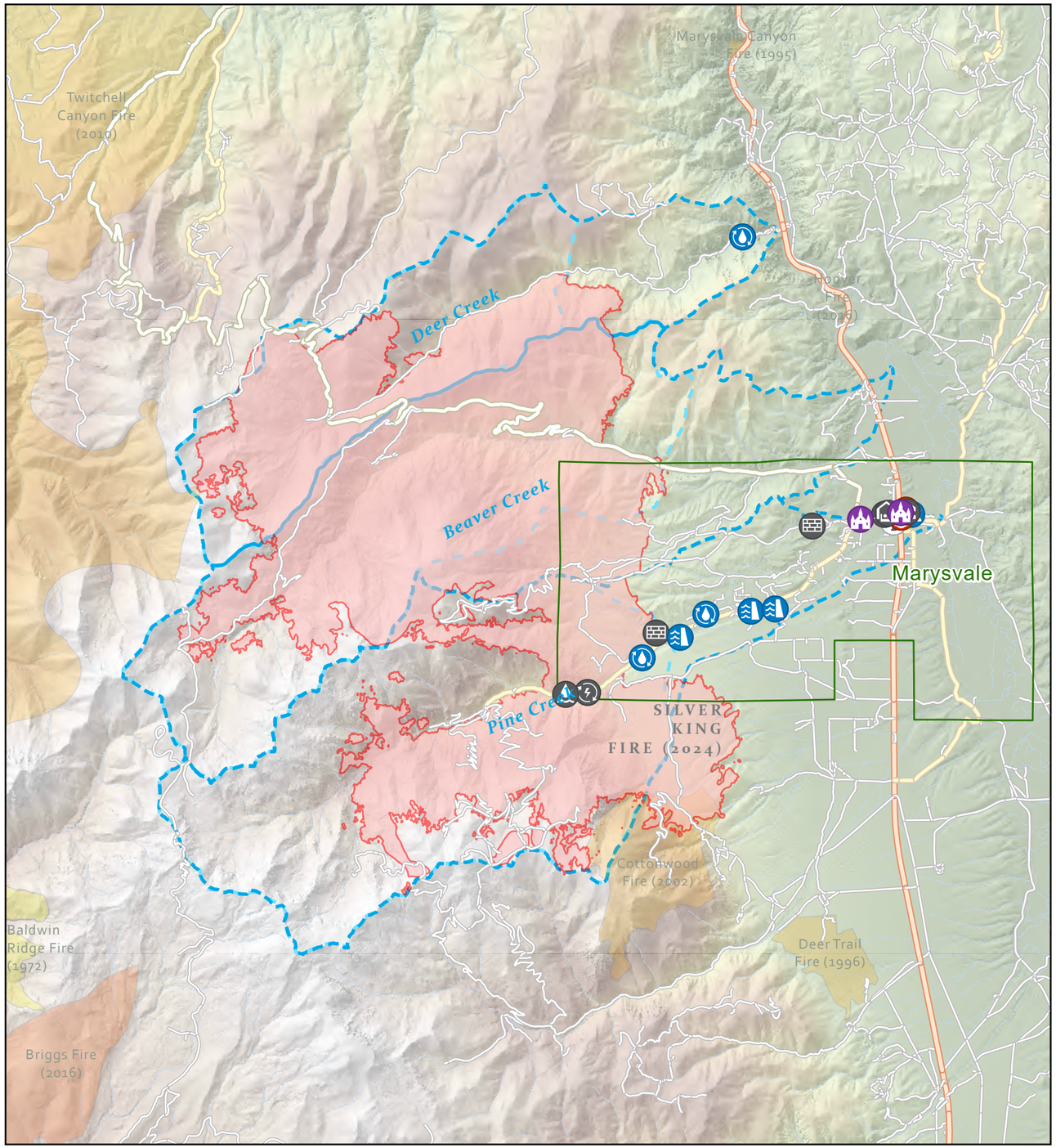
Overview

Inundation Based on USGS Debris Flow Likelihood



Purpose and Use

These inundation maps have been prepared to identify areas that could be affected by debris flow flooding as a result of the Silver King Wildfire. The inundation maps are intended to aid emergency response planning efforts and to facilitate timely notification and evacuation of areas affected by a debris flow flood condition.

Hydrology

Sevier River - Flowing at constant 100 cfs.
Pine Creek (Bullion) - Peak flow of 1,350 cfs.
Beaver Creek - Peak flow of 1,1450 cfs.
Deer Creek - Peak flow of 680 cfs.

Flow hydrograph developed using the WILDCAT5 rainfall-runoff hydrograph model at the outlet of the watershed's sub-basin. A 30 minute storm duration and 0.64-inch storm rainfall was used based on the BAER Report and NOAA Atlas 14 Point Precipitation Frequency Estimates to produce a storm intensity of 1.26 inches/hour (32 mm/hour). A Farmer-Fletcher rainfall distribution and a single curve number of 90 to represent the current soil condition of the watershed was used.

DISCLAIMER

This map has been developed using the best information available, however, its preparation required many assumptions. Actual conditions during a runoff event may vary from those assumed, so accuracy cannot be guaranteed. The limits of flooding shown should only be used as a guideline for emergency planning and response actions. Actual areas inundated and associated impacts depend on specific flooding conditions and may differ from what is shown on the maps. **Areas outside of the mapped flooding areas may still be at risk.**

Legend

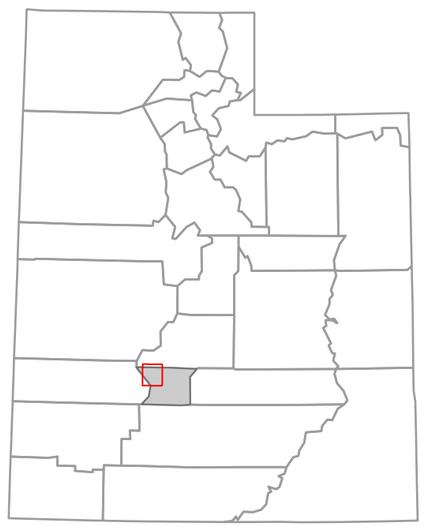
Critical Infrastructure
- Community
- Communications
- Debris Basin
- Electrical
- Fire EMT
- HLZ
- Irrigation Diversion
- Shelter
- Water - Chlorinator
- Water - Collection Spring
- Water - Pump
- Worship

- Watershed
- Subbasin
- Municipalities

Burn Area
- Silver King

Past Fires
- 1956 - 1973
- 1974 - 2013
- 2014 - 2018
- 2019 - 2023

Piute County, Utah



Spatial Reference:
NAD 1983 StatePlane Utah South FIPS 4303 Feet

0 4,000 8,000 12,000 16,000 Feet
1 inch = 2 miles (1:100,000)

N

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Debris Flow Page Index

Inundation Based on USGS Debris Flow Likelihood

Legend

Critical Infrastructure

- Fire EMT
- Community
- Worship
- Communications
- Electrical
- HLZ
- Shelter
- Debris Basin
- Irrigation Diversion
- Water - Chlorinator
- Water - Collection Spring
- Water - Pump
- Flooded Roads
- Watershed
- Subbasin
- Municipalities
- Silver King
- Sevier River
- Hydraulic Model Extent
- Sheet Index

Debris Flow (ft)

