Proposed Methodology

for

Aquatic Habitat Loss Assessment

Prepared by the
CBFWA
Resident Fish Advisory Committee

Why Assess Habitat Losses

- Some area have been denied funding because of no assessment

- BPA and Utilities need to know total losses

- BPA wants credit for Resident Fish

- Not all actions needed are a good fit for Resident Fish substitution

- Need to be able to mitigate for operational losses

Determine Area Impacted

- How many acres of River were lost to inundation

- How many acres of aquatic habitat in tributaries was lost

- How many acres of aquatic habitat blocked by roads

Benefits of Using Area of Habitat

- Simple GIS calculation
- No need to determine stream order
- Automatic accounting of channel width
- Can use to credit for acquisition
- No need to find similar habitat for acquisition
- Provides for mitigation even when no similar habitat available

Lake Rufus Woods Boundary Waters of the Colville Reservation

Dams_83.shp
Colville Boundary

N
W   E
S

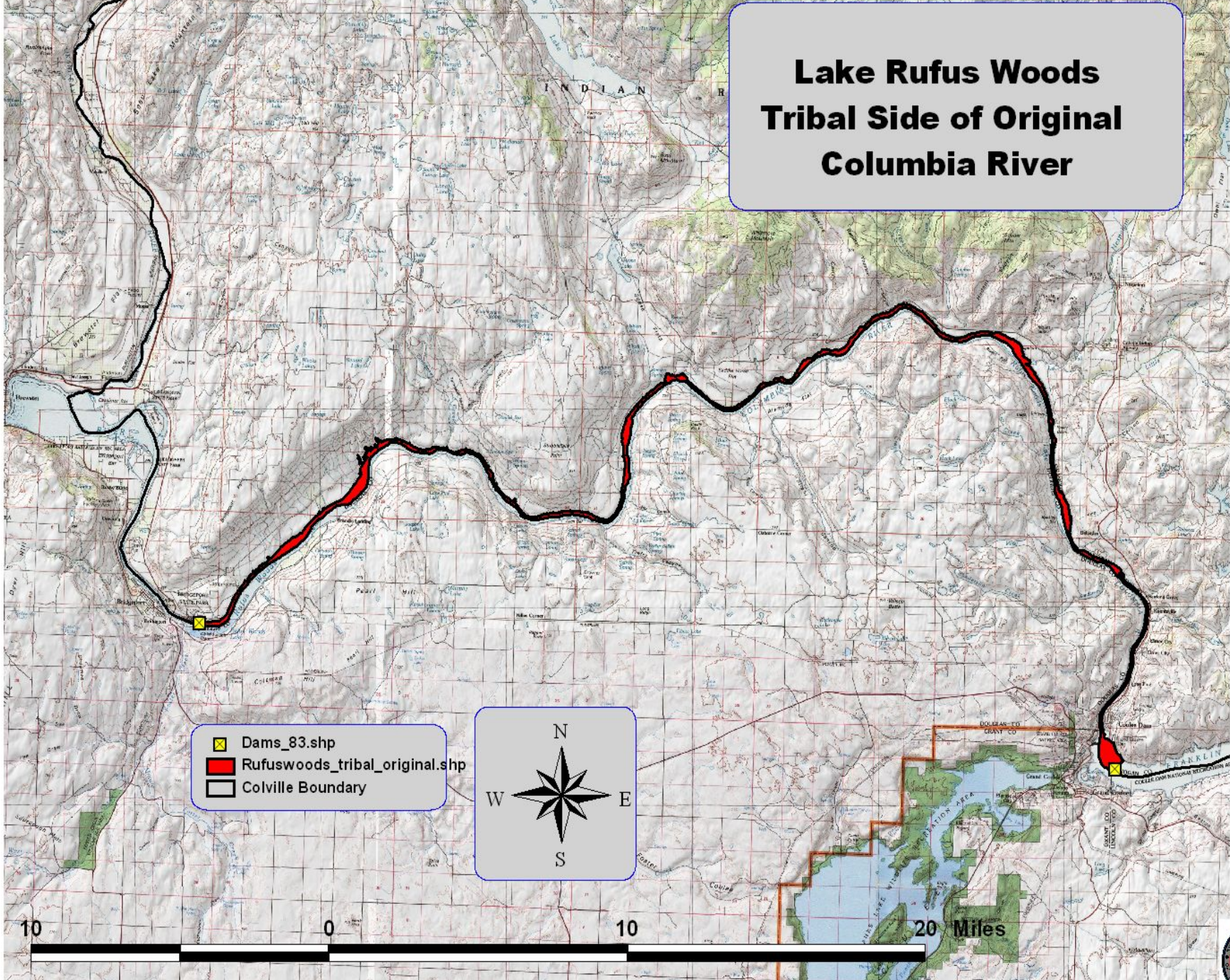10   0   10   20   Miles

Calculating the Area of Lost Habitat

- Select area to assess (Lake Rufus Woods)
- Created GIS shapefile of original river and clipped to Reservation boundary
