

St. Regis Paper Company Superfund Site
Cass Lake, Minnesota
Proposed Plan for Soil: June 23, 2011



EPA's Preferred Clean up Alternative for Soils

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Agenda

- EPA's Proposed Plan
- Question and answer
- Opportunity for comments

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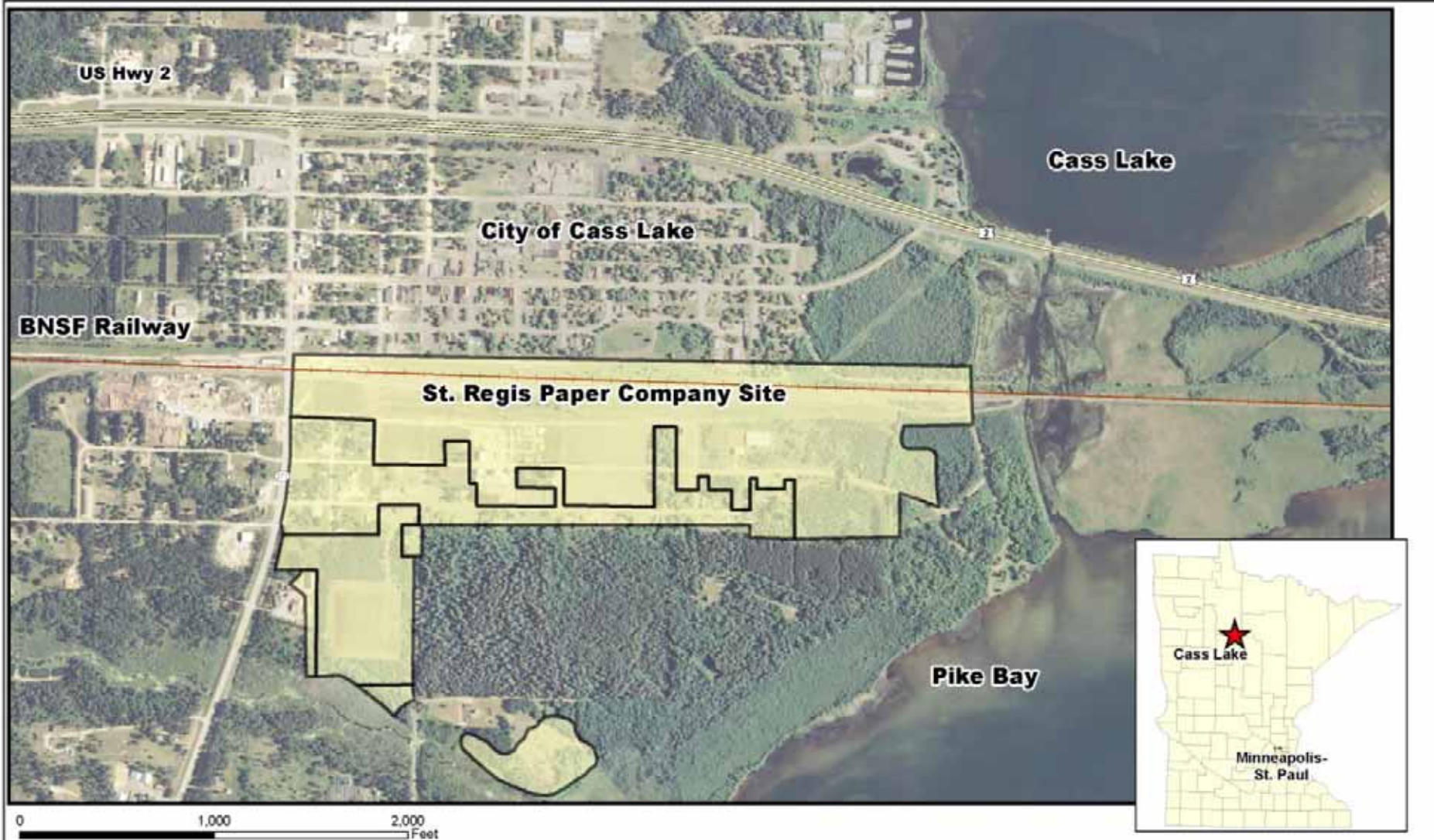
EPA's Proposed Plan for Site Cleanup

- Site History
- Risk Assessment conclusions
- Clean up goals
- Cleanup alternatives
- EPA's selection criteria
- EPA's preferred alternative
- Next steps

