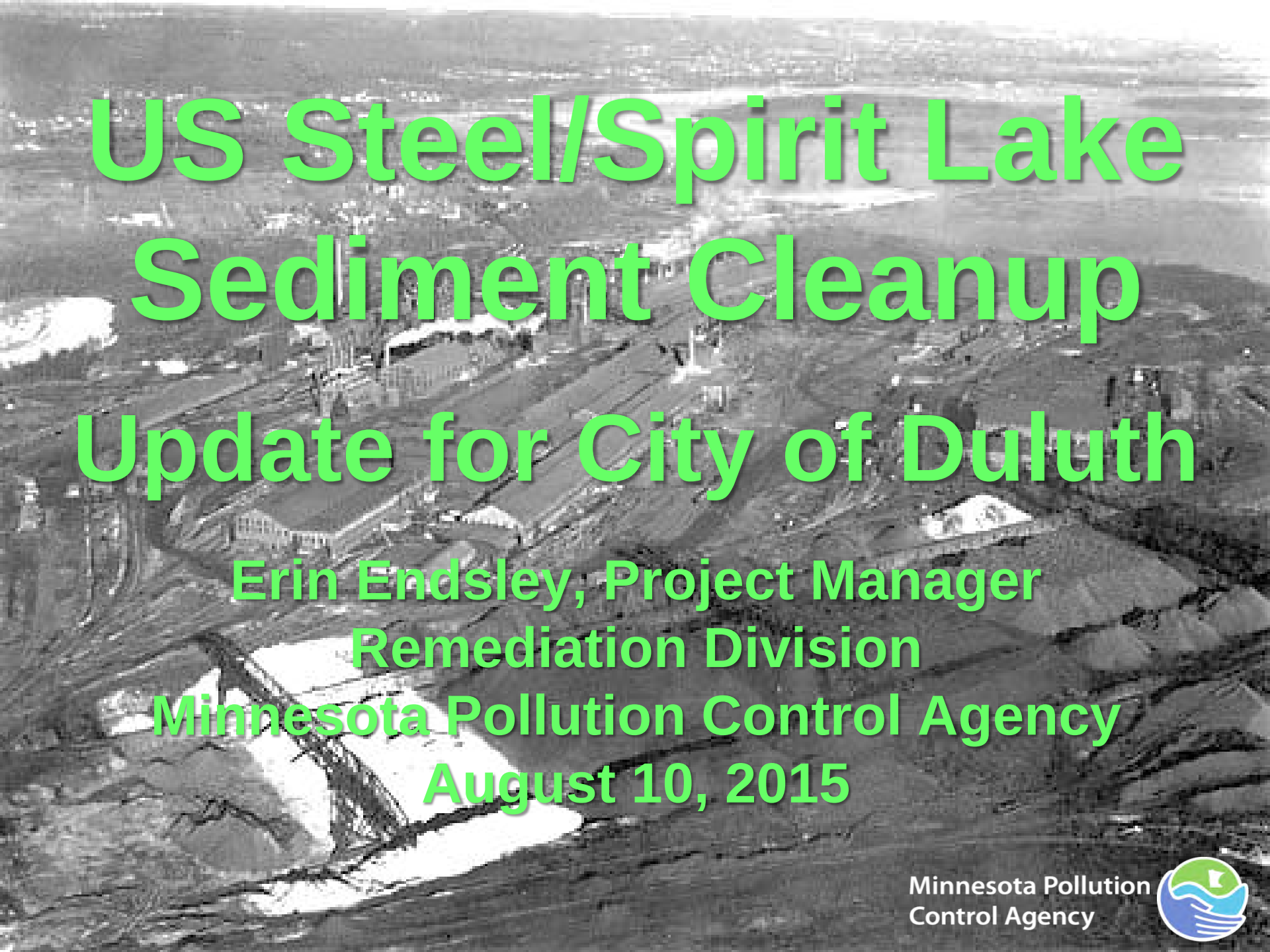

US Steel/Spirit Lake Sediment Cleanup

Update for City of Duluth

Erin Endsley, Project Manager
Remediation Division
Minnesota Pollution Control Agency

