FLOODPLAINS FOR THE FUTURE

PUYALLUP, WHITE & CARBON RIVERS

# Annual Report 2019-2020

# We define floodplain health as:

***The condition of multiple elements that when considered together contribute to a functioning floodplain, including the natural physical processes and biological factors that support salmon populations; the long-term viability of agricultural lands; and the reduction of the risk of flooding.***

PHOTO: WASHINGTON FARMLAND TRUST

## OUR INTEGRATED MANAGEMENT GROUP

The Floodplains for the Future Integrated Management Group (IMG) is a group of stakeholder and government organizations with interest in the Puyallup River watershed. FFTF Partners include:

**American Rivers**
**City of Orting**
**City of Puyallup**
**City of Sumner**
**Floodplains by Design**
**Forterra**
**King-Pierce Farm Bureau**
**Muckleshoot Indian Tribe**
**Pierce Conservation District**
**Pierce County**
**Pierce County Agricultural Program**
**Port of Tacoma**
**Puget Sound Partnership**
**Puyallup Tribe of Indians**
**Strategic Conservation Partnership**
**South Puget Sound Salmon Enhancement Group**
**The Nature Conservancy**
**UW Climate Impacts Group**
**Washington Farmland Trust**
**Washington State Department of Ecology**
**WRIA 10/12 Lead Entity**

# Our Focus

Dear Reader,

The culture in the Puyallup is both one of working together and of getting things done. Floodplains for the Future (FFTF) is a partnership of organizations and people committed to recovering salmon, increasing the safety of communities from flood risk, and maintaining a vibrant farming community. In a typical year, partners face challenges in completing large-scale and impactful work. These challenges include siloed funding sources, the legacy of historic impacts, insufficient investments in community needs, complicated contract requirements, disparate technology platforms and data sets, and a myriad of other details.

2020 was far from typical. In addition to the expected effort of transforming floodplain management to achieve community goals, we also faced a pandemic that physically isolated us. This forced us to get creative, to work together through Zoom or Microsoft Teams, and to find new ways to do familiar work. Despite these drastic circumstances, the partners of Floodplains for the Future collaboratively developed and submitted a $9 million grant application to continue the work of the program into the future. We supported each other, made substantial progress on our projects while adapting to new guidelines and Governor's orders, and kept results coming.

Through it all, Floodplains for the Future partners kept up our efforts, and we kept thinking big. Driven by persistence, creativity, and strategic use of limited human and financial resource, Floodplains for the Future has brought over $60 million into the Puyallup in seven years. We have collaborated to support, fund, and implement multi-benefit floodplain projects and activities across the watershed. Together, we have removed over 70 at-risk structures from the floodplain, conserved nearly 400 acres of farmland, restored hundreds of acres of critical salmon habitat, and made numerous other advancements towards our goal of achieving integrated floodplain management. We have 16 projects in development that will continue to achieve on-the-ground results over the years to come.

This 2019-2020 Annual Report shares results from 2019 and highlights work completed in 2019 and 2020 to support Floodplains for the Future partners. This information is crucial to the Floodplains for the Future partnership. It helps us understand what we are accomplishing with our investments, how the landscape is changing, and whether we are making progress toward our goals. The results shared within this annual report include updates on combined contributions, built environment and actively farmed land in the floodplain. The report also highlights several stories of accomplishment.

Congratulations to all on another successful year of Integrated Floodplain Management. Happy reading!

*Kathleen Berger*

Floodplains for the Future Coordinator

# Why Integrated Floodplain Management

The floodplains of the Puyallup Watershed are at risk: increasing pressure from development and climate change threatens to weaken the ability of communities to respond to flood events, remove agricultural lands from production, and exacerbate the problems facing salmon in the watershed. For these reasons, integrated floodplain management solutions that balance flood risk, farms, and fish are necessary to build a resilient, healthy, and productive watershed.

Integrated floodplain management is a form of planning where Floodplains for the Future (FFTF) partners have agreed on a set of shared visions, strategies, and actions to improve floodplain health. Instead of competing against one another for limited resources, FFTF partners work together to pursue diverse funding opportunities and develop multi-benefit projects that benefit all stakeholders in the watershed.