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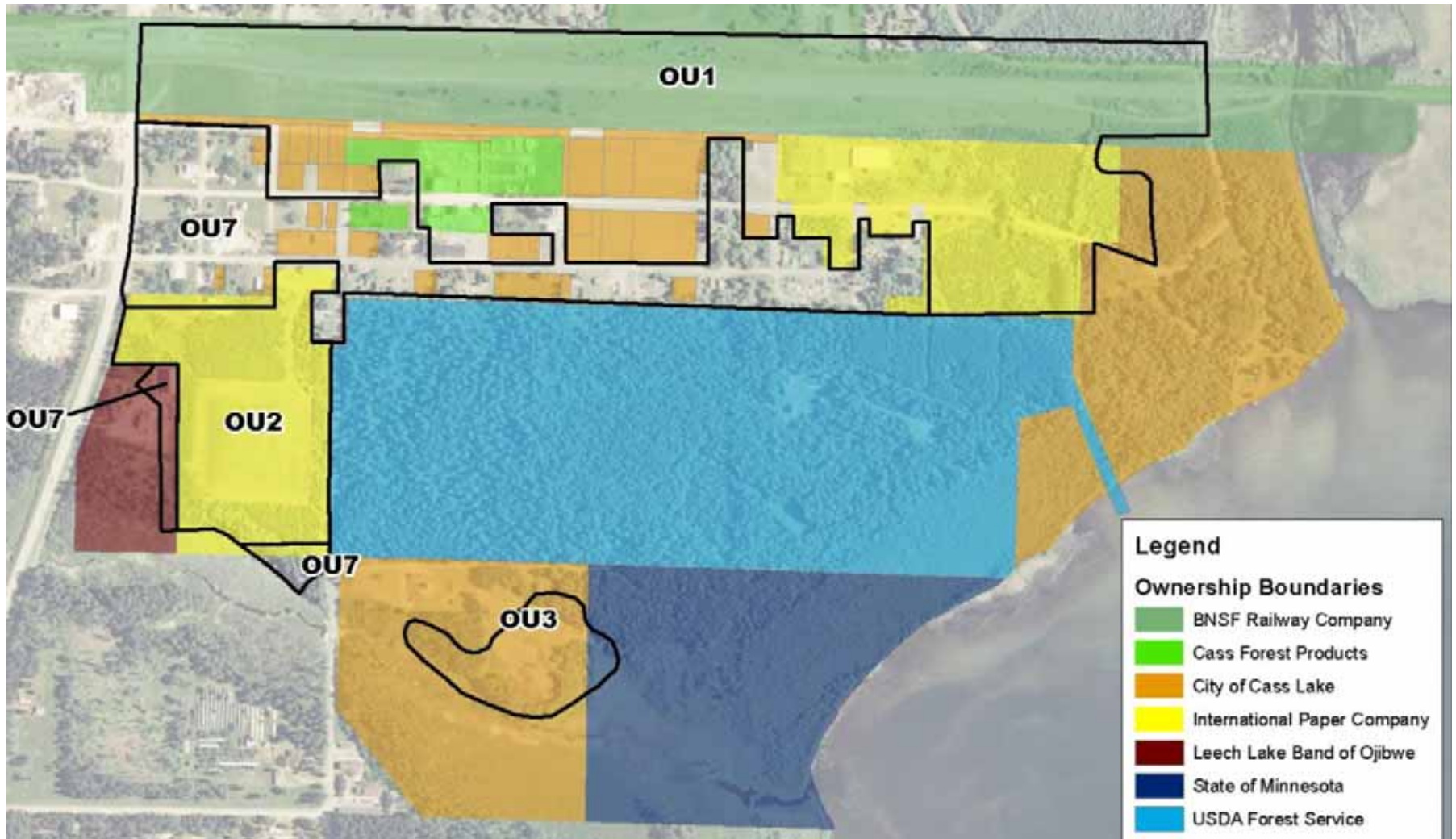
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Site Ownership/Operable Units