August 10, 2015

Minnesota Pollution Control Agency

Outline

- Site history
- Completed cleanup activities
- Planned cleanup activities
- City of Duluth involvement
- Remedy selection process
- Project timelines/next steps
- Questions

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US Steel Superfund Site


Universal Atlas Cement Company

US Steel Duluth Works

- Operated from 1915-1979
- Coke, steel, and wire production
  - Coke ovens
  - Blast furnaces and open hearth furnaces
  - Blooming and billet mills
  - Rod, wire, and fence mills
  - Bulk materials handling

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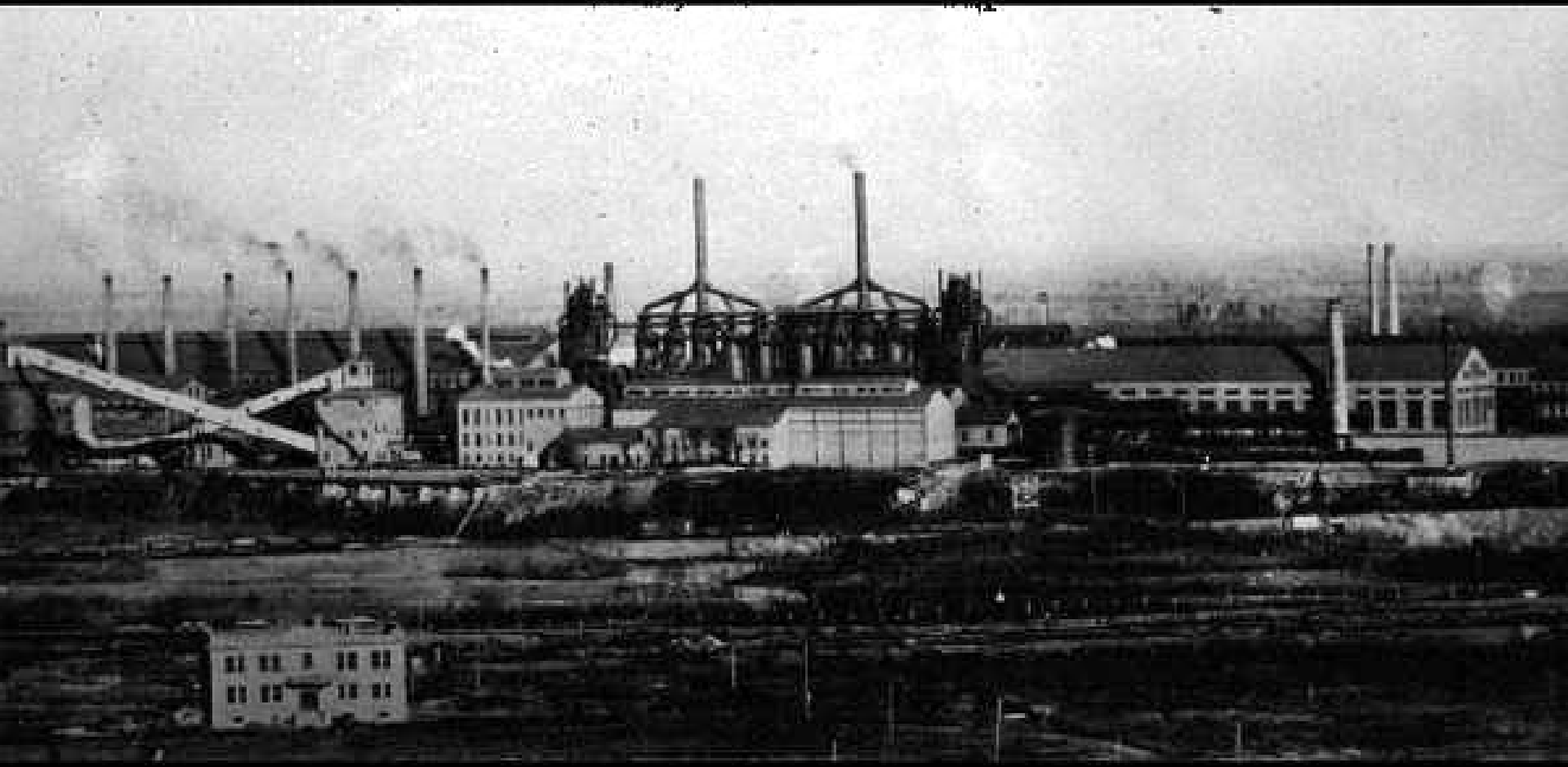

