





# Clark Fork River Migration Compared to Proposed Septic System Construction

750 Schmidt Lane  
Missoula, Montana  
June 2019

## Bankline Approximation

- 2005
- 2009
- 2011
- 2013
- 2017
- 2018

- Standing Water Approximation
- 750 Schmidt Ln Parcel Boundary
- Existing Well with 100ft buffer
- Proposed Elevated Sandmound
- 2019 Flood Extent
- FEMA 2015

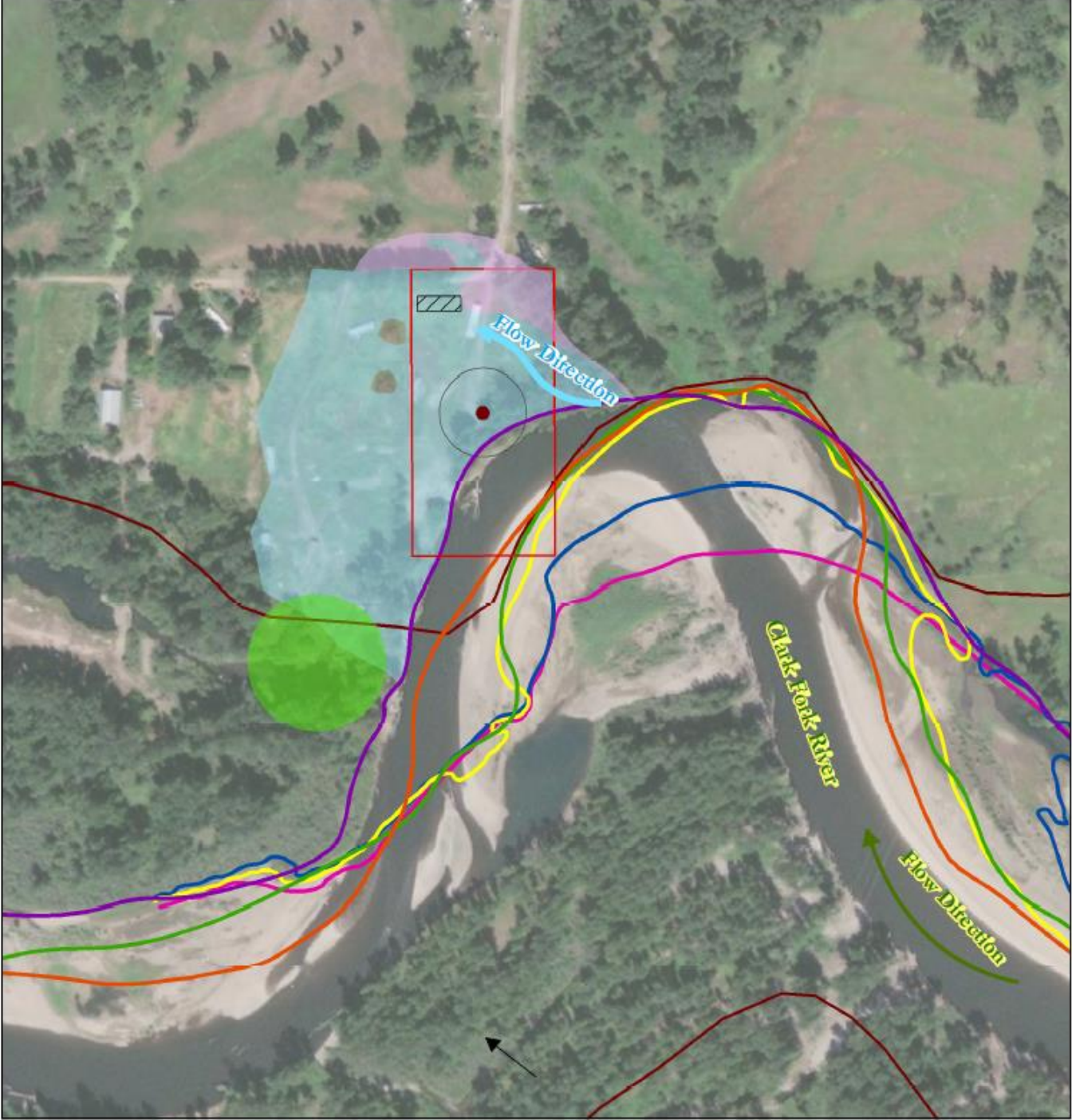


## Data:

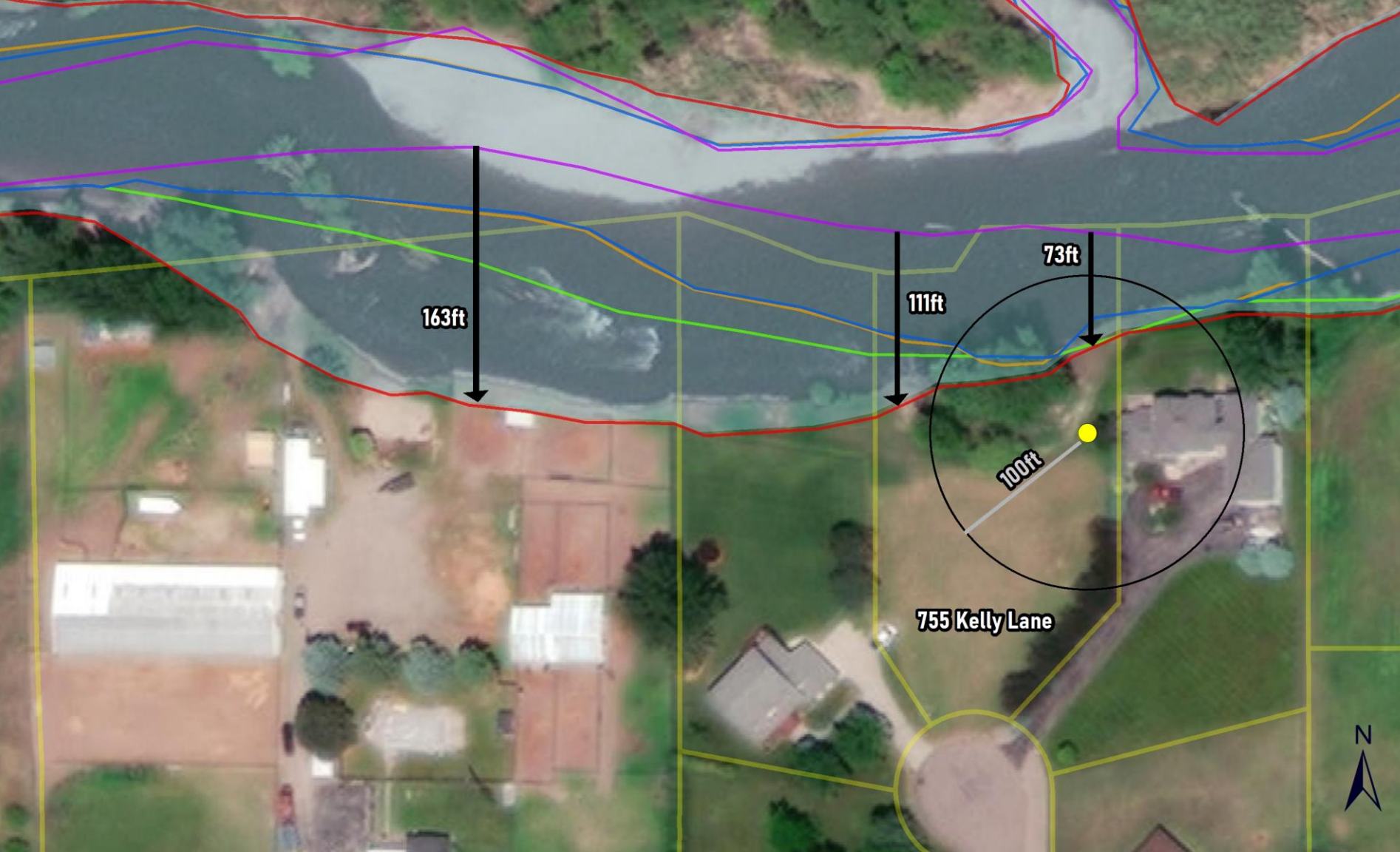
2005, 2009, 2013, 2015, and 2017  
banklines digitized from NAIP Imagery  
2018 bankline digitized from May-June  
Sentinel-2 Imagery

Elevated sandmound digitized from  
Territorial Landworks Inc. Construction  
Plans

2019 Flood Extent and Standing Water  
Extent digitized from site visits and  
photos







StatePlane Montana FIPS 2500 Feet

- Proposed Well Location & 100ft Buffer
- Parcel Boundaries
- 2019 River Channel
- Approximate River Bank\***
- 2005
- 2011
- 2013
- 2017
- 2019

\* 2005-2017 river bank derived from USDA NAIP Imagery. 2019 river bank and channel produced by DTM Consulting Inc.