One of these projects, the South Fork Floodplain Restoration, is a side channel restoration project near Orting designed to reduce flood risk and improve salmon habitat. Construction for this project began in 2013 and was divided into three phases. Over 2,400 linear feet of existing levee was removed and set back encompassing an area of nearly 42 acres that includes 4,200 linear feet of side channel habitat as well as many engineered log jam structures, pools, rifles, and other natural wood features. In early February 2020, excessive rainfall lead to a moderate flood event for the Puyallup River. The South Fork side channel was fully engaged by the flood event, and water extended beyond the project into the riparian areas as designed. Additionally, large woody debris recruitment and gravel transport occurred and the project was described as a success by Pierce County Floodplain Services. Through their efforts, FFTF partners produced beneficial outcomes for flood risk reduction and salmon recovery in the watershed.

The path towards integrated floodplain management can be difficult as oftentimes the goals behind reducing flood risk, supporting agriculture, and recovering salmon are at odds. However, working towards integrated solutions results in projects and funding opportunities that increase the pace and magnitude of FFTF actions to improve floodplain health.

## Our goal is integrated floodplain management

Integrated floodplain management seeks common agreement on visions, strategies, and actions. Integrated management can lead to suites of actions that meet the needs of farm, fish, and flood risk. Integrated solutions make better use of limited funding and staffing and lead to wiser capital investments.

**FARM** **FISH** **FLOOD RISK**

## Our Vision

*Restored connections between rivers and land improve habitat for salmon, protect communities and critical infrastructure from flooding, and provide new opportunities for recreational and cultural uses while preserving agricultural lands in the Puyallup River Watershed.*

## Our Mission

*To encourage shared leadership in a trusting and transparent environment in order to plan, fund, and implement multi-benefit floodplain projects in the Puyallup, White, and Carbon River floodplains.*

# Working Strategically

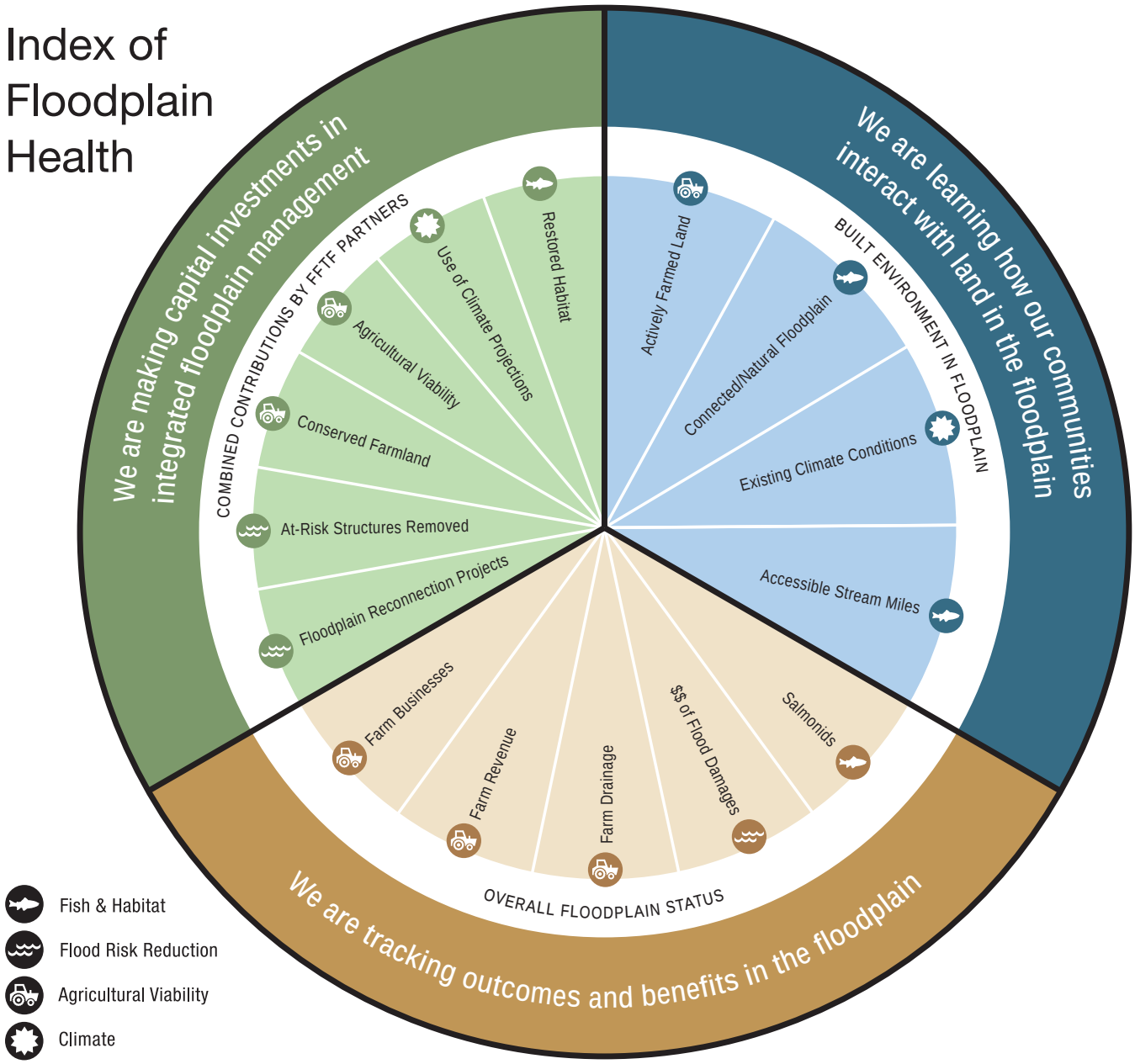
FFTF partners have identified over $500 million in infrastructure, restoration, and farmland conservation needs throughout the floodplains of the Puyallup Watershed. In an era when investment in infrastructure, agriculture, and salmon recovery continues to be well below the levels of communities need, creativity and strategic opportunism are required.

