

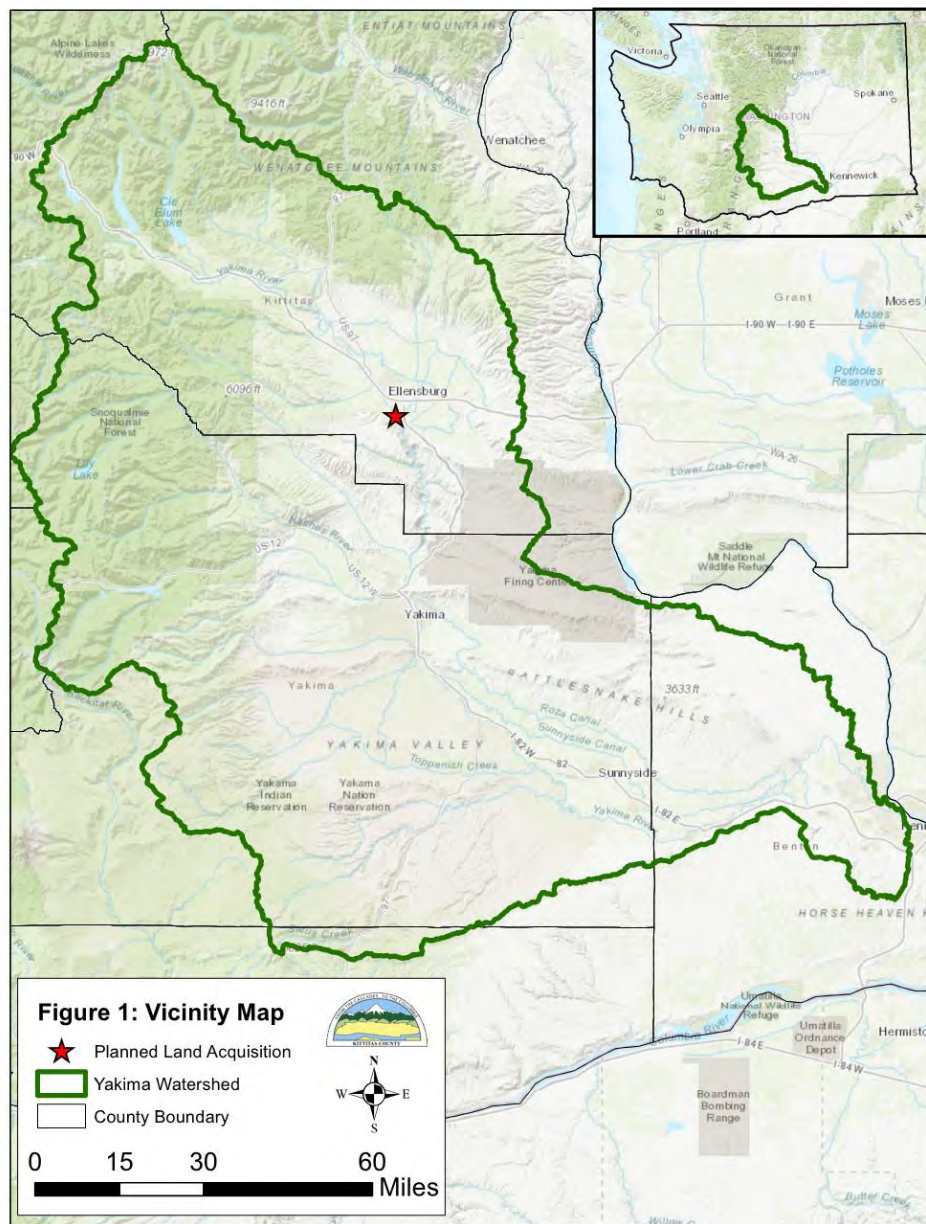
2018 Yakima River - Ellensburg to Ringer Reach Project Update

