Partnership Opportunities for Source Water Protection

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October 28th, 2020

USDA Forest Service

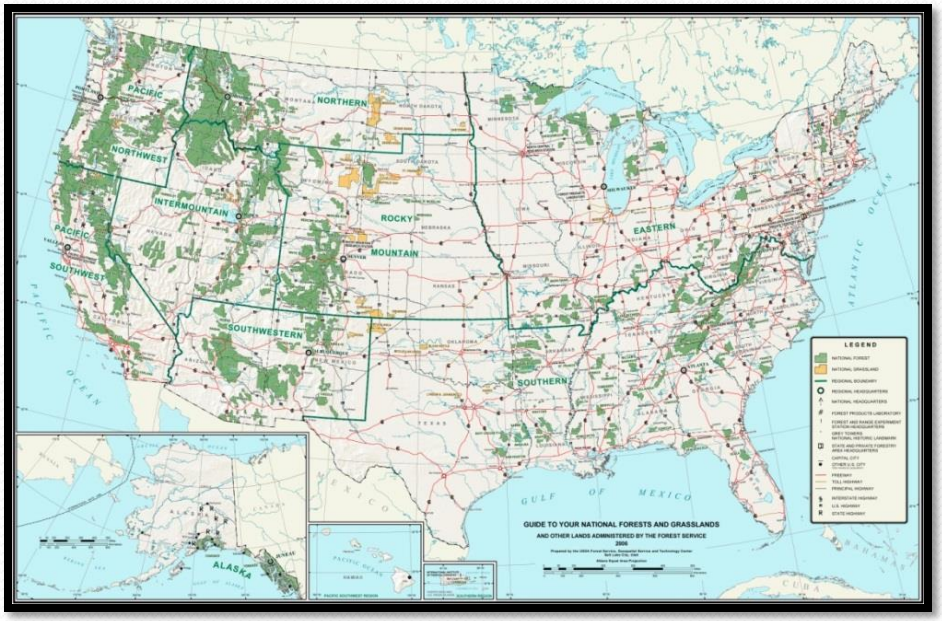
National Forest System Lands

154 National Forests

20 National Grasslands

193 million acres

44 states & Puerto Rico



57,000 miles of stream

400,000 lake acres

7.2 million wetland acres

Provide 20% of America's clean water supply

Brief History of the US Forest Service

The Organic Administration Act of 1897, under which most national forests were established, states:

"No national forest shall be established, except to improve and protect the forest within the boundaries, or for the ***purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber*** for the use and necessities of citizens of the United States…"

Historic National Forest Timber Sale Levels

Resource	Treatments	Benefits
Forest Health and Climate Resilience	• Wildland/urban interface readiness • Insect & disease treatments • Reforestation	• Reduction in wildfire risk • Reduce fire threat to infrastructure • Protect habitat and recreation values • Improve carbon storage
Recreation and Transportation Infrastructure	• Aquatic Organism Passage (AOPs) • Road & trail management • Visitor use planning	• Improved WQ – Reduction in turbidity, sedimentation, nutrients, bacteria • Improved resilience to flood events
Stream and Wetland Restoration	• Road-stream crossing including AOPs • Riparian and instream restoration • Non-native invasive plant treatment • Grazing improvements	• Improved WQ – Reduction in turbidity, sedimentation, nutrients, bacteria • Improve water storage and flow • Risk reduction to infrastructure due to flooding • Mitigation for development impacts • Improved habitat and recreation values
Legacy Impacts	• Dam removal or improvement • Abandoned mine reclamation • Acid drainage treatment	• Reduce leaching of heavy metals, • Improve aquatic ecosystem • Stabilize soil and improve water storage • Reduce cyanobacterial bloom risks