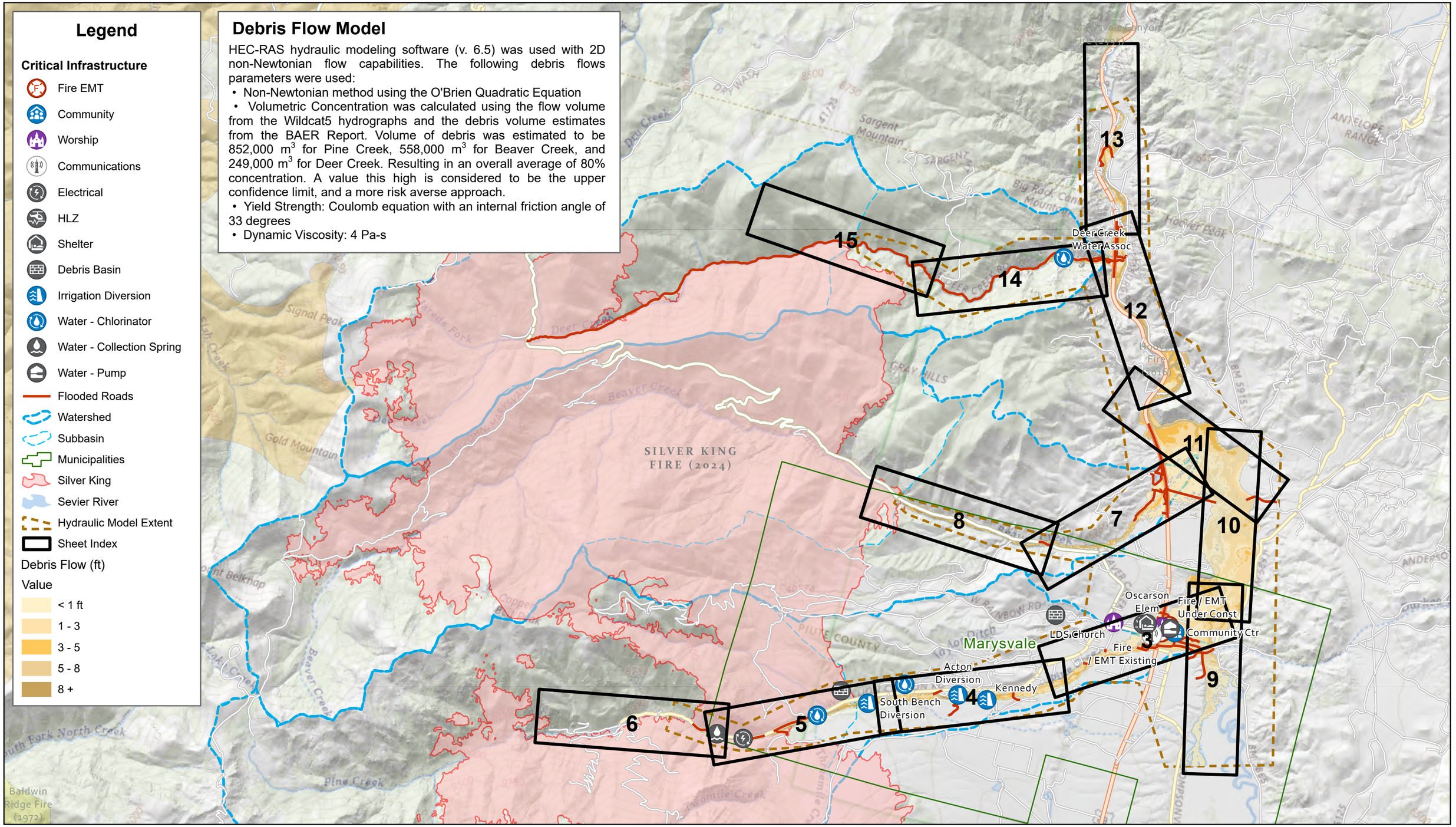
Value

- < 1 ft
- 1 - 3
- 3 - 5
- 5 - 8
- 8 +

Debris Flow Model

HEC-RAS hydraulic modeling software (v. 6.5) was used with 2D non-Newtonian flow capabilities. The following debris flows parameters were used:

- Non-Newtonian method using the O'Brien Quadratic Equation
- Volumetric Concentration was calculated using the flow volume from the Wildcat5 hydrographs and the debris volume estimates from the BAER Report. Volume of debris was estimated to be 852,000 m^3 for Pine Creek, 558,000 m^3 for Beaver Creek, and 249,000 m^3 for Deer Creek. Resulting in an overall average of 80% concentration. A value this high is considered to be the upper confidence limit, and a more risk averse approach.
- Yield Strength: Coulomb equation with an internal friction angle of 33 degrees
- Dynamic Viscosity: 4 Pa-s



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1 inch = 0.95 miles (1:60,000)

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Debris Flow - Pine Creek

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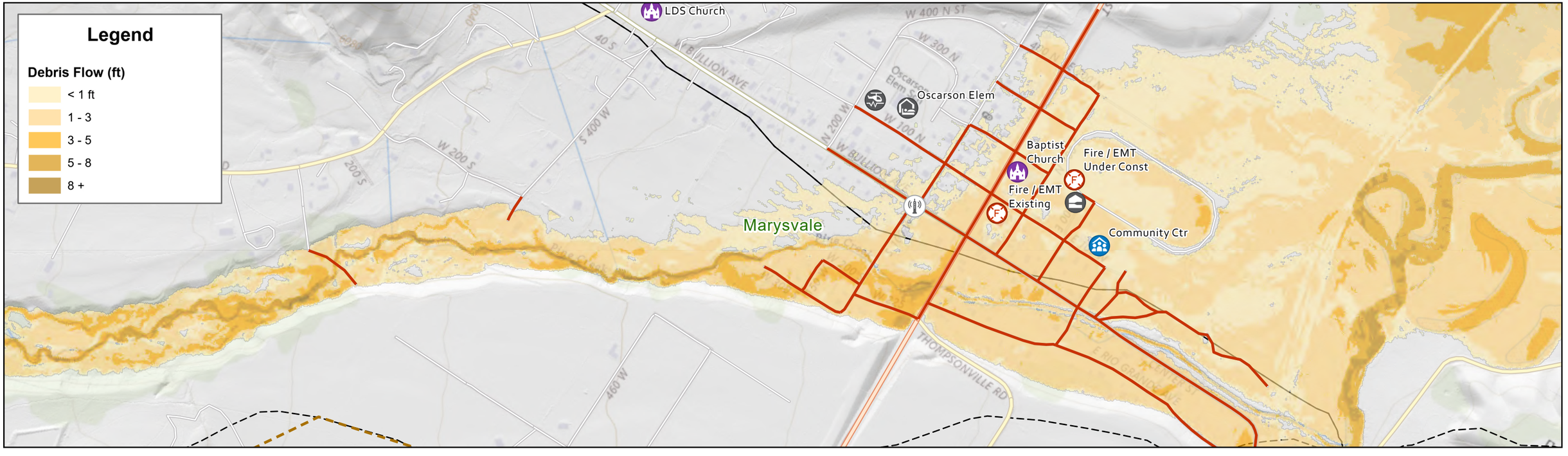

