seed mix, and a site specific Integrated Weed Management Plan (IWMP) should help expedite reclamation success. The reclamation plan is provided on Page 2.

Table 1. Demicks Lake Pipeline Loamy Ecozone Site Seed Mix Recommendation.

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Western Wheatgrass	*Pascopyrum smithii*	4.8	12	20%
Needle-and-Thread	*Hesperostipa comata*	3.4	9.0	15%
Blue Grama	*Bouteloua gracilis*	0.48	9.0	15%
Green Needlegrass	*Nassella viridula*	2.2	9.0	15%
Sideoats Grama	*Bouteloua curtipendula*	2.1	9.0	15%
Little Bluestem	*Schizachyrium scoparium*	1.0	6.0	10%
Slender Wheatgrass	*Elymus trachycaulus*	1.6	6.0	10%
Total	**--**	**16**	**60**	**100%**

Notes:
1. Seed mix was developed for loamy soil conditions and fine to medium soil textures based on vegetation data. Seed mix may be adjusted based landowner preferences.

RECLAMATION PLAN
LOAMY ECOZONE SITES

(1) SOIL AMENDMENTS

Soil amendment recommendations are based on recent soil chemical analysis. It is recommended that the following fertilizer amounts be applied to areas within the Loamy Ecozone:

- Nitrogen – 20 pounds per acre
- P_2O_5 – 50 pounds per acre
- K_2O – 0 pounds per acre

(2) SEEDBED PREPARATION

These recommended seedbed preparation steps will aid in successful reclamation. Steps may be omitted, conducted in different order, or changed to optimize success and efficiency depending on field conditions, sub-soil properties, and local terrain.

- Rip subsurface soil, prior to topsoil application, to a minimum of 16 inches to reduce soil compaction and improve drainage. Ripping should be conducted using a double pass with a straight-shank agricultural ripper or parabolic ripper. The shanks on the back of a grader or dozer should NOT be used to alleviate soil compaction. Do not smooth the ROW with a dozer once ripped it is beneficial to have an irregular surface to help tie the topsoil and subsoil horizons together. Tillage can be used to break soil clods apart prior to topsoil application.
- Apply topsoil and soil amendments, discussed above, to improve the soil chemical characteristics and to supplement soil nutrients.
- Finally, till the site to a depth of 4.0 to 6.0 inches to incorporate soil amendments and to create a seedbed conducive to seedling establishment (disk and harrow, field cultivator, vibra-shank, or other alternative suitable to site conditions).

(3) SEEDING

Seeding should be conducted using a drill seeder suitable for the location's soils and capable of direct seed placement. Drill seeding should occur on the contour using a drill equipped with an agitator, double disc opener, wheel press, and depth bands to mix seed and ensure proper seeding depths. Seeds should be planted to the depth specified by the vendor to ensure proper germination and emergence. It is recommended that the seed be placed ⅛ to ½ inch deep. The Loamy Ecozone seed mix and rate are provided in Table 1.

(4) STRAW MULCHING

Application of straw mulch is recommended to reduce potential water and wind erosion. Recommended straw mulch application rates are between 1.5 to 2.0 tons per acre. This will provide ground coverage of approximately 80 to 90 percent of the ground surface prior to crimping. Once applied the straw mulch should be crimped into the soil using a straight disc crimper with approximate 8.0-inch spaced tines. Upon successful crimping the straw mulch should be standing vertically with approximately 40 to 60 percent of the ground surface covered. Straw mulch should be at least 6.0 inches in length. Straw mulch should be crimped sufficiently to cause vertical cover that will not be dislodged by light breezes.

(5) WEED MANAGEMENT

A site-specific IWMP should be developed once weedy species can be identified. Sites could be mowed prior to flowering and seed head production of weedy species. Mowing will reduce competition with desirable species and allow greater opportunity for reclamation success. In addition to mowing, herbicides appropriate for the identified weedy species should be implemented into the weed management plan to eradicate any problematic species. Application timing and rates should follow the manufacturer's recommendations. Herbicide applications should be selective and avoid desirable native grass, forb, and shrub species. It is recommended to avoid overgrazing during the establishment period to minimize competitive weedy species establishment.

RECLAMATION PLAN
SALINE ECOZONE SITES

SITE DESCRIPTION

The Saline Ecozone consists of land used primarily for forage production and grazing. The Saline Ecozone makes up approximately fourteen (13.8) percent of the Demicks Lake Pipeline. This ecozone occurs in topographically low areas, including alluvial fans and stream terraces, as well as on hillsides. This ecozone consists of fine textured soils (clay loams and clays) with characteristically elevated soil electrical conductivity (EC) and soil sodium adsorption ratio (SAR). Soils are moderately deep to deep (> 20 inches) and slope typically ranges from 0 to 8 percent. Vegetation of the Saline Ecozone is predominantly native/introduced rangeland grasses. These sites will be returned to a similar pre-disturbance land use following construction.

A recommended seed mix is provided for the Saline Ecozone in Table 1. The seed mix was developed using 80 pure live seeds (PLS) per square foot. This seed mix considers inherent soil properties and includes saline tolerant grass species to improve reclamation success.

One key obstacle in reclaiming the Saline Ecozone sites will be the elevated soil salinity and potential soil attributes associated with sodic soils (soil dispersion, poor soil structure, hard surface crust formation, and reduced infiltration). Additionally, fine textured soils with elevated soil clay contents can contribute to greater potential soil erosion and deteriorated soil structure. Deteriorated soil structure may result in hard, compacted soils that will limit infiltration and root growth. Ecozone appropriate soil amendments, seedbed preparation methods, seeding practices, a suitable seed mix, and a site specific Integrated Weed Management Plan (IWMP) should help expedite reclamation success. The reclamation plan is provided on Page 2.

Table 1. Demicks Lake Pipeline Saline Ecozone Sites Seed Mix Recommendation.

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Beardless Wildrye	*Leymus triticoides*	3.4	12	15%
Inland Saltgrass	*Distichlis spicata*	1.3	16	20%
Western Wheatgrass	*Pascopyrum smithii*	6.3	16	20%
Nuttall's Alkaligrass	*Puccinellia nuttalliana*	0.33	16	20%
Green Needlegrass	*Nassella viridula*	2.0	8.0	10%
Slender Wheatgrass	*Elymus trachycaulus*	3.3	12	15%
Total	**--**	**17**	**80**	**100%**

Notes:
1. Seed mix was developed for saline and fine textured soil conditions based on vegetation data. Seed mix may be adjusted based on landowner preferences.

RECLAMATION PLAN
SALINE ECOZONE SITES

(1) SOIL AMENDMENTS

Soil amendments are recommended to expedite reclamation success and create conditions that can better support seed germination and plant growth. Gypsum ($CaSO_4 \cdot 2H_2O$) is recommended to improve potential saline/sodic soil conditions within the Saline Ecozone and to reduce potential soil dispersion. It is recommended that 1.5 tons per acre gypsum be applied to soils within the Saline Ecozone. In addition, 5.0 tons per acre of cornstalks should be applied to the Saline Ecozone sites to improve soil structure and reduce potential soil dispersion of saline/sodic soils. To offset nitrogen immobilization due to the organic carbon additions, it is recommended that 75 pounds per acre of nitrogen be applied. Soil amendments should be incorporated post topsoil application to a depth of 4.0 to 6.0 inches.

- Gypsum – 1.5 tons per acre
- Cornstalks – 5.0 tons per acre
- Nitrogen – 75 pounds per acre
- P_2O_5 – 50 pounds per acre

(2) SEEDBED PREPARATION

These recommended seedbed preparation steps will aid in successful reclamation. Steps may be omitted, conducted in different order, or changed to optimize success and efficiency depending on field conditions, sub-soil properties, and local terrain.

- Rip subsurface soil, prior to topsoil application, to a minimum of 16 inches to reduce soil compaction and improve drainage. Ripping should be conducted using a double pass with a straight-shank agricultural ripper or parabolic ripper. The shanks on the back of a grader or dozer should NOT be used to alleviate soil compaction. Do not smooth the ROW with a dozer once ripped. It is beneficial to have an irregular surface to help tie the topsoil and subsoil horizons together. Tillage can be used to break soil clods apart prior to topsoil application.
- Apply topsoil and soil amendments, discussed above, to improve the soil physical and chemical characteristics and to supplement soil nutrients.
- Finally, till the site to a depth of 4.0 to 6.0 inches to incorporate soil amendments and to create a seedbed conducive to seedling establishment (disk and harrow, field cultivator, vibra-shank, or other alternative suitable to site conditions).

(3) SEEDING

Seeding should be conducted using a drill seeder suitable for the location's soils and capable of direct seed placement into fine textured soils. Drill seeding should occur on the contour using a drill equipped with an agitator, double disc opener, wheel press, and depth bands to mix seed and ensure proper seeding depths. Seeds should be planted to the depth specified by the vendor to ensure proper germination and emergence. It is recommended that the seed be placed ⅛ to ½ inch deep. The Saline Ecozone seed mix and rate are provided in Table 1.

(4) STRAW MULCHING

Application of straw mulch is recommended to reduce potential water and wind erosion. Recommended straw mulch application rates are between 1.5 to 2.0 tons per acre. This will provide ground coverage of approximately 80 to 90 percent of the ground surface prior to crimping. Once applied the straw mulch should be crimped into the soil using a straight disc crimper with approximate 8.0-inch spaced tines. Upon successful crimping, the straw mulch should be standing vertically with approximately 40 to 60 percent of the ground surface covered. Straw mulch should be at least 6.0 inches in length. Straw mulch should be crimped sufficiently to cause vertical cover that will not be dislodged by light breezes.

(5) WEED MANAGEMENT

A site-specific IWMP should be developed once weedy species can be identified. Sites could be mowed prior to flowering and seed head production of weedy species. Mowing will reduce competition with desirable species and allow greater opportunity for reclamation success. In addition to mowing, herbicides appropriate for the identified weedy species should be implemented into the weed management plan to eradicate any problematic species. Application timing and rates should follow the manufacturer's recommendations. Herbicide applications should be selective and avoid desirable native grass, forb, and shrub species. It is recommended to avoid overgrazing during the establishment period to minimize competitive weedy species establishment.

RECLAMATION PLAN
SANDY ECOZONE SITES

SITE DESCRIPTION

The dominant characteristic of the Sandy Ecozone is coarse soil textures consisting primarily of sandy loams. The Sandy Ecozone covers approximately six (6.3) percent of Demicks Lake Pipeline. These soils can be found on slopes ranging from 0 to 30 percent and tend to be well- to excessively drained. Vegetation and land use within the Sandy Ecozone includes pasture and native range consisting of both native and introduced grasses and forbs. These sites will be returned to a similar pre-disturbance land use following construction.

A recommended seed mix is provided for the Sandy Ecozone in Table 1. The seed mix was developed using 60 pure live seeds (PLS) per square foot and considers seed availability, original site composition, and the ability of species to thrive in this specific ecozone.

One key obstacle in reclaiming the Sandy Ecozone sites will be elevated sand contents and coarse soil textures, which will contribute to lower soil water holding capacity and moisture availability for seed germination and seedling establishment. Ecozone appropriate soil amendments, seedbed preparation methods, suitable seed mixes, seeding practices, and a site specific Integrated Weed Management Plan (IWMP) should help expedite reclamation success. The reclamation plan is provided on Page 2.

Table 1. Demicks Lake Pipeline Sandy Ecozone Sites Seed Mix Recommendation.

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Western Wheatgrass	*Pascopyrum smithii*	4.8	12	20%
Sideoats Grama	*Bouteloua curtipendula*	2.1	9.0	15%
Canada Wildrye	*Elymus canadensis*	2.3	6.0	10%
Needle-and-Thread	*Hesperostipa comata*	3.4	9.0	15%
Sand Dropseed	*Sporobolus cryptandrus*	0.10	12	20%
Little Bluestem	*Schizachyrium scoparium*	1.0	6.0	10%
Slender Wheatgrass	*Elymus trachycaulus*	1.6	6.0	10%
Total	**--**	**15**	**60**	**100%**

Notes:
1. Seed mix was developed for sandy soil conditions and coarse soil textures based on vegetation data. Seed mix may be adjusted based on landowner preferences.

RECLAMATION PLAN
SANDY ECOZONE SITES

(1) SOIL AMENDMENTS

Soil amendments are recommended to expedite reclamation success and create conditions that can better support seed germination and plant growth. To improve soil structure and organic matter content it is recommended that 5.0 tons per acre of cornstalks be applied to sandy sites. Improved soil structure and organic matter content in coarse textured soils will increase the soil's water holding capacity and nutrient retention. The use of corn stalk mulch can be omitted in some areas of the Sandy Ecozone if it is determined that sand content does not warrant the use. To offset nitrogen immobilization due to the organic carbon additions, it is recommended that 75 pounds per acre of nitrogen be applied. The cornstalks and nitrogen should be applied and incorporated post topsoil application to a depth of 4.0 to 6.0 inches.

- Nitrogen – 75 pounds per acre or 20 pounds per acre without cornstalks
- P_2O_5 – 50 pounds per acre
- K_2O – 0 pounds per acre

(2) SEEDBED PREPARATION

These recommended seedbed preparation steps will aid in successful reclamation. Steps may be omitted, conducted in different order, or changed to optimize success and efficiency depending on field conditions, sub-soil properties, and local terrain.

- Rip subsurface soil, prior to topsoil application, to a minimum depth of 16 inches to reduce soil compaction and improve drainage. Ripping should be conducted using a double pass with a straight-shank agricultural ripper or parabolic ripper. The shanks on the back of a grader or dozer should NOT be used to reduce soil compaction. Do not smooth the ROW with a dozer once ripped it is beneficial to have an irregular surface to help tie the topsoil and subsoil horizons together. Tillage can be used to break soil clods apart prior to topsoil application.
- Apply topsoil and soil amendments, discussed above, to improve soil structure and to supplement soil nutrients.
- Finally, till the site to a depth of 4.0 to 6.0 inches to incorporate soil amendments and to create a seedbed conducive to seedling establishment (disk and harrow, field cultivator, vibra-shank, or other alternative suitable to site conditions).

