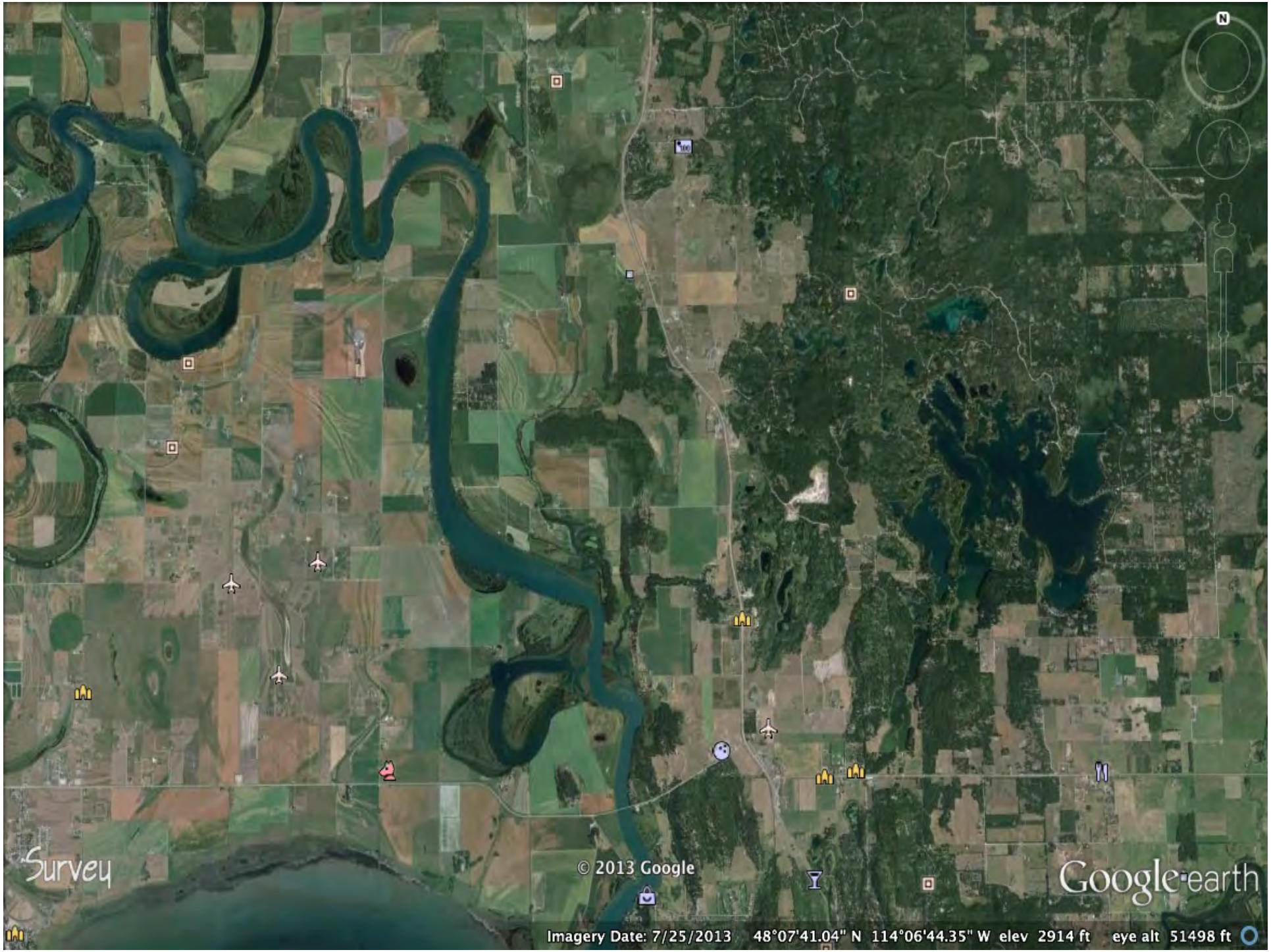
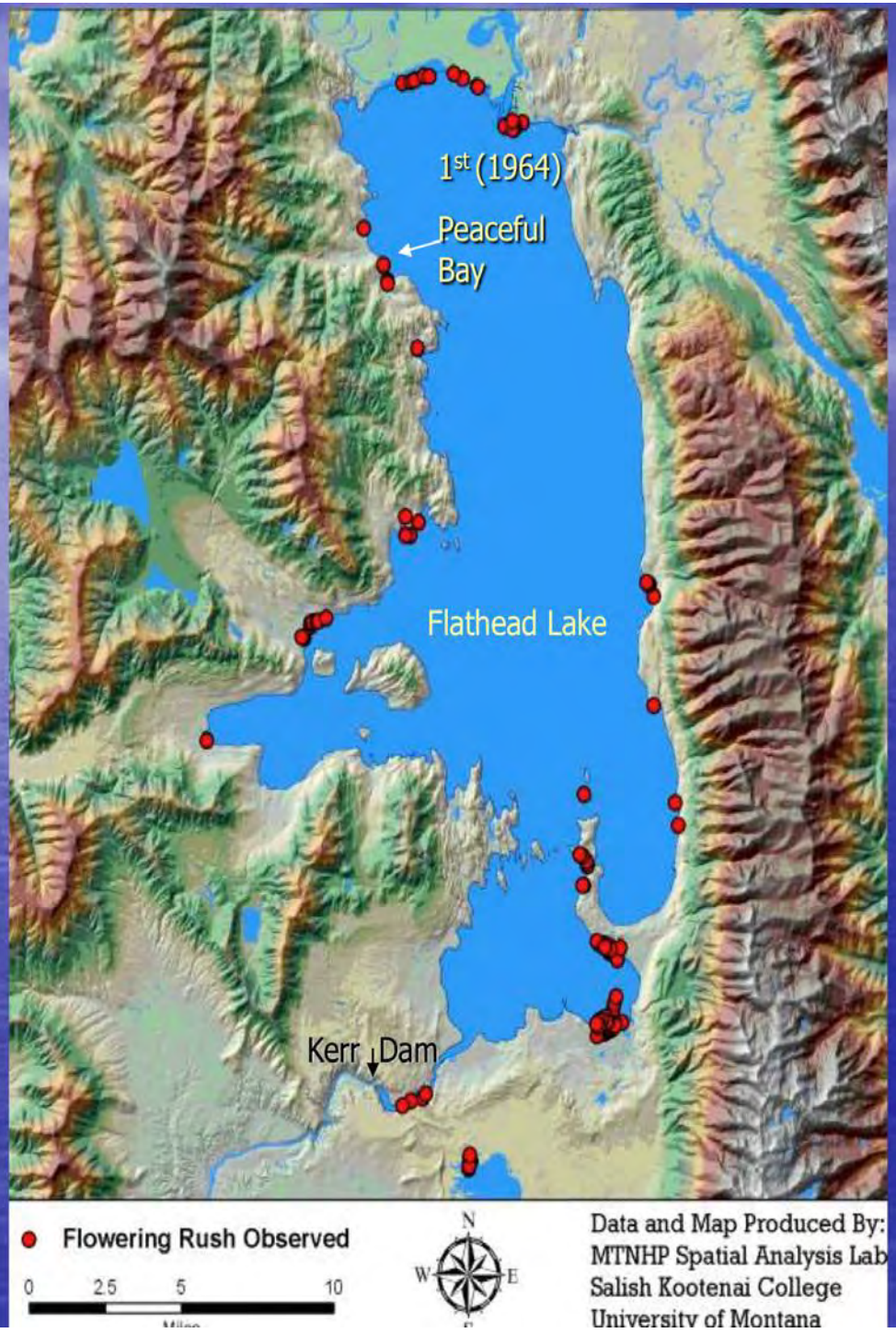
Status of Flowering Rush in Flathead & Lower Clark Fork Rivers