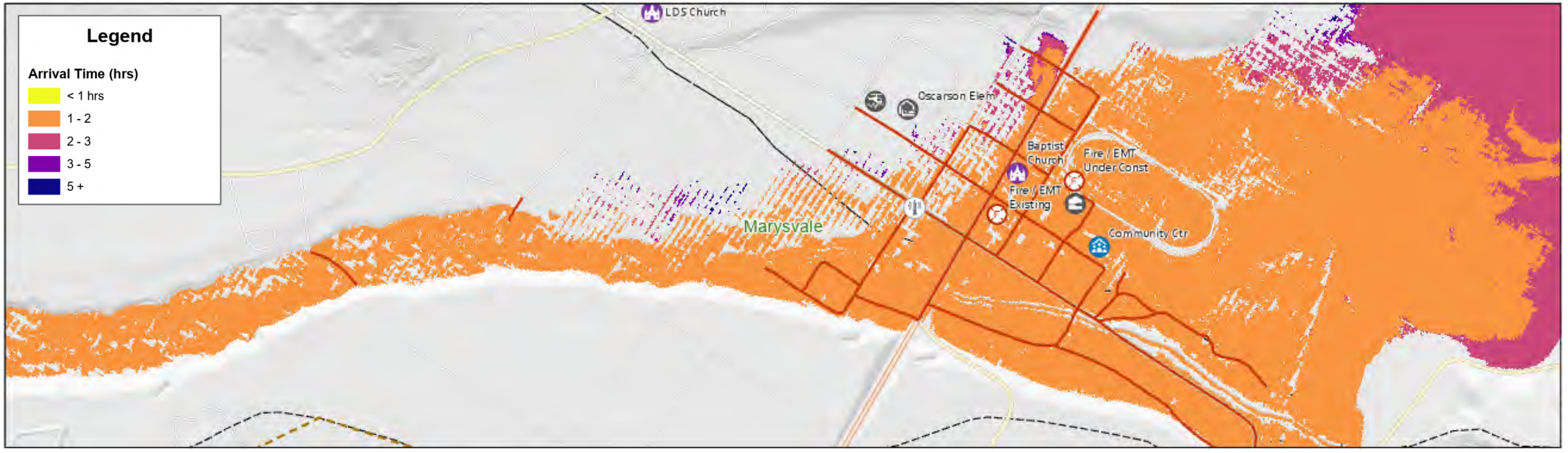

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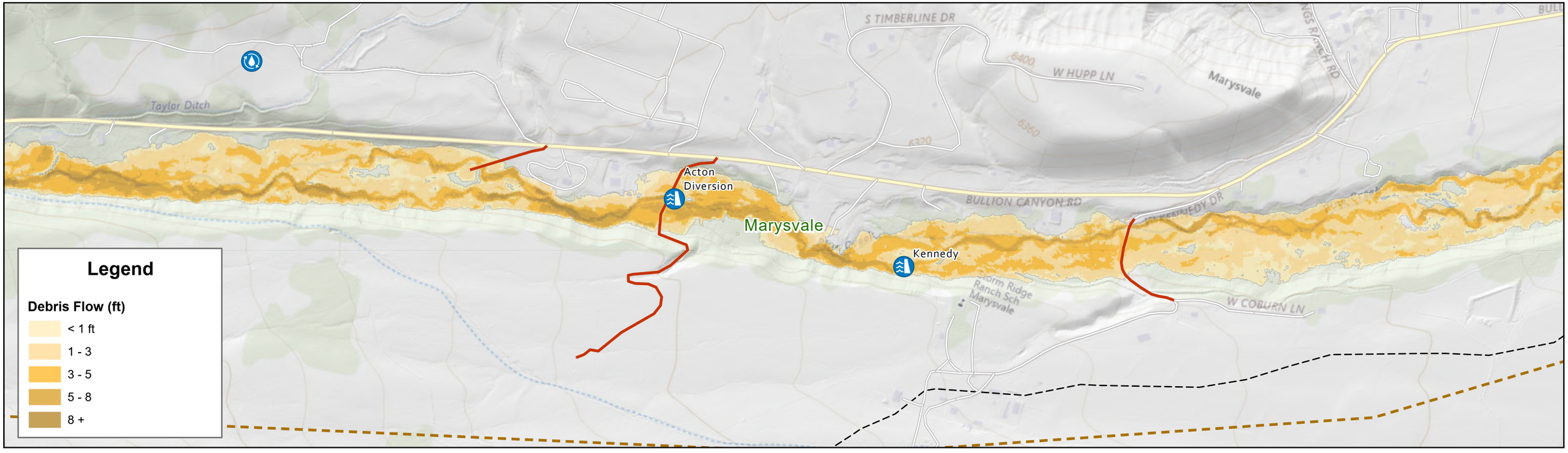
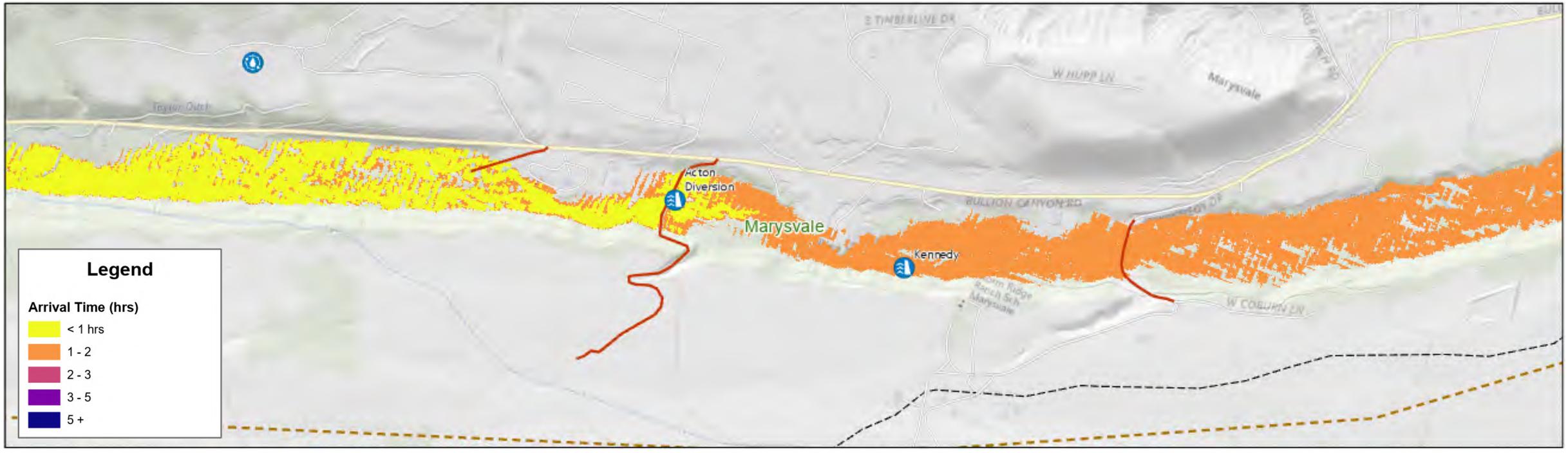
Debris Flow - Pine Creek

Inundation Based on USGS Debris Flow Likelihood





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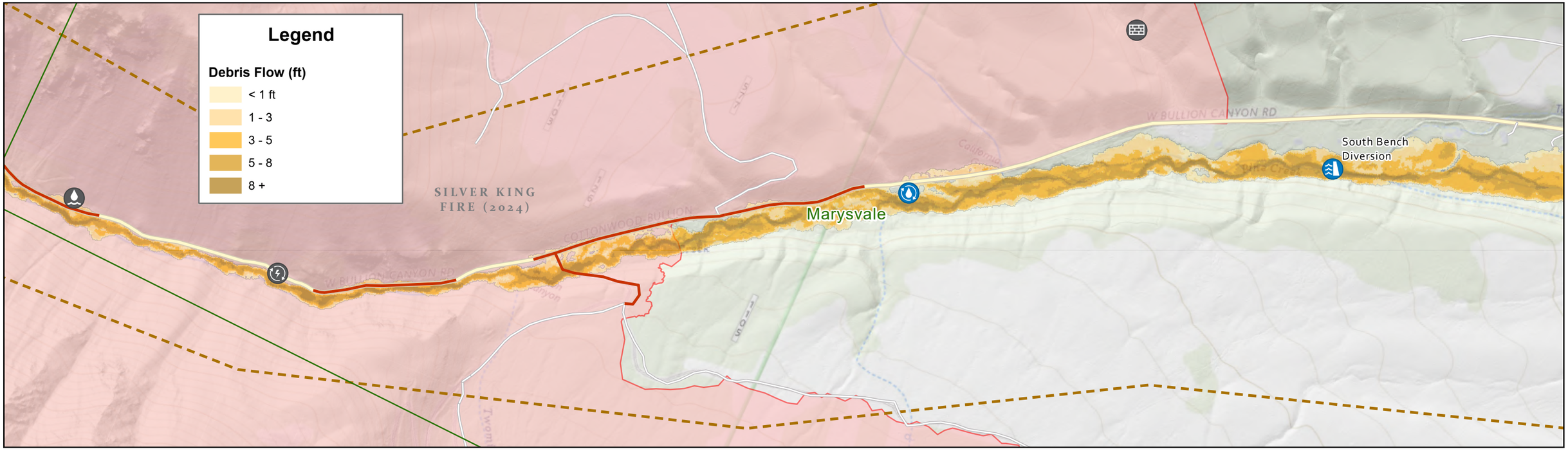
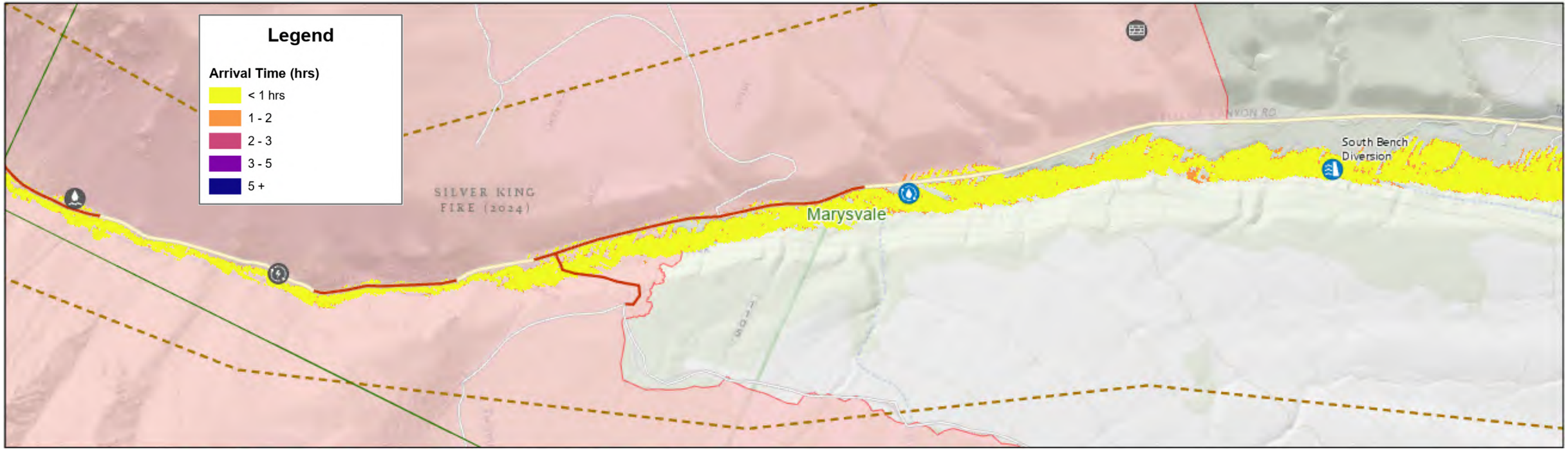
Debris Flow - Pine Creek

