
Appendix XXXI

**Unanticipated Discoveries Plan for Paleontological
Resources**

Bakkenlink Pipeline, LLC.

Unanticipated Discoveries Plan for Paleontological Resources

1.0 INTRODUCTION

The Bakkenlink Pipeline Project will include approximately 132 miles of pipeline in Billings, McKenzie, Stark and Williams Counties, North Dakota. This unanticipated discovery plan provides procedures in the event paleontological resources are discovered during construction. This plan will be followed during construction on Federal or State lands. A bedrock formation has the potential to contain important fossil resources if the formation has a Potential Fossil Yield Classification (PFYC) system ranking of 3 to 5. Tables 1-1 and 1-2 provide summaries of PFYC rank 3 to 5 formations that could be disturbed by the Project activities. The tables also provide a breakdown of land ownership.

Table 1-1. Acres of Disturbance, PFYC Rank 3 to 5

Row Labels	NDSL	USACE	USFS	Grand Total
Bullion FM.		5.3	1.5	6.8
Golden Valley Fm.			1.2	1.2
Sentinel Butte Fm.	15.6		31.2	46.8
Grand Total	15.6	5.3	33.8	54.8

Table 1-2. Miles of Disturbance, PFYC Rank 3- to 5

Row Labels	Bullion Fm.	Golden Valley Fm.	Sentinel Butte Fm.	Grand Total
NDSL	0.08		1.31	1.39
Improved Access Road	0.08			0.08
Pipeline – Main CL			1.31	1.31
USACE	0.35			0.35
Improved Access Road	0.12			0.12
Pipeline – Main CL	0.23			0.23
USFS	0.44	0.18	3.23	3.85
Improved Access Road	0.18			0.18
Pipeline – Main CL	0.26	0.18	3.23	3.67
Grand Total (miles)	0.87	0.18	4.54	5.59

2.0 CONSTRUCTION METHODS

ROW preparation will generally involve two phases. The first is the removal of brush by a brush hog. Following topsoil removal, the remainder of the ROW will be mechanically graded to a working surface by equipment including blading machines, scrapers, and other heavy machinery. When preparation of ROW segments is complete, trenching machines, backhoes, and hand excavation will be used to prepare the pipeline trench. Trenching machines will conduct the majority of the excavation but will be replaced with backhoes in areas where terrain precludes their use, and by hand excavation where utilities (such as existing pipelines and telephone lines) must be undercut. In cases where existing roadways, railroads, and other restrictive manmade or natural topographic features occur, boring machinery and directional drilling equipment may be used in place of surface cutting equipment.

3.0 PRECONSTRUCTION PREPARATION

Although archaeological sites are unlikely to yield fossil resources because of the relatively young age of the sediments yielding archaeological remains, BakkenLink is aware that fossil remains may be encountered along the pipeline. Due to the fact that construction will cross areas underlain by formations with a PFYC rank of 3, 4, and 5, as noted in the tables above, these areas will require BakkenLink to monitor for the presence of paleontological resources. BakkenLink's Environmental Inspectors will be responsible for identification of unanticipated potentially scientifically significant paleontological resources. As such, prior to commencement of construction, Bakkenlink will provide training to all Environmental Inspectors concerning the nature of fossil resources and procedures to be followed when unanticipated paleontological resources are discovered. This training should be conducted by a qualified paleontologist.

Bakkenlink will also provide contractor personnel with instructions on procedures to follow in the event of an unanticipated discovery during all field construction activities. The training will emphasize the sensitive nature of fossil resources and implement a strict policy prohibiting the collection of fossils or other paleontological resources.

If BakkenLink encounters an unanticipated discovery, they will consult with the North Dakota State Paleontologist and take the steps noted in the following section.

4.0 UNANTICIPATED DISCOVERIES OF PALEONTOLOGICAL RESOURCES

4.1 Paleontological Support During Construction

If any paleontological resources are discovered, they will most likely be isolated bones, teeth, and jaws that can be addressed appropriately by the paleontologists without substantial delays in construction activities. There is always a chance, however small, that substantial and scientifically significant articulated remains of vertebrate fossils, including those of dinosaurs or marine reptiles, may be encountered in excavations in areas underlain by fossil bearing formations.