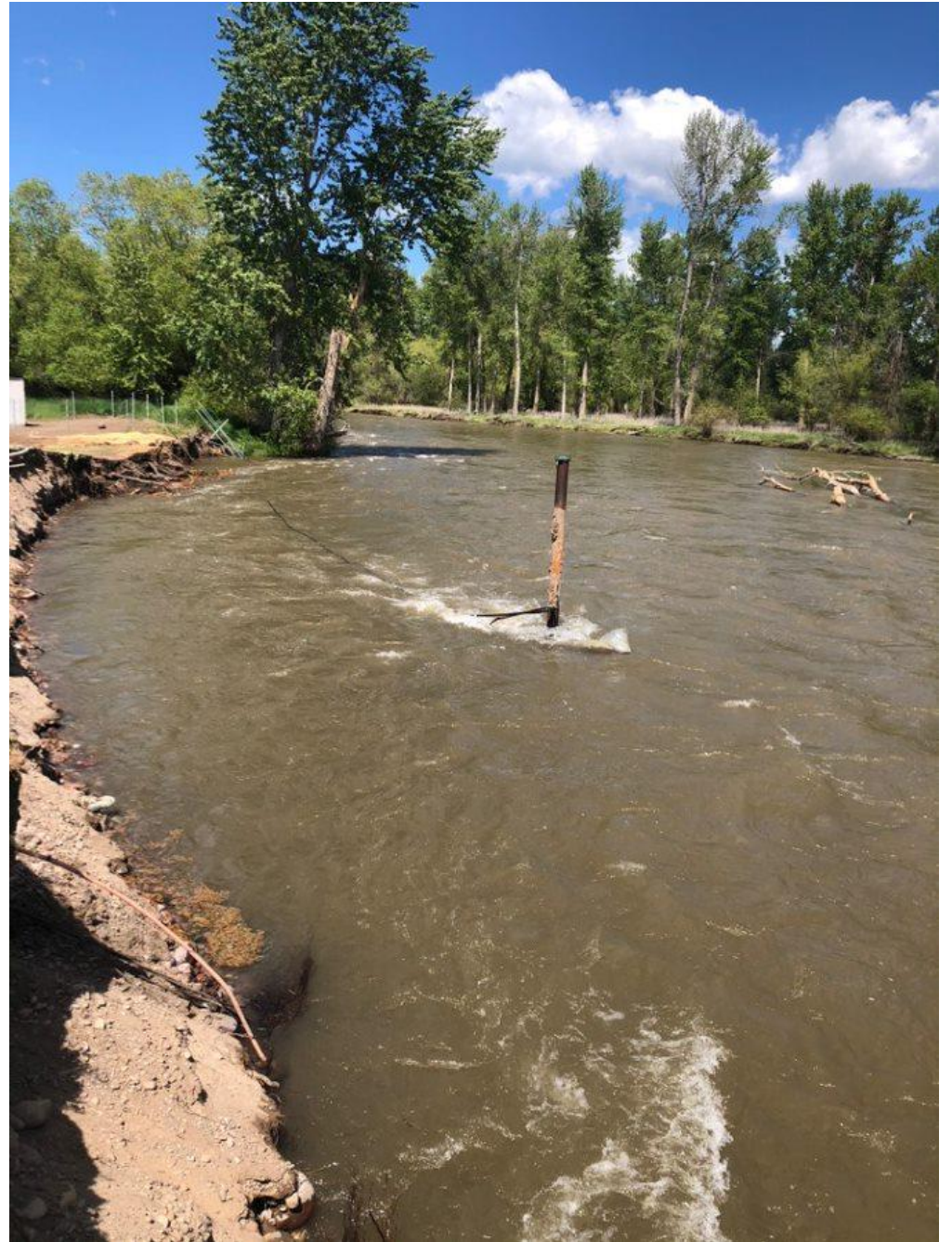
755 Kelly Lane

100ft

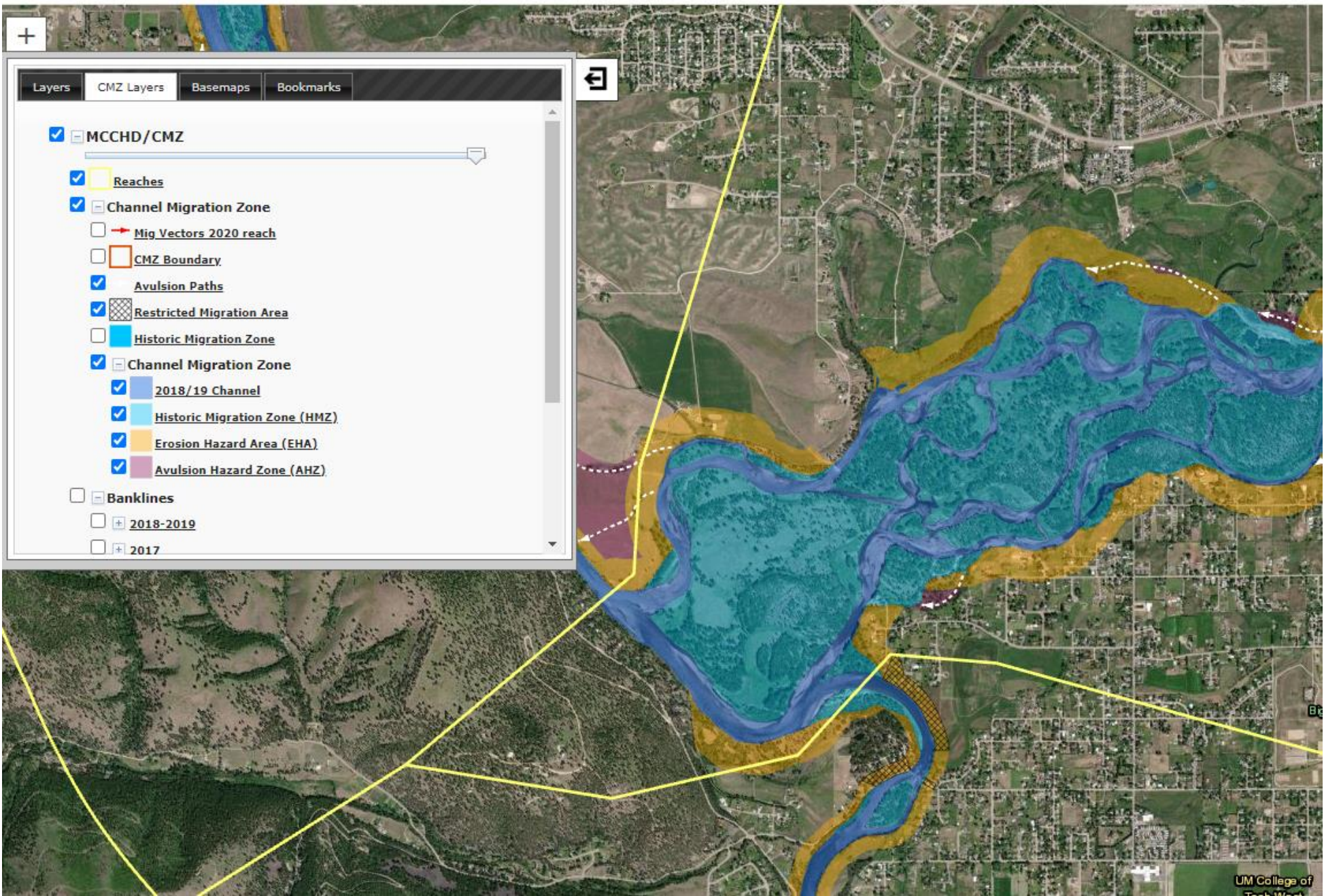
73ft

111ft