US Steel Contaminants

- By-products of steel and coke production with disposal to the land and the St. Louis River
- Contaminants: PAHs (coal tar), oils and heavy metals in soil, sediment, surface water and shallow groundwater

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US Steel Cleanup

- Site listed on NPL SF list in 1983-MPCA lead agency
- Visual and “free product” contamination cleaned up in the 1990s at a cost of $12 million
- Land units-tar, fuels, drums, tanks, pipelines, building removal
- Sediment units-Wire Mill Pond and OU-J in 1997

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USS Site Current Status

90% of the site is undergoing some form of investigation or cleanup

- 132-acre VIC site (Duluth Seaway Port Authority) – planned soil cleanup
- Petroleum site (Release from 1 million gal. tanks) – investigation
- Sediment Units – completed feasibility study
  - Over 350 acres of sediments (>1,650,000 yd^3)

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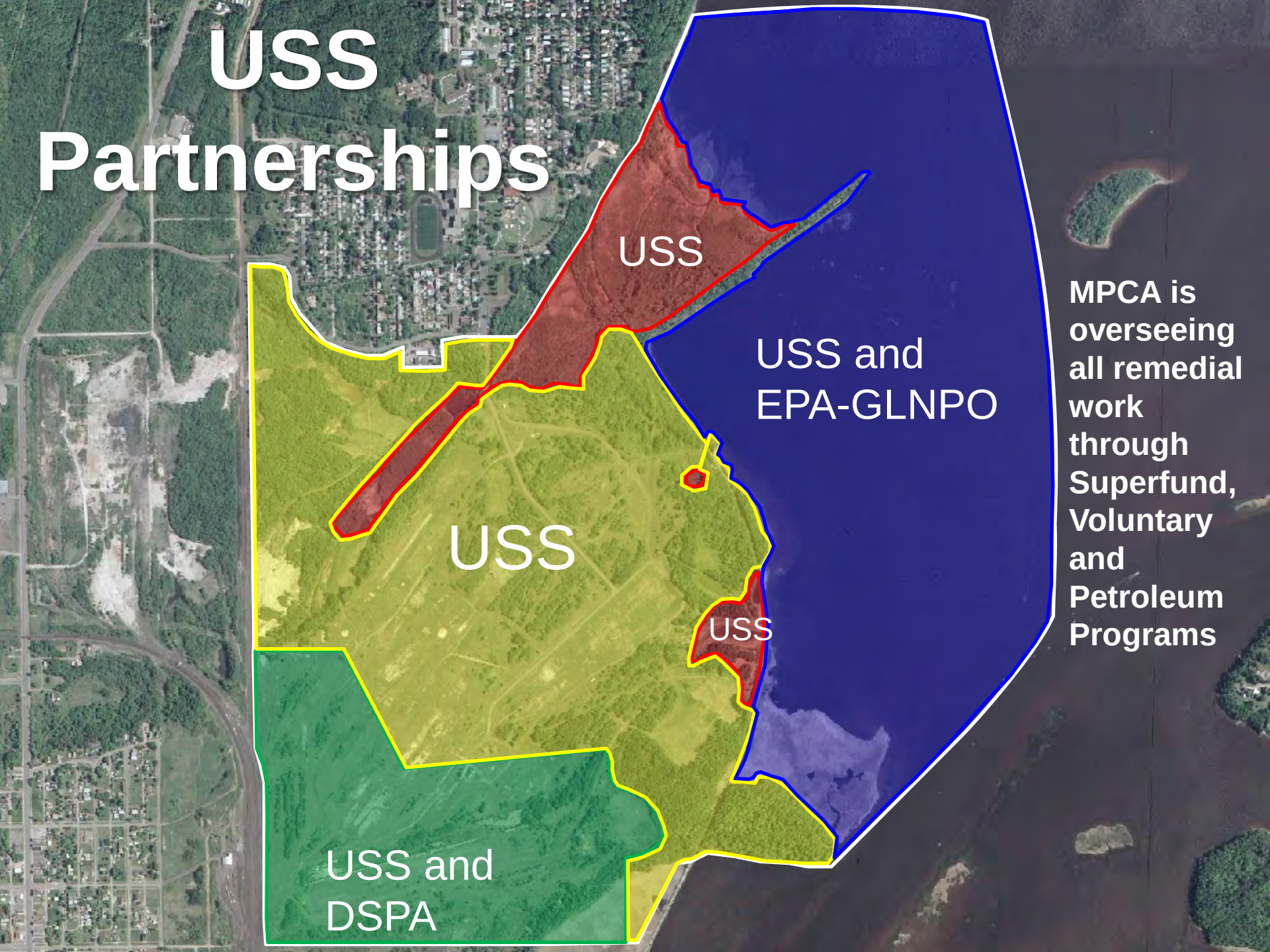
USS Partnerships