(3) SEEDING

Seeding should be conducted using equipment appropriate for soil conditions. On coarse textured soils of moderate slope an imprint seeder could be used to establish microclimates for seed placement and water retention. Any method that would encourage water retention will benefit seedling establishment in coarse textured soils. Imprint seeding will also help protect young newly emerged plants from wind damage and moving sand particles. If imprint seeding is not an option, seeding should be conducted using a drill seeder capable of direct seed placement in coarse soil textures. Drill seeding should occur on the contour using a drill equipped with an agitator, double disc opener, wheel press, and depth bands to mix seed and ensure proper seeding depths. Seeds should be planted to the depth specified by the vendor to ensure proper germination and emergence. It is recommended that the seed be placed no deeper than ½ inch. The Sandy Ecozone seed mix and rate are provided in Table 1.

(4) STRAW MULCHING

Application of straw mulch is recommended to reduce potential water and wind erosion and to stabilize soils. Recommended straw mulch application rates are between 1.5 to 2.0 tons per acre. This will provide ground coverage of approximately 80 to 90 percent of the ground surface prior to crimping. Once applied the straw mulch should be crimped into the soil using a straight disc crimper with approximate 8.0-inch spaced tines. Upon successful crimping the straw mulch should be standing vertically with approximately 40 to 60 percent of the ground surface covered. Straw mulch should be at least 6.0 inches in length. Straw mulch should be crimped sufficiently to cause vertical cover that will not be dislodged by light breezes. Straw mulch should not be used in areas where seed is imprinted.

(5) WEED MANAGEMENT

A site specific IWMP should be developed once weedy species can be identified. Problematic locations could be mowed prior to flowering and seed head production of weedy species. Mowing will reduce competition with desirable species and allow greater opportunity for reclamation success. In addition to mowing, herbicides appropriate for the identified weedy species could be applied to eradicate any problematic species. Application timing and rates should follow the manufacturer's recommendations. Herbicide applications should be selective and avoid desirable native grass, forb, and shrub species.

ATTACHMENT A

Soil Data Demicks Lake Pipeline

Sample ID	pH	Ec_e	SAR	N	P	K	OM
		dS/m		lb/acre	ppm		%
0001	8.0	0.71	0.03	5	2	174	3.7
0007	8.1	0.58	0.52	8	2	181	3.9
0014	7.3	0.61	0.03	10	3	452	4.9
0021	8.0	0.64	0	4	2	221	3.9
0029	7.6	0.52	0	6	4	229	3.8
0035	8.0	1.0	0	16	13	361	4.8
0042	7.9	0.86	0	10	2	257	3.9
0049	8.9	1.2	8.3	3	2	159	1.5
0056	7.2	0.64	0	12	11	335	5.3
0063	7.7	1.01	0	17	6	403	7.9
0070	7.9	0.95	0	17	5	286	3.1
0077	7.1	0.61	0.03	16	6	266	7.6
0084	7.8	0.74	0	12	4	280	5.3
0091	7.9	0.77	0	8	4	175	3.8
0098	7.7	0.58	0	4	4	141	4.7
0099	8.0	0.83	0	8	3	240	4
0104	8.2	0.89	0	6	3	187	3.3
0113	8.5	0.61	4.0	13	4	186	2.3
0121	9.0	5.5	22	9	4	157	2.2
0126	6.9	0.64	0.03	11	5	281	4.3
0133	7.6	0.77	0	8	4	228	4.7
0140	7.2	0.58	0.03	3	3	219	3.8
0147	7.8	1.0	0.65	5	3	223	3.1
0161	7.8	0.8	0	7	4	222	4.5
0168	7.8	0.89	1.6	10	3	277	3.9
0175	8.6	1.1	9.1	7	2	162	1.8
0298	5.9	0.15	0	9	16	309	2.8
0364	7.5	0.80	0	13	3	217	3.2
0371	7.4	0.31	0.03	8	4	193	2.4
0378	7.3	0.22	0.03	4	3	152	1.5
0392	8.4	0.89	5.0	6	3	212	2.2
0399	7.9	0.64	0	11	3	131	2.2
0406	7.7	0.12	0.65	3	4	49	0.5
0413	7.6	0.64	3.6	18	43	326	3.9
0420	7.0	0.09	0.28	3	2	207	1.7
0427	7.9	0.52	0	14	3	56	1.4
0434	6.9	0.64	0.65	31	6	206	2.6
0438	6.4	0.58	1.5	30	9	218	2.5
0448	6.3	0.37	0	10	5	192	2

Sample ID	pH	Ec_e	SAR	N	P	K	OM
		dS/m		lb/acre	ppm		%
0455	5.7	0.64	0.03	56	8	476	4.3
0469	7.8	1.3	0	40	4	306	3.5
0470	8.0	1.0	0.15	22	5	291	3.9
0483	8.0	1.2	0.40	63	31	899	3.1
0490	6.7	0.71	0	34	3	316	3.2
0512	8.0	0.61	0	4	22	173	2.1
0518	7.7	1.4	0	83	14	331	3.1
0525	7.7	1.3	0	52	19	292	3.1
0532	8.0	0.77	0	14	5	180	2.7
0539	5.6	0.58	0.15	32	30	293	5
0541	7.7	11	25	4	16	227	4.3

Notes:
1. Soil sample analytical results from soil samples collected during the fall of 2018.
2. Red highlighted cells could potentially impair reclamation success.

Soil Data Demicks Lake Pipeline

Sample ID	pH	Ec_e	SAR	N	P	K
		dS/m		lb/acre	ppm	
BEISIGL-FLASHER-TELFER	7.8	0.63	0.60	16	13	185
BELFIELD-SAVAGE -DAGLUM	7.8	0.66	0.60	29	15	331
BRANDENBURG-CABBA-DOGTOOTH	7.4	0.74	0.50	26	9	329
CABBA-BADLAND	8.3	6.2	19	4	3	101
CABBA-CHAMA-SEN	7.7	0.83	0.70	44	10	279
CABBA-CHAMA-SHAMBO	7.8	1.1	0.90	35	7	211
CHAMA-SEN-CABBA	7.7	0.85	0.80	43	7	229
DAGLUM-BELFIED	7.8	1.2	1.6	8	7	229
DOGTOOTH-JANESBURG	7.8	1.4	3.8	10	7	255
DOGTOOTH-JANESBURG-CABBA	7.8	1.1	2.1	22	9	254
FARNUF	7.7	0.56	0.40	15	15	340
KORCHEA	7.7	0.90	0.60	30	14	477
LAWTHER	7.8	0.68	1.4	19	18	433
REEDER-FARNUF	7.8	0.63	1.0	13	11	239
REGENT-JANESBURG	7.8	1.3	1.7	12	6	174
RHOADES-DAGLUM	7.5	0.91	1.5	8	9	290
SAVAGE	7.7	0.90	0.60	32	15	348
VEBAR-COHAGEN	7.4	1.4	0.80	91	15	506
ZAHL-CABBA-WILLIAMS	7.2	0.94	0.30	17	6	310

Notes:

1. Soil sample analytical results from soil samples collected during the fall of 2015. Soil samples were collected as part of the Garden Creek Loop project for ONEOK.
2. Red highlighted cells could potentially impair reclamation success.

APPENDIX B

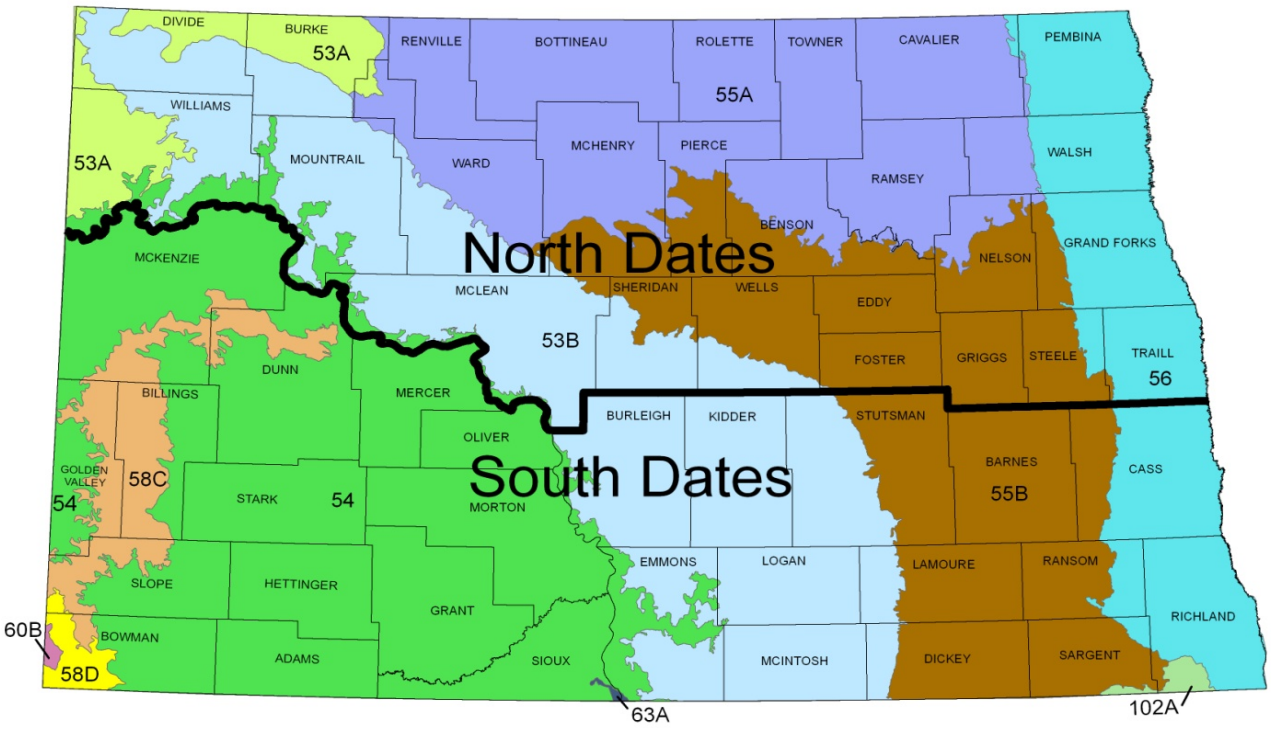
NRCS Herbaceous Vegetation Establishment Guide

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Herbaceous Vegetation Establishment Guide

Seeding Dates:

Seeding dates are based on climatic records, research, and experience; and represent optimum periods for grass and legume establishment. These dates should provide for adequate development of adventitious roots prior to stressful periods, such as hot, dry summers and cold, open winters. The following table shows recommended seeding dates by Major Land Resource Areas (MLRAs). Variation from these dates plus or minus 5 days may be made if justified by moisture and temperature conditions.



Seeding Dates		
Species Type and Season of Planting	**NORTH** (53A, N.1/2 53B, 55A, N. ½ 56, N. 1/3 55B)	**SOUTH** (58C, 58D, 54, S. ½ 53B, S. 2/3 55B, S. 56)
Cool Season Species		
Spring[3]	Prior to May 20	Prior to May 10
Late summer [1]	August 10 to September 1	August 10 to September 15
Late fall (dormant) [2, 3]	See footnote [2]	See footnote [2]
Warm Season Species		
Spring	May 10 to June 25	May 10 to June 25
Warm/Cool Season Mix		
Spring	May 1 to June 15	April 20 to June 1

[1] If legumes are part of a mixture, seed by August 25th. For winter survival, it is essential that alfalfa plants reach the 6-leaf stage prior to fall dormancy. Alfalfa requires 6-8 weeks growth after emergence to develop the 6-leaf stage.

[2] Seeding may occur once soil temperatures drop to 40º Fahrenheit for a minimum of 5 consecutive days (usually after November 1) based upon North Dakota Agriculture Weather Network http://ndawn.ndsu.nodak.edu/index.html or actual field measurements at a depth of 2 inches.

[3] Pollinator plantings consisting of forbs only (no grasses) will be seeded during the spring or dormant seeding windows. Pollinator plantings consisting of forbs and grass mixtures will be seeded during the appropriate seeding window for the grass component of the mixture.

Seedbed Preparation:

A seedbed will be prepared that is free of competing vegetation and is not subject to excessive erosion. A firm seedbed will be provided so the seed is placed at the designed depth. **IT SHOULD BE FIRM ENOUGH SO THAT ADULT FOOTPRINTS ARE HARDLY VISIBLE**.

The presence or absence of weed populations, especially noxious weeds, will impact seedbed preparations. Each field should be evaluated for weed pressure. Seeding on fields with significant weed populations will be delayed until weeds are controlled. This may mean a protective cover crop may need to be planted.

When planning a seeding, the previous two years of herbicide application should be considered. Any potential carryover problems should be addressed by delaying seeding, establishing a cover crop, and/or changing species to be planted. If a cover crop is necessary, refer to part 6 of this tech note.

Seedbed alternatives:

No-Till Method - Seeding into standing stubble of a previous crop without further seedbed preparation. Excess straw or chaff should be removed prior to seeding. Use of harvest equipment, which spreads straw along a minimum of 80 percent of the header width, will prevent excess chaff problems. If weeds or excessive volunteering of previous crop is present, control with appropriate herbicide(s) in accordance with product label directions and current recommendations from North Dakota State University Cooperative Extension Service, ND Weed Control Guide, Cir. W-253 Rev.

Rye produces an allelopathic agent that may inhibit germination in many grass species. If possible, avoid seeding into rye stubble or heavy rye residue. Other commonly grown crops provide good cover and do not inhibit germination.

Cover Crop Method - Plant a cover crop (high residue producing crop) of oats, barley, flax, grain sorghum, millet, or sudangrass during the growing season before seeding perennial forages if existing cover is insufficient to control erosion. If the cover crop method is to be used, see part 7.