Inundation Based on USGS Debris Flow Likelihood





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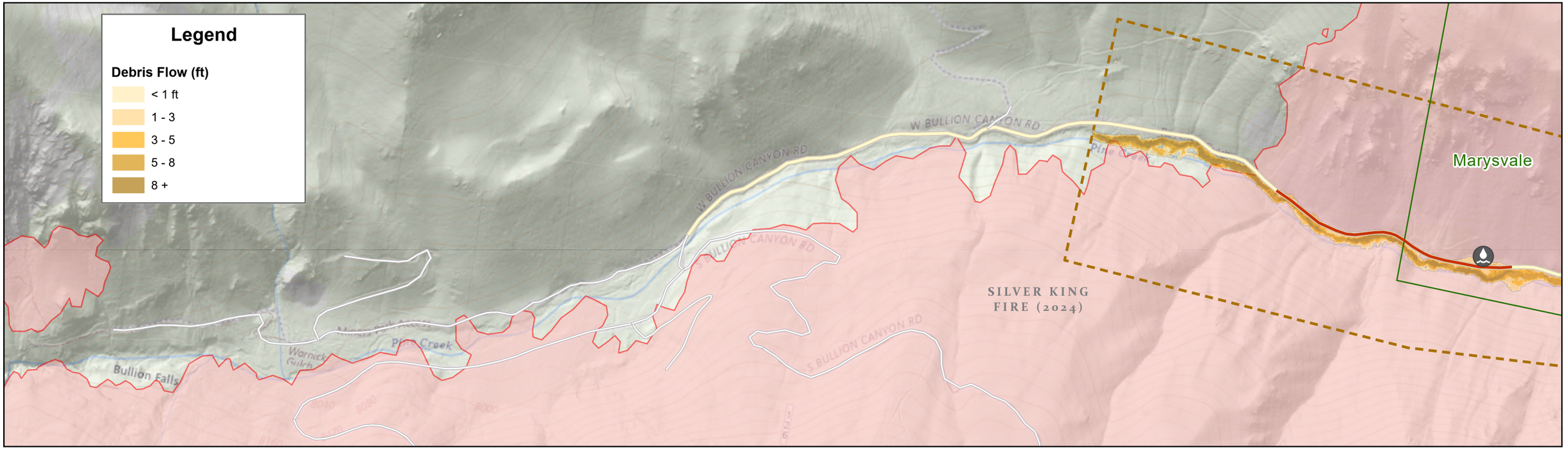
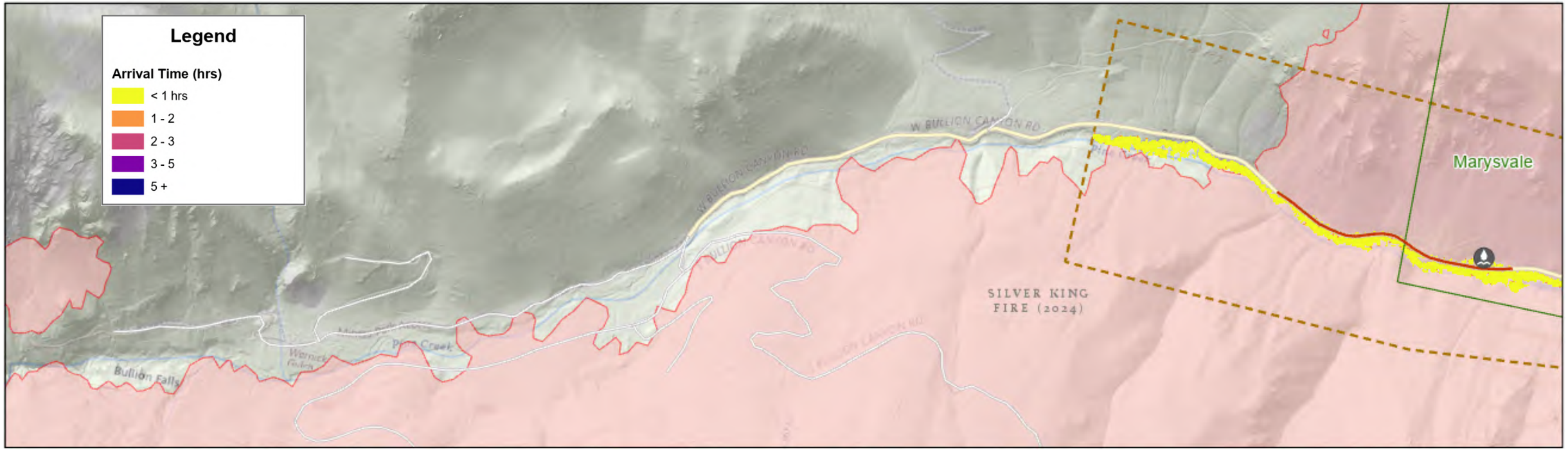
Debris Flow - Pine Creek

Inundation Based on USGS Debris Flow Likelihood





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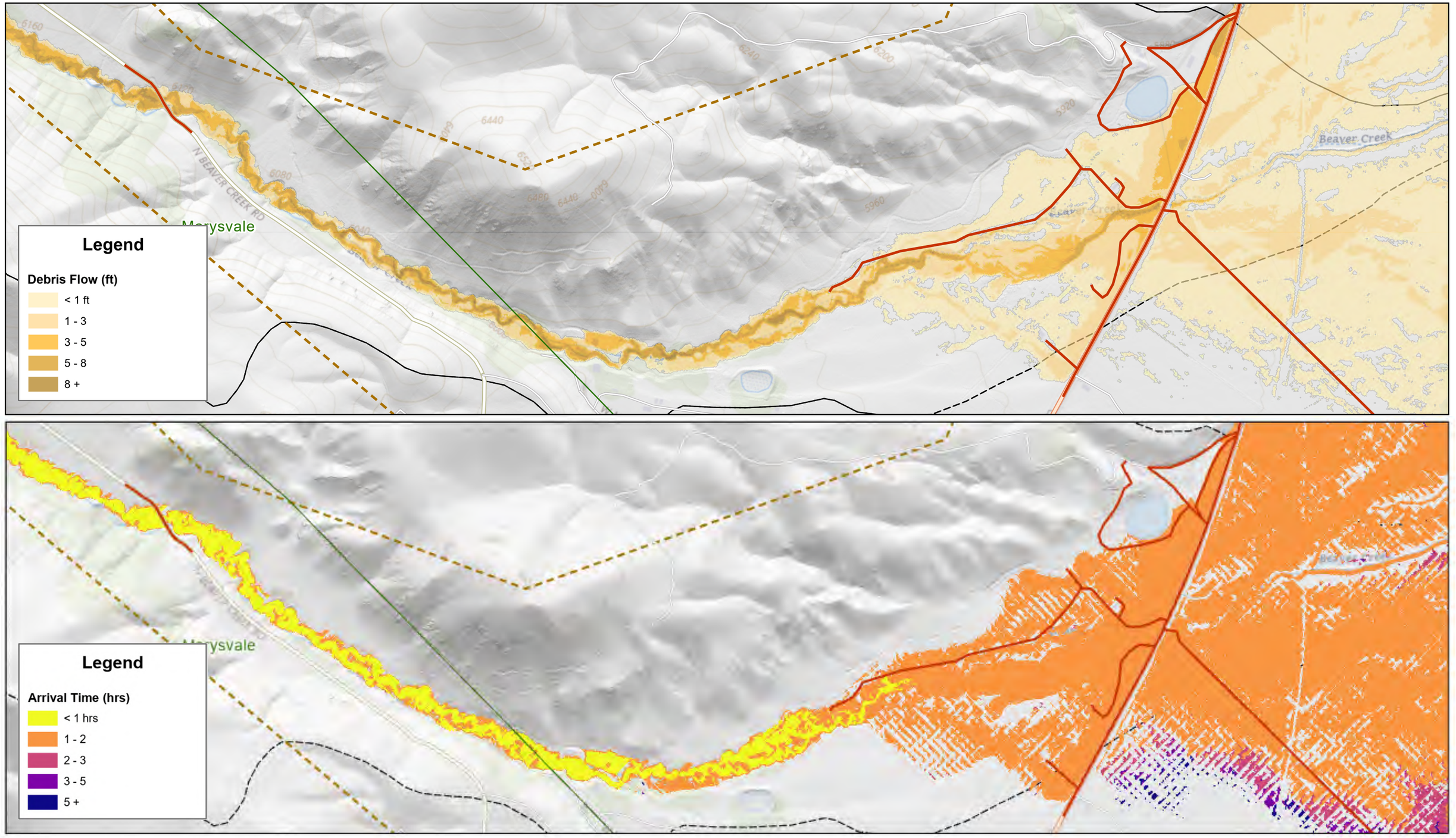
Debris Flow - Beaver Creek