By establishing a compelling and inclusive vision guided by strategies and actions – the 21 partner organizations in the FFTF program are able to unite their efforts towards securing funding from local, state, and federal sources to achieve their goals and advance their work.

## Together, FFTF Partners have crafted the following broad strategies to guide their efforts:

- ➔ Reconnect floodplain through levee setbacks and side channel reconstruction
- ➔ Remove structures at-risk of flooding through parcel acquisition and demolition
- ➔ Preserve agricultural land through conservation easements
- ➔ Restore habitat and watershed processes to support all salmon and trout species
- ➔ Identify agricultural resiliency opportunities and action plans
- ➔ Develop a strong, commonly understood collaborative structure and partnership.

# Index of Floodplain Health





## INVESTMENTS

**We are making capital investments in integrated floodplain management and making progress toward our goals**

## LAND

**We are learning how our communities interact with land in the floodplain**

## OUTCOMES

**We are tracking outcomes and benefits in the floodplain**

# Monitoring to Move Forward

In order to track progress towards their goals, FFTF partners have developed a robust monitoring plan referred to as the Shared Monitoring Program. This program is comprised of 18 high-level metrics that track capital investments in the FFTF program, monitor the progress of actions by FFTF partners, and report on conditions in the watershed outside of the direct influence of FFTF partners that nevertheless have an impact on the program. Together, these 18 metrics comprise the Index of Floodplain Health which groups the metrics around three themes: land, investments, and outcomes. Land metrics help partners learn how communities interact with land in the floodplain, investment metrics track the financial contributions of FFTF partners, and outcome metrics reflect trends in floodplain conditions.

The success of integrated floodplain management lies in ensuring that individual stakeholder issues and goals are integrated at both project and watershed scales. By monitoring their actions through these metrics, FFTF partners are able to understand the degree to which their efforts and investments in the watershed align with their shared visions, strategies, and actions. This iterative process of reflection allows partners to celebrate their successes, identify areas where they are falling short of their goals and where collaboration can be improved, and ultimately, move closer to achieving integrated floodplain management in the Puyallup Watershed.

This 2019 Annual Report provides results for 3 of the 18 metrics in the Index of Floodplain Health. Project specific monitoring of actions supported by FFTF will occur as each project is implemented by the project sponsor.

