



## Integrating Spatial Decision Support Frameworks with the From Forests to Faucets Partnership

In 2010, Denver Water formed the From Forests to Faucets Partnership (F2F) to proactively address watershed related wildfire risks with land and fire management agencies. An analysis was completed with the partnership to identify where vegetation management can align with strategic fire response to build wildfire resilience into source water supply.

### The Spatial Decision Support Frameworks:

- **Potential operational delineations (PODs)** represent the safest and most effective control lines that could be used to contain a fire. These can be natural (ridges, fuel type transitions, etc.) or human-made (roads, fuel breaks, etc.) features that can change with natural disturbance, vegetation management, and shifts in human perceptions.
- **Risk assessment and decision support (RADS)** is a collaborative process that 1) quantifies wildfire risk to a community's values and 2) prioritizes vegetation management to maximize risk reduction per dollar spent.
- Summarizing RADS risk outputs by POD can inform fire response strategies in relation to the susceptibility and importance of values on the landscape.

### Types of Risk:

- **In-situ risk** represents local wildfire risk to highly valued resources and assets (HVRAs). If there are fire-sensitive HVRAs within a POD that intersect with high fire probability and fire intensity, in-situ risk will be high.
- **Transmitted risk** represents wildfire risk to HVRAs should fire cross a POD line into a neighboring POD. This highlights areas with high potential for fire spread into a nearby fire-sensitive PODs and can be thought of as "sources" of risk.
- Both in-situ and transmitted risk were calculated for each POD in the F2F partnership's analysis extent and are displayed in Figure 1.

### How to Reduce Risk:

- Management actions are most effective when strategically targeted on the types of risk present in a POD and the specific values you are trying to protect (Table 1).
- There are alternative management strategies besides fuels reduction that could reduce in-situ risk (e.g. floodplain enhancement, sediment reduction structures, and aerial mulching) and transmitted risk (e.g. reducing human ignitions, fire patrols, and recreation planning).

Table 1: Bivariate risk matrix that pairs the specific type of risk (in-situ vs. transmitted risk) with an appropriate management action.

<p>Low in-situ risk</p> <p>↑</p> <p>↓</p> <p>High in-situ risk</p>	<p>POD boundary hardening to limit fire spread</p>		<p>Support beneficial fire to maintain low risk</p>
	<p>Local fuels reduction + POD boundary hardening</p>		<p>Local fuels reduction for HVRA protection</p>
	<p>High transmitted risk</p>	<p>←</p> <p>→</p>	<p>Low transmitted risk</p>