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Site History

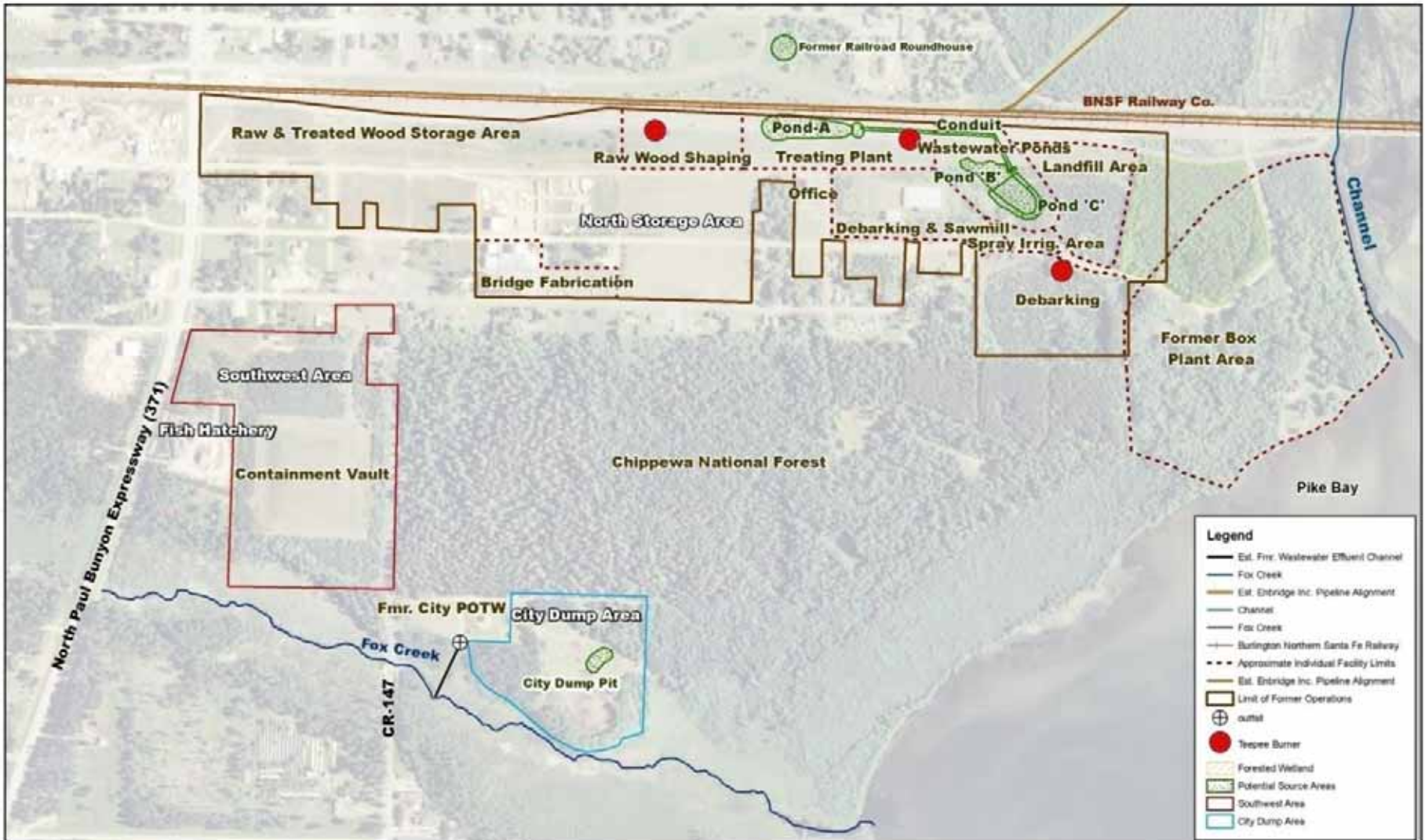
- 1984: Site on EPA's Superfund List
- 1985: Wood treatment operations end
- 1985 - 87: Site clean-up under MPCA
- 1994 EPA becomes lead agency
- 2001 and 2003: New sampling conducted
- 2003-06 Soil removal actions
- 2004 Risk Assessment sampling begins
- 2005 EPA orders house dust actions
- 2008 PRPs begin Feasibility Study
- 2011 Risk assessment complete
- 2011 Feasibility Study complete