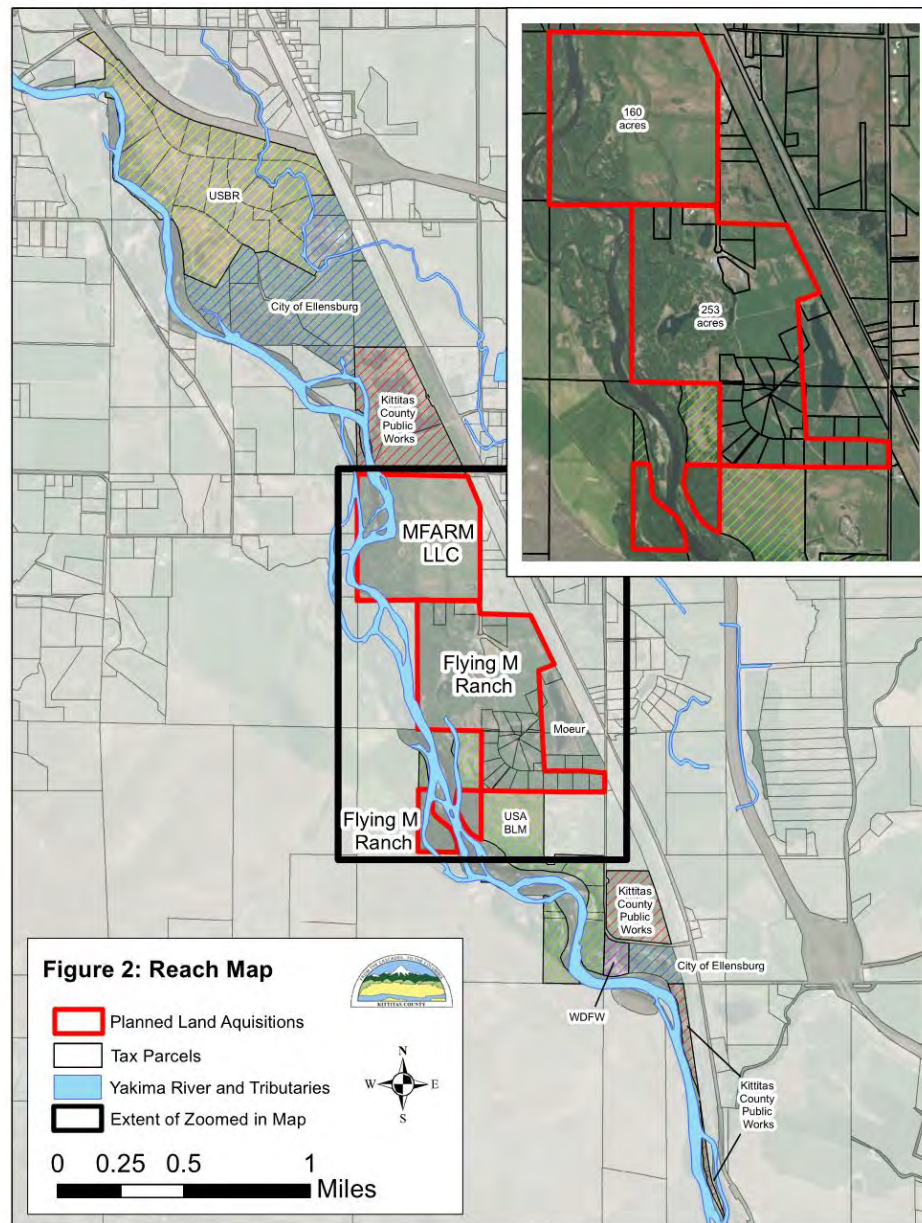


Ellensburg to Ringer Reach Project Partners

(Schaake Levee to Ringer Loop)

- Bureau of Reclamation
- City of Ellensburg
- Mid-Columbia Fisheries Enhancement Group
- National Oceanic and Atmospheric Administration
- Trout Unlimited
- Trust for Public Land
- Bureau of Land Management
- Washington State Department of Fish and Wildlife
- Washington State Department of Ecology
- Washington State Recreation and Conservation Office
- Yakama Nation
- Yakima Basin Fish and Wildlife Recovery Board