# How is the F2F Partnership Prioritizing Management Actions?

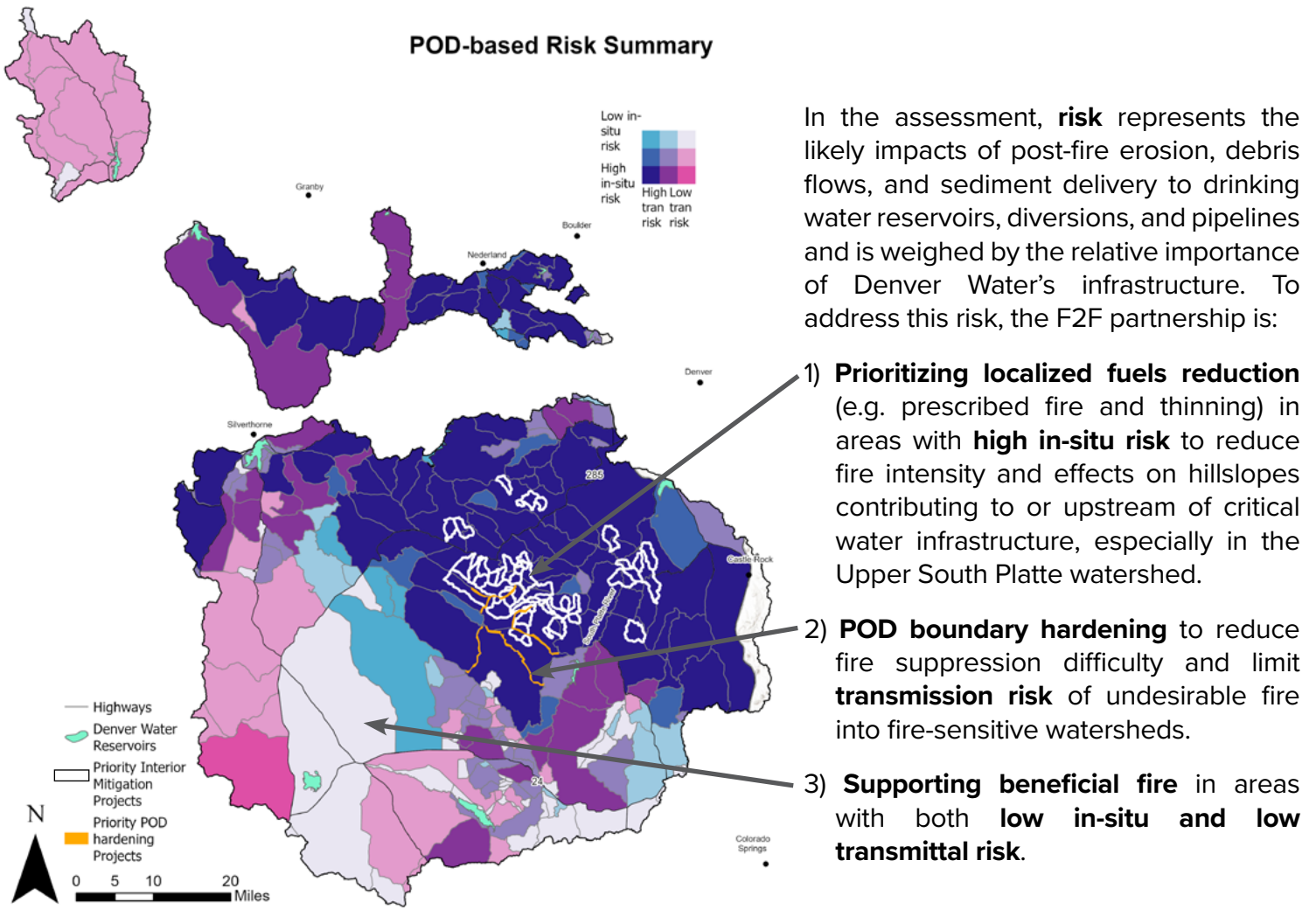


Figure 1: In-situ risk and transmitted risk matrix summarized by potential operational delineation (POD) across Denver Waters' source water collection area. For visualization purposes, the color gradient is based on quantile breaks which equally distributes observations across class intervals. Priority management actions for reducing in-situ risk are outlined in white and those prioritized for reducing transmitted risk are outlined in orange.

## Additional Resources:

Aldworth T, Beeton T, Edinger J, and Ritter S (2024) PODs:

A strategic collaborative spatial wildfire planning framework and decision support tool for wildfire response and mitigation. <https://storymaps.arcgis.com/collections/f513b2593f5342a59207334207d853a8>

Thompson M, Bowden B, Brough A, Scott J, Gilbertson-Day J, Taylor A, Anderson J, Haas J (2016) Application of Wildfire Risk Assessment Results to Wildfire Response Planning in Southern Sierra Nevada, California, USA.

Forests. 7(3). <https://doi.org/10.3390/f7030064>

## To Read the Full Technical Report:

Rhea A, Wolk B, Ritter S, and McDonald M (2024) From Forests to Faucets Partnership Wildfire Risk Assessment. CFRI-2414. [https://cfri.colostate.edu/wp-content/uploads/sites/22/2024/09/Rhea\\_et al ForeststoFaucets WildfireRiskAssessment CFRI\\_2414.pdf](https://cfri.colostate.edu/wp-content/uploads/sites/22/2024/09/Rhea_et al ForeststoFaucets WildfireRiskAssessment CFRI_2414.pdf)



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