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Historical Site Operations



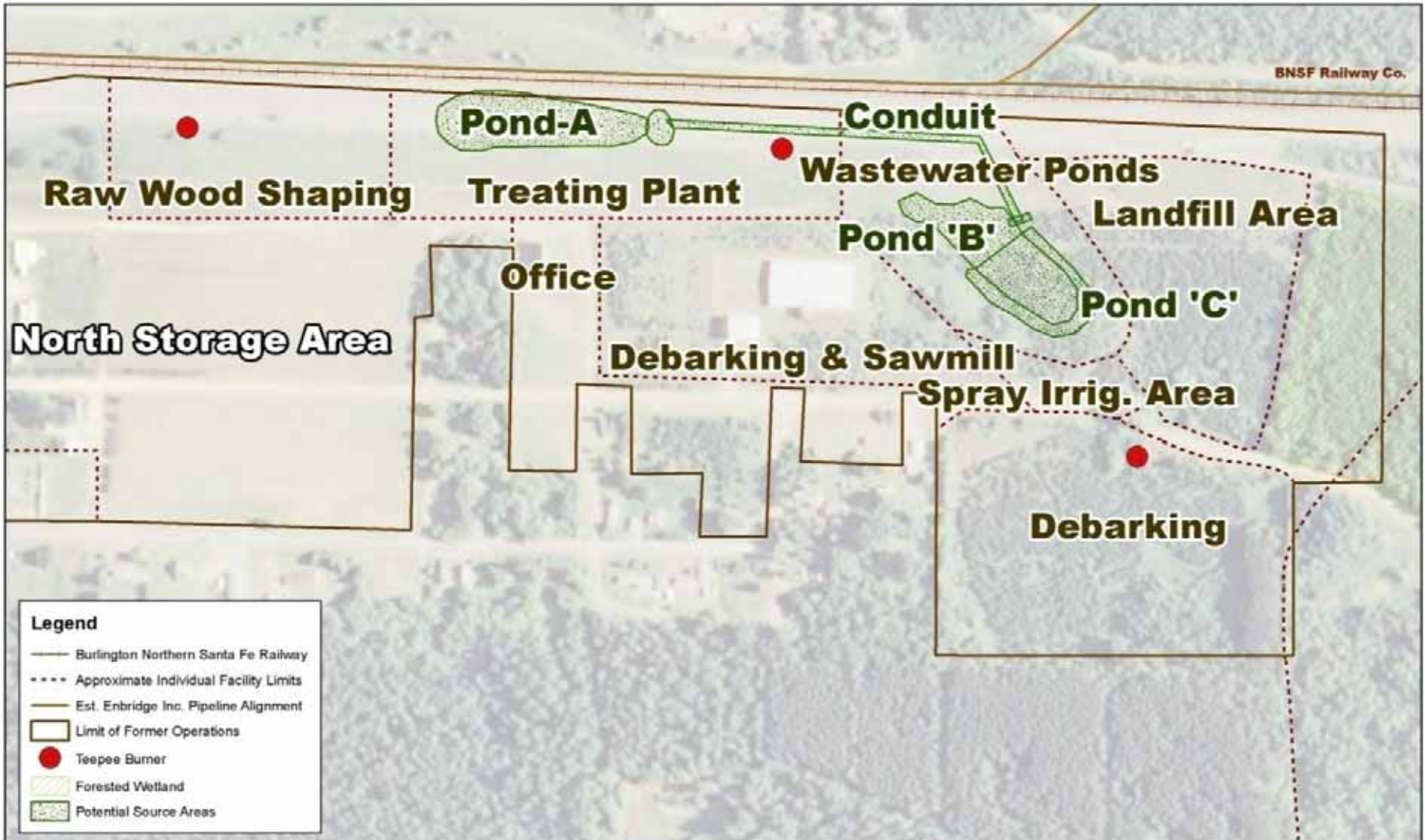
Legend	
	Est. Fmr. Wastewater Effluent Channel
	Fox Creek
	Est. Enbridge Inc. Pipeline Alignment
	Channel
	Fox Creek
	Burlington Northern Santa Fe Railway
	Approximate Individual Facility Limits
	Est. Enbridge Inc. Pipeline Alignment
	Limit of Former Operations
	outlet
	Teepee Burner
	Forested Wetland
	Potential Source Areas
	Southwest Area
	City Dump Area

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Historical Site Operations



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Site Contaminants

- Pentachlorophenol (PCP): wood preserving, insecticide
- Dioxin: impurity in the PCP
- Polycyclic aromatic hydrocarbons (PAHs): Made when coal, oil, gasoline, wood garbage are burned incompletely
 - Benzo(a)pyrene equivalent [B(a)PE]: A group of PAHs used to measure health effects
 - High molecular weight PAHs (HPAHs): A group of PAHs used to measure environmental impacts