How to Partner with the USFS

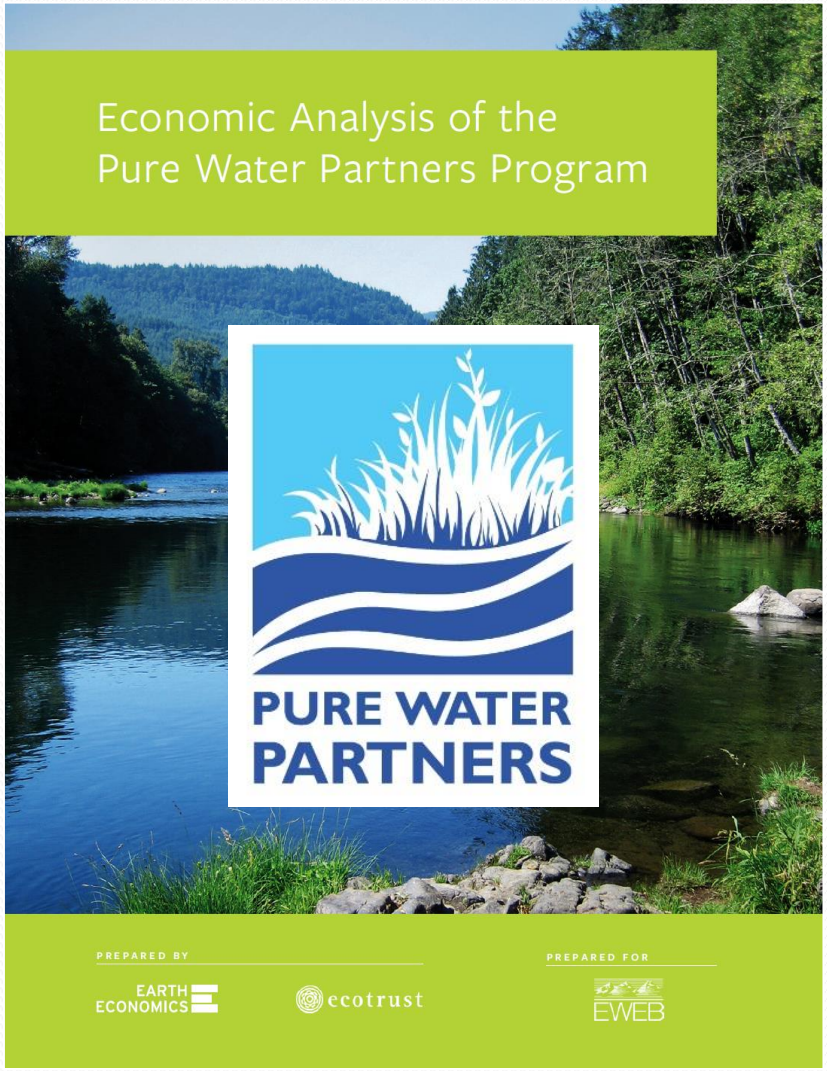
- Contact local forests directly
- Schedule of Proposed Actions (SOPA)
- Join collaborative groups
- Work through Regional Partnership Coordinator

McKenzie Watershed Conservation Fund: Pure Water Partners

Eugene Water and Electric Board
Partnership with the Willamette National Forest

- **payments** to private landowners to maintain high quality riparian areas
- **partnerships** to restore degraded areas
- **green infrastructure** for stormwater management and carbon offsets
- **Willamette National Forest** collaboration through stewardship contracting

Just good business…..



On average, each acre of healthy riparian forest protected through the program results in an **$438 economic benefit/yr.** with a **260% return on investment** over 20 years.

Innovative Financing for Source Water Protection

Forest Resilience Bond

- Leveraging capital up-front to increase the pace and scale of restoration
- Quantifying benefits to multiple beneficiaries for shared investments

Water Funds

- Collective-action platforms
- Strategic planning and blended financing

Voluntary Surcharge Programs

- Small donations / user fees that can be invested in green infrastructure

Innovative Finance for National Forests Grant Program

- Development, refining, and scaling of conservation finance models
- Utility partnerships
- www.ifnfgrants.org

Join us!

Contact Nikola Smith, Regional Partnership Coordinator, nikola.smith@usda.gov

Quantified Ventures

BLUE FOREST CONSERVATION

Drinking Water Providers Partnership

Grant for environmental conservation and restoration projects in municipal watersheds across the Northwest.

Goals:

- Restore and protect the health of watersheds which communities depend upon for drinking water while also benefiting aquatic and riparian ecosystems, including the native fish that inhabit them.

- Support local partnerships between drinking water providers, landowners, and restoration practitioners.

- **Applications are due by 5:00PM PST on 8 January 2021.**

Forests to Faucets 2.0 Connecting Forests, Water and Communities

A Story Map

About | Important Watersheds | Risks to Surface Drinking Water | Explore Data | Learn More

Why Forests to Faucets?

