



BEAR DEN PHASE 2 PROJECT

Plan of Development

APPENDIX J

**Plan for Construction Monitoring and Unanticipated Discovery of
Paleontological Resources**



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Paleontological Resources**

**Prepared for:
BUREAU OF LAND MANAGEMENT**

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TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
2.0	INITIAL FIELD SURVEYS	1
3.0	TRAINING AND ORIENTATION.....	1
4.0	MONITORING DURING CONSTRUCTION.....	2
5.0	UNANTICIPATED DISCOVERIES OF PALEONTOLOGICAL RESOURCES.....	2
5.1	Paleontological Support During Construction	2
5.2	Procedures at Time of Discovery of Unanticipated Paleontological Resources ...	2
5.3	Procedures for Recordation and Treatment of Unanticipated Paleontological Resources.....	3
6.0	CONTACTS FOR UNANTICIPATED DISCOVERIES.....	4

LIST OF TABLES

Table 1-1	Disturbance Within the Sentinel Butte Formation, Potential Fossil Yield Classification – 4	1
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1.0 INTRODUCTION

This monitoring and unanticipated discovery plan outlines the procedures to be implemented in the event paleontological resources (e.g., vertebrate fossils) are discovered during construction of the Enable Bakken Crude Services, LLC (EBCS) Bear Den Phase 2 Project (Project). EBCS will adhere to the procedures outlined in this plan for the duration of the Project.

All bedrock formations have the potential to contain significant fossil resources. Those formations that have been given the Potential Fossil Yield Classification (PFYC) system ranking of 3 to 5 have a higher known potential to contain fossils. According to previous geological mapping, the Project is underlain by the high potential Paleocene-age Sentinel Butte Formation (PFYC 4) of the Fort Union Group, the high potential Golden Valley Formation (PFYC 4), and low potential Quaternary surficial deposits (PFYC 2). Table 1-1 provides a summary of the areas of disturbance and a breakdown of land ownership in the Sentinel Butte and Golden Valley formations that could be disturbed by the Project activities.

TABLE 1-1		
Bear Den Phase 2 Project Disturbance Within the Sentinel Butte Formation Potential Fossil Yield Classification – 4		
Land Ownership/Project Facilities	Acres of Disturbance	Miles of disturbance
North Dakota State Lands		
Access Roads	0	0
Pipeline – Main CL	13.05	1.0
U.S. Forest Service		
Access Roads	0	0
Pipeline – Main CL	21.35	2.17
Private		
Access Roads	1.67	0.45
Pipeline – Main CL	135.52	11.53
Grand Total	169.94	14.5

2.0 INITIAL FIELD SURVEYS

Prior to construction a field survey of the Project area will be conducted by a BLM-permitted paleontologist in those areas with a PFYC rank of 3 or higher. This survey will help identify areas of greater or lesser concern during the construction phases, and recommendations will be made and approved by BLM prior to ground disturbance.

3.0 TRAINING AND ORIENTATION

EBCS is aware that fossil remains could be encountered along the Project. Due to the fact that construction will cross areas underlain by formations with a PFYC rank of 4 as noted in the table above, these areas will require EBCS to monitor for the presence of paleontological resources. Prior to construction, a worker education pamphlet on paleontological resources should be prepared by the EBCS Paleontology Consultant that illustrates the type of fossils that could be discovered during construction; procedures that should be followed in the event of a fossil discovery; the necessity of reporting discoveries and complying with the stipulations of this

plan; and penalties for the theft or destruction of paleontological resources. A module on paleontological resources should be presented to workers and Environmental Inspectors (EIs) as part of the pre-construction worker environmental awareness training program.

4.0 MONITORING DURING CONSTRUCTION

Based upon the initial field survey certain areas within any geologic unit might be identified as needing inspection or monitoring, and mitigation monitoring should be done in all PFYC ranked 4-5 units by a BLM-permitted paleontologist. In the event that the BLM-permitted paleontologist observes a potentially significant fossil, they shall consult with the Project owner to determine a plan of action for safely accessing and evaluating the find. Paleontological Monitors should always err on the side of caution and salvage any fossils for which the scientific significance is uncertain.

5.0 UNANTICIPATED DISCOVERIES OF PALEONTOLOGICAL RESOURCES

5.1 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 BLM-permitted paleontologists without substantial delays in construction activities. There is always a chance, however small, that substantial and scientifically significant articulated remains of vertebrate fossils may be encountered in excavations in areas underlain by fossil-bearing formations.

5.2 Procedures at Time of Discovery of Unanticipated Paleontological Resources

The procedures for handling the unanticipated discovery of paleontological resources shall be in accordance with Bureau of Land Management (BLM) rules and guidance (BLM, 2008, 2007, and 1998a). EBCS will implement the following procedures if paleontological remains are discovered:

1. The Contractor will stop work in the immediate area in order to protect the integrity of the find.
2. The Contractor will notify the EI of the find. The BLM-permitted paleontologist will temporarily flag or fence off the find, and the area will encompass a sufficient area to protect the discovery itself and provide a buffer zone. A general guideline will be to provide a buffer of at least 100 feet around the discovery and can be larger or smaller depending on the width of the right-of-way. No fencing will be installed outside of the Project area without prior approval from the landowner.
3. The EI will notify EBCS of the find.
4. The BLM-permitted paleontologist will confirm the presence of paleontological remains, and make a determination as to their scientific value and significance. If the BLM-permitted paleontologist determines that the find is insignificant (e.g., a common invertebrate or plant fossil), EBCS will be notified and the halted construction activity will resume.

5. If the find is significant (e.g., vertebrate fossils, or unique invertebrate or plant fossils), the BLM-permitted paleontologist will commence salvage of the fossils. Construction in the location of the find will not resume until the significant fossils are removed from the project area. A technical report describing the results of the recovery will be prepared and submitted to the BLM and U.S. Forest Service (USFS) (for discoveries on USFS lands) for review. Recovered materials will be curated with a repository approved by the BLM or USFS.
6. If the paleontological remains are identified on state-owned land, EI will notify the North Dakota State Paleontologist in order to determine if a North Dakota Paleontological Resource Collecting Permit will be required to investigate, excavate, collect, or otherwise record the fossil remains.
7. Once documentation and salvage of the find is completed and confirmed by the BLM-permitted paleontologist, EBCS will direct the EI to grant clearance to the Contractor to resume work in the vicinity of the site.
8. The Cultural Resource Manager will notify the State Geologist and, upon request, provide copies of the written and photographic documentation of the paleontological materials.

5.3 Procedures for Recordation and Treatment of Unanticipated Paleontological Resources

All paleontological materials of scientific significance discovered during construction will be documented using methods consistent with modern professional paleontology standards. Scientifically significant fossil vertebrates will be collected and curated into an approved museum or academic repository. Standard data on site will be recorded as deemed necessary by the BLM-permitted paleontologist, which should include lithology and depositional context of unit yielding the remains, stratigraphic position, any taphonomic data, and global positioning system (GPS) location, etc. The localities will be plotted on appropriate U.S. 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).

All significant fossils collected from BLM lands during construction must be prepared (repaired) to the point of curation and transferred to a BLM-approved paleontological repository. Land owners should be consulted regarding the significant fossils on their lands and these fossils should be left in place with land owner consent, or collected and returned to the land owner or donated to a paleontological repository.

6.0 CONTACTS FOR UNANTICIPATED DISCOVERIES

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