- Clip to high water line of original river

# Lake Rufus Woods Tribal Side of Original Columbia River

Legend:
- Dams_83.shp
- Rufuswoods_tribal_original.shp
- Colville Boundary

N
W E
S

10   0   10   20 Miles

Determine Tributaries Impacted by Inundation

- Lake Rufus Woods has 3 tributaries that had historic anadromous use
    - Nespelem River
    - Peter Dan Creek
    - Coyote Creek
- May have been others intermittent streams that provided some habitat during spring freshet
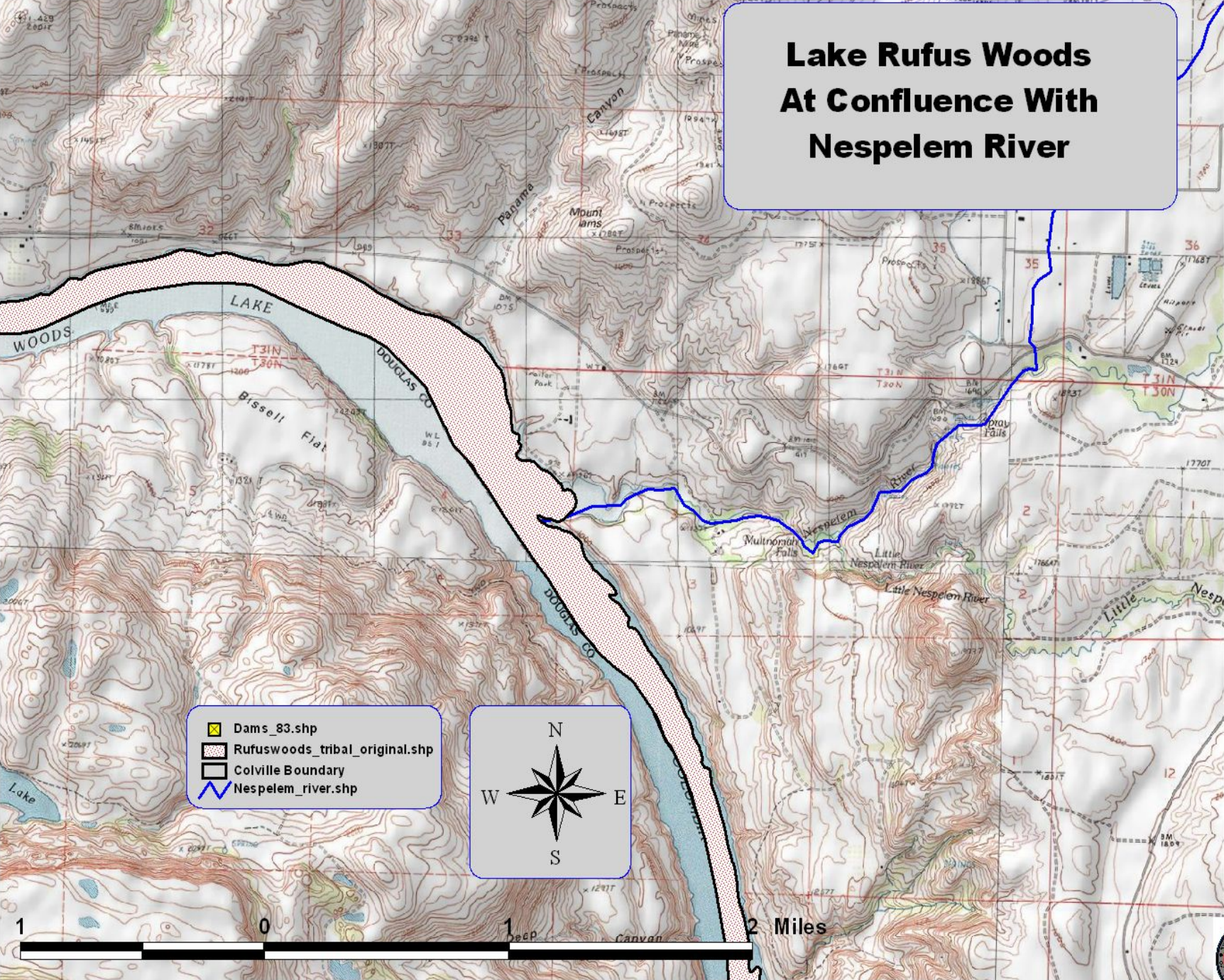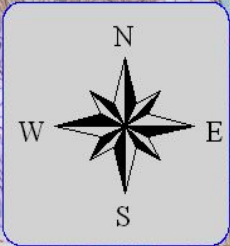
Rufus Woods
Aqautic Habitat