Virgil Dupuis; Salish Kootenai College, Alvin Mitchell; Salish Kootenai College, Peter Rice; University of Montana,


Mica
Revelstoke
Arrow Lakes
Duncan
Keenleyside
Kootenay Lake
Canada
U.S.
Grand Coulee
Chief Joseph
Wells
Rocky Reach
Rock Island
Wanapum
Priest Rapids
Columbia R.
Albeni Falls
Libby
Hungry Horse
Noxon
Pend Oreille Lake
Flathead Lake
Kerr
Montana
Seattle
Lower Monumental
Little Goose
Lower Granite
Dworshak
Washington
Ice Harbor
The Dalles
Portland
Bonneville
McNary
John Day
Hells Canyon
Oxbow
Brownlee
Idaho
Willamette R.
Oregon
Boise Projec
Snake R.
American Falls
Corps of Engineers Dams
Dams owned by Others

- Initiated inventories 2005
- Herbicide trials
  - Early spring and summer
  - Water column treatments
  - Bucket trials
  - Exposed sediments (2014)
  - Granular (planning)
- Spatial Model of Flathead Lake


Survey
© 2013 Google
Google earth
Imagery Date: 7/25/2013 48°07'41.04" N 114°06'44.35" W elev 2914 ft eye alt 51498 ft



