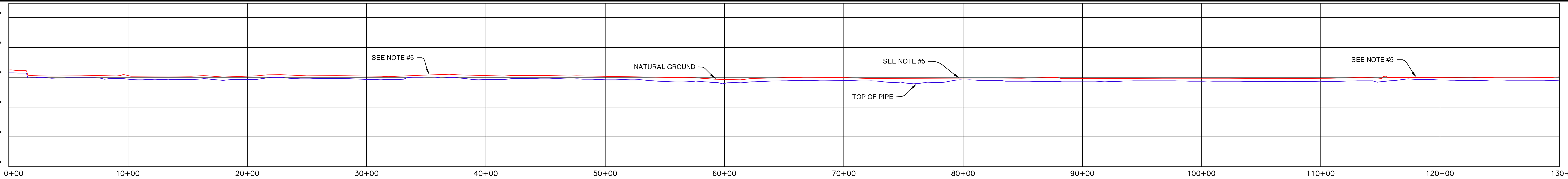
RIGHT-OF-WAY
HORIZONTAL REPRESENTATION (2D)
TRACT NUMBER
OWNERSHIP/AGENCY
LENGTH
APPLICABLE DWG. NO.

ML-ND-SR-0477.0000 | ML-ND-SR-0478.0000 | ML-SD-MR-0479.0000 | ML-SD-MR-0480.0000 | ML-SD-MR-0481.0000 | ML-SD-MR-0482.0000

LAND USE

PIPELINE PROFILE

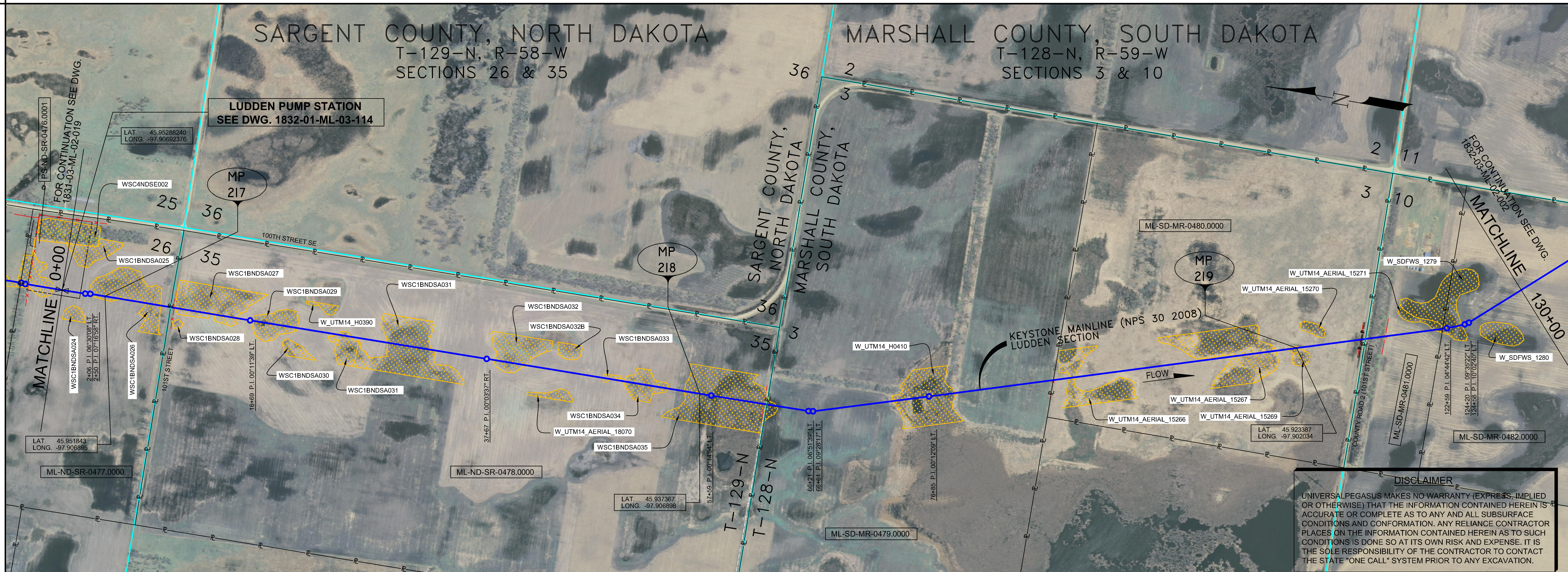
HORIZ: 1"=500' VER: 1"=100'
HORIZONTAL REPRESENTATION (2D)