Legend:
- ☒ Dams_83.shp
- Coyote_end_fish.shp
- Peterdan_end_fish.shp
- Nespelem_falls.shp
- Stream_83.shp
- Rufuswoods_tribal_original.shp
- Colville Boundary

N
W   E
S

10   0   10   20   Miles
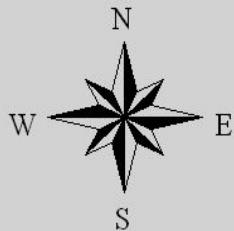
Lake Rufus Woods
At Confluence With
Nespelem River

Dams_83.shp
Rufuswoods_tribal_original.shp
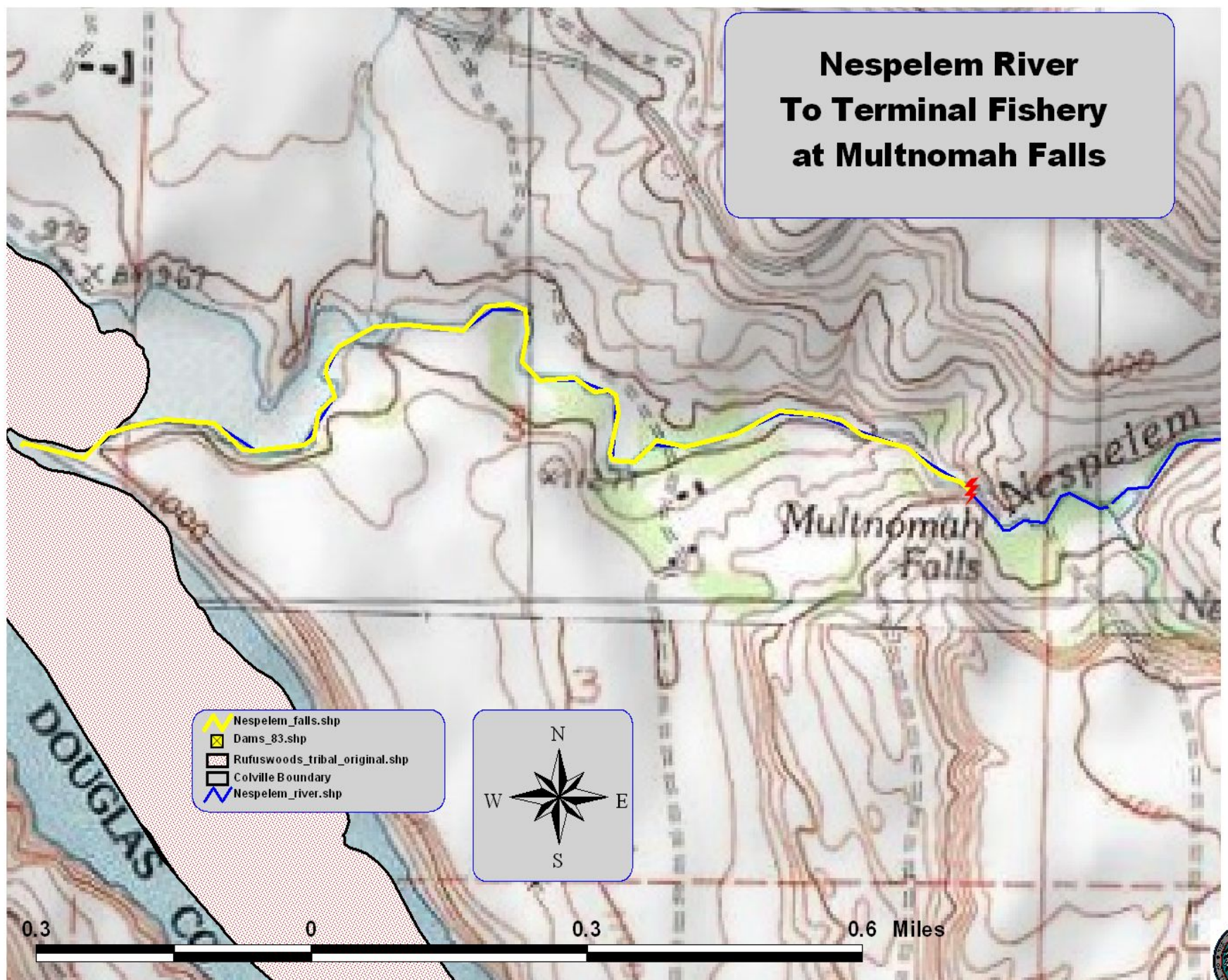Colville Boundary
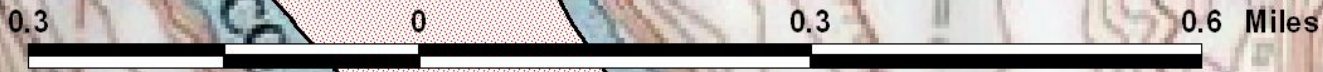Nespelem_river.shp