Clean-Till Method - Seed into a new, clean tilled, firmly packed seedbed. If erosion or potential climatic factors are a potential concern, a cover crop may be used. See part 6 if a cover crop is to be used.

Seeding Equipment:

Seeding equipment that ensures proper seed placement and good seed-soil contact will be used. Modern grass seeding attachments that allow for proper seed flow, seed placement and soil packing are needed to ensure a successful seeding.

Slower seeding speeds should be used for fluffy or rough-coated seed species. Three to five miles per hour should be the seeding speed for most types of grass drills. Seeding speeds in excess of 6 miles per hour may result in uneven or inconsistent grass and legume stands.

If a carrier is needed to help feed seed through the drill cracked corn or rolled oats may be added to the mixture.

Grass Drill

Grass drills are specifically designed and equipped to properly meter and place various grass, legume and/or forb seed and share the following design characteristics:

- Different seed boxes are normally required to handle the three types of grass seed commonly used. This includes the relatively clean, smooth seed characteristic of many cool-season grasses, the chaffy or trashy seed characteristic of many warm-season grasses, and fine, smooth seed, characteristic of legumes or grasses such as switchgrass, hard fescue, or reed canarygrass. Seed boxes having the capability of seeding chaffy or awned grasses (i.e. blue grama, bluestems, and indiangrass) are needed, only if such species are planned in the seeding mixture; likewise, fine-seed or legume seed boxes are needed, only if such species are to be seeded.
- Agitators or similar mechanisms that prevent bridging of chaffy or trashy seed and ensure a constant flow of seed at the desired rate with uniform mixing of the species in the mixture.
- Feeder mechanism (picker wheels, fluted feed, etc.) that ensures uniform flow of all types of grass seed either separately or in a mixture.
- Oversized feeder tubes that allow constant flow of chaffy or trashy type seed from boxes to placement point (if such seed is used).
- Individually mounted, adjustable, spring loaded, double-disc openers.
- Depth bands or other depth-control systems that provide positive seed placement for final planting depth of one-fourth to one inch over varying degrees of seedbed firmness.
- Press/packer wheels that provide adequate covering and firming of soil over and around the seed for necessary seed/soil contact after proper seed placement. They should be mounted individually on each furrow opener or independently to follow behind each opener. Press/packer wheels are not intended to provide the basic "firm seedbed." The firm seedbed must exist before the drilling operation begins.
- Drill calibration should be completed for both grass and grain drills prior to seeding. Refer to item 4 for guidance in completing drill calibration.

Small Grain Drill

Free-flowing grass seed (i.e., wheatgrasses) and legume seed can be successfully planted with a small grain drill provided proper seeding depth can be maintained throughout the field. Seeding depth is the most limiting factor to seeding success and contributes to most of the seeding failures when using a grain drill. It is extremely important to have a firm seedbed when using a grain drill. Periodic inspections should be done to check seeding depth especially when seeding across different soil types. Seeding depth will vary under actual planting conditions.

Checking the drill frequently and hand mixing the seed is essential to achieving a properly blended seed mix and helps ensure that seeds of different sizes are seeded evenly across the field. Periodic feeder

mechanism adjustments are usually necessary to ensure proper seeding rates. A separate legume box is desirable for seeding small seeded species. (i.e. switchgrass, hard fescue, reed canarygrass, and alfalfa). Ensure that the grain drill's drop tubes are placed in front of the packer wheels to allow for proper seed-soil contact.

Chaffy or awned seeds (i.e. bluestems, indiangrass, and blue grama) are extremely difficult to plant with a grain drill. It is recommended that a grass drill be used for these types of grasses. Proper agitation is needed to prevent "bridging" of seed in the seedbox, and the feeder mechanism must be capable of metering a uniform flow of seed at the desired rate. Very few grain drills have this capability. Use of debearded seeds is strongly recommended when considering seeding chaffy or awned seeds in a grain drill.

Broadcast Seeder

Broadcasting may only be used when one or more of the following conditions apply to the planting area:

- Slope makes use of a drill impractical;
- Soil conditions prohibit effective use of a drill;
- Area is 5 acres or less;
- Seeding pure stands of alfalfa.

Broadcast plantings exceeding 5 acres require a variance approved by the State Resource Conservationist. All areas to be broadcast will have properly prepared seedbed (minimal residue cover with a smooth, firmly packed surface). Following the broadcast operation, an additional operation will incorporate the seed into the soil at the proper depth. This can include use of a drag or harrow, culti-packer, roller packer, or other suitable implement to cover and press the seed into the soil surface, to attain the goal of good seed to soil contact. All broadcast plantings will utilize 150% of full seeding rates listed in Table 1. Forbs planned for pollinator plantings which normally exceed 100% rates, will not exceed 150% of the full seeding rate.

Air-seeders

Some air-seeders and similar types of equipment may be used to seed free flowing grass seed (i.e., wheatgrasses) and legume seed if proper seeding depth can be obtained (as specified in part 6). However, seeding mixtures containing varying seed sizes may require an inert carrier to work properly in air-seeders. The shallow planting depths for grasses and legumes can be difficult to maintain with this type equipment. The equipment must be able to provide a uniform flow of seed at the desired rate. Use packer wheels or other suitable packing implement to press soil firmly around the seeds.

Drill Calibration:

Grass or grain drills may be calibrated using the following methods.

Bulk Weight Method:

Raise the drill's drive wheel and measure its circumference in **feet**. Next, measure the distance between seed spouts or disc openers. Use Table A to determine the number of revolutions (R) to turn the drive wheel for the row spacing and wheel circumference in feet (C) for your drill.

Table A

Row spacing in inches	No. of seed spouts to use	Turns of drive wheel	Row spacing in inches	No. of seed spouts to use	Turns of drive wheel
6	4	96/C = R	24	1	96/C = R
7	4	82/C = R	30	1	77/C = R
8	3	96/C = R	36	1	64/C = R
10	3	77/C = R	42	1	55/C = R
12	2	96/C = R	48	1	48/C = R

Place enough seed in the box to cover spouts from which you will collect seed. Turn the drive wheel until all spouts are feeding. Place a container under the correct number of seed spouts (as determined from the Table A) and turn the drive wheel the number of revolutions previously determined. Weigh the sample in grams. Multiply this weight by 0.5. The result is the pounds per acre at that setting. Make adjustments in the drill setting and continue trials until the desired seeding rate is obtained.

Remember: Seeding rates as determined by this method are in terms of **bulk seed**. You need to convert your seeding rate from pure live seed per acre to bulk seed per acre when using this calibration method.

Example:

Row spacing = 7 inches
Number of seed spouts = 4
Circumference of drive wheel = 6.8 ft
Revolutions of drive wheel (R) = 82/C
R = 82/6.8 = 12 revolutions
Bulk seeding rate is 15.1 lbs/ac. The drill is properly set when the 4 seed spouts yield 30 grams of seed after 12 revolutions of the drive wheel.
30 grams x 0.5 = 15 lbs/ac

Seeds Per Row Foot Method:

This method of determining the amount of seed being distributed by the seeding equipment is to count the number of seeds per foot of drill row while the machine is in operation.

Fill the drill with seed, make setting, and drive equipment over a hard ground surface or canvas. Count the number of seeds per foot of row and adjust until proper seeding rate is attained. Use Table B to determine the linear foot of row necessary to equal one square foot planted.

Table B

Row spacing in inches	Linear foot of row to equal one square foot
6	2.0 feet
7	1.8 feet
8	1.5 feet
10	1.2 feet
12	1.0 foot

To determine the proper number of seeds per foot of drill row for a specific seeding mixture; you will first need to calculate the bulk seeding rate for each species in the mix. From Table 1, calculate the number of seeds per square foot (ft^2) for each pound seeded (seeds per pound divided by 43,560ft^2/acre). Multiply the number of seeds per square foot for each pound seeded by the bulk seeding rate for each species. Total the resulting numbers to determine the number of seeds per square foot for the mixture.

For example: If you want to calibrate a drill for a mixture of 4.5 lbs. PLS/ac green needlegrass (80% purity and 70% germination) and 4.0 lbs. PLS/ac western wheatgrass (92% purity and 85% germination), we would calculate the bulk seeding rate for each species. Bulk seeding rate would be 8 lbs/ac for the green needlegrass and 5.1 lbs/ac for the western wheatgrass. Table 1 shows one pound of green needlegrass seed contains,

180,000 or 4.1 seeds/ft^2 for each pound seeded (180,000/43,560 ft^2/acre). Western wheatgrass has 112,000 seeds per pound or about 2.6 seeds/ft^2 for each pound seeded.

8 lbs/ac x 4.1 seeds/ft^2/lb. = 32.8 seeds/ft^2
5.1 lbs/ac x 2.6 seeds/ft^2/lb. = 13.3 seeds/ft^2

The total seeds per square foot for the mix would be 46. If the drill we are calibrating has 7-inch row spacing, the drill calibration would be 46 seeds per 1.8 feet of row length.

Seed Requirements:

A. All seed must meet the requirements of North Dakota State Seed Laws and Regulations. Information on State seed law is available at Chapter 4.1-53 of the ND Century Code or ND Seed Labeling Requirements. All seed, including homegrown seed, must be officially tested for purity and germination to enable pure live seed (PLS) calculations for determining the proper seeding rate. Tests must be made within a 12-month period, exclusive of the test month, prior to seeding. Recommend re-testing of seed within the 12-month period if stored improperly (high humidity and/or high temperature).

B. Use certified seed when available.

C. Approved Varieties and Seed Selection:

   a. Origin of non-varietal ('common') grass seed (and for those varieties not listed in table 2) of both native and introduced species for Forage and Biomass Planting is limited to ND, SD, NE, MT, MN, WY, and the Canadian provinces of Alberta, Manitoba and Saskatchewan.

   b. Origin of non-varietal ('common') native forbs and legumes (and for those varieties not listed in table 2) will originate or be grown in ND, SD, NE, MT, WY, ID, WA, OR, MN, WI, IA, CO, and the Canadian provinces of Alberta, Manitoba and Saskatchewan.

   c. Approved named varieties are located in Table 2. All approved seed varieties must originate from the contiguous United States or Canada. If the origin is from someplace other than the contiguous United States or the Canadian provinces of Alberta, Manitoba and Saskatchewan the producer or vendor must provide a DNA analysis that proves the variety is bona fide.

   d. Alfalfa named varieties must have a Winter Survival Index (WSI) of 2 or less to meet specifications. The term winter hardiness rating is sometimes used synonymously with winter survival index, a number of 2 or less is acceptable. If the winter hardiness rating uses letters (e.g. EH, extremely hardy) those will not be acceptable, only a number of 2 or less will be accepted. Origin of **non-varietal** ('common') alfalfa types and introduced legumes is limited to ND, SD, MN, MT, and the Canadian provinces of Alberta, Manitoba and Saskatchewan.

   e. Organic grass seed. Grass seed produced in a manner which meets the requirements of the National Organic Program is presently limited by availability and species. If organic grass seed which meets the requirements of Section 5 of this document is not available for the species identified on the ND-CPA-9, substitution of non-organically raised grass seed of the same species is permitted under Section 205.204(a) of the Code of Federal Regulations – National Organic Program.

   f. Legume seed should be inoculated with the proper culture just prior to seeding in order to increase the potential for nitrogen fixation by the plant.

D. No noxious weed amounts are allowed on any seed tags.

E. All seeding rates will be based on pure live seed (PLS). PLS can be calculated from information on the seed tag. PLS is derived by multiplying percent pure seed by percent germination (plus

percent hard and dormant seed, if present) and dividing by 100. See ND Extension Service Publication A-353 "Farmer's Guide for Seed Buying".

F. Additional information on seed tag interpretation can be found at:
http://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/ndpmcnl11797.pdf

G. Seed coating is considered inert matter which is reflected in the purity and inert percentages on the seed tag. The extra weight of the coating reduces the number of pure live seeds per pound, resulting in need to use higher seeding rates to achieve a full stand. Seed coating is considered inert matter which is reflected in the purity and inert percentages on the seed tag. The extra weight of the coating reduces the number of pure live seeds per pound, resulting in need to use higher seeding rates to achieve a full stand.
http://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/ndpmcnl12597.pdf

H. Total PLS pounds seeded must be within 10% of the planned design.

Seeding Depth:

Proper seeding depth is extremely important in successfully establishing native and introduced vegetation from seed. Native grasses, forbs, and shrubs need to be seeded at a shallow depth, as light plays a key role in the germination of many native species. Optimum seeding depths are ¼ to ¾ inch.

Cover and Companion Crops:

Cover Crops

A cover crop is an annual residue-producing crop, planted during the growing season(s) before seeding the perennial cover. Its purpose is to provide cover and residues to reduce evaporation, maintain cool soil temperatures, smother or reduce weeds, improve soil structure, enhance soil biology, trap snow, protect seedlings from extreme climatic conditions and control wind and water erosion.

See Practice 340 *Cover Crop* for guidance on selecting and managing cover crops. See Table 1: *Cover Crop – Common Species and Properties* for cover crop species characteristics, seeding rates, mycorrhizal association, etc.

Companion Crops

A companion crop is an annual that is planted with the perennial species. Seeding rates for companion crops are lower than normal seeding rates for those crops to reduce competition with the seeded perennial species.

Barley	10 lbs/acre
Oats	10 lbs/acre
Spring wheat	15 lbs/acre
Flax	7 lbs/acre

If used, the companion crop should be clipped above the new perennial seedlings and removed before it becomes competitive with the perennial species.

Management and Protection During Establishment:

Grazing

Do not graze until stand is fully established. This period will be a minimum of one full growing season. If an adequate stand has not established during the first growing season, or if seedlings do not have well-developed root systems with adventitious roots above the sown seed, then deferment should be extended through the second growing season. Grazing during the deferment period for weed control will be handled on a case-by-case basis provided no damage will be done to the seeded species.

Weed Control

During the establishment period, excessive amounts of competitive weeds will be controlled. Control weeds that compete with seedlings for sunlight and/or moisture during the growing season of the species planted. The first weed control operation will be needed as recommended or prior to weed seed maturity. Repeated weed control operations may be needed. Competitive weeds can be controlled either mechanically or chemically, or by a combination of these methods.