LEGEND

KEYSTONE PIPELINE
STATE BOUNDARY
COUNTY/TOWNSHIP
SECTIONS
NATIONAL OR STATE RESERVATION BOUNDARY
PROPERTY LINE
FENCE
EXCLUSIONARY FENCE
POWER LINE
TELEPHONE LINE
BURIED CABLE
WATER LINE
SANITARY SEWER LINE
STORM SEWER / DRAIN
FOREIGN PIPELINE
RAILROAD
HIGHWAY / ROAD
STREAM / DITCH
WETLAND
INTERSTATE ROUTE
U.S. ROUTE
STATE ROUTE
POINT OF INTERSECTION (PI)
PIPELINE MILEPOST
DIRECTION OF FLOW
HOUSE
BUILDING
WATER WELL
MAINLINE VALVE
ML-XX-XX-0000.0000 TRACT NUMBER

PIPELINE PLAN (SCALE 1" = 500')HORIZONTAL REPRESENTATION (2D)



PIPELINE SCHEMATIC

HEAVYWALL PIPE
WELD FITTING
TRANSITION PIECE
CASING PIPE
CONCRETE COATING
SET-ON WEIGHTS
PIPELINE WARNING SIGN
PIPELINE MARKER
MATERIAL ITEM
GROUNDING MAT
ZINC RIBBON
AERIAL MARKER
CATHODIC TEST STATION
MAINLINE VALVE
CHECK VALVE
O.C. OPEN CUT
BR. BORE
D DRINKING WATER USA
E ECOLOGICAL USA
H HIGHLY POPULATED AREA
K OPERATOR (KEYSTONE) DEFINED
O OTHER POPULATED AREA
S SOURCE WATER PROTECTION AREA
W WELLHEAD PROTECTION AREA

HORIZONTAL STATIONS (2D)

SLOPE STATIONS (3D)

PIPE SLOPE REPRESENTATION (3D)

FOR PUMP STATION ASSEMBLY MATERIAL SEE DWG. 1832-01-ML-03-114

CPS (3D)

TEST SECTIONS (3D): TEST SECTION 2A-3 ILTO-023-2010 | 89+23 | TEST SECTION 2A-3 ILTO-024-2010 | 118+14 | TEST SECTION 2A-4 ILTO-024-2010

ENVIRONMENTAL MITIGATION/RECLAMATION STATIONS (2D)

TOPSOIL SALVAGE METHOD
STREAMS
WETLANDS
TIMING CONSTRAINTS
STATIONS
MONITORING
RECLAMATION
SPECIAL CONSIDERATIONS

GENERAL NOTES

1) ALL CHAINAGES ARE IN FEET UNLESS OTHERWISE SPECIFIED.
2) DATUM ELEVATION AND PROJECTION ARE BASED ON MEAN SEA LEVEL AND NAD 83.
3) FIELD PIPE LOCATING REQUIRED TO DETERMINE PLACEMENT OF PIPELINE WITHIN PERMANENT EASEMENT.
4) UNLESS OTHERWISE NOTED, 48 INCHES MINIMUM COVER EXCEPT 36 INCHES IN AREAS OF CONSOLIDATED ROCK.
5) NO ACTUAL AS-BUILT GROUND SHOTS WERE TAKEN AT THIS LOCATION. THE PROFILE REPRESENTS A PROJECTION FROM SHOTS TAKEN AT 150' TO 250' INTERVALS.
6) THE TYPE OF COATING APPLIED TO THE FIELD WELDS DURING THE ORIGINAL CONSTRUCTION WAS TWO COMPONENT LIQUID EPOXY. THE COATING PRODUCTS USED WERE DENSO 7200 OR SPC SP-2888.
7) THE SUBSTANTIAL CONSTRUCTION COMPLETION DATE, BASED ON CALIPER PIG RUN, WAS SEPTEMBER 01, 2009 FOR M.P. 195.68 TO M.P. 218.50, SEPTEMBER 02, 2009 FOR M.P. 218.50 TO M.P. 259.00 AND OCTOBER 08, 2009 FOR M.P. 259.21 TO M.P. 301.75.
8) ORIGINAL IN-SERVICE DATE OF THE KEYSTONE PIPELINE (PHASE 1): JUNE 30, 2010.
9) CPS CALCULATION DATE: MAY 2010.
10) ORION STATION SERIES NUMBER: 1182700.
11) TO DETERMINE THE MILE POST AT A GIVEN LOCATION, ADD THE 3D STATION NUMBER FROM THIS SEGMENT TO STATION NUMBER 11453+73 AND DIVIDE BY 5280.