Our nation relies on forested watersheds for high-quality drinking water. The National Forests to Faucets 2.0 (F2F2) Assessment is a geographic analysis done by scientists in the US Forest Service that uses biophysical and demographic data to show relative importance of sub-watersheds for surface drinking water and to look at potential threats to those watersheds.

The F2F2 Assessment compares sub-watersheds across the country to show which are most relied upon as sources of drinking water and which are threatened. Threats to these important forested watersheds include fire, insects and disease, development, and reduced run-off due to a changing climate.

Explore the F2F2 Assessment

Use the links below or the corresponding tabs at the top of the page to explore the relative importance of sub-watersheds for surface drinking water; the potential threats to those watersheds (fire, insects and disease, development, reduced run-off due to changing climate); and the biophysical and demographic data supporting the assessment.

Important Watersheds

Relative importance of watersheds for surface drinking water.

Risks to Surface Drinking Water

This section displays the relative importance of each sub-watershed for surface drinking water. Locate the sub-watershed(s) of interest to you and determine the extent to which their current status is threatened.

Explore Inputs

Explore an interactive web map displaying the biophysical and demographic parameters supporting the assessment.

https://usfs.maps.arcgis.com/apps/MapSeries/index.html?appid=e84fc83c8be542079d3c1d489d45be21

Forest to Faucet
Analysis Objectives

- **OBJECTIVE 1**
  ABILITY TO PRODUCE CLEAN WATER
  Assess subwatersheds across the continental US to identify those with the natural ability to produce clean water based on its biophysical characteristics(APCW)

- **OBJECTIVE 2**
  IMPORTANCE TO SURFACE DRINKING WATER
  Assess subwatersheds across the US to identify those important to surface drinking water (IMP)

- **OBJECTIVE 3**
  IDENTIFY IMPORTANT FORESTS
  Identify forest areas that protect surface drinking water

- **OBJECTIVE 4**
  ANALYZE RISKS
  Analyze potential risks to surface drinking water, present and future from fire, insect and disease, development, and changes in water yield.

Objective 1:

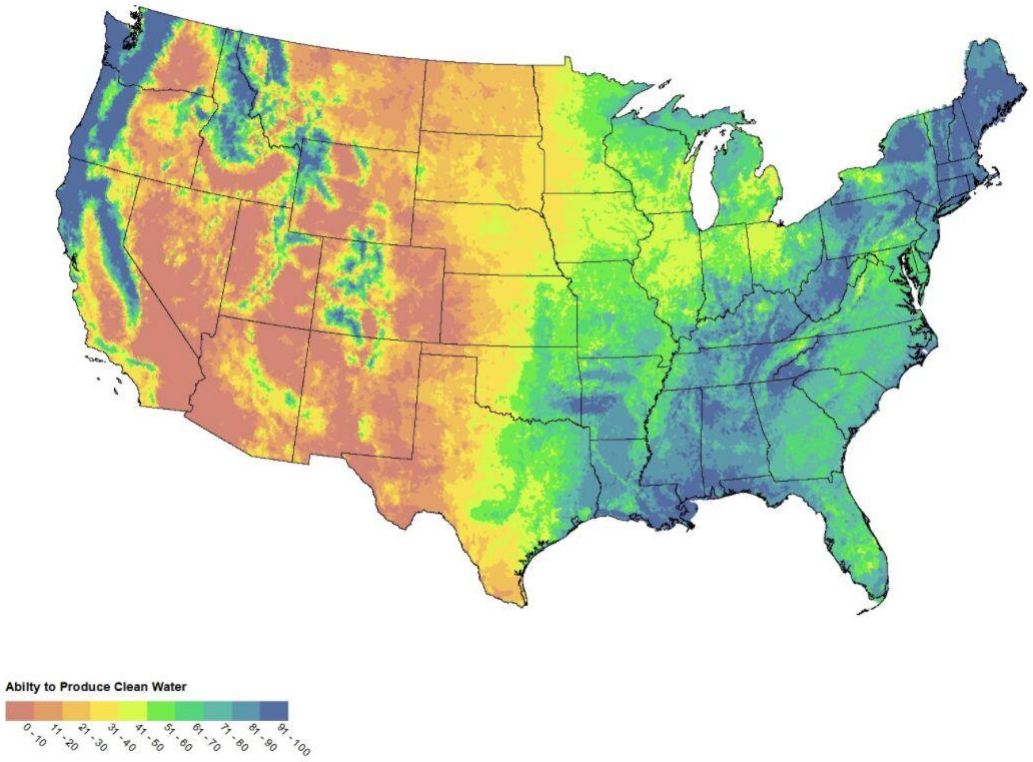
ABILITY TO PRODUCE CLEAN WATER (APCW)