Inundation Based on USGS Debris Flow Likelihood



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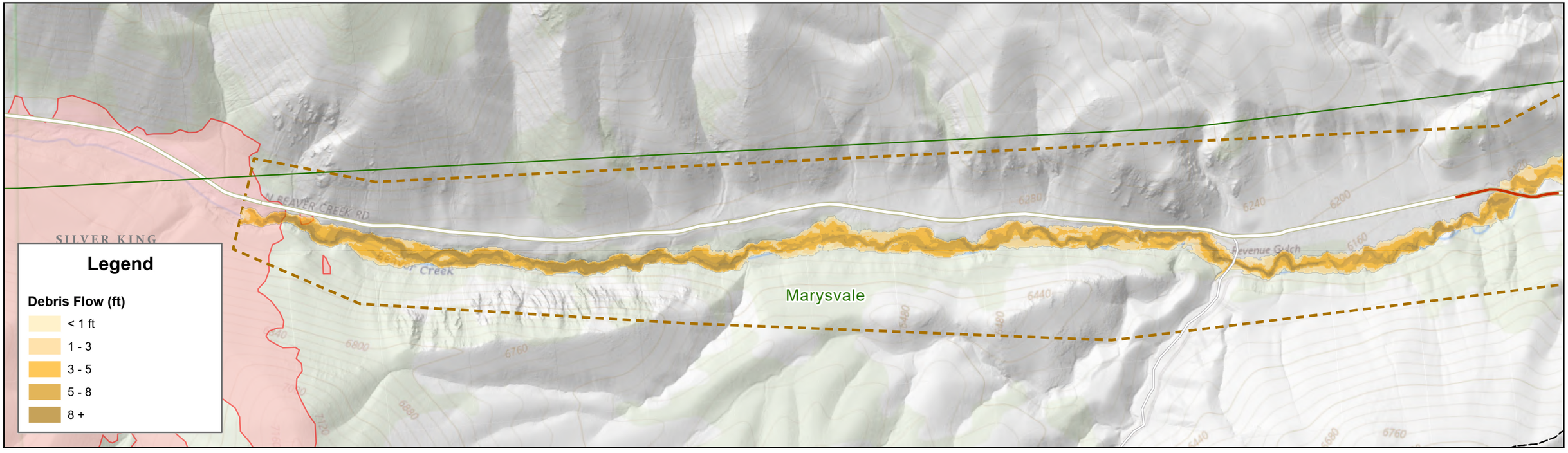
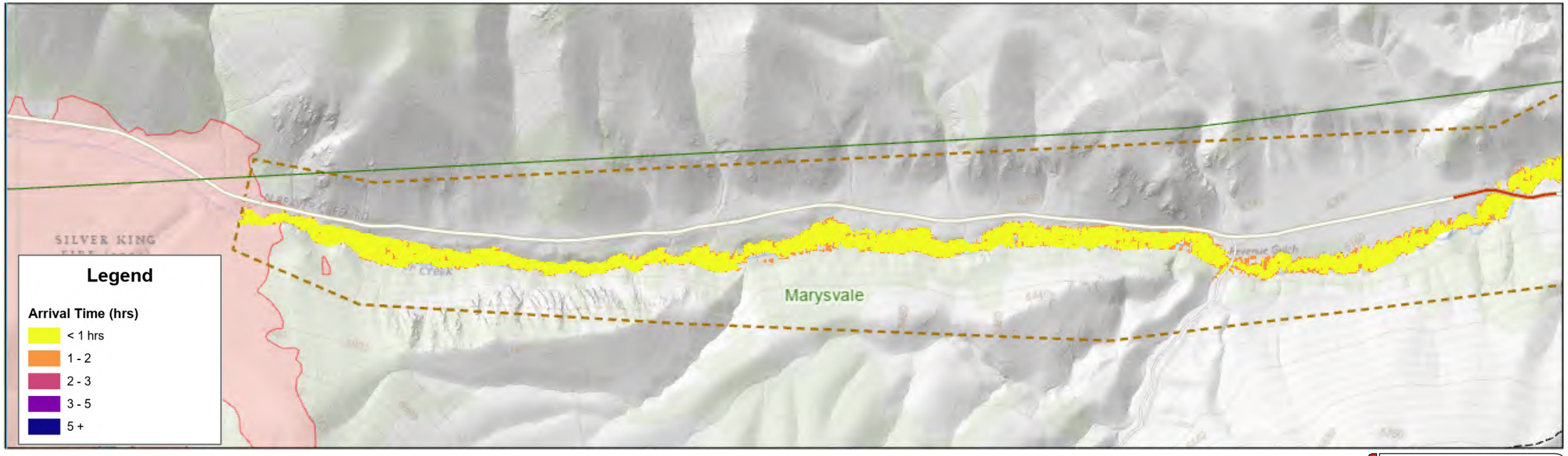
Debris Flow - Beaver Creek

Inundation Based on USGS Debris Flow Likelihood





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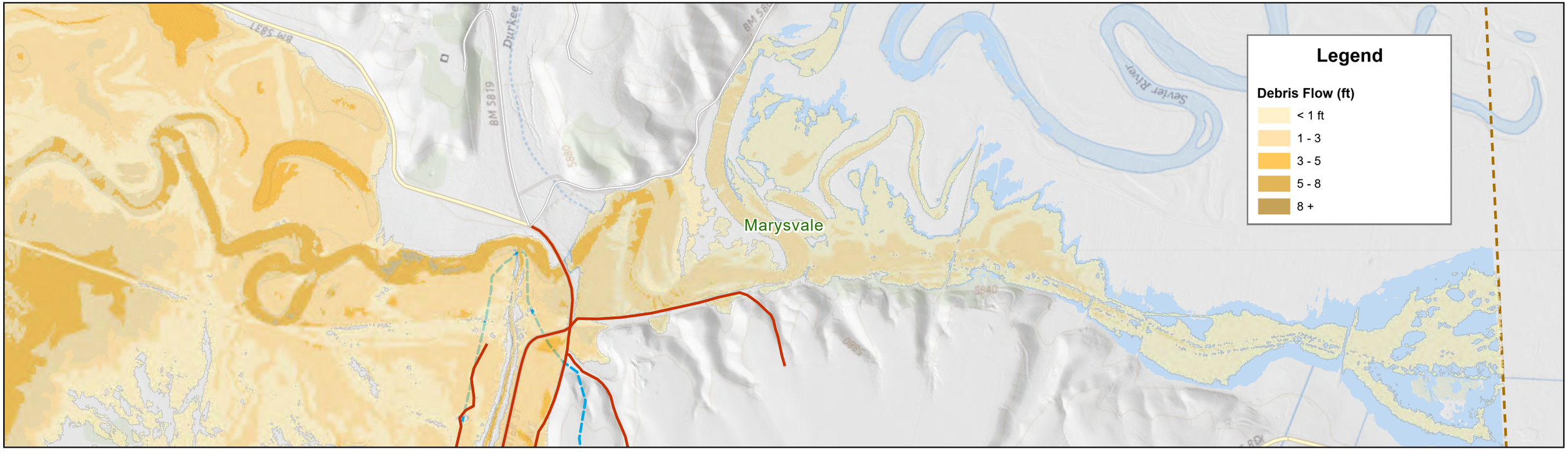
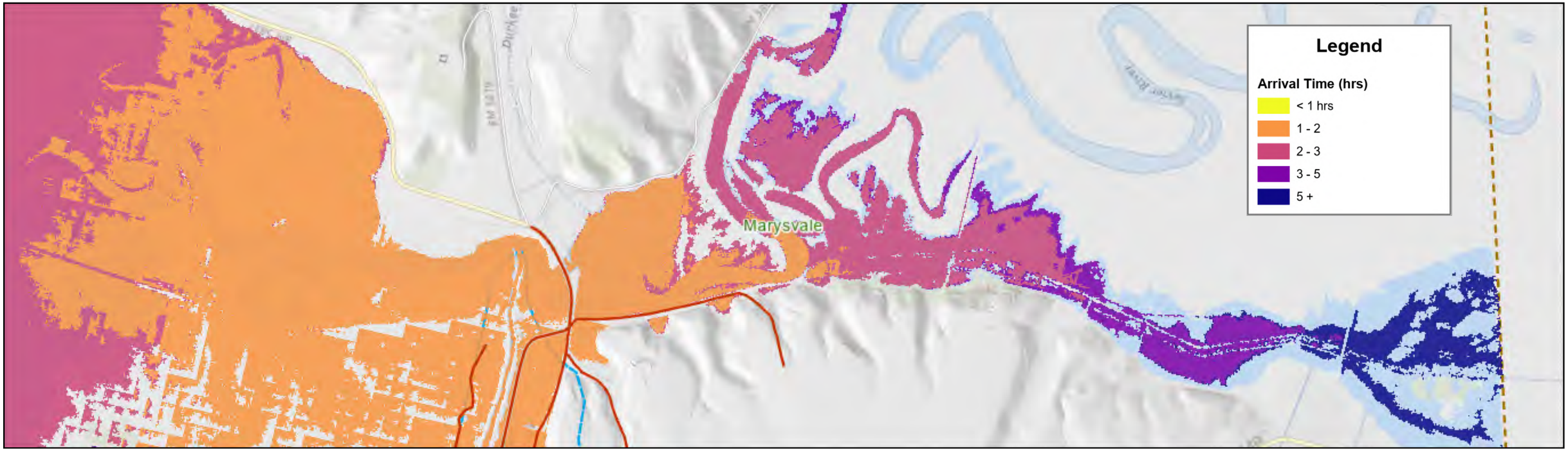
Debris Flow - Sevier River