Determine Extent of Habitat

- Nespelem river has Multnomah Falls natural barrier end of fish passage
- Calculate length of stream
- Determine average channel width
- Calculate square meters of habitat
- Convert to acres

Nespelem River
To Terminal Fishery
at Multnomah Falls

Legend:
- Nespelem_falls.shp
- Dams_83.shp
- Rufuswoods_tribal_original.shp
- Colville Boundary
- Nespelem_river.shp

Multnomah Falls

Nespelem

DOUGLAS Co

N
W   E
S

0.3   0   0.3   0.6 Miles
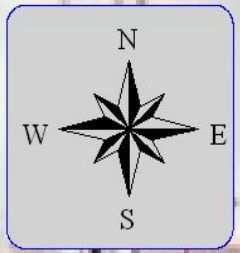
Nespelem River

Average width = 5.526 meters

Length of habitat = 121281 meters

$w \times l = m^2$

5.526 x 121281 = 670,198.6 sq meters

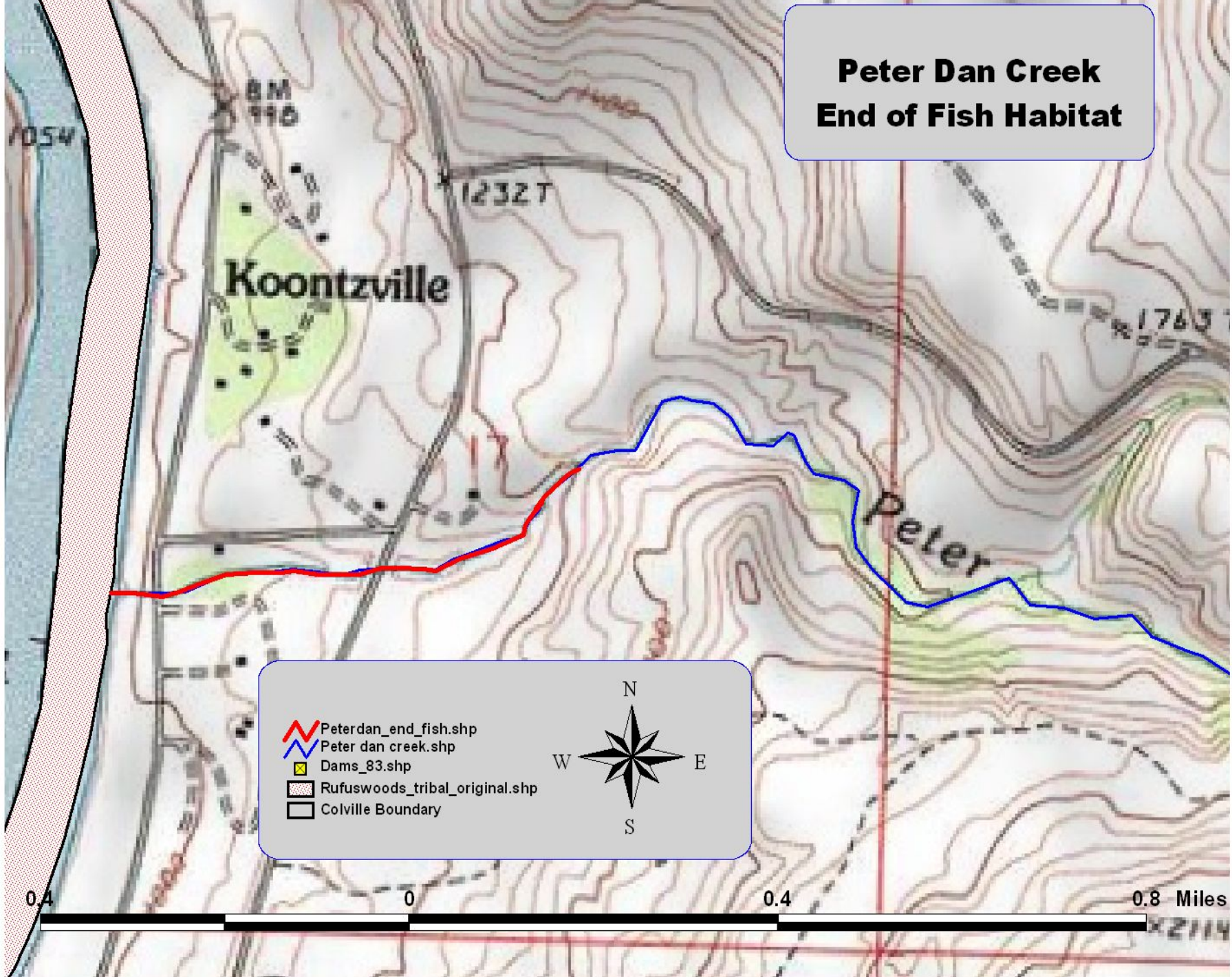$m^2/0.093 = ft^2$

670,198.6/0.093 = 7,206,436 sq feet

$ft^2/43,560 = 165.437$ acres

Peter Dan Creek
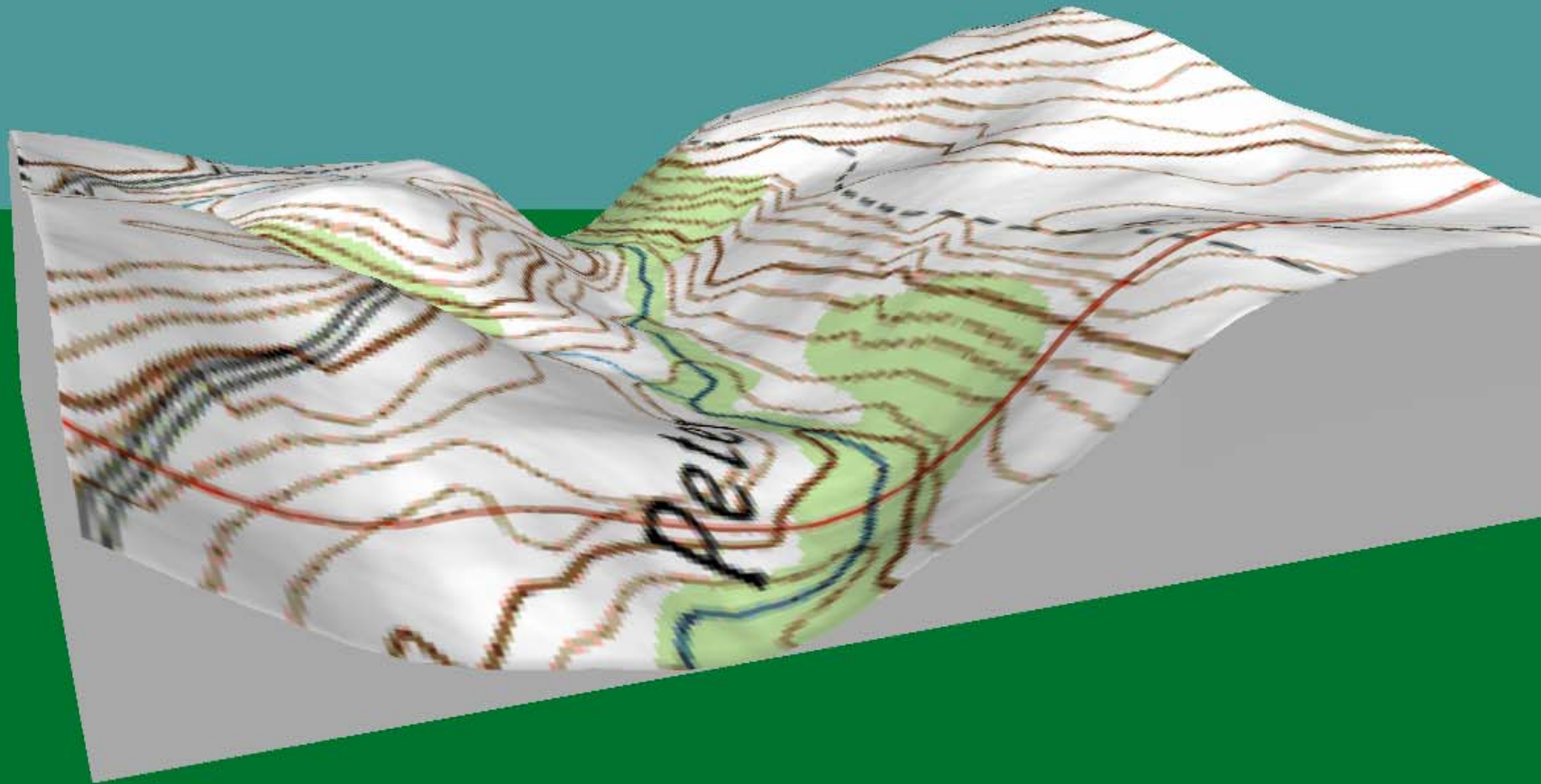End of Fish Habitat

Koontzville

Peter

Legend:
- Peterdan_end_fish.shp
- Peter dan creek.shp
- Dams_83.shp
- Rufuswoods_tribal_original.shp
- Colville Boundary