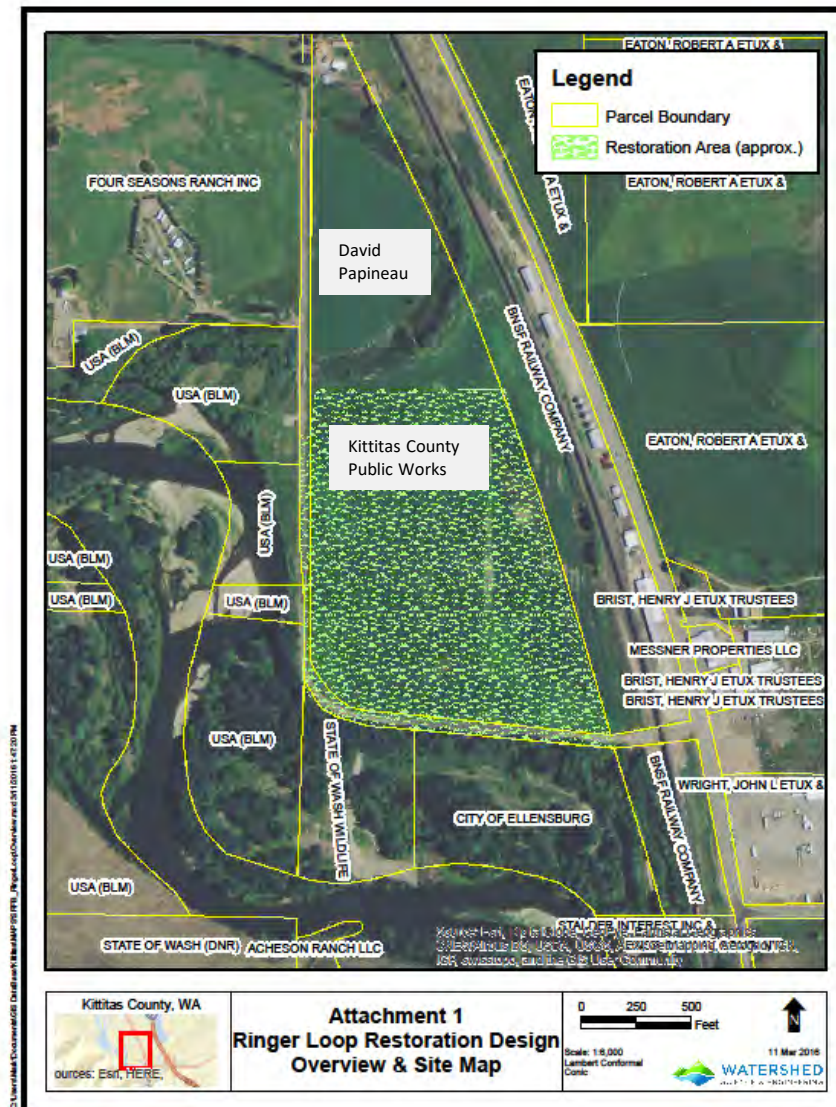


The Upper Yakima River Floodplain and Habitat Acquisition Project is a continuation of prior habitat and restoration projects in this key reach of the upper Yakima River. The project will help restore main-stem health on a nearly 5-mile reach of the Yakima River, provide benefits to the recovery goals for listed species, reduce flood hazards by:

- Acquiring 413 acres of contiguous Yakima River floodplain, including wetlands, side channels, and riparian areas;
- Preventing development on 20 parcels that are currently subdivided and zoned for development;
- Improving habitat for Middle Columbia River Steelhead and other aquatic species by facilitating future levee removals and off-channel aquatic habitat and riparian restoration projects;

- Reducing flood hazards by allowing greater flood storage through increasing active floodplain and facilitating future avulsion studies;
- Providing increased floodplain width, re-establishing floodplain connectivity, restoring natural channel migration processes, and connecting hyporheic flows;
- Enhancing agriculture and the local economy by restoring irrigable lands back to Twin City Foods, Kittitas County's second-largest employer.
- Continuing reach-scale floodplain restoration efforts by Kittitas County Flood Control Zone District, US Bureau of Reclamation, and others to connect and restore an approximate 5-mile-long corridor of publicly-owned lands, encompassing over 1,100 acres of protected floodplain.