Inundation Based on USGS Debris Flow Likelihood





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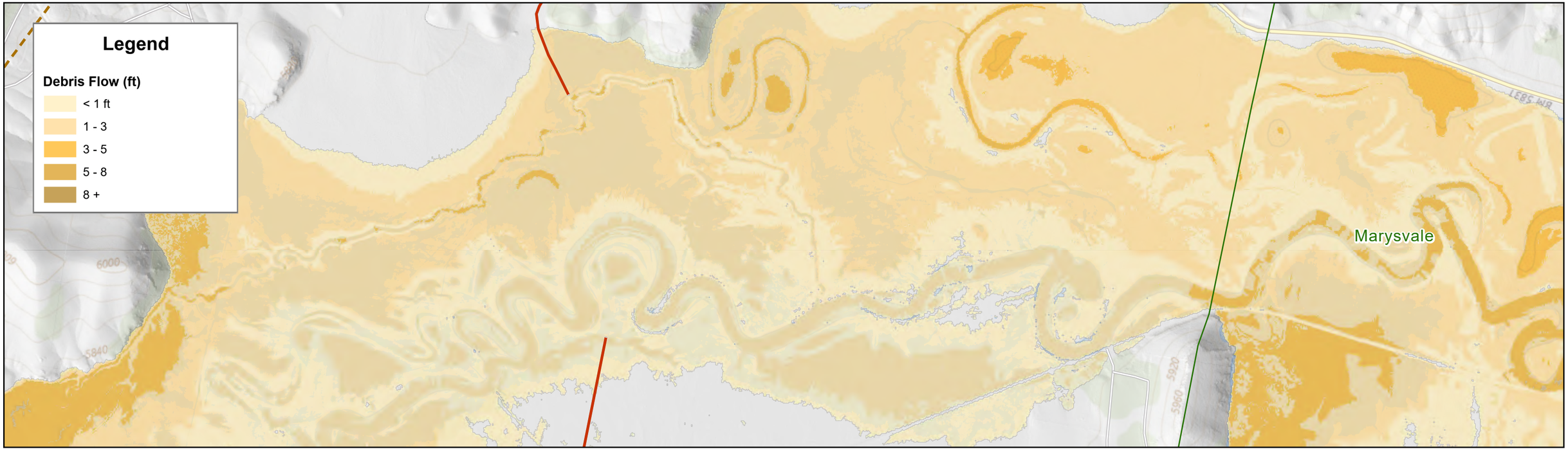
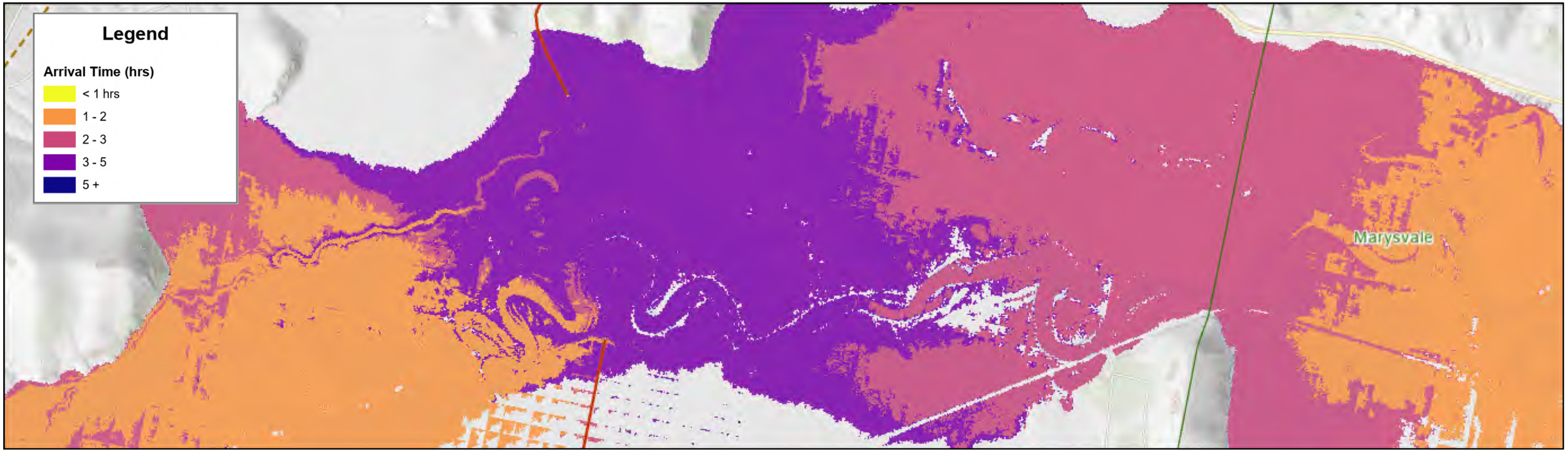
Debris Flow - Sevier River

Inundation Based on USGS Debris Flow Likelihood





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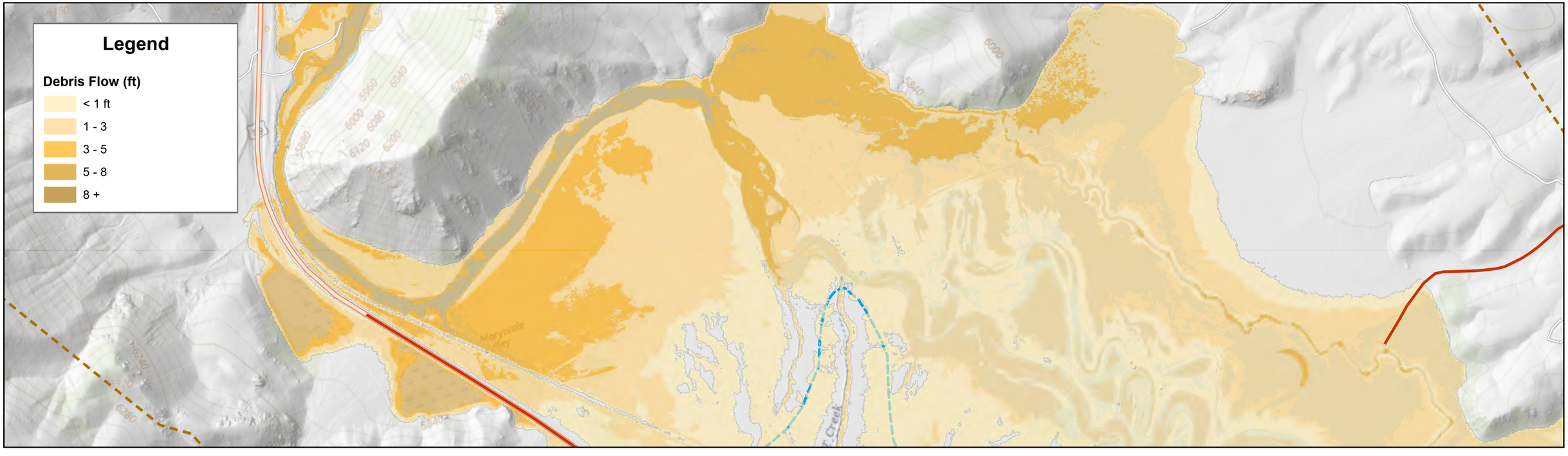
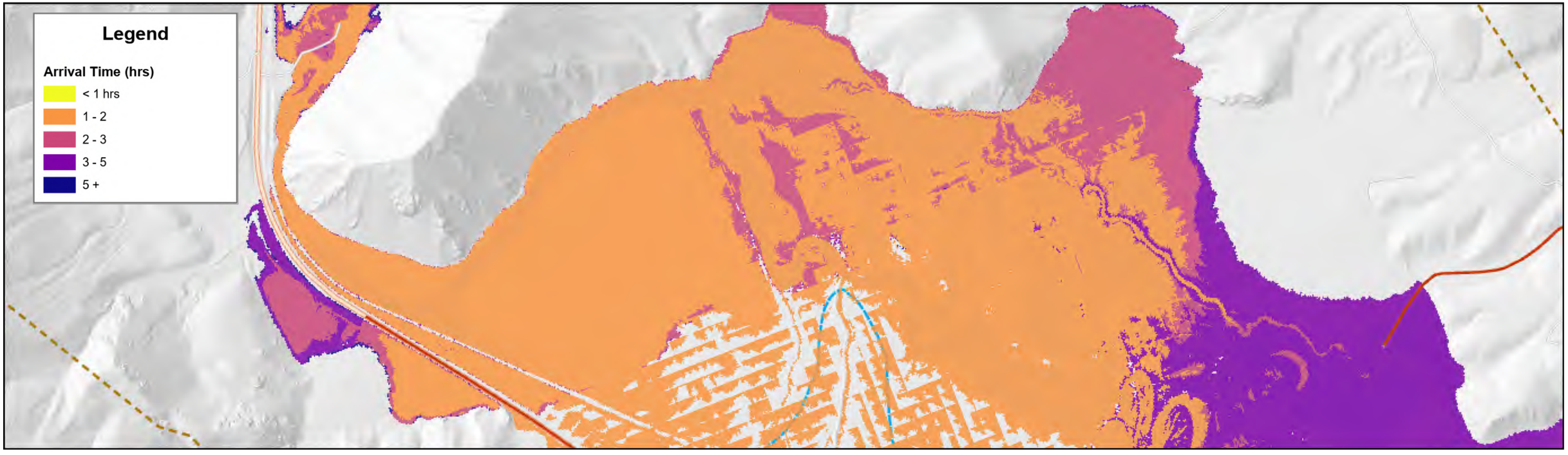
Debris Flow - Sevier River