## METRICS REPORTED IN THIS ANNUAL REPORT

### INVESTMENTS

**Combined Contributions**

*Floodplain Reconnection Projects*

*At-risk Structures*

*Conserved Farmland*

*Agricultural Viability*

*Use of Climate Projections*

*Restored Habitat*

### LAND

**Built Environment in Floodplain**

**Actively Farmed Land**

*Connected/Natural Floodplain*

*Existing Climate Conditions*

*Accessible Stream Miles*

### OUTCOMES

*Overall Floodplain Status*

*Farm Businesses*

*Farm Revenue*

*Farm Drainage*

*$$ of Flood Damages*

*Salmonids*

*Metrics Not Reported*

# Investments

*We are making capital investments in integrated floodplain management and making progress toward our goals*

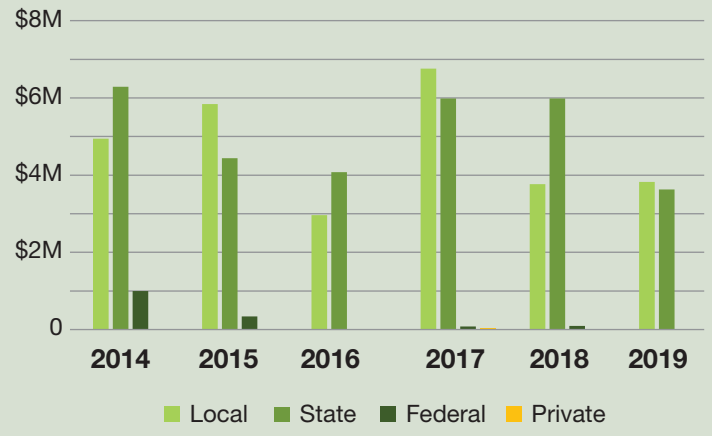
## INTEGRATED METRIC

### COMBINED CONTRIBUTIONS BY FFTF PARTNERS

#### DESCRIPTION

FFTF partners are working together to support the recovery of floodplain functions and protect the health and safety of communities around floodplains. Working independently and collaboratively, FFTF partners seek and acquire funding from multiple sources, including federal, state, and local grants, rate-based fees and taxes, and private foundations. Partners provide match funds in many cases and use existing grants to leverage additional funds where possible. Together, the combined investment of all FFTF efforts serves as an indicator of progress toward the shared goals of the FFTF program. In 2019, partners contributed over $7 million toward FFTF activities, bringing their total combined contributions to over $60 million since FFTF was formed in 2013.

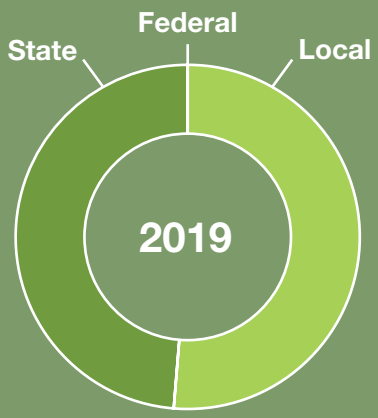
#### YEARLY BREAKDOWN




## FUNDING

**$7,454,806**
in 2019

**$60,069,645**
total to date (since 2013)




**Funding Source and 2019 Amount**

| | |
|---|---|
| Local | $3,824,208 |
| State | $3,629,401 |
| Federal | $1,197 |
| Private | $0 |
| TOTAL | $7,454,806 |

# Land

*We are learning how our communities interact with land in the floodplain*

## INTEGRATED METRIC

### BUILT ENVIRONMENT IN THE FLOODPLAIN

#### DESCRIPTION

WDFW's High Resolution Change Detection dataset is used to show changes in land-use between two time periods. This data revealed approximately 250 acres of new human-dominated land cover (i.e, developed or impervious) in the floodplain between 2015 and 2017. The majority of the new built environment is associated with commercial and residential development in the Lower Puyallup (127 acres) and Lower White (181 acres) reaches. 3.5 acres of the total 250 acres were previously connected to active river channel with natural land cover.

**250 acres**
of new built environment in the floodplain between 2015 and 2017

**3.5 of the 250** acres were previously connected floodplain with natural land cover

**"Built environment"** is defined as human dominated land cover such as roads, buildings, and warehouses (as measured by impervious and semi-impervious surfaces)

## INDIVIDUAL METRICS

### ACTIVELY FARMED LAND

#### DESCRIPTION

This metric uses Washington State Department of Agriculture and Pierce County data to measure the amount of actively farmed land in the Puyallup watershed. The data allows FFTF partners to monitor progress made towards their goal of minimizing the conversion of agricultural lands to non-agricultural uses.

