

CONFIDENTIAL

**Research Design for the
TransCanada Keystone Pipeline
Cultural Resource Inventory
in South Dakota**

Prepared for:
ENSR International
Fort Collins, Colorado

Prepared by:
Ed Stine
Metcalf Archaeological Consultants, Inc.
Bismarck, North Dakota

January 2006

CONFIDENTIAL

**Research Design for the
TransCanada Keystone Pipeline
Cultural Resource Inventory
in South Dakota**

Prepared for:
ENSR International
Fort Collins, Colorado

Prepared by:
Ed Stine
Metcalf Archaeological Consultants, Inc.
Bismarck, North Dakota

January 2006

CONFIDENTIAL

Introduction

TransCanada intends to construct a 30" crude oil pipeline (Keystone Pipeline) that crosses through portions of eastern South Dakota. As planned the pipeline will have a 125' wide construction corridor with extra workspace needed at stream crossings. It will enter South Dakota, from North Dakota, approximately 3/4 mile east of the Brown/Marshall county line and travel south approximately 96 miles and then heading south-southeast (slightly east of the juncture of Clark, Spink, and Beadle counties), for an additional approximately 127 miles, leaving South Dakota at Yankton on the Missouri River. The 223 mile long corridor will pass through portions of Marshall, Day, Clark, Beadle, Kingsbury, Miner, Hanson, McCook, Hutchinson, and Yankton counties (Figure 1 and Appendix B). The lead Federal agency for this project is the U.S. Department of State. The lead State agency is the South Dakota State Historic Preservation Office (SDSHPO).

The purpose of this document is to provide a research design for a cultural resource inventory of the proposed pipeline corridor in South Dakota, which will be implemented in 2006. The ideas and concepts underlying this document are the results of informal discussions with the SDSHPO Review and Compliance Officer Paige Hoskinson and ENSR International. This research/survey design is intended only for the inventory phase of the pipeline project. Issues such as open trench monitoring, site evaluative testing, and site mitigation/data recovery will be addressed following the inventory phase, in consultation among MAC, ENSR staff, and SDSHPO archaeologists.

Five levels of investigation are proposed for this project. The first, a literature and files search of the entire pipeline route covering a two mile wide corridor, is included within this document. The second is a reconnaissance of the route by a geomorphologist who will identify areas that may need closer investigation, and conversely areas that are not archaeologically sensitive. The third is a Level III intensive pedestrian survey. The fourth is a reconnaissance inventory by MAC archaeologist(s). The fifth, based on some of the above investigations is no survey. A sampling strategy, based in part on the results of a literature search (Level I records search) of the South Dakota Archaeological Research Center's site and manuscript files, is proposed. The sampling strategy also takes into account the various land forms, crossed by or adjacent to the corridor. Under this strategy an intensive pedestrian inventory of a 300' wide corridor, centered on the proposed pipeline centerline, will be undertaken along approximately 38.5 miles (17%) of the overall length in South Dakota. This inventory will include areas recognized to be archaeologically sensitive, including river crossings, and areas with documented sites, as determined by the Level I records search. There may be some small individual areas along glacial lake beach lines, fan alluvium, playa lakes, or other areas identified during geomorphological investigations. This additional inventory will probably total less than ten miles. Approximately 52 miles (23%) will be subject to a Class II reconnaissance level (drive-by) inventory. Most of this length will be covered during the geomorphological survey and some may not need re-walking. Metcalf Archaeological Consultants, Inc. will coordinate the Class II reconnaissance inventory with the geomorphological survey since each may provide useful information and observations to the other. The segments to be covered by the pedestrian inventory are depicted on the project corridor maps in Appendix B.

CONFIDENTIAL

Environmental Setting

The proposed pipeline corridor passes through four Archaeological Regions in South Dakota, the Upper James (Region #18), the Middle James (Region #17), the Lower James (Region #16), and the Yankton (Region #15) *South Dakota State Plan for Archaeological Resources* (SDSHS 1991: 38.1-41.5). Other than two major river valleys the 220 mile pipeline does not pass through any dramatic topographical land forms.

The north end of the line passes through Marshall, Day, and Clark counties in the Upper James Archaeological Region. The topography is generally flat to gently rolling and was once covered by glacial Lake Dakota. The James River valley is broad and generally featureless, essentially the bed of Lake Dakota. The corridor has the potential to cross beach ridges in all three counties and it crosses the base of the Coteau Des Prairies (the high water shore line of glacial Lake Dakota) in Day and Clark counties. A portion of the Coteau Des Prairies, passed closely by the corridor, rises dramatically (over 200') to the east. [REDACTED]

[REDACTED] ions. In Day and Clark counties numerous small streams draining into the James River are crossed by the corridor. Most are small ephemeral drainage and it is unclear if these streams were a draw for utilization by past populations.