N
W   E
S

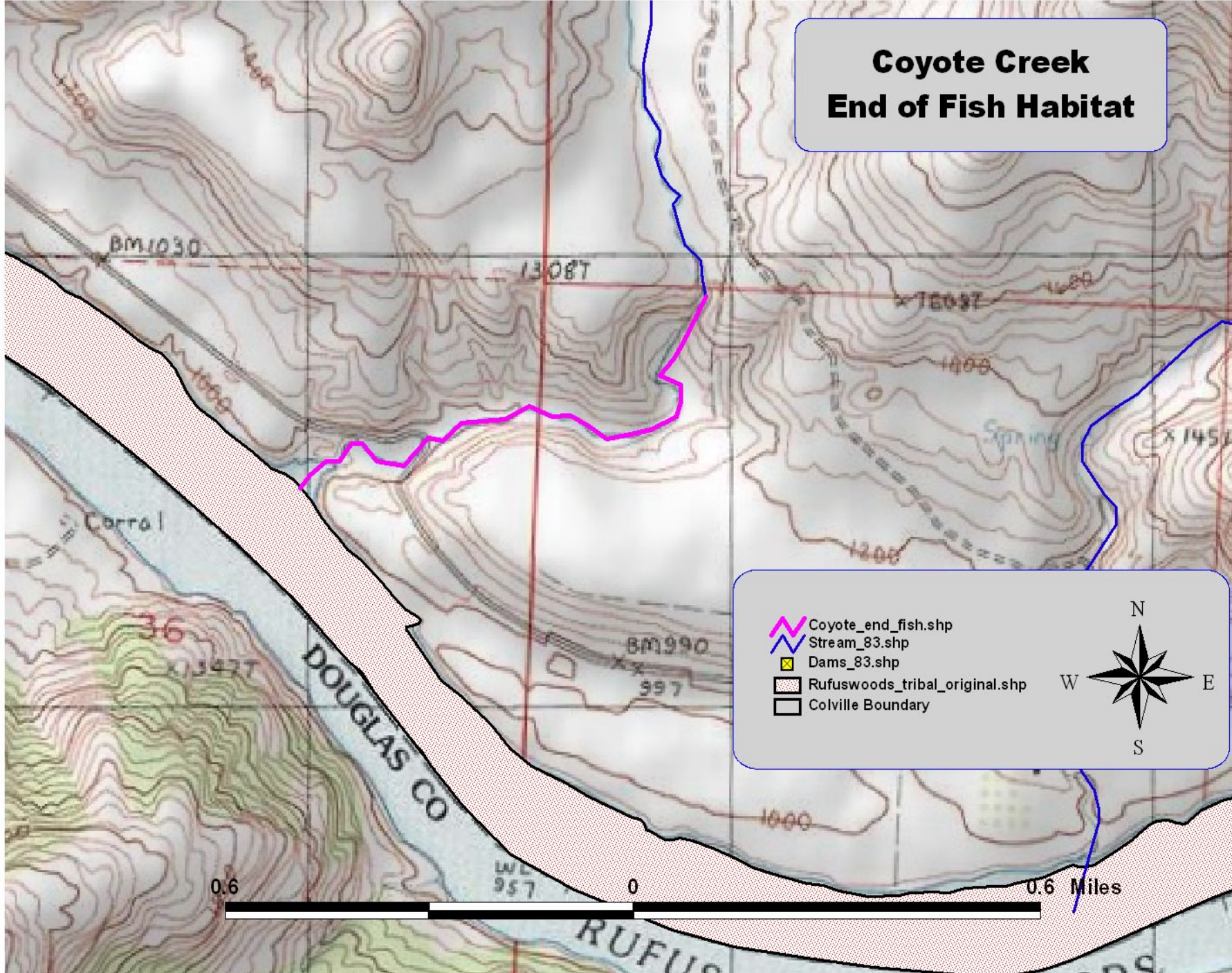0.4   0   0.4   0.8 Miles

Slope of stream 15%

Coyote Creek
End of Fish Habitat

BM 1030

1308T

16047

1453

Spring

1400

1200

Corral

36

1347T

DOUGLAS CO

BM 990

957

997

1000

Coyote_end_fish.shp
Stream_83.shp
Dams_83.shp
Rufuswoods_tribal_original.shp
Colville Boundary

N

W   E

S

0.6   0   0.6   Miles

RUFUS

Rufus Woods Calculation Alternatives

Stream Name	Acres	km
Columbia River Mainstem	4017.38	81.83
Nespelem River	165.44	2.15
Coyote Creek	1.07	1.36
Peter Dan Creek	0.99	0.90
Total	4184.88	86.24