Mechanical - When controlling competitive weeds by clipping or mowing, adjust the equipment to cut above the new seedlings, and clip before the weeds set seed or mature. If the clippings are dense enough to smother the new seedlings, promptly remove clippings from the field.

Mowing Height – Eight to ten inches is the preferred stubble height. This will be over the top of most 1- to 2-year old forb and legumes species in early summer. Certain species are especially sensitive to clipping height and removal of the basal leaves may result in death of the plant. Some grass species such as switchgrass have high growing points, and once established should not be mowed at a height less than 10 inches until after the growing season.

Equipment – Swathers generally work best because of operator visibility, maneuverability, and ease of height adjustment. The operator can quickly raise or lower the platform. If the windrows are heavy enough to smother new seedlings they should be promptly removed. Sickle bar mowers are good if an adequate, consistent stubble height can be maintained. Rotary mowers can work well if they are set at the highest wheel setting. This will usually result in about an 8-inch clipping height. A level mowing height should be maintained and travel speed as appropriate to disperse the clippings. A sharp blade is essential.

Timing – Mowing must be done early enough in the season before most of the weed seed become viable and so the seeded species can still benefit from the "opened canopy" and put on new growth before fall. Multiple mowings in a season may be necessary with high density/biomass weed competition. Mowing in late summer or early fall provides little benefit to the seeded species and probably causes more harm than good. Check local/state regulations of individual conservation practices for the earliest allowable mowing dates.

Whenever new seedings are mowed some injury occurs to the seeded species. Young forb and legume seedlings are especially vulnerable and may be killed by driving over them. If weeds are a competition problem to the new seeding, then mowing is probably justified. Spot mowing is encouraged whenever possbile. This eliminates damage to the seeded species in areas where you don't have to mow, and maintains the taller wildlife cover. Spot mowing also creates "edge" structure which enhances landscape diversity within the field and may provide additional wildlife benefits.

Chemical - To control competitive weeds with herbicides use the appropriate herbicide(s) applied according to the manufacturer's label. The best control will generally be obtained when weeds are in the early stages of growth. Precautions should be taken to ensure that grass or legume seedlings are not

injured by the selected herbicide(s). Refer to North Dakota State University, ND Weed Control Guide (Cir. W-253 Rev.) for specific herbicide recommendations on forage crops in North Dakota. Noxious weeds must be controlled in accordance with State law.

Insect Control
Insects can be a threat to seedlings. Contact the County Extension Service for recommendations on control of specific insects affecting seeded species.

Cautions when using pesticides:
Some herbicides have residual activity that can adversely impact stand establishment of sensitive species or may have haying or grazing restrictions. Use of pesticides must be consistent with the manufacturer's label requirements and in accordance with State and Federal laws and regulations.

Guidelines for Stand Evaluation:
To determine adequacy of stands and to determine if reseeding or reinforcement seeding is required, use ND-CPA-9a, Stand Evaluation Worksheet, and the following guidelines:

It should be recognized that environmental factors, such as climate, insects, soils, and fertility affect time required for establishment of stands. Timeliness of precipitation, drought, extreme temperatures, severe winds, or late soil thaw can delay seedling emergence and/or development.

Seedling emergence should be relatively uniform over the area. The density of established plants required for an adequate stand will depend upon the planned purpose of the seeding and may vary from program-to-program. Consult program specific guidelines for additional information.

If specific practice or program guidelines are not available, stand counts should indicate a density of at least 3 to 5 seedlings per square foot of area. If at least 3 of the seedlings are rhizomatous species, the lower limit of 3 seedlings per square foot is adequate. The upper limit of 5 seedlings per square foot is necessary when all are bunch-type species or a mixture of rhizomatous and bunch-type species.

The adequacy of a stand will be based on density of established plants and stage of morphological development needed to ensure perenniality. To be considered established, a grass plant must have a well-developed adventitious root system and should exhibit signs of tillering or rhizome development. See Figure 1. An alfalfa plant must have a well-developed taproot with secondary and tertiary roots and a well-developed crown set below the soil surface and/or branch rhizome.

For more information on alfalfa seedling development, see these online publications:

University of Wisconsin, Alfalfa Germination & Growth, A-3681

NDSU, Time of Seeding for New Alfalfa Establishment, R648

Preliminary stand evaluation can be made 4 to 8 weeks after germination; evaluate for progress and management problems (i.e. weeds, insects, etc.) - not for final establishment.

All stands must go through at least one winter before making final stand evaluation.

Stands resulting from late fall (dormant) or spring seedings must go through the first growing season and subsequent winter; evaluation for final establishment can be made any time during the second growing season.

Stands resulting from late summer seeding cannot be evaluated for final establishment until the end of subsequent, full growing season.

Most stands will require 2 growing seasons to become established; warm-season species may require 3 growing seasons for establishment.

Stand counts may either be done using a 1-square foot frame or the row count method. If a frame count is used, all plants rooted within the frame should be counted. If the row count method is used, 2 side-by-side rows should be counted, the length to be determined by the row spacing. 6-inch row spacing would require the observer to count all plants in 2 rows for a length of 12 inches; a 7-inch row spacing would require a 10.3-inch length of 2 rows; and an 8-inch row spacing would require a 9-inch length.

A predetermined number of steps should be taken diagonal or perpendicular to the drill rows and the frame dropped at the toe of the foot on the final step. The frame should be dropped in a consistent alignment to the drill rows. The same procedure would be used when making a row count. Instead of dropping the frame at the toe of the foot, this point would then mark the beginning of the row count.

The number of samples required depends on factors such as stand uniformity and the number of species to be counted. Generally, a minimum of 10 counts (or frames) per 10 acres or less of field size would result in a representative sample. End rows, turn around areas or other areas that may have been double seeded should be avoided. Ten counts per 10 acres of field size should only be used as a starting point. For example, a 70 to 80 acre pasture planting with a uniform stand may be sampled accurately using 40 counts or less. Whatever the situation, enough counts must be taken so that a representative sample is obtained.

ND-CPA-9A, Stand Evaluation Worksheet, may be used to document the stand counts.

If evaluation reveals a marginal stand, consideration should be given to allowing a second growing season for establishment. Seedings that contain a high percentage of "hard seed" are more likely to produce new seedlings during the second growing season.

The alternative of a partial reinforcement seeding, in lieu of the full seeding rate, should be considered during the evaluations.

"Spot" seeding weak areas may be a logical alternative in the case of spotty or intermittent stands, in lieu of whole field reseeding. Grazing deferment should follow spot seedings.

Table 1. Full Seeding Rates [1,2]					
Species	**Seeds/Pound**	**MLRA 55 A/B & 56 [4]**		**MLRA 53 A/B, 54 & 58 C/D [4]**	
		Seed/SqFt	**#PLS/Ac**	**Seed/SqFt**	**#PLS/Ac**
Introduced Cool-Season Grasses					
Bromegrass					
Meadow (BRBI2)	80,000	30	16.5	25	13.5
Smooth (BRIN2)	135,000	25	8	20	6.5
Creeping foxtail (ALAR)	750,000	60	3.5	60	3.5
Hard fescue (FEBR7)	565,000	50	4	35	3
Timothy (PHPR3)	1,300,000	30	1	NR	NR
Wheatgrass					
Green (ELHO3)	135,000	46	14	33	10
Crested (AGCR)	175,000	28	7	25	6
Intermediate (THIN6)	88,000	20	10	17	8.5
Pubescent (THIN6)	88,000	20	10	17	8.5
Siberian (AGFR)	175,000	30	7.5	25	6
Tall (THPO7)	79,000	23	13.5	20	11
Wildrye					
Altai (LEAN3)	68,000	30	19	25	16
Dahurian (ELDA3)	86,000	20	10	17	8.5
Mammoth (LERA5)	55,000	30	24	25	20
Manystem (LEMU11)	150,000	30	8.5	25	7.5
Russian (PSJU3)	175,000	30	7.5	25	6
Native Cool-Season Grasses					
Bluejoint (CACA4)	4,480,000	50	0.5	50	0.5
Fowl bluegrass (POPA2)	2,080,000	48	1	48	1
Green needlegrass (NAVI4)	180,000	30	7.5	25	6
Mannagrass					
American (GLGR)	1,280,000	45	1.5	45	1.5
Fowl (GLST)	1,440,000	37	1	37	1
Needle and thread (HECO26)	115,000	25	9.5	25	9.5
Nutall alkaligrass (PUNU2)	2,108,000	50	1	50	1

Table 1. Full Seeding Rates [1,2]					
Species	**Seeds/Pound**	**MLRA 55 A/B & 56 [4]**		**MLRA 53 A/B, 54 & 58 C/D [4]**	
		Seed/SqFt	**#PLS/Ac**	**Seed/SqFt**	**#PLS/Ac**
Native Cool-Season Grasses (cont.)					
Porcupine grass (HESP11)	57,000	25	19	25	19
Prairie junegrass (KOMA)	2,315,000	50	1	50	1
Reed canarygrass (PHAR3)	530,000	40	3.5	40	3.5
Wheatgrass					
Bluebunch (PSSP6)	140,000	NR	NR	25	8
Slender, awned & bearded (ELTR7)	155,000	25	5.5	17	5
Streambank/Thickspike (ELLAL)	155,000	NR	NR	25	7
Western (PASM)	112,000	25	10	20	8
Whitetop (Sprangletop) (SCFE)	191,000	11	2.4	NR	NR
Wildrye					
Basin (LECI4)	140,000	NR	NR	25	8
Beardless (LETR5)	150000	30	8.5	25	7.5
Canada (ELCA4)	115,000	20	7.5	17	6.5
Virginia (ELSU)	96,000	20	10	NR	NR
Native Warm-Season Grasses					
Alkali sacaton (SPAI)	1,758,000	NR	NR	40	6
American sloughgrass (BESY)	1,150,000	25	0.9	25	0.9
Bluestem					
Big (ANGE)	176,000	30	7.5	25	6
Little (SCSC)	286,000	30	4.5	25	4
Sand (ANHA)	113,000	30	12	25	9.5
Buffalograss (BODA2)	50,000	30	26	25	23
Grama					
Blue (BOGR2)	750,000	40	2.5	30	2
Sideoats (BOCU)	180,000	30	7.5	25	6
Inland saltgrass (DISP)	520,000	35	5.5	35	5.5
Indian ricegrass (ACHY)	235,000	30	5.5	25	4.5
Indiangrass (SONU2)	193,000	30	7	25	5.5
Prairie cordgrass (SPPE)	183,000	30	7	30	7

Table 1. Full Seeding Rates [1,2]					
Species	**Seeds/Pound**	**MLRA 55 A/B & 56 [4]**		**MLRA 53 A/B, 54 & 58 C/D [4]**	
		Seed/SqFt	**#PLS/Ac**	**Seed/SqFt**	**#PLS/Ac**
Native Warm-Season Grasses (cont.)					
Prairie dropseed (SPHE)	224,000	25	5	25	5
Prairie sandreed (CALO)	275,000	30	5	25	4
Sand dropseed (SPCR)	5,680,000	70	0.5	70	0.5
Switchgrass (PAVI)	390,000	40	4.5	30	3.5
Native Grass-likes					
Fox sedge (CAVU2)	1,600,000	37	1	37	1
Slough sedge (CAAT2)	230,490	25	4.7	25	4.7
Native Forbs and Legumes					
American vetch (VIAM)	30,000	25	36	25	36
Aster					
Blue (SYLAL3)	880,000	30	1.5	30	1.5
Heath (SYER)	3,200,000	30	0.4	30	0.4
New England (SYNO2)	1,300,000	25	0.8	NR	NR
Black-eyed Susan (RUHI2)[3]	1,450,000	25	0.8	25	0.8
Black samson (ECAN2)	120,000	25	9	25	9
Blanket flower (GAAR)	157,000	25	7	25	7
Blue vervain (VEHA2)	1,488,000	34	1	34	1
Canada anemone (ANCA8)	128,000	29	10	29	10
Canada milkvetch (ASCAC6)	266,000	25	4	25	4
Canada tickclover (DECA7)	88,000	25	12.3	25	12.3
Columbine (AQCA)	362,000	25	3	25	3
Coneflower					
Grayhead (RAPI)	625,000	25	1.7	NR	NR
Prairie (Yellow) (RACO3)[3]	737,000	25	1.5	25	1.5
Cudweed sagewort (ARLU)[3]	4,000,000	25	0.3	25	0.3
Culver's root (VEVI4)	12,800,000	30	0.1	NR	NR
Cup plant (SIPE2)	22,400	10	9	NR	NR

Table 1. Full Seeding Rates [1,2]					
Species	**Seeds/Pound**	**MLRA 55 A/B & 56 [4]**		**MLRA 53 A/B, 54 & 58 C/D [4]**	
		Seed/SqFt	**#PLS/Ac**	**Seed/SqFt**	**#PLS/Ac**
Native Forbs and Legumes (cont.)					
Evening primrose (OEBI)	1,376,000	25.3	0.8	25.3	0.8
Gayfeather					
Dotted (LIPU)	136,000	25	8	25	8
Thickspike (LIPY)	136,000	25	8	NR	NR
False boneset (EUPE3)	2,560,000	25	0.4	25	0.4
Giant blue hyssop (AGFO)	1,440,000	25	0.8	25	0.8
Golden Alexander (ZIAU)	176,000	25	6.2	25	6.2
Goldenrod					
Canada (SOCA6)	4,600,000	25	0.2	25	0.2
Missouri (SOMI2)	1,998,000	25	0.5	25	0.5
Stiff (SORI2)	772,000	25	1.4	25	1.4
Tall smooth (SOGI)	700,000	25	0.5	25	0.5
Hoary vervain (VEST)	450,000	25	2.4	25	2.4
Illinois bundleflower (DEIL)	60,000	25	18	25	18
Ironweed (VEFA2)	385,000	25	2.8	25	2.8
Joe Pye weed (EUMAB)	1,520,000	25	0.7	25	0.7
Lewis flax (LILE3)	287,000	25	3.8	25	3.8
Milkweed					
Butterfly (ASTU)	67,000	25	16.2	25	16.2
Showy (ASSP)	85,000	25	13	25	13
Swamp (ASIN)	72,000	25	15	25	15
Partridge pea (CHFAF)	43,000	10	10	10	10
Plains coreopsis (COTI3)	1,650,000	25	0.7	25	0.7
Prairieclover					
Purple (DAPU5)	290,000	25	3.8	25	3.8
White (DAAL)	278,000	25	3.9	25	3.9
Prairie onion (ALST)	176,000	25	6.2	25	6.2
Prairie phlox (PHAN4)	304,000	28	4	28	4