OPERATING AND TEST PRESSURE

1. THE MAXIMUM OPERATING PRESSURE (MOP) IS 1440 PSIG.
2. THE MINIMUM TEST PRESSURE WAS 1801 PSIG.

BILL OF MATERIALS (3D)

ITEM NO.	DESCRIPTION	QUANTITY
2	30" O.D. X 0.386" W.T., API -5LX-70 W/FBE COATING	12,582'
3	30" O.D. X 0.516" W.T., API -5LX-70 W/FBE COATING &	239'
	ABRASION RESISTANT OVERCOAT	
414	LUDDEN PUMP STATION ASSEMBLY (+191')	1 EA
104	30" - 45° 3 DIA RAD WELD FITTING 0.429" W.T., Y-70	1 EA
104A	30" - 45° 3 DIA RAD WELD FITTING 0.429" W.T., Y-70	1 EA
	PIPELINE MARKERS	0 EA
	PIPELINE WARNING SIGNS	5 EA
	CATHODIC TEST STATION	2 EA
	AERIAL MARKER	0 EA

REFERENCE DRAWINGS

REF. NO.	DRAWING NO.	REV. NO.	DRAWING TITLE
414	1832-01-ML-03-114	6	LUDDEN PUMP STATION
	1832-01-ML-03-115	0	LUDDEN PUMP STATION
	1832-01-ML-03-116	0	LUDDEN PUMP STATION

REVISIONS

NO.	DATE	REV. BY	CHCK. BY	APPRD. BY	ENV. APPRD.	DESCRIPTION
1	5/12/08	UEI	RDG	LAG	SEC	ISSUED FOR CONSTRUCTION
2	7/25/08	UEI	GTC	LAG	SEC	REROUTE REVISION
3	10/12/06	UEI				ISSUED FOR AS-BUILT 1832-03-ML-02-001 REPLACES COVERAGE OF IFC DRAWINGS 1832-03-ML-02-001, 1832-03-ML-02-002

ENGINEERING RECORDS

	INITIAL	DATE		INITIAL	DATE
DRAWN BY	UEI	10/02/01	ENV. APPRD.		
CHECKED BY			APPRD. BY		
			COMPANY APPROVED		

PROFESSIONAL ENGINEER

NAME	STATE	LIC#	REV#	DATE
LOYS ALVIN GRAY, III	SD	CE9004		

SCALE: 0 125 250 500 Feet

TransCanada *In business to deliver*

UNIVERSAL

KEYSTONE MAINLINE (NPS 30 2008) LUDDEN SECTION

FIA# 1832 | SPREAD 2A | DISCIPLINE 03

AS-BUILT ALIGNMENT

M.P. 216.93 TO M.P. 219.39
SHEET 1 OF 19 SHEETS
STA. 0+00 TO STA. 130+12 (3D)

DRAWING NO. 1832-03-ML-02-001 REV. 3

Z:\00_KEYSTONE_AS_BUILT\4-alignment sheets for North Dakota\ND1832_ASBUILT\ND1832-001.dwg, 3/10/2011 7:57:32 AM, pdfFactory.pc3