Kittitas County Acquired over 40 Acres in the reach 2017



Historic Photo Summary 1954-2017

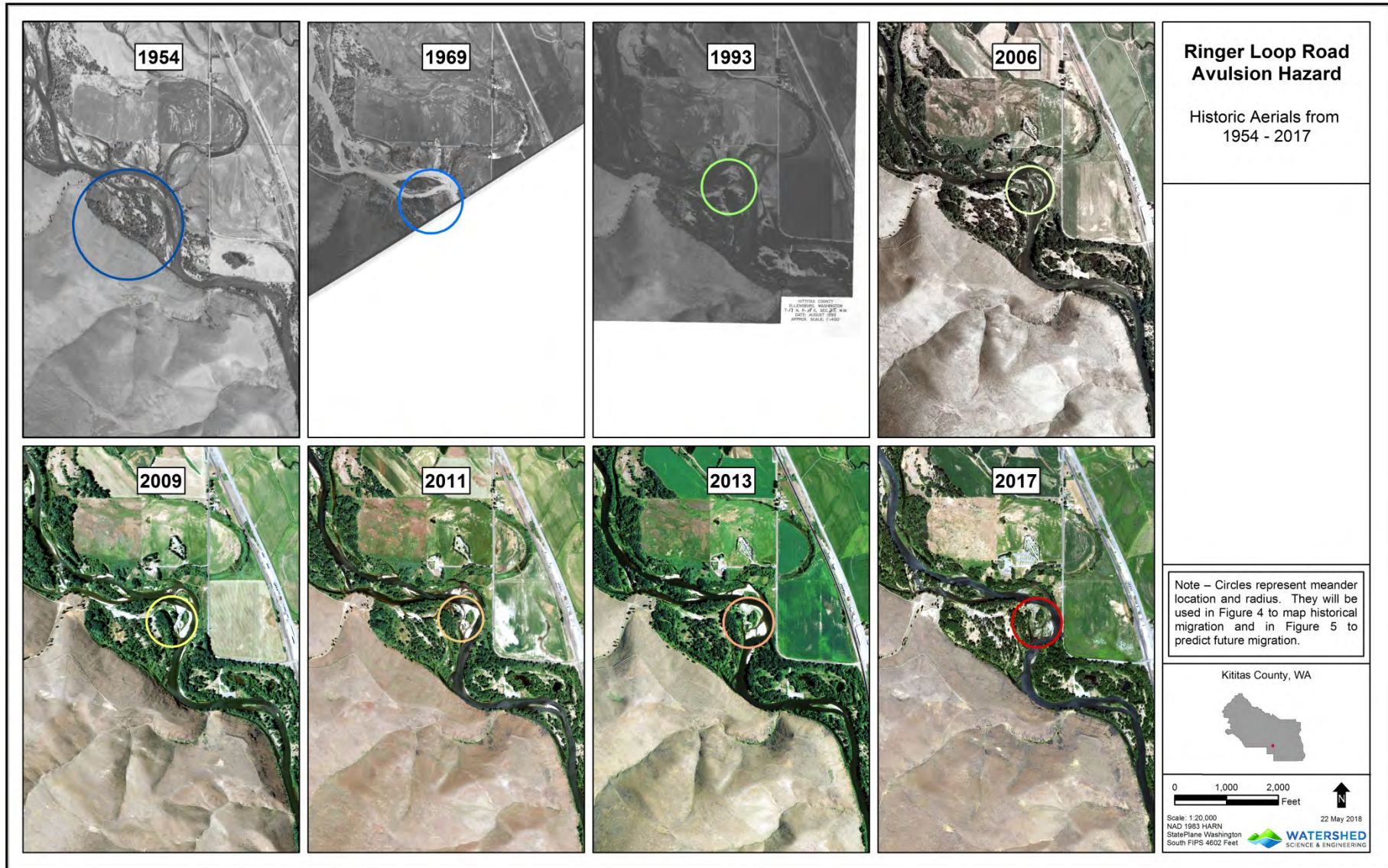


Figure 3

Migration Risk Based on Historic River Meander