Inundation Based on USGS Debris Flow Likelihood





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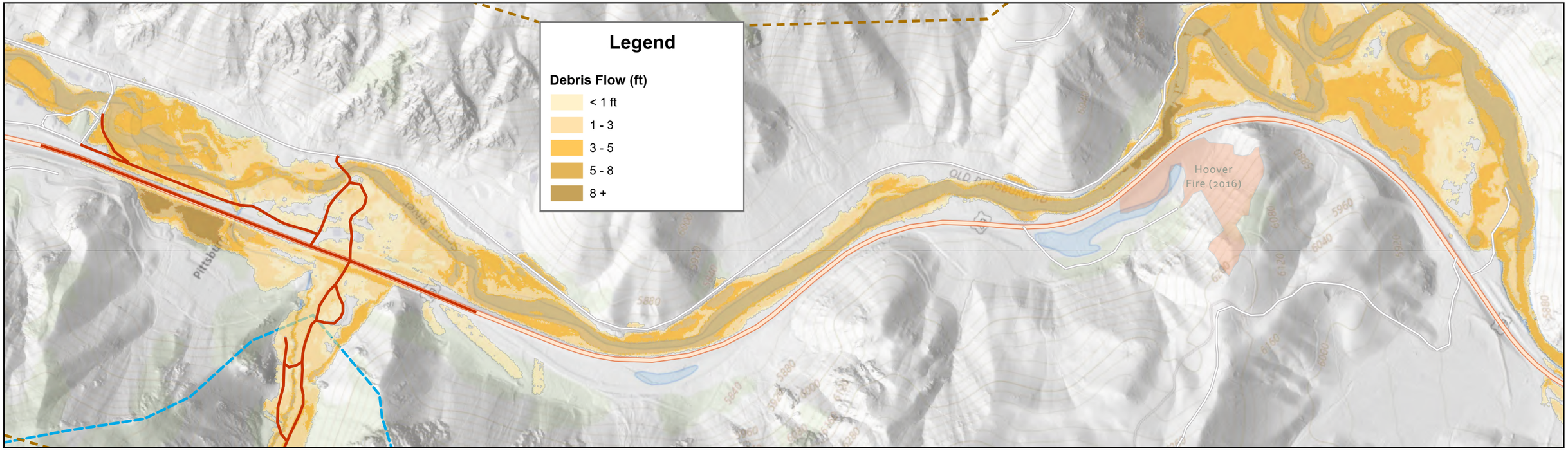
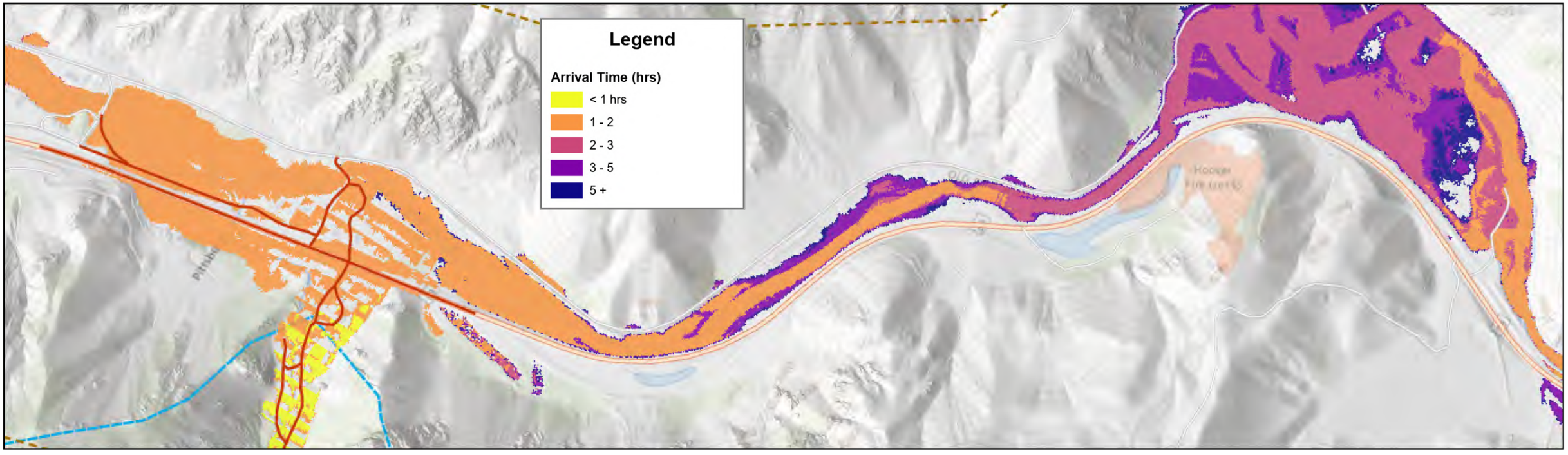
Debris Flow - Sevier River

Inundation Based on USGS Debris Flow Likelihood





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Debris Flow - Sevier River

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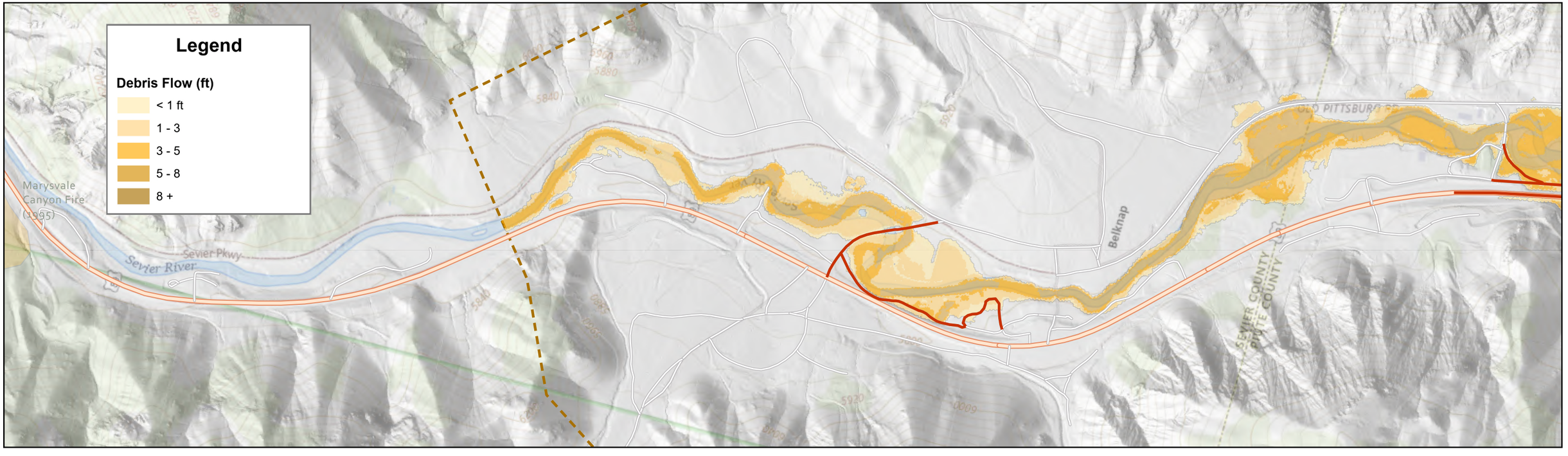