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MPCA-Lead Cleanup Actions

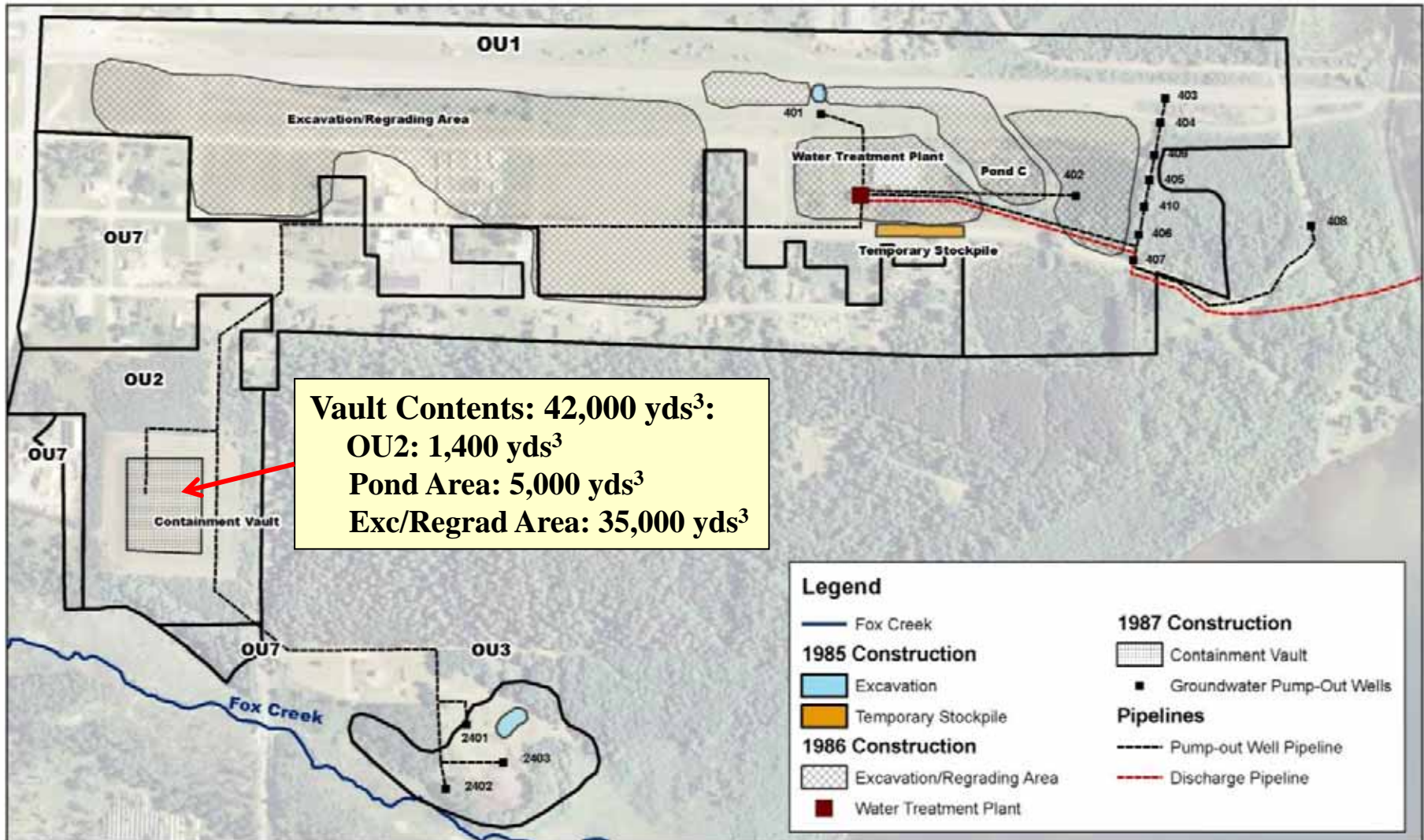
- 1985-87
- Provide city water to residents
- Excavate about 42,000 yds³ of contaminated soil/sludge
- Place the soil/sludge in a hazardous waste vault
- Install groundwater pump and treat system
- Operate, monitor, and maintain the vault and system