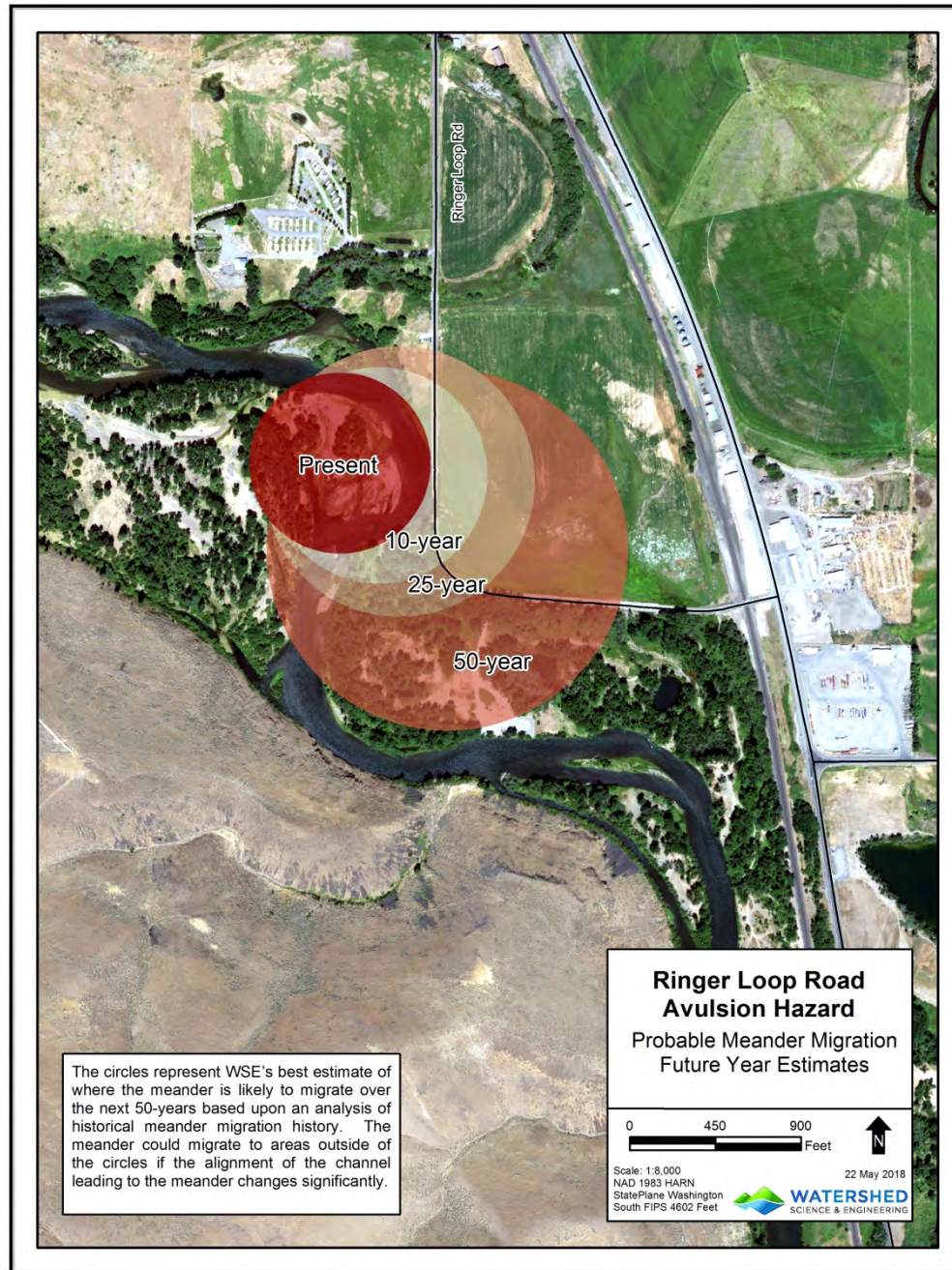
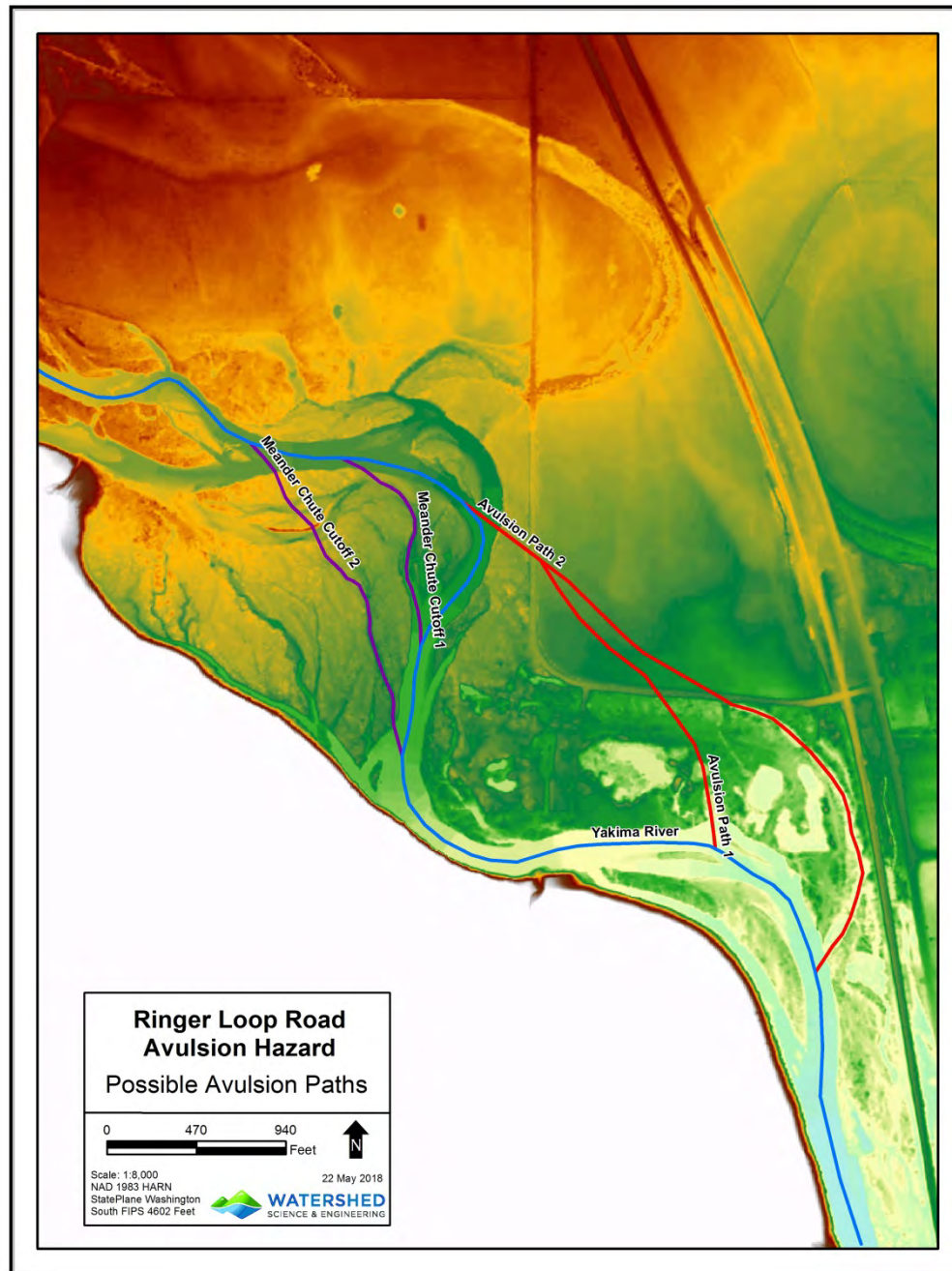