Table 1. Full Seeding Rates [1,2]					
Species	**Seeds/Pound**	**MLRA 55 A/B & 56 [4]**		**MLRA 53 A/B, 54 & 58 C/D [4]**	
		Seed/SqFt	**#PLS/Ac**	**Seed/SqFt**	**#PLS/Ac**
Native Forbs and Legumes (cont.)					
Purple meadow rue (THDA)	176,000	25	6.2	25	6.2
Rocky Mountain Bee plant (CLSE)	64,000	29.6	20	29.6	20
Scarlet globemallow (SPCO)	500,000	25	2	25	2
Silvery lupine (LUAR3)	126,000	NR	NR	25	8
Shell-leaf penstemon (PEGR7)	273,000	25	4	25	4
Sneezeweed (HEAU)	2,100,000	25	0.4	25	0.4
Spiderwort					
Long bract (TRBR)	166,000	25	7	25	7
Prairie (TROC)	166,000	25	7	25	7
Sunflower					
False (HEHES)	60,000	25	18	25	18
Maximilian (HEMA2)	250,000	6	1	6	1
Sawtooth (HEGR)	630,000	25	1.7	NR	NR
Stiff (HEPAS)[3]	85,000	5	2.5	5	2.5
Western yarrow (ACMIO)[3]	2,800,000	25	0.4	25	0.4
Wild bergamot (MOFI)	1,200,000	25	0.9	25	0.9
Introduced Legumes					
Alfalfa (MESA)	210,000	30	6.5	25	5.5
Birdsfoot trefoil (LOCO6)	418,000	50	5	NR	NR
Cicer milkvetch (ASCI4)	134,000	30	10	25	8
Clover					
Alsike (TRHY)	680,000	50	3	50	3
Red (TRPR2)	275,000	30	5	NR	NR
Strawberry (TRFR2)	300,000	25	3.5	25	3.5
Sweet (MEOF)	260,000	25	4	20	3
White / Ladino (TRRE3)	800,000	25	1.5	25	1.5
Sainfoin (ONVI)	18,500	15	35 (hull)	15	35 (hull)

Table 1. Full Seeding Rates [1,2]					
Species	**Seeds/Pound**	**MLRA 55 A/B & 56 [4]**		**MLRA 53 A/B, 54 & 58 C/D [4]**	
		Seed/SqFt	**#PLS/Ac**	**Seed/SqFt**	**#PLS/Ac**
Native Shrubs					
Buffaloberry (SHAR)	41,000	4	4.2	4	4.2
Chokecherry (PRVIV)	5,000	3	26	3	26
False indigo (AMNA)	52,000	30	25	25	21
Golden currant (RIAU)	240,000	30	5.5	25	4.5
Juneberry (AMAL2)	82,000	30	16	25	13
Leadplant (AMCA6)	200,000	30	6.5	25	5.4
Prairie rose (ROAR3)	45,000	30	29	25	24
Saltbush					
Fourwing (dewinged) (ATCA2)	52,000	7	6	7	6
Gardner (ATGA)	110,000	30	12	25	10
Western snowberry (SYOC)	74,400	30	17.5	25	14.6
Winterfat (KRLA2)	150,000	30	8.5	25	7
WY big sagebrush (ARTRW8)	2,466,000	NR	NR	28	0.5

Footnotes for Table 1.

[1] See individual practice specifications (e.g. 550 Range Planting) for planning and application details and requirements.

[2] For additional information see http://plants.usda.gov/.

[3] These species are limited to no more than 2% of the seeding mix.

[4] See map on page 1 or Major Land Resource Areas (MLRA) of North Dakota in FOTG - Section I - Maps.

Table 2. Approved Named Varieties [1]		
Species	**Recommended Varieties for North Dakota**	
Introduced Cool-Season Grasses		
Bromegrass	Meadow	Fleet, Paddock, Regar, Montana, MacBeth, Cache
	Smooth[1]	Carlton, Signal, Magna, Manchar, Badger, Radisson, Rebound, Beacon, Barton, Baylor, Saratoga, Lincoln, AC Rocket, Bravo, Polar, Jubilee, Alpha, Cottonwood, York
Creeping foxtail		Retain, Garrison
Hard fescue		Discovery, Aurora, Reliant, Durar
Timothy		Climax, Itasca, Winmor, Comtal, Goliath, Timfor, Toro
Wheatgrass	Crested	
	Type: Standard	Nordan, RoadCrest, Summit
	Fairway	Ephraim, Ruff, Parkway, Fairway, Douglas
	Hybrid	HyCrest II, HyCrest, NU-ARS AC2
	Green	NewHy, AC Saltlander
	Intermediate	Reliant, Clarke, Slate, Chief, Oahe, Haymaker, Beefmaker, Manifest, Rush [4]
	Pubescent	Manska, Greenleaf, Luna
	Siberian	Vavilov, P-27
	Tall	Orbit, Platte, Jose, Alkar
Wildrye	Altai	Pearl, Eejay, Prairieland, Mustang
	Beardless	Shoshone
	Dahurian	Arthur, James
	Mammoth	Volga
	Manystem	Shoshone
	Russian	Mankota, Tetracan, Bozoisky Select, Swift, Bozoisky II, Cabree, Mayak
Native Cool-Season Grasses		
Bluejoint		Common
Fowl bluegrass		Common
Green needlegrass		Lodorm, AC Mallard, Fowler
Mannagrass	American	Common
	Fowl	Common
Needle and thread		Common, AC Sharptail
Nutall's alkaligrass		Common
Porcupine grass		Common
Prairie junegrass		Common
Reed canarygrass		Palaton, Venture, Vantage, Rise, Rival, Chiefton, Marathon
Wheatgrass	Bluebunch	Goldar, Secar, Anatone, P-7, Whitmax
	Slender awned, bearded	Adanac, Pryor, Revenue, Primar, Firststrike
	Streambank/ Thickspike	Bannock, Critana, Sodar, AC Polar, Elbee
	Western	Rodan, Walsh, Flintlock, Rosana, W.R.Poole, Recovery
Whitetop (Sprangletop)		Common
Wildrye	Basin	Trailhead, Magnar, Continental, Washoe
	Canada	Mandan
	Virginia	Omaha

Table 2. Approved Named Varieties [1]		
Species	**Recommended Varieties for North Dakota**	
Native Warm-Season Grasses		
Alkali sacaton		Common
American sloughgrass		Common
Bluestem	Big	Sunnyview, Bison, Bonilla, Bounty, Champ
	Little	Badlands, Itasca
	Sand	Goldstrike, Garden
Buffalograss		Bowie, Cody
Grama	Blue	Bad Rivean
	Sideoats	Killdeer, Pierre, Butte
Inland saltgrass		Common
Indian ricegrass		Rimrock, Nezpar
Indiangrass		Tomahawk
Prairie cordgrass		Red River
Prairie sandreed		Goshen, Bowman, Koch
Prairie dropseed		Common
Sand dropseed		Common
Switchgrass		Dacotah, Forestburg, Sunburst, Summer
Native Grass-likes		
Fox sedge (*Carex vulpinoidea*)		Common
Slough sedge (*Carex atherodes*)		Common
Native Legumes and Forbs		
American vetch		Common
Aster	Blue	Common
	Heath	Common
	New England	Common
Black-eyed Susan		Common
Black Samson		Bismarck
Blanket flower		Meriwether
Blue vervain		Common
Canada anemone		Common
Canada milkvetch		Sunrise
Canada tickclover		Common
Columbine		Common
Coneflower	Grayhead	Common
	Prairie (yellow)	Stillwater
Cudweed sagewort		Summit
Culver’s root		Common
Cup plant		Common
Evening primrose		Common
False boneset		Common
Giant blue hyssop		Common
Gayfeather	Dotted	Common
	Thickspike	Common

Table 2. Approved Named Varieties [1]		
Species	**Recommended Varieties for North Dakota**	
Native Legumes and Forbs (cont.)		
Golden Alexander		Common
Goldenrod	Canada	Common
	Missouri	Common
	Stiff	Common
Hoary vervain		Common
Illinois bundleflower		Common
Ironweed		Common
Joe Pye weed		Common
Lewis flax		Appar, Maple Grove
Milkweed	Butterfly	Common
	Showy	Common
	Swamp	Common
	Tall smooth	Common
Partridge pea		Common
Plains coreopsis		Common
Prairie onion		Common
Prairie phlox		Common
Purple meadow rue		Common
Prairieclover	Purple	Bismarck
	White	Antelope
Rocky Mountain Bee plant		Common
Scarlet globemallow		Common
Shell-leaf penstemon		Common
Silvery lupine		Common
Sneezeweed		Common
Spiderwort	Long bract	Common
	Prairie	Common
False sunflower	False	Common
	Maximilian	Medicine Creek
	Sawtooth	Common
	Stiff	Bismarck
Western yarrow		Great Northern, Eagle
Wild bergamot (Monarda)		Common
Introduced Legumes		
Alfalfa [2]		Winter Survival Index (WSI) of 2 or less [3]
Birdsfoot trefoil		Leo, Empire, Viking
Cicer milkvetch		Lutana, Monarch, Windsor
Clover	Alsike	Common
	Red	Common
	Strawberry	Common
	Sweet	Common
	White / Ladino	Common
Sainfoin		Eski

Table 2. Approved Named Varieties [1]		
Species	**Recommended Varieties for North Dakota**	
Native Shrubs		
Buffaloberry		Sakakawea
Chokecherry		Common
Currant	Golden	Common
False indigo		Survivor
Fourwing saltbush	Dewinged	Wytana, Snake River
Gardner saltbush		Common
Juneberry		Common
Leadplant		Common
Prairie rose		Common
Western snowberry		Trapper
Winterfat		Open Range
WY big sagebrush		Common

Footnotes for Table 2.

[1] See individual practice specification (e.g. 512 – Forage and Biomass Planting) for planning and application details and requirements.

[2] A partial list of grazable type alfalfas can be found in the NDSU report, "Developing Alfalfa Adapted to Grazing in the Northern Great Plains".

[3] The following web sites are approved for use in determining alfalfa varieties that are acceptable and planners are strongly encouraged to use these web sites for selecting acceptable varieties: http://www.alfalfa.org/ or http://www.extension.umn.edu/agriculture/forages/variety-selection-and-genetics/#legumes . Alfalfa named varieties must have a Winter Survival Index (WSI) of 2 or less to meet specifications. The term winter hardiness rating is sometimes used synonymously with winter survival index, a number of 2 or less is acceptable. If the winter hardiness rating uses letters (e.g. EH, extremely hardy) those will not be acceptable, only a number of 2 or less will be accepted.

Generally, the higher the fall dormancy score, the greater the production potential of the alfalfa variety. However, the higher FDS, the shorter the life span/persistence of the alfalfa variety. Origin of non-varietal ('common') alfalfa types is limited to ND, SD, MN, MT, and the Canadian provinces of Alberta, Manitoba and Saskatchewan.

NOTE: Approved varieties which may not be shown on these web sites include Alogonquin, Anik, Blazer, Champ, Drylander, Grim, Ladak, Ladak 65, Prowler, Rambler, Rangelander, Ramsey, Ranger, Spredor 2, Teton, Travois, Vernal, and Wrangler. Alfalfa varieties not listed here or shown on these web sites will require documentation from the distributor or developer to determine suitability. Consult the appropriate area or state office specialist for assistance as needed.

[4] Limited ND production trials indicate Rush intermediate wheatgrass is less productive than other approved intermediate varieties; therefore, Rush will be used for conservation cover plantings only. In addition, Rush is a Protected Plant Variety (PPV) and should only be available as commercial certified seed as designated by blue seed tag.