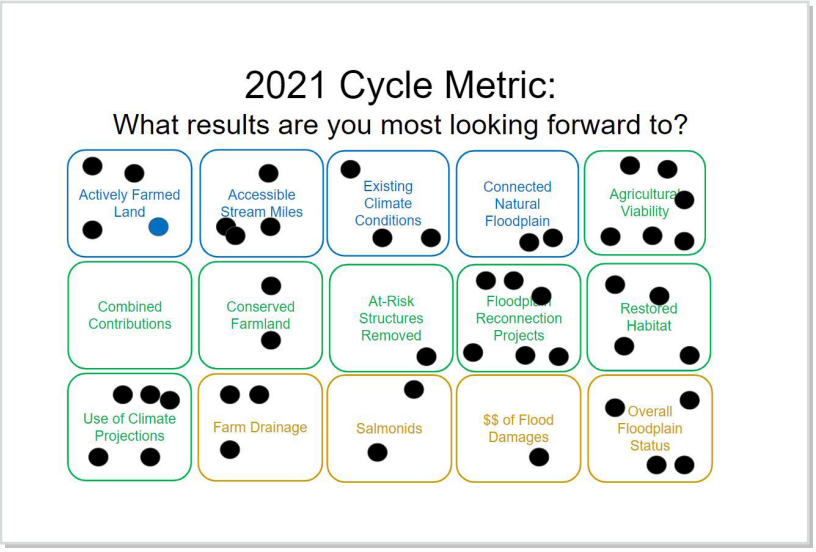
**3,905 acres**
of actively farmed land in the floodplain in 2019

**FFTF Baseline:**
4,157 acres of actively farmed land in the floodplain in 2013

*Story of Accomplishment*

# Collaboration Gone Virtual

In response to the COVID-19 pandemic, Washington State Governor Jay Inslee issued a stay-at-home order on March 25th, 2020. As a result, FFTF partners rapidly shifted their work of understanding the 2019 metric results in an entirely virtual setting. Since its inception, FFTF has been rooted in robust collaboration between stakeholders and partners and this same level of engagement has continued as the work of FFTF has been done virtually. In order to maintain this level of engagement, partners invested significant time in taking trainings to learn more tools to be able to conduct complex collaborative work online. Partners then shared resources, tips, and ideas and broadly took advantage of a variety of tools including virtual meeting platforms and interactive presentations hosted on Google Slides.




In various FFTF meetings, partners have been provided with a Google Slides presentation comprised of various slides designed to promote and sustain engagement. The FFTF Monitoring Team has modified and expanded several slide formats provided through trainings that included sticky-notes, sliding scales, dot-voting exercises, and comment boxes for meeting participants to use during stakeholder group discussions, presentations, and the 2019 Results Summit. Google Slides allow multiple users to access a presentation at the same time, enabling meeting participants to type questions or comments and voice their opinions during the course of a discussion or presentation. This platform allowed FFTF to overcome many of the obstacles to robust engagement presented by virtual meetings and helped to capture key discussion points to inform subsequent work of the FFTF program.



Partners have also taken advantage of a variety of virtual meeting platforms over the last nine months. Microsoft Teams has proven to be useful for small group meetings to discuss strategies and next steps for the program, while others like Zoom and WebEx have been used for larger meetings like the Results Summit. Zoom has been particularly useful for engagement as its breakout room function has enabled partners to discuss specific topics in small groups before sharing opinions and thoughts with all FFTF partners.