Rufus Woods
Habitat Gains

Legend:
- Dams_83.shp
- Rufuswoods_tribal_original.shp
- Rufus_gains.shp
- Coyote_end_fish.shp
- Peterdan_end_fish.shp
- Nespelem_falls.shp
- Stream_83.shp
- Colville Boundary
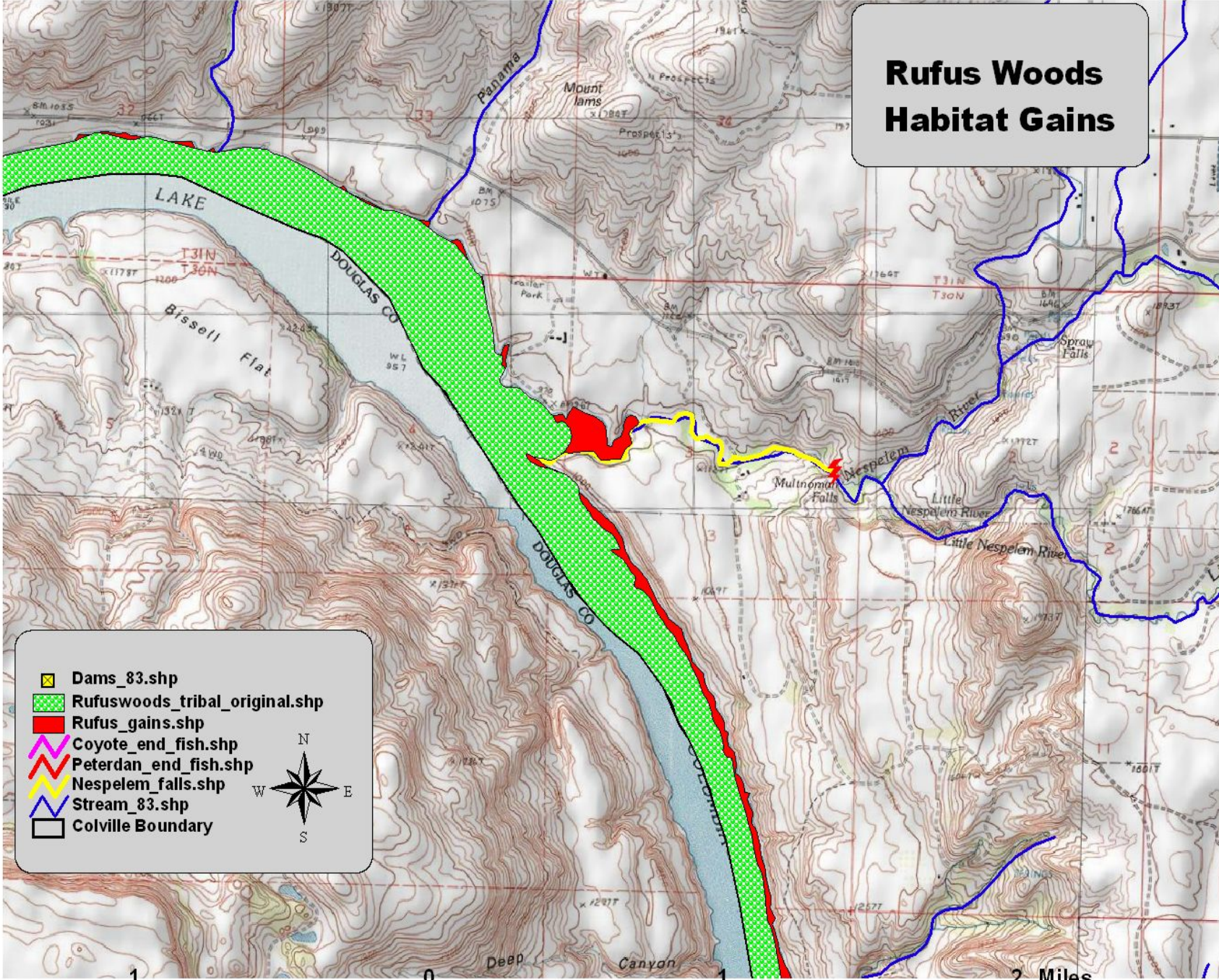
1   0   1   2 Miles

Rufus Woods Habitat Gains

Stream Name (SO = Stream Order)	Acres	Gain km	Lost km
Columbia River Mainstem	54.49	0	0
Nespelem River (SO 6)	(-4.84)	0	.84
Coyote Creek (SO 3)	(-0.87)	0	.11
Peter Dan Creek (SO 4)	(-0.013)	0	.008
Total	48.77	0	.96

Issues for Discussion

- Loss of habitat features (islands, falls, side channels)
- Crediting for what BPA inundation has created?
- Streams with order 1-4 small area?
- How much land can you acquire associated with acres of aquatic habitat?
- Land acquisition, easements, water rights?
- How has Montana credited kilometers of stream when purchasing acreage of land?
- Will this fulfill needs of all members?