Table 3. Grass and Grass-like Species Characteristics									
Species	**Growth Characteristics [1,10]**	**Drought Tolerance [2]**	**Flood Tolerance [3]**	**Saline Tolerance (dS/m) [4]**	**Recovery After Harvest**	**Season Of Use [6]**	**Longevity [7]**	**Grazing Preference [8]**	**Stand Establishment [9]**
Introduced Grasses									
Bromegrass									
Meadow (BRBR14)	B/M	Fair	Fair	5-10	Good	Sp, F	Medium	High	Medium
Smooth (BRIN2)	R/M	Fair	Good	5-10	Good	Sp, F	Long	High	Rapid
Creeping foxtail (ALAR)	R/M	Poor	Good	10-15	Good	Sp, Su, F	Long	High	Medium
Hard fescue (FEBR7)	B/S	Good	Fair	NR	Good	Sp, F	Medium	Medium	Medium
Timothy (PHPR3)	B/M	Poor	Good	NR	Good	Sp, F	Short	Medium	Rapid
Wheatgrass									
Green (ELHO3)	B/M	Fair	Good	15-25	Good	Sp	Long	High	Medium
Crested (AGCR)	B/M	Good	Poor	10-15	Fair	Sp, F	Long	Medium	Rapid
Intermediate (THIN6)	R/M	Fair	Fair	10-15	Fair	Sp	Long	High	Medium
Pubescent (THIN6)	R/M	Fair	Fair	10-15	Fair	Sp	Long	High	Medium
Siberian (AGFR)	R/M	Good	Poor	NR	Fair	Sp, F	Long	Medium	Rapid
Tall (THPO7)	B/T	Fair	Good	15-25	Fair	Sp, F, W	Medium	Low	Medium
Wildrye									
Altai (LEAN3)	B/M	Fair	Good	15-25	Poor	Sp, F, W	Medium	Medium	Slow
Dahurian (ELDA3)	B/M	Fair	Fair	NR	Good	Sp	Short	Medium	Rapid
Mammoth (LERA5)	R/T	Good	Poor	NR	Fair	Sp	Long	Low	Slow
Manystem (LEMU11)	R/M	Fair	Fair	15-25	Poor	Su, F	Long	Medium	Slow
Russian (PSJU3)	B/M	Good	Fair	15-25	Good	Sp, F, W	Medium	High	Medium
Native Cool-Season Grasses									
Bluejoint fowlgrass (CACA4)	R/M	Poor	Good	NR	Fair	Sp,Su	Long	Medium	Medium
Fowl bluegrass(POPA2)	B/M	Poor	Good	Poor	Poor	Sp, F	Med	Low	Medium
Green needlegrass (NAVI4)	B/M	Good	Fair	NR	Good	Sp, F	Long	High	Medium
Mannagrass									
American (GLGR)	R/T	Poor	Good	NR	NR	NR	NR	NR	NR
Fowl (GLST)	R/T	Poor	Good	NR	Poor	NR	Short	High	Medium
Needle and thread (HECO26)	B/M	Good	Fair	NR	Fair	Sp	Long	Medium	Slow
Nutall's Alkaligrass (PUNU2)	B/S	Poor	Good	15-25	Fair	Sp	Long	High	Slow
Porcupinegrass (HESP11)	B/M	Good	Fair	NR	Good	Sp	Long	Medium	Slow
Prairie junegrass (KOMA)	B/S	Good	Poor	NR	Poor	Sp	Long	High	Slow
Reed canarygrass (PHAR3)	R/T	Fair	Good	5-10	Good	Sp, Su	Long	High	Medium
Wheatgrass									
Bluebunch (PSSP6)	B/M	Good	Poor	NR	Poor	Sp, Su, F	Long	High	Medium

Table 3. Grass and Grass-like Species Characteristics									
Species	**Growth Characteristics [1,10]**	**Drought Tolerance [2]**	**Flood Tolerance [3]**	**Saline Tolerance (dS/m) [4]**	**Recovery After Harvest**	**Season Of Use [6]**	**Longevity [7]**	**Grazing Preference [8]**	**Stand Establishment [9]**
Native Cool-Season Grasses (cont.)									
Wheatgrass (cont.)									
Slender/Awned/Bearded (ELTR7)	B/M	Good	Good	15-25	Fair	Sp, Su, F	Short	Medium	Rapid
Streambank/Thickspike (ELLAL)	R/M	Good	Fair	10-15	Fair	Sp. F	Long	Medium	Medium
Western (PASM)	R/M	Good	Good	15-25	Fair	Sp, Su, F	Long	Medium	Medium
Whitetop (Sprangletop) (SCFE)	R/T	Poor	Good	NR	NR	NR	Medium	NR	NR
Wildrye									
Basin (LECI4)	B/T	Good	Fair	NR	Fair	Sp, F	Long	High	Slow
Beardless (LETR5)	R/M	Fair	Fair	15-25	Poor	Su, F	Long	Medium	Slow
Canada (ELCA4)	B/M	Fair	Good	10-15	Fair	Sp, F	Short	Medium	Rapid
Virginia (ELSU)	B/M	Fair	Good	Poor	Poor	Sp	Short	Medium	Rapid
Native Warm-Season Grasses									
Alkali sacaton									
American sloughgrass (BESY)	St/S	Poor	Good	NR	Poor	NR	NR	NR	NR
Bluestem									
Big (ANGE)	R/T	Fair	Good	NR	Good	Su	Long	High	Slow
Little (SCSC)	B/M	Good	Poor	NR	Fair	Su, F	Long	Medium	Medium
Sand (ANHA)	R/T	Good	Fair	NR	Fair	Su, F	Long	High	Slow
Buffalograss (BODA2)	St/S	Good	Poor	10-15	Fair	Su	Long	High	Medium
Grama									
Blue (BOGR2)	B/S	Good	Poor	NR	Poor	Su	Long	High	Medium
Sideoats (BOCU)	R/S	Good	Poor	NR	Fair	Su, F	Long	High	Medium
Inland saltgrass (DISP)									
Indian ricegrass (ACHY)	B/M	Good	Poor	NR	Fair	Su	Long	High	Slow
Indiangrass (SONU2)	R/T	Fair	Good	NR	Good	Su, F	Long	High	Medium
Prairie cordgrass (SPPE)	R/T	Poor	Good	10-15	Fair	Sp	Long	Medium	Slow
Prairie sandreed (CALO)	R/T	Good	Poor	NR	Fair	Su, F	Long	Medium	Slow
Prairie dropseed (SPHE)	B/M	Fair	Good	NR	Fair	Su	Long	Medium	Slow
Sand dropseed (SPCR)	B/M	Good	Poor	NR	Poor	Su	Short	Low	Rapid
Switchgrass (PAVI)	R/T	Fair	Good	5-10	Fair	Su, F	Long	Medium	Medium
Native Grass-likes									
Fox sedge (CAVU2)	B/S	Poor	Good	None	Poor	Sp	Long	Medium	Medium
Slough sedge (CAAT2)	R/M	Poor	Good	None	Poor	Sp, Su	Long	Low	Low

NR = Not Rated

Table 4. Pollinator / Forb Species Characteristics											
Species	**Growth Character-istics[1,10]**	**Establish-ment List[12]**	**Drought Tolerance [2]**	**Flood Tolerance [3]**	**Saline Tolerance (dS/m) [4]**	**Recovery After Harvest**	**Season of Use [6]**	**Longevity[7]**	**Grazing Preference[8]**	**Stand Establish-ment[9]**	**Bloom Period[11]**
Native Forbs/Legumes											
American vetch (VIAM)	Pr/P	B	Good	Poor	Poor	NR	NR	Medium	NR	Medium	Er / Mi
Aster											
Blue (SYLAL3)	E/P	B	Fair	Poor	None	Poor	NR	Short	NR	NR	Mi / L
Heath (SYER)	E/P	B	Good	Fair	NR	NR	Su	Long	Low	NR	Mi / L
New England (SYNO2)	E/P/R	B	Poor	Good	NR	NR	NR	Long	NR	Medium	Mi / L
Black samson (ECAN2)	E/P	A	Good	Poor	Poor	NR	NR	Long	NR	Slow	Mi / L
Black-eyed susan (RUHI2)	E/P	A	Good	Good	Poor	NR	NR	Short	NR	Rapid	Mi / L
Blanketflower (GAAR)	E/P	A	Good	Fair	2-6	NR	NR	Medium	NR	Medium	Mi
Blue vervain (VEHA2)	E/P	B	NR	NR	NR	NR	NR	NR	NR	NR	Mi / L
Canada anemone (ANCA8)	P/R/M	B	Fair	NR	NR	Poor	NR	Medium	NR	NR	Er / Mi
Canada milkvetch (ASCAC6)	E/P	A	Fair	Good	2-6	NR	NR	Short	NR	Medium	Mi
Canada tickclover (DECA7)	E/P	B	Fair	Fair	NR	NR	Sp, Su	Medium	Medium	NR	Mi
Columbine (AQCA)	P/M	B	Fair	NR	NR	NR	NR	Medium	NR	Rapid	Er / Mi
Coneflower											
Grayhead (RAPI)	E/P/T	B	Good	Fair	NR	Poor	Sp, Su	Medium	Medium	Medium	L
Prairie (Yellow) (RACO3)	E/P	A	Good	Fair	2-6	NR	NR	Long	NR	Medium	Mi
Cudweed sagewort (ARLU)	E/P	B	Good	Poor	NR	NR	NR	Long	NR	Medium	L
Culver's root (VEVI4)	E/P	B	Fair	Fair	NR	NR	NR	Long	NR	NR	Mi
Cup plant (SIPE2)	E/P/T	B	Poor	Good	Poor	NR	NR	Long	NR	Medium	L
Evening primrose (OEBI)	Bi/M	B	Medium	NR	None	Slow	NR	Short	NR	Rapid	Mi / L
False boneset (EUPE3)	E/P	A	NR	NR	NR	NR	NR	NR	NR	NR	Mi /L
Gayfeather											
Dotted (LIPU)	E/P	A	Good	Poor	Poor	NR	NR	Long	NR	Slow	Mi / L
Thickspike (LIPY)	E/P	B	Poor	Fair	Poor	Poor	Su	Medium	NR	Medium	Mi / L
Giant blue hyssop (AGFO)	E/P/R	A	Poor	Fair	NR	NR	NR	Medium	NR	Rapid	Mi / L
Golden Alexander (ZIAU)	E/P	B	Poor	Fair	NR	NR	Sp, Su	Medium	NR	Medium	Er
Goldenrod											
Canada (SOCA6)	E/P	B	Fair	NR	NR	Fair	NR	Long	NR	NR	Mi / L
Missouri (SOMI2)	E/P	B	Good	NR	NR	Poor	NR	Short	NR	NR	Mi / L
Stiff (SORI2)	E/P/B	A	Good	NR	NR	Fair	NR	Medium	NR	NR	Er / Mi / L
Tall smooth (SOGI)	E/P/B	B	Medium	NR	NR	NR	NR	Medium	NR	NR	L
Hoary vervain (VEST)	E/P	B	NR	NR	NR	NR	NR	NR	NR	NR	Mi / L

Table 4. Pollinator / Forb Species Characteristics											
Species	**Growth Character-istics[1,10]**	**Establish-ment List[12]**	**Drought Tolerance [2]**	**Flood Tolerance [3]**	**Saline Tolerance (dS/m) [4]**	**Recovery After Harvest**	**Season of Use [6]**	**Longevity[7]**	**Grazing Preference[8]**	**Stand Establish-ment[9]**	**Bloom Period[11]**
Native Forbs/Legumes (cont.)											
Illinois bundleflower (DEIL)	E/P	A	Fair	Good	Poor	Fair	Sp, Su	Short	High	Rapid	Mi / L
Ironweed (VEFA2)	E/P	B	Fair	Good	NR	Fair	Sp, Su	Short	High	Rapid	Mi / L
Joe Pye weed (EUMAB)	E/P	B	Fair	Good	NR	NR	NR	Medium	NR	NR	Mi / L
Lewis flax (LILE3)	E/P	A	Good	Fair	2-6	NR	NR	Medium	NR	Rapid	Er
Milkweed											
Butterfly (ASTU)	E/P	A	Good	Poor	None	Poor	Sp, Su	Medium	NR	NR	Er / Mi / L
Showy (ASSP)	E/P	B	Low	NR	NR	Poor	NR	Long	NR	NR	Er / Mi
Swamp (ASIN)	E/P	B	Poor	NR	NR	Poor	NR	Medium	NR	NR	Mi / L
Partridge pea (CHFAF)	E/P	B	NR	NR	NR	NR	NR	NR	NR	NR	L
Plains coreopsis (COTI3)	E/A	A	Good	Good	NR	NR	NR	Short	NR	Rapid	Er / Mi
Prairieclover											
Purple (DAPU5)	E/P	A	Good	Fair	2-6	NR	NR	Medium	NR	Medium	Mi
White (DAAL)	E/P	B	Good	Fair	NR	NR	NR	Medium	NR	Medium	Mi
Prairie onion (ALST)	E/P	B	Good	Poor	NR	NR	NR	NR	NR	NR	Mi
Prairie phlox (PHAN4)	P/R/M	B	NR	NR	NR	NR	Sp, Su	Long	Fair	Slow	Mi
Purple meadow rue (THDA)	E/P	B	Poor	Good	NR	NR	NR	NR	NR	NR	Mi
Rocky Mountain Bee plant (CLSE)	A/L/T	B	Low	NR	NR	Slow	NR	Short	Low	Rapid	Er
Scarlet globemallow (SPCO)	E/P	A	Good	Poor	NR	Good	NR	Short	Fair	NR	Mi
Shell-leaf penstemon (PEGR7)	E/P	A	Good	Poor	NR	NR	NR	Short	NR	Medium	Er
Silvery lupine (LUAR3)	E/P	B	Fair	NR	NR	Good	NR	Short	NR	NR	Er / Mi
Sneezeweed (HEAU)	E/P	B	Poor	NR	NR	Poor	Sp, Su	Medium	NR	NR	L
Spiderwort											
Long bract (TRBR)	E/P/R	B	NR	NR	NR	NR	NR	NR	NR	NR	Er / Mi
Prairie (TROCO)	E/P	B	Good	Good	NR	NR	NR	NR	NR	NR	Er / Mi / L
Sunflower											
False sunflower (HEHES)	E/R	B	Good	NR	None	Poor	NR	Short	NR	NR	Mi / L
Maximilian (HEMA2)	E/P/R	A	Poor	Good	2-6	NR	NR	Long	NR	Medium	Mi /L
Sawtooth (HEGR4)	E/P/R	B	Fair	NR	NR	Poor	NR	Medium	NR	NR	Mi / L
Stiff (HEPAS)	E/P/R	B	Fair	NR	NR	Poor	NR	Long	High	Slow	Mi / L
Western yarrow (ACMIO)	E/P	A	Good	Good	2-6	NR	NR	Long	NR	Medium	Er / Mi
Wild bergamot (MOFI)	R/P	A	Poor	Good	NR	Poor	Sp	Medium	Medium	Medium	Mi / L
Introduced Legumes											
Alfalfa (MESA)	E/P	A	Good	Poor	5-10	Good	Sp, Su	Medium	High	Rapid	Er / Mi