The corridor bends to the south-southeast as it enters the Middle James Archaeological Region at the north edge of Beadle County. At this point it is approximately seven miles west of the coteau base and still within the glacial lake bed. The corridor continues through Kingsbury and Miner counties with little evident topographic change. It continues to cross various ephemeral streams and beach lines. As it leaves Miner County the corridor is approximately 22 miles west of the coteau base.

Within the Lower James Archaeological Region the corridor passes through Hanson, McCook, Hutchinson, and a portion of Yankton counties. Topography remains flat to gently rolling although the Wolf Creek crossing in northern Hutchinson County and the James River crossing in northern Yankton County provide some topographic relief. The James River trench is steep sided (approximately 100' deep) and flat bottomed at the crossing. Wolf Creek is a major tributary of the James River. [REDACTED]

... sites.

The corridor leaves South Dakota after passing through the Yankton Archaeological Region which consists of the Missouri River Valley in Yankton County. The Missouri River has a broad flat valley with steep breaks overlooked by rolling uplands. The corridor loons around the east side of Yankton and crosses the river south of the city. [REDACTED]

CONFIDENTIAL

Results of Level I Records Search

Cultural Resources

The search, in Rapid City, of the South Dakota Archaeological Research Center's site files revealed 30 cultural resources documented within one mile of the project corridor centerline (Table 1). Included among these are ten prehistoric sites, 17 historic sites, and three sites that can be best described as site leads as their exact locations are unknown (Appendices A and B). With the exception of railroad lines none of the sites are directly crossed by the proposed pipeline corridor as currently mapped. There are

[REDACTED]

[REDACTED]. There have been few inventories in these two project areas.

[REDACTED]

Table 1: Cultural Resources by Region and County						
County	Prehistoric	Site Lead Prehistoric	Historic	Architectural	Multi-Comp	Total
Upper James Archaeological Region (#18)						
Brown	-	-	-	2	-	2
Clark	1	-	2	2	-	5
Day	1	1	-	-	-	2
Marshall	2	-	6	-	-	8
Total	4	1	8	4	-	17
Middle James Archaeological Region (#17)						
Beadle	-	-	-	-	-	-
Kingsbury	-	-	3	34	-	37
Miner	-	-	3	1	-	4
Total	-	-	6	35	-	41
Lower James Archaeological Region (#16)						
Hanson	-	-	1	2	-	3
Hutchinson	-	-	-	105	-	105
McCook	1	-	-	7	-	8
Yankton	5	2	-	77	-	84
Total	6	2	1	191	-	200

CONFIDENTIAL

ratio but in addition to the increased survey in the Lower James area the line crosses areas (Wolf Creek and the James River) [REDACTED]

[REDACTED] Ultimately the eastern part of South Dakota does not appear to have been heavily investigated.

Inventory Recommendations

The proposed pipeline route, documented sites, previous inventories, and areas recommended for pedestrian inventory are depicted on USGS 7.5' (1:24,000) quadrangle maps in Appendix B. In addition to the areas marked for inventory, all railroads crossed by the line will be recorded and site forms or site form updates will be filed. We recommend Level III inventory of 38.5 miles of the 223-mile-long corridor. In addition we recommend that another 52 miles be covered by a Level II reconnaissance survey. The Level III and Level II inventory lengths are provided by county in the following table (Table 2). These segments are not final as the recommended geomorphological reconnaissance will probably identify additional areas with moderate to high site potential and segments within the areas recommended for Level II inventory will ultimately be investigated to Level III standards.