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MPCA-Lead Cleanup Actions



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EPA Actions

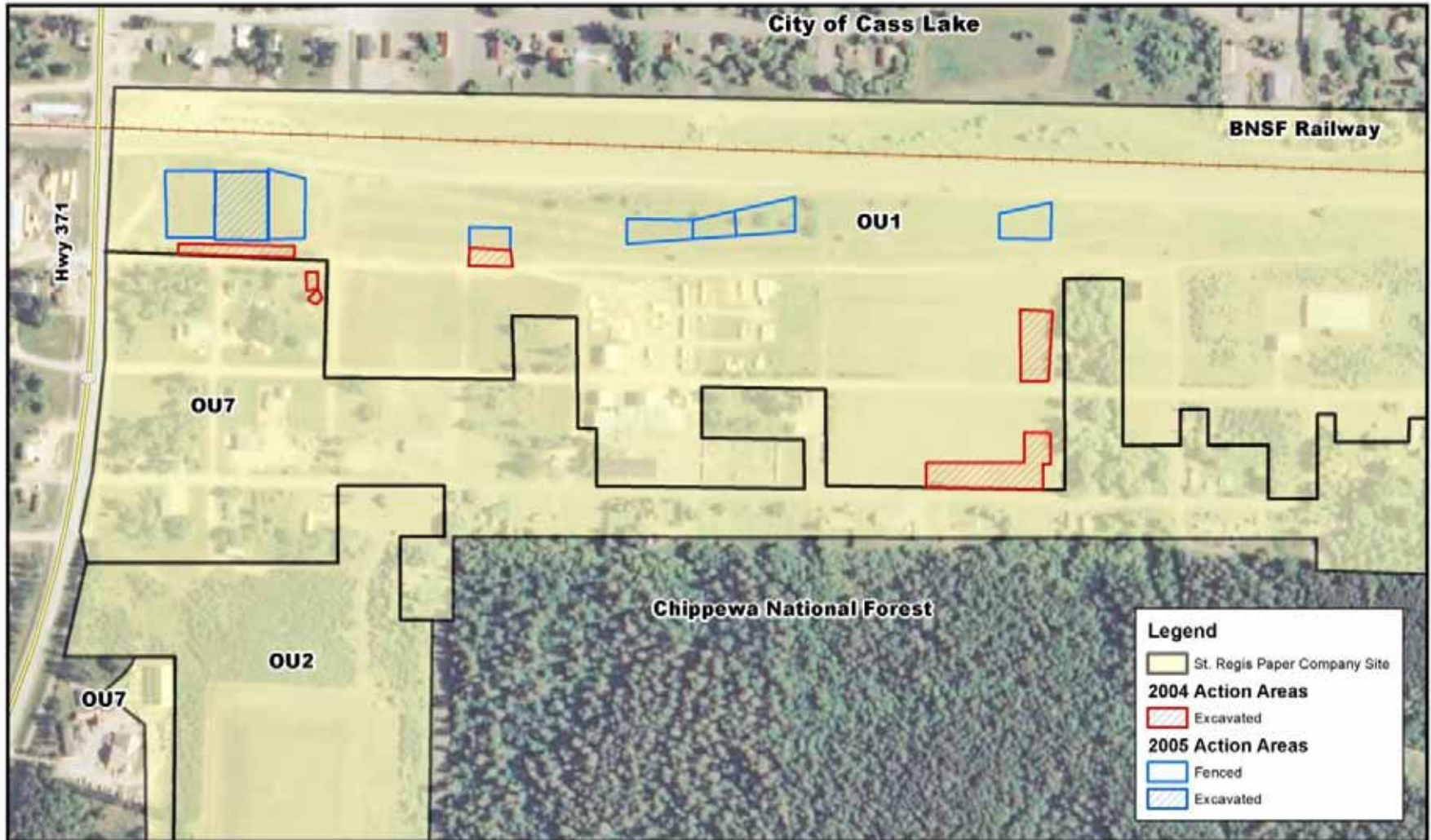
- EPA became the lead agency in 1994
- Reviews of the remedy concluded soil sampling and a risk assessment were needed
- Initial sampling in 2001. More sampling in 2003
- Human health and ecological risk assessment sampling began in 2004
- Removal actions, 2004 to 2006, excavated about 3,900 tons of contaminated soil, disposed offsite
- Interim action for residential house dust, 2006
 - Initial & periodic cleaning, 3” interim soil cover
- Human Health Risk Assessment complete, 2008

