Appendix J

Paleontology

Date: Friday, March 22, 2024
Project: Norfolk-Wisner; (S-275-6(1052)); C.N. 32319
To: Courtney Ziska, NDOT
From: Shane Tucker, Highway Paleontology Program
Subject: Evaluation of Impact to Paleontological Resources

Evaluation of Impact to Paleontological Resources
Norfolk-Wisner (S-275-6(1052))
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In the early 2000s, the Highway Paleontology Program recovered fossil snails and isolated vertebrate remains from freshly-made roadcuts on the Norfolk East (US-275) Project between Norfolk and the junction of US-275 and N-57. Construction exposed portions of the Peoria loess, Loveland loess, and sand and gravels associated with glacial outwash. These specimens included two ancient prairie dog lower jaws and isolated snake vertebrae.

N-57 to Wisner (US-275) Project
The University of Nebraska State Museum has five vertebrate paleontology localities within one-mile (either direction) of US-275. There are three additional sites within 2-miles (either direction) of US-275. The majority of these sites are from ancient sand and gravel layers exposed in the bluffs above the floodplain. Additional fossils were recovered from commercially-mined gravel operations on the floodplain of the Elkhorn River.

Potential Fossil Yield for Rock Layers
Fossil abundance in any given rock unit throughout this corridor is directly tied to the origin of the rock units. Wind-blown loess deposits (Peoria loess and Loveland loess) have moderate potential whereas fluvial sand and gravels (Pleistocene and Holocene in age) have a moderate to high potential yield for paleontological resources. Both of these lithologies are present within the limits of the project.

Significance of the Fossils
The fossils from this particular area are extremely important providing the best evidence for faunal and climate change for the last part of the Ice Age (10,000 years to 1.2 million) in Nebraska. The most significant specimens collected within this corridor are an upper and lower molar from an extremely large mammoth. This one million-year-old behemoth may have been the largest land mammal to walk in North America regardless of time interval.

It is nearly impossible to determine exactly where fossil resources will be encountered due to the vegetative cover and/or the nature of preservation. Preliminary pedestrian surveys planned for 2020 were cancelled due to Covid. The majority of our mitigation efforts will be occurring during construction. The Program has found it beneficial to leave open wind-blown loess exposures for additional weathering with appropriate erosion control measures in place (i.e. silt fence) to maximize collecting efforts. We

discovered isolated elements and several dozen partial skeletons of ground squirrels, gophers, mice, and snakes using similar techniques on the Arnold East (N-92) and North Loup-Ord (N-11) Projects.

Preliminary faunal list from Elkhorn Valley (Pleistocene/Holocene) Deposits

Paramylodon harlani (Ground sloth)*

Megalonyx jeffersonii (Ground sloth)*

Mammuthus columbi (Columbian mammoth)*

Mammuthus meridionalis (Early mammoth)*

Mammut americanum (American mastodon)*

Equus sp. (Ice Age horse)*

Camelops sp. (Camel)*

Rangifer sp. (Caribou)*

Cervalces scotti (Stag-moose)*

Symbos cavifrons (Woodland musk-ox)*

Cervus elaphus (Elk)

Odocoileus sp. (Deer)

Platygonus sp. (Peccary)

Bison antiquus (Large bison)*

Bison bison (Bison)

Canis dirus (Dire wolf)*

Canis latrans (Coyote)

Lynx rufus (Bobcat)

Ursus americanus (Black bear)

Arctodus simus (Short-faced bear)*

Taxidea taxus (Badger)

Procyon lotor (Raccoon)

Erethizon dorsatum (Porcupine)

Ondatra zibethicus (Muskrat)

Castoroides ohioensis (Giant beaver)*

(* = extinct species)