Table 2: Pipeline Corridor Proposed Level of Inventory							
County	Miles of Corridor	Level II mi.	Level II%	Level III mi.	Level III%	Previous Survey mi.	Previous Survey %
Upper James Archaeological Region (#18)							
Clark	36	12.5	35	2	6	-	-
Day	30	10	33	9	30	-	-
Marshall	24	2.5	10	1	4	2.25	9
Total	90	25	28	12	13	2.25	3
Middle James Archaeological Region (#17)							
Beadle	16	2	12.5	6	38	-	-
Kingsbury	16	-	-	1	6	-	-
Miner	24.5	7	29%	1	4	-	-
Total	56.5	9	16	8	14	-	-
Lower James Archaeological Region (#16)							
Hanson	19	-	-	2	11	-	-
Hutchinson	23.5	3	13	5.5	23	-	-
McCook	11	7	64	2	18	-	-

CONFIDENTIAL

Table 2: Pipeline Corridor Proposed Level of Inventory							
County	Miles of Corridor	Level II mi.	Level II%	Level III mi.	Level III%	Previous Survey mi.	Previous Survey %
Yankton	19.5	6	31	8	41	-	-
Total	73	16	22	17.5	24	-	-
Yankton Archeological Region (#15)							
Yankton	3.5	2	57	1	29	.5	14
Grand Total	223	52	23	38.5	17	2.75	1

Field Methods

Geomorphological Investigations will initially consist of a study of existing geologic and soil maps and a review of the Level I files search (site and inventory locations) followed by a reconnaissance drive-by of the entire pipeline route in order to determine areas that may have the potential for the presence of archaeological sites, particularly deeply buried sites. At that time specific areas will be identified where more detailed investigations, including intensive pedestrian survey and soil coring are recommended. Areas with low potential for the presence of archaeological sites will also be identified with no further investigations resulting in those areas.

Pedestrian Survey will be the primary focus of the cultural resource inventory of the 300' wide pipeline corridor. Portions of the mapped pipeline corridor, based on the results of the literature search and geomorphological investigations, will be inspected employing parallel zig-zag pedestrian transects spaced at no more than 20 meter intervals. When an artifact or feature is encountered the pedestrian transects will be collapsed to approximately five meter intervals in the area of the find and the area will be closely scrutinized to determine the nature of the find. Temporally diagnostic artifacts such as hafted stone tools and rim sherds may be collected for further analysis and will, at a minimum be sketched and photographed in the field. Site boundaries and center points will be recorded with a Trimble GeoExplorer (or equivalent) GPS unit. The Level III inventory, site recording, and documentation will conform to the standards and guidelines of the SDSHPO and those of any involved Federal agencies.

Shovel probes will augment the pedestrian survey in areas where surface visibility is inadequate and/or where cultural material is suspected to be within one meter of the ground surface. Shovel probes will be approximately 40 cm in diameter and will be excavated into pre-Holocene soils or up to one meter deep, whichever comes first. The geomorphological investigations will aid in determining the depth of Holocene soils. Probes will generally be spaced at ten meter intervals in multiple transects. All fill from the probes will be screened through 1/4" mesh. Probe locations will be recorded with a Trimble GeoExplorer (or equivalent) GPS unit.

CONFIDENTIAL

Reconnaissance for this project is defined as a windshield/drive-by survey of the corridor when it, and topography, are clearly visible from the road. In cases where the area is forested or a distance from the road (generally over 1/4 mile) is too great to clearly see the corridor, it will be walked with a single transect (one archaeologist). Specific areas that appear to be sensitive, e.g., locally prominent rises, areas near good sources of potable water etc., will be marked on maps and then intensively inspected. Metcalf Archaeological Consultants, Inc. will coordinate the reconnaissance inventory with the geomorphological survey since each may provide useful information and observations to the other.

Native American Consultation

Metcalf Archaeological Consultants will first contact all involved Federal agencies and confirm that we should initiate consultation on their behalf (Federal agencies are restricted in delegating that responsibility). For those agencies that do request the proponent (TransCanada) initiate consultation, SHPOs and any appropriate Federal agencies will be contacted and requested to provide information about appropriate tribes to contact along with individual contact names and address for those tribes. We will also research appropriate literature, including the Smithsonian Handbook of North American Indians, to help determine tribes that may have an interest in the project area. We will contact those tribes by mail (certified, return requested) inviting them to be consulting parties under Section 106 of the NHPA for the project. We will address any responses from tribes as they are received, in consultation with ENSR, SHPO, etc.

CONFIDENTIAL

Appendix A
Records Search Results

Confidential Information removed from document

CONFIDENTIAL

Appendix B
Project Corridor Maps

CONFIDENTIAL

Map Key

- Architectural Sites
- Historic District
- Site Lead
- Multi-Component Site
- Historic Site
- Prehistoric Site
- ★ Isolated Find
- Previous Survey Area (Block)
- ∩ Previous Survey Area (Linear)
- ∩ Pipeline ROW
- ∩ Level II (Reconnaissance Survey)
- ∩ Level III (Pedestrian Inventory)
- ∩ Pipeline in Previously Inventoried Block