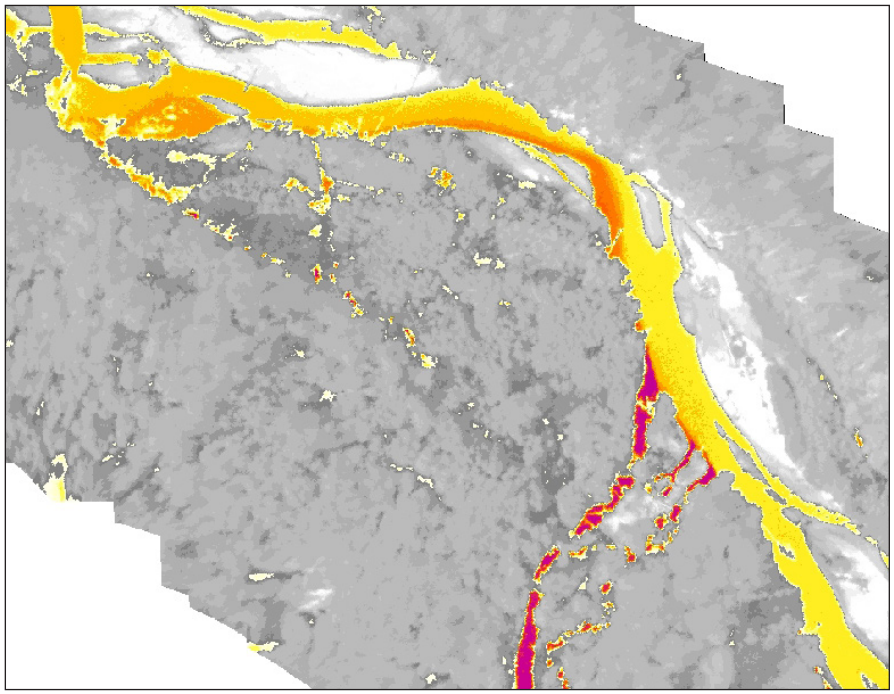
Despite the many challenges posed by the COVID-19 pandemic, FFTF partners adapted quickly and used a variety of engagement tools to maintain the same level of collaboration that has been a hallmark of the program.

*Story of Accomplishment*

# Heat Matters: Thermal Infrared Mapping

Heat matters to fish. Among the many climate change impacts affecting salmon and trout populations, increasing instream temperatures are at the top of the list. When water temperatures are too high, the excessive heat can kill fish, limit their movement, and increase their metabolism to a rate unable to be supported by available food sources. Salmon recovery practitioners are wrestling with how to implement strategies that protect and restore a range of water temperatures to support the ability of salmon and trout to continue to survive and thrive in the Puyallup Watershed.

The lower portions of the Puyallup Watershed are highly urbanized, while the upper watershed flows from 12 glaciers on the flanks of Mt. Rainier. Many tributary basins drain the narrow elevation band in areas likely to transition from snow-dominated to rain-dominated systems with future climate change. Watersheds in this zone are likely to experience the most change under future climate predictions. The Puyallup Watershed is home to the only remaining Spring Chinook population in South Puget Sound and understanding projected temperature impacts is important for protecting these fish and others in the watershed. In the absence of major intervening actions, these anthropogenic and topographic factors make the fish populations of the watershed especially vulnerable to the effects of changing climate.



Tributary confluence of Huckleberry Creek with the Upper White River at River Mile 53, on the Mount Baker Snoqualmie National Forest. Thermal Infrared Imagery reveals Huckleberry Creek is 3 degrees (C) cooler than the mainstem White River and has a downstream cooling effect on the White River. Telemetry data from the Puyallup Tribe and USFWS confirms that Bull Trout key in on this thermal diversity and spend days to weeks holding in this location during the summer months.

In response to these risks imposed by climate change, partners within the Puyallup Watershed came together to plan and fund a watershed-wide acquisition of fine scale thermal data in 2019. Thermal infrared (TIR) data was collected on 335 miles of the Puyallup, Carbon, and White Rivers, including all major tributaries. The data was acquired between July 26 and August 1 of 2019 under contract with Quantum Spatial Inc. (QSI). QSI leads the industry in data acquisitions of this type and has reported the Puyallup River project as one of their largest projects to date.

Watershed partners are now hard at work formulating plans for how to use these data to form strategies and inform priorities for restoration actions within the watershed to better prioritize and design projects that maximize benefits to fish and allow our salmon and trout populations to survive and thrive into future.