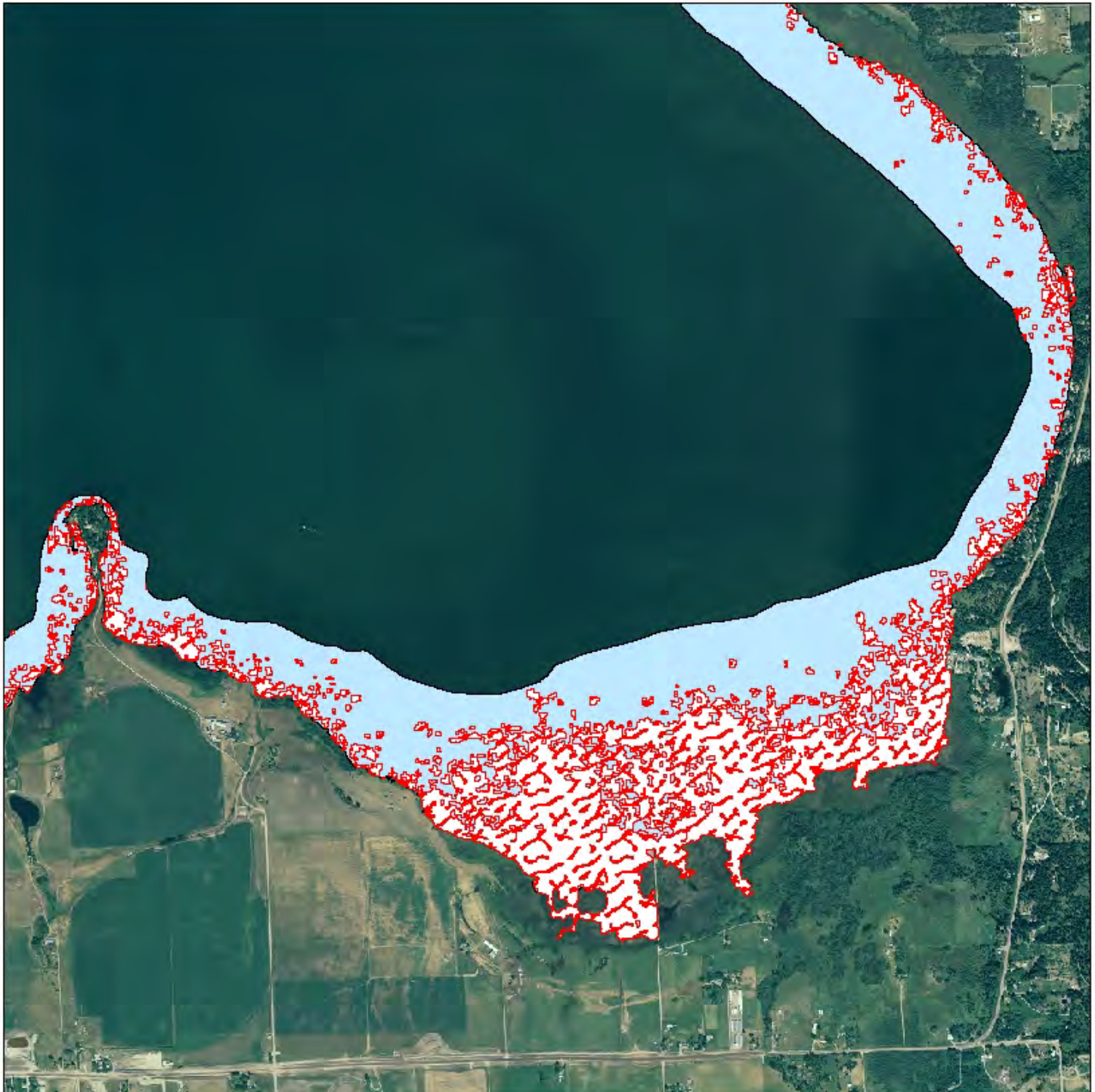
Known Infestations

Flathead Lake

Partial Survey

Data Through

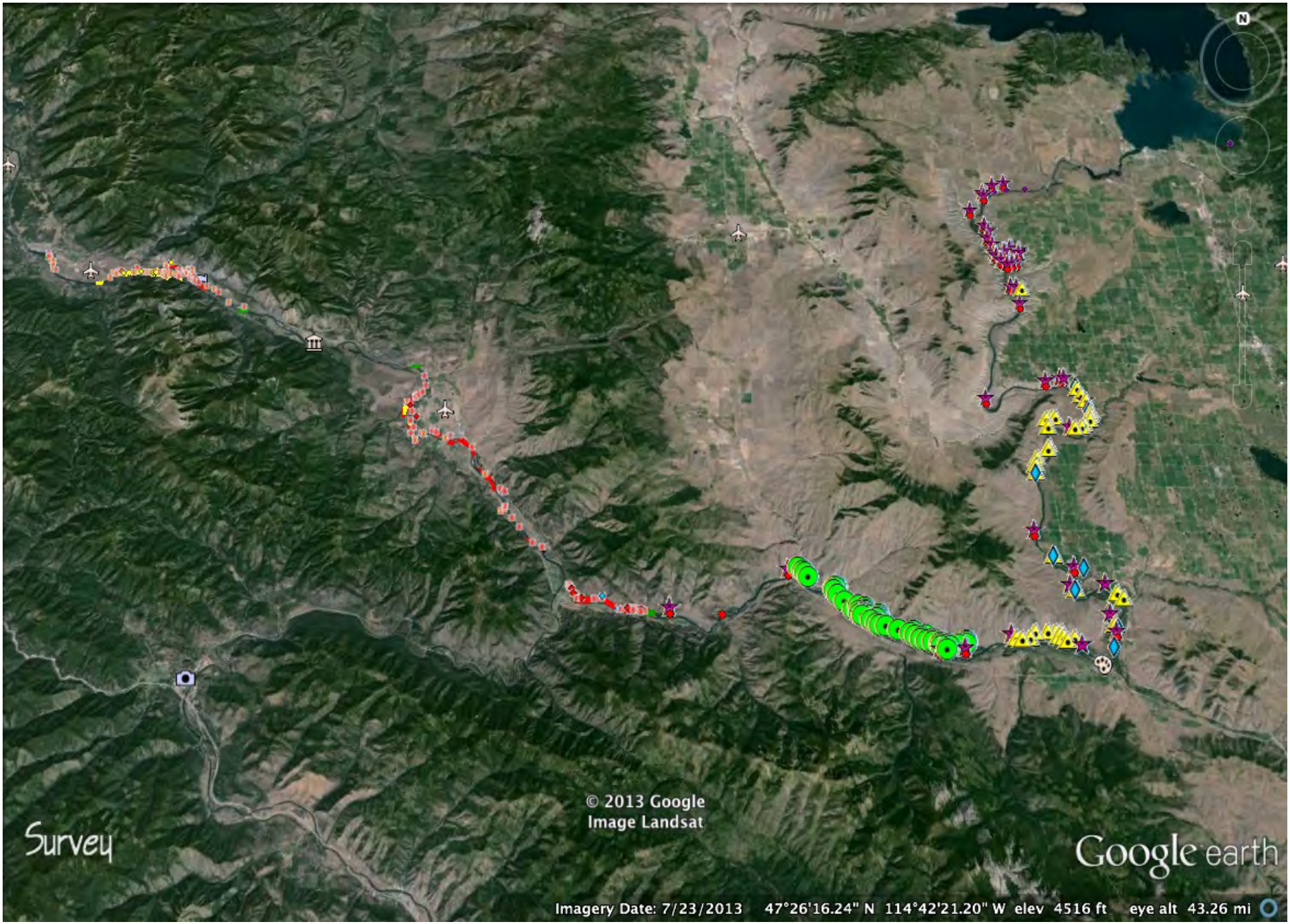
10/13/2008



Initial Spatial Modeling Predictions