MPCA is overseeing all remedial work through Superfund, Voluntary and Petroleum Programs


Upland
Stream, Basin
&
Wetland
Sediments
Unnamed Creek
Corridor & Delta
Unnamed
Pond
Tar
Pits
Wire Mill
Pond

Coke Plant Settling Basin Management Area


Wire Mill Settling Basin
Management Area

St. Louis River Estuary Sediments

Superfund Feasibility Study Goals and Considerations

1. The cleanup remedy will protect human health and the environment
2. FS must consider the estuary sediment remedial actions and Upland source control
3. FS must consider land ownership – current and anticipated future use
4. Other considerations:
   - § Preserve upland for future economic redevelopment
   - § GLNPO involvement will provide habitat betterment
   - § Input from the resource managers (MNDNR, USFWS, Tribes, City of Duluth, USACE, SLRA)

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Feasibility Study (FS)

- Completed July 2015; approx. 2-yr process
- 12 alternatives developed
- Stakeholder input incorporated into development of alternatives
- 5 advanced through more detailed analysis
- FS identifies USS and GLNPO's preferred alternative – Alternative #8
- Alternative #12 developed based on tribal input

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Common Remedy Elements

- Consolidation of contamination on Upland units in confined disposal facilities (CDFs)
- Dredging, excavation and capping
- Natural cover and thin covers
- Unnamed Creek will be reengineered to control storm water
- Wire Mill Pond and surrounding dredge spoil piles will be completely removed creating 7 acres open water
- Habitat betterment considerations