*Story of Accomplishment*

# Farmland Pressure Mapping Project

In response to discussions regarding the Actively Farmed Land metric during the 2018 results cycle, Pierce County Surface Water Management (SWM) worked with Environmental Science Associates (ESA) to leverage existing spatial data and other information to better inform conversations about the pressures facing agricultural lands in Pierce County. This project was designed to test assumptions about how habitat restoration efforts, transportation projects, and development pressures drive the conversion of farmland throughout the Puyallup River watershed and was intended to spark discussions amongst FFTF stakeholders regarding both agricultural strategies and integrated strategies. Although this work took place in 2020, the results of this effort were done to support the understanding of 2019 results.

ESA developed a geospatial web application to map areas of active farmland in the Puyallup River watershed and provide relevant context regarding the relationship between agricultural lands and habitat projects, development, transportation, zoning designations, and other conversion pressures. The web application was developed using data sources generated for the FFTF program in addition to publicly available GIS layers. The web application was shared with stakeholders over a series of two virtual disappearing task group (DTG) meetings in mid-September. Stakeholders and partners reviewed the web application and accompanying summary statistics and had a robust conversation about the information presented and how it should be used to guide FFTF efforts as they relate to agriculture in the watershed.

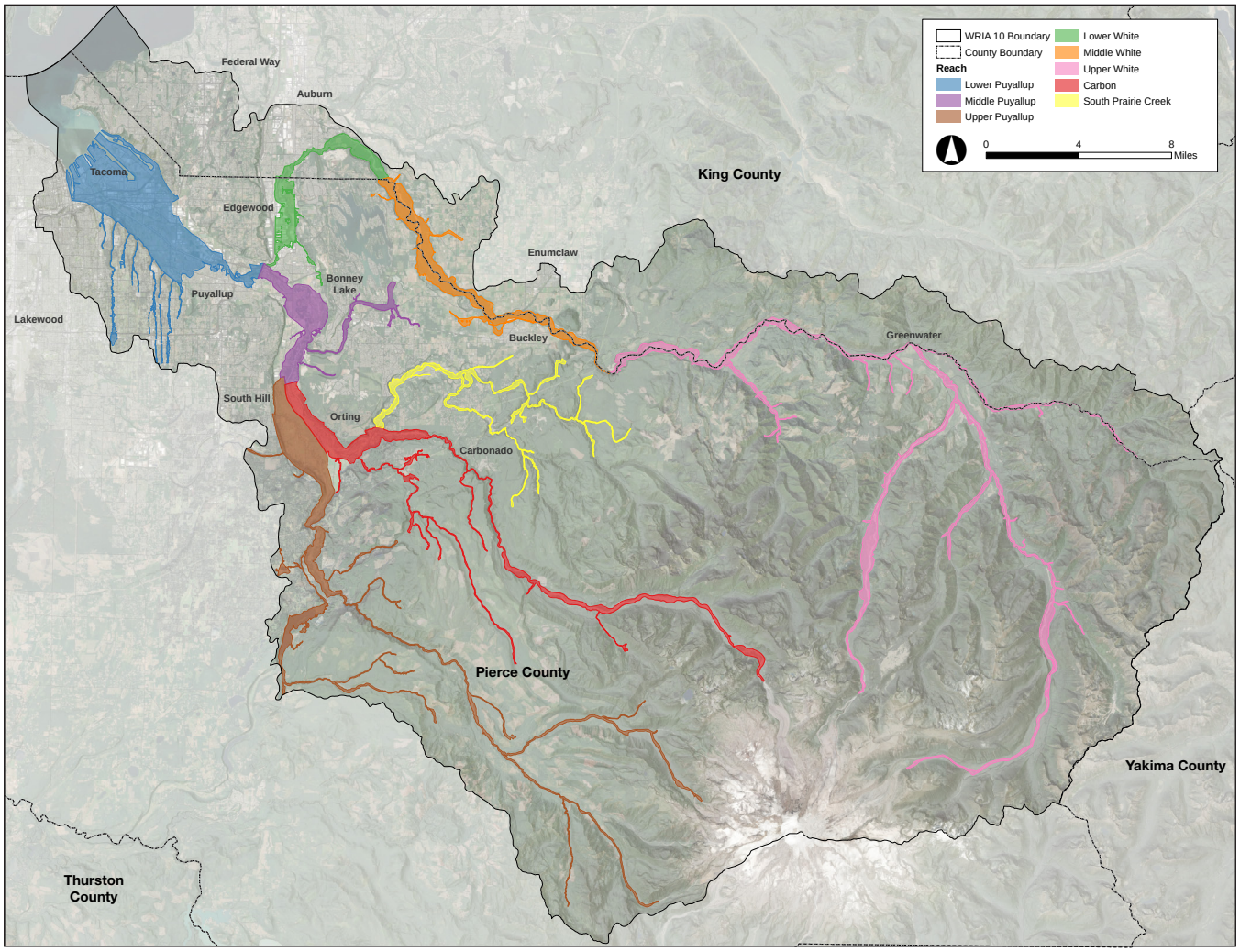
This effort revealed a total of 3,905 acres of actively farmed land in the floodplains of the Puyallup River watershed in 2019 which represents a net decrease of 175 acres since 2013 (approximately 4 percent). A similar portion of agriculture outside of the floodplain area was also lost over the same time period. Summary statistics also revealed that habitat and SWM capital improvement projects have not been a major driver of the conversion of actively farmed land over the past 6 years, especially compared to other pressures like development and infrastructure projects. 704 acres of actively farmed land in the watershed were found to be bisected or adjacent to proposed infrastructure projects including transportation corridors, airports and ferries, surface water management operations, and sewer projects. The mapping also showed 5,205 acres of actively farmed land without agriculture-protecting zoning in the unincorporated areas of the Puyallup Watershed. Additionally, almost 2,000 acres of actively farmed land in the watershed is located within city and urban growth area boundaries.