Marcus Reddish

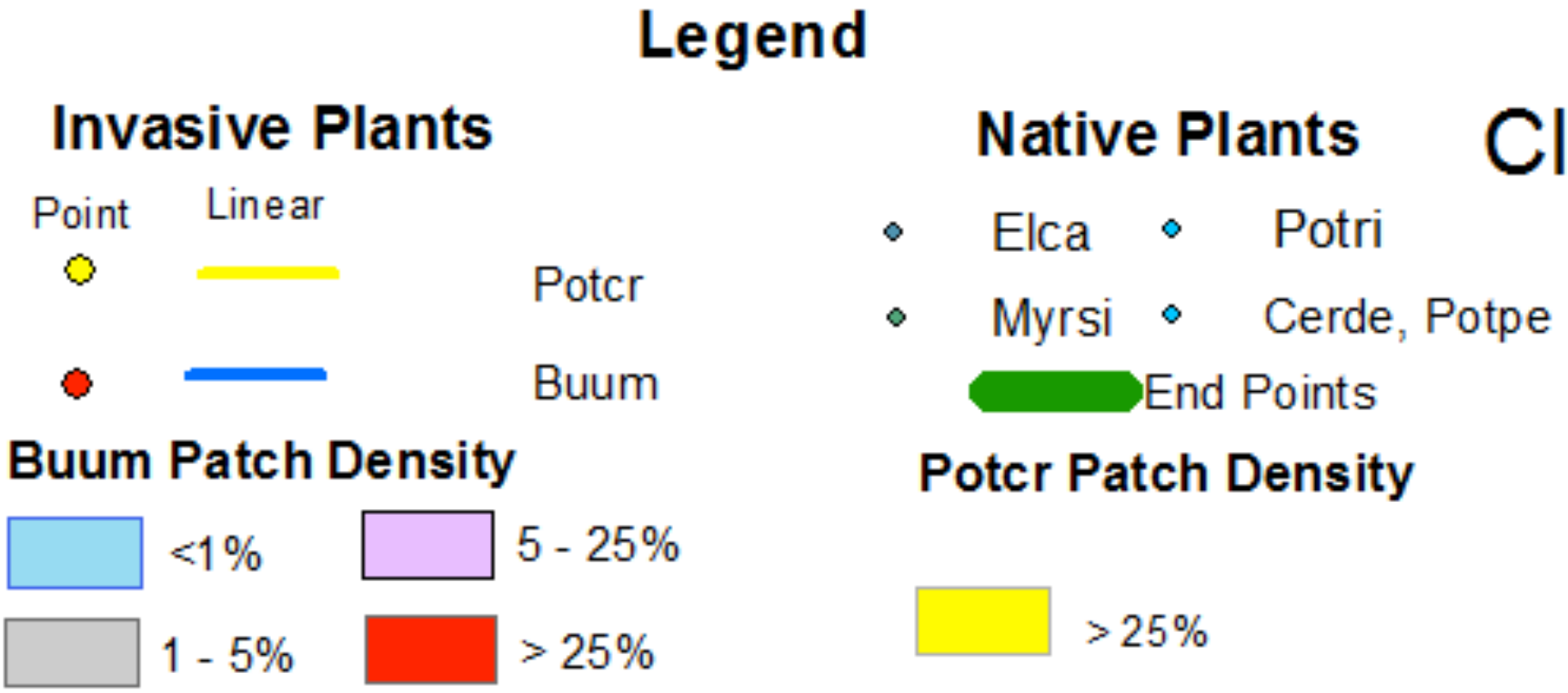
	Size Acres	Infested Acres	Max Acres	% of Lake
0-10” Littoral	5,823	> 1000	4,364	3.5%
10-20’ Littoral	8,375	> 1000	6,546	5.3%
	14,558	> 2,000	10,910	8.8%