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EPA Excavations



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Human Health Risk Assessment Methods

1. Analyze site contamination and past studies on effects
2. Consider different ways people are exposed (eat, breath, skin contact), how often?, how long?
3. Combine information on the toxicity of each chemical to determine total risks and hazards:
 - a) EPA's acceptable risk range of possible excess cancer is one in 1,000,000 to one in 10,000
 - b) EPA also determines noncancer hazards
4. For St. Regis, EPA added tribal member scenarios
5. EPA determines whether the site risks are great enough to cause health problems

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Risk Assessment Conclusions

- Unacceptable Human Health Risks:
 - Future exposure of residents to dioxin and B(a)PE if the interim cover is removed
 - Current and future exposure of workers to dioxin and B(a)PE contaminated soil in industrial areas
 - Future exposure of workers in contaminated groundwater areas by digging
- Unacceptable ecological risks:
 - Current exposure of invertebrates to PCP and HPAHs in an area southwest of the vault.

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Feasibility Study

- Set cleanup goals and objectives
- Identify cleanup technologies and processes
- Screen, analyze, and compare alternatives
- Evaluate all options against 9 selection criteria

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The Nine Criteria

➤ **Threshold factors:**

- Overall protection of human health and the environment
- Compliance with federal/state/tribal laws

➤ **Balancing factors:**

- Long-term effectiveness and permanence
- Preference for treatment
- Short-term effectiveness
- Implementability
- Cost

➤ **Modifying considerations:**

- Tribal and state acceptance
- Community acceptance

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St. Regis Risk-based Values

Contaminant²	Value	Risk	Residential/ Commercial
Dioxin	6.3 ppt	1 in 1,000,000 cancer	Residential
Dioxin	38 ppt	1 in 1,000,000 cancer	Commercial
Dioxin	380 ppt	1 in 100,000 cancer	Commercial
Dioxin	63 ppt	1 in 100,000 cancer	Residential
Dioxin	630 ppt	1 in 10,000 cancer	Residential
Dioxin	3,800 ppt	1 in 10,000 cancer	Commercial
Dioxin	2,000 ppt	Noncancer	Commercial

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Selected Preliminary Cleanup Goals

Chosen due to:

- Uncertainties in the risk assessment

Residential Property Areas

Contaminant	Value	Excess Cancer Risk	Human Health/Eco
Dioxin	63 ppt	1 in 100,000	Human Health
B(a)PE	1.6 ppm	1 in 100,000	Human Health

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Selected Preliminary Cleanup Goals

Commercial Property Areas

Contaminant	Value	Excess Cancer Risk	Human Health/Eco
Dioxin	380 ppt	1 in 100,000	Human Health
B(a)PE	4.1 ppm	1 in 100,000	Human Health

Ecological Risk Area near OU2

Contaminant	Value	Excess Cancer Risk	Human Health/Eco
HPAHs	18 ppm	-	Eco
PCP	31 ppm	-	Eco

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Potential Site ARARs



- Applicable or relevant and appropriate requirements
 - Federal, tribal, state
- Identified Potential ARARs for cleanup:
 - LLBO Hazardous Substance Control Act

Contaminant	Value	Excess Cancer Risk	Human Health/Eco
Dioxin	10 ppt	About 1 in 1,000,000	-
PCP	2 ppb	-	-
B(a)PE	N/A	-	-
HPAHs	N/A	-	-

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The Considered Alternatives

- Excavation and cover alternatives
- Excavation only alternatives
- On-site and off-site disposal of contaminated soil
- Cleanup goals based on ranges from about 1 in 1,000,000 to 1 in 10,000 excess cancer risk

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Alternative 7

- Excavation and cover alternative
- Cleanup to **1 in 10,000** excess cancer risk level
- Residential: Excavate at **190** ppt dioxin to 2 ft. maximum
- Commercial: Cover at **2000** ppt dioxin
- Excavate ecological risk area
- Pave unpaved roads and Cass Forest Products work area

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Excavation	
Cover	
No action	
Unsampled	



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Alternative 8

- Excavation and cover alternative
- Cleanup to **1 in 10,000** excess cancer risk level
- Residential: Excavate at **190** ppt dioxin to 2 ft. maximum
- Commercial: Cover at **190** ppt dioxin
- Excavate ecological risk area
- Pave unpaved roads and Cass Forest Products work area