APCW = (N + A + I + R) * Q

where

N = Percent Natural Cover
A = Percent Agricultural land
I = Percent Impervious
R = Percent Riparian natural cover
Q = Mean Annual Water Yield

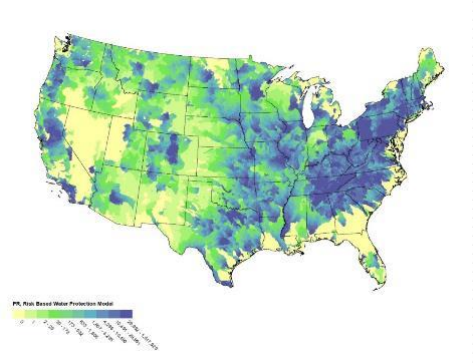
Ability to Produce Clean Water (APCW)				
Rating→ ↓Attribute	Very High (4 points)	High (3 points)	Moderate (2 points)	Low (1 point)
N = Percent Natural Cover	>75	50-75	25-50	<25
A = Percent agricultural land	<10	10-20	21-30	>30
I = Percent Impervious	0-1	1-5	5-10	>10
R = Percent riparian natural cover	>70	51-70	30-50	<30
Q = Mean annual water yield	>800 mm	400-800 mm	200-400 mm	0-200 mm
Ability to Produce Clean Water (APCW)	(N + A + I + R) * Q = APCW			

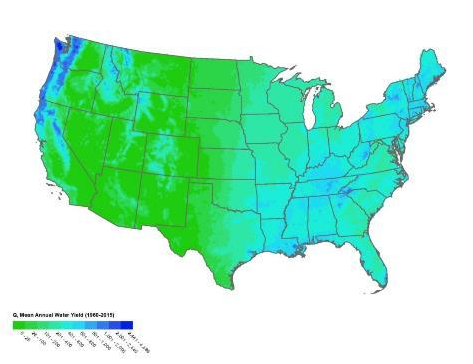


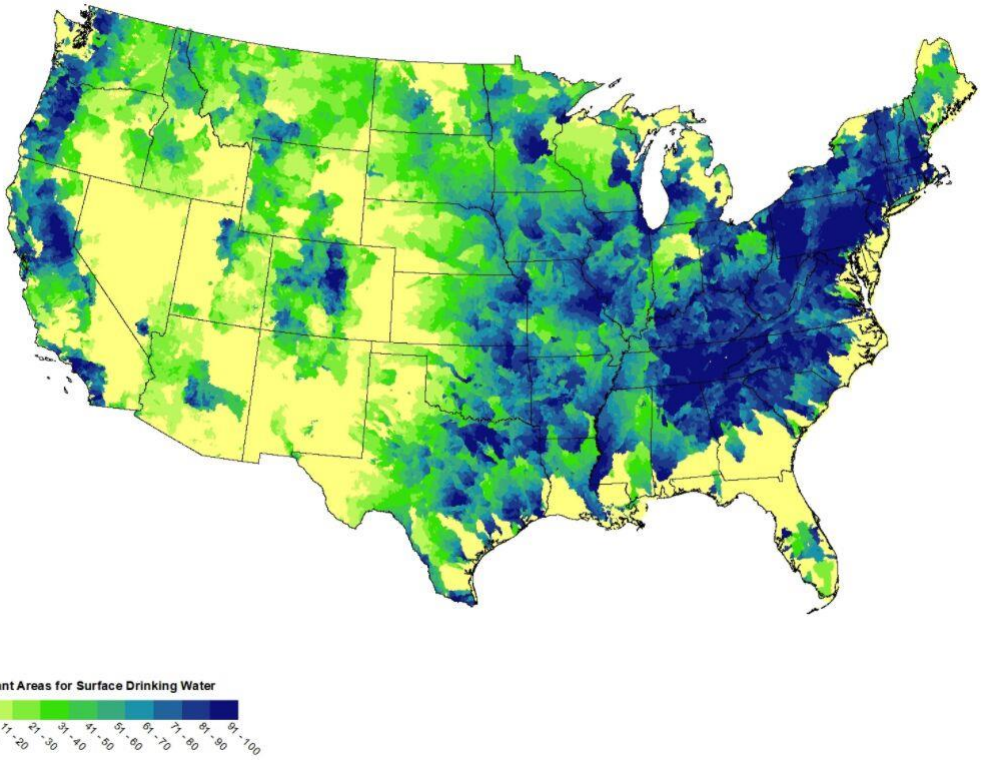
OBJECTIVE 2:

RELATIVE IMPORTANCE TO SURFACE DRINKING WATER (IMP)

IMP = Qn * PRn







OBJECTIVE 3:
IDENTIFY FOREST AREAS THAT PROTECT SURFACE DRINKING WATER

This analysis highlights the relative importance of:

a) all forest lands,

b) National Forest system lands,

c) other Protected lands

and

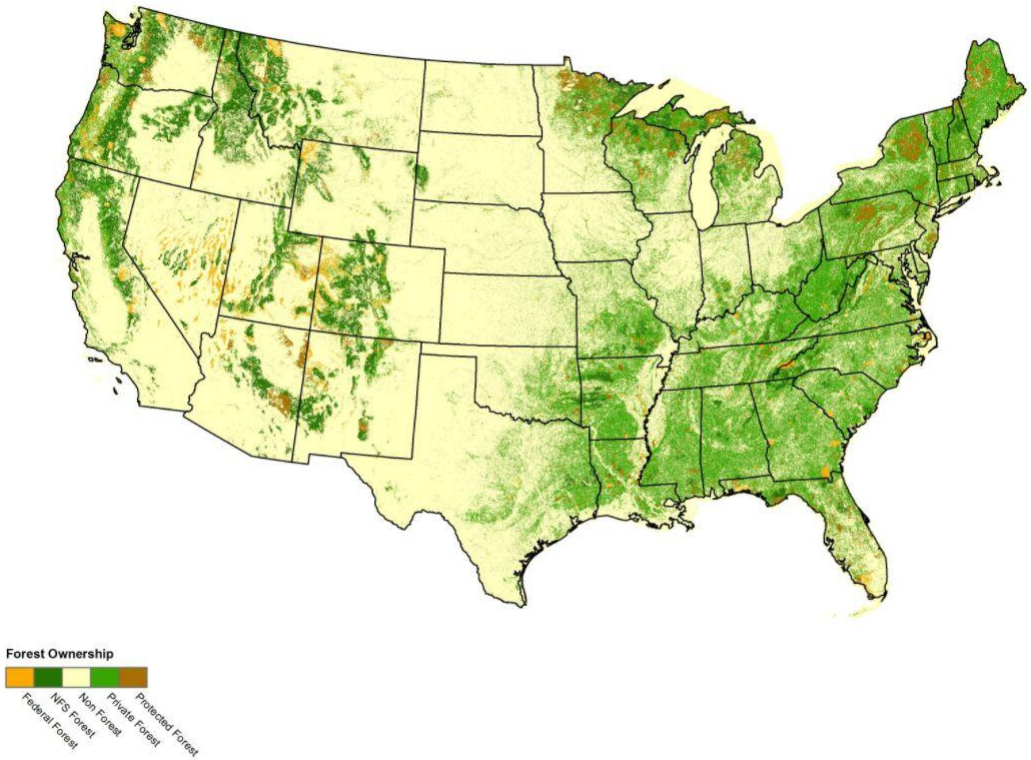
d) unprotected private forest lands.

Conservation Biology Institute, 2016. PAD-US (CBI Edition) Version 2.1 Shapefile (updated September 1, 2016)

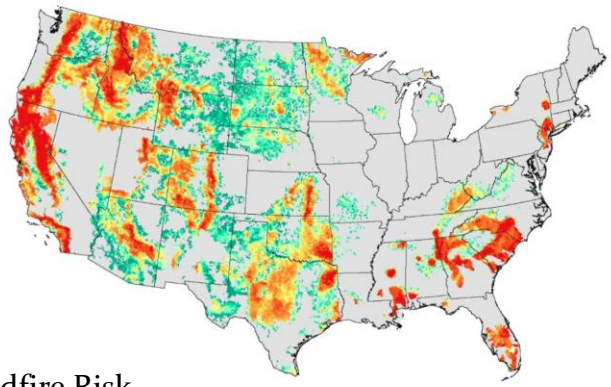
U.S. Endowment for Forestry and Communities 2016. National Conservation Easement Database October 5 2016

U.S. Geological Survey, 2019. National Land Cover Dataset NLCD 2016 Land Cover Conterminous United States. Sioux Falls, SD.