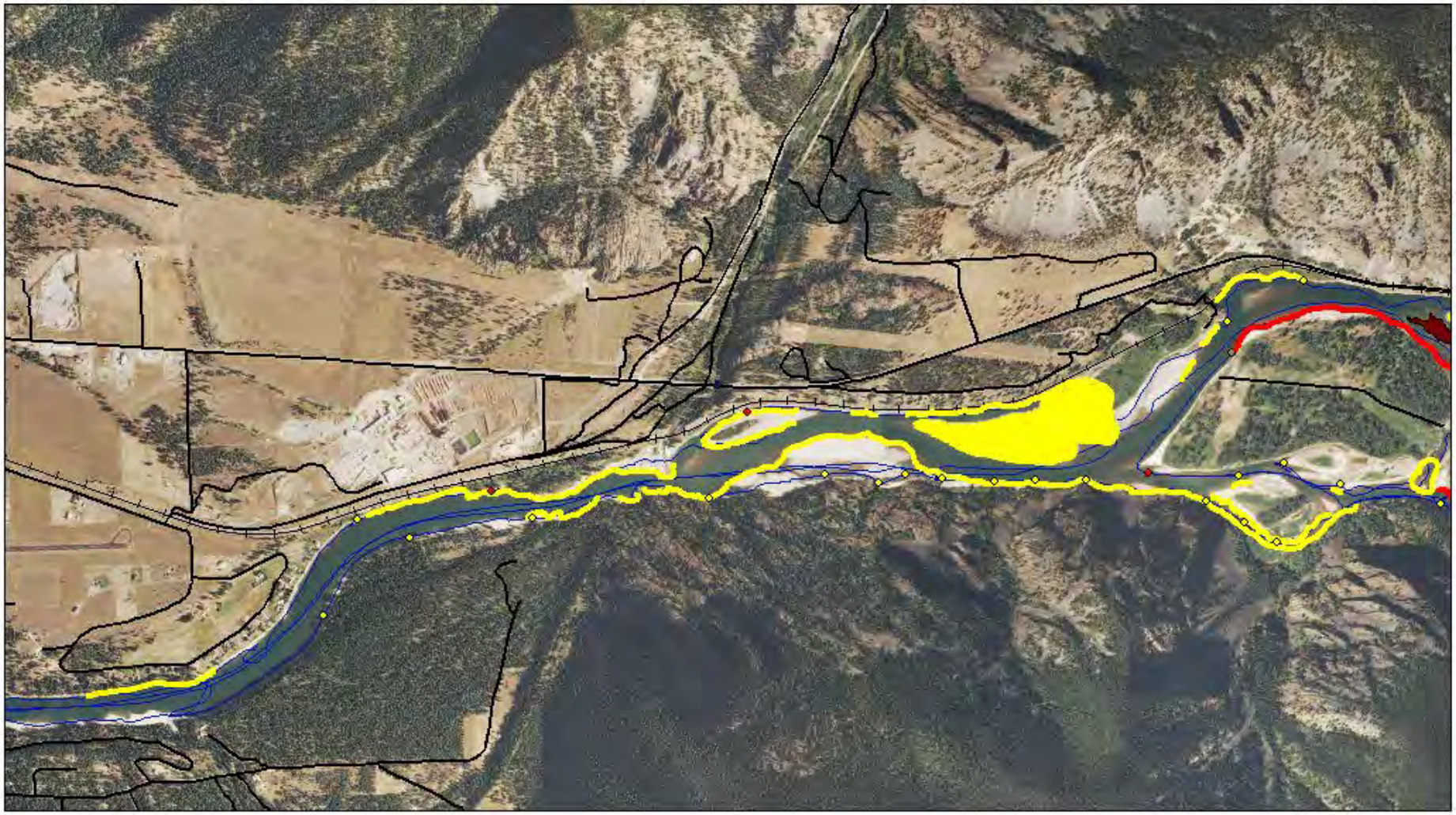

Survey
© 2013 Google
Image Landsat
Google earth
Imagery Date: 7/23/2013 47°26'16.24" N 114°42'21.20" W elev 4516 ft eye alt 43.26 mi


Survey
© 2013 Google
Google earth
Imagery Date: 7/23/2013 47°36'01.46" N 114°20'35.75" W elev 2663 ft eye alt 23542 ft


N
Survey
Google earth
Imagery Date: 7/23/2013 47°20'14.42" N 114°29'52.85" W elev 2493 ft eye alt 24291 ft