4.2 Procedures at Time of Discovery of Unanticipated Paleontological Resources

The procedures for handling the unanticipated discovery of paleontological resources shall be in accordance with US Bureau of Land Management (BLM) rules and guidance (BLM 2008, 2007, and 1998a). If fossils of potential scientific importance are discovered, all construction activity will immediately cease within 100 feet in all directions from the discovery, and the discovery will be immediately reported to the Bakkenlink Environmental Inspector responsible for protection of environmental resources on that spread or construction activity. The Bakkenlink Environmental Inspector will immediately report the discovery to the North Dakota State Paleontologist who will examine and record the paleontological resource and evaluate its significance and determine if

additional mitigation (collection and curation) are applicable. Ground-disturbing construction activities will not resume within 100 feet in any direction of the discovered paleontological resource until the appropriate agencies have concurred that construction may resume. Agencies may inform the North Dakota State Paleontologist by telephone, with follow-up documentation by mail or email. The list of agency contacts is provided at the end of this plan.

If fossil materials of known or suspected scientific importance are uncovered during excavation, the operator should stop work immediately in the vicinity of the discovery and contact the authorized BLM officer. Activities should be redirected until the authorized officer and a qualified paleontologist can assess the situation and advise whether any mitigating measures need to be undertaken before surface disturbing operations can continue.

4.3 Recording Procedures for Unanticipated Paleontological Resources

All paleontological materials of scientific significance discovered during construction will be recorded using methods consistent with modern professional paleontology standards. Initially, field paleontologists will identify to as great an extent as possible the horizontal and vertical extent (e.g., features visible in an exposed trench profile) of all fossil vertebrate material. Scientifically significant fossil vertebrates will be collected and curated into an approved museum or academic repository. Collection could involve plaster jacketing and removal of large remains, such as those of dinosaurs. Standard data on the discovered locality will be recorded including lithology of unit yielding the remains, stratigraphic position, and global positioning system (GPS) location. The localities will be plotted on appropriate United States Geological Survey (USGS) 7.5' quadrangles. In addition the locality will be photo documented. This information will be recorded on the standard paleontological locality forms according to BLM handbook H-8270-1 (BLM 1998b).

4.4 Emergency Salvage of Paleontological Resources

Unstable earth conditions in trenches or other unforeseen natural or work events could endanger paleontological resources discovered during construction of the Bakkenlink Pipeline. If paleontological resources are in imminent danger of destruction, Bakkenlink will, without delay, apply prudent methods to preserve as much paleontological information as possible. Salvage activities will follow standard paleontological procedures as much as possible, but human safety concerns or the immediacy of the threat to the paleontological resource may require less exact methods of material extraction, including rapid shovel excavation or use of backhoes or other heavy equipment.

5.0 CONTACTS FOR UNANTICIPATED DISCOVERIES

Bakkenlink

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North Dakota BLM Lands

BLM Field Office Manager
North Dakota Field Office
99 23rd Avenue West, Suite A
Dickinson, North Dakota
701-227-7700

US Forest Service Lands

United States Department of Agriculture
Forest Service
McKenzie Ranger District
1901 South Main Street
Watford City, ND 58854-6705
701-842-2393

United States Department of Agriculture
Forest Service
Dakota Prairie Grasslands
Grassland Supervisor's Office
240 W. Century Avenue
Bismarck, ND 58503-1494
701-250-4443

US Army Corps of Engineers

Ryan Neuman
Natural Resource Manager
U.S. Army Corps of Engineers
201 1st Street
P.O. Box 527
Riverdale, ND 58565
701-654-7411 Ext. 246

State of North Dakota Lands

John W. Hoganson, Paleontologist
North Dakota Geological Survey
600 East Boulevard Avenue,
Bismarck ND 58505-0840
701-328-8000

6.0 REFERENCE

BLM. 2008. Instruction Memorandum No. 2009-011. Assessment and Mitigation of Potential Impacts to Paleontological Resources, October 10, 2008.
http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2009/IM_2009-011.html.

BLM. 2007. Potential Fossil Yield Classification (PFYC) System for Paleontological Resources on Public Land, Instruction Memorandum No. 2008-009, October 15, 2007.
<http://www.blm.gov/wo/st/en/prog/more/CRM/paleontology/laws-and-policy.html#Yield>

BLM. 1998a. Paleontological Resource Management. BLM Manual 8270.
<http://www.blm.gov/wo/st/en/prog/more/CRM/paleontology/laws-and-policy.html>.

BLM 1998b. General Procedural Guidance for Paleontological Resource Management. BLM handbook H-8270-1. <http://www.blm.gov/wo/st/en/prog/more/CRM/paleontology/laws-and-policy.html>.