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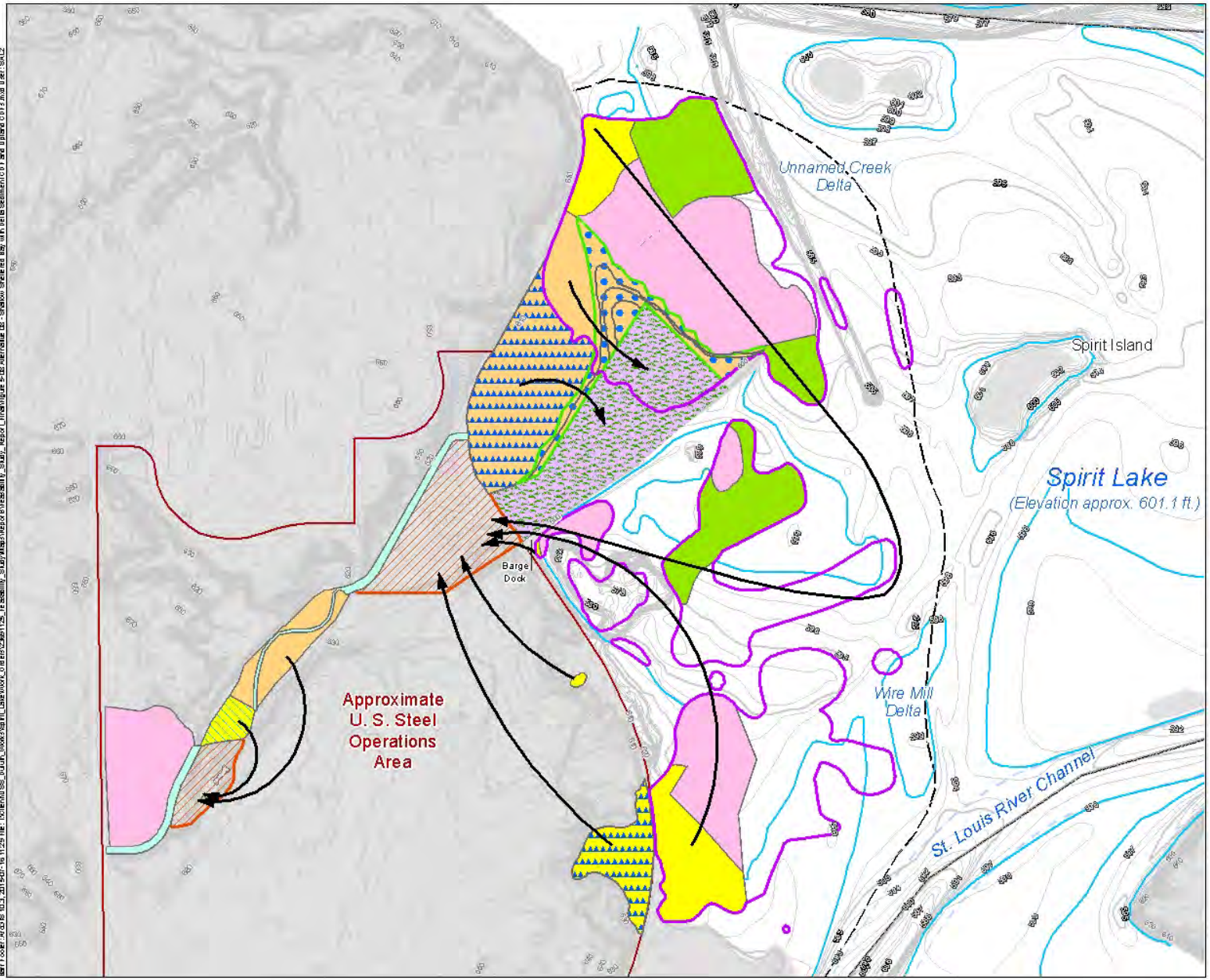
Alt 8: Shallow Sheltered Bay w/ Delta & Upland CDFs

- Removal Volume: 648,000 CY
- Cap/Cover Areas
  - Upland: 22 acres
  - Estuary (including OU-M Delta): 121 acres
  - OU-M Upland CDF: 18 acres (berm height: 9’)
  - OU-M Delta CDF: 29 acres (berm height: 6’)
  - CDF behind OU-J: 5 acres (berm height: 25’)
  - Total: 196 acres
- Provides good flow channel for Creek and stormwater ponding area
- Estuary-connected open water: net increase of 20 acres with 29 acres as shallow sheltered bay
- Key Challenges
  - Consolidation Area of Estuary Only Material in Estuary (OU-M Delta)
- Anticipated Construction Duration: 2 years

Alt 8: SSB w/ Delta & Upland CDFs



Remedial Action

- Drainage Feature
- ENR Thin Cover
- Remedial Cap
- Remove
- Remove to Set Elevation and Remedial Cap
- Upland CDF
- Unnamed Creek Estuary Sediment CDF
- Shallow Sheltered Bay Protection-Submerged Shoal Feature
- New Open Water
- Storm water Ponding Area
- Submerged Shoal Elevation Contours
- Movement and Primary Destination of Removed Material