After reviewing the summary statistics, stakeholders used the two DTG meetings to review the web application and look at specific areas of the watershed. This exercise enabled participants to verify their local, on-the-ground knowledge with the information presented in the web application and provided stakeholders with a landscape level view of conversion pressures facing agricultural lands throughout the watershed. Overall, participants felt that the layered risks from zoning categories, transportation projects, and development pressures compound the stressors facing agriculture and highlight the urgency to protect and conserve farmland in the watershed. There was broad consensus from participants that the web application and its data would be a valuable tool to advance discussions and strategic planning efforts regarding agricultural conservation moving forward. Following the DTG meetings, the information has been used in the FFTF Farm Committee and in the Strategic Conversation Partnership to drive discussions of new strategies and approaches to preserving agricultural viability.


2013
86th Ave E
27th Ave NW
98th Ave
Valley Ave E


2018
86th Ave E
27th Ave NW
98th Ave
Valley Ave E

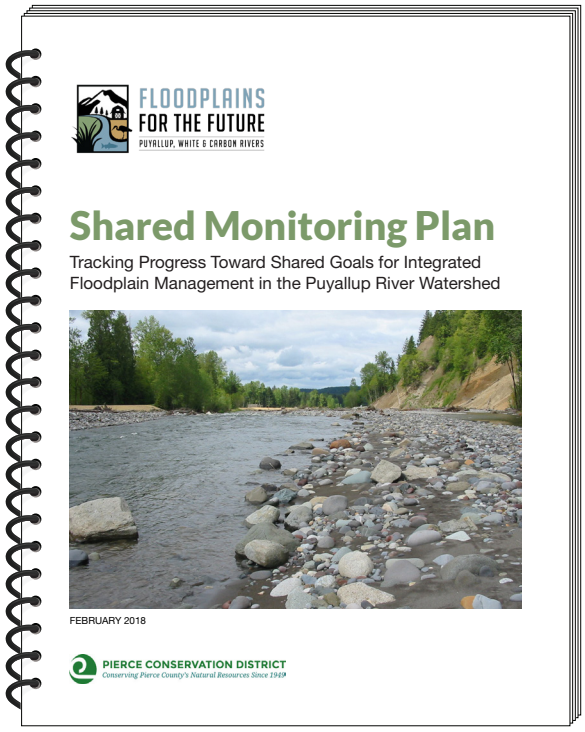
## Puyallup Watershed: FFTF Reaches




## LEARN MORE

The monitoring component of the FFTF program is guided by the Shared Monitoring Plan. This document contains detailed information about the protocols used to track each metric including the data source and collection methods.

More information about the results included in this Annual Report including the Shared Monitoring Plan, graphics, tables, benchmarks, and data along with the results from previous years of monitoring (2013-2018) can be found on the Floodplains for the Future website: www.floodplainsforthefuture.org.

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