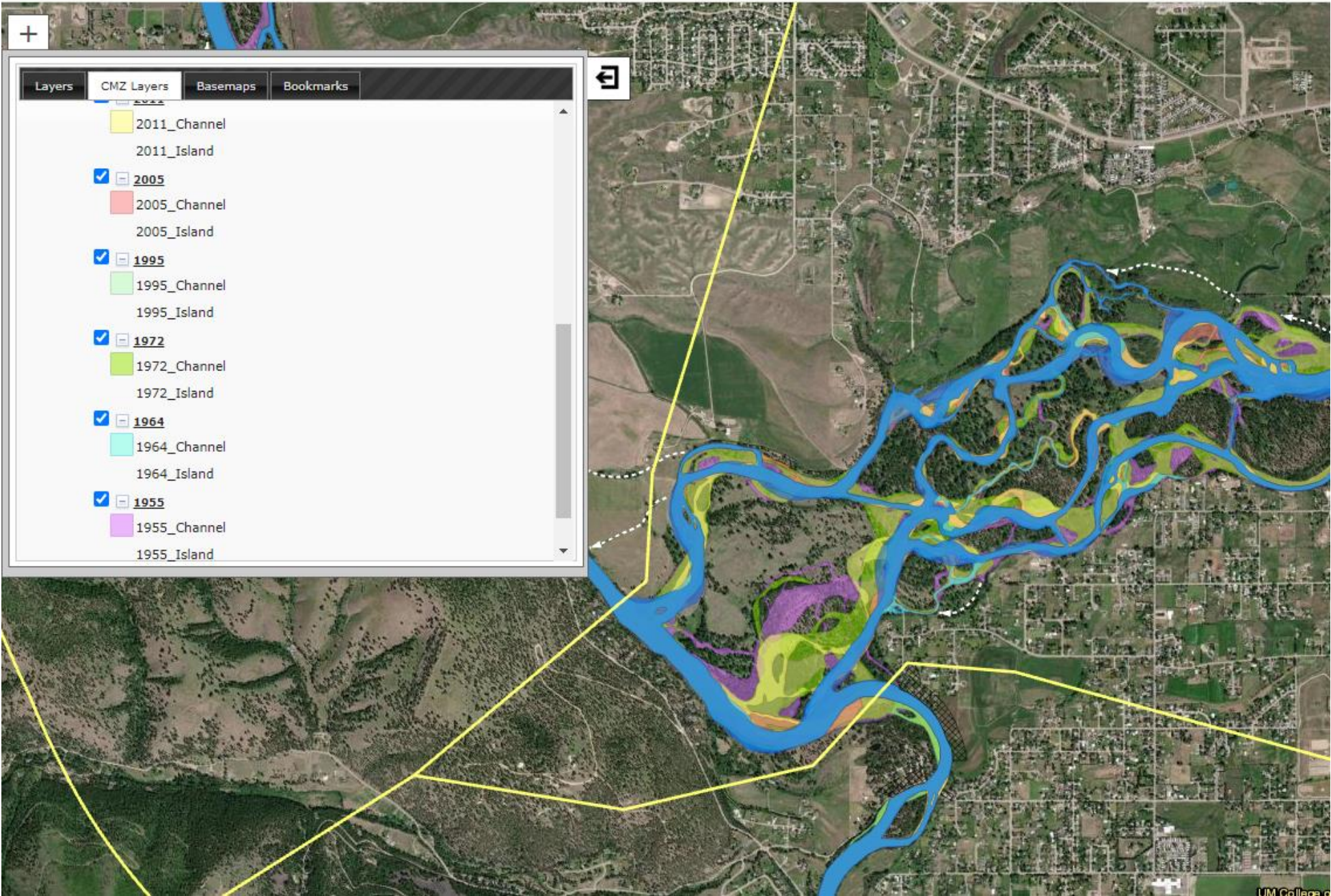
163ft





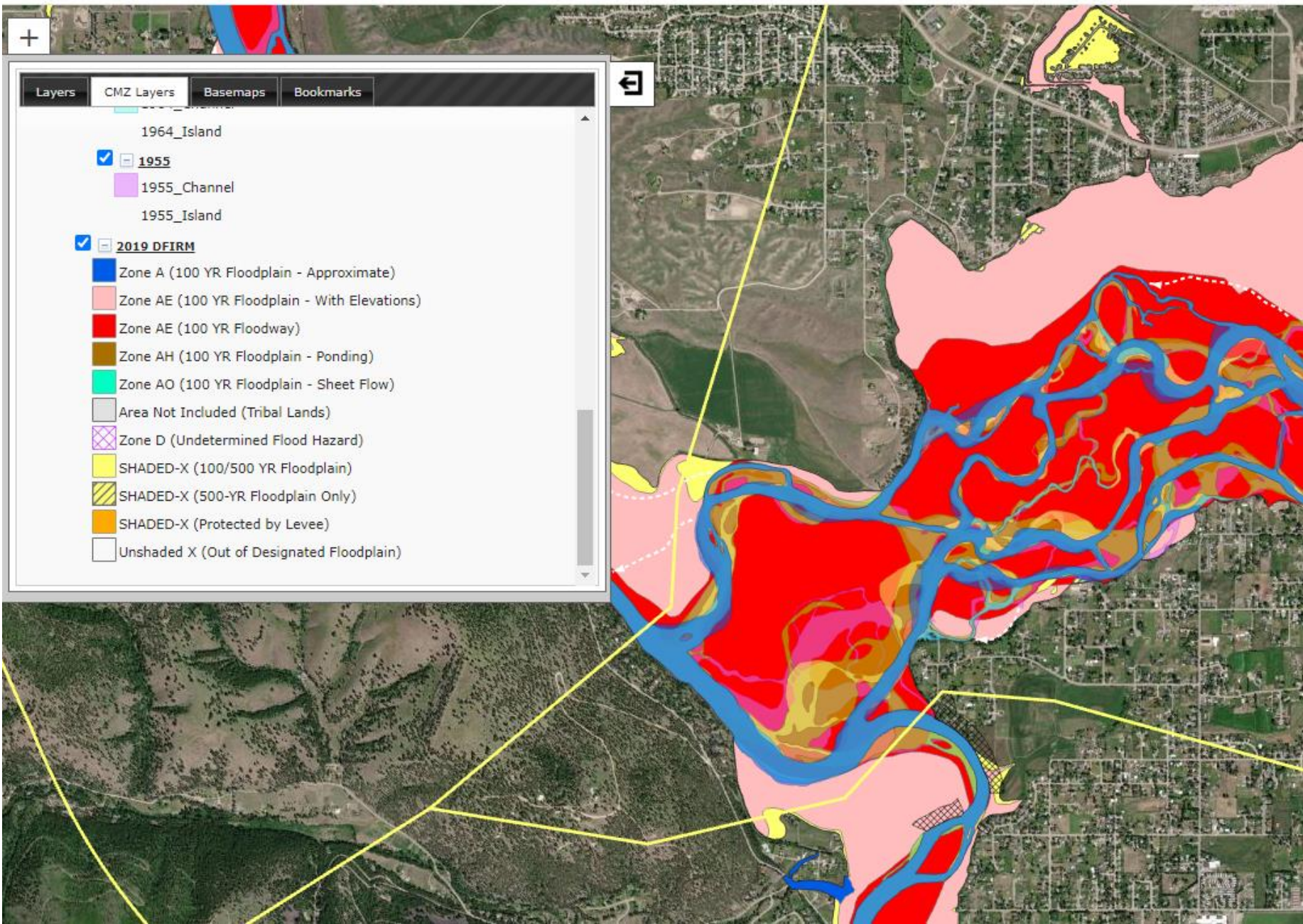


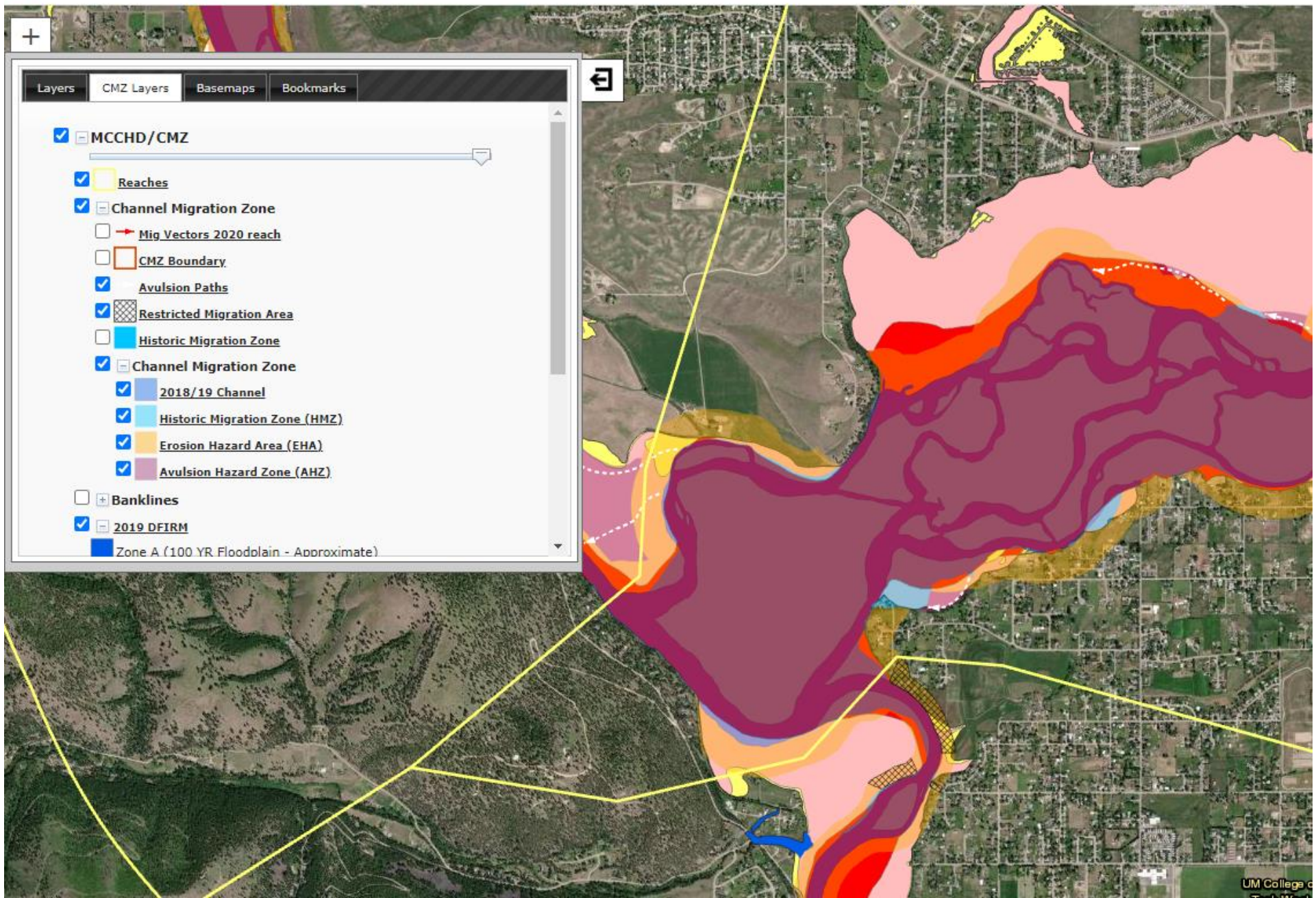