- Estuary PRG Footprint (Total PAH(13), Lead, Zinc, Copper, MPCA - March 5, 2014)
- 2011 Upland Elevation Contours (10-Foot) *
- 2011 Upland Elevation Contours (2-Foot) *
- 2012 Bathymetry Contours (5-Foot)
- 2012 Bathymetry Contours (1-Foot)
- 598 Feet Bathymetry Contour
- Approximate Outer Study Area Limit
- Approximate Location of St. Louis River Channel, Based on Orthophoto Interpretation
- Approximate U. S. Steel Operations Area (URS, 2008)
- State Boundary

* Source: Minnesota Department of Natural Resources LiDAR Elevation, Arrowhead Region, NE Minnesota, 2011

800 0 800
Feet

Figure 5-8

ALTERNATIVE 8
SHALLOW SHELTERED BAY WITH DELTA SEDIMENT CDF AND UPLAND CDFS
Former U. S. Steel Duluth Works - Spirit Lake Sediment Site
Saint Louis River
Duluth, Minnesota

Alt 12: Open Water Bay w/ Upland CDFs

- Removal Volume: 716,000 CY
- Cap/Cover Areas
  - Upland: 22 acres
  - Estuary (including OU-M Delta): 144 acres
  - OU-M Upland CDF: 18 acres (berm height: 20')
  - Borrow Site: 17 acres (cap height: 20')
  - CDF behind OU-J: 5 acres (berm height: 25')
  - Total: 207 acres
- Provides good flow channel for Creek and stormwater ponding area
- Estuary-connected open water: net increase of 44 acres with 37 acres as open water bay
- Utilizes borrow-related excavations for on-site storage
- Key Challenges
  - Longer haul distances to achieve consolidation
  - Construction and O&M of 3 CDFs
  - Consumes otherwise developable area
  - Constructability of CDF (berm height and stability)
- Anticipated Construction Duration: 3 years