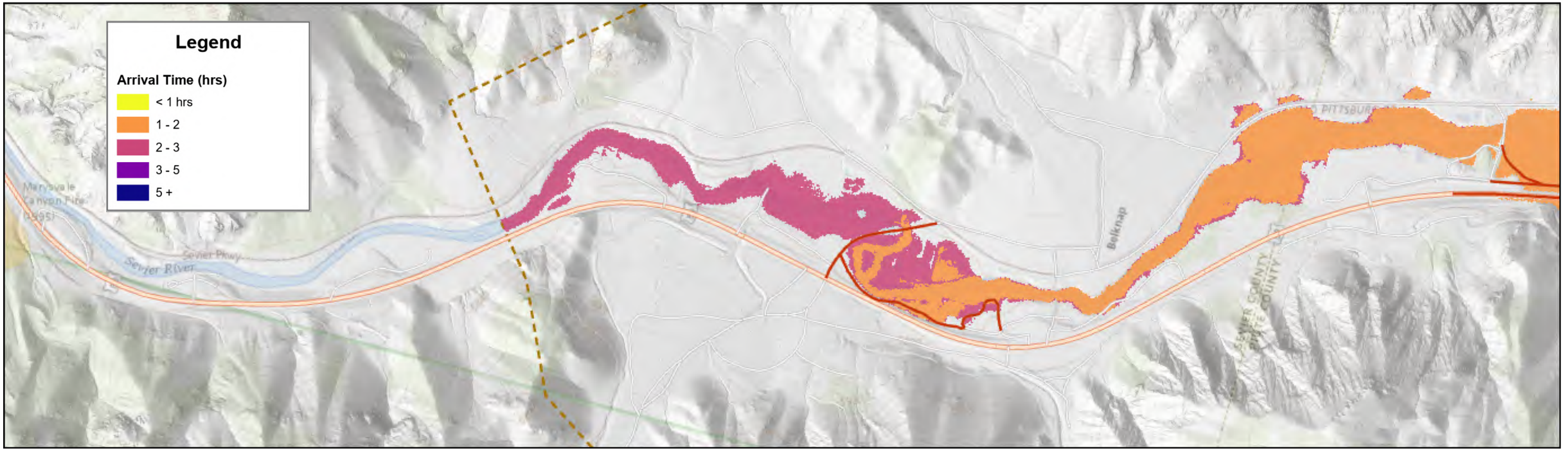

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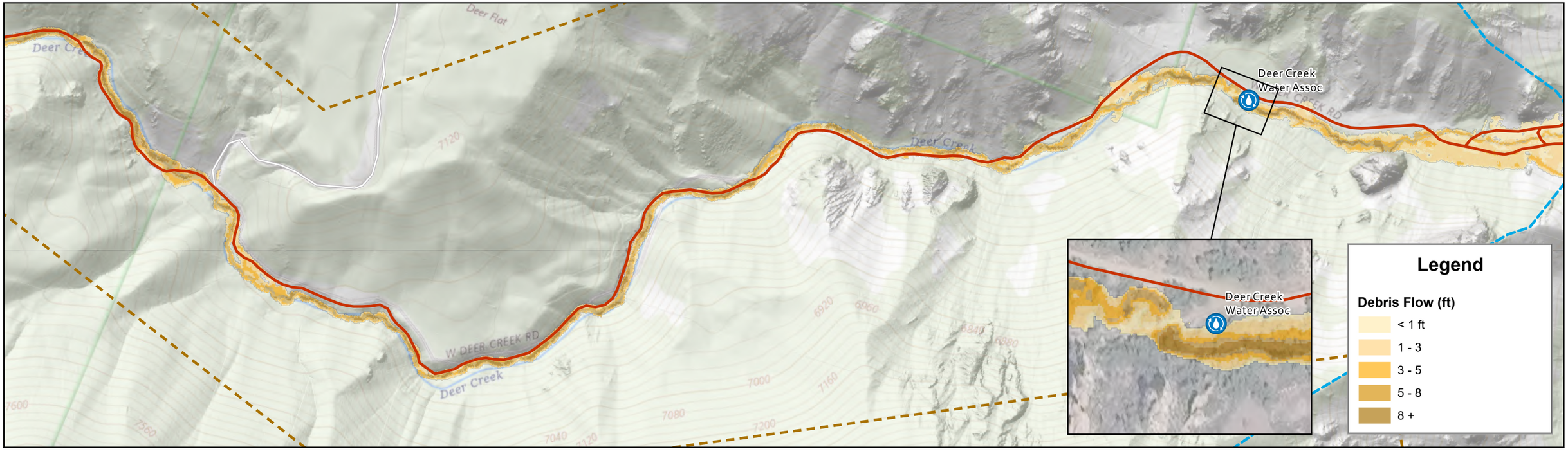
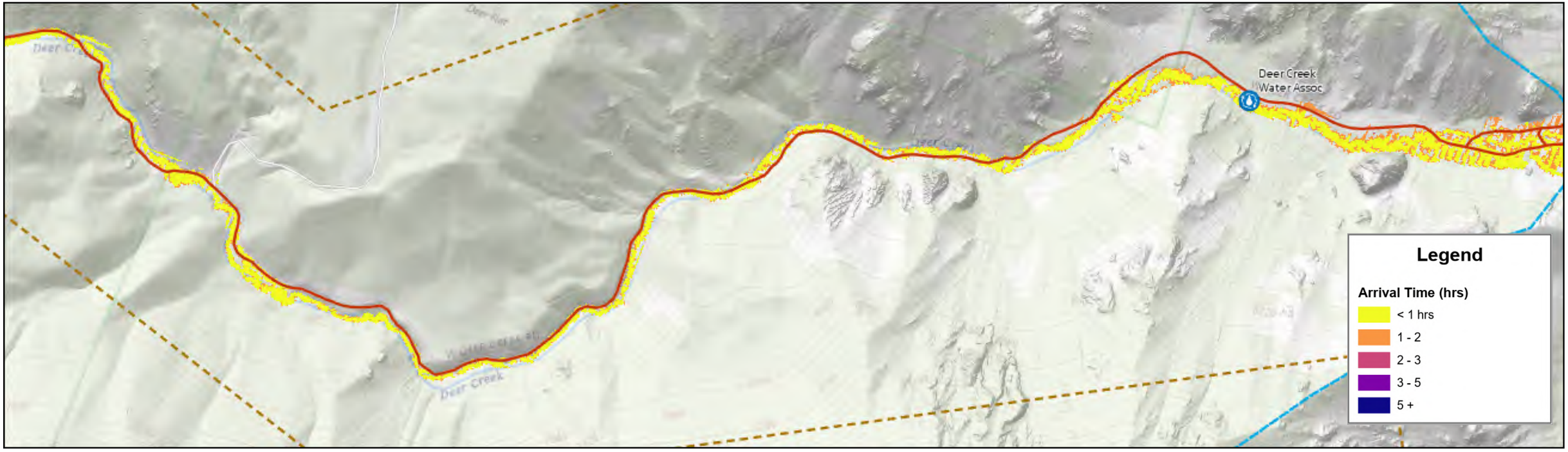
Debris Flow - Deer Creek

Inundation Based on USGS Debris Flow Likelihood





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Debris Flow - Deer Creek

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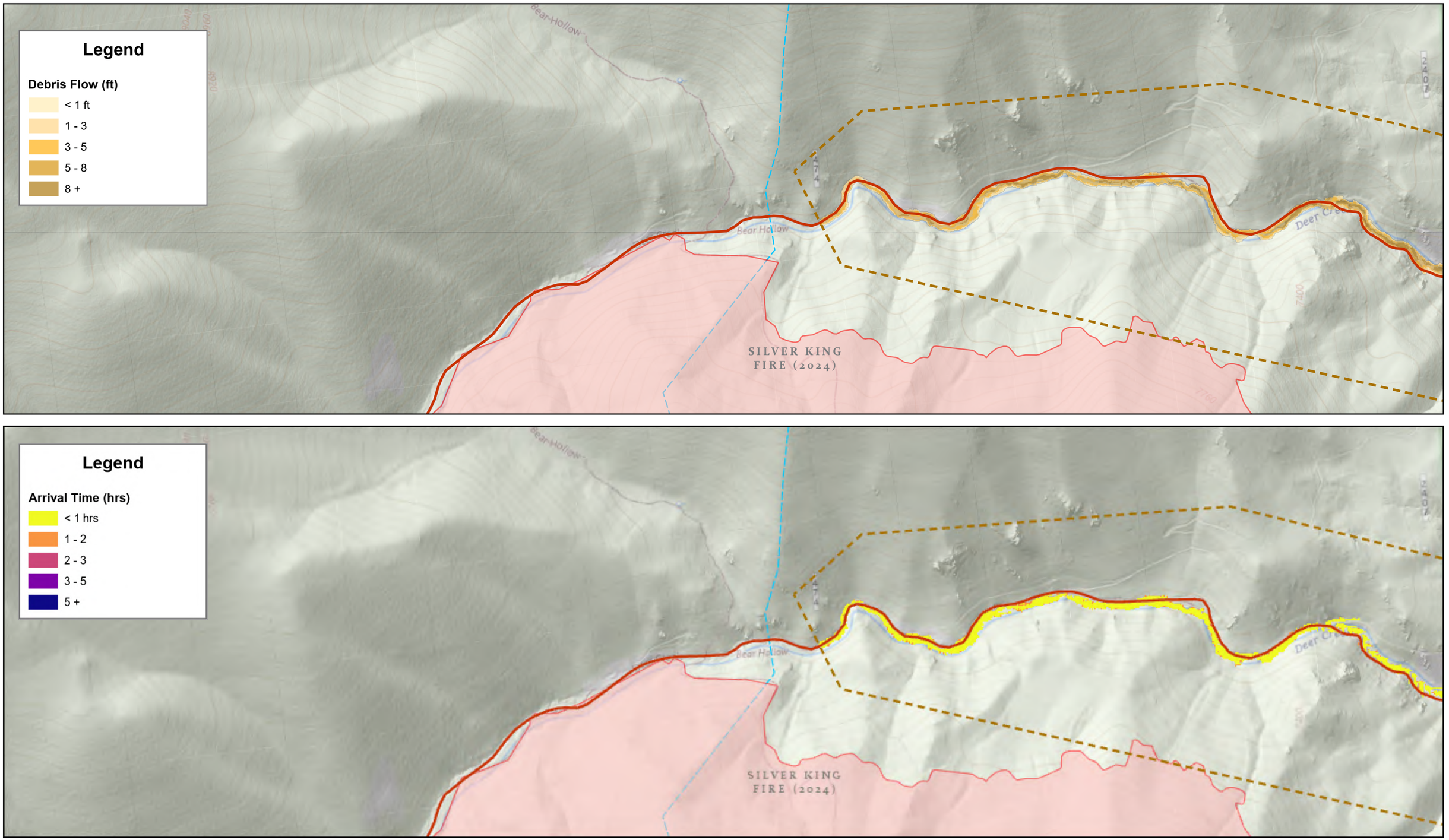

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