Mapping Protocols





Legend

Invasive Plants

Potcr

Buum

Native Plants

Elca

Myrsi

Cerde, Potpe

Potri

Buum Polygon

Trace

Moderate

Low

High

End Points

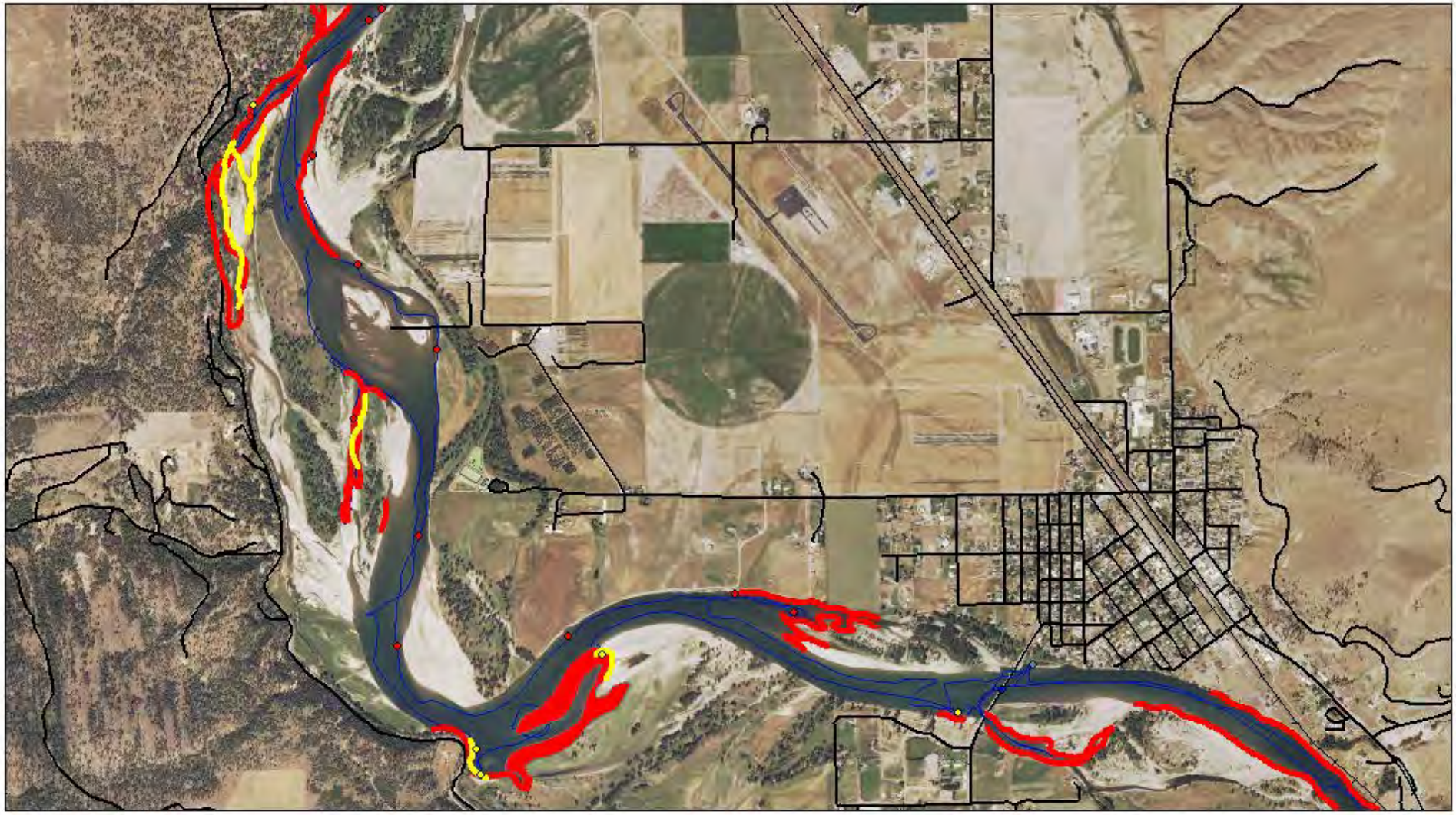
Clark Fork River AIS Inventory 2013

2 Thompson

0.25 0.125 0 0.25 0.5 0.75 1 Miles

N W E S

1:24,000



Legend

Invasive Plants

Potcr

Buum

Buum Polygon

Trace

Moderate

Low

High

Native Plants

Elca

Cerde, Potpe

Myrsi

Potri

End Points

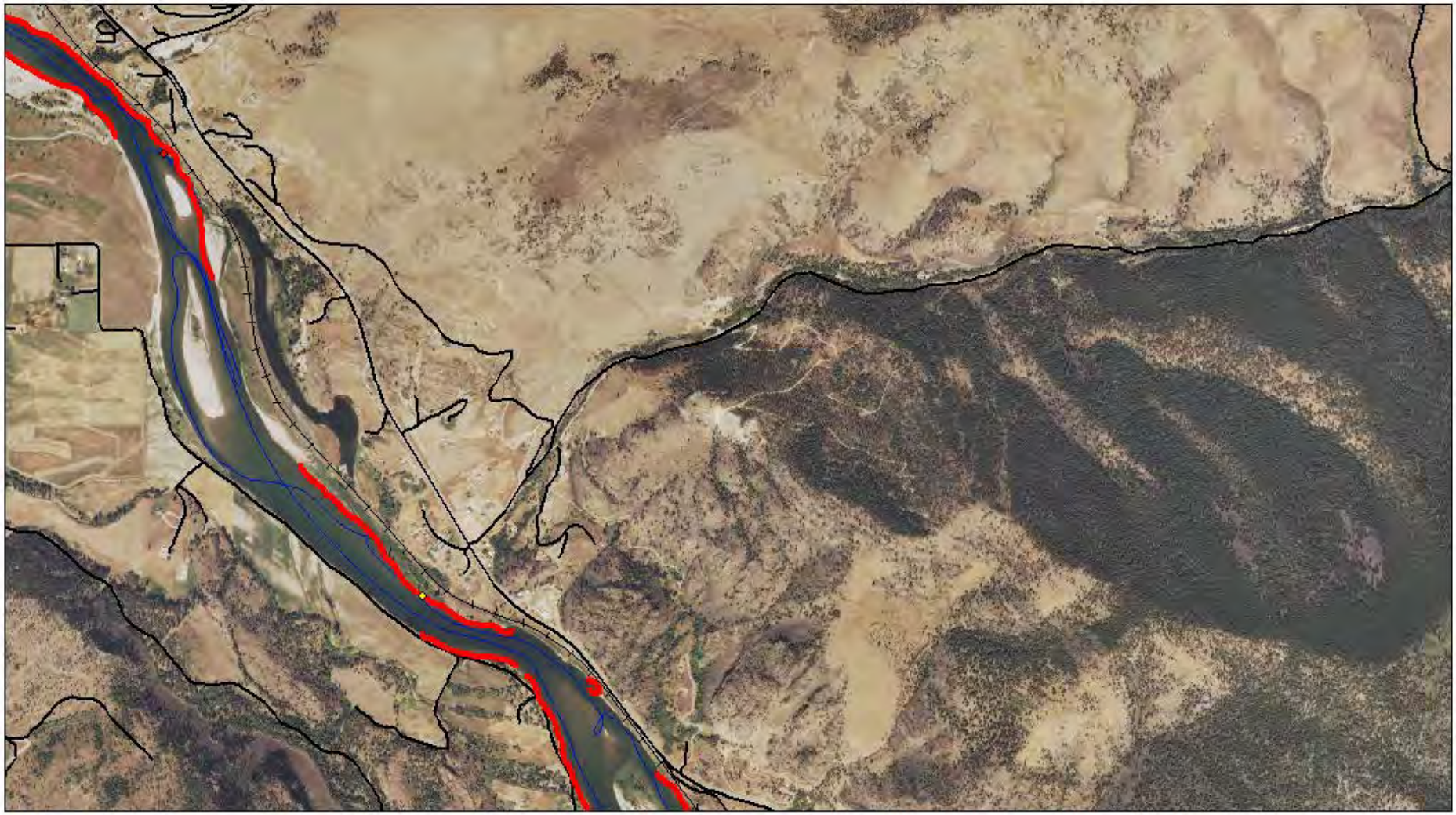
Clark Fork River AIS Inventory 2013

7 Plains

0.25 0.125 0 0.25 0.5 0.75 1 Miles

N W E S

1:24,000



Legend

Invasive Plants

Potcr

Buum

Buum Polygon

Trace | Moderate | Low | High

Native Plants

Elca | Cerde, Potpe | Myrsi | Potri

End Points

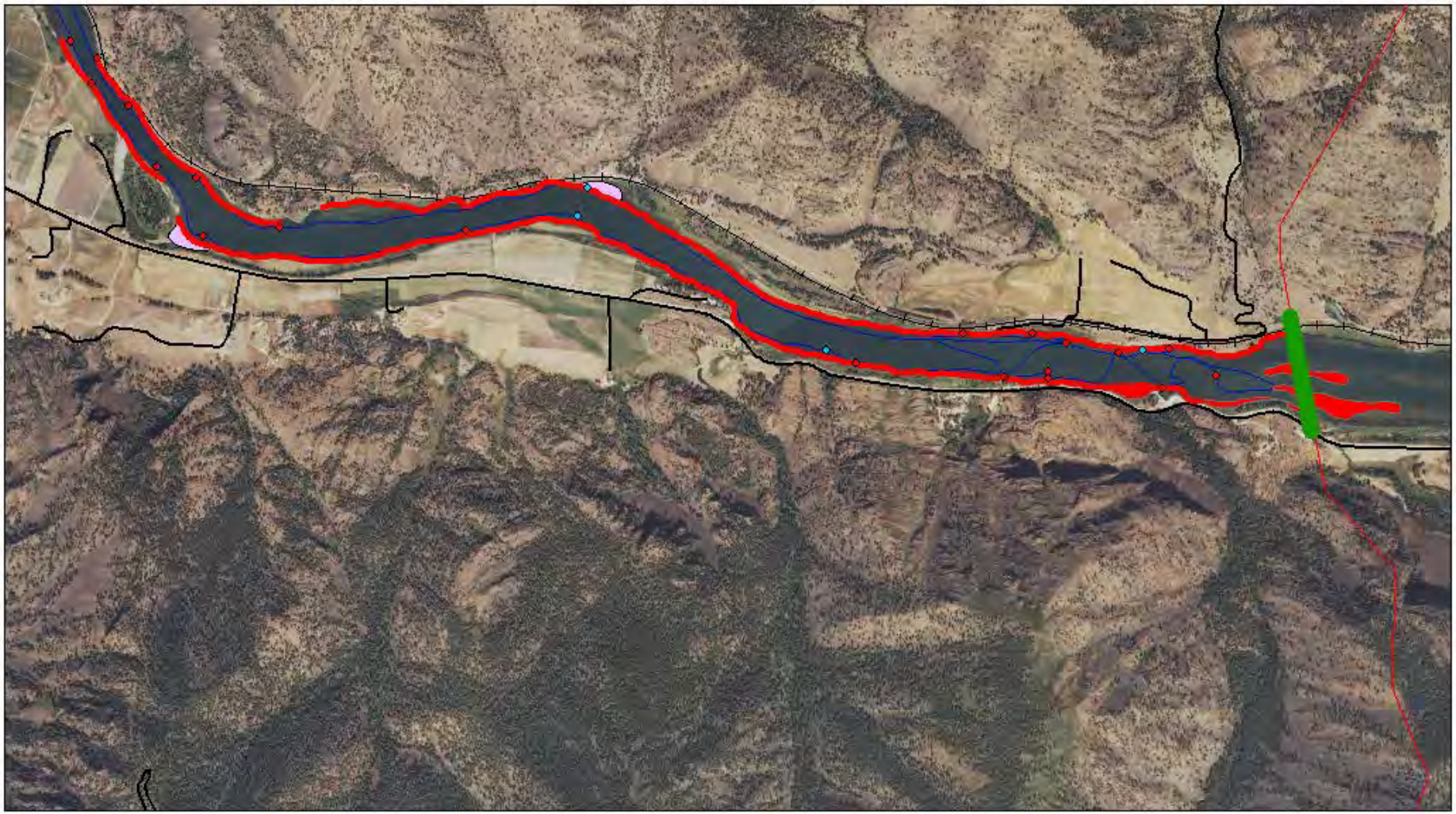
Clark Fork River AIS Inventory 2013

8 Plains

0.25 0.125 0 0.25 0.5 0.75 1 Miles

N W E S

1:24,000



Legend

Invasive Plants

Potcr

Buum

Buum Polygon

Trace

Moderate

Low

High

