APPENDIX N

Typical Workspace Graphics
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Typical Temporary Extra Workspace at Directionally Drilled Waterbody Crossings

Notes:
Temporary extra workspace may need to be extended for HDD pipestringing or other special circumstances. HDD point of entrance and exit will be approximately 35' from the closest existing pipeline.
75' HIGH BANK

HIGH BANK

RIVER/STREAM HIGH BANK

50' MIN.

300' 50'

MIN.

TEMPORARY EXTRA WORK SPACE

Typical Temporary Extra Workspace at Waterbody Crossings Greater Than 50 Feet Wide

NOTE: THE 50' MINIMUM SETBACK MAY BE REDUCED DUE TO SPECIAL CIRCUMSTANCES.
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Typical Temporary Extra Workspace
at Waterbody Crossings
Less Than 50 Feet Wide
**Alberta Clipper Project**

Typical Waterbody Crossing

Open Cut Method

(Neche, ND to Clearbrook, MN)

**Existing Pipeline**

**Outermost Existing Pipeline (LSR)**

**Proposed Trench**

**Silt Fence, Double Staked Straw Bales, or Both as Necessary with Flowing Water**

**Segregated Stream Bed Spoil**

**20' Buffer Minimum**

**20' Buffer Minimum**

**Segregated Stream Bed Spoil**

**Silt Fence, Double Staked Straw Bales, or Both as Necessary with Flowing Water**

**140' Construction Right of Way**

**75'**

**Temporary Bridge (If Needed)**

**Culvert (For Support)**

**15' Neckdown Setback**

**50'**

**15' Neckdown Setback**

**From Ordinary High Water Mark**

**50'**

**From Ordinary High Water Mark**

**Extra Work Space Up to 75' Wide and Lengths Vary**

**Extra Work Space Up to 75' Wide and Lengths Vary**

**For environmental review purposes only**

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Southern Lights Diluent and Alberta Clipper Projects
Typical Waterbody Crossing
Open Cut Method
(Clearbrook, MN to Superior, WI)
Typical Waterbody Crossing
Dam and Pump Method
(Neche, ND to Clearbrook, MN)

**Alberta Clipper Project**

**EXISTING PIPELINE**

**OUTERMOST EXISTING PIPELINE (LSR)**

**SPOIL**

**SEgregated STREAM BED**

**SPOIL**

**LIMIT OF CONSTRUCTION RIGHT OF WAY**

**20' BUFFER MINIMUM**

**50' FROM ORDINARY HIGH WATER MARK**

**ENERGY DISSIPATOR**

**15' NECKDOWN SETBACK**

**15' NECKDOWN SETBACK**

**FROM ORDINARY HIGH WATER MARK**

**EXTRA WORKSPACE UP TO 75' WIDE AND LENGTHS VARY**

**20' BUFFER MINIMUM**

**20' BUFFER MINIMUM**

**20' BUFFER MINIMUM**

**20' BUFFER MINIMUM**

**BALES LINED WITH IMPERMEABLE LINER**

**STANDBY PUMP**

**PUMP**

**PLACE SEDIMENT BARRIERS ACROSS WORKING SIDE OF ROW AT THE END OF EACH DAY**

**SILT FENCE, DOUBLE STAKED STRAW BALES, OR BOTH AS NECESSARY**

**TEMPORARY BRIDGE (IF NEEDED)**

**EXTRA WORKSPACE UP TO 75' WIDE AND LENGTHS VARY**

**CONSTRUCTION RIGHT OF WAY**

**SPOIL**

**DOWNSTREAM DAM**

**LIGHT SOUR PIPELINE ROW**

**140' CONSTRUCTION RIGHT OF WAY**

**75'**

**Segregated Stream Bed SPOIL**

**50'**

**20' BUFFER MINIMUM**

**20' BUFFER MINIMUM**

**20' BUFFER MINIMUM**

**20' BUFFER MINIMUM**

**SEgregated STREAM BED SPOIL**

**20' BUFFER MINIMUM**

**50' FROM ORDINARY HIGH WATER MARK**

**EXTRA WORKSPACE UP TO 75' WIDE AND LENGTHS VARY**

**15' NECKDOWN SETBACK**

**FROM ORDINARY HIGH WATER MARK**

**EXTRA WORKSPACE UP TO 75' WIDE AND LENGTHS VARY**

**CONSTRUCTION RIGHT OF WAY**

**SPOIL**

**SPOIL**

**20' BUFFER MINIMUM**

**20' BUFFER MINIMUM**

**20' BUFFER MINIMUM**

**20' BUFFER MINIMUM**
Southern Lights Diluent and Alberta Clipper Projects
Typical Waterbody Crossing
Dam and Pump Method
(Clearbrook, MN to Superior, WI)
Southern Lights Diluent and Alberta Clipper Projects
Typical Waterbody Crossing
Flume Method
(Clearbrook, MN to Superior, WI)
Southern Lights Diluent and Alberta Clipper Projects
Typical Waterbody Crossing
Horizontal Directional Drill (HDD) Method

For environmental review purposes only
Southern Lights Diluent and Alberta Clipper Projects
Alternative Wetland Construction Layout
Frozen Conditions

NOTES:
1. The offset from the outermost existing pipeline will be 40' for most locations but may be increased or decreased depending on the site specific construction requirements.

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NOTES:

1. The offset from the outermost existing pipeline will be 40' for most locations but may be increased or decreased depending on the site specific construction requirements.

2. This layout reflects the open-cut push-pull method. Trackhoes will dig each ditch independently, by separate crew from construction timber mats placed over the ditchline.

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Alternative Wetland Construction - Unfrozen Conditions
36" Alberta Clipper Construction Following Southern Lights Construction
Right of Way Configuration, Timber Mat Construction
Figure 2.2-4
Alberta Clipper and Southern Lights Diluent Projects Right-of-Way
Configuration: Alternative Wetland Construction Methods
Frozen and Un-Frozen Conditions

- Existing ROW boundary defined by location of northern most pipeline: 25 feet to the north and 100 feet to the south.
- Because pipeline spacing varies due to construction requirements at the time of installation, the distance between the southern most line and southern existing ROW boundary varies between 0 and 35 feet.
- New additional ROW requirements for the Alberta Clipper and Southern Lights Diluent Projects will vary along the proposed route from Clearbrook, MN to MN-WI border. These ROW requirements will depend on the location of Enbridge's southern most existing line and the existing ROW boundary. Enbridge will need up to 105 feet of additional permanent ROW for the Alberta Clipper and Southern Lights Diluent Pipelines to facilitate winter construction methods through extensive wetland areas and is necessary to allow for approximately 25-foot spacing between the Alberta Clipper Project and the southernmost additional permanent ROW boundary.
- Typically up to 30' of temporary workspace adjacent to new additional ROW will be rented from landowners.

For environmental review purposes only
Typical Temporary Extra Workspace at Open-cut Crossings of County, Township, and Private Roads
Typical Temporary Extra Workspace at Foreign Pipeline and Utility Crossings
NOTE: TEMPORARY EXTRA WORKSPACE MAY NEED TO BE EXTENDED IN SPECIAL CIRCUMSTANCES. THE 50' MINIMUM SETBACK MAY BE REDUCED DUE TO SPECIAL CIRCUMSTANCES.
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Typical Temporary Extra Workspace at Pipeline Crossover
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**NOTE:** Temporary extra workspace for four-lane highway crossings will be designed on site-specific basis.

Typical Temporary Extra Workspace at Bored Highway Crossings
Typical Temporary Extra Workspace at Bored Railroad Crossings