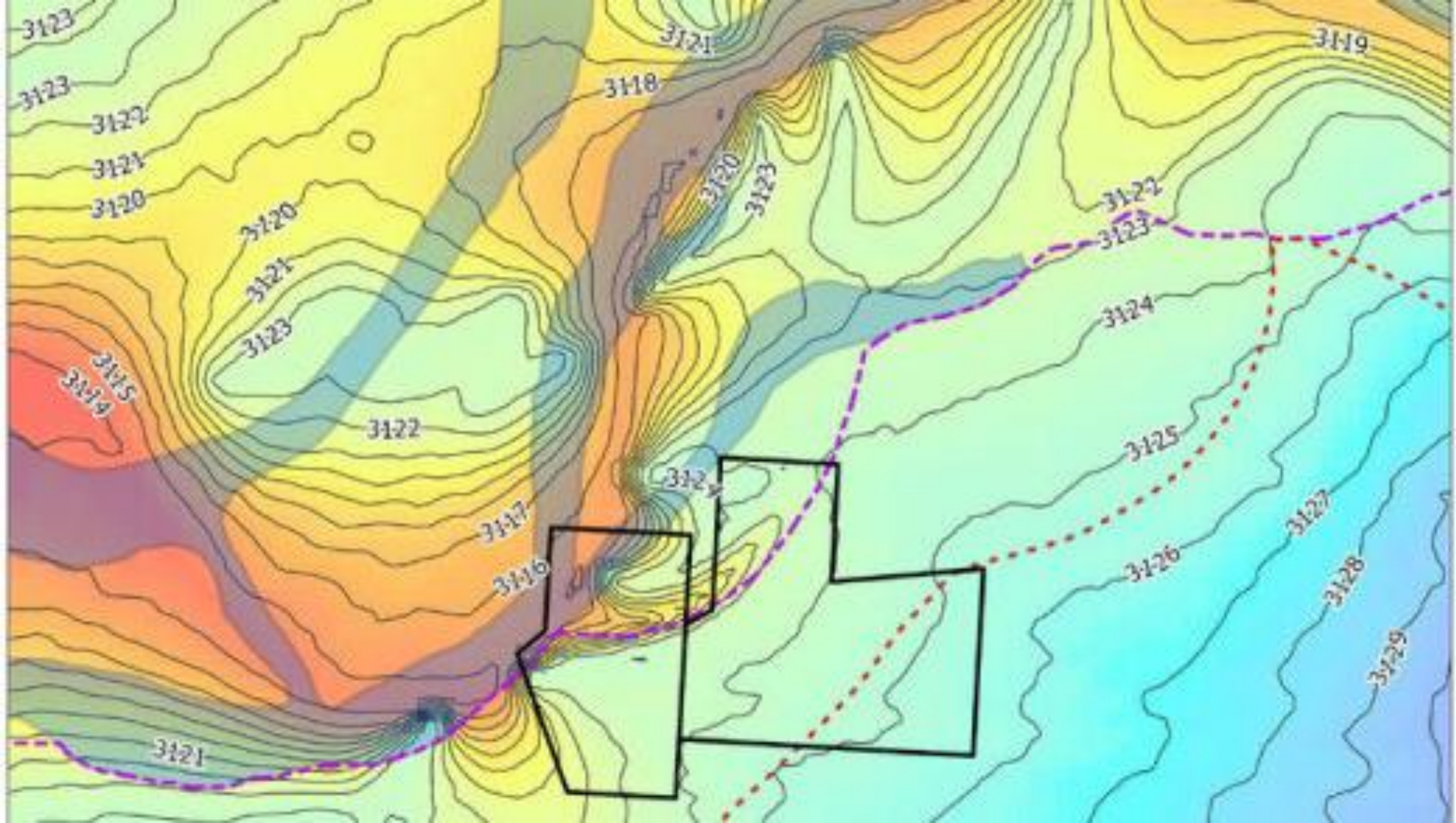


Layers | **CMZ Layers** | Basemaps | Bookmarks

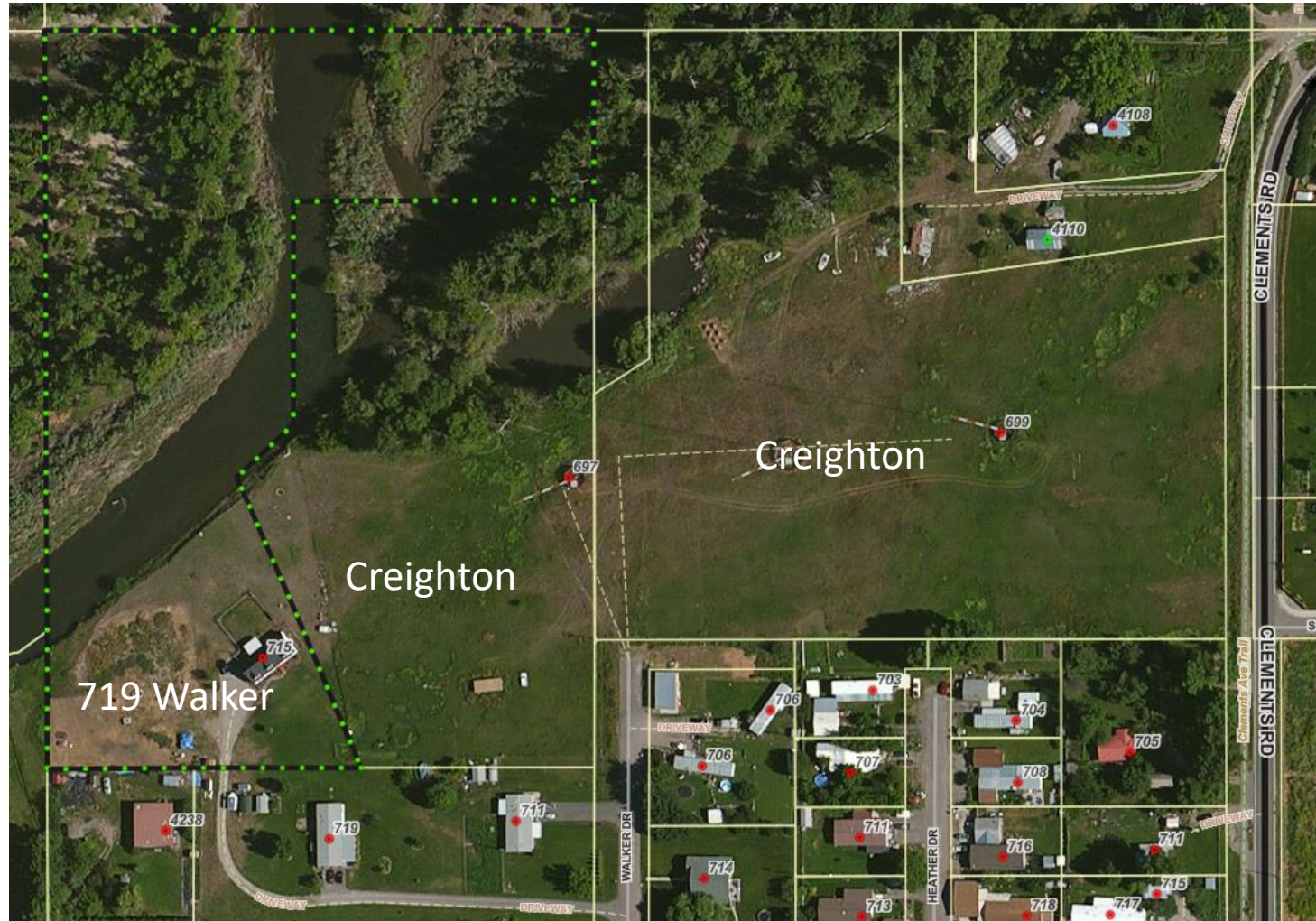
- 2011\_Channel
- 2011\_Island
- 2005
  - 2005\_Channel
  - 2005\_Island
- 1995
  - 1995\_Channel
  - 1995\_Island
- 1972
  - 1972\_Channel
  - 1972\_Island
- 1964
  - 1964\_Channel
  - 1964\_Island
- 1955
  - 1955\_Channel
  - 1955\_Island