Native Plants

Elca

Cerde, Potpe

Myrsi

Potri

End Points

Clark Fork River AIS Inventory 2013

11 Flathead

0.25 0.125 0 0.25 0.5 0.75 1 Miles

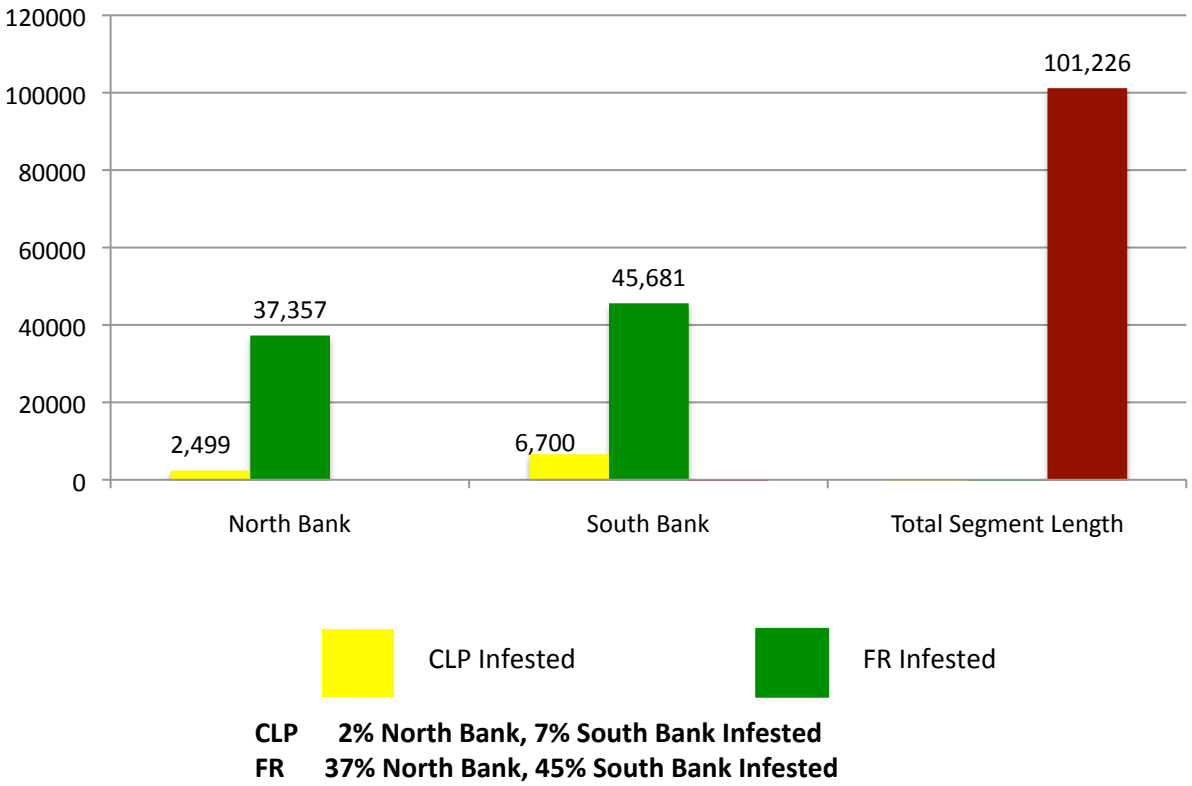
N W E S

1:24,000

Flathead Reservation line to Thompson Falls Inventory Summary

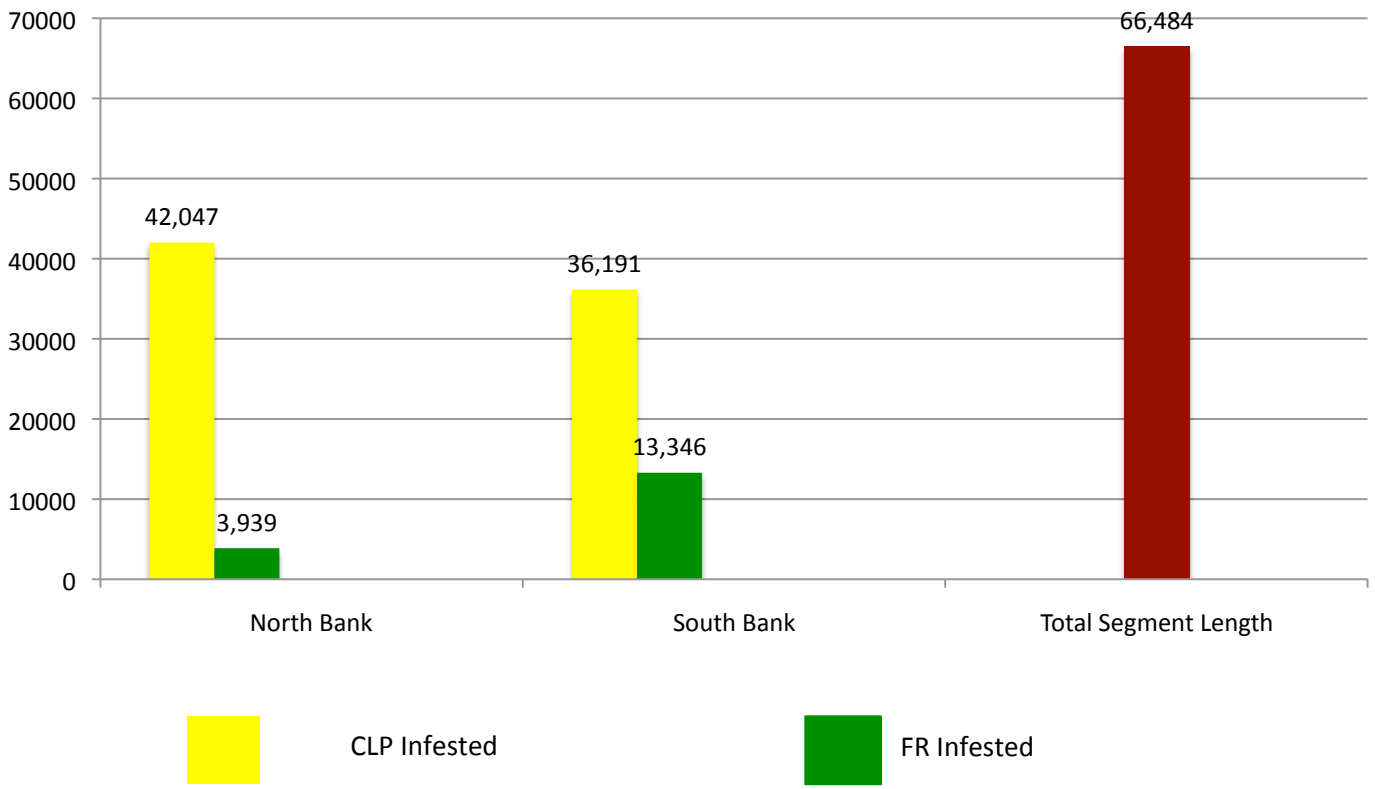
- Total river inventory length 31.5 miles
- Miles of river bank inventory, both sides 63.0 miles
- Miles of islands inventoried, both sides 30.4 miles
- Linear miles of flowering rush 24.8 miles
- Acres of flowering rush 88.3 acres
- Linear miles of curlyleaf pondweed 11.4 miles
- Acres of curlyleaf pondweed 61.1 acres

Reservation Line to Plains 19 miles
(feet of bank infested)



CLP 2% North Bank, 7% South Bank Infested
FR 37% North Bank, 45% South Bank Infested

Thompson Falls Upstream 12.6 miles
(feet of bank infested)



CLP 63% North Bank , 57% South Bank of segment infested
FR 6% North Bank , 20% South Bank of segment infested

- Monitor AIS in the Flathead River and Clark Fork River on a regular basis.
- Develop standard field data collection procedures, documentation, and reporting.
- Support the AIS prevention efforts in enforcement, inspection, outreach, and research.
- Evaluate impacts to native fish and plants, economic impacts, sedimentation,
- Investigate the feasibility of herbicide treatments in a river environment.
- Investigate controls for flowering rush.

These Introduced Piscivorous Fish

Are Adapted to Vegetated Habitats

(Dibble et al 1997)

Native Salmonids Are Open Water Species


07/26/2008

Swimmer's Itch (*schistosome cercarial dermatitis)*
Trematode Parasite


Flathead Valley Pablo Reservoir Irrigation Canal


Invasive of Wetlands & Shoreline
(Displacing Native Plants)
08/31/2005

Partners

- USDA NIFA
- Montana Department of Agriculture
- Montana Department of Natural Resources
- Western Integrated Pest Management Center
- Confederated Salish and Kootenai Tribes
- Clean Lakes Inc.