

HDD



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Distance Matters



- Further out – greater chance for frac out (especially in wetlands)
- 1,970 feet from upland to upland



Season Matters

- Depending upon geology, boring in growing season tends to frac out more
- Fond du Lac has never experienced a frac out in winter



Enbridge Alberta Clipper/Southern Lights



- **Alberta Clipper**

- 36 inch pipeline from Alberta, Canada to Superior, Wisconsin
- Designed to carry “tar sands” heavy crude
- Travels 14 miles through Fond du Lac Reservation
- Installation from August 2009 until March 2010

- **Southern Lights**

- 20 inch “reverse flow” from Superior to Alberta
- Designed to carry diluent (solvent for tar sands)
- Travels 14 miles through Fond du Lac Reservation
- Installation from August 2009 until March 2010

Alberta Clipper

- All streams/ditch crossings on reservation were Open Cut



Southern Lights



- All stream/ditch crossings were HDD
- However, Enbridge's application stated that all crossing for BOTH pipelines would be installed by Open Cut
- All but one HDD was conducted in winter



Southern Lights



- No exploratory borings conducted prior to HDDs
- One stream crossing had 7 frac outs (6 in upland and one in wetland which entered stream)
- Clean up took 4 vac trucks, 50 workers, and 8 1/2 hours to complete



Information and Considerations



- Request borings for all proposed HDDs
- What are the resource that would be impacted?
- Can they be avoided by using HDD?
- What are the chances of success of HDD?
- What is the likelihood of frac out – is it worth the chances of a larger impact?
- Time of year – if work is in winter, open cut may be better option
- Timing restrictions due to species (fish “windows”)

Information and Considerations (continued)



- Best Practices – Does applicant/contractor have a plan in place should HDD have a frac out?
- No state, federal or Canadian regulations on HDD
- Industry manuals on operation of the equipment
- Not much on potential problems or planning available
- Some publications – American Society of Civil Engineers
- FERC standards for HDD