Table 4. Pollinator / Forb Species Characteristics											
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Introduced Legumes (cont.)											
Birdsfoot trefoil (LOCO6)	Pr/P	A	Fair	Fair	5-10	Good	Sp, Su	Medium	High	Rapid	Er
Cicer milkvetch (ASCI4)	Pr/P	A	Good	Fair	5-10	Good	Sp	Long	High	Medium	Mi
Clover											
Alsike (TRHY)	Pr/P	A	Poor	Good	5-10	Good	Sp, Su	Short	High	Medium	Mi
Red (TRPR2)	Pr/P	A	Fair	Fair	5-10	Fair	Sp, Su	Short	High	Medium	Er / Mi
Strawberry (TRFR2)	E/P	A	Fair	Good	15-25	Fair	Sp, Su	Medium	Medium	Rapid	Er / Mi
Sweet (MEOF)	E/Bi	A	Good	Fair	5-10	Poor	Sp, Su	Medium	Medium	Rapid	Mi
White / Ladino (TRRE3)	Pr/P	A	Poor	Good	5-10	Fair	Sp, Su	Short	High	Medium	Er / Mi / L
Sainfoin (ONVI)	E/P	A	Good	Poor	NR	Fair	Sp, Su	Medium	High	Slow	Er
Native Shrubs											
Buffaloberry (SHAR)	E/P/R	A	Good	Poor	8-15	NR	NR	Long	NR	Slow	Er
Chokecherry (PRVIV)	E/P/R	A	Fair	Fair	4-8	NR	NR	Long	NR	Slow	Er
False indigo (AMFR)	E/P	A	Poor	Good	NR	NR	NR	Medium	NR	Slow	Mi
Golden currant (RIAU)	E/P	A	Good	Fair	8-15	NR	NR	Medium	NR	Slow	Er
Juneberry (AMAL2)	E/P/R	A	Poor	Good	4-8	NR	NR	Long	NR	Slow	Er
Leadplant (AMCA6)	E/P	A	Good	Poor	NR	NR	NR	Long	NR	Slow	Mi / L
Prairie rose (ROAR3)	E/P/R	A	Good	Fair	NR	NR	NR	Long	NR	Slow	Er / Mi
Saltbush											
Fourwing, dewinged (ATCA2)	E/P	A	Good	Poor	8-15	NR	NR	Long	NR	Slow	Mi
Gardner (ATGA)	E/P	A	Good	Poor	8-15	NR	NR	Long	NR	Slow	Mi
Western snowberry (SYOC)	E/P/R	A	Fair	Fair	NR	NR	NR	Long	NR	Slow	Er / Mi
Winterfat (KRLA2)	E/P	A	Good	Poor	NR	NR	NR	Long	NR	Slow	Er
WY big sagebrush (ARTRW8)	E/P	A	Good	NR	NR	NR	NR	Long	NR	NR	L

NR = Not Rated

Footnotes for Table 3 and Table 4.

[1]For additional information refer to the USDA Plants Database at: http://plants.usda.gov/.
[2]**Drought Tolerance**: Based on species being on an adapted site.
[3]**Flood Tolerance**: Good = 28-42 days; Fair = 14-28 days; Poor = less than 14 days. Creeping foxtail and reed canarygrass can tolerate up to 60 days.
[4]**Plant salinity tolerance** ratings are based upon saturated paste measurements in decisiemens per meter (dS/m). USDA-NRCS March 2007. Plant Materials for Salt-Affected Sites in the Northern Great Plains. Soil surface layer salinity measurements may be taken in the field using a 1:1 solution and a handheld EC Meter. To convert EC Meter readings to dS/m, multiply meter reading by 0.5.
[5]**Recovery after Harvest**: Based on adequate soil moisture.
[6]**Season of Use**: Sp – spring; Su – summer; F – fall; W – winter.
[7]**Longevity**: Short 1-4 years; Medium 5-10 years; Long – longer than 10 years with proper management.
[8]**Grazing Preference**: Based on season of rapid growth. Palatability is relative, depending on quantity, quality, and availability of other species. Grazing preference shown is for cattle and will vary for other species of domestic livestock or wildlife.
[9]**Stand Establishment**: Rapid – usually 1 growing season after planting; Medium – usually 1-2 growing seasons after planting; Slow usually 2-3 growing seasons after planting.

10.

Growth Characteristics	
A	Annual
B	Bunch
Bi	Biennial
E	Erect
M	Mid 18" - 36"
P	Perennial
Pr	Prostrate
R	Rhizomatous
S	Short < 18"
St	Stoloniferous
T	Tall > 36"

.

11.

Bloom Period		
Er	Early bloom period	April - May
Mi	Mid-bloom period	May - July
L	Late bloom period	July - September

[12]**Establishment List:** Pollinator species listed as “A” have demonstrated consistent establishment and persistence on various sites state-wide, based on field reviews of pollinator plantings. At least 75% of native forbs must be “A” Establishment list species. Additional species to consider for pollinator plantings are noted as “B”. Grass species do not have a rating.

Demick's Lake Pipeline Project

WEED MANAGEMENT PLAN

DRAFT

Prepared by:

December 2018

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LIST OF ACRONYMS AND ABBREVIATIONS

EI	Environmental Inspectors
MP	Milepost
ONEOK	ONEOK Bakken Pipeline, L.L.C.
Plan	Weed Management Plan
Project	Demicks Lake Pipeline Project
ROW	Right-of-Way
SPCC	Spill Prevention, Control, and Countermeasure Plan
USEPA	United States Environmental Protection Agency

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1.0 INTRODUCTION

Noxious weed control practices for the ONEOK Bakken Pipeline, L.L.C. (ONEOK) Demicks Lake Pipeline Project (Project) described in the *Weed Management Plan (Plan)* are being developed in consultation with the Richland County, Montana, and McKenzie County, North Dakota, Weed Districts.

2.0 GOALS AND OBJECTIVES

This Plan prescribes methods to prevent and control the spread of noxious weeds during and following construction of the Project. ONEOK and its contractors will be responsible for implementing the methods described in this Plan.

This Plan is applicable to the construction and operation of the proposed pipeline facilities, including the pipeline right-of-way (ROW), the proposed aboveground facilities, and extra temporary workspaces (ETW) disturbed during the construction and operation of the proposed facilities.

3.0 NOTIFICATION AND APPROVAL

ONEOK will execute the following notification procedure:

1. At least 15 days prior to ground-disturbing activity, submit this Plan and the Project *Revegetation Plan* to the Weed Control District in Richland County, Montana, and the McKenzie County Weed Board in North Dakota.
2. Allow the County weed agencies to identify revisions to bring the Plan into compliance with the district weed management plan.
3. Wait to commence ground-disturbing activity until the Plan is approved by the County weed agencies and signed by the presiding officer of the board and by the person or a representative of the agency responsible for the action. The Plan must be approved, with revisions if necessary, within 10 days of receipt by the Board.

4.0 NOXIOUS WEED SPECIES LISTS

A weed is commonly defined as a plant that grows out of place. A noxious weed is any plant officially designated by a federal, state, or county government as injurious to public health, agriculture, recreation, wildlife, or property (Sheley, Petroff, and Borman, 1999). Noxious weeds are opportunistic plant species that readily flourish in disturbed areas, thereby preventing native plant species from establishing successive communities.

4.1 MONTANA

Under Montana's County Weed Control Act, Title 7 Chapter 22 Part 21 (Montana Code Annotated 2011), Montana has officially designated 31 plant species as noxious, as of September 2018. Information on the species classified as noxious weeds list for the State of Montana can be accessed at: http://agr.mt.gov/Weeds.The 31 species are divided into four groups based on their presence and treatment requirements as detailed below:

Priority 1A species are not present or have very little presence in Montana and any detection of the species will require eradication, education, and prevention.

Yellow starthistle

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Priority 1B listed species have limited presence in Montana and if identified require eradication or containment and education.

Curlyleaf pondweed	Flowering rush	Rush skeletonweed
Dyers woad	Japanese knotweed complex	Scotch brome
Eurasian watermilfoil		

Priority 2A species are common in isolated areas of Montana. The management of these species is prioritized by weed management districts and requires eradication or containment where less abundant.

Blueweed	Orange hawkweed	Tansy ragwort
Hoary alyssum	Perennial pepperweed	Yellowflag iris
Meadow hawkweed complex	Tall buttercup	

Priority 2B listed species are considered abundant in Montana and widespread in many counties. Management of these species is prioritized by weed management districts and will require eradication or containment where less abundant.

Babysbreath	Houndstongue	Saltcedar (tamarix)
Canada thistle	Leafy spurge	Spotted knapweed
Common tansy	Oxeye daisy	Sulfur cinquefoil
Dalmatian toadflax	Russian knapweed	Whitetop
Diffuse knapweed	St. Johnswort	Yellow toadflax

Regulated Weeds:

Russian olive	Cheatgrass	Hrydrilla

4.2 NORTH DAKOTA

Invasive species in North Dakota are controlled and regulated under North Dakota Law (NDCC § 4.1-47-02). Counties and cities have the option to add additional weeds for enforcement only in their jurisdiction.

The State of North Dakota has 11 state-listed noxious and invasive weeds:

Absinth wormwood	Leafy spurge	Saltcedar
Canada thistle	Musk thistle	Spotted knapweed
Dalmatian toadflax	Purple loosestrife	Yellow toadflax
Diffuse knapweed	Russian knapweed	

McKenzie County, North Dakota, recognizes the following as invasive weeds:

Baby's breath	Common burdock	Houndstongue
Black henbane	Halogeton	

To comply with Montana's County Weed Control Act, Title 7 Chapter 22 Part 21 (Montana Code Annotated 2011), Section 7-22-2152 and with North Dakota Law (NDCC § 4.1-47-02), ONEOK has prepared this Plan specifying the weed management procedures to be implemented. Regulations also require that ONEOK reseed, plant, or otherwise manage the area to establish a beneficial plant cover. To this end, ONEOK has developed a *Revegetation Plan* that describes the methods to be used to

accomplish revegetation, the time and method of seeding, fertilization practices, and recommended plant species (POD Attachment 12). The Plan is subject to approval by the Richland County Weed District and the McKenzie County Weed Control Board.

5.0 NOXIOUS WEED SPECIES MANAGEMENT

This Plan is designed to:

- Treat specific infestation areas as recommended by weed districts prior to construction, pending landowner approval and seasonal limitations;
- Prevent the introduction and spread of weeds via construction equipment during construction;
- Contain weed seeds and propagules by preventing segregated topsoil from being spread to adjacent areas or along the construction right-of-way; and
- Treat infestations that may develop during operations.

5.1 IDENTIFICATION OF PROBLEM AREAS

ONEOK will work with the County Weed Control Boards and landowners to identify known locations of weed infestations in the Project area. In addition to infestation areas identified by the weed districts and landowners, additional areas containing noxious species may be identified prior to construction by the Environmental Inspectors (EI), which will be demarcated using color-coded flagging or signage on the construction ROW. Identification of existing noxious weed locations will alert environmental inspection and construction personnel to implement weed control measures during construction.

5.2 TREATMENT MEASURES

ONEOK will implement weed control measures, pending landowner approval of specific control measures, at identified infestation areas based on County weed agency input or by the EIs. Weed control measures may include the application of herbicide or mechanical, and/or alternative methods. The weed control measure chosen will be the best method available for the time, place, and species of weed as identified through consultation with the appropriate regulatory agencies. Should landowners not allow the use of herbicides, ONEOK will investigate potential alternative methods to be implemented, with approval by the landowners.

Herbicide application is an effective means of reducing the size of weed populations. Herbicide treatment methods will be based on species-specific and area-specific conditions (e.g., proximity to wetlands, open water, riparian areas or agricultural areas, and time of year) and will be coordinated with the local counties and regulatory agencies. Spot herbicide applications will be the preferred option. In areas of dense infestation, a broader application may be used. Pending the seasonal start of construction, preconstruction treatment of infestation areas may be conducted and will be controlled as described in section 7.1, to minimize the impacts on the surrounding vegetation. Preconstruction applications will be completed in accordance with applicable chemical contact times (as specified by the manufacturer) in advance of clearing and grading within the construction right-of-way. Treatment may be restricted in areas that are not readily accessible (e.g., difficult topography, saturated/inundated soils, etc.).

Mechanical control (e.g., mowing) can also be an effective control measure specifically for annual species (i.e., not for perennial rhizomatous species). The efficacy of mechanical control measures is dependent upon proper timing to cut the vegetation prior to the maturation of seed and may require multiple treatments during the growing season.

5.3 PREVENTIVE MEASURES

The following measures will be implemented to prevent the spread of noxious weeds.

- Prior to the beginning of construction of the project, all contractor vehicles and equipment (including timber mats) will be cleaned of soil and debris capable of transporting weed propagules. The contractor will maintain logs documenting the cleaning history of each piece of equipment and will make logs available to ONEOK, upon request. Contractor vehicles and equipment will be inspected and may require additional cleaning if necessary prior to mobilization to the ROW. Cleaning will be conducted using high pressure washing equipment or compressed air, and/or manually remove excess soil from the tracks, tires, and blades of equipment.
- ONEOK will install cleaning stations where the project crosses state lines. Stations will be sited at least 0.25 mile from perennial waterbodies. Station design and post-construction removal will be included in the contract bid documents. Stations will utilize high pressure water or compressed air and/or manually remove excess soil and plant debris from the tracks, tires, and blades of equipment prior to movement of equipment out of weed infested areas.
- Areas of the ROW where weed infestations are identified will be clearly marked prior to construction. In these areas, the contractor may elect to conduct full ROW topsoil stripping and will stockpile cleared vegetation and segregated topsoil along the ROW. The stockpiles will be identified as noxious weed stockpiles with signs and be maintained adjacent to the areas from which they were obtained to eliminate the transport of soil-borne noxious weed propagules to other areas along the ROW. During reclamation, the contractor will return topsoil and vegetative material to the areas from which they were obtained. Alternately, for annual weed species the contractor may elect to mow the infested area before the species begins seeding, thus eliminating the threat of spreading seeds during topsoiling and construction.
- In areas where full ROW topsoil stripping is implemented, equipment required for initial vegetation clearing and topsoil segregation will be cleaned using one of the methods described above prior to leaving the area. Once the topsoil has been segregated, subsequent equipment will not require cleaning, as it will not come into contact with noxious weeds or the topsoil containing weed seeds and propagules. Equipment required for topsoil restoration will also be cleaned prior to moving out of an infested area identified by Richland County, McKenzie County, or ONEOK.
- The contractor will ensure straw bales used to construct sediment control devices or used as mulch applications are certified weed free and obtained from approved certified sources as recommended by the County weed agencies.
- The contractor will ensure seed mixes and mulching materials used for revegetation are certified weed free and obtained from approved certified sources as recommended by County weed agencies.