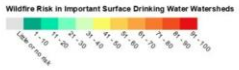
Yang, L., et al. (2018). "A new generation of the United States National Land Cover Database: Requirements, research priorities, design, and implementation strategies." ISPRS Journal of Photogrammetry and Remote Sensing 146: 108-123.

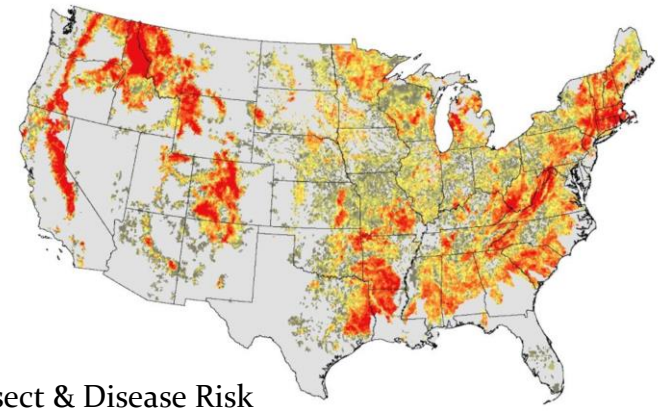


Objective 4:
IDENTIFY SUBWATERSHEDS WHERE RISKS AFFECT SURFACE DRINKING WATER.

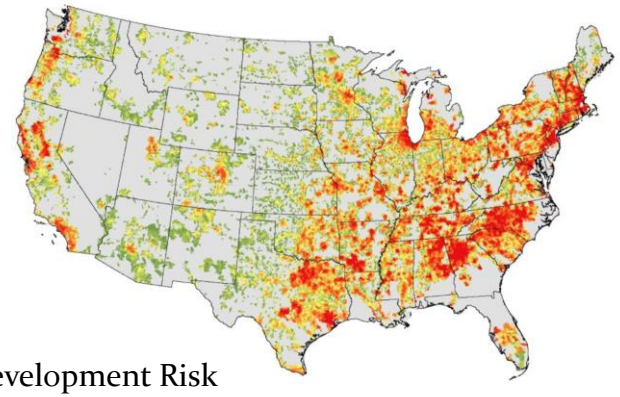


Wildfire Risk

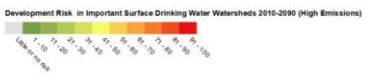


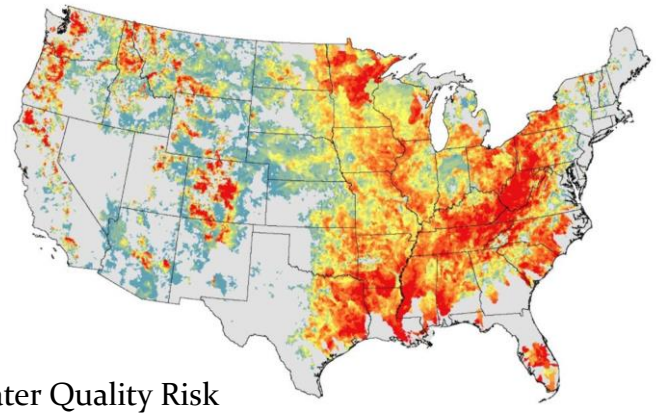


Insect & Disease Risk



Development Risk





Water Quality Risk

How can the Forest to Faucets application be useful to Water Managers?

By identifying source water areas upstream from drinking water intakes that:

- **Have a natural ability to produce clean water based on biophysical characteristics**
- **Have consumer demand for the water produced**
- **Are facing significant threats (development, insects and disease, and wildland fire).**

Using this information priority areas for restoration and/or conservation can be identified for further analysis.

Helpful References

- Forest To Faucets website - https://www.fs.fed.us/ecosystemservices/FS_Efforts/forests2faucets.shtml

- Protecting Drinking Water at the Source – Working with the USDA Forest Service – brochure created by FS and America Water Works Association

  https://www.awwa.org/Portals/0/AWWA/ETS/Resources/22426%20USDA%20Forest%20Svc%20SWP%20flyer.pdf?ver=2020-08-04-125418-410