Figure 5



Note the easterly most potential avulsion path along BNSF rail line.

Figure 6

- The easterly most possible avulsion path is problematic in that BNSF will be compelled to engage in flood fight.
- An opportunity exists taking actions now – during revegetation – to minimize the risk of establishment of the easterly flow path.
- The east-west roadway segment is currently working to limit the risk of avulsion.
- We desire evaluating the potential for lowering the grade of the levee (Ringer Loop Road) to ground level in the vicinity of the westerly most flow path as a means of maintaining boat ramp access while training the river towards the eventual avulsion path.

Ringer Loop Reno Blankets Removing Energy – Reducing Avulsion Potential



Modeled Velocities – Note Ringer Loop

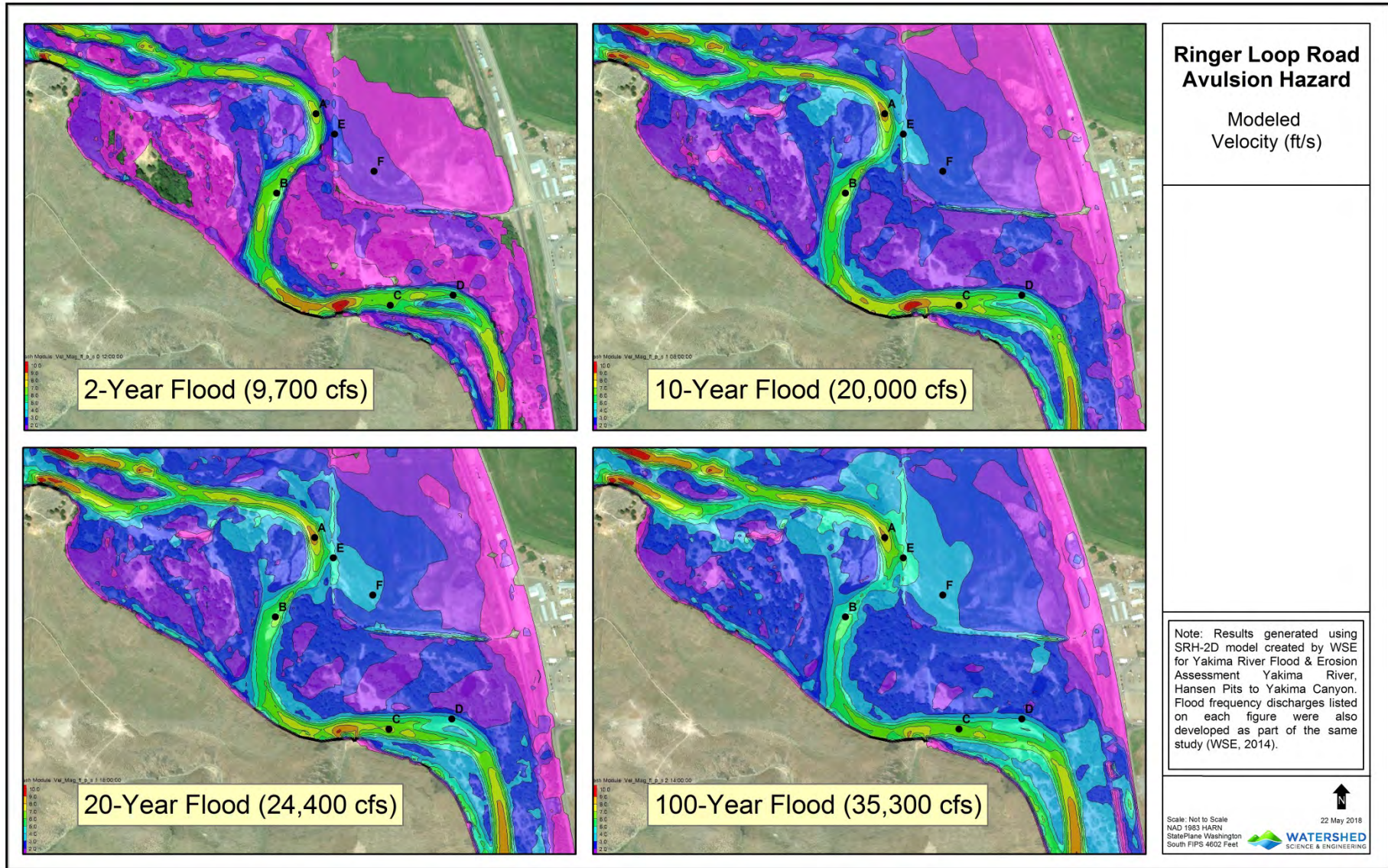


Figure 8

Current Conditions – Looking South



Current Conditions – Looking North



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Current Conditions - Easterly Culvert



NEXT STEPS

- Revegetation with Mid-Columbia Fisheries Enhancement Group in coordination with Bureau of Land Management effort
- Follow up study of river mechanics assuming a lowered roadbed grade in the vicinity of the westerly most probable flood avulsion flow path