5.4 POST-CONSTRUCTION TREATMENT METHODS

ONEOK's objective is to comply with the requirements to prevent the spread of noxious weeds and treat areas of the ROW where weed species form a significant portion of the vegetation community in comparison to adjacent undisturbed areas. ONEOK will implement established reclamation practices to prevent the spread of noxious weeds in reclaimed construction areas and pipeline ROW.

The contractor will implement reclamation procedures immediately following construction. Rapid reclamation and revegetation will discourage the establishment of noxious weeds. In areas of severe weed infestation, as determined by ONEOK's EI(s), ONEOK may elect to delay reclamation efforts and conduct intensive weed control prior to implementing reclamation procedures where allowed by applicable laws.

The contractor will limit the use of fertilizer in reclaimed areas. Fertilizer will only be applied where specified by the jurisdictional land management agency or the property owner.

In the event noxious weed species become established in the ROW, ONEOK will make good faith efforts to control weeds within the ROW and to work with adjacent landowners to prevent the spread of the species to adjacent lands. Post-construction weed control measures may include the application of herbicide or mechanical methods, pending landowner approval. Should ONEOK receive calls from landowners concerning noxious weed on the ROW, ONEOK will work with the landowners to determine the appropriate action to control the spread of the weeds. The weed control measure chosen will be the best method available for the time, place, and species of weed as determined through consultation with the appropriate regulatory agencies. ONEOK will control noxious weed species at ONEOK-managed aboveground facility sites to prevent the spread onto adjacent properties.

Individuals wishing to report noxious weeds on the ROW should call ONEOK at (605) 642-2197, extension #5. ONEOK staff will work with the County or landowner on an appropriate treatment method.

Post-construction herbicide applications will be conducted prior to seed maturation where possible. Applications will be controlled, as described in Section 7, to minimize the impacts on the surrounding vegetation. As discussed in Section 5.2, herbicide treatment methods will be based on species-specific and area-specific conditions (e.g., proximity to water, riparian areas or agricultural areas, and time of year) and will be coordinated with the local county and regulatory agencies. Spot herbicide applications will be the preferred option. In areas of dense infestation, a broader application will be used and a follow-up seeding program implemented according to the *Revegetation Plan*. The timing of subsequent revegetation efforts will be based on the persistence of the selected herbicide. ONEOK will communicate with a designated representative of each county to inform them of the location and type of treatment administered by ONEOK or its contractor.

Mechanical methods entail the use of equipment to mow weed populations for annual species (i.e., not for perennial rhizomatous species). Mechanical treatments will be conducted prior to seed maturation where required. If such a method is used, subsequent seeding will be conducted if necessary to re-establish a desirable vegetative cover that will stabilize the soils and slow the potential re-invasion of weeds.

During routine operations activities, if noxious weed species are identified that are not listed on the county or state weed lists, ONEOK will treat the affected area as quickly as possible.

ONEOK will consult with local agencies regarding the use of biological and alternate noxious weed control methods, which may be implemented through agreements with private landowners.

6.0 MONITORING

Following construction, weed infestations reported by landowners will be monitored as part of ONEOK's operations and maintenance surveys. EIs will periodically monitor the ROW to capture

revegetation growth. Should the EIs identify noxious weed populations in the ROW, they will report their findings to the ONEOK operations and maintenance division to determine the appropriate action to control the spread of the weeds. Noxious weed management will be conducted in accordance with state and county regulations.

7.0 HERBICIDE USE

7.1 HERBICIDE APPLICATION AND HANDLING

Herbicide application will be based on information gathered from consultations with local weed districts and state agencies as well as discussions with landowners. Before application, ONEOK or its contractor will obtain required permits from the local weed districts or the state agencies, and landowner approval. Herbicide application will be conducted in accordance with applicable laws and regulations by a state-licensed contractor, or via contract with the County Weed Board if requested by the landowner.

All herbicide applications will follow United States Environmental Protection Agency (USEPA) label instructions. Application of herbicides will be suspended when any of the following conditions exists:

- Wind velocity exceeds 6 miles per hour during application of liquid or granular herbicides;
- Snow or ice covers the foliage of noxious weeds; or
- Precipitation is occurring or is imminent.

Vehicle-mounted sprayers (e.g., handgun, boom, and injector) may be used mainly in open areas that are readily accessible by vehicle. Hand application methods (e.g., backpack spraying) that target individual plants may be used to treat small or scattered weed populations or in rough terrain. Calibration checks of equipment will be conducted at the beginning of spraying and periodically to ensure that proper application rates are achieved.

Herbicides will be transported to the project site daily with the following provisions:

- On-site herbicide quantities will be limited where practical;
- Concentrate will be transported in approved containers only, in a manner that will prevent tipping or spilling, and in a compartment that is isolated from food, clothing, and safety equipment;
- Mixing will be conducted in an upland area at a distance greater than 100 feet from open or flowing water and wetlands, greater than 200 feet from private wells, and greater than 400 feet from public wells. The property owner would be consulted about the presence and location of wells prior to herbicide application; and
- All herbicide equipment and containers will be maintained as needed and inspected for leaks daily.

7.2 HERBICIDE SPILLS AND CLEANUP

ONEOK has developed a *Spill Prevention, Control, and Countermeasure (SPCC) Plan* that incorporates all reasonable precautions to be taken to avoid spills of all potentially hazardous materials. In the event of a spill, cleanup will be immediate and will be conducted in accordance with the *SPCC Plan*.

Herbicide contractors are responsible to keep spill kits in their vehicles and in herbicide storage areas to allow for quick and effective response to spills. Items to be included in the spill kit are:

- Protective clothing and gloves;
- A minimum of 20 pounds of suitable commercial adsorbent and barrier materials;
- Plastic bags and bucket;
- Shovel;
- Fiber brush and screw-in handle;
- Dust pan;
- Caution tape; and
- Detergent.

Response to an herbicide spill will vary depending on the material spilled and the size and location of the spill. The order of priorities after discovering a spill are to protect the safety of personnel and the public, minimize damage to the environment, and conduct cleanup and remediation activities.

7.3 WORKER SAFETY AND SPILL REPORTING

All herbicide contractors will obtain and have readily available copies of the appropriate safety data sheets and the herbicide labels for the herbicides used. All herbicide spills will be reported in accordance with applicable laws and requirements. Further information regarding spill response and reporting is detailed in the *SPCC Plan*.

8.0 REFERENCES

Montana Department of Agriculture. 2017. Montana Noxious Weed List. Available online at: http://agr.mt.gov/Weeds. Accessed September 2018. Sheley, R., J. Petroff, M. Borman. 1999. Introduction to Biology and Management of Noxious Rangeland Weeds, Corvallis, OR.

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Demicks Lake Pipeline Project

DUST CONTROL PLAN

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Prepared by:

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Introduction

ONEOK Bakken Pipeline, L.L.C. (ONEOK) proposes to construct the Demicks Lake Pipeline Project (Project), which will consist of approximately 77 miles of 20-inch-diameter pipeline in North Dakota and Montana for the transport of natural gas liquids (NGLs) from ONEOK's Demicks Lake Natural Gas Processing Plant in McKenzie County, North Dakota, to a planned ONEOK-affiliate pipeline in Richland County, Montana. Approximately two (2) miles of the pipeline will be located in Montana.

Construction of the Project will involve land-disturbing activities, which can increase the susceptibility of soils to erosion caused by wind and water. Wind erosion can damage the productivity of the land by reducing soil moisture, altering soil structure, and carrying away soil nutrients and topsoil. A small amount of soil loss from wind erosion occurs naturally; however, human activity, such as pipeline construction, can dramatically increase soil loss due to wind erosion (fugitive dust) and potentially create conditions that could be detrimental to air quality and safety. Fugitive dust is a type of non-point source air pollution that can cause respiratory distress for construction workers, as well as for nearby residents and wildlife. Additionally, fugitive dust can create a safety hazard by obscuring visibility for equipment operators, construction personnel, and traffic on public roads near the Project.

ONEOK has developed this *Dust Control Plan* as a guide for construction and field personnel on implementation of appropriate measures to minimize and control the generation of fugitive dust during construction activities associated with the Project. It will be the responsibility of the Project contractors, working with ONEOK's field representatives, to identify activities that are generating dust and to at all times control airborne dust levels during construction activities to acceptable levels that are in compliance with any applicable standards, including those established by the Montana Department of Environmental Quality (MDEQ), the North Dakota Department of Health (NDDOH), and other regulating agencies and local ordinances.

Fugitive Dust Sources

ONEOK has attempted to identify the primary potential sources of fugitive dust, which include:

- Vegetation clearing activities;
- Initial grading of topsoil and subsoil, including cut-and-fill areas on steep sideslopes;
- Excavation, temporary side casting of spoil, and backfilling;
- Blasting;
- Grading associated with reestablishing contours and restoring segregated topsoil;
- Vehicle traffic down unimproved public and private access roads;
- Vehicle and equipment travel down the Project right-of-way (ROW);
- Open-bodied trucks hauling sand, soil, gravel, or other materials; and
- Activities at Project facilities such as material storage yards, contractor yards, parking areas, and aboveground facility locations.

ONEOK's Contractors and field representatives will identify activities that are generating fugitive dust, implement feasible dust abatement techniques or Best Management Practices (BMPs) to control dust, and maintain compliance with applicable fugitive dust regulations.

Fugitive Dust Control Measures

Dust suppression measures will be employed as necessary to control fugitive dust emissions where construction activities approach dwellings, farm buildings, commercial areas, and other areas occupied by people; where the pipeline parallels an existing road or highway; and where dust could compromise safety or become a public nuisance. This will also apply to access roads where dust raised by construction vehicles may irritate or inconvenience local residents. To minimize wind erosion and fugitive dust emissions during construction, ONEOK will implement the following reasonably available control measures:

- Disturb no more earth than required for construction to occur;
- Use dust abatement techniques (i.e., applying water or approved nontoxic chemical dust suppressants) on unpaved or un-vegetated areas or other areas susceptible to wind erosion, including the Project ROW, approved work areas, and unpaved roads, at least daily in areas of active construction. (Note: utilization of chloride-containing additives is limited to roads. Application of dust suppressants will be repeated as necessary and as determined by the Environmental Inspector (EI) or ONEOK representative);
- Water for dust control will be obtained from wells, municipal sources, and nearby rivers where the necessary water purchase agreements and permits required by federal, state, and local agencies for the procurement of water have been secured. No unapproved water sources will be used for Project activities, including dust control;
- Temporarily stockpiled soils (topsoil and spoil) will be sprayed with water or approved chemical dust suppressant to create a semi-hard protective layer to minimize wind erosion, if necessary, and as determined by the EI or ONEOK representative. (Note: utilization of chloride-containing additives is limited to roads and is not permitted on stockpiled soils);
- Appropriate precautions will be taken to prevent fugitive dust emissions caused by sand-blasting from reaching any residence or public building. Curtains of suitable material will be placed, as necessary, to prevent wind-blown particles from sand blasting operations from reaching any residence or public building;
- Emissions from construction equipment combustion, open burning, and temporary fuel transfer systems and associated tanks will be controlled to the extent required by state and local agencies through the permitting process;
- Project-related traffic speeds will be controlled on the construction ROW and within other Project facilities; where construction activities approach dwellings, farm buildings, commercial areas, and other areas occupied by people; where the pipeline parallels an existing road or highway; and on unpaved access roads. A speed limit of 25 mph will be followed on unimproved roads. Additional speed limit restrictions may be required by the property owner/tenant on private lands or by the county on public roads (e.g., posted speed limits);
- Speed limits will be decreased when excessive winds prevail and where sensitive areas such as public roads are adjacent to access roads or the construction ROW;

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- Open-bodied trucks carrying sand, soil, gravel, or other materials will be covered where necessary to prevent such materials from being expelled;
- Construction entrance/exit access locations onto paved roads will be cleaned at a minimum of once every 48 hours, or as needed or specified by the EI if materials are observed to be accumulating on the road surface;
- In construction areas adjacent to highways where dust could cause poor visibility, ONEOK will implement additional BMPs to minimize dust and potential safety issues. These additional BMPs may include applying water as close to earth-moving equipment as possible, slowing the speed of construction equipment, spacing equipment further apart, increased traffic control, or shutting down operations during high wind periods. ONEOK will coordinate with the appropriate highway authorities to ensure adequate traffic control measures are in place, including the possibility of using flaggers to control traffic if extreme low-visibility conditions develop;
- When opacity along dirt roads and the ROW exceeds 20 percent (objects partially obscured), construction activity will cease until dust control measures are employed; and
- Other dust control measures, such as the use of wind fences or berms, may also be implemented as needed.

The frequency of water application will largely depend on weather conditions. Additionally, ONEOK will attempt to begin cleanup and rough grading within 72 hours after backfilling and complete cleanup within 14 days after backfilling, weather and soil conditions permitting. If seasonal or other weather conditions prevent compliance with the time frames, the contractor will stabilize the ROW and maintain erosion and sediment control measures until cleanup can be conducted. Disturbed areas will be permanently revegetated in accordance with applicable permit conditions and landowner requirements.

Regulatory Applicability

The following agencies are responsible for air quality management in areas of Project construction activities:

- Montana Department of Environmental Quality and
- North Dakota Department of Health

This Dust Control Plan has been developed to meet the regulatory requirements of Montana Administrative Rule 17.8.308(3) and North Dakota Administrative Code Article 33-15. While the states of Montana and North Dakota have no specific regulations in relation to construction dust control, ONEOK and its contractors will utilize measures outlined in this Plan to minimize dust during construction.

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