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Alternative 8



Excavation	
Cover	
No action	
Unsampled	



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Alternative 2

- Excavation and cover alternative
- Cleanup to **1 in 100,000** excess cancer risk level
- Residential: Excavate at **63** ppt dioxin to 2 ft. maximum
- Commercial: Cover at **380** ppt dioxin
- Excavate ecological risk area
- Pave unpaved roads and Cass Forest Products work area

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Excavation	
Cover	
No action	
Unsampled	



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Alternative 3

- Excavation and cover alternative
- Cleanup to **1 in 100,000** excess cancer risk level
- Residential: Excavate at **63** ppt dioxin to 2 ft. maximum
- Commercial: Cover at **63** ppt dioxin
- Excavate ecological risk area
- Pave unpaved roads and Cass Forest Products work area

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Alternative 3



Excavation	
Cover	
No action	
Unsampled	

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Alternative 4

- Excavation and cover alternative
- Cleanup to **1 in 1,000,000** excess cancer risk level
- Residential: Excavate at **63** ppt dioxin to 2 ft. maximum and cover at **10** ppt dioxin
- Commercial: Cover at **10** ppt dioxin
- Excavate ecological risk area
- Pave unpaved roads and Cass Forest Products work area





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Alternative: 4



Excavation	
Cover	
No action	
Unsampled	

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Alternative 5

- Excavation alternative
- Cleanup to **1 in 100,000** excess cancer risk level
- Residential: Excavate at **63** ppt dioxin
- Commercial: Excavate at **63** ppt dioxin
- Excavate ecological risk area

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Excavation	
Cover	
No action	
Unsampled	



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Alternative 6

- Excavation alternative
- Cleanup to **1 in 1,000,000** excess cancer risk level
- Residential: Excavate at **10** ppt dioxin
- Commercial: Excavate at **10** ppt dioxin
- Excavate ecological risk area

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Excavation	
Cover	
No action	
Unsampled	



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Alt	Description (A – Offsite Disposal, B – Onsite Disposal)	Cost (A/B) \$ Millions
1	No Action	0
2	Residential: Excavate soil to 2 ft. over 63 ppt dioxin, 1.6 ppm B(a)PE, Pave roads and Cass Forest Products Ind/Com: 1 ft. cover soil over 380 ppt dioxin, 4.1 ppm B(a)PE Eco Area: Excavate soil over 31 ppm PCP, 18 ppm HPAHs	22.5/20.3
3	Like 2, but Ind/Com cover over 63 ppt dioxin, Cover Eco area over 2 ppb for PCP	29.8/27.7
4	Like 3, but cover all areas over 10 ppt dioxin	45.8/44
5	Like 3, but exc. all areas over 63 ppt dioxin	103/45
6	Like 3, but exc. all areas over 10 ppt dioxin and exc. Eco area over 2 ppb PCP	201/82
7	Like 2, but: Res: Excavate over 190 ppt dioxin, 8.1 ppm B(a)PE Ind/Com cover over 2,000 ppt dioxin, 41 ppm B(a)PE	12.4/10.5
8	Like 7, but: Ind/Com cover 190 ppt dioxin, 8.1 ppm B(a)PE	22/19.9

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Comparison to the Nine Criteria

Alt	Protects HH&E	Complies with ARARs	Treatment	Implement	Effective	Cost A/B \$ Million
1	No	No	N/A	N/A	N/A	0
2	Yes	No	No	Yes	Yes	22.5/20.3
3	Yes	No	No	Yes	Yes	29.8/27.7
4	Yes	Yes	No	Yes	Yes	45.8/44
5	Yes	No	No	Yes	Yes	103/45
6	Yes	Yes	No	Yes	Yes	201/82
7	Yes	No	No	Yes	Yes	12.4/10.5
8	Yes	No	No	Yes	Yes	22/19.9

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EPA's Preferred Alternative: 4A

- Is protective of human health and the environment
- Meets ARARs
- Is implementable
- Is long- and short-term effective
- Is cost effective





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EPA's Preferred Alternative: 4A



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Tribal and State Acceptance

- Tribal acceptance
 - LLBO prefers Alternative 6A
- State acceptance
 - State has not made a final decision
- Community acceptance
 - Will be determined after public comment period

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Questions?