# Downstream examples



# Erosion immediately downstream

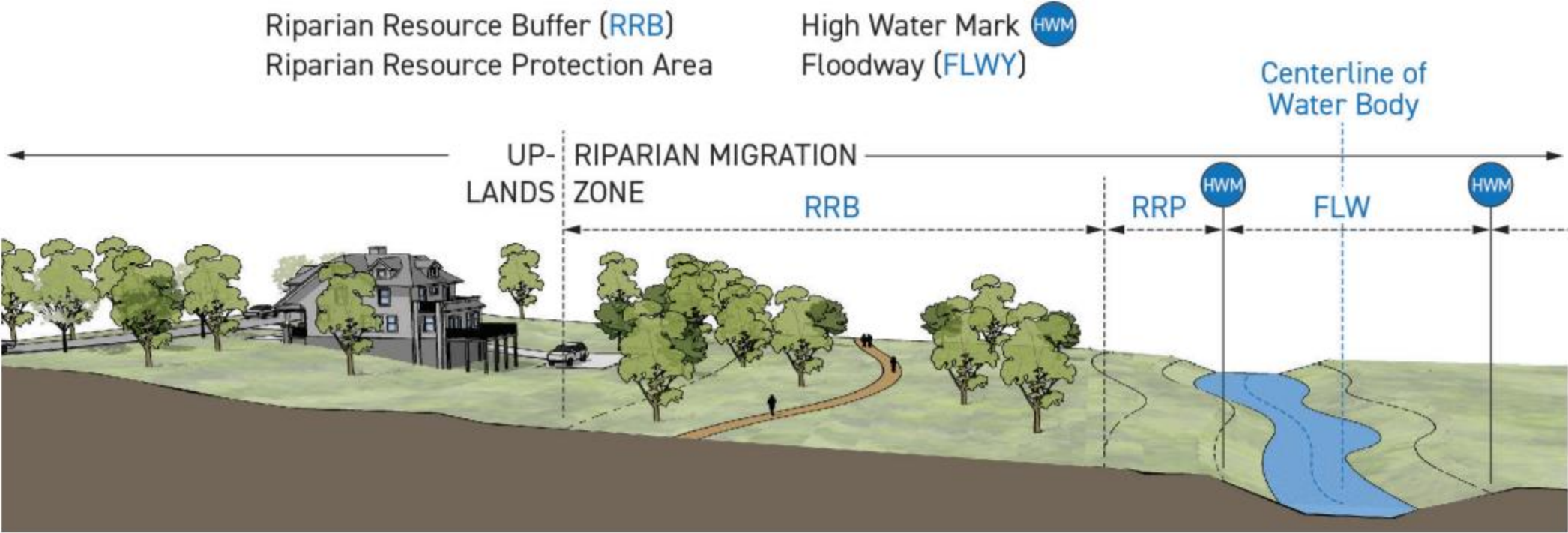


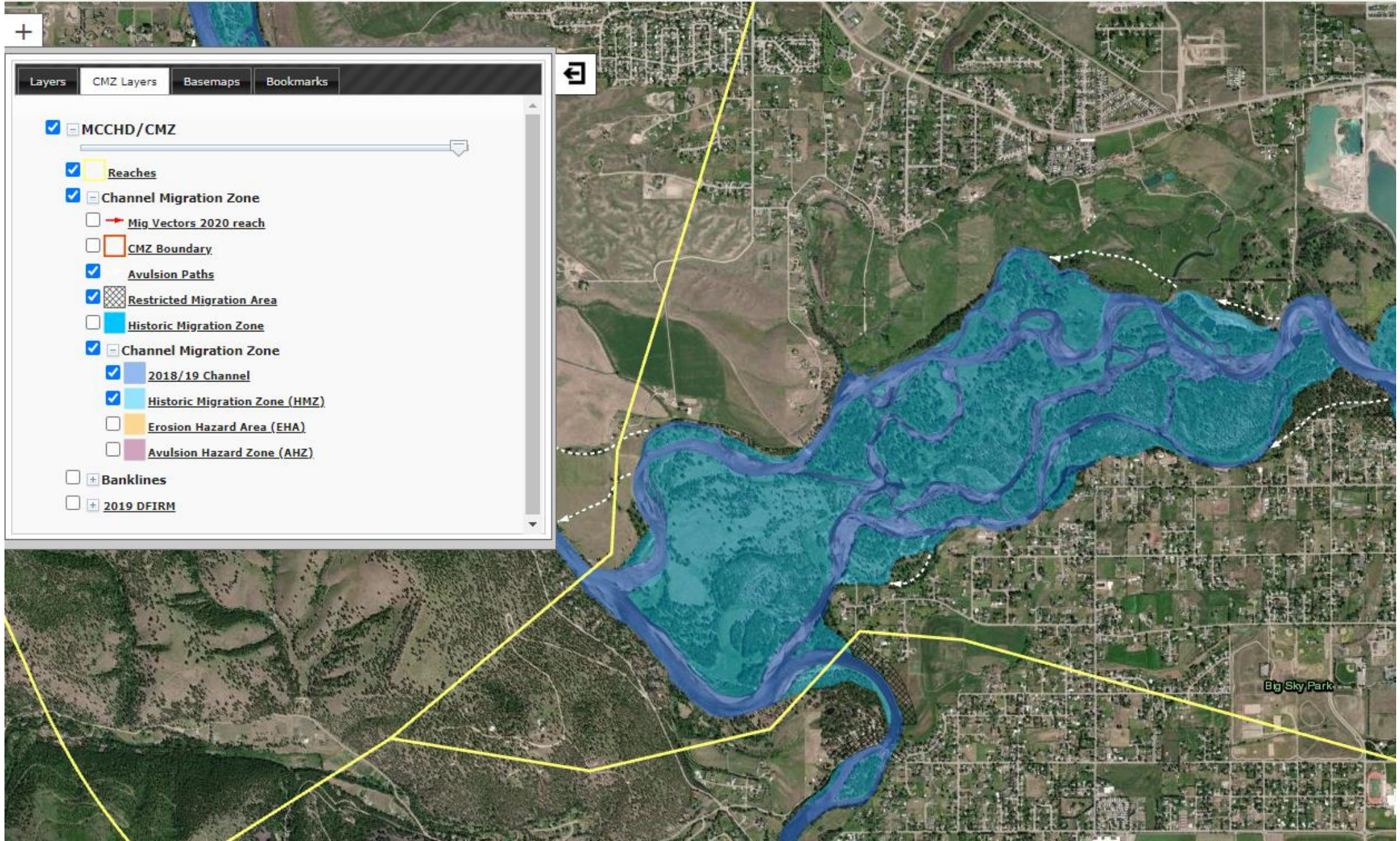
2014



2022

**FIG. 4 Riparian Resource Measurements**







**C) Riparian Resource Protection Area (RRPA) Required.**

1. A minimum 50-foot setback whose measurement is described in Section 7.4.E. is required to protect all riparian resources as defined by these regulations.
2. Those areas within the 50-foot Riparian Resource Protection Area (RRPA) absent of riparian and/or hydrophilic vegetation, including canopy cover of said vegetation, as mapped by a qualified professional specializing in riparian resource systems and species, may be excluded from the RRPA and designated within the Riparian Resource Buffer described in Section 7.4.D. below.
3. Riparian or hydrophilic vegetation shall not be removed or altered so as to eliminate it from inclusion in the Riparian Resource Protection Area. Where riparian or hydrophilic vegetation has been removed or altered within the 50-foot protection area, that area shall be designated as included within the RRPA and subject to all standards for Riparian Resource Protection Areas.
4. Riparian Resource Protection Areas are not required adjacent to wetlands.

1. The Riparian Resource Protection Area (RRPA) shall be measured as a horizontal distance landward from one of the following:
  - a. Where the Channel Migration Zone (CMZ) is mapped, the edge of the 2018/2019 channel, or
  - b. Where the CMZ is not mapped, the mean high-water mark of rivers, streams, creeks, natural lakes, and ponds.
  - c. There is no requirement for a Riparian Resource Protection Area adjacent to wetlands.
  
2. The Riparian Resource Buffer shall be measured landward as a horizontal distance as \_\_\_ an additional area from the established edge of the Riparian Resource Protection Area in accordance with Table 3, subject to the following:
  - a. Where the CMZ is mapped and the Historic Migration Zone (HMZ) extends beyond the Riparian Resource Buffer listed in Table 3, the boundary of the Riparian Resource Buffer shall be extended to include the HMZ plus an additional 50-feet from the boundary of the HMZ.
  - b. Riparian Resource Buffers measuring 50 feet in width shall be established around wetlands, measured from the upland edge of the wetland, in accordance with Table 3.