Alt 12: Open Water Bay w/ Upland CDFs

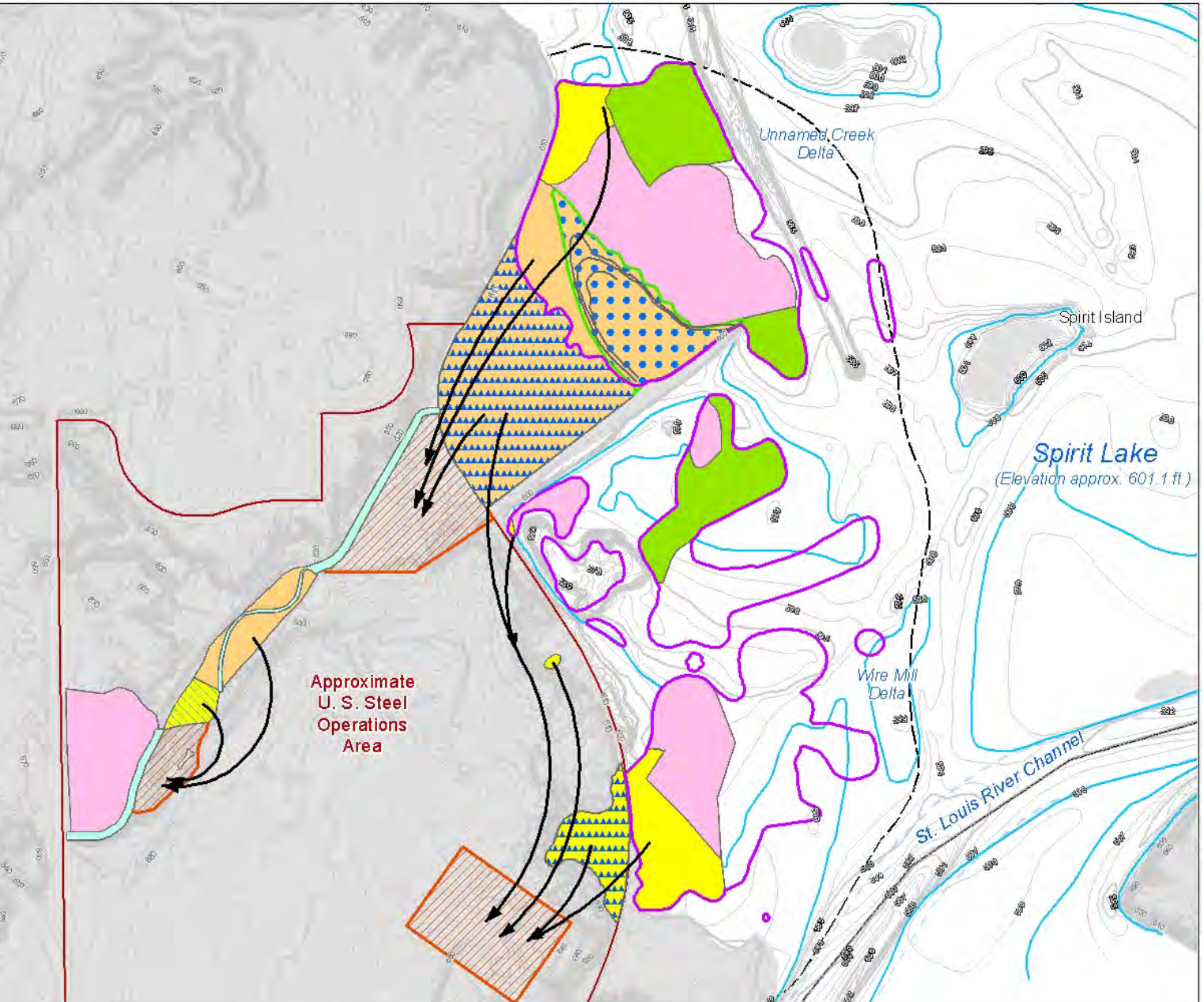


Figure 5-12

ALTERNATIVE 12
OPEN WATER BAY WITH UPLAND CDFS
Former U. S. Steel Duluth Works - Spirit Lake Sediment Site
Saint Louis River
Duluth, Minnesota

Alternatives 8 and 12

Alt 8

- 648,000 CY removed
- Berm heights adjacent to City property are 6’ and 9’
- $66 million
- Allows use of railroad after construction
- Smaller bay with varied water depths
- Habitat enhancements – substrates, water exchange in sheltered bays, sheltering from wind waves, locations for access
- Does not encroach upland development areas
- Two years to construct

Alt 12

- 716,000 CY
- Berm heights adjacent to City property are 20’
- $77 million
- Allows use of railroad after construction
- Large shallow open water bay (increases volume of removed material requiring consolidation)
- Habitat enhancements- open shallow bay, emergent vegetation, wet marshes, substrates, less wind wave protection
- Encroaches upland development area
- Three years to construct.

SF Remedy Selection Criteria

- Overall Protection of Human Health and the Environment
- Compliance with ARARs (applicable or relevant and appropriate requirement)
- Long Term Effectiveness and Permanence
- Reduction of Toxicity, Mobility, or Volume
- Short Term Effectiveness
- Implementability
- Cost
- Community Acceptance
- Support Agency Acceptance

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City of Duluth Involvement

- Impacted property owner -
  - City will need to negotiate with USS for compensation for impacts to their property
  - USS will need to negotiate access agreement with City
- Stakeholder – input from the City and other stakeholders is considered during remedy selection
- RGU for EAW process

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City-owned property

Requested Response from City

- Input to MPCA on alternatives presented in FS by Aug 14
- Continued involvement in EAW process
- Coordination with USS on access agreement and post-remediation restoration/compensation agreement

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Next Steps

MPCA remedy selection Aug/Sept 2015

Proposed Plan Aug/Sept 2015

- Public Comment Sept/Oct 2015
- Public Meeting Sept/Oct 2015

Responsiveness Summary/Final Cleanup Plan

Design/Permits: ongoing

Construction: Summer 2016-2018?

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More Info

- **MPCA USS Site Webpage:**
  http://www.pca.state.mn.us/mvri83b

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218-302-6619

Any Questions